Hobbies WEEKLY

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The home carpenter should build this

GARDEN CHAIR

THE chair shown in our sketch makes a strong and sturdy piece suitable for use in the garden. A close-grained hard wood should be used if possible, and the joints suggested should be well made and close fitting and all dowelled together.

There is very little shaping to be done, and what there is is carried out to the ground rails connecting the front and back legs, and to the two arm rests.

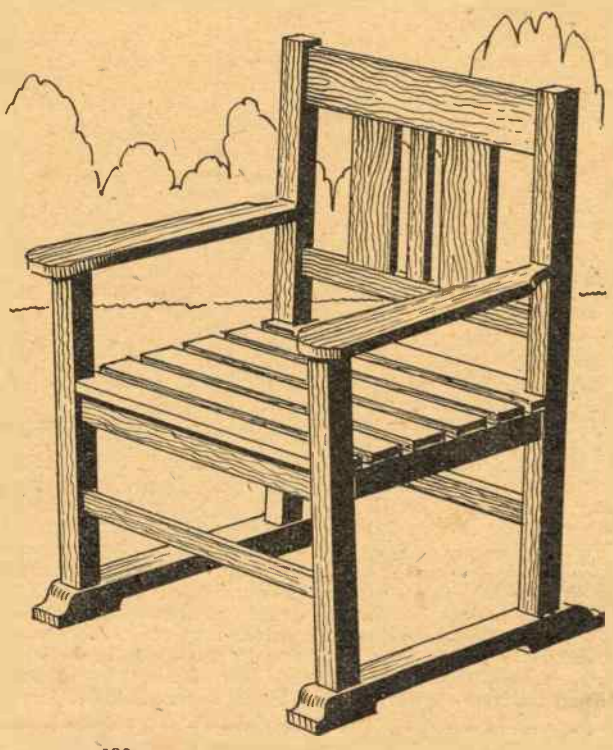
In Fig. 1 we give a front and a side view of the chair and include all necessary measurements for setting out the rails, etc. We also give a cutting list for all the parts, the length measurements being given full to allow for cutting and trimming.

Virtues Necessary

For such a piece of furniture as this where hard usage is brought about, and weight has to be well supported, it is of vital importance to see that good joints are made. This will no doubt tax the skill of a good many workers, but it will be a good thing for those who have not yet tested their skill in this respect to try their hand with this piece.

The type of joints to be made are all shown in the diagrams in Fig. 2. Here at A is shown how the front and side seat rails, C and D, are tenoned into the legs.

The tenons meet in the leg so their ends must be mitred to an angle of 45°, the mortises are cut clean until they meet to allow the tenons to fit properly. The top of the front legs are cut to a stub-tenon, as shown, and this fits into a corresponding shallow mortise in the arm rest.



A stronger job of fixing here would be to have an open mortise, that is, it is cut quite through the thickness of the arm rest. The tenon is thus longer and penetrates to the top where it is cut across the middle and a thin wedge inserted.

The rails E and F are tenoned into the back legs of the chair and shallow mortises are made on these rails

The detail at D Fig. 2 shows how the front seat lath L is notched at the ends to fit round the legs. The back lath of the seat will be served the same. The proper spacing of the seat laths may be seen in the side view in Fig. 1.

The shaping of the arm-rests may be seen at E in Fig 2, and the small tenon which fits into the back leg is also shown here. All this may be cut with a coarse fretsaw and the sharp edge cleaned off after fitting and fixing.

The front legs should have tenons

Cutting List

A—Two Legs 24ins. by 1¼ins. by 1¼ins.
B—Two Legs 39ins. by 1¼ins. by 1¼ins.
C—Two Rails 23ins. by 2½ins. by 1in.
D—Two Rails 18ins. by 2½ins. by 1in.
E—Top Rail 23ins. by 3ins. by 1in.
F—Mid Rail 23ins. by 2½ins. by 1in.
G—Two Rails 15ins. by 4ins. by ¾in.
H—One Rail 15ins. by 1½ins. by ¾in.
I—One Rail 23ins. by 1½ins. by ¾in.
J—One Rail 23ins. by 1½ins. by ¾in
K—Two Rails 23ins. by 2½ins by 2½ins.
L—Six Seat Laths 24ins. by 2½ins. by by ¾in.
M—Two Arm Rests 20ins. by 4½ins. ¾in.

