

# Hobbies

## WEEKLY

### CONTENTS

	Page
A Child's Small Bureau	65
Editor's Notes - - -	66
Church Bell Set - - -	67
Hints for Anglers - - -	68
Lino-cut Work - - -	69
Umbrella Fern Stand -	71
A Model Windmill - -	72
Smoker's Companion -	73
Novelty for "The Fifth" -	74
Handyman Conjurer -	75
Entomology Equipment -	76
Stamp Collecting - - -	77

November 1st, 1950

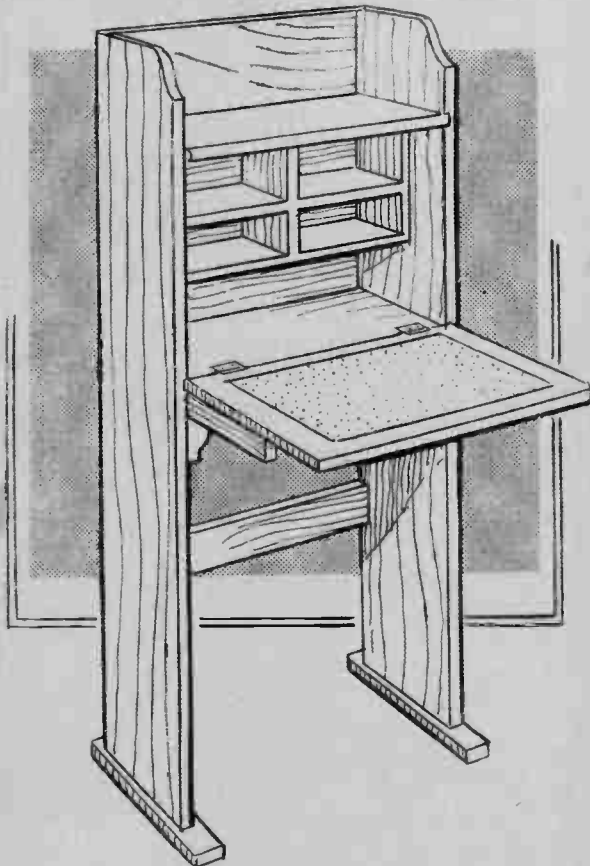
Price Fourpence

Vol. III No. 2870

**M**OST children like something of their very own, so the writing bureau, designed specially for a youngster, would prove a delightful present. It is just the thing for homework and such correspondence as children are likely to indulge in. A shelf is added for the sole accommodation of children's books, also, and is not to be trespassed upon by any adult.

A too heavy article is not wanted, so a

## A CHILD'S SMALL BUREAU



good quality wood,  $\frac{1}{2}$ in. thickness, would be quite stout enough for the purpose. The depth of the bureau will allow the sides to be cut from a single board without jointing.

Fig. 1 shows a front and side section, less interior pigeon holes. Cut these sides to the measurements given, plus the thickness of the two shelves and bottom tenons. Shape up the tops, and square lines across where the shelves will come. At these places saw and chisel out grooves across  $\frac{1}{2}$ in. deep to accommodate them.

### The Feet

Cut the two feet from 1in. by  $1\frac{1}{2}$ in. wood. The bottom ends of the sides will be cut to form two tenons, as in detail (A) Fig. 2, each 2ins. long and separated 3ins. apart. Make the tenons

$\frac{1}{2}$ in. deep and chisel out the necessary mortises in the feet to fit them. Note here that the sides are fitted on to be 2ins. back from the front edge of the feet and, of course, 1in. in from the back. Glue the sides to the feet.

The two shelves are cut to the length given in the front view, plus  $\frac{1}{2}$ in. for entry into the grooves. The top shelf alone is  $\frac{1}{2}$ in. wider than the full depth of the bureau, so that its front edge will project that amount in front, so that the fall front on which the writing will be done, can come underneath it.

### The Drop Front

This fall front, seen in the side section at Fig. 1, is as long as the shelves and 12ins. wide. It is to be clamped at each side end to prevent warping, so when cutting the wood to length, make allowance for the clamps, which are 12in. lengths of 1in. wide wood, the same thickness, of course, as the fall front.

Detail (B) shows how these sides are cut to form tenons for fitting the clamps on, much the same construction as a drawing or pastry board, in fact. The tenons need not be deeper than  $\frac{1}{2}$ in. or even  $\frac{3}{4}$ in. and the wood should be reduced in thickness for them, a reduction of  $\frac{1}{8}$ in. at back and front will leave  $\frac{1}{2}$ in. thickness, just about right.

The two clamps are shown at (B1) and are, naturally, mortised to suit the tenons. Make a good fit, glue them on, and clamp up tightly until the glue is hard. No twisting or warping of the writing flap will then be likely to occur.

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

the little trouble involved being well worth it.

Level off the front and rear surfaces of the flap, then hinge it to the lower shelf, using  $1\frac{1}{2}$  in. backflap hinges, as in detail (C). Recess the hinges level with the surface. It may be added here that the flap should be cut the full length of the shelves, it will then overlap on to the sides of the bureau just  $\frac{1}{2}$  in. and keep the dust out. It comes up to the projecting portion of the top shelf, and if a small brass turn-button is fitted to the shelf, it will keep the flap up as well as any patent catch, and be a lot easier to fit.

Between the sides, above the top

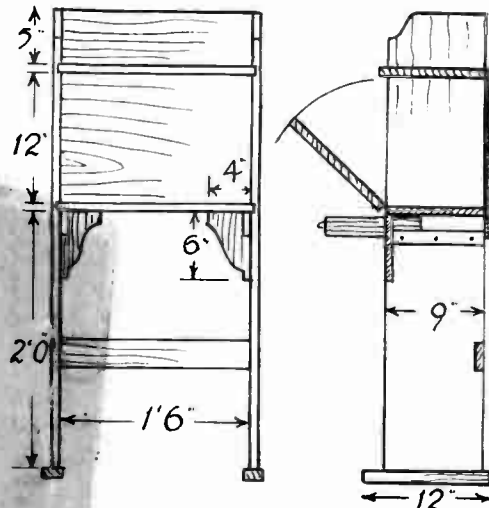


Fig. 1—Front and side view with dimensions

shelf, glue and nail a 5 in. wide strip of the wood across, to form a back for the book department. The actual back of the bureau is plywood, nailed to the shelf and side, and extending downwards 2 ins. below the lower shelf. Composition board might serve here. About halfway between this lower shelf and the feet, nail a crossbar of 3 in. wide wood across,

level with the rear edges of the sides. This is clearly shown in Fig. 1.

### Desk Supports

When the fall front is down, some support will obviously be needed. A pair of pull-out slides meet this. These are 9 in. lengths of 2 in. wide wood. Cut two angle brackets, as shown in the front view of the bureau, to the shape given, and in each cut a  $\frac{3}{8}$  in. by 2 in. piece from the outer corners.

Fix the brackets in with glue and nails, level with the front edges of the sides. Push the slides through these, and while they are in position, nail a 1 in. wide strip of wood underneath to keep them in place. These strips are, of course, nailed to the sides of the bureau.

Cut two strips 2 ins. wide, and preferably of thinner wood, also 9 ins. long, and nail these to the strips under the slides, allowing them to pro-

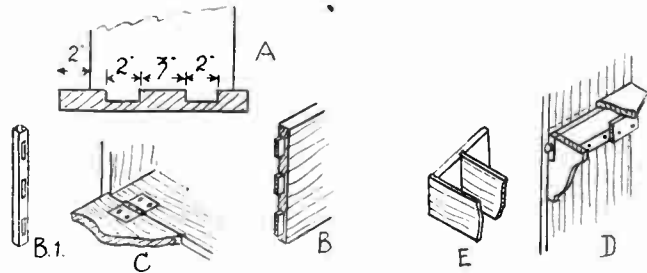


Fig. 2—Details of various joints, hinging, etc., in construction

ject above and so keep the slides from slipping outwards. The detail sketch (D) in Fig. 3 will explain this. The slides should now be withdrawable, but must not be pulled out too far, or else they will not support the writing flap. A wire nail driven in each flap just 1 in. from the rear ends, will act as a stop and prevent this happening.

### Inside Compartments

The interior of the bureau can now be fitted with pigeon holes, as in the general view, or alternatively with horizontal divisions, as at (E) like those

### MATERIALS LIST

Sides (2)— $\frac{3}{4}$  in. by 9 ins. by 3 ft. 6  $\frac{1}{2}$  ins.  
Shelf (1)— $\frac{3}{4}$  in. by 9 ins. by 1 ft. 6  $\frac{1}{2}$  ins.  
Shelf (1)— $\frac{3}{4}$  in. by 9 ins. by 1 ft. 6  $\frac{1}{2}$  ins.  
Top back— $\frac{3}{4}$  in. by 5 ins. by 1 ft. 6  $\frac{1}{2}$  ins.  
Bottom bar— $\frac{3}{4}$  in. by 3 ins. by 1 ft. 6  $\frac{1}{2}$  ins.  
Feet (2)—1 in. by 1  $\frac{1}{2}$  ins. by 1 ft.  
Fall front— $\frac{3}{4}$  in. by 12 ins. by 1 ft. 5  $\frac{1}{2}$  ins.  
Clamps for same (2)— $\frac{3}{4}$  in. by 1 in. by 1 ft.  
Slides (2)— $\frac{3}{4}$  in. by 2 ins. by 9 ins.  
Brackets (2)— $\frac{3}{4}$  in. by 4 ins. by 6 ins.  
Back (plywood)— $\frac{3}{4}$  in. by 16 ins. by 1 ft. 7  $\frac{1}{2}$  ins.

Remainder from spare wood.

in a stationery cabinet. Probably the pigeon holes would please a youngster better, more like the real thing.

To finish off the job, either stain and varnish the work or white enamel, as

preferred. A piece of smooth leather or rexine can be glued to the inside face of the fall front, to make a nice surface for writing upon. A small knob should be fitted to the front ends of the slide, for ease in withdrawal, and the job is done; a pleasing present for any intelligent child.

## From The Editor's Notebook —

WHAT fun and games our readers do have! A letter from one of our ardent followers has been making some flea carriages for a flea circus, including a flea Lord Mayor's Coach. Well well! What next will they be up to—these craftsmen, I mean, of course—not the fleas.

THERE are literally thousands of text books on that complex subject wood, and the student, technician and even the ordinary man-in-the-street, who has as great an interest in wood as anyone, must, on occasion, have great difficulty in finding, amidst such a wealth of information, the particular work of reference he requires. It may be he is quite unaware that there is a particular book, covering his interest or problem, or, perhaps, he just wishes to obtain a particular work that is not on the booksellers' list.

As far as the Timber Development Association is concerned the problem is not so difficult for, during the past ten years, it has collected in its Headquarters Library about one thousand three hundred of the most useful books on the growth, structure, properties and uses of wood. To assist those who wish to know of or obtain a particular work the Association has recently issued an up-to-date catalogue in which all these books are listed



under subjects with author's name, title and publisher. Copies of this new edition of the 'Library Catalogue' can be obtained on application to the Timber Development Association, 75 Cannon Street, London, E.C.4.

HERE is another unusual 'collecting' hobby, which may appeal to other readers. A fellow in Belfast cuts out the Newspaper Title from the front page of as many different ones as he can get. After two years he has 342, and is still adding to them.

THE quaint cat you see in the picture is one which gaily revolves as you pull the bright attractive toy along. With Christmas coming you surely know somebody who would just love it. Patterns and instructions are on this week's gift sheet. A kit of wood and wheels to make it (No. 2870) can be bought from any Hobbies Branch for 5/-, or 5/10 post free from Dereham, Norfolk.

The Editor

# A novel playing model to make incorporates a CHURCH BELL SET

**W**E know that most of our readers prefer, whenever possible, to make and do things for themselves, rather than just watch the other fellow at it. But the ancient and interesting hobby of bell-ringing is one that, for most of us, ends with just listening—since the opportunity for doing more does not come our way. Making this little bell set, therefore, not only provides an interesting piece of work, but allows the study of bell-ringing (or campanology) to be carried on at leisure.

A peal of bells may, of course, consist of any number up to about twelve; but five, as shown in our model, is quite common. The number of different sequences (or changes) in which a small set of bells can be rung, is surprising. For instance, with five bells no less than 120 different changes are possible, and it is said that to ring a complete set of changes on twelve bells would take over 90 years, ringing two each second day and night continuously.

## Keyboard Operation

The bells shown are of the straight tubular type, since these are easier to get into tune than the older bell shape. They are operated by a keyboard or carillon—a method which is gradually taking the place of bell ropes, because of its obvious advantages in allowing one man to operate a complete peal of bells.

For simplicity and economy of material the construction of the church itself has been kept quite simple; but handymen with a knowledge of architecture will, no doubt, wish to embellish it with further ornament. For the baseboard a piece of wood about 10ins. by 7ins. is required. The measurements for the rest of the work allow of wood of  $\frac{1}{4}$ in. thickness, although this can, of course, be varied to suit whatever oddments are available. The little porch, cut from four small pieces, can be of thinner material, to keep the proportion.

## The Side Walls

Make a start by cutting the two sides, the end, and the two pieces forming the roof (see Fig. 1). The tower consists of four pieces and a roof on which the steeple is fixed. The back piece of the tower is cut  $1\frac{1}{2}$ ins. shorter than the other three, to allow space for the key-

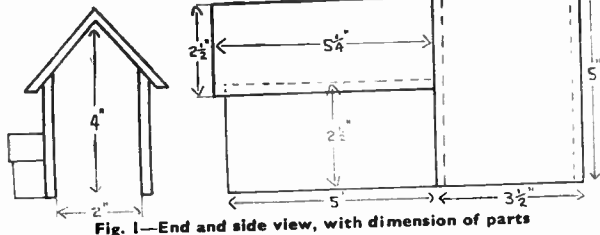


Fig. 1—End and side view, with dimension of parts

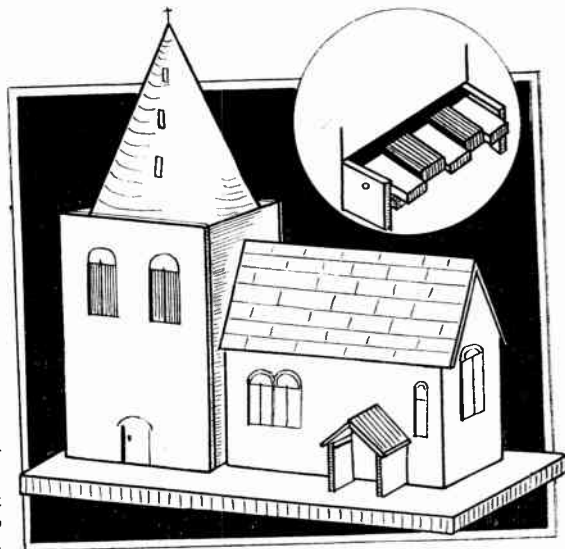
board, and neither the back piece or the tower roof should be fixed permanently until the 'works' have been put inside.

The steeple is cut from cardboard. Mark out a circle 4ins. in radius, and cut it out. Then cut it across the middle, and taking one of the halves fold it up coneshape until the width at the open end is just under 3ins. Glue the edges down in this position, and fix the cone to the roof of the tower with angled pieces of the cardboard or stiff paper. The steeple can be made up ready, but the actual fixing into position, of course, comes later.

## The Keyboard

The keys are  $\frac{1}{2}$ in. wide, and to enable the fingers of one hand to play them easier, alternate keys are made higher and a little shorter, piano fashion. Three of the keys are, therefore, cut 3ins. by  $\frac{1}{2}$ in. from  $\frac{1}{4}$ in. wood, and two of them  $2\frac{3}{4}$ ins. by  $\frac{1}{2}$ in. from  $\frac{1}{4}$ in. wood. Take off the front edges slightly, to give a finished appearance, and the second and fourth can be painted a darker colour than the first, third and fifth, to complete the effect.

When the keys are ready, hold them in a vice or clamp side by side, with the bottom edges flush, and drill a  $\frac{1}{16}$ in. hole through all five, about 1in. from one end. The five keys (with washers between) are then threaded on to a stiff wire or piece of  $\frac{1}{16}$ in. dowel, which is held in the two pieces of 1in. square wood that are glued to the base of the tower, as shown.



## The Strikers

The general principle of the strikers and their shape, is shown in the sketch at Fig. 2. Here only one is shown, but the other four are, of course, identical, and are mounted side by side on a dowel. The actual size of the strikers will vary according to the length of the bells, so it is best to cut and tune the bells first before attempting to get the strikers into position.

They must fit very loosely on the  $\frac{1}{16}$ in. dowel, with small pins through the dowel on either side of each of them to prevent any sideways movement. When we come to fix them this dowel fits into two holes cut for it in the sides of the tower. It is important to see that the hole in each striker is higher than the middle, so when the key is released the striker falls back away from the bell. Put a small screw or tack in each striker at the point it will touch the bell, as this helps to produce a louder, clearer note.

