

# HOBBIES WEEKLY

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## ★ This week's FREE DESIGN ★

**T**HOUSANDS of holiday-makers each year have a happy time on the famous Norfolk Broads, travelling the pleasant waterway on cruisers and yachts, and stopping at will for a cooling swim, or to indulge in a quiet spot of fishing.

To many of these, the subject of our design for an inlaid picture, taken from an old print of the Ferry Inn at Horning, will be very familiar, and will recall pleasant memories of halts for refreshment. It is also of interest to note that this inn has recently been reconstructed, and, therefore, presents a different appearance from our reproduction.

The subject particularly lends itself to the making of an inlaid picture, and with careful working the finished effort



*'The Ferry Inn'*

# AN INLAID PICTURE

will grace the wall of any home. If desired, of course, it could also be used for knife marquetry.

For the inlaid picture, a specially prepared kit can be purchased. It includes a panel of  $\frac{1}{2}$  in. wood to make the frame, four selected  $\frac{1}{8}$  in. inlaid panels of contrasting colours, and

sufficient stripwood to make the overlay border.

### Trace the Outline

The frame should be made first. It is cut to the outline shown on the design sheet, and it will be noticed that for space reasons only the top half is shown

in detail and workers will complete the whole, of course, by reversing the design and carrying on from the centre lines. The outline should be traced on to the wood and when it has been cut, a small hole should be drilled in one corner and the whole of the centre of the frame removed as accurately as possible.

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

**For Modellers, Fretworkers  
and Home Craftsmen**

**4<sup>D</sup>**

The reason for this is that the panel will later be used as a backing piece for the inlaid picture itself, and will eventually be put back into the frame as the finished work.

#### Inlay Cutting

To cut the inlays, pin the four pieces of wood together with the whitewood uppermost. Be sure that the pins are outside the area of the picture. Now trace the design carefully on to the whitewood. Another method is to paste the design down, but this is not generally recommended in view of the tendency to warp and the fact that the design has eventually to be cleaned off, thus necessitating extra work.

It is suggested that the first pieces to be cut should be the small insets in the foliage of the trees. Drill a very fine hole at the edge of them, just sufficient to take a fine sawblade (No. OO or O), when working on these sections.

Following this, start removing the pieces of the pattern one after the other until all is completed. Slight deviation from the lines of the pattern will not matter unduly, as the pieces being cut will be exactly the same and must, therefore, fit when making up. This, of course, assumes that you have followed an essential in this type of work—that is, to keep the saw upright when cutting. Otherwise it will be seen that if the saw is used at an angle, the bottom sections will be of a different size and fit from the top ones.

#### Matching Up

When all the pieces have been cut, choose the ones which match those shown on the design referring, of course, to the key, and glue them piece by piece to the backing board. This, you will remember, is the piece cut from the centre of the frame. See that the pieces fit together tightly, and do not be in a hurry. Let the glue squeeze up between the pieces so that the whole is well filled. Now place a piece of paper over the picture and put the work under weights. When it has dried thoroughly, clean off the paper with a suitable scraper such as a Skarsten (a piece of glass will serve if you have no proper tool), and finally clean up with a piece of very fine glasspaper.

You may possibly find that there are gaps in the surface which require filling in. To remedy this, a good method is to use a mixture of white glue—Durofix or similar—and sawdust of the colour required. The mixture should be principally sawdust with just enough glue to make the whole adhere. Rub this mixture well into the places to be filled, and leave to dry before levelling off.

This completes the main work, and you should now provide a suitable finish for the picture. Apply white wax

polish as used for furniture, and polish briskly with a soft duster. A proved method is to apply the polish with the fingertips, gently rubbing it in. Then glasspaper very gently over the surface and apply polish again by the fingertip method. To get a perfect result, do not hesitate to make up to as many as six applications of the polish, each followed by gentle smoothing with glasspaper and a final polish. This will give the picture depth and also make it shine.

### YOU CAN GET A KIT

For making this picture you can obtain a kit (No. 3094) containing all necessary materials, including four selected  $\frac{1}{4}$  in. panels of inlay wood, from any Hobbies Branch, or post free from Hobbies Ltd., Dereham, Norfolk, price 8/4.

Polishing from time to time, after the picture has been hung, will keep it in excellent condition. Now prepare the stripwood border. This should be mitred and chamfered as shown on the design sheet, and glued into place on the frame. A word of warning here—take special care with the mitres, as badly cut joints will depreciate from the look of the finished picture.

The whole of the frame is now cleaned up, and either stained and polished or wax polished only, as desired. You might possibly like to make the mitred border lighter or darker than the actual frame for contrast. It will depend on the colour and quality of the actual wood, but whatever the finish chosen, the whole of the frame should serve to draw attention to the inlaid picture and not away from it.

The inlaid picture is now placed in position from the back of the frame, and secured by pasting a piece of stiff

brown paper over it and the frame, in much the same way as when mounting a photograph. The backing piece holding the inlay picture stands proud of the frame by some  $\frac{1}{8}$  in., of course, but this does not matter, as it is not seen.

Prepare the picture for hanging with two screw eyes and a length of cord. If the picture is to be hung from a rail, a fairly long length of cord will be required, but if it is to be suspended from some lower wall fitting, then it is preferable to stretch a shorter length of cord fairly tightly between the two screw eyes, so that when the picture is hung on the fitting, the cord is not seen.

#### Extra Pictures

You will have noticed that apart from the picture already made, there are also sufficient parts to make three others. Although the colours are not the same as those in the original, you will be able to match up two of the three and make quite reasonable pictures. The rest will probably have to be discarded because the colourings are not suitable. For instance, one of the sky pieces of the four inlay panels cut will be of dark wood and would look out of place in the normal picture.

For the two extra pictures you are able to make, find pieces of plywood or other suitable backing wood and glue the pictures down as before. Then give them a framing of ordinary picture frame moulding which is quite cheap to buy, and you have another two passable pictures. These would make nice gifts for friends.

As an alternative to making extra pictures from the additional pieces, they can be used as an inlay decoration on other articles you may be making. For instance, they could form parts of trays, firescreens, and trinket boxes or articles of furniture. Often quite small parts of a design can be used to enhance larger furniture such as cabinets and bookcases.

## Build a Canoe for under £6

Canoeing enthusiasts will be pleased to learn that we shall soon be publishing details for another single-seat canoe, PBK10. Designed by P. W. Blandford, it has faster lines and is even easier to build than the very successful PBK11, first published in 'Hobbies Weekly' four years ago. PBK10 has been constructed for a total cost of under £6.

### WATCH FOR FURTHER DETAILS

You can make these

# Building-Blocks from Stripwood

THESE are intended as a first exercise in woodworking for a beginner, and are suitable as a gift for a child of up to about 8 years of age. The main difficulty in obtaining blocks having sufficiently uniform thickness is overcome by using Hobbies stripwood. For the blocks described, two 3ft. lengths of  $\frac{1}{4}$  in. by  $\frac{1}{4}$  in. stripwood are required, and one 3ft. length of  $\frac{1}{4}$  in. by  $1\frac{1}{2}$  in. stripwood.