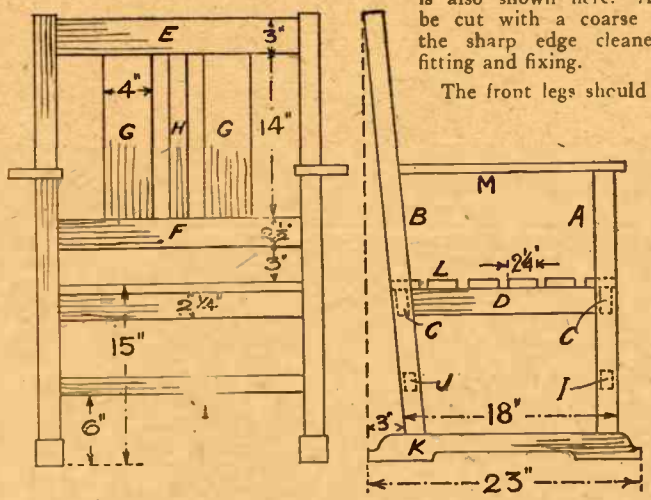


Fig. 1—Front and side view with dimensions and lettered parts

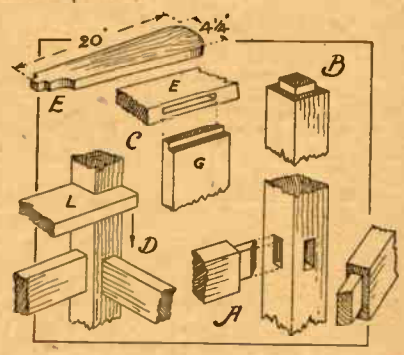


Fig. 2—Details of joints used

to admit the projections on the uprights G and H, see Fig. 2.

Small dowels may be put in on the face if desired to stiffen the joint. It must be observed that the front face of the rails G and H are flush with the rails E and F.

cut at their bases to fit into mortises in K. They may be either pinned or wedged, the former being preferable in this case.

Clean the surfaces of the wood at completion and brush over some raw linseed oil, adding a second and a third application at intervals until the wood is capable of withstanding rain and exposure.

If a porous or soft wood has been used then it might be advisable to use paint for the whole chair, two coats at least being applied.

Small Home-made Vices

VICES for holding tiny parts of models can be made from hinges, a 6in. iron equal-sided chest or box hinge being used in making the novel vice shown. Small, hand vices of this nature are useful when it is necessary to file parts to shape.

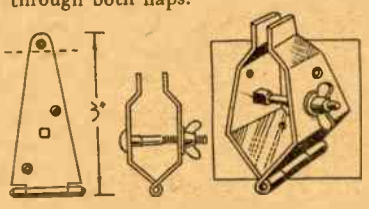
Generally, the parts are too small for holding in one's fingers. Perhaps too, one may wish to drill holes in the parts. The hand vice grips the part firmly, adjustment being made by means of a bat-wing nut working on a bolt.

Another point, the same vice will be found useful for holding glued parts together, thereby acting as a cramp. The most suitable hinges to use are the equal-sided ones mentioned. These range in length from 3ins. to 6ins. (closed).

Made from a Hinge

Assuming you have a 3in. hinge, the end hole is cut off (as indicated by the dotted lines). This is best done by closing the hinge flaps together and cutting away the metal with a hacksaw, finally filing the edges level.

While still closed, drill the bolt hole in the position shown. The best type of bolt is a roundhead carriage one about 3/16in. thick. Therefore, drill a 3/16in hole right through both flaps.



Open the flaps amd make one of the holes square by driving a square. sectioned tapering rimer into it. The resultant "bulge" on the opposite side is filed away. The square part of the bolt shank should fit neatly and freely in the hole. Do not have it a tight fit—just nice and free, yet in such a way that the bolt will not turn in the hole.

The hole in the other flap is bored with a ⅜in. drill. A larger size of hole is necessary here to allow for the movement of the flap. If desired, you could drill two 3/16in. holes beside each other, one above the other so an elongated 3/16in. slot can be filed (using a rat-tail file).

The hinge flaps are then bent identical in the manner indicated. The bending can be done in an iron bench vice or in the jaws of an iron sash cramp.

The Fixing Mechanism

Insert the bolt, then slip on a suitable metal washet and a bat-wing, Owing to the manner in which the "knuckle" of the hinge juts, there is bound to be a limit to the movement of the vice jaws, the "binding" of the knuckle serving as a spring in keeping up an expansion force between the flaps.

If the flaps are bent so that they are free to move easily towards each other, it may be necessary to fit a small ½in. coil spring over the bolt, at the inside, i.e., between the hinge flaps. The spring will push the vice jaws apart when the bolt is slackened.