As the second and fourth keys are  $\frac{1}{2}$ in. thick, the strikers for these two will need to be a little shorter at the bottom than the other three. A block of wood  $\frac{1}{16}$ in. thick is glued to the base, immediately under the inner edge of the keys, on which they rest when not being struck, and a similar block about  $\frac{1}{16}$ in. thick is glued under the outer end, as a stop when the keys are depressed.

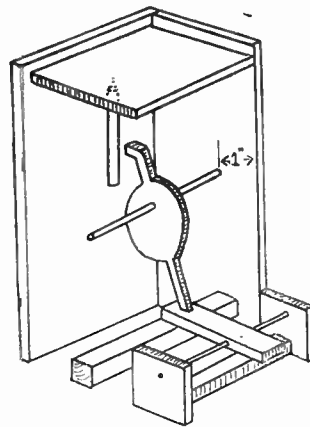


Fig. 2—How the strikers act

## The Bells

Now we come to the

bells, and here there is scope for a good deal of variation according to what the handyman has available. Tubular steel about  $\frac{3}{8}$  in. diameter is the best, but solid metal will do. The main thing is to see that it is as hard as possible, to get a good clear note when it is struck.

The bells can range in size from about 3 ins. to 1  $\frac{1}{2}$  ins., and if all five are to be cut from the same material a beginning can be made by cutting off pieces 1  $\frac{1}{2}$  ins., 1  $\frac{1}{4}$  ins., 2 ins., 2  $\frac{1}{2}$  ins. and 3 ins. Drill a hole near the top of each, and suspend them separately on wires, for a trial, giving each a tap with a piece of metal to see the note it produces. The pitch of any of them can then be raised by sawing a small piece from the end.

### Tuning

The usual intervals for a set of five are (In tonic sol-fa—from the top), doh, te, fa, soh, fah. That is to say the top note is made the dominant (or doh note) and the second is only half of a full note lower, to make the te.

There is, of course, no need to use exactly the same material for all the bells, and by using a different metal for the top or bottom two it is possible to produce five suitable notes with pieces more nearly the same length. This has the advantage that the strikers need not

be made to reach so high as when the top notes are shorter.

When five suitable bells have been cut and tuned, they are hung on separate stiff wires from the roof of the tower, about  $\frac{1}{2}$  in. from the front edge, as shown.

CUTTING LIST		
No. of Pieces	Description	Size
1	Base Board	10" x 7"
2	Sides	5" x 2 $\frac{3}{4}$ "
1	End	2" x 4"
2	Roof	5" x 2 $\frac{3}{4}$ "
1	Tower Front	5" x 3 $\frac{1}{2}$ "
1	Tower Back	3 $\frac{1}{2}$ " x 3 $\frac{1}{2}$ "
2	Tower Sides	5" x 3 $\frac{1}{2}$ "
1	Tower Roof	3" x 3"
2	Porch Sides	1" x 3 $\frac{1}{2}$ "
2	Porch Roof	3" x 3"
3	Keys	3" x 3" x 1" (with 1" x 1" hole)
2	Keys	2 $\frac{1}{2}$ " x 3" x 1" (with 1" x 1" hole)
2	Keyboard Supports	1" x 1" x 1"
1	Inner Key Block	3" x 1" x 1"
1	Outer Key Block	3" x 1" x 1"
5	Strikers from Key Dowel	3" x 1" x 1"
1	Striker Dowel	3" x 1" x 1"

The exact position for the strikers will then be seen. They must be long enough to reach all the bells, and for the bottom of each striker to rest lightly on its own key.

When the key is depressed the striker

moves forward and strikes the bell, falling back into its first position as soon as the key is released. See that the strikers hit each bell in the middle of it, so it is not driven sideways. But if this does happen little guides of cardboard can be glued to the inside of the tower in suitable positions to prevent the bells from touching each other. It may also be necessary to put a strand of cotton across inside the tower, between the bells and the front of the tower, to prevent the bells from hitting the front and setting up an unwanted jangle.

### Adjustment and Touch

With just a little extra trouble the back of the tower can be fitted on a pair of hinges, and then the little door so made can be opened at any time to make little adjustments to the bells.

With a little practise the right 'touch' on the keyboard is soon acquired. The loudest and clearest notes are obtained if the keys are pressed down with a short tapping motion, then released quickly and a brief interval of a second or so allowed before striking the next one.

Paint in the windows neatly, and any other suitable decoration. Then finish off the stone walls and the slated roof and spire in their appropriate colours. (290)

## Some practical, helpful and interesting HINTS FOR ANGLERS

**R**EMEMBER that light tackle is all the better for comfort in fishing; avoid heavy rods. With a light rod you can fish all day without fatigue. If you can only afford one rod be sure it is light-weight and well-balanced.

When fishing it is wise to carry a disgorging, one that is really useful. It should have a hole at one end which is threaded with a piece of string, in turn tied to a button hole of your jacket, and the disgorging kept in your pocket. When you need to use it, you just pull it out of your pocket with the string, and after use it is as easily slipped back. You need not fear losing the disgorging when secured in this fashion.

### Put them Back

Returning live fish to the water after you have caught them is much practised these days. It is a wise thing to get a keep-net and sink it into the water at the edge of river or lake, secured by string and peg to the bank. Into it slip the fish when unhooked.

At the end of the day return them to the water, unless there are any you specially wish to take home. All small fish should be put back. In this way the stock of fish in the water will not deteriorate, and future sport is ensured. Do not throw the fish back: replace them gently.

Sometimes the success of a day's outing consists of trying different methods and lodes. For instance, supposing one way

of angling is unsuccessful, another method may be tried. Sometimes fish are cruising in mid-water, instead of on the bottom, or they may even be just under the surface. Therefore it is advisable to vary the depth at which you have adjusted float and baited hook. If there is nothing doing at one depth, there may be at another.

### Change of Bait

It is a good plan, too, when fish do not bite freely, to change your bait. Sometimes an unusual bait is attractive. Bacon rind, small cubes of tripe or fat bacon—if you can spare it out of your meagre ration—and cheese, for instance, are often good baits for chub and perch, etc. Bits of Yorkshire pudding are also attractive at times. Indeed, you can try almost anything edible, and find it acceptable to fish.

To preserve a keep-net, and give it a longer life, steep it in boiled linseed oil. All surplus oil must be drained away, and the net hung up until dry. All gut casts, lines and attachments should be kept in airtight tins or in a book with chamois leather leaves.

When a river is flooded worms are best baits. Under flood conditions fish are often to be found in the slacks, quiet bays, 'cow' drinks, ditch mouths, slow eddies, and grassy hollows.

### Rod Tips

When a rod ferrule sticks it can be annoying. To prevent this happening, it

is wise to grease, with some kind of lubricant or Vaseline, the ferrules before joining the rod when about to fish.

A rubber band placed on the rod below the bottom ring is useful to secure the hook while moving from place to place, with your rod set up. Another idea is to whip a small ring on the rod just above the cork grip. You need a suitable ring and a piece of flat metal (thin) bent in centre to fit against the rod, and a little silk to whip it on securely. When moving you insert hook in the ring.

### Rod Stoppers

Keep stoppers or plugs in the ends of rod ferrules when the rod is not in use. Have an eye to the rings periodically. Some of them may get worn and become sharp on the edges, and when this happens the line suffers. Renew worn rings as soon as noticed.

At end of season re-varnish the rod and see to all frayed whippings—replace them, and give them a coat of shellac varnish.

A useful shellac varnish is made up as follows: shellac, six parts; spirits of wine, eight parts; gum benzoin, two parts. Keep in a dry place. This is a quick-drying varnish, and can be used for all kinds of silk whippings and bindings.

Always carry your rod in a bag, and when not in use hang it up by the loop at the end of the bag. If no loop on the bag, stitch one on—a piece of tape will serve. Such care as this will add life to the whole thing.

# Artistic Christmas or Greeting Cards can be made with LINO-CUT WORK

LINO cutting is sometimes referred to disparagingly as something we did at school, but prints from lino cuts, in capable hands, are works of art, and a medium of expression used by professional artists. It is a form of printing and one good purpose in which lino cuts can be used, is in the production of Birthday or Christmas cards. Once the preliminary work is finished, any reasonable number of copies may be taken.

The linoleum is easy to cut out, but its comparative softness necessitates a broad, simple technique. The tools required are few, a sharp knife and a gouge or two, obtainable, as is also the linoleum, at art shops.

The process is to cut out of a piece of linoleum, the whites of a black and white

by the spaces, and are easily made with a V gouge.

The first consideration is the design of the Christmas card. Some subjects lend themselves to lino cutting better than others. If figures are attempted they must be suggestions, rather than detailed drawings. Faces are difficult unless on a very large scale, and the size of your card will probably curtail this.

## Suitable Subjects

Some architectural subjects are excellent for this work—a sketch of a half-timbered Tudor cottage would need little adaptation. Harbour scenes are good and fascinating, the water can be treated boldly, with masses of black and white shadows and reflections.

To some, sketching comes naturally.

detail. Ink the blacks in solidly with indian ink. This will give an idea of how the final print will look. A tracing is then made of all the black lines and masses. The tracing is reversed, the transparent tracing paper being merely turned over, and the reversed outlines traced on to the linoleum. It is advisable now to ink in the sketch on the actual linoleum for clearness when cutting.

A complete lino cut could be cut out with a sharp-pointed knife, but it is a laborious process, and a few simple tools are worth the outlay. The cutting tools need little practice to find their uses. Broadly, the knife is used for cutting round the outlines.

The V gouge will cut out spaces beginning with sharp points and if not dug too deeply it can be used to produce



Fig. 1—The subject squared up



Fig. 4—A partly-cut subject mounted on wood

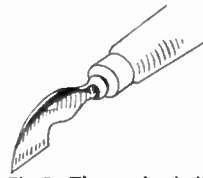


Fig. 5—The cutting knife

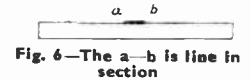


Fig. 6—The a-b is line in section

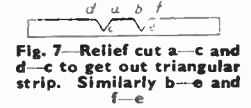


Fig. 7—Relief cut a-c and d-c to get out triangular strip. Similarly b-e and f-e



Fig. 2—Drawn double size for cutting



Fig. 3—Broad lines and masses drawn in



Fig. 9—The V gouge



Fig. 11—The U gouge



Fig. 12—U gouge cutting at different depths



Fig. 10—Progress of cutting—getting deeper each time

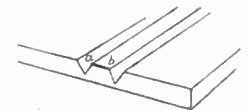


Fig. 8—Result of cut, with a-b in relief

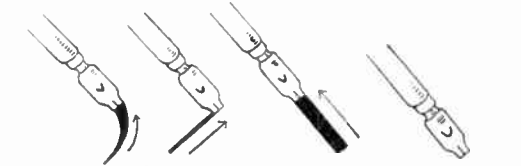


Fig. 13 & 14—The type of pen with strokes it can produce

**Best Wishes**



Fig. 14—Quick printing with flat nib

Fig. 15—A 3-stroke letter

but if not most people have taken snapshots on holiday, some of which make excellent pictures, and can be used as a basis for the lino cut. Having drawn the sketch, or selected the photograph desired, this must be adapted to a suitable form for cutting in linoleum.

If it is not the correct size, an outline sketch can be made by squaring up. This consists of dividing the original sketch or photograph into squares. On a separate sheet the same number of squares are drawn, either larger or smaller, in such a proportion as to give the required size.

The main shapes are then drawn in using the lines of the enlarged or reduced squares as a guide. Then must be decided the main lights and darks, cutting out all

fine white lines to relieve solid masses of black. The U gouge will cut out spaces with curved ends. The V and U gouges are also used for cutting out the large spaces. In this case the lino must be gouged out as deeply as possible without digging into the canvas backing of the linoleum.

## Mount on Wood

When the cutting is completed, the linoleum should be mounted on to a wood block. It can be nailed on with small pins. This will give a solid foundation for printing. The next stage is inking up the block. This can be done with printing ink, oil paint or poster paint. The last named is perhaps the best for a start.

sketch or design, leaving the blacks standing up in relief. These parts in relief will then print when inked and paper brought into contact under pressure.

From this it will be found that thin black lines, i.e. the thin strips of linoleum left in relief, are not advisable as they break easily, either in the cutting or in the printing. Thin white lines fairly wide apart are possible, for these are formed

Poster paints are supplied in glass jars and should be of a creamy consistency. The paint can be applied to the block by dabbing with a wad of cloth, by a brush or with a rubber roller. When using the dabber try it out on a hard flat surface.



An example of broad treatment of flowing lines to suggest a dog's coat

The paint must go on evenly, if too liquid it will run into and fill the crevices and the thin white lines will not print clearly.

Various types of paper can be used, as different effects are given by different surfaces. Some papers give better results if used damp—soak in water and dry off the superfluous liquid by placing between two sheets of blotting paper. The block having been coated with ink or paint, the paper is laid on the block and pressure applied by using a roller or photographic

squeegee, the side of the hand or the back of a large spoon.

The first result will probably show a number of lines and blobs which are not required, especially where large white spaces occur. With the first print as a guide, these blemishes can be removed by further cutting. If the lino cut is printed on the bottom right-hand quarter of the sheet of paper, the paper can be folded to form a ready-made card, or if preferred the lino cuts can be trimmed and mounted on to a stiffer paper or card.

### Greetings

The cards are now complete except for the greetings. The cards can be used as they are and the good wishes written inside, but some will prefer to finish them off with a little neat printing. Paper specially printed can be obtained beforehand but this considerably increases the cost of the cards, and unless it is intended to print a large number of cards, this additional cost will not be warranted.

The printing can be done by hand. It is as well to keep the wording short. Good printing cannot be hurried. Useful for quick printing is a flat nib such as used for showcard work. With these, thick and thin lines are obtained according to

the direction in which the pen stroke is made. Draw faint pencil guide lines and do not overload the nib with ink. Too much ink will cause blots in certain letters. The small 'e' particularly is inclined to fill up solidly. The penholder is held in the same position when forming the letters.



Architectural treatment with a decorative sky effect. The V gouge cut thin lines of the roofing

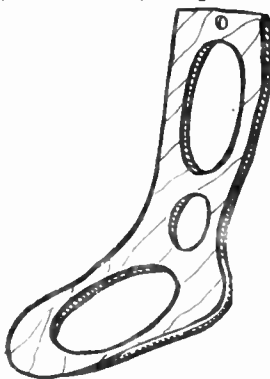
A successful lino cut in the form of a Christmas card may tempt you to obtain orders from your friends. Clubs and bazaars find them useful for their stationery stalls at the Christmas fêtes. An order for a dozen or two will cover the cost of production and anything above will be mainly profit for the Christmas holiday. (216)

### Sock Drier

YOU all know how some socks shrink out of shape after they have been washed. This gadget prevents all that. It is simply a piece of waterproof-glued plywood cut to shape, and slipped inside the wet sock. The internal holes are not essential, but they are recommended, as they facilitate drying.

To get the shape of the plywood, lay a brand new sock over it, and mark round with a pencil. This first shape can be used as a template for the rest. An extra-long shape may be made for use with golf stockings, etc. At the top, a hole is drilled to take a loop of string so that the affair can be hung up.

The shape is cut with a fretsaw, of course. If you have a treadle machine, two or three can be cut at a time by tacking pieces of plywood together. Glasspaper well afterwards so the edges are well rounded and not likely to tear the socks.



### Staining Floors

IN many homes it is the custom to stain the surrounds of floors, but all too often a cheap grade of varnish stain is used and, moreover, applied to wood not in a condition to receive it. Consequently disappointment results. It is a fallacy to believe that varnish stains will hide blemishes. All too often they reveal them.

The floor-boards, after being well scrubbed in the usual way, must have their grain closed with a good wood filler.

Such fillers can be obtained ready-made, but one can make some at home by mixing a good grade of silica with equal parts of linseed oil, turps, and japan drier, to make a paste which can be well brushed in across the grain of the wood with a stiff brush and left to dry for a couple of hours. The surplus is then removed by rubbing first across the grain, and lastly with the grain, with a piece of canvas. The wood is then glasspapered smooth.

Buy a good make of varnish-stain; it is far cheaper in the long run. Two coats are better than one, especially when the first is allowed to get bone-dry and lightly glasspapered before the next is applied. If the varnish is subsequently treated with wax polish the floor will be easier to keep shiny.

Never apply varnish stain over badly-worn painted or varnished floor-boards, hoping that the new coat will hide the

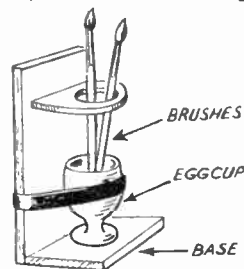
old. Remove the old varnish. This is best done with a varnish-remover solution which can be obtained from a paint shop.