The  $\frac{1}{4}$  in. by  $\frac{1}{4}$  in. stripwood is marked out to provide the following: four pieces 6ins. long, eight pieces 3ins. long, four pieces 2ins. long, and ten pieces 1ins. long. These lengths are multiples of  $\frac{1}{4}$  in., so that the blocks will fit in many ways.

The 3ft. length of  $\frac{1}{4}$  in. by  $1\frac{1}{2}$  in. stripwood is cut as follows: two pieces 6ins. long and eight pieces 3ins. long. Two of the 3ins. pieces are marked out as shown at (A) in Fig. 1, a 45 degree set-square being used. A further 3in. piece is marked as at (B).

Marking out should be as accurate as possible, and on two sides of the wood.

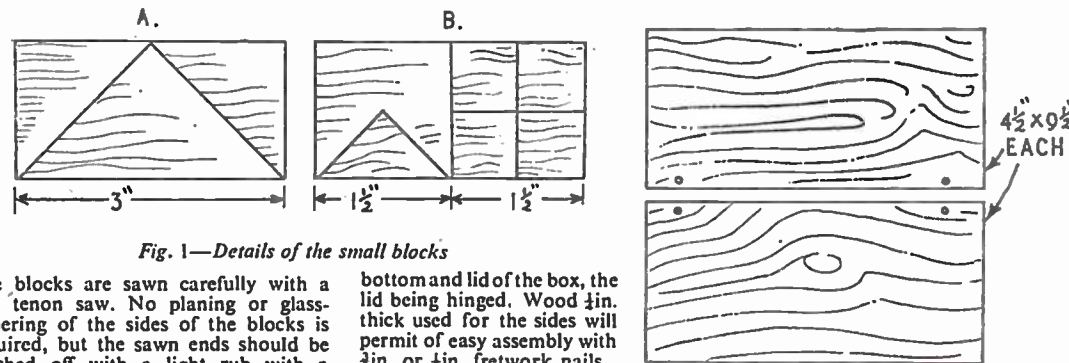
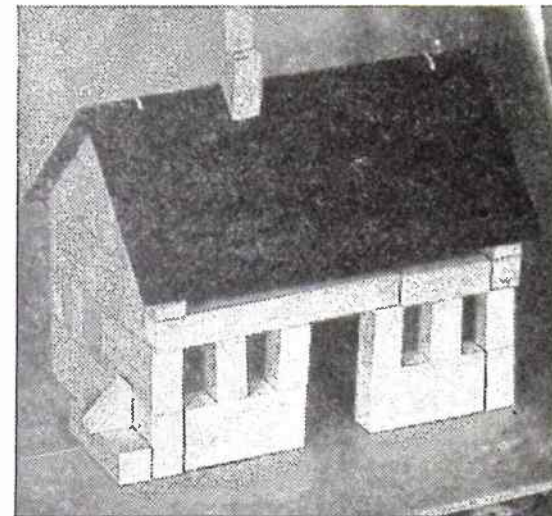


Fig. 1—Details of the small blocks

The blocks are sawn carefully with a fine tenon saw. No planing or glasspapering of the sides of the blocks is required, but the sawn ends should be finished off with a light rub with a glasspaper block, to remove any rough edges which would prevent the blocks standing squarely on end.

#### 3-ply Roof

The roof is made from 3-ply, as shown in Fig. 2, thin string loops through the holes illustrated holding the pieces together. This roof may be used in the normal way, or flat, as a platform, or as a flat roof in models of this kind.

The photograph shows a model built with the blocks as described. Among other models may be listed towers, churches, bridges, pavilions and garages, etc.

The wooden box to hold the blocks will require to be 6ins. by 9ins. by 1ins. inside. Ply may be used for the

bottom and lid of the box, the lid being hinged. Wood  $\frac{1}{4}$  in. thick used for the sides will permit of easy assembly with  $\frac{1}{4}$  in. or  $\frac{1}{8}$  in. fretwork nails. (F.G.R.)

Fig. 2—The Roof

## Cotton-reel Chessmen

AN employee at Brechin Castle, Scotland, Mr. G. H. Tait, has the unusual hobby of carving sets of chessmen from discarded cotton reels. He selects thirty-two empty reels of uniform size and with the aid of a small saw, a penknife and a few files he carves handsome chess figures, staining half the set red or black. During the recent war he spent most of his spare time making game sets for disabled Servicemen who were in hospitals, and one of his best sets of chessmen was so highly

prized by the Red Cross Organisation that they had it exhibited all over Britain. He has made over 10,000 different chess or draughts pieces. For a change, he turns to draughtsmen, and makes three pieces from an ordinary-sized reel, while from the unwanted ends of his reels he makes stands for tiny dresses for dainty Victorian dolls. When these dresses are removed from their stands they become miniature spinning tops.

(D.G.)

# A Neat Side Table



Fig. 1

THE small table shown in Fig. 1 would look well if made from mahogany and finished by french polishing.

The top of the table is 18ins. square and stands on four tapered legs 29½ins. long and 1½ins. square. The legs are lightened in appearance by chamfering slightly to the measurement given, being ¾in. square at the bottom. The four rails (A) connecting the legs at the top are 13½ins. by 1in. by ¾in. in section. The shelf (B) is 14ins. square by ¾in. or 1in. thick. The rails (C) are ¾in. square in section and two horizontal rails 12½ins. long and four measuring 9½ins. will be wanted.

The table top may have a wide chamfer carried round on all four sides as shown in Fig. 2 and in the detail (Fig. 3). A plain side-view of the table with dimensions is given in Fig. 2, and Fig. 4 shows the method of framing the parts together. In Fig. 5 is given a cross-section of the joint between the legs and the top rails. A second detail showing the haunched top of the joint is given in Fig. 4.

Fig. 6 shows how the small rails (C) are coggled together at their intersections. The tenons are level with the outer faces of the cross-rails. They are ¾in. wide and are haunched down ¼in. from the top edges. The mortises are set

45 degrees as shown in Fig. 5. The shelf (B) should be framed into the legs, first notched over them and tenoned into them as shown in the detail at the lower end of Fig. 4. Care must be taken to arrange the small tenons on rails (C) so that they line up

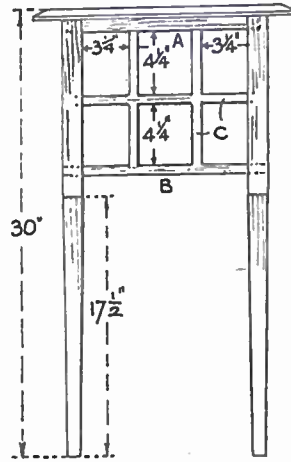


Fig. 2

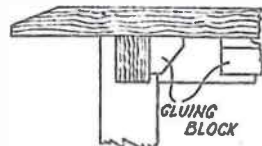


Fig. 3

in ¾in. from the outer faces of the legs, and are cut to correspond with the tenons. The mortises are cut from each face of the legs until they meet, the ends of the tenons being cut to an angle of

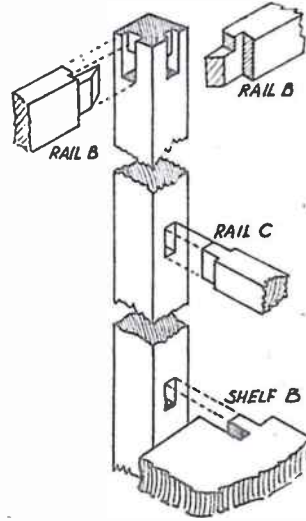


Fig. 4

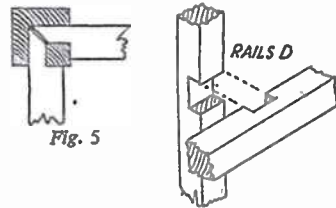


Fig. 5

Fig. 6

accurately with the several mortises in shelf (B) and top rails (A). The rails (C) may be simply housed full-section ¾in. in depth, or they may have small tenons cut on their ends as shown in the detail Fig. 4.