How to enlarge or reduce your pattern parts by DRAWING TO SCALE

DRAWING to scale often presents a somewhat intricate and mysterious task to some of our readers, especially those who delight in making models of ships, aeroplanes, etc. Sometimes, if not frequently, the wood and other material available is not sufficient to complete a particular size of model.

The Use of Scale Rules

Instead of going to the trouble of plotting the outlines of shapes in squares or using a pantograph, the majority of you will doubtless prefer a simple method often employed by the writer—the use of small, home-made scale rules. To help you in this connection, seven full-size scale rules, ranging from ½in. to 1in. are printed on Cover iv.

These rules, needless to say, have been carefully calibrated to be as accurate as possible, for the smallest inaccuracy in, say, the ⅜in. or ¼in. scales, would be greatly accentuated n the actual enlargement.

11/16in., 9/16in., 7/16in., 5/16in. and 3/16in. to the inch.

The latter, of course, are all "between" sizes in respect to the seven sizes provided. There is no great need for the between sizes, however, unless you want to have as much scope as possible with their use. Those of you who possess a 12in. rule, thin card, and black ink and pen, will find it easy to make the additional rules.

One simply rules straight lines along the card to mark the ½in. wide strips, with three straight lines running through the centre of each (as shown on the rules provided) so the ¼in., ½in. and ¾in. divisions can be distinguished. One strip is then divided into (say) 13/16in. carefully and these 13/16in. spaces are halved, then quartered and the quarters divided into eighths.

Enlarging Drawings

Having marked out the rules in ink, the strips are cut to width, using a sharp penknife and ruler instead of scissors. Regarding the rules provided, the page should be carefully pasted on thin card and, when dry, neatly cut out into strips, using scissors this time as a knife edge might "lift" the paper and scrape it off the card in places.

At Fig. 1 we show how one of Hobbies miniature waterline naval ships can be enlarged to almost any size. The model chosen is the smallest one—a Patrol Vessel—and

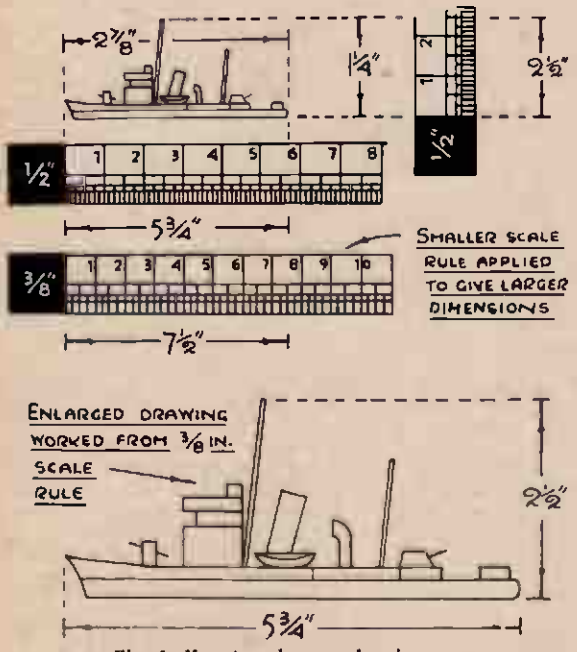


Fig. 1—How to enlarge a drawing

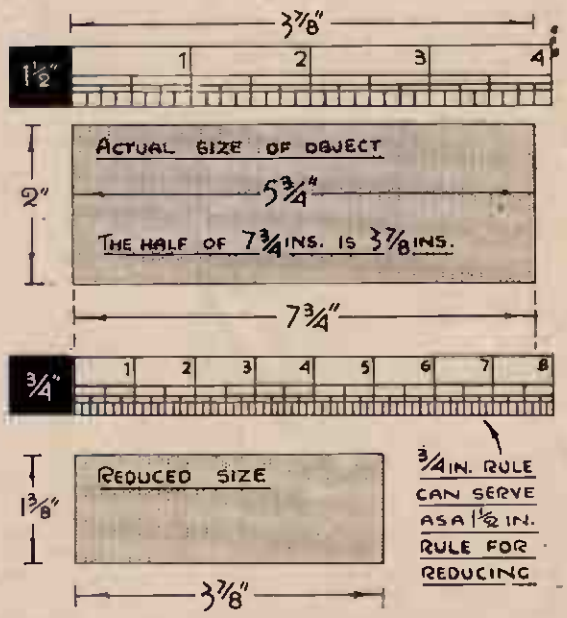


Fig. 2—How to reduce a drawing

Now, by means of the seven main scale rules provided, a great deal of enlarging and reducing can be done, all entirely by measurement. These rules, you will notice, are ranged in ⅛in. reductions, i.e., each one is ⅛in. smaller per inch. It is possible, however, to have a set of rules ranged (from 1in. to 3/16in.) in 1/16in. reductions, this giving useful, extra scales in the following sizes: 13/16in.,

Therefore, to make an enlargement, the parts of the model are measured with any *one* of the rules ranging from ⅛in. to ½in. and the drawings made by means of the 1in. (actual size) rule. The enlargement of the patrol vessel is to the sizes given by the ⅜in. rule only.