The liquid softens the varnish which can then be scraped off. The parts which miss the scraper can be scrubbed with steel wool dipped in the varnish remover. This done, scrub down with a sugar-soap solution.

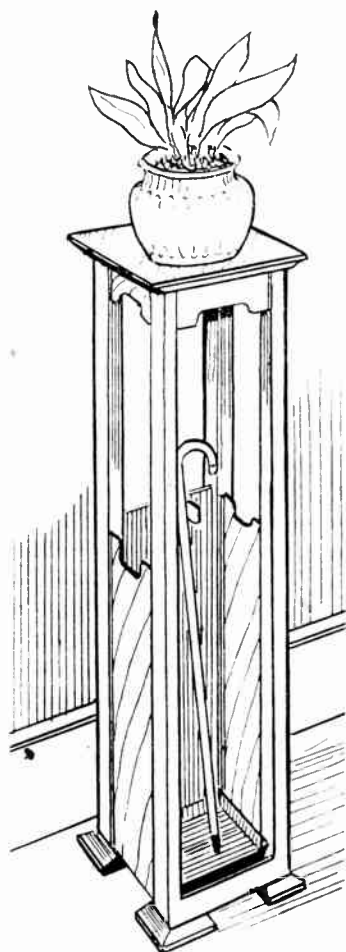
By this time the wood will be rather rough and open-grained, so it is then glasspapered and grain-filler is applied as before. It might be thought that this is a lot of work, but it is quicker in the end, because a properly stained floor surround will last a long time, whilst a 'rushed' job soon looks tawdry, and has to be done all over again.

### Paintbrush Holder

A HANDY holder for paint brushes which can be placed on the bench or fastened on the wall, can be made from a bracket at the top of which a small ring of fretwood is fastened horizontally. An egg-cup can be fastened at the bottom of the bracket by adhesive tape, and should be filled with turpentine.



# A useful, simple and attractive piece of work is this UMBRELLA FERN STAND



Glue and nail these to the top and bottom parts, as shown at (B). It will be seen that the uprights extend beyond parts (A) by  $\frac{3}{4}$  in. at each corner. At the bottom, on the side which will be the open one, glue and nail across a strip of wood,  $\frac{3}{4}$  in. thick and  $1\frac{1}{2}$  ins. wide, as shown at (B).

When the glue is set hard, punch the nails down and stop the holes level, then level off both top and bottom with a smoothing plane to provide a flat surface for the actual top of the stand and the four feet underneath.

The sides and back of the carcase are to be panelled. Fig. 2 gives the dimensions of these, also of the top spandrels. Of these parts cut two of (C and D) and four of strips (E), lengths of  $\frac{1}{2}$  in. square wood. The panels and spandrels are best cut from  $\frac{1}{4}$  in. plywood, though a good quality of substitute plywood could be used instead. The strips (E) are nailed and glued to the uprights, as shown in plan detail (F) in Fig. 3.

Then the panels, etc., are nailed to the side edges of parts (A) and to the strips of wood (E). Two of (D) and one of (C) are now cut, only 7 ins. wide, to fit in the back and across the top at the front of the stand, fitting all in with strips of wood (E) as before.

The top of the stand is cut  $10\frac{1}{2}$  ins. by  $10\frac{1}{2}$  ins. from one piece of wood if possible, of  $\frac{3}{4}$  in. thickness preferably. It is bevelled off underneath, as in detail (G) and fixed to the top of the carcase with screws, from beneath. From similar wood, four corner feet are cut to size given at (H). These are bevelled on their upper surfaces, two edges only, and are screwed to the bottom, to extend beyond the uprights by just 1 in.

This completes the woodwork of the stand. Nails should be driven flat in,

then the whole glasspapered to smoothness, paying particular attention to the edges of the plywood panels. The whole can be stained and varnished or enamelled, according to the wood employed.

If deal has to be used, an enamel finish is to be preferred, or a coat of hard glossy paint over a suitable undercoat. For an article of this description, a warm brown tone of colour would be rather nice.

To the back panel, inside, it is as well to fix a small divisional piece of wood or metal, to keep walking sticks or um-

**MATERIAL NEEDED**

- Parts A (2)— $\frac{3}{4}$  in. by 8 ins. by 8 ins.
- Uprights (4)— $\frac{3}{4}$  in. by  $1\frac{1}{2}$  ins. by 3 ft. 3 ins.
- Top— $\frac{3}{4}$  in. by  $10\frac{1}{2}$  ins. by  $10\frac{1}{2}$  ins.
- Feet (4)— $\frac{3}{4}$  in. by 3 ins. by 3 ins.
- Panel (C and D) (2)— $\frac{1}{4}$  in. by 6 ins. by 2 ft.
- Panel (C and D) (1)— $\frac{1}{4}$  in. by 7 ins. by 2 ins.
- Front spandrel, D, side strips, etc., from scrap wood left over. Panels C and D are shown as one, to be sawn across as in the diagram to make the two.

brella apart. Readers can, of course, employ their own ideas about this simple matter. As a suggestion, a 10 in. length of strip brass, with its ends doubled together and bent at right angles, screwed to the back would do nicely and look rather well.

Inside the stand, at the bottom, a metal tray to receive any moisture draining from an umbrella, would be a useful accessory. This can be easily made from sheet zinc or tinplate. A pattern for it is shown at (I). Bend up 1 in. all round, press the corners together, as at detail (J) and flatten them down. This saves the trouble of soldering them and is quite as effective. Enamel the tray green colour or coat with Japan black, as preferred.

**T**HIS combined piece of hall furniture serves two purposes, that of a plant stand, with an interior space to accommodate an umbrella and a couple of walking sticks.

Fig. 1 shows the method of building it, the carcase being four upright strips of wood, joined together at top and bottom with the two pieces of timber, shown at (A). These parts are cut to the dimensions given from  $\frac{3}{4}$  in. thick wood. At each corner cut out a piece 1 in. long and  $\frac{1}{2}$  in. wide. The four uprights are of  $1\frac{1}{2}$  in. by  $\frac{3}{4}$  in. section, and can well be sawn from a piece of the  $\frac{3}{4}$  in. thick board from which parts (A) have been cut.

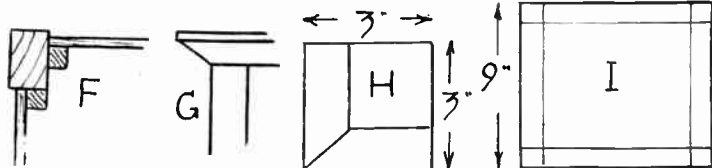


Fig. 3—The joints to use

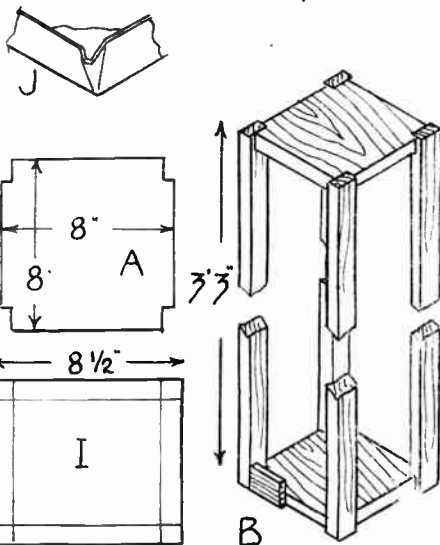


Fig. 1—The carcase of the framework

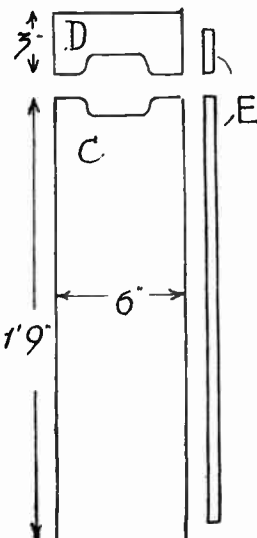


Fig. 2—The side panels

# Simple details and dimensions for building A MODEL WINDMILL

**T**HE base is cut out of a piece  $\frac{1}{2}$  in. thick and  $3\frac{3}{8}$  in. square. A line is now drawn from corner to corner to find the centre, also the position of the feet of the braces. Bore a  $\frac{1}{2}$  in. hole right through the centre of the base to take a piece of dowel rod, which acts as the main post of the mill. A small chamfer should be worked all round on the top edge about  $\frac{1}{8}$  in. each way.

A piece of  $\frac{1}{2}$  in. dowel rod should next be cut off at  $2\frac{3}{8}$  ins. long and glued in the hole in the base. Then measure  $1\frac{1}{8}$  ins. back from the centre post and make a mark for the bottom outside point of the braces, which come on the diagonal line marked from corner to corner.

The body of the mill should now be prepared from a piece of wood  $3\frac{3}{8}$  ins. long, by 2 ins. by  $1\frac{3}{8}$  ins. This can be built up if necessary from two or three thinner pieces glued together. Cut one end square and making a mark at  $\frac{1}{4}$  in. from the front end and in the centre of the width, which is the  $1\frac{3}{8}$  ins. way. This is therefore  $\frac{7}{8}$  in. from the side and  $\frac{3}{8}$  in. from the front. Bore another  $\frac{1}{2}$  in. hole at this point about 1 in. deep.

The front should then be shaped as

shown. Measure  $\frac{1}{4}$  in. on each side and bevel back from the centre line so the front is splayed back each way from the centre line. Then measure 1 in. down from the top and square a line round. From this line draw the shaping of the top as shown in the drawing.

When finally shaped the body can be pushed down on to the dowel which is standing up from the base, leaving a space of  $1\frac{3}{8}$  ins. between the base and the underneath of the body. The dowel should, of course, be lightly glued before assembling. Also make sure that the base and body are square and in line with each other before the glue sets.

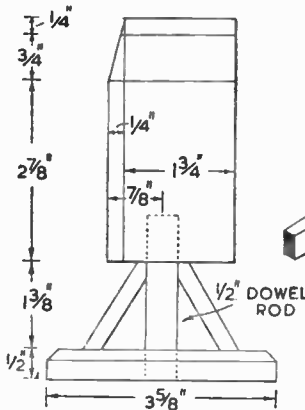
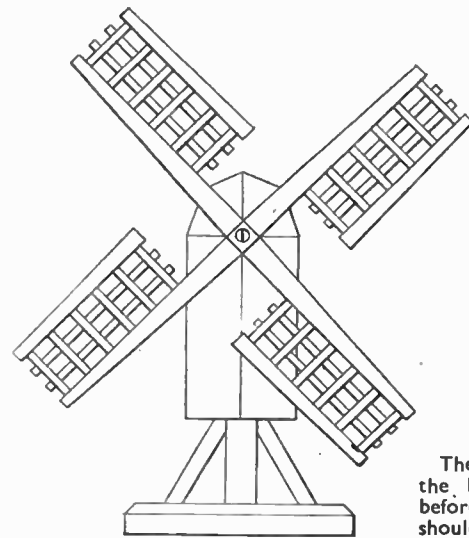
The braces are cut from pieces  $\frac{1}{8}$  in. square. An easy way to mark the top and bottom cuts on these is to get a piece of thin cardboard with a square corner on it (a postcard would do) and measure  $1\frac{3}{8}$  ins. from the corner on one edge and  $1\frac{1}{8}$  ins. from the same corner on the other edge. These two marks are held on the brace and a mark made where each side of the card comes. This will give the correct bevels for the top and bottom cuts.

as shown. A hole is drilled to take a small screw for fixing to the body of the mill. Before gluing the halved joint together set out the six holes at  $\frac{1}{8}$  in. centres on alternate sides of the main spars to take the small cross rails. Drill these nearly through with a  $\frac{1}{8}$  in. drill.

The spars are then tapered off from the centre to  $\frac{1}{8}$  in. at each end, the halving glued and the two spars fixed together like a cross. The short spars should be marked out for position of holes from the main spars, and can be worked in one long piece for easy setting out and boring.

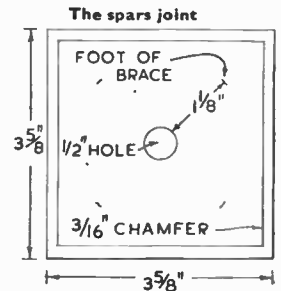
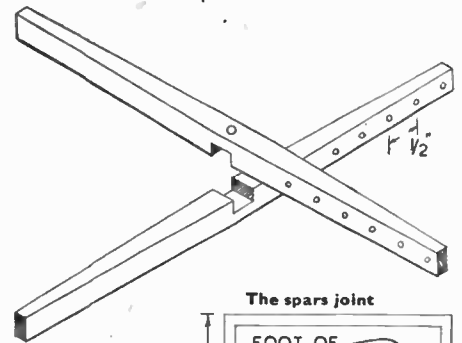
They are made from a piece of  $\frac{1}{8}$  in. by  $\frac{1}{2}$  in. If a centre line is marked from end to end of a piece about 12 ins. long, and a pair of dividers set to  $\frac{1}{2}$  in., this can be marked right along for 24 holes. Bore with a  $\frac{1}{8}$  in. hole and cut afterwards into four pieces  $2\frac{3}{8}$  ins. long and slightly tapered smaller on the ends.

The small rails are cut from  $\frac{1}{8}$  in. square stuff; twenty-four of these will be needed at  $1\frac{1}{8}$  ins. long. The ends are rounded with a penknife to push into the holes in the spars.



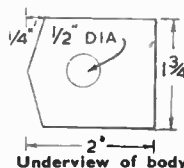
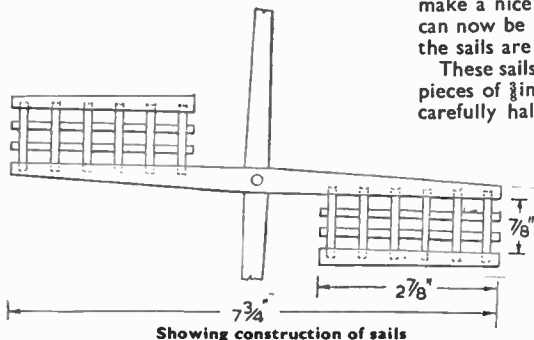
The sharp edges should be taken off the braces to make them octagonal before gluing in position. The tops should also be slightly hollowed out to make a nice fit on the dowel rod. This can now be left for the glue to set while the sails are prepared.

These sails are made by cutting off two pieces of  $\frac{3}{8}$  in. square stuff at  $7\frac{3}{4}$  ins. long, carefully halved together in the centre



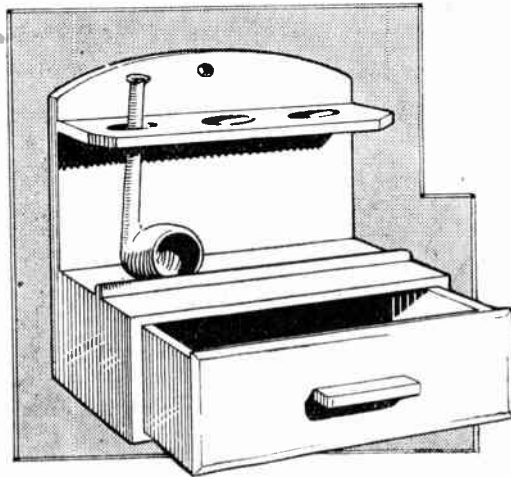
The whole sail can now be assembled together before gluing, to see if everything fits together nicely. Then a spot of glue should be put on each end of the small rails and the whole thing can be lightly tapped together and left for the glue to set.

The back cross rails are cut from  $\frac{1}{8}$  in. square stuff at  $2\frac{3}{8}$  ins. long and glued on the back of the short rails by putting a spot of glue where they cross the short rails. When finally glued and set the sails are fixed to the body with a small screw through the centre. The whole thing would look well made in oak and brushed over with linseed oil when finished.





# This simple drawer and pipe holder makes an ideal SMOKER'S COMPANION



**H**ERE is an ideal piece of work for the fretwork beginner. This is a simple pipe rack with drawer beneath for cigarettes. It is just the thing for the side table, or it could, of course, be hung on the wall quite handy. The marking out of the various parts must be carefully and accurately done if a true fit is to be made, and in this respect a drawing board with the square and set squares are almost indispensable.

In Fig. 1 the ground arrangement of the parts are seen, and some measurements, helpful in assembling. A full cutting list is included, so there may be no difficulty in setting out the parts.

## The Main Back

This is part (A) and should first be marked out and cut. As fairly thick wood is suggested for the main parts of the rack, care must be taken in cutting with the fretsaw to keep a perfectly vertical cut, otherwise the pieces will not fit accurately and closely.

If a fretmachine is available, then there need be no worry about this vertical cutting. If it is required to clean up the cut edges, care again must be taken to hold the piece perfectly vertical on the glasspaper surface. All sharp edges should be just slightly glasspapered.

## Prevents Splitting

**R**EADERS who do large work, and use nails can lessen the risk of splitting when nailing near the edge, if they turn the nail upside down, and make a slight mark with its head by giving it a couple of blows with a hammer where you intend to drive it. You will find this lessens splitting considerably.