All the woodwork should be cleaned up ready for assembling and gluing together. First fix the rails (C) together, and then fix them into the shelf and top cross-rails. The whole is then fixed into the legs, care being taken not to use too much glue. Next add the table top and fix it to the rails by means of glued angle blocks as seen in Fig. 3. (S.W.C.)



## Electric Motor Query

I HAVE a 3-phase electric motor (fractional h.p.) and wish to work this from single phase. I believe there is a way in which this can be done. Any details or suggestions will be appreciated. (G.W.—Congleton.)

IT is sometimes possible to run a 3-phase motor from standard A.C. mains, a condenser being used to obtain phase shift. To do this, one A.C. lead should be wired to one 3-phase input terminal, and the other to a second 3-phase input terminal. The condenser is wired between the remaining 3-phase input terminal and one A.C. mains lead. Experiment should be made to find the best method of connection, and the direction of running may usually be reversed by changing the condenser connection from one A.C. lead to the other. The condenser should be of 500 V working rating, and will usually require to be of 1 to 2 mfd. This depends upon the current drawn by the motor. A condenser with a fairly high power-factor rating may be required, or it will overheat and possibly break down as a result.

## Pointing a Wall

PLEASE advise me as to what materials and tools are necessary to 'point' walls, and also the easiest method of doing so. I should also like to know what to buy to make the mortar and the proportions needed in the mixing. (F.S.—South Shields.)

FOR pointing a wall you will require a brick rake, for scraping out the old mortar, a pointing trowel, and a straight-edged strip of wood. Remove the old mortar with the rake, dust and damp, and trowel in the new mortar. After each line, place the straight-edge above and below the mortar and draw the trowel along, to leave a neat mortared line. Trowel the mortar in so that its surface is slightly behind the edge of the bricks at the top and a little in front of them at the bottom, to throw the water off. A mortar for repointing the wall can consist of 1 part cement to 2 parts of fine sand, measured in bulk. If a whiter mortar would be preferred, substitute lime for the cement. Do not mix too much at a time if you are a beginner at the work.

## Indelible Pencil Marks

PLEASE tell me how to remove indelible pencil marks from a kitbag. (C.C.—Liverpool.)

PROVIDED there has been no reaction between the proofing and the pencil dye, methylated spirit alone will remove the marks. Soak the part in a saucer containing meths., pressing and squeezing the cloth. Renew the meths. if the marks are heavy enough to stain the liquid deeply. If any stain remains, dry the kitbag and apply a poultice of equal parts of chloride of lime (bleaching powder) and whiting made into a paste with water. Leave for about a quarter of an hour, wash off and soak the part in vinegar for a few minutes, then rinse well in water. This latter treatment, if needed, should counteract any combination with the proofing.

## Metallizing Non-Metals

I SHOULD like to know something on the subject of metallizing non-metals, such as leather, glass, wood, plastic, etc. (M.M.—Dunedin.)

THE principle of metallizing non-metallic materials is dealt with in full technical detail in the British publication *How to Metallize Baby Shoes*, price 3/- from D. C. Williams, 16 Newton Rd., Southampton. The methods given should be applicable to materials other than leather, for these rely on the application of a simple non-conducting coating, followed by brushing on a film of a good conductor. Plating is then done in the usual way. The scheme seems a big improvement over the old graphite coating method. The chemicals needed can be had from any laboratory furnisher—some from a pharmacist. The electrical equipment, too, is not elaborate, and readily obtainable.

## Cleaning a Brass Clockcase

PLEASE tell me the best way to clean a brass-cast clock case, and how to treat it afterwards to keep its colour. (A.C.—Finchley.)

NORMAL tarnishing can be removed with clear household ammonia. If possible, remove the movement from the case, for it may be affected by the fumes. Dip a rag in neat

ammonia and rub on the brass. When bright, remove surplus ammonia and loosened tarnish with successive rags wetted with plain water. A toothbrush may be used if the case has casting crevices. For heavy tarnishing, treat first with ammonia, then with nitric acid diluted with three times its volume of water. Very thoroughly remove the latter with wetted rags and keep it off the skin. After drying, buff up with a good metal polish, swab with a rag wetted with benzene and apply a protective lacquer consisting of Durofix thinned down to brushing consistency with amyl acetate.

## Heating an Aviary

I WISH to make a heater for my budgerigar aviary. If possible I should like one where no electricity is involved because my aviary is in such a position that it would be impossible to get electricity to it. (W.E.—Luton.)

PROVIDING your aviary is well built and sited in a sheltered spot and is dry and draught-proof, no heater is required, as the budgerigar does not require artificial heat, except, perhaps, in extremely severe wintry spells, and then it is only necessary to maintain the temperature of your birdroom above 40 degrees. The danger from heating apparatus—apart from electrical—is in smoke and fumes. You would have a difficult job in making a 'foolproof' aviary heater yourself, but there are firms which supply fumeless heaters for aviaries in various sizes. We would recommend you to write to D. Ross & Sons (Dept. C.B.2), St. Leonard's Works, Forres, for particulars. For smaller birdroom, an oil-burning heater is sold by P. J. Bryant, Forest Rd., Fishponds, Bristol. Actually, rather than run risks of losing valuable budgies, it is better not to use heat at all where there is no electricity supply, for if an oil heater is left unattended for some unavoidable reason for long periods, there is danger from fumes, smoke and fire.

## Limed Oak Finish

I WISH to know the various ways and methods of getting: (1) the limed oak finish on furniture, (2) any finish on oak to retain its natural shade (after glass-papering), as applying button polish tends to make it yellow, and eggshell varnish makes it immediately darker in tone. (C.G.—Paisley.)

FOR the limed oak finish desired, employ Romany limed oak filler, applied after staining and partial polishing. For a natural oak finish, use white polish or a brush-on clear cellulose varnish, as preferred.