One measures everything. First the length of the hull, then the thickness, the position of the masts,

their height, the distance of the cabin from the bow, its width and height, the anti-aircraft gun position, its height and width, etc. It is the same with plain patterns of shapes. Fancy, floral fretwork designs are a different matter, of course, and these must be squared up in the usual way for enlarging or reducing.

Enlarging Drawings

Making enlargements of drawings and elevations is just as easy as making reductions of them. By rights, the scale rules must be larger than 1in. Thus, one needs rules worked out in 1½ins., 1¾ins., 1⅞ins., 1⅛ins., 1¼ins., 1⅜ins., 2ins., and so on, although the seven sizes mentioned will suffice for most requirements.

Now, as you can see at Fig. 2, by applying (say) an 1½in. rule to an oblong shape measuring 7⅞ins. by 2ins., with an ordinary 1in. rule, we get a reduced size of 3⅞ins. by 1⅛ins. The 3⅞ins. by 1⅛ins. is marked out with an 1in. rule. What could be easier

There is, incidentally, no real need for the above sizes of scale rules mentioned, for one has them already, contained in the seven rules provided on the cover page. It is just a matter of measuring the article with any one of the rules and by dividing the resultant sizes in half to get the reduced sizes.

To illustrate this point more clearly, we apply a ¼in. rule to the same oblong shape. As you see, we get, as a result, a length of 7⅞ins. The half of this measurement is 3⅞ins.—that given by a 1½in. rule if used.

Assuming you use an 1¼in. rule, you can, instead, use a ¼in. one, for two ¼ins. equal 1¼ins., just as two ⅛ins. equal 1¼ins. It sounds, at first glance, a bit complicated, but actually, it is all very simple.

To prevent miscalculations, however, the proper *reducing* rules should be made. It will then be only a matter of measuring the article to be reduced and getting the reducing sizes.

Need for Special Care

Please note, by the way, that for clarity, the rules must not be divided into 1/16ins. Keep them out, for you can always allow for them "in your mind's eye" between the ¼in. spaces. No ¼in. spaces appear in the ⅛in. and ⅛in. rules for the same reason.

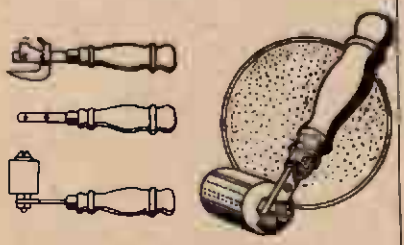
FROM ODDS AND ENDS

A Wall paper Roller

WALLPAPER seam rollers are used by paper-hangers for pressing flat joins in the paper, the roller being less messy than a cloth. Moreover, one is not so liable to tear the soft, damp wallpaper.

We show such a roller device herewith. It will be found useful for other "squee-geeing" purposes. It is easily made from a few odds and ends.

For instance, the handle is provided by an old tin-opener, while the roller is made from a wooden cotton thread spool. The roller spindle is a ¼in. roundhead machine bolt.



The tin-opener—such as the type shown—has a flat shank to which, by means of a couple of rivets, the opener is fixed. The opener is removed by filing away the rivets. The foremost hole in the shank is drilled with a ¼in. drill for the bolt.

The length of the bolt is determined by the length of the cotton spool, plus allowance for the shank, two nuts and a washer (see top view). To prepare the roller, carefully chip away the flange of wood at each side of the spool, then glasspaper the spool smoothly.

To assemble, insert a washer over the bolt, slip the bolt through the spool, then screw on a nut up to the end of the spool. When the shank is put on the end of the bolt, screw on the second nut. Both nuts are "locked" with a couple of spanners against the shank so there is sufficient freedom for the roller to revolve easily.

Finishing Off

To finish off, give the roller a couple of coats of clear varnish or polish. If desired, it is possible to cover the surface of the roller with a strip of thin rubber. An old bicycle air-tube will give you this material.