On the outline of the back, shown in Fig. 1, the positions of the base and the top of the box shown as (B), and the pipe rack or shelf (E) is given by dotted lines. These dotted lines should be drawn across the back as a guide and two holes should be bored between each pair of lines to take the fixing screws. After the holes are made, they should be countersunk on the back of piece (A) so the heads of the screws lie flush and neat.

It will be noted that the top of piece (A) is cut to a curve, the point for the compass which marks this curve being made as shown at the base of the piece. The parts (B) and (C) are cut in pairs, so having marked out and cut one piece, it can be used as a template for drawing round to outline the second piece. This assures accuracy of fit when the time comes for assembling the pieces. Note when gluing up that the parts all lie flush at the ends of the drawer compartment, this is seen in Fig. 1, and in the sketch of the finished article. This again simplifies the final cleaning on a flat surface of glasspaper.

## Pipe Holder

The rounded-top fillet (D) which is glued and pinned down to the top of the box is placed  $2\frac{1}{2}$  ins. out from the main back to the front edge, thus allowing the pipes to rest, as shown in the side view Fig. 2, without falling forward.

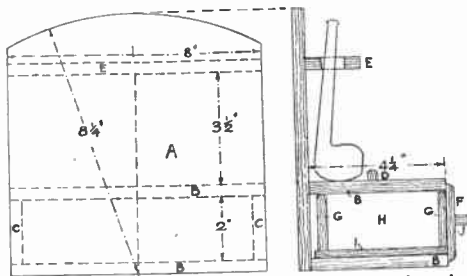


Fig. 1—Details of main back

Fig. 2—Side elevation

(H) into three and allow the thickness of the wood—viz.,  $\frac{1}{2}$  in. as width of each tenon and its recess. Cut the joints clean with the fretsaw and afterwards glue them up, testing the inside of the frame thus made with the set square to

## CUTTING LIST

- A—8 $\frac{1}{2}$  ins. by 8 ins. by  $\frac{3}{8}$  in.
- B—8 $\frac{1}{2}$  ins. by 4 $\frac{1}{2}$  ins. by  $\frac{1}{2}$  in. Cut 2.
- C—4 $\frac{1}{2}$  ins. by 2 ins. by  $\frac{1}{2}$  in. Cut 2.
- D—8 ins. by  $\frac{3}{8}$  in. by  $\frac{1}{2}$  in.
- E—8 ins. by 1 $\frac{1}{2}$  ins. by  $\frac{3}{8}$  in.
- F—7 $\frac{1}{2}$  ins. by 2 $\frac{1}{2}$  ins. by  $\frac{1}{2}$  in.
- G—7 $\frac{1}{2}$  ins. by 1 $\frac{1}{2}$  ins. by  $\frac{1}{2}$  in. Cut 2.
- H—4 ins. by 1 $\frac{1}{2}$  ins. by  $\frac{1}{2}$  in. Cut 2.
- I—7 $\frac{1}{2}$  ins. by 4 $\frac{1}{2}$  ins. by  $\frac{1}{2}$  in.
- J—2 ins. by  $\frac{1}{2}$  in. by  $\frac{1}{2}$  in.

ensure its being perfectly square. A few fine fret pins can be driven in the joints after the glue has hardened, as seen in the outline of the made-up drawer.

## Drawer Details

The floor of the drawer (I) it must be noted, lies flush with the front face of the piece at the front of the frame, see section of drawer in Fig. 2. The back upright (G) of the drawer frame will come just a little way in, along the floor, so as to give added strength when the nails are driven through the floor into it.

The front of the drawer, piece (F), is  $\frac{3}{8}$  in. larger than the drawer itself all round, as will be seen in the section Fig. 2. The back edge, therefore, of piece (F) will lie flush with the front of the box when the drawer has been closed.

A simple square handle is glued and

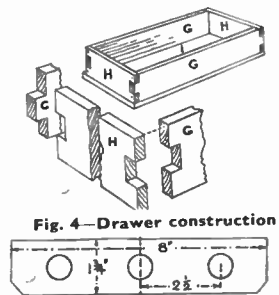


Fig. 4—Drawer construction

Fig. 3—The pipe rack

The outline of the pipe rack shelf (E) is given in detail in Fig. 3. The holes for the pipes should be  $\frac{3}{8}$  in. diameter and should preferably be made with the brace and bit, although holes cut with the fretsaw can be quite cleanly cut if sufficient care be taken. Glue and screw the rack on and then proceed to make the drawer.

The method of making this is shown in the outline diagram at the top of Fig. 4. The jointing of the sides and ends of the drawer is given in the enlarged diagram in Fig. 4. To mark the jointing correctly divide the width of the pieces (G) and

nailed to the front (F) before this is glued and pinned to the drawer piece (G). All the  $\frac{3}{8}$  in. wood may consist of American white wood or similar even-grained stuff, while the  $\frac{1}{2}$  in. wood could be mahogany or any such hard wood.

The actual external finish of the rack may be left to the choice of the worker; it may be paint in art shades or stain and varnish. The surface of the wood must be well cleaned with coarse and fine glasspaper before any finish of either paint or polish is applied.

# A simple mechanical frame will introduce movement and NOVELTY FOR 'THE FIFTH'

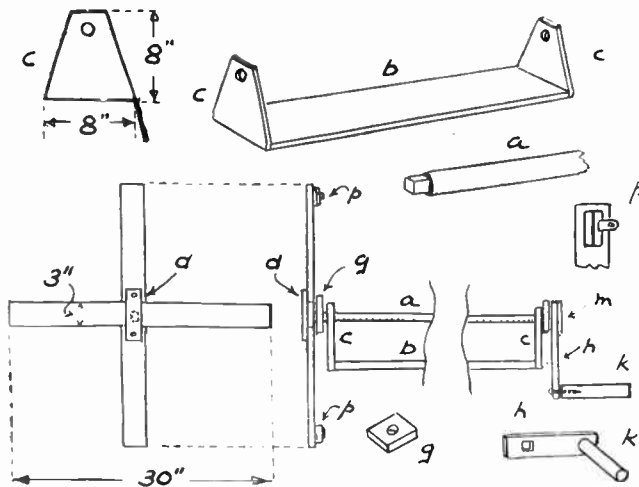
**H**AVE you ever been to a firework display and seen moving 'set-pieces'? The set-pieces are those big frames of fireworks that are generally at the end of the programme and which, with the fireworks burning all together, outline some figure. Most of these pieces are stationary, but occasionally, when once alight, the frame revolves or goes through some other motion.

Recently the writer saw a huge firework duck of this nature which when all aglow pecked the ground in front of it. When one has seen a few moving pieces the stationary type seem just a little flat, so the action must add something to the quality of the exhibition.

Now there is no reason why you should not put a bit of movement into your own home display this year. It is really quite simple to do.

## A Simple Frame

You require the frame shown, made up of two brackets holding a horizontal



Details of the parts and their construction

'axle', at the one end of which is a four-armed cross and at the other a simple handle.

Fireworks like Catherine wheels and Roman candles are secured to the ends of the arms and ignited, the handle is turned and we have our moving set-piece. Although there are four arms, if we want to make things spin out, there is no reason why we should not use two or even one. For a single Catherine wheel at the end of an arm, throwing out its usual big circle of light which in its entirety is describing another circle is in itself a novelty to watch, and adds something in the way of variety to the normal showing.

Two or more wheels at the arm ends form a real moving set-piece. Roman candles and other lights can be fixed to the arms as described in a moment—

even sparklers — with some very excellent effects.

## Construction

Now as to the construction of the very simple apparatus. As the frame may only be required for the one night, pieces can be used 'borrowed' from something else—to which they can be eventually returned. On the other hand you might like to make a more permanent article.

The axle (a) is an ordinary brush stale and if it is to be employed later for its rightful purpose it should be used now without cutting, which is really all to the better, for it keeps the operator well away from his fiery display. If desired, however, the stale could be rather shortened.

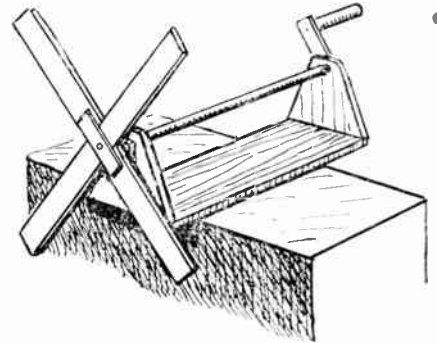
A stale is roughly 45ins. and so allowing for the spacers (g) and vertical ends. The base (b) will be 38ins. long, and to give good stability it should be 8ins. wide. This piece must be of sufficient thickness to take the ends firmly

with out having to bother about angles. The ends (c) can be either triangular or rectangular but are 8ins. wide and the same height. If triangular they should taper down to 4ins. at the top. At about 1in. from the top in either case are bored the holes to take the brush stale, the necessary diameter being

taken from the stale in question.

The ends of the stale are squared, as shown, to take the cross at one end and the handle crank at the other. For the cross, lengths of wood 30ins. by 3ins. and about 3/8in. thick are used, these being joined at the middle (at right-angles) by a half joint. After which a square is taken out the same size as the squared end of the stale. The cross is finally fixed in position by the piece (d) on the outside which lies across the line of connection of the two pieces, three screws being inserted, one at either end and one in the middle going through into the end of the axle.

Now make the two 'spacers' (g) which are to go between the upright and the cross at the one end and the upright and the handle, at the other. These spacers are squares of wood, as



shown, bored out to fit nicely on the stale. To prevent splitting, bore out the holes first, then cut to squares to about 2 1/2ins. by 2 1/2ins. There is obviously some latitude in the size of these spacers as long as they do their job of preventing any danger of the cross or handle catching on the uprights.

Cross, axle and uprights can now be assembled and the handle at the far end fitted. This is made up of the crank (h) and grip (k). The crank is 12ins. long by 3ins. wide and of about 3/8in. wood to give stiffness, while the grip is about 8ins. long. The grip is fixed solidly to the crank with the single long screw shown, so it will turn in the hand. Holding the grip loosely, however, the fact of its turning in the hand will not be any disadvantage.

The handle is secured to the end of the axle exactly in the same way as the cross, the extra outside piece (m) in this case doing the locking.

## Wheel Display

To display Catherine wheels they are just fastened to the ends of the arm in the usual way with a short hat-pin or ordinary strong pin pushed in. To hold lights of one sort or another, the bulldog paper clips (p) are attached, at the back and end of each arm. They are held by a small screw each. With them candles, sparklers, etc., can be quickly fixed, either sticking straight out or set at right-angles to the arms.

All is now complete, but for use the frame must be put on some suitable support to bring the cross to about the eye-level, or a little above the eye-level of the spectators. To make things go well do not say before what the frame (if it is noted in the dark) will do, but let the movement of the blazing fireworks come as a complete surprise.

There is always lots to interest readers in our advertisement pages

# Some fascinating tricks easily made by the HANDYMAN CONJURER

**H**ERE are two interesting tricks for the conjurer who is also a handyman. Both are of a mechanical nature but the necessary apparatus does not take very long to make.

The first trick is what we might call 'The Mystery Tin'. This article stands on the table. Raising the lid you proceed to fill it (the tin) with sand, or some such substance, talking the while about the new way you have discovered of making sweets.

When full the tin is tilted towards the spectators to show that it indeed has sand in it right to the brim. The lid is now put on and holding the tin between

of the required partition and this should be copied on to card and then cut out of thin tin with the addition of the tabs (a). These tabs are then turned up at right-angles (b) and the partition soldered in position, as shown in the right-hand diagram. A touch of solder at each of the tabs will do, the work being easy, as the tin will be bright and free from grease. Finally the whole container should be given a coat of bright enamel.

## Another Mystery

Spoken of as the 'Pillars of Solomon' the necessary items for the second trick consist of two apparently solid strips of wood, shaped at the top like gate posts. At the upper end a piece of cord seems to run straight through the two by means of a hole from side to side.

The pillars, held in the hand, are exhibited and the cord pulled backwards and forwards to prove that there is 'no deception'. A knife is passed between the woods, apparently severing

hand holding the ends. This trick if put over slickly can be quite mystifying, but by making a rather more complicated pair of pillars things can be improved.

In the extension of the illusion you allow someone to note that you will not let go of the ends and guess that the cord goes through there. You appear indignant, and covered by the patter put the pillars down for a moment and then pick them up again, saying you will prove there is no deception.

Again you show an intact cord, cut with the knife and aver that the cord is severed. 'Let us see the other end' says the doubting one. 'All right' you exclaim 'if the gentleman insists' and you hold the pillars right apart with a section of cord hanging from each. The pieces are put side by side again and immediately the cord joins up, for it can be pulled out at one side and it disappears in at the other—obviously a continuous length.

## How it Works

Fig. 2 (B) gives the secret. The pillars are like the first, but have a really large channel taken out of the middle. Two pieces of cord are used, each having a small weight attached. Holding the tubes vertically, the weights fall to the

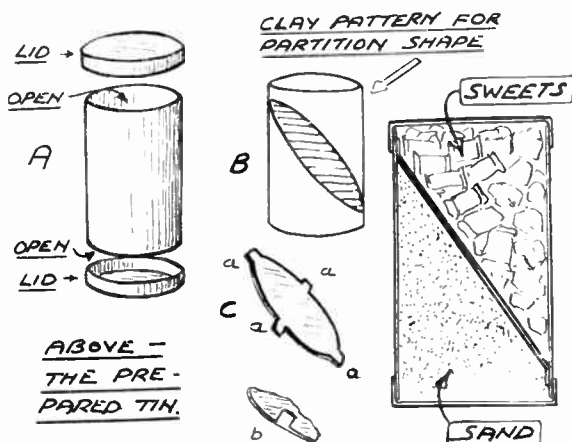


Fig. 1—Details of apparatus for the mystery tin

the hands (like a concertina) it is waved about and the lid once more removed. Behold it is now found full of sweets that can be handed round to any young folk in the audience.

Fig. 1 shows the secret. The tin is double-ended with two lids and a partition diagonally across the centre. Thus there are two divisions, the one already full of sweets and the other into which the sand is poured. In the waving about the tin is, of course, reversed and when set down the end with the sweets opened up.

## Making the Mystery

To make, any not-too-small patent food or cocoa tin will do, a second lid being procured from another discarded tin of the same kind.

With some care the bottom of the tin is removed and the second lid made to fit tightly. The lids must be fairly tight fitting to prevent accident, but those of most food tins are to start with. To get the right shape for the partition, fill the open-ended tin with stiff clay. Push this out and slice the mould so formed diagonally as (B), starting a little way from the top and bottom.

The surface left (shaded) is the shape

of the required partition and this should be copied on to card and then cut out of thin tin with the addition of the tabs (a). These tabs are then turned up at right-angles (b) and the partition soldered in position, as shown in the right-hand diagram. A touch of solder at each of the tabs will do, the work being easy, as the tin will be bright and free from grease. Finally the whole container should be given a coat of bright enamel.

You now bring the pillars together, make some passes and the cord once more joins up and can again be pulled to and fro.

Fig. 2 (A) shows how this feat of joining a cut cord is done. Each pillar is drilled down its length, with horizontal openings (a) and (b) at the top and bottom. The cord is fed through one of the horizontal holes, down the centre boring, through to bottom 'sideways' hole into the next pillar, up through its vertical boring, and so out. The appearance of going straight through from side to side, however, is very complete.

As well as the holes (a) on the outside there are the holes (d) on the inside opposite the outer ones (really a continuation of them) and these are the ones you carefully point out when the pillars are slewed apart. Note that the pieces must only be slewed as shown, with the

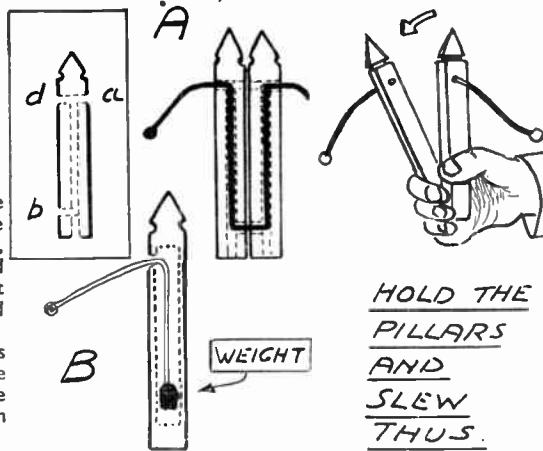


Fig. 2—How the 'Pillars' are made and operated

bottom, drawing in the cords. Pulling on them brings the weights back to the tops.

With practice it is possible to pull on one cord (the weight being at the bottom) and at the same time by tilting the other pillar allow that cord to be drawn in by its weight, which gives quite the impression of one connected piece. The taking right apart of the pillars, therefore, comes as a great surprise.