# A Book to Read

## Making Pottery Figures

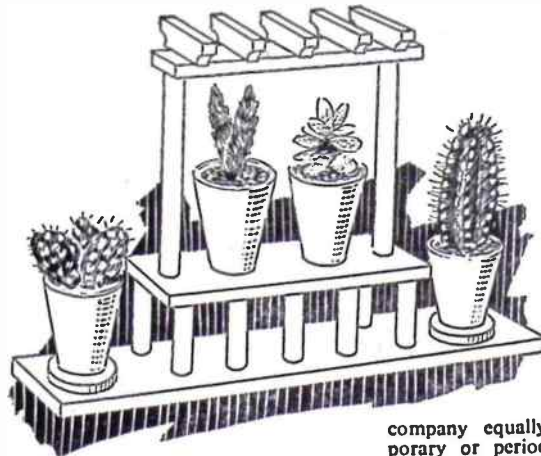
by Marjorie Drawbell

THIS book has now been published for a little over a year, but we were prevented from mentioning it at the time of its publication, and feel that it is of sufficient interest to warrant review now, despite the time lapse. The modelling of pottery figures has always been a satisfying craft, and whether the figures are made in unique pieces or for

duplicating, there is much expert advice in this book on achieving successful results. Miss Drawbell is a regular exhibitor at the Royal Academy, and her book will prove invaluable to the student and craftsman. The illustrations are particularly clear and the step-by-step photographs provide a course in themselves. Published by The Studio Ltd., 66 Chandos Place, London, W.C.2—Price 15/-.

You can make this

## Attractive Stand for Cacti Plants



More Details are on page 319

the seven columns of  $\frac{1}{2}$ in. diameter round rod are then glued in place. On top of these is another platform to take two pots. Two tall columns and cross-pieces make a miniature pergola, as shown.

Two rings are cut out with a fretsaw, and glued to the base. Clean up all the parts with glasspaper and give two or three coats of white or stone colour enamel. Place the pots as shown in the illustration.

Remember to buy cacti in small thumb pots or alternatively increase the size of the stand to suit large pots. (M.p.)

company equally well with contemporary or period furniture and with two or three cacti in pots, makes an ideal gift.

All parts may be cut from odd wood and round rod. The base is cut first and

THIS stand is specially designed for cacti in small pots. The very nature of the stand enhances the appearance of the plants. It keeps

HERE'S MAGIC FOR YOU!

## Make this Novel Production Box

MAGIC is a fascinating hobby, and when the amateur magician is handy with tools he can make some really excellent tricks—tricks that would be expensive to buy at a magic depot.

Here are the instructions for making and working a clever production box. The box may be shown convincingly empty, yet suddenly it yields flowers, handkerchiefs, streamers and the usual collapsible goods of the conjurer.

### The Secret

The sketch shows that the box has a base and two sides, while the back and front slide in and out on runners of stripwood. Behind the back of the box, unseen by the audience, is a smaller box glued firmly in place. This carries the articles which will later be produced.

In presenting the trick, the front of the box is slid right out, showing the inside quite empty. The back is then slid out, and the audience can see right through, proving the absence of mirrors.

Now the original front piece is slid into the back while the back piece goes into the front. This simple move conveys the hidden articles secretly into the box. The box is now turned round and shown on all sides. It has been shown inside and out, apparently quite free from any faking.



After a wave of his hand the magician reaches into the box and artistically produces the contents. Suitable items for bringing forth can be obtained at magic depots. It is possible to obtain a set of baby alarm clocks which nest

together and may be produced one by one.

The base of the box is a piece of  $\frac{1}{2}$ in. plywood, 7ins. square. The fixed sides are two pieces of  $\frac{1}{2}$ in. plywood, 7ins. by 8ins. high. The sides are fixed to the base with six cup-head chrome screws and a touch of glue. The back and front are  $\frac{1}{2}$ in. plywood, 7ins. by 7 $\frac{1}{2}$ ins. high to allow for standing on the base and coming flush with the top. The secret box to hold the articles is 5ins. square and 3ins. deep. It is fixed together with panel pins and glue, then it is glued in place 1in. from the top of the back. The runners in which the back and front slide are of  $\frac{1}{4}$ in. stripwood. They are glued in place, the outer ones being flush with the edges. A larger box can, of course, be made from which to produce livestock.

### Bright Colours

The job should be finished in bright art enamel. It adds to the decorative effect if a few imitation Chinese characters are painted on the sides and sliding panels. These should be in a strong contrasting colour. The backs of the sliding panels should be painted or stained a deep black, the inside of the box being similarly treated. If desired a set of four small wooden knobs can be fixed under the base to act as feet. (R.W.W.)

AN IDEAL GIFT FOR A FRIEND

## A Set of Miniature Garden Tools

GOOD work cannot be expected by using inferior tools and this applies especially to the craft of gardening. Some people possess what is known as 'green fingers' and can get anything to grow, but even to them much depends on the tools they use.

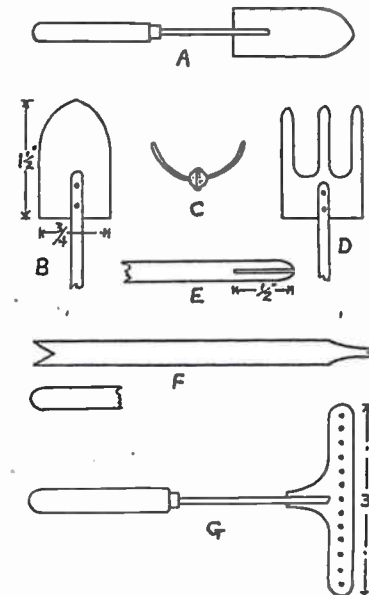
The manner in which young plants raised from seed are transplanted can either make or mar their future success. It is for work such as this that a set of quite small garden tools can be extremely useful. Now that miniature or Japanese gardens are becoming so popular it is really essential to possess tools which are in relation to the size of the work to be done. Ordinary garden tools would be out of all proportion and could do much damage to the tiny plants.

To make a set of miniature garden tools is not a difficult task and will repay the time spent. Many people use a tiny forked stick for transplanting but this is only a makeshift and is easily broken.

If you are not a gardener yourself but enjoy making things, a set of these tools would make an ideal present for a friend, or quite a profitable little business could be started by making them for sale.

Sheet iron is the best material for most of the tools, although brass is quite serviceable and somewhat easier to work with. The thickness will depend on their size and for the smallest the metal from a good quality tin should be about right.

The general layout of a trowel complete with handle is given at (A),



while (B) shows all the measurements for the smallest size and (C) the shape it will have when bent. For larger sizes the measurements must be increased in proportion.

The point of the trowel can assume many different shapes, from square or curved to pointed, but that shown will be most useful for our purpose. The blade is fastened into a piece of brass or

iron rod which is slotted to a distance of about  $\frac{1}{4}$ in. The end is tapered off as shown at (E) and it can be fixed either with solder or one or two rivets. The rod should be about 4ins. long, and this in turn is fixed into a suitable wooden handle. For getting into awkward places the rod may be somewhat longer and it is often an advantage to make it curved.

For the fork (D) all the parts are cut the same size as for the trowel, but the sheet metal is kept flat and three or four prongs cut out with a fretsaw. Transplanting young seedlings is made quite easy with the tool (F), which is just a strip of any sheet metal about 6ins. long and  $\frac{1}{2}$ in. wide. The 'V'-shape ends are made in different sizes to suit different plants, or one end may be just rounded off and used to make the hole and firm the soil round the seedling when planted.