The best way to attach it is to first smear a film of rubber solution over the roller and allow to dry. The rubber strip is cut to the width of the roller and tried around its circumference to find the length.

Having smeared rubber solution on the strip, press it neatly around the roller, being careful not to "stretch" it too much, for in the drying the elasticity of the strip may open the join. Let the ends of the strip overlap each other, then cut both at once by pressing a sharp safety razor blade over the rubber.

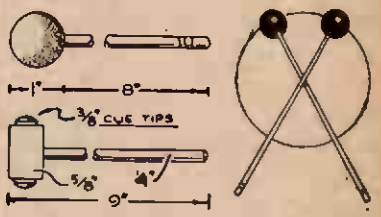
The blade will cut through the rubber easily and give you a neat, tidy join. Of course, you will have to raise the lower overlap end up to remove the waste piece.

Xylophone Beaters

XYLOPHONES are musical instruments played upon with small beaters. Such beaters are easily made from thin cane and 1in. diam. wooden ball feet. However, failing the latter it would be easy enough to make your own ball feet from 1in. cubes of wood, drilling the handle holes in each cube prior to paring circular in shape.

The depth of the holes are ¼in. while the diameter is ¼in. or 3/16in.

The handles are made from an 18ins. length of ordinary school cane, planing it down (with a smoothing



plane) to the thickness required, You may incidentally, plane the handles to a slight taper, the thinner end being glued in the beater heads.

To set the handles off, small beads could be filed on them as shown.

If you find that the solid wood beaters are too noisy on the xylophone keys, a "mallet" form of beater can be made. The head consists of an 1in. piece of ¼in. dowelling at each end of which billiard cue tips (leather) are attached.

These beaters are easier to make and do not tend to do any damage to the key blocks. Half-round ¼in. diam. rubber toes (if you possess a set) could be used instead of the cue tips.

The reason the handles are made from cane is that cane is springy and thus adds to the flexibility of one's wrists. A piece of ordinary wood, such as dowel rod, is too stiff.

If you have a dowel plate, use it when reducing the cane. Plane the cane roughly to ¼in. diam., then mallet the 9in. length through the ¼in. hole in the plate. The plate, of course, trims the length of cane neatly to the desired diameter. The average length of xylophone beaters is roughly 9ins., but sometimes they are much longer. Much depends on the size of one's hands or the number of beaters held in each hand whilst playing. Finish off by varnishing.

To meet the present needs and difficulties make a WAR-TIME 2-VALVE

AN easily-built receiver that will give good speaker results from the locals can be made by the amateur radio enthusiast from the following instructions. The modest two-valver has much to recommend it in these days for even small and inexpensive batteries will run it for a long period, while if it is properly designed it will provide all that is necessary in the way of volume and quality of reproduction for domestic listening. It will not, of course, comb hundreds of stations from the ether, but this is not a very important point now-a-days.

The Circuit

The circuit is the well-known detector-pentode arrangement. Suitable component values enable the circuit to give of its best, so that it is sensitive and gives good quality reproduction. The coil is designed to tune sharply (flat tuning being a bug-bear with this type of receiver unless precautions are taken) and selectivity is good. A glance at the circuit diagram will show the other salient features.

Constructing the Receiver.

The panel is made from ply-wood 7ins. by 5ins., whilst the baseboard should be of wood about ¼in. thick. The panel and rear terminal strip are attached to the base by means of wood screws.

The components should be located as shown in the wiring plan, and the run of wiring shown should also be followed. If the coil leads are left long enough and the small reaction condenser is of the type fitted with terminals it will not be necessary to solder any of the connections.

Although a large knob with 0-180 degree dial is fitted to the tuning condenser a geared reduction drive can be used instead if it were to hand. The on/off switch is fixed below the reaction condenser and is not shown in the wiring plan. One lead to it goes to the earth circuit of the receiver, the other to the low tension accumulator via a length of flex.

The battery leads pass through a hole in the terminal strip and are fitted with appropriate connectors.

It will be noticed that a resistance is used in place of the more normal choke in the detector reaction circuit. This contributes to the general stability of the set, and is definitely better than a choke of doubtful efficiency. If a really good choke were to hand it could be used instead.

The low frequency transformer should be of reliable make, and the connections marked upon it followed.