We have suggested using the two pairs of pillars, but, of course, the variation could be worked with the

(Continued foot of page 76)

# What the Entomologist needs in the way of HOME-MADE EQUIPMENT

**O**BTAINING perfect specimens of butterflies, their larvae and the like for the purposes of study and photography is a difficult task—and more often than not the specimens caught in the wild state by most of the recognised methods suffer in the process. The bloom of insects is removed, and often other blemishes are caused by the use of the net.

A simple and easily-made collection of bottles and breeding boxes serves the useful purpose of providing perfect specimens, while also allowing the opportunity of studying the various stages of growth and development.

## Large Breeding Cage

Fig. 1 shows a breeding cage with a glass panel at the front which allows clear observation. It can be made of four-ply or ordinary  $\frac{1}{2}$  in. boxwood, and should be approximately 1ft. square.

The top is of close mesh fine zinc sheeting; and may be slightly sloping. Round the edge of the front glue a layer of felt; the glass panel will slide against this and thus prevent escape of any particularly small specimens.

The glass panel itself slides out when required, and is kept in its normal position by means of two metal right angles fastened at the slides so that the panel rides inside them. Small clips of 2ins. made of brass, which will bend easily, do very well. They are set to

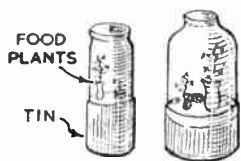


Fig. 2—Small breeding jars

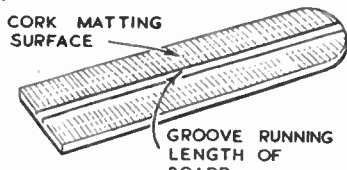


Fig. 3—A useful setting board

overlap the front of the cage by the thickness of the glass front.

Inside the cage a shallow tray is set at the bottom. A small seed-box or similarly constructed tray will serve, and it should fit as nearly as possible into the cage.

The tray is divided into two sections by means of a strip of wood down the

centre. One half of the tray is filled with earth and moss, kept fresh with a little moisture occasionally. The other half has a lid into which holes are drilled into which may be placed small bottles and tubes containing the plants and foliage upon which the specimens feed.

If desired, and to assist observation, a piece may be cut into the back of the cage and a piece of butter muslin glued over it. This allows more light to enter.

An easier breeding and observation receptacle can be made very simply from one of the large common pickling bottles. First remove the bottom of the bottle by tying a piece of string which has been soaked in paraffin round the bottle at the required point.

Light the string, and allow it to burn for a minute, then plunge the bottle into a bucket of cold water; the bottom should then fall off at the mark of the string. It is then placed in a tin as nearly as possible its own diameter (see Fig. 2). If it does not fit well, glue a piece of felt

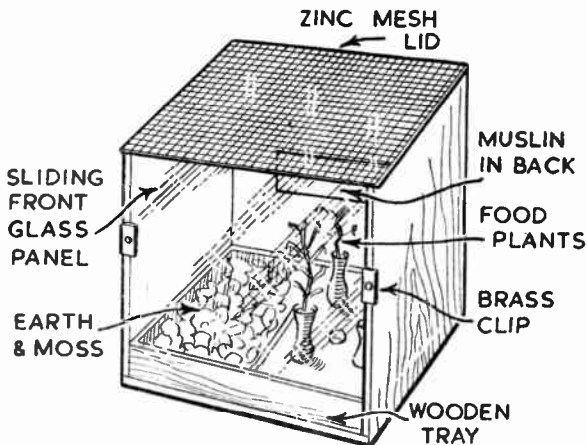


Fig. 1—A large breeding cage

round the tin as was done with the large cage. The tin itself should not be more than 2ins. deep.

Cover the top of the bottle with a fine mesh

jar. Make a butter muslin cap for the bottle from a circle of the material and an elastic band tacked on to it. In the bottom place a small quantity of well crushed laurel leaves, and keep these in place with a circle of cardboard. When

in use always make sure that the leaves are newly cut and crushed.

A small quantity of cyanide of potassium with a cupful of plaster-of-paris poured over it and allowed to set also makes an effective base for a jam jar type killing bottle. It should be remembered that this is a poison, and the contents of the bottle should not be inhaled.

For large specimens a piece of blotting paper with a few drops of chloroform on it may be placed in the bottom of a jar, and covered with a circle of cardboard. This will prevent the wings of the specimens from picking up dampness from the blotting paper.

## Setting Boards

Simple setting boards are made by gluing a piece of cork matting to a board of the required size, then making a groove down the centre about  $\frac{1}{4}$  in. wide (see Fig. 3). Several of these can be made with grooves of varying widths to take variously sized specimens. A sharp knife or razor blade is best used for cutting the groove. (271)

zinc cap cut to fit, and in the bottom of it place some earth and moss, leaving a little space for one or two small bottles or tubes to contain the feeding foliage.

## Killing Bottles

A small handy and effective killing bottle can be made from an ordinary jam

## Handyman Conjurer—(Continued from page 75)

second pair only. It is much easier with the first pair, however, to give the impression of a continuous cord that there is some advantage in using them first, also it is good to have the simpler pair for times when it is not intended to work the more elaborate trick.

Now some points about making. Neither set of pillars must be too small, as they may have to be seen from some distance. The cord should be about the same as that used for pictures and made pliable by working through the hands. For the first pillars the holes can be

drilled, but for the second it is better to halve the pieces, chisel out the channel, and glue the halves together again. The design on the top, especially if using two sets, should be simple to allow of easy copying.

In working the variation, the pillars are, of course, changed when put down for a moment. The spot where they are placed must be out of sight, but this can easily be so behind gear on the table. The second pair are there and are picked instead of the first, the whole

action being covered with the patter that is just then taking the form of a rather heated argument with the critic.

If you think no one is likely to take you up, have an assistant ready to ask about the ends you will not show. An assistant can bring in his objections just at the right time and if some thought has been given beforehand, quite an entertaining dialogue might take place—all of which helps. Always remember that official conjurers never underrate the value of an assistant.



## More Birds on Stamps

**W**E have already considered those water birds which appear on stamps, swans, gulls, penguins, etc. Now let us consider some land and air birds. It may at first appear rather ridiculous to use the term land bird, but this is not so really. As an example, think of the bird shown on the first illustration, the Kiwi. It is a flightless bird so that it most certainly must be considered as a land bird.

### The Kiwi

But it is also remarkable for other interesting items—for one thing the size of the egg that it lays. Now a hen's egg that weighs 2½ ozs. is considered quite big, yet the kiwi which is no larger than the ordinary domestic fowl can lay an egg weighing 11½ ozs.—the record is 15 ozs. It would seem that we in England ought to try to keep a kiwi or two and that should solve the egg shortage!

Probably you will have noticed that the beak of a bird is pierced by two holes, one on either side. These are the nostrils and curiously enough their position varies in different kinds of birds. Most of them have the nostril at the base of the beak, but the kiwi is the only bird which has the nostrils situated at the end of the beak.

Now just a point about the stamp and not the bird. Compare the amount of cloud shown in each of these two stamps. Notice the difference? Well have a look at your duplicates; you may find that you have some of each.

### The Huia

New Zealand, however, gives us more than a kiwi. There is the huia and two of them are shown on the 3d. value of the 1898 stamp. Look at the beaks of these two and notice the difference in shape. Yet they are both huia birds; the upper one with the straighter beak is the cock and the lower with the decidedly curved beak is the hen. These birds are valuable because they feed on the grubs of the timber-boring beetle. The cock hammers and makes a hole in the bark and the hen probes around these holes with the curved beak and extracts any unsuspecting grub.

Two hawk-billed parrots or 'Kea and Kaka' appear on the 1/- value of the same set. These birds are most unpopular in New Zealand owing to the habit they have of alighting on the back of a sheep, digging the wool away and then tearing the flesh of the sheep, inflicting wounds which may ultimately cause death. Since the birds normally live on insects it is suggested that they developed the habit from mistaking a

sheep's back for a lump of lichen covered ground.

New Zealand also gives us the Pied Fantail—on the ½d. value of the 1935 set. The 1/- of the same set gives us a picture of the Tui bird.

### The Kookabura

Australia gives us a number of birds, in addition to the swan we mentioned previously. There is the Kookabura which is shown on the 6d. stamps issued in 1913, 1932, and 1937. They are slightly different views of the same bird which also has other names—the 'Laughing Jackass' and also the 'Settler's Clock'. The latter is due to the fact that it seems to be very regular in its giving tongue at sunrise, noon and sunset.

From Australia also, on the 5½d. of the 1942 issue, comes the emu which you will sometimes see spelt emeu. This bird is frequently kept in captivity and makes a good pet. But if displeased it can deliver a very nasty outward and backward kick. It can also run at over



The Kiwi of New Zealand

Note Huia beaks

The Argus Pheasant

35 miles per hour, which is about twice as fast as a man can sprint when he is running a 100 yds. race. The nesting habits are curious for the cock undertakes the entire duty of incubating the eggs which entails sitting from 70 to 80 days.

The 1/- value of the 1932 stamps from Australia depicts a bird with a very beautiful plumage—the lyre bird. Its name obviously comes from the similarity of its tail to the musical instrument of the same name. The colour is

dark brown and grey. Only one egg is laid and the young one when hatched has a very thick down coat.

### Bird of Paradise

Another bird mainly noted for its plumage is the Bird of Paradise which we can see on the 2d. value of the pictorial issue from Papua, dated 1932. Another view is on all values of the 1931 issue from New Guinea.

From the same area of the world—the East Indies—we have a picture of another bird which displays itself as a natural part of courtship. On the 5c. stamp of the 1894 issue of North Borneo we have a picture of the Argus Pheasant. The courtship of this bird is somewhat peculiar. First the cock runs round the hen several times, stamping the ground as it goes. Then it suddenly stops and throws up its wings so they meet and form a screen such as you can see in the illustration. It is rather like our peacock except that the wings form the screen and not the tail or rather the tail coverts.

North Borneo gives us some more birds. One of them, the cassowary, is a large bird but its wings are useless for flight or for defence. The bird uses its legs for both. Another bird from North Borneo is the cockatoo which surely does not need any description whatever. We notice also quite a number of countries which show pictures of parrots. One of the best of these is the 2/6 value stamp of Toga.

### The Quetzal

Guatemala on many of her issues gives a picture of the quetzal, a bird with some peculiar habits. For one thing it does not make a nest, it bores a hole in a stump of a tree and in this places two or four eggs. It is also a most beautifully coloured bird, iridescent green above with blue on the tail coverts and a green throat.

These are a few of the birds that can be found on stamps, but there are many more and a very good stamp competition could be made by making a list of birds, asking the competitors to list the countries from which they come—Try it for yourself!

## HOBBIES 1951 HANDBOOK

is now on sale at all  
Newsagents and Hobbies  
Branches for 1/-  
(1/3 post free)

## YOU CAN BECOME A HANDICRAFTS INSTRUCTOR

Experience not essential

Men who enjoy making things in wood or metal can turn their hobby into a permanent and interesting Career. Short hours, long holidays, and security in a job you would really enjoy, can be yours if you become a Handicrafts instructor. Let us send details of the easiest and quickest way to get the necessary qualification.

**We definitely guarantee  
"NO PASS—NO FEE"**

If you would like to know about our unique method of preparing you for one of these appointments, write today, and we will send you our informative 176 page Handbook—free and without obligation. Mark your letters "Handicrafts Instructor."

**BRITISH INSTITUTE OF  
ENGINEERING TECHNOLOGY**

595 Shakespeare House  
Stratford Place, London, W.1


# BIET



*Swann-Morton*  
**CRAFT TOOL**

The perfect, razor-sharp utility tool for modellers in Balsa Wood, also for Biologists, Students, Commercial Artists, Photographers, etc. 2 interchangeable blade shapes. Handle and two blades 2/- post free. Spare blades 1/6 for 2/6 post free. Send P.O. to

**FAMILY PRODUCTS**  
92-94 BRADFIELDRD.  
SHEFFIELD 6.  
*Trade enquiries invited*



**BOYS!!! BOYS!!! BOYS!!!**  
With the aid of our amazing assembly outfit you can quickly and easily assemble this superb scale model of the famous 'Ferguson' tractor. All parts supplied in finished state. All plastic construction, real rubber trakgrip tyres. Can be dismantled and re-assembled with ease. Send P.O. today for 8/- post free.

**MURRAY HILL & CO., BEDFORD SQUARE, SIDMOUTH, DEVON**



**ALLOY CIRCULAR CHAIN GUARD**  
Very latest idea. Clips on cycle chain wheel as shown. Any make. No gearcase clearance necessary. Polished like chrome. Looks very 'De Luxe' and saves trousers getting dirty or caught. 3/9 Post 3d  
Trousers clips unnecessary  
State if chainwheel has 46 or 48 teeth.



**CYCLOP FLOOD LIGHTING REFLECTORS**  
for cycle lamps give car-type road lighting. Treat yourself. BATTERY MODEL, 12-sided, 1/6 DYNAMO, 12-sided, 2/6 All from Halfords and up-to-date cycle dealers or direct **KORVING LTD. (HB) 12 Duke Street, London, S.W.1**



**BRANCHES**

**LONDON**  
78a New Oxford St., W.C.1  
(Phone MUSEum 2975)  
87 Old Broad Street, E.C.2  
(LONDON Wall 4375)  
117 Watworth Road, S.E.17

**GLASGOW**  
326 Argyle Street  
(Phone CENTral 5042)

**MANCHESTER**  
10 Piccadilly  
(Phone CENTral 1787)

**BIRMINGHAM**  
14 Bull Ring

**SHEFFIELD**  
4 St. Paul's Parade

**LEEDS**  
10 Queen Victoria Street  
(Phone 28639)

**HULL**  
10 Paragon Square

**SOUTHAMPTON**  
25 Bernard Street

**BRISTOL**  
30 Narrow Wine Street  
(Phone 23744)

Head Office & Factories—**HOBBIES LTD., DEREHAM, NORFOLK**

## ★ EXCITING NEW FILM STRIPS ★

**DENIS COMPTON'S  
'MY CRICKETING  
DAYS'**

**'BRUMAS'  
THE LOVABLE  
BABY POLAR BEAR**

**SPECIAL PRESENTATION BOX 5/- EACH  
COMPLETE WITH CINE VIEWER**

From all good Toy and Sports Shops  
or post free from

**FILM STRIPS EDLESBORO  
Nr. DUNSTABLE**

P.S. Why not send for complete list of films from 10/11 (Battery Model) 6d. to 2/6 and details of the WONDER Home Strip Projector. 19/6 (All mains Model)



## NICOTEXIT

**THE GUARANTEED SMOKING DETERRENT**

- ★ **POSITIVELY STOPS SMOKING IMMEDIATELY** and for several hours after each application. Purchase price refunded if it fails to do so.
- ★ **ONE BOTTLE IS USUALLY SUFFICIENT** to establish control of smoking in any form. It is not poisonous.

*Invaluable to all who smoke too much*

**5/6** Per Bottle  
Post Free

Obtainable only by post from Sole Concessionaires for Great Britain:—

**THE NICOTEXIT COMPANY (Dept. B.4.)**  
62 High Street, Croydon, Surrey



*The World's most powerful  
midget electric motor*

**"MIGHTY MIDGET"  
REVERSIBLE  
ELECTRIC MOTOR**

*No mains supply required*

The "Mighty Midget" complete with 6-1 reduction gear and pulley runs off a 4d. battery and uses less current than a flash lamp bulb. 10,000 r.p.m. and reversible. A precision engineered job. Guaranteed.

**KEITH PRODUCTS CO.**

(Dept. B.) 4, Castle Street, Guildford

Send P.O. for  
**14/9** post free  
Can now be supplied complete with 5-amp. miniature reversing switch. Inclusive price 17/3 post free



**THE BOLSTER HOME WATCH AND  
CLOCK REPAIR OUTFIT**

These precision jewellers instruments, include watchmaker's magnifying eyeglass, finest watch tweezers, set watchmaker's screwdrivers, watch and clock oil, oilers, dusting powder, clock brush, plus illustrated instructional manual for the amateur. In container 12/9 post free.

Senior Outfit includes everything above, plus watch jewels, luminous compounds, dial renewer, jewellers rouge, explanatory book. Price 21/- post free.  
(Dept. H. W.), 5a Station Parade, Ashford, Middx

**BOLSTER  
INSTRUMENTS,**

## KITS for OLD TIME SHIPS

Hobbies range of Ship Models includes Elizabeth Jonas, Cutty Sark, Victory, Mayflower, etc. Complete kit of wood, sail material, guns, pulleys, cord, etc., with full size pattern of parts and planed wood ready to cut out, shape and construct. A fascinating pastime.

Kits for models 12 ins. long and upwards.

Ask for free illustrated lists at Hobbies Branches or from Hobbies Limited, Dereham, Norfolk.