A miniature rake shown at (G) is very useful and will complete our set of tools. It is used with great advantage when making up a seed box, giving a good surface to the soil. Sheet metal 3ins. long and about  $\frac{1}{2}$ in. wide has a projection on one side to fasten to the handle in a similar manner to the other tools.

Drill a series of holes and solder in a row of panel pins. The number of holes and the size of the pins will govern the fineness of the soil and must be left to your individual requirements.

A coat of paint on the handles and all or part of the metal work will improve the appearance as well as helping to preserve the tools. (A.F.T.)

## How to Renovate a Wicker Chair

DISCOLOURED and grimy wicker chairs can spoil the appearance of an otherwise neat and tidy room.

Therefore, to give such a chair a thorough cleaning and overhaul is always well worth the trouble.

Dust it all over thoroughly and brush out as much dirt as possible from the crevices. Then scrub the chair well with a stiff brush and a good cleansing agent. Rinse it afterwards with clean water but avoid dousing it. When it is really dry, peel off any loose wicker to the point where it is securely attached to the chair. Do not, however, take off more than is absolutely necessary.

Next, brush the exposed frame with

animal glue. Ordinary glue will serve the purpose but animal glue is preferable for a good job. Prepared 'cements' should not be used in this connection.

Stout packing twine can be used to repair the damaged parts of the chair if it is not possible to obtain the proper matching wicker. It should be wound round and round the frame, over the wet glue, and the ends secured firmly. Excess glue must be wiped off.

When quite dry again, glue size should be brushed on to seal the twine and hold it together. This will also form a good base for painting, if it has been decided to complete the job in as near a professional manner as possible.

In this event, brush on a priming

coat. It is advisable to use a white undercoat tinted with the colour of the selected final coat to achieve a good finish.

For the application of the final coat it is a good plan to procure an inexpensive insect-spray gun, as this makes an economical speedy job, and will ensure an even distribution if carefully used. A good brand of enamel thinned with turpentine should be used for this final coat.

In selecting the colour, pay attention to the predominating colours of the room to avoid any 'clashing'. If the chair is to be used outdoors, bear in mind the colouring of any other garden furniture. (E.M.B.)

# A Lady's Workbox

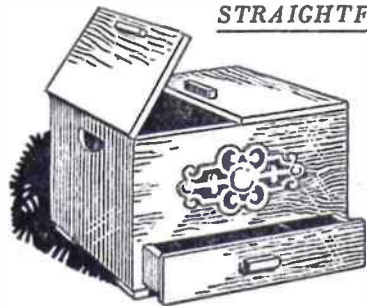


Fig. 1

THE attractive workbox shown here would make an ideal gift for a woman. It has good interior space with two lift-up lids, a convenient drawer for reels of cotton, silk, etc., and, if desired, a tray may be made for various other articles necessary to the seamstress.

Any good hardwood may be used for the box, oak or mahogany being specially recommended. The construction is reasonably simple, and Figs. 2

CUTTING LIST		
(A)	2	9 1/2 ins. by 10 1/2 ins. by 1/2 in.
(B)	1	14 ins. by 9 1/2 ins. by 1/2 in.
(C)	1	14 ins. by 7 1/2 ins. by 1/2 in.
(D)	1	14 ins. by 11 ins. by 1/2 in.
(E)	1	13 1/2 ins. by 10 1/2 ins. by 1/2 in. ply
(F)	2	4 ins. by 1 1/2 ins. by 1/2 in.
(G)	2	11 ins. by 7 1/2 ins. by 1/2 in.
(H)	2	13 ins. by 2 ins. by 1/2 in.
(I)	1	14 ins. by 10 1/2 ins. by 1/2 in. ply
(J)	1	13 1/2 ins. by 2 1/2 ins. by 1/2 in.
(K)	2	9 1/2 ins. by 2 ins. by 1/2 in.
(L)	4	2 ins. by 2 ins. by 1/2 in.
(M)	1	7 1/2 ins. by 4 ins. by 1/2 in.

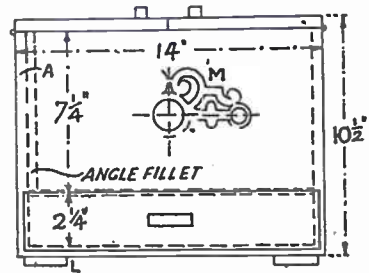


Fig. 2

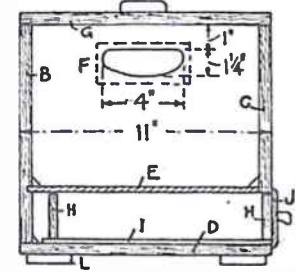


Fig. 3

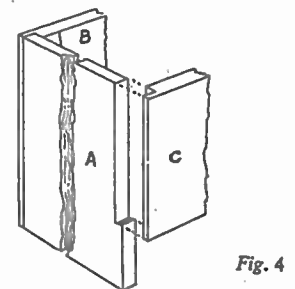


Fig. 4

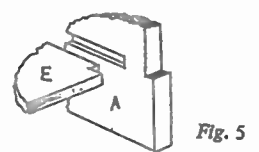


Fig. 5

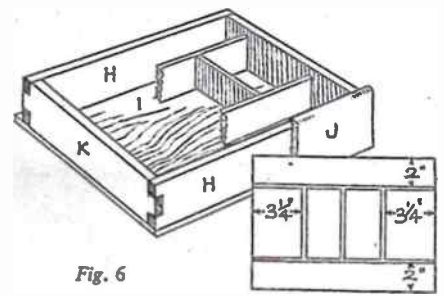


Fig. 6

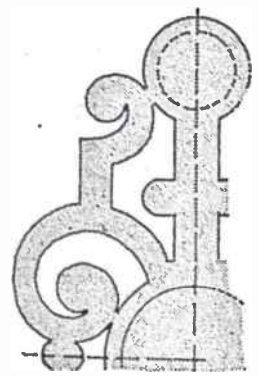


Fig. 7

which closes flush against the floor (D) and to the front (C) of the box. The floor is grooved into the back and further strengthened by glued angle fillets. This floor (E) must be fitted in while the sides of the box are being assembled. Note here that hand-holes are suggested in the ends (A) for the purpose of lifting the box, these holes being lined inside by gluing on thin wood, as shown in Fig. 3. The main floor (D) is screwed to the ends (A) and to the back (B). Four toe blocks are

floor (I) is countersunk screwed to the edges of the frame, and the partitions are arranged as the little plan in Fig. 6 shows. The ends of the short cross-partitions may be single-tenoned into the long ones, this work being done with a fretsaw.

When setting out the parts of the drawer, first take careful measurements of the actual opening. The sides of the completed drawer can then be glass-papered down to make an accurate fit. Round off all sharp edges before

glued and screwed to the floor as shown. The lids must be made from well-seasoned wood to hold flat and to keep their shape. They are fixed by brass hinges to the ends of the box, and each lid should have a brass or chromium knuckle stay.

The drawer may be made as suggested in Fig. 6, the frame rails (H) and (K) being pin-jointed and glued together, and the front (J) afterwards glued on and screwed from inside. The

putting any finish on the wood. The ornamental overlay on the front is optional. This overlay, if added, will, of course, be glued and pinned on after the box has been stained or otherwise finished.