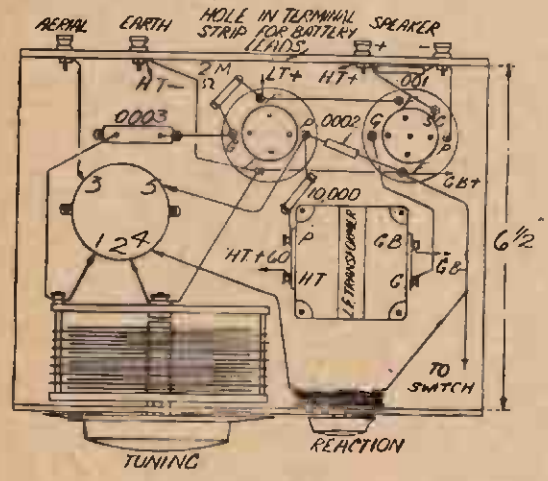
The coil is wound upon a 3in. length of 1¼in. diameter cardboard tubing. It is fitted with two small brackets to hold it to the baseboard.

COMPONENTS REQUIRED

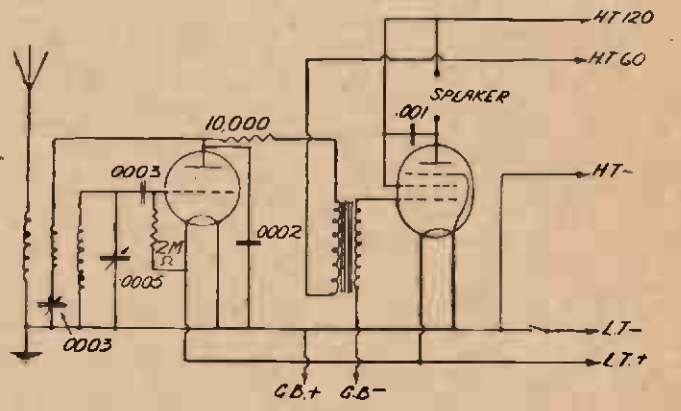
2 Valve Holders with terminals, one 4-pin, one 5-pin.
Low-frequency Transformer, ratio between 1 : 3 and 1 : 5.)
·0005 Air Dielectric Tuning Condenser with knob or dial.
·0003 Reaction Condenser with knob.
On/off Switch.
3 Fixed Condensers : ·0002, ·0003, and ·001 mfd.
2 Resistors : 2 megohm and 10,000 ohms.
Wire for coil ; terminals ; spade ends and plugs ; connecting wire and flex.
2 Valves : Osram HL2 and Cossor 220HPT (or similar types).

All windings must be in the same direction. The connections will be seen by comparing the diagram of the coil and the wiring plan.

Insert the valves and connect the batteries, using a 2-volt accumulator and 120-volt H.T. Aerial earth and speaker connections should be made to the appropriate points. If the speaker used is of the moving-coil type and does not have positive and negative markings, ignore the plus and minus markings of the speaker terminals.



Layout of base

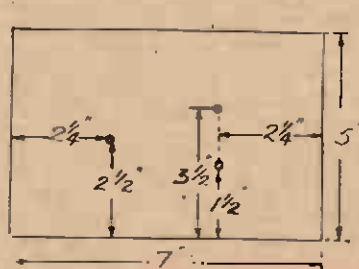


The wireless circuit

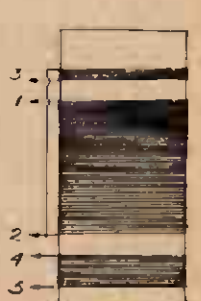
Commencing from the bottom of the coil, the windings are as follows :— Reaction winding. 40 turns of 36 s.w.g. enamelled wire wound side by side.

Grid Winding. 75 turns side by side of 28 s.w.g. double cotton covered wire. It is commenced ¼in. from the reaction winding.

Aerial Coupling. 20 turns side by side of the same wire as is used for the reaction winding. It is ¼in from the top of the grid winding.



The panel dimensions



The tuning coil

The Home Service will be heard on several wavelengths, and the General Forces programme on two wavelengths with the tuning condenser about half open.

If you are a photographer you can have your own

HOME MADE PRINTING PAPER

MANY keen amateur photographers may be experiencing difficulty in obtaining supplies of the necessary material for carrying on. Fortunately this trouble may soon be over, but meanwhile the Services want all that the manufacturers can supply and we must go without.

There are, however, some things which can be made at home, one of which is printing paper. It is very simple and a most interesting process for those who like dabbling with chemicals and making experiments.

The description of most new processes often suggests a lot of complicated work and indifferent results at the finish. But if these instructions for making salted paper are carefully followed there is no reason why any amateur should fail to obtain some pleasing and satisfactory prints. It is a process which many old time amateurs used quite frequently with great success.