Two famous books

## BUILDING A GALLEON BUILDING A CLIPPER

are packed with all the wisdom, 'wrinkles', skill and 'know how' of the modelmaker's whose work graces museums and forms the background for films. More than that they are full of the spirit of adventure and knowledge of ships. And a long list of old time ship plans, wood packs, kits, etc., including:—

WOOD PACKS. 'Golden Hind', 21/-; 'Santa Maria', 17/6; H.M.S. 'Bounty', 9/6; H.M.S. 'Victory', 17/6; 'Cutty Sark', 15/-.

MINIATURE KITS. 'Golden Hind', 7/-; 'Victory', 6/-; 'Cutty Sark', 4/6; 'Caliph', 5/6; 'Archibald Russell', 5/6. PLANS. Greek Galley, 5/6; Roman Ship, 3/6; Viking Ship, 3/-; Crusaders Ship, 4/-; 'Ark Royal', 9/-.

★The complete list costs 1/- post free and contains a 1/- refund voucher valid in purchasing Modelcraft goods.

## MODEL CRAFT LTD.

77 (F) GROSVENOR ROAD, LONDON, S.W.1



## COLD water GLUES



Most hobbies require Glue—"CASCO" fills the bill for either new work or repairs. It is an absolute necessity for the Modelmaker for Fretwork, Toymaking, etc. Easy to mix in cold water Casco is simple to use and almost impervious to heat and moisture. "CASCO" Grade "A" is the world-famous Cascin Cold Water Glue manufactured in Great Britain, Australia, U.S.A. and Scandinavian countries. Conforms to MODERN BRITISH STANDARDS SPECIFICATION 1444, TYPE A.

Stocked by Ironmongers, Builders' Merchants, Hardware Stores, etc.



### DISTRIBUTORS:

Gt. Britain: Charles Clow & Co. Ltd.  
45 Gt. Peter St., London, S.W.1.

Ire: C. B. Waller, 60 Middle Abbey St., Dublin  
M. J. Galligan, 16 Oliver Plunkett St., Cork

**FREE!** Send for literature and Free Sample to the manufacturers

**LEICESTER, LOVELL & CO. LTD.**

(Dept. HW), NORTH BADDESLEY, SOUTHAMPTON

# A new solder

## FOR WORKSHOP AND HANDYMAN

- CONTAINS 2 CORES OF FLUX
- NO EXTRA FLUX REQUIRED
- REPLACES STICK SOLDER, FLUID AND PASTE FLUXES
- IF DESIRED FLUX RESIDUE READILY WASHES OFF WITH WATER
- SO FAST THAT IT WILL EVEN SOLDER BLUED SPRING STEEL WITHOUT PRE-CLEANING



No. 10 KIT 2/- each

5/- each



Available in 5/- retail cartons (4 specifications) or 2/- Multicore Solder Kit contains 2 specifications Arax Multicore Solder and 2 specifications Ersin

Multicore Solder for electrical wire to tag joints. Now obtainable from many stores. In case of difficulty 5/- cartons or 2/- Multicore Solder Kits sent post free on receipt of postal order or stamps.

MULTICORE SOLDERS LTD., MELLIER HOUSE, ALBEMARLE ST., LONDON, W.1

## PLASTIC MARBLE

New Artificial Stone for casting Bookends, Ashtrays, Wall Vases, etc. Sets granite-hard with a scintillating crystalline structure closely resembling Alabaster. Enormously strong, highly resistant to heat, and impervious to water. Any type of 'natural veining' can be simulated in any colour.

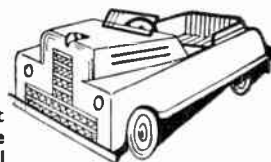
## FLEXIBLE MOULDS

Are easily prepared with 'Elastomould' Synthetic Rubber Solution. Sold in handy liquid form. Makes ideal moulds for casting Plaques, etc. Will faithfully duplicate the most minute details.

Send 1/- for full details of this easy, fascinating and profitable hobby. Money refunded to bona fide enquirers.

Dept. H.1. KARLENA ART STONE CO.  
55 Deansgate Arcade, Deansgate, Manchester, 3.

## PEDAL MOTOR CAR



This new simplified chart enables any amateur to make a strong smart modern Pedal Car suitable for children 2 to 5 years. Complete plan and instructions

2/6 post free

Wheels and other parts for Pedal Cars and Dolls Houses available. Send stamped addressed envelope for list

**ZIMPLAN** 88 WARE ROAD  
HODDES DON, HERTS.

# 'PERSPEX' and 'CRINOTHENE'

*for the handicraft worker*

'Perspex' acrylic sheet is available in transparent, translucent and opaque colours in a wide, useful range of sheet sizes and thicknesses. It can be fabricated as easily as wood or non-ferrous metals, using standard equipment.

'Crinothene', a decorative plastic sheeting supplied in many attractive colours, is ideal for lampshades.

For further information, please apply to the nearest I.C.I. Sales Office.

'Perspex' is the registered trade mark of the acrylic sheet manufactured by I.C.I.

'Crinothene' is the registered trade mark of polythene sheet manufactured by I.C.I.



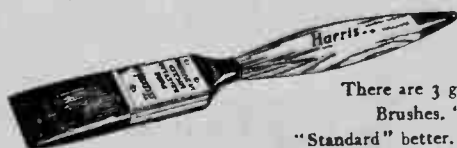
IMPERIAL CHEMICAL INDUSTRIES LIMITED, LONDON, S.W.1.

P413

The  
bristles  
won't  
come out!  
Harris



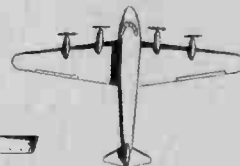
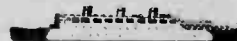
the paint brush with a name to its handle



There are 3 grades of Harris Brushes. "Junior" good. "Standard" better. "Super" best.

L. G. HARRIS & COMPANY LIMITED, STOKE PRIOR, WORCESTERSHIRE  
CRC24

**EXTRA CASH  
IN SPARE  
TIME**



A fascinating way of earning extra cash in spare time from odd pieces of lead. Small Outlay—Large Profits. Sample mould 3/6d. Casting moulds. deep-cut and ordinary type Aeroplanes, Soldiers, Farm and Wild Animals, Cars, etc. Stamped envelope for full list. Illustrated Catalogue 9d.

MASTERCRAFT MOULDS  
69, ST. MARKS ROAD, HANWELL, LONDON, W.7

Printed by BALDING & MANSELL, LTD., London and Wisbech, and Published for the Proprietors, HOBBIES LTD., by HORACE MARSHALL & SON, LTD., Temple House, Tallis Street, E.C.4. Sole Agents for Australia and New Zealand: Gordon & Gotch (A's) Ltd. For South Africa: Central News Agency Ltd. Registered for transmission by Canadian Magazine Post



# Hobbies

## WEEKLY

### CONTENTS

	Page
Early Type Locomotive Model	81
Bedside Companion	83
Fun with a Pencil	84
Silk Screen Printing	85
Simple Dart Holder	86
Ventriloquist's Doll	87
Novel Money Box	89
Kitchen Conveniences	90
Craftsman's Knives	91
Photographic Alphabet	92
Locomotive Patterns	95

November 8th, 1950

Price Fourpence

Vol. III No. 2871

## Patterns for a model of Stephenson's EARLY TYPE LOCO

FROM about the year 1814 the progress of rail transport made revolutionary strides. We have all heard of the 'Puffing Billy' which was built about 1814; well, since then many new types of locomotives have been built which have extended our commerce and trade.

It is interesting to note the varying forms these locomotives took, and the model maker, who is interested in railways, would be well advised to make up a set of these early models as comparisons with the modern huge engines seen in our own railways.

### Distinctive Type

We have chosen for our model this week one of George Stephenson's earlier type of loco's which he built about 1844. Our model, shown in the picture on this page, is of the high fire-box with long boiler type, and it makes a really interesting little piece to make up in wood.

This model, we might say, is designed for the amateur model maker who, perhaps, has not so far attempted such a piece of work. No special tools are required beyond the fret-saw, shaping knife, glasspaper and a tube of glue. Some stout brass wire will also be

required for the handrails, etc., and some card for the formation of the long boiler.

Let us then commence to make the model by setting out the main floor or footplate.

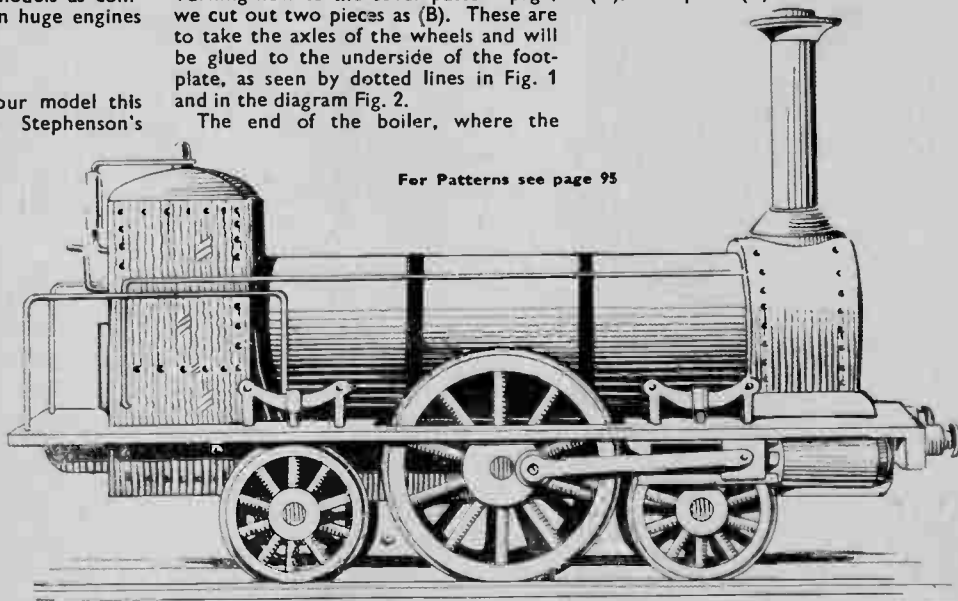
A piece of  $\frac{1}{4}$  in. thick wood will be wanted for the footplate, measuring  $10\frac{1}{2}$  ins. by  $4\frac{1}{2}$  ins., and as Fig. 1 shows, there are three interior openings to be cut in it to the measurements given. The position of other pieces to be glued to this floor is shown by the dotted lines. Turning now to the cover pattern page, we cut out two pieces as (B). These are to take the axles of the wheels and will be glued to the underside of the footplate, as seen by dotted lines in Fig. 1 and in the diagram Fig. 2.

The end of the boiler, where the

funnel is, will be made up of four pieces, as (C) on the pattern sheet, three being cut from  $\frac{1}{8}$  in. wood, and one from  $\frac{1}{16}$  in. wood. They will be glued together and cleaned round with glasspaper. The overlay (D) will be cut according to the dotted line on (C), pattern sheet, and this will be of  $\frac{1}{8}$  in. stuff. See Fig. 2 for completion of this part. Cut two of piece (E) from  $\frac{1}{4}$  in. wood and glue to pieces (C).

Now turn to the firebox (Fig. 3) which is made up of pieces (F), (G) and (H), with piece (K) for the base. Wood

For Patterns see page 95



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

$\frac{1}{8}$  in. thick will be used for all these pieces. The top (H) will consist of two pieces  $2\frac{3}{8}$  ins. by  $1\frac{1}{2}$  ins. glued together and afterwards shaped up with rasp, file and glasspaper to the outline shown in the side view Fig. 4, and the detail Fig. 3. Take care in assembling and gluing up the pieces to see that they are butted together properly and in the order shown, such as pieces (G) go in between the sides (F) of the firebox.

The overlay (I) is 1 in. square, and of

A buffer plate is next made from  $\frac{3}{16}$  in. wood, size  $4\frac{1}{2}$  ins. by  $\frac{1}{2}$  in., see Fig. 2 for its position. To this plate are glued the washers (P), (Y), (Z) to form the buffers, piece (Z) being rounded to form the shaped face. Some careful fretcutting and handling will be needed in our next item—the wheels.

Two of the larger pattern wheel, and one of the smaller will be needed. Cut one of each from the  $\frac{3}{16}$  in. wood, and then, either make a tracing or a rubbing

each cylinder, as shown in Fig. 4 and on pattern sheet. The piston which works freely in the hole of the cylinder is shown as (V) on the sheet, and the square portion of it must slide easily in the slide piece (T) which is glued centrally with the cylinder to the footplate. Two of each piece will, of course, be made, one each side of the loco.

Two cover pieces as (W) are glued on, one each side of (V), as seen in Fig. 6 to hold the piston in place when it travels backwards and forwards through the cylinders.

Two connecting rods as (U) on the

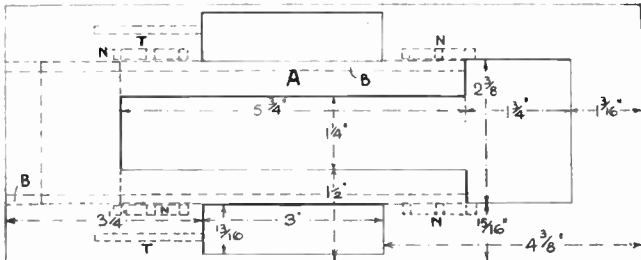


Fig. 1—The lay-out of the baseplate

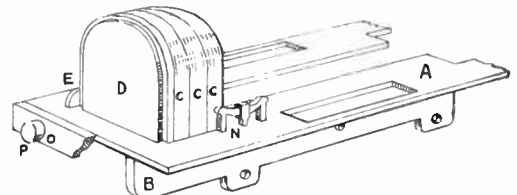


Fig. 2—Front end of footplate

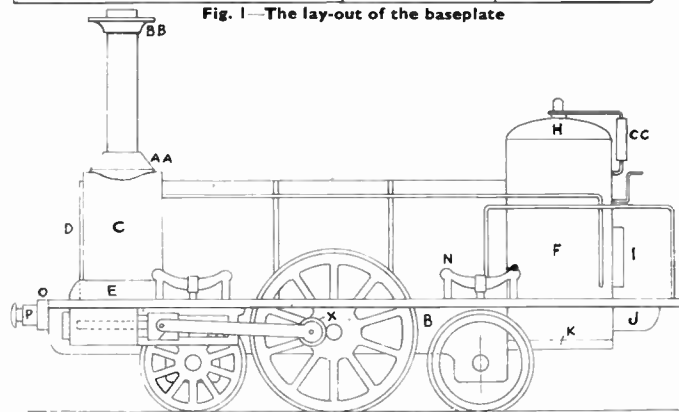


Fig. 4—Side elevation showing position of parts

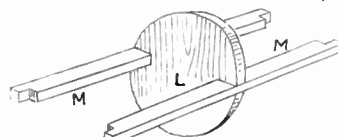


Fig. 5—Boiler framework

sheet, are cut carefully from thin wood and pivoted to the large wheels and to the centre of the square on

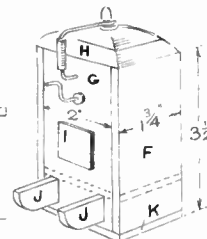


Fig. 3—Firebox

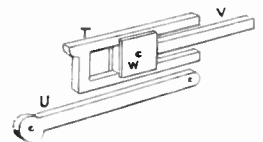


Fig. 6—Valve gear

$\frac{1}{8}$  in. or  $\frac{1}{16}$  in. wood. The two brackets (J) are cut to the outline given on the pattern sheet and glued as shown underneath the footplate, see Figs. 3 and 4.

For the boiler we need three discs as (L) on the pattern page. Cut these out carefully and note the two notches in each disc which are to fit into corresponding recesses in piece (M), two of which are required as outlined on the pattern sheet. In Fig. 5 is shown the method of gluing up the pieces to form the framework, as it were, of the boiler. Only the middle disc is shown here, the end ones will be similarly treated.

To cover this framework and so form the circular boiler, we have a square of stoutish card  $5\frac{3}{8}$  ins. long by about 7 ins. wide. Apply glue all round the edges of the three discs and then bend the card on to them, holding the latter tightly in place by slipping over two or three elastic bands until the glue has hardened. The completed boiler should now fit accurately and be glued between the two end uprights of the footplate and go into the opening of the latter for a distance of  $\frac{3}{8}$  in. Four springs, as (N) on the pattern sheet, should next be cut from  $\frac{3}{16}$  in. wood and glued to the footplate in the positions given on the plan Fig. 1, and side view Fig. 4.

of this for cutting the remainder, or use the cut-out wheels for drawing round in pencil direct on to the wood.

To form the flanges of the wheels cut rings of stoutish card or  $\frac{1}{8}$  in. wood to the outer dotted lines shown on the patterns of the wheels, the width of the rings being  $\frac{1}{4}$  in. to fit the inner curves of the fretted parts between the spokes. Glue the flanges cleanly to the wheels and see there is an equal margin all round the rim. Next cut off three pieces of  $\frac{1}{4}$  in. diameter rod as (S) on the pattern sheet, and run them through the holes of bearers (B) where they should fit loosely enough to allow free turning. Put the larger wheels up through the slots in the footplate and so attach them to the axle.