The pattern of the overlay can be prepared for cutting by using the diagram (Fig. 7). This, being a quarter of the whole pattern, can be transferred to the wood by setting out the two centre lines shown dotted on to the wood and then using carbon paper for pencilling in each quarter section round the dotted lines.

(S.W.C.)

# Interesting Experiments for Beginners

THE terms element, mixture and compound turn up constantly in chemistry and it is necessary to be quite clear what we mean by them.

An element consists of only one substance. Iron contains nothing but iron. Therefore, it is an element. Copper, zinc, sulphur and carbon are other everyday examples of elements.

sulphur into a dry test tube. Lay the tube flat and bring a magnet near. The tube will be attracted and may be drawn along the bench by moving the

magnet. Now heat the tube until it is red hot and let it cool. Again test it with a magnet and try to draw it along the bench. You will be unable to do so. Something has happened to the iron. Break the tube and a black button will be found. Crush it and examine it with a lens. Neither iron nor sulphur will be seen. Shake some with water. Only black particles will sink and no sulphur will be floating. Mechanical means have failed to separate the iron and sulphur. The iron and the sulphur are still there, but in another form. They have combined together to form iron sulphide—a compound.

### Same Proportion

Each distinct compound always contains the same elements in the same proportions. In mixtures we can vary the proportions at will and still have a mixture. One mixture which is essential to us is air. It contains the gases oxygen and nitrogen, together with minute amounts of other gases. It is the oxygen we need. Without it, no fire would burn. Aeroplane and car engines would be at a standstill.

A simple experiment will show this. The requirements are shown in Fig. 2—a large jam jar or deep, wide bottle and a candle stuck on a bent wire passing through a tin lid. Make the hole in the lid gas tight by pressing a little Plasticine round the wire. Lower the lighted candle into the jar and seal the edge of the lid with Plasticine, too. The candle will burn for a time and then dim and go out. The wax of the candle is combined with all the oxygen of the air in the jar. No oxygen being left, it cannot continue to burn.

### Life-giving

The body, too, needs oxygen to combine with its waste materials. Without it we, too, would 'go out'.

Probably an appalling thought has struck you. With all these aeroplanes, cars, ships and trains racing about the world gobbling up oxygen, millions of people breathing it and fires squandering it, we shall sooner or later be left in the same state as the candle in the jar!

There is no cause for alarm, however. Nature has balanced things very nicely for us. In burning and breathing, oxygen combines with carbon to form the compound carbon dioxide, which is a gas. This is poured out into the air. Plants and trees breathe in this gas through their leaves, remove the carbon which they need for their growth and turn out oxygen into the air.

Continued on page 316

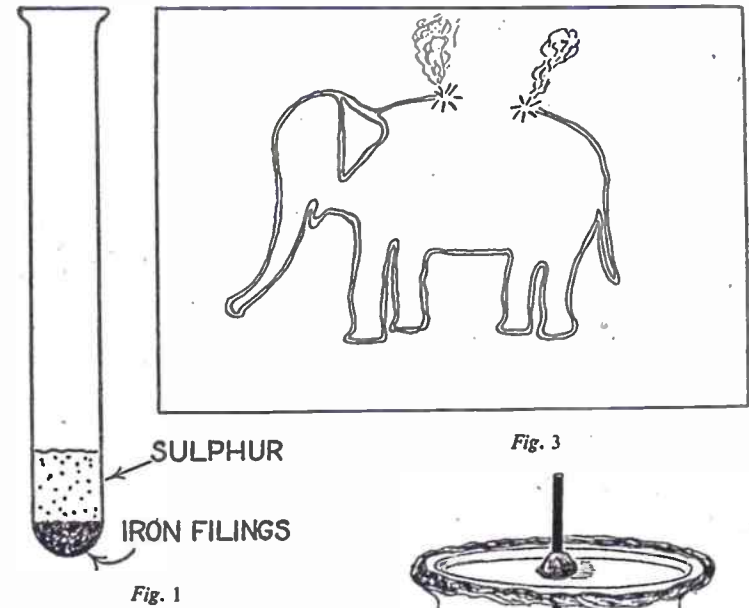


Fig. 1

Fig. 2

A mixture consists of two or more substances lying side by side, and those substances can easily be separated by mechanical means. Grind together salt and coal. Though the mixture looks an even grey, a lens will show the salt and coal particles lying side by side. Stir the mixture with water and filter. The coal alone will remain on the filter. Pour the clear liquid which passes through the filter into a saucer and let it dry. The salt will remain behind.

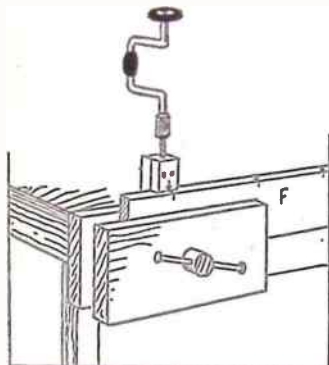
Fill the end of a dry test tube with iron filings to the depth shown in Fig. 1, and then add sulphur to a total depth of 1/2 in. Empty out the powders and mix well. A lens will reveal iron and sulphur particles. Shake a portion of the powder with water in a test tube. The iron will sink and much of the sulphur will float about in the water. This, too, is a mixture.

A compound consists of two or more elements combined together into something quite different from the elements in it. Put another mixture of iron and

Fig. 2

# Practical Hints on Dowelling

By W. J. Ellson



to be dealt with, and other sizes of dowels, too, though  $\frac{1}{4}$  in. and  $\frac{1}{2}$  in. ones will usually suffice for most jobs. Remembering that the point of the bit must come exactly in the middle of the edge of the board to be dowelled, it is a simple matter to substitute suitable slips of wood for part (B), of the required thickness to ensure this. They could be made as occasion arises, and kept handy in a bag or box. The back part (A) will be common to all.

To use the gadget for dowelling two boards together, edge to edge, first lay the boards together, as at (C) in Fig. 2, and pencil across both where the dowels are subsequently to come. Square these lines across the edges, as at (D), and

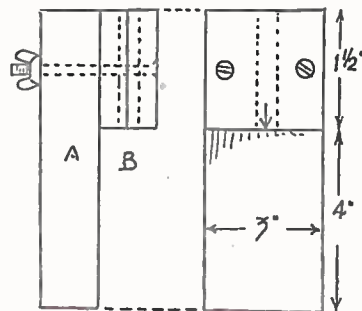


Fig. 1

mark the face sides of each board with an (F) in pencil. This is important. Place the gadget against the boards (one at a time, of course) and clamp up in the vice. Tap gadget at its side until the arrow comes exactly over the pencilled guide mark on the board. See the board is placed with its face side towards you. Place the drill bit in the hole in gadget, and then bore deep enough for half the dowel to enter. This operation is shown in the general view.

Used correctly, all holes will be in alignment, and truly square with the face side of the boards. Side the dowels are a shade less in length than the combined length of the holes, then glue them in and clamp up. If home-made dowels are employed, cut a narrow notch down each to allow air to escape as the dowels are tapped home.