What you Need

To start with you must have a piece of flat wood, such as a drawing board or piece of five-ply that is quite flat and perfectly clean, a pair of chemical scales for weighing small quantities such as grains, and a couple of good brushes. If you intend doing small size papers, get a flat one about 1in. wide and preferably with sable hair about 1½ins. long. The other brush should be a small hog-hair as it is required for a stippling action. These brushes must *not* be metal bound.

Finally a supply of good quality paper is necessary. This is not easy to obtain, but it is possible to get a sketching block or some Whatman drawing paper from an artist's colourman. You may have a few sheets left in an old copy or drawing-book which would answer the purpose. White or cream will be quite suitable.

Coating the Paper

The first essential is to 'salt' the paper by coating it with a chloride solution and in order to prevent this solution sinking too much into the paper the surface has to be sized. This, however, is quite simply accomplished by incorporating a small quantity of arrowroot in the salting solution.

When the paper has been salted it is then treated with a sensitising bath containing a small quantity of silver nitrate which re-acts with the chloride salt and becomes silver chloride.

Prepare the two solutions as follows: arrowroot 80 grains, ammonium chloride 60 grains, acid citric 6 grains, soda carbonate 12 grains, and Water 4 ounces. Work the arrowroot into a thin paste in one ounce of the water, then add this gently to a further two ounces of the water. This should be briskly boiling at the time of adding. Stir it well and keep it at the boil for about five minutes or until a clear jelly is formed.

Mixing the Ingredients

Dissolve the other ingredients in the remaining ounce of water until no sediment is left. Then add the arrowroot and allow the concoction to cool. If this part of the work has been correctly done there should be no lumps or any undissolved particles and the solution should not require filtering. If you think, however, you will have a better solution by so doing then pass it through a piece of muslin while it is still warm.

The sensitising bath is then prepared by mixing 70 grains of silver nitrate with 20 grains of acid citric in 1 ounce of distilled water, be careful not to make this bath in strong daylight but in the subdued light of your workroom, and pour it into an amber coloured glass bottle which has been thoroughly washed clean beforehand.

Using the Solutions

Now with these two solutions you can coat quite a number of pieces of paper for one ounce of each will do 12 pieces 10ins. by 8ins.

Pin a piece of the paper to be coated on to your board quite taut and using the glass headed pins which are still obtainable from any dealer, pour 40 drops of the arrowroot solution, if the size of your paper is 10 x 8 or a corresponding amount if any other size, on to the centre of the paper and rapidly work this with the flat brush over the whole of the surface using an up and down motion.

Should the paper cockle it must be re-pinned in a taut condition to the board and the brush used again but this time across the surface. This action should counteract the cockling.

Having well distributed the solution over the whole of the surface take the other brush, holding it in a perpendicular position, and with circular strokes work it over the entire surface until it appears almost dry. Then hang the sheet in a warm place to dry.

When you are satisfied that the coating has dried into the paper it is ready for sensitising. Using just the same quantity of the second solution as the first treat the paper in the same way, having first washed the brushes. Hang it to dry in a dark cupboard and when it is dry cut it into pieces to fit your negatives. Several pieces may be prepared at the same time as, provided they are kept packed tightly and in a dark cupboard, they will keep for a long time.

Daylight Printing

Printing is done in daylight and fairly plucky negatives are the best. Place a negative in your printing frame, celluloid side to the glass. Then put a piece of paper, coated side to the film, and see that the back of the frame fits with a good pressure. Place the frame in a spot where no shadows are likely to fall across it, and from time to time examine the printing by unhooking one half of the back of the frame. Carry on printing until the highlights are slightly darkened.

The print is now ready for toning and fixing, and you can buy a toning bath from a dealer or make one. The latter is done by dissolving 1 grain of gold chloride with ½ ounce of precipitated chalk in 20 ounces of water, allow it to stand and when clear it is ready for use. The fixing bath is a plain hypo one made by dissolving one ounce of soda hypo in 10 ounces of water.