The smaller wheels are easily fitted and fixed to their axles and all must run smoothly and clear of the sides of footplate, etc. Clean off the outer surfaces of the hubs of the wheels including the axle ends, before taking the next step in operations, which are the outside cylinders and connecting rods, etc.

A glance at Fig. 4 gives the general arrangement of the fittings.

A 'flat' must be made as shown so the cylinders when glued sit well up underneath the footplate. A cover disc, as (R) on the sheet, is glued over one end of

the ends of the piston rod. Pieces (T) are  $\frac{1}{8}$  in. thick, also piece (V), the former pieces must be glass-papered down a little so as to allow pieces (V) to project slightly to take the side squares (W). Two bosses or discs (X) must be cut from  $\frac{3}{16}$  in. wood.

The funnel is a 2 in. length of  $\frac{1}{2}$  in. rod. The boiler end is from a  $\frac{1}{2}$  in. thick disc cut and shaped up as (AA).

The capping is shown at (BB) on the sheet and is simply a disc of  $\frac{1}{2}$  in. wood shaped as shown. All are glued and pinned together and glued to the boiler. The steam gauge, etc., and the various railings along the sides of the boiler and the handrails are all made from stout brass wire let into the wood to make neat fixings.

In painting the model a good oil paint or enamel should be used. The boiler should be sap green and the front funnel portion and the firebox black. The springs and the wheels should be a dark red lined in yellow. Wheel spokes should be shaped if possible to give a realistic effect.

The model should be mounted on a stout base and painted or french polished. The wheels should stand on strips  $\frac{1}{4}$  in. square to represent railway lines, and sleepers could be added of  $\frac{1}{8}$  in. by  $\frac{1}{4}$  in. stuff. All should be painted black. Narrow brass bands might be cut from strip brass and pinned round the boiler, or these bands may be represented by painting them on in yellow paint. (277)

# Lamp and book holder combined in this simple BEDSIDE COMPANION

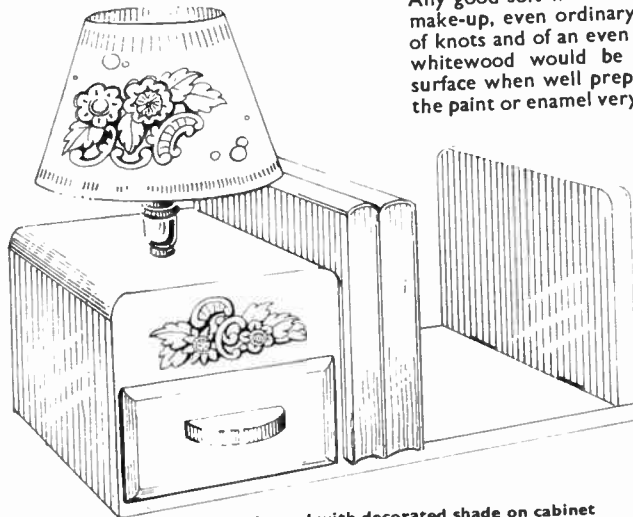


Fig. 1—The completed stand with decorated shade on cabinet

HERE is a simple yet very effective electric lamp stand in the form of a book rest. There is also a useful little drawer in which might be kept the assortment of small articles which may always be found in the bedroom. There is room for a few small books, Penguins or Pelican volumes being most suitable and handy for the bedside. Such an article as this would make a truly useful and acceptable gift for birthday or Christmas.

Wood  $\frac{3}{4}$  in. thick is used for the base, the top of the box, and the end upright. Wood  $\frac{1}{2}$  in. thick is suggested for all other parts.

A good idea of the finished article may be got from Fig. 1, and shows how the decoration is obtained with wood stains or paints. It would make for a good colour scheme and a very attractive combination if the electric lamp shade were decorated in somewhat the same manner as the motif on the box above the drawer front. Various coloured stains can be purchased that will take to the parchment or other material which might be used for the shade.

The general construction of the box, etc., can be seen in the sectional diagram Fig. 2. The base (A) consists of a panel measuring 9 ins. by  $4\frac{1}{2}$  ins. by  $\frac{1}{2}$  in. thick.

CUTTING LIST		
A	9 ins. by $4\frac{1}{2}$ ins. by $\frac{1}{2}$ in.	
B	$4\frac{1}{2}$ ins. by $3\frac{1}{2}$ ins. by $\frac{1}{2}$ in.	
C	$3\frac{1}{4}$ ins. by $1\frac{1}{2}$ ins. by $\frac{1}{2}$ in.	
D	4 ins. by $4\frac{1}{2}$ ins. by $\frac{1}{2}$ in.	
E	$3\frac{1}{2}$ ins. by $3\frac{1}{2}$ ins. by $\frac{1}{2}$ in.	
F	$4\frac{1}{2}$ ins. by $4\frac{1}{2}$ ins. by $\frac{1}{2}$ in.	
G	$3\frac{1}{2}$ ins. by 1 in. by $\frac{1}{2}$ in.	
H	Hinge—one pair, $\frac{3}{4}$ in.	
I	$4\frac{1}{2}$ ins. by $3\frac{1}{2}$ ins. by $\frac{1}{2}$ in.	
J	$4\frac{1}{2}$ ins. by $3\frac{1}{2}$ ins. by $\frac{1}{2}$ in.	
K	$3\frac{1}{2}$ ins. by $2\frac{1}{2}$ ins. by $\frac{1}{2}$ in.	
L	$3\frac{1}{2}$ ins. by $2\frac{1}{2}$ ins. by $\frac{1}{2}$ in.	
M	$1\frac{1}{2}$ ins. by $\frac{3}{4}$ in. by $\frac{1}{2}$ in.	

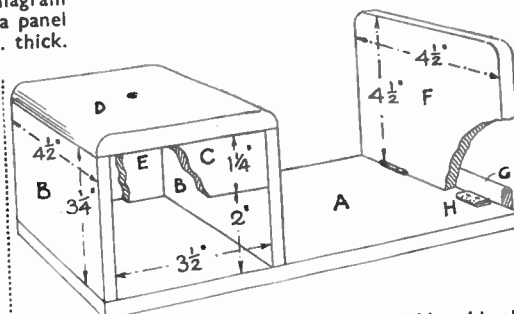


Fig. 2—Constructional details of cabinet and hinged book end

mediately above the top edges of the sides of the drawer, as (J) in Fig. 3.

The construction of the drawer is made clear in Fig. 3 and needs but little comment beyond these illustrations. When the actual box part of the drawer, consisting of parts (I), (J), and (K), are glued up and pinned with fret pins neatly along the sides and edges, the outer front (L) is glued on. This front, as will be noted from the cutting list, is a little larger all round than the actual opening in the front of the box, so that when the drawer is pushed home this front rests neatly and flush with the front surface of the box. The section through the front of the drawer, shown in the circled diagram in Fig. 3, shows the relative position of all the parts when the drawer is slightly withdrawn.

## Hinged End

The end upright (F) of the bookrack is shown hinged to the base, so it can be folded down for packing if necessary. Cut the piece from  $\frac{1}{2}$  in. wood and round off the two top corners, as seen in Fig. 2. A pair of stout brass hinges should be recessed into the lower edge of the upright and screwed there.

Then the upright is folded down flat against the base and the flap of the hinge then screwed to the base. A fillet (G) of hard wood for preference should finally be screwed to the base, as shown in Fig. 2, the upper edge being rounded and all sharp corners taken off.

The Bookstand is not intended for heavy or cumbersome books. There are at least two ways of finishing off the woodwork of this stand. One is a cream or green matt enamel laid on a covering coat of ordinary paint. The first coat of paint must be allowed to thoroughly harden before the final coat of enamel is laid on.

A simple cone shape shade can be made from parchment to go in a ready-made wire frame. Or the worker may prefer to purchase a shade complete and add the decorative work as previously suggested. The electric flex for the lamp is brought up from the house plug and carried up direct to the bookstand, carrying it through the back direct to the lamp fitting.

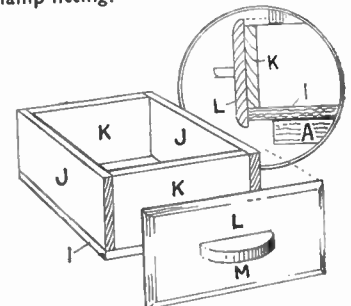


Fig. 3—How the drawer is made

# You need not be a trained artist to enjoy FUN WITH A PENCIL

**E**VEN though one's knowledge of drawing is limited, good fun can be had with a few strokes of a pencil and a lot of thought. Forget the rules, the details and the anatomy for a while and aim at simplicity.

If a head is round draw a circle. Try and draw the circle freehand. If you cannot, use a compass—who cares? Think of eyes. There are pig-eyes, slit eyes and round eyes, among others. Put the

have become faces, diagrammatic perhaps, but faces which are full of life.

Apply the same principles to the profile. Use the circle for the head, the nose projecting beyond the circumference, and make use of hair as a solid black shape. Watch other people or yourself in the mirror, and note the 'lines' of the various expressions.

## Triangle Shapes

Now, a well-built man is broad in the

basic figures the trimmings are added, the collars and ties, and odd lines to suggest coats, blouses and skirts.

We read of the strong young man, straight and upright. Straight and upright gives us a clue to the basic line, a straight perpendicular line. As age creeps on the straight line begins to bend and the torso tends to fat. In the profile, the perpendicular curves, and the front bulges out. For the female profile, an oval placed on top of a slightly

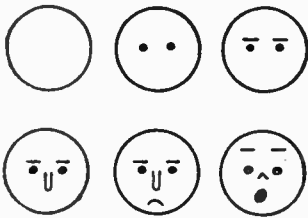


Fig. 1—Circles form a basis for expressions



Fig. 2—Three simple profiles

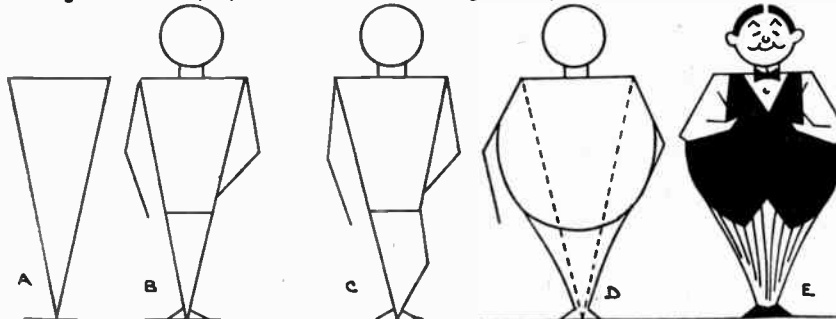


Fig. 3—The triangle at A with stages in outline and completed

eyes in the circle. What of noses? Long ones, short ones, turned up ones. Choose the type you want and suggest it by a simple line.

## Facial Expressions

Eyebrows may be straight or round, and you raise your eyebrows in surprise. Note how the position of the eyebrows alters the expression. The line of the mouth with the ends turned down gives a miserable expression. Turn the ends up and pleasure results. An oval will indicate a mouth which is open.

With such lines placed in varying positions, an amazing number of expressions are obtained, and the plain circles

shoulders, and roughly speaking, tapers to the feet. So draw a long triangle, with the shortest side on top, and the point opposite immediately beneath, as though it were sticking in the floor. On the top line erect your neck and circular head. Add two arms and two feet. If the man is fat, you can hang the torso in a beautiful curve from shoulder to shoulder.

## The Woman

The female is known by her curves. Start with one circle on top of a slightly larger one. For the legs place two lines from the lower circle to a point on the floor. Add arms and head. To these two

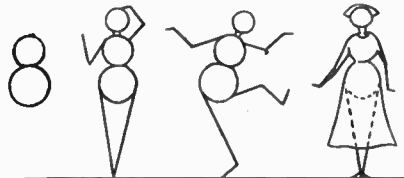


Fig. 4—The basic lines of a woman



Fig. 6—Profiles showing actions

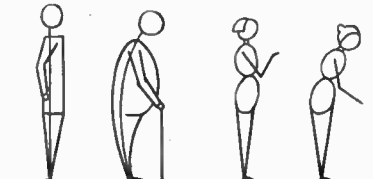


Fig. 5—Simple figure profiles

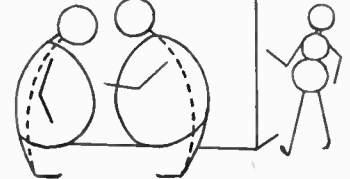


Fig. 7—The lines to make the picture below



Fig. 8—A picture from No. 7 lines

larger oval will suffice for the torso. Add limbs and head.

Now for action. This is determined by the poise of the head, the slope of the body and the position of the limbs. Watch for it in the people passing by. Take the strong, young man again. When walking, his shoulders are thrust back; he is springy on his feet, his arms are swinging.

When he runs, his body is forward and his stride is long. When the old man walks his steps are short, his feet tend more to shuffling. When a lady runs normally her body is more upright than the man's, her steps are shorter.

Observation and thought give us the basic lines. On these lines we hang the bodies. After single figures have been tried out, group two or three together. Some amusing incidents can be produced.

(296)

# How to make and use an outfit for undertaking SILK SCREEN PRINTING

**S**CREEN printing provides the handyman with a simple and effective means of reproducing designs in various colours on such articles as table mats, fire screens, trays and, in fact, on anything which has a flat smooth surface. It also enables him to make his own birthday and Christmas cards, calendars and even invitation cards. As well as to print his own notepaper or simple bills and posters for such things as social functions, meetings, concerts, etc.

The purpose of this article is to describe the simple and, fortunately, inexpensive equipment which is required for this. A second article will deal with the materials to use, the way to make the necessary stencils, and the actual printing of the job.

No attempt will be made to burden the amateur enthusiast with too much technical information of an advanced nature, but we shall try to show how he may obtain both fun and satisfaction by doing simple screen printing well.

## How it Works

Screen printing is a stencil process and the equipment consists of a flat baseboard, which can be fixed to a bench in the garden shed or to the kitchen table, and a frame. One side of this frame is hinged to the baseboard so that it lifts up and down like a book. A small piece of wood is attached to the side of the frame so that it swings loosely and holds it up when required (see Fig. 1).

Across this frame you will have to stretch either taffeta or bolting silk, the function of which is to support the stencil. This stencil is to mask out those parts of the design where you do not wish to print.

Before asking you to make the few simple items of equipment, it is best to tell you how the process works, so that you may know why each is necessary.

As already stated, the screen supports the stencil and so holds such 'floating' pieces of it as the middle of such letters as the 'O' or the 'B', etc. If it were not for the screen, such

stencil pieces would be quite unattached for there are no 'ties' left in the stencils used for good quality silk screen printing. The stencil pieces are fixed to the screen with adhesive.

The job to be printed is placed on the base-board so that two of its edges are set against 'register guides' (described hereafter) attached to this base-board.

*This most modern form of printing can be undertaken by the amateur. An expert here tells you how to make the apparatus to use for colour printing at home.*

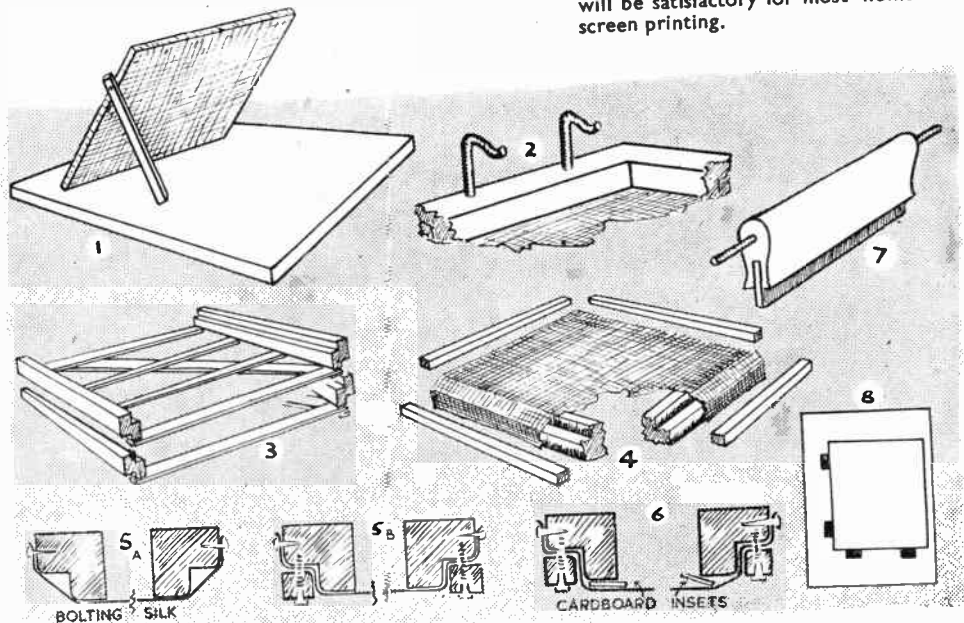
Then you lower the screen and pour a little colour on to a space at the end called the 'fountain head' and by drawing a squeegee (described hereafter) across the screen, you force colour through the mesh of those parts of the screen unprotected by the stencil on to the job beneath. Next you place the squeegee in its housing (see Fig. 2) and lifting the frame, remove the printed job and put it in a rack to dry (see Fig. 3). Then insert

another copy in position and repeat the printing operation.