Another job where a dowelled joint is often used is shown at Fig. 3, where the rails of a stool or table are so fixed to the legs. A good and easy method here is to cut a piece of stiff paper of a size to fit the top portion of the legs where the

dowels are to come, as at (E) and (F). Mark the position of the dowels with centre and cross lines, place on the legs, and prick through with an awl.

To use the gadget on this part of the job, cut a piece of wood, as at (H) in Fig. 2, of suitable thickness and interpose between parts (A) and (B). Its thickness will be determined by the distance required between (A) and the point of the drill bit, this distance being obviously the same as the distance between the side of the legs and the dowel points. As a further guide, draw pencil lines across the leg over the dowel guide points already made. The holes can then be bored with the aid of the gadget, as described.

To mark accurately the holes for the dowels on the ends of the rail, draw two

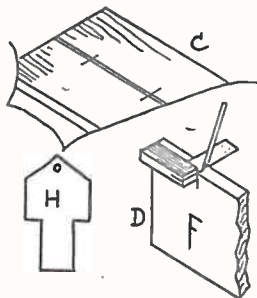


Fig. 2

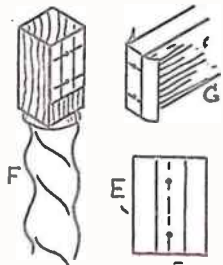


Fig. 3

lines down the paper guide (E) the thickness of the wood apart, with the dowel spots down the centre. Fold the paper on the lines drawn, and place on the end edges of the rails, as shown in detail (G). Prick through on the spots, and pencil line across each. Then the holes can be bored, as already described, with the bit, working through the guide hole in the gadget.

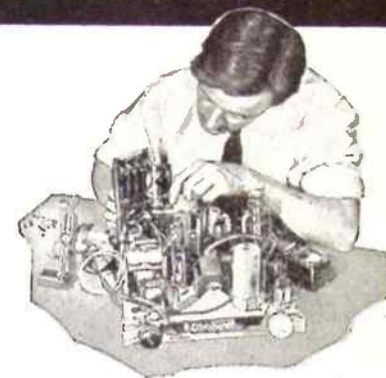
To save subsequent work, keep the thickening pieces, made as necessity demands, with the gadget in a box. They may come in useful later on.

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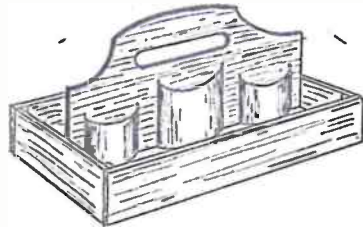
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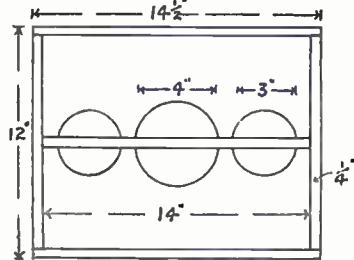
wood, and the corners can be reinforced with triangular strips if this is thought necessary. Cut the base of the tray first, then the sides can be built around it. For most general purposes a piece 14ins. long and 11½ins. wide will be sufficient, but this may be increased

DOING innumerable jobs about the house means carrying tools and materials from place to place and often at very short notice. A washer may be needed on a tap, a sash cord for a window, lino may need tacking down or a hinge need oiling.

All these varied tasks call for an assortment of tools, nails, screws, nuts and bolts, etc. When you start on a job you probably do not know your actual requirements, and to save a lot of running about it is nice to have as much as possible in a handy place for use on the spot.

This article deals with a compact container for tools and materials that can be easily carried about from place to place and is always ready for any repairs that may be needed. Although quite light in weight it is comparatively strong and is easy to make.

The entire framework is of ½in. ply-



if necessary to house a wider range of tools and material.

The sides are built around the base-board and they need not be very deep—2½ins. to 3ins. will be enough. Two pieces 14½ins. for the long sides and two pieces 11½ins. for the short sides. Glue and tack these firmly in place and fix the corner pieces for strength if thought necessary.

The circular containers for screws, nails, etc., are cut from old tins and the centre ply panel which divides these in half also acts as a handle for carrying the tray around. The centre tin is larger than the two outside ones, being about 4ins. diameter, while the others are 3ins. each.

### Smooth Edges

Neatly cut the tops off the tins and file and emery paper the edges quite smooth. If you do not mind spending a little extra time on the job an ideal finish is to solder a piece of wire round the outside of the tin tops. When done neatly this makes a smooth edge and avoids cutting the hands.

To hold the tins in place the centre ply panel is cut and slotted as shown and then slipped over all the tins and glued and tacked in position. Cut this centre panel from ½in. ply 14ins. long and 7ins. wide.

The slot for carrying is about 5ins. long and 1½ins. wide and the edges well rounded off with glasspaper. It would, perhaps, be an advantage to fit triangular corner pieces to the ends of the handle for strengthening where it is glued to the sides of the tray.

Give the tray a coat of paint to preserve it and make it fit to be seen anywhere about the house.

(A.F.T.)

Continued from page 313

## Home Chemistry

Burning and breathing both work on a similar principle, because both involve combination with oxygen. In the body, carbon-containing waste matter in the blood is turned into carbon dioxide which is got rid of by breathing out. Sometimes in serious illnesses the oxygen of the air is not concentrated enough to do the job and more has to be supplied to the patient.

An intriguing experiment will show what a help this is. Half fill a test tube with hydrogen peroxide and drop in manganese dioxide little by little until bubbles rise in the liquid. The bubbles contain oxygen and, bursting at the surface, fill the empty part of the tube. Light a spill and blow it out. The glowing end—like the patient—will soon go out, if some help is not given.

Plunge the glowing end into the oxygen in the upper part of the test tube. With a slight pop the spill will burst into

flame again. This glowing spill test is always used to find out when a chemical is giving off oxygen.

### Spectacular Trick

Oxygen can be made from many other chemicals besides hydrogen peroxide and manganese dioxide. These other chemicals all contain a lot of oxygen and part with it easily. Heat a little potassium permanganate in a dry test tube and plunge in a glowing spill. It takes fire, showing that the chemical is giving off oxygen. This chemical will even provide enough of the gas to set fire to glycerine. The experiment makes a most spectacular trick—no less than making fire without a match!

Powder some potassium permanganate and heap it into a cone on a tin lid—about as much as would heap up on a shilling. Make a little hollow in the top and let one or two drops of glycerine

fall into this. In a few moments smoke will appear. Suddenly the glycerine will burst into a fierce lilac flame and the mass round it will glow red hot.

Another trick makes use of potassium nitrate (saltpetre, or nitre), for this, too, provides extra oxygen. In a quarter test tube of water dissolve as much potassium nitrate as you can by warming over a flame. With this solution draw the outline of, say, an elephant on porous white paper. See that the outline has no breaks. Make a small pencil mark at one point and let the paper dry. The drawing will be unnoticeable. On touching the pencil mark with the glowing end of a bit of burning string, a spark will appear, separate into two and run all round the outline of the elephant (Fig. 3).

While you have the potassium nitrate solution you might like to make a fuse. Simply soak a length of soft white string in it for about a quarter of an hour. After removing it and letting it dry, it will fizz and burn quickly on applying a light.