Washing and Fixing

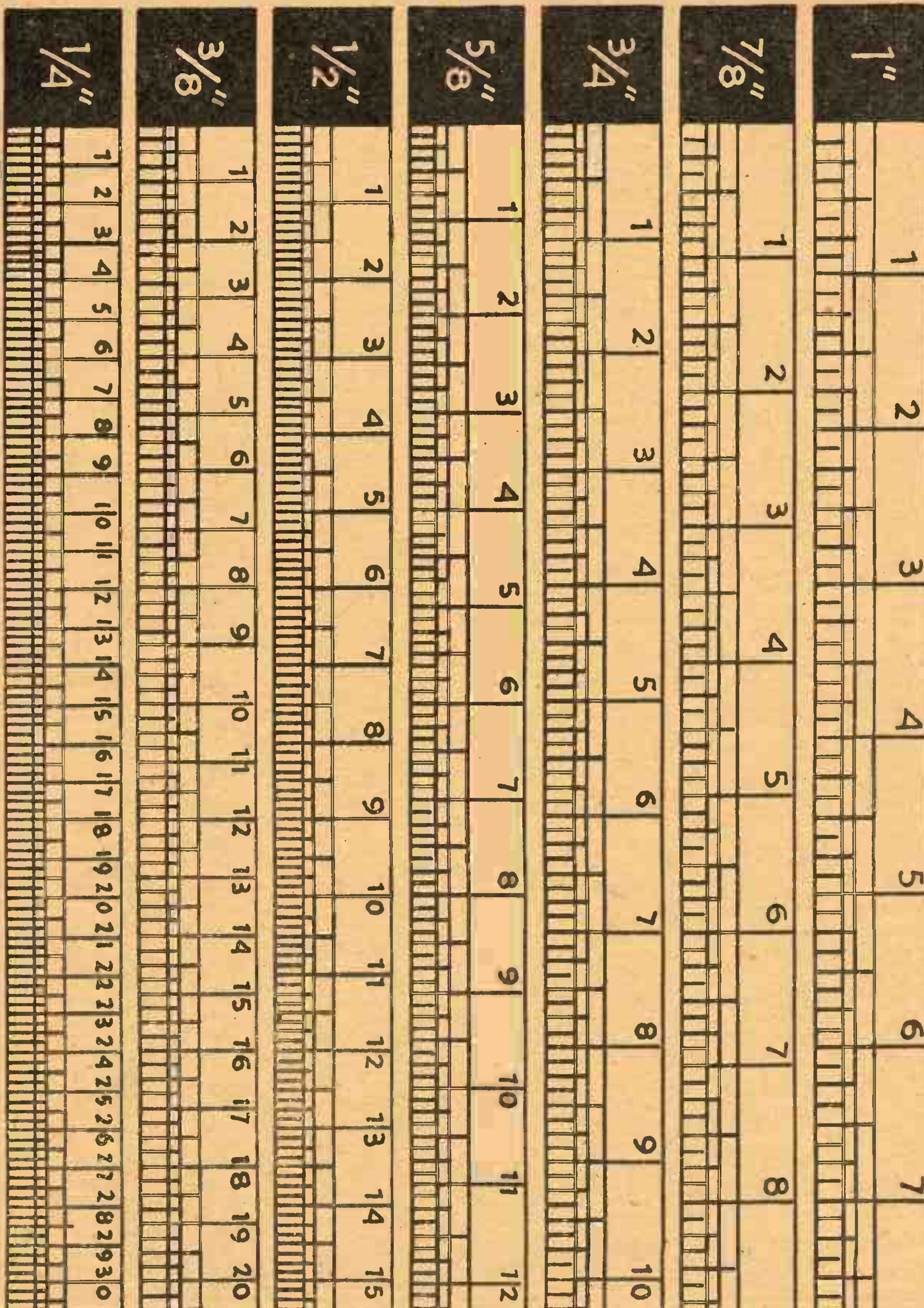
The print is first immersed in a solution of ½ ounce of salt in 20 ounces of water. Do not wash it first but keep it moving in the salt water for five or ten minutes. Then wash it quickly and place it in the toning bath until a nice rich tone is reached and the action appears final. Wash it and place it for five minutes in the fixing (thick papers will require 10 minutes) then wash it again for a few minutes and hang to dry.

If desired the toning bath may be omitted and the print placed in the fixing solution after it has been through the "salt" bath. In this case it is better to print it rather deeper, but a little experience will soon put you right on this point and also help you to obtain the desired effects.

Keep the prints always on the move in the dishes and make sure that the dishes and other pieces of apparatus are kept clean.

RULES FOR DRAWING TO SCALE

See Page 131



A MODEL IN PYRUMA

Made for the Daily Express by Brian Adnams, this model is stone hard and in natural colour. It was modelled in plastic Pyruma, air-dried, sized and painted with poster colour. Pyruma Plastic Cement, in air-tight tins is obtainable from Ironmongers, Hardwaremen, Hobbies Shops, Basset-Lowke Depots, and many Art Material Dealers from 1/3 a tin.

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