## Making the Frame

The frame consists of four wooden sides joined at right angles. A convenient size for home use would be about 15ins. by 20ins. This would be suitable for most amateurs, unless they want to print double crown posters, which being 20ins. by 30ins. would require a frame about 24ins. by 40ins. The frame should be hinged to the base-board, after the silk or taffeta has been stretched across it and tacked firmly. The construction of the frame is shown in Fig. 4.

Good quality screen taffeta or organdie will usually serve the needs of the amateur, but if you decide to use bolting silk, this may be obtained from any firm supplying equipment for screen printers. Whatever material is used, it must be stretched across the frame very tightly indeed, or satisfactory printing results will not be obtained. Indeed the screen must be as taut as a drum and if you do use bolting, number 12 double XX will be satisfactory for most 'home' silk screen printing.



**Fig. 1.** The base board and frame with screen stretched across it. The wooden strut swings freely and allows the screen either to be closed or keeps it raised in the position shown.  
**Fig. 2.** The housing for the squeegee.  
**Fig. 3.** Drying racks made to pile on each other. Sufficient space should be left between the units to allow the wet printed job to remain between each without it touching the rack above.  
**Fig. 4.** The frame with the screen stretched across it. The extra pieces of wood will be pressed into the rebates to tighten the screen even further.  
**Fig. 5a.** Detail showing first stage in tacking the screen to the frame.

**Fig. 5b.** The second stage—the pieces of wood are being pressed home into the rebate and secured with wood screws.  
**Fig. 6.** Strips of cardboard may be forced between the screen and the frame if this is necessary to make it really taut.  
**Fig. 7.** A handy kind of squeegee—the blade is rubber and the pins protruding from either end are to allow it to hang conveniently on its housing.  
**Fig. 8.** Plan view of the baseboard. The job to be printed is shown in position against the four register guides. These can be cut from thin pieces of card or thick paper if the job to be printed is thin. Stick or nail the register guides required to the baseboard.

To stretch the screen over the frame, cut the cloth about 5ins. or 6ins. larger than the outside measurement, and tack down, at intervals of about 1in., along one of the long sides of this frame. The tacks should be on the outside edge and the cloth turned over the frame to allow for this. The accompanying illustrations will make the point clear. The tacking should start from one corner and the cloth must be kept pulled as tightly as possible while this is being done.

When the first side is completed, one of the sides at right angles to it, should be tacked, great care being used to keep the cloth taut while it is being done. With two sides tacked, the cloth must again be stretched while the remaining two sides are secured with more tacks.

It will be seen from the illustration at Fig. 4 that the frame has a rebate in it, so that the cloth folds over it in such a way that, instead of making one bend at right angles to enable it to cover the outside, it makes two bends, each at 45 degrees. It thus spans the rebate diagonally, thereby leaving a triangular empty space between itself and the surfaces of the rebate. This is to enable the screen to be tightened still more after the material has been tacked.

The additional strips of wood shown

in the illustration, should now be screwed down into place so that they fill the rebate. Thus they will tighten the screen further by pressing the cloth down into the rebate of the frame.

The screen should now be very taut indeed, but if further tightening is required, strips of cardboard may be inserted between the underside of the frame and the cloth, in the manner shown in Fig. 6.

If the stock on which you wish to print is paper or very thin card, the frame should be hinged to the base-board direct. But if you intend to print on anything thicker, such as plywood or glass, the hinge should go on to a 'distance piece' a little thicker than the job to be printed, so that the screen may rest flat on the job when it is lowered for printing, without straining the hinges.

### The Squeegee

The squeegee consists of a strip of rubber set in a wooden handle. It should not be quite as wide as the width of the inside of the screen and a handy shape is shown in Fig. 7. The blade of the squeegee should be kept sharp by rubbing on a sheet of glasspaper. The purpose behind keeping the blade sharp

and the edge true is to ensure satisfactory prints.

Register guides are necessary to ensure that the sheets to be printed are always kept on the base-board 'in register', i.e., in a uniform position in relation to the screen. They must be left in position until all the colours on a particular job are printed. Otherwise the various colours would not be in register with each other. Two edges of rectangular sheets should be registered to guides as illustrated in Fig. 8.

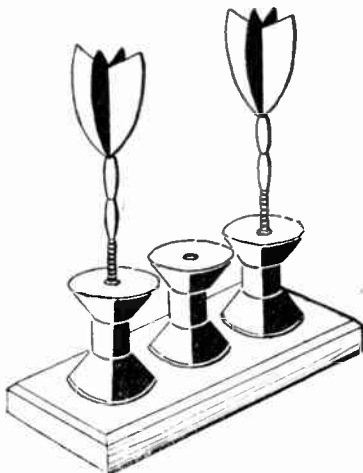
### Drying Racks

The amateur doing only a small quantity at a time will not require to make special provision for the drying of his work, for the various jobs will not take up too much room if they are spread out and allowed to dry overnight. However, in case he should wish to provide himself with a drying rack, included in Fig. 3 is an illustration which shows a handy kind of rack.

So much for the necessary equipment. All of it can be made at home with very little trouble and expense. In the next article we shall show how to prepare your stencils, choose your materials and colours, and print the job. (270)

(To be Continued)

## Some wood and three empty bobbins will make A SIMPLE DART HOLDER



**H**OW often damage is done to the flights of darts, especially the feather ones, when they are hurriedly placed on any convenient shelf or mantelpiece after the game is over. The easy-to-make, cheap little model shown can protect your dart-flights from damage, and at the same time sheath the steel points. This Dart Rest always looks handy on any shelf.

The model is made from the following materials. A piece of oak 6ins. long and 2½ins. wide, and ½in. thick; three discarded cotton bobbins 2ins. tall and

1½ins. across the widest diameter; six flat-head wood screws 1in. long, No. 4; S.W.G.; and if possible an old piece of green baize to be glued to the bottom of the base with Durofix adhesive.

This baize makes a smooth contact surface for the model to stand anywhere, and never leaves scratches. Cut the oak base to true rectangular shape, and then draw a pencil line lengthways down the centre of the top surface. Mark out the position of the screw clearance holes on this line, as shown in the front view of the diagram. Place a ½in. twist-drill in your hand-drill and make the clearance holes for the screws. Countersink these so the heads of the screws are well below the surface of the wood.

If you have not a vice, you can easily do this drilling by securing the base between two strong battens nailed on a solid block of scrap wood.

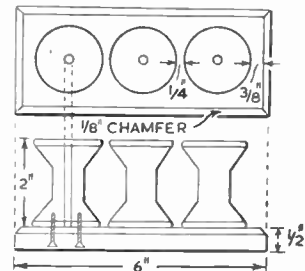
Now with your plane tilted slightly upwards, and working with the grain, make the ¼in. chamfer along the surface perimeter of the base. With a small pair of calipers, or even dividers you can find the diameter of the base of the bobbin. Then draw in this diameter with your pencil, and also mark the two points on the bevel of the bobbin, where the diameter cuts the circumference.

Arrange the bobbin on the base so these pencil points on the bevel are aligned with the central line of the upper surface of the base. Now you can screw in the 1in. wood screws to fix the first

bobbin in position. When the other two bobbins are also screwed in position use a fine glasspaper on all the surfaces of the model, but not on the bottom one of the base.

This must be roughened with a marking knife, or a strong clasp knife, ready to receive a layer of Durofix adhesive. Smear some on the green baize, too. Bring the two surfaces together, and balance some heavy books, or an iron on the top of the bobbins to apply some pressure. The best method to do this is to fix the model between two strips of planed wood, arrange in the vice, and leave for the day.

Then remove the model and trim the projecting edges of the green baize, with



Plan and section of article

a pair of very sharp scissors, to the perimeter of the oak base. To add a pleasing final appearance to your model give it two coats of green enamel paint. (258)

# An expert tells you exactly how to make a VENTRILOQUIST'S DOLL

**W**ITH the growing popularity of Ventriloquism as a form of intimate entertainment, there has arisen an ever-increasing number of exponents of the art.

Successful broadcasts by radio and television, to say nothing of brilliant ventriloquial acts on the variety stage, the concert platform, and on the films, have awakened the desires of a number of people of both sexes to amuse their friends and, perhaps, turn an honest penny out of a deceitful voice, by emulating the example of that fabulous prince of vocal tricksters, Valentine Vox.

A great deal of the ventriloquist's success, however, depends not only on his vocal accomplishments, but also on the puppet he uses as his mouthpiece—his dummy. In fact many world-famous ventriloquists have, in a way, had to take second place in popularity to their very wonderful dolls.

## Personality Appeal

For instance, 'Jim' the mouthpiece of the late Arthur Prince; 'Charlie McCarthy'; and 'Mortimer Snerd', Edgar Bergan's puppets; and our own famous 'Archie Andrews', are outstanding examples of the doll itself becoming an actual public character and obtaining personal popularity. Hence the incentive to would-be-deceivers to take up the art.

A really good ventriloquist's doll is a costly puppet. It has to be something more than a mere doll. Apart from the fact that it must be well made, it must

cost much money should not deter any aspirant for ventriloquial fame from obtaining a figure; and the cheapest way to do this successfully is to make the puppet for yourself. So it is the object of this short series of articles to explain the general principles of form and construction; the actual design and finish of the figure will be left to the skill and ingenuity of its maker.

## Head and Face Character

The shape of the head and the character of the face being the most important part of the puppet, serious study should be given to these points before any attempt is made on the actual modelling. The anatomy of the head should be studied, the bone formation of the skull, and the more important muscles. This may seem to be going rather deeply into the subject but actually it is the basis of all good work on the head, whether by modelling or carving.

With a good working knowledge of the shape and proportions of the head and face, the craftsman can rest secure that his work will be a success. As far as comparative proportions are concerned, it is worth noting that the face is divided horizontally into three equal sections. (1) hair-line to eyes; (2) eyes to tip of nose; and (3) nose to chin.

The space between the eyes is about the width of one eye, and the width of the mouth should be the same as the space between the eye-balls. The width across the cheekbones should be noted, the angle of the jaw and the shape of the chin.

The all-over size of the head should be about the same as that of a young child. The figure may have to be seen by a large audience, and if the head is too small the whole puppet will look insignificant and completely fail in its purpose.

The head is made in stout papier mâché, about  $\frac{1}{8}$  in. in thickness. This may be done in two different ways. In the first system a pattern head is modelled in clay or plasticine. This model is then cut, vertically, in half. Each half is laid, flat-side downward, on a sheet of glass; about 1 in. away all round the model, a 'wall' of clay is built up, and into this space, covering well the whole of the half-head, plaster of paris is poured and allowed to set hard.

Both halves of the head are treated in this way. The clay is then removed, thus leaving two halves of a mould from which impressions can be taken. Before the papier mâché is forced into the moulds the inner surface of each of the plaster sections is painted with shellac to smooth and harden the pattern.



Papier mâché on the Plasticine head shape

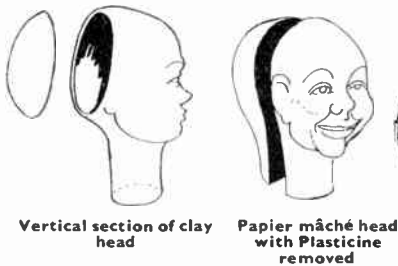
## Making Papier Mâché

The papier mâché itself is made of layers of strips of newspaper dipped in flour paste until the required thickness is obtained. It is allowed to dry well before being removed from the moulds and when completely dry and hard, the two halves of the head can be joined together. As a rule, however, the eye and mouth fittings are set in position before the sections are finally joined.

In the second method the head is modelled first in Plasticine. This time the paper layers are placed on outside the pattern. They are pasted on each layer consisting of small pieces of torn paper until the whole head is completely covered. As each layer becomes dry, another covering is put on, usually of a different coloured paper to make sure of a perfect covering. This process is repeated until at least a dozen layers are well pasted and smoothed on. Then the whole thing is allowed to dry.

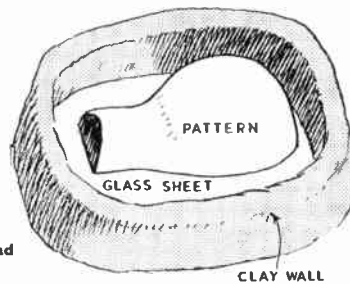
## The Back Opening

When it is ready for the next stage, the back of the head is cut away very carefully, the Plasticine removed, and after the movable fittings have been securely placed into position, the backpiece is replaced and fixed, and the head is ready for its make-up and wig. It is a good plan to add a complete layer covering of thin linen, usually about half-way, in the process, this makes the head doubly strong against knocks or pressure.



Vertical section of clay head

Papier mâché head with Plasticine removed



How to make a plaster of paris mould

also have character and a good personal appearance, which all means individual work and accurate finish.

Unfortunately in many cases this is far from being the fact. Some really excellent showmen, masters of their voice and art, appear before their audiences with dolls with most inhuman looking heads, faces such as no human being ever had, and mouths which not only open like traps, but look like traps opening, too.

The most important part of the puppet, whereon the eyes of the whole audience are continuously centred, should be a work of art and express a real personality.

The mere fact that first-class puppets

Assuming then that these preliminary studies have been made and all the important points of structure and proportions duly noted, the craftsman can proceed, at last, to the actual construction of a head.

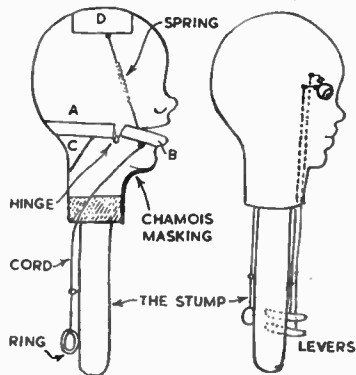
## The First Decision

The first thing to decide on is the character of the puppet. What shall it be? There are quite a number of very popular types used by ventriloquists; there is the 'Cheeky Boy', the 'Page Boy', a Sailor, a Soldier, a Costermonger, a Nigger, an Old Man, and so on to suit almost every range of ventriloquial voice.

The average ventriloquist's doll is fitted with three special movements to the head. The mouth for speaking; the eyes; and the neck—nodding and turning. Additions and variations to these movements occur; eyebrows are made to raise; eyes to close. Some puppets are made to smoke, and even to spit—a particularly unpleasant accomplishment and one which any good showman will do well to avoid.

### Mouth Mechanism

Most important of all the movements made by the ventriloquist's doll are those of the mouth—the act of speaking. On the opening and closing of the puppet's mouth the operator depends so much for his deception and the better this action is done the greater are the chances of ultimate success.



Details of the stump portion

The action is made by cutting away the lower half of the mouth and chin, re-setting them on a hinged block attached to a strong spring, which keeps the mouth shut until it is opened by a pull from a string from below. This is where the 'trap' effect sometimes occurs; it is caused by cutting out the mouth with straight horizontal lines. Whereas if the mouth can be cut with a slightly upward curve at either end, this trap-like appearance will be very much modified and give a much more natural and pleasant expression to the face.

Rounded lines to the cheeks, chin, and eyebrows will help to give a smiling, cheeky look to the features.

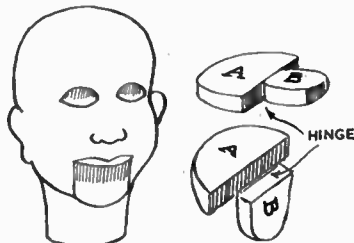
### Mouth Parts

This mouth action will need very careful attention, although it is really fairly simple in construction. It consists of two wooden blocks (A) and (B). (A) is cut like a semi-circle to fit into the back half of the head—level with the mouth. (B) is the mouth block and its upper surface can be hollowed to represent the palate; teeth also may be added. (B) is attached to block (A) by means of a hinge on the underpart which allows it to fall away from (A). When this mouth-action is made the lower lip and chin piece which has been cut out of the papier mâché head may be glued neatly and firmly to (B).

Now the mouth movement is ready to be set in position in the head. Block (A) must first be fixed by means of glue or

nails; additional support for it may be given by fixing a small bracket block (C) just below the point of fixture.

The mouth is kept closed when the figure is not speaking by a special spring action. Another wooden block (D) is fitted very firmly to the top of the head, and connecting this block (D) with the mouth piece (B), is either a strong