(L.A.F.)



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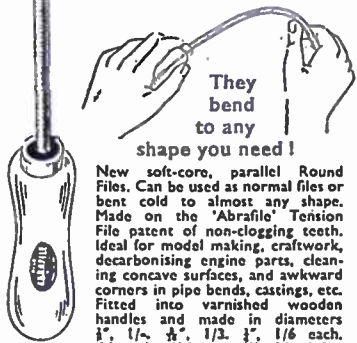
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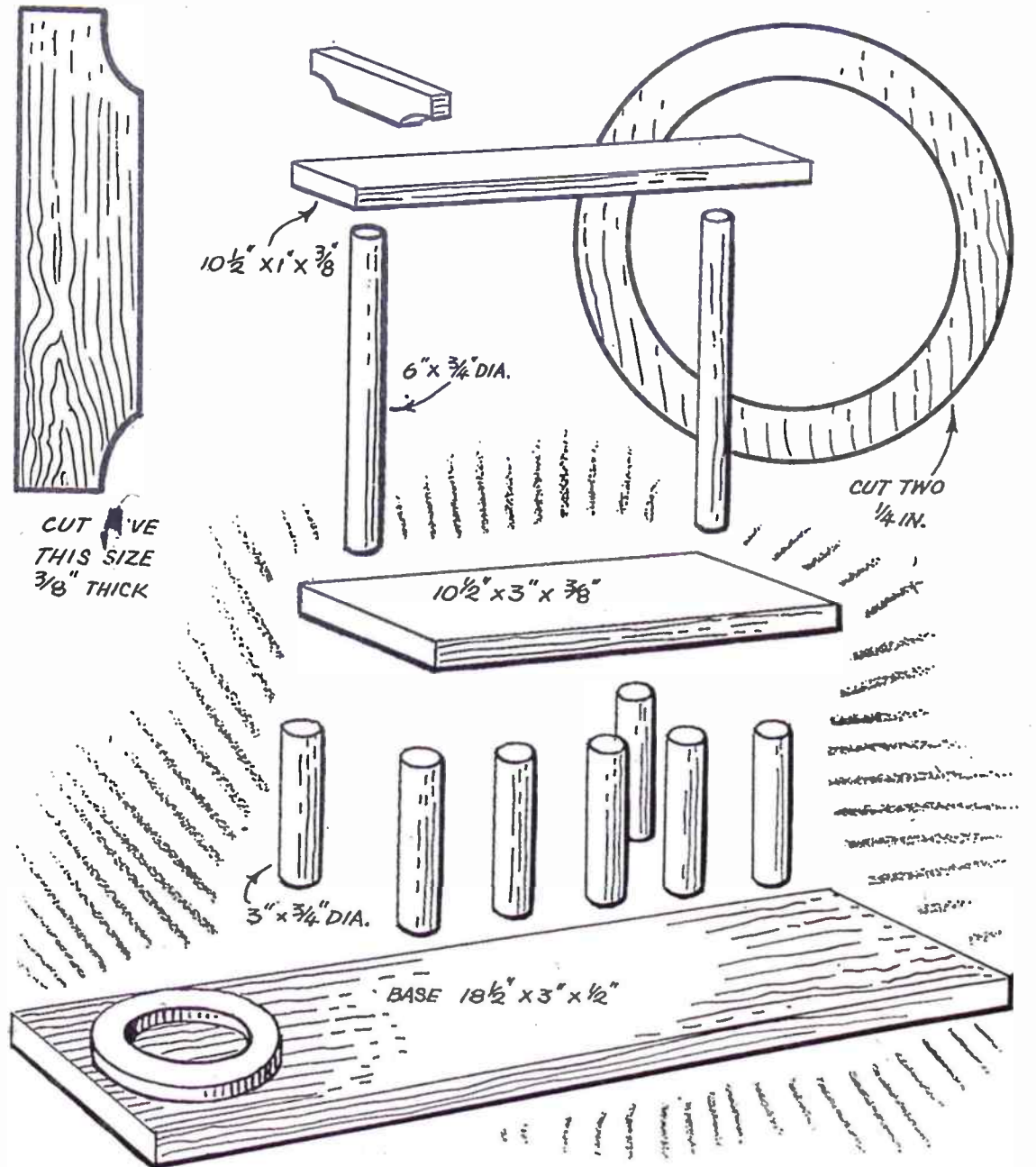
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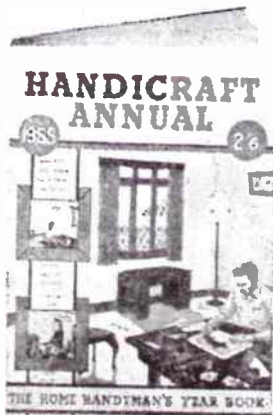
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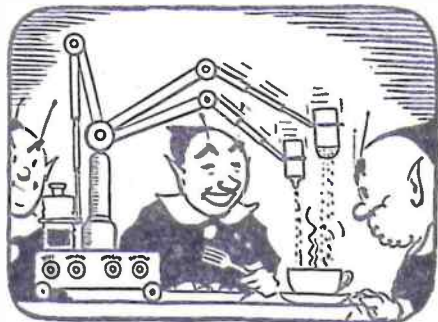
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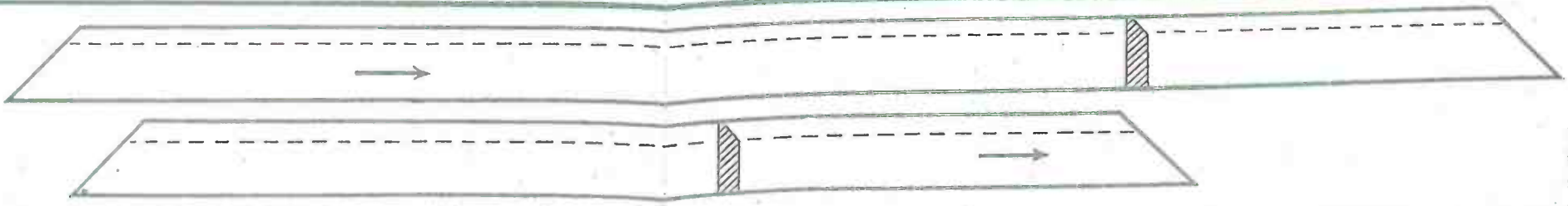
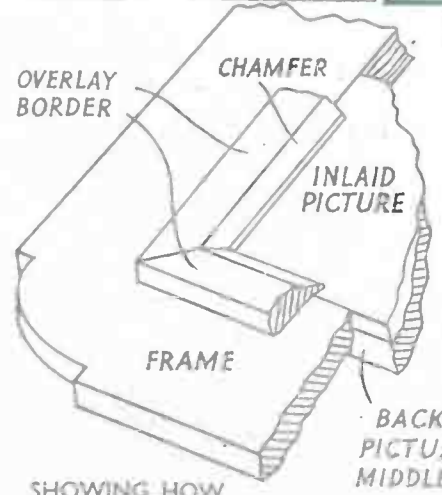
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	MEDIUM LIGHT		DARK

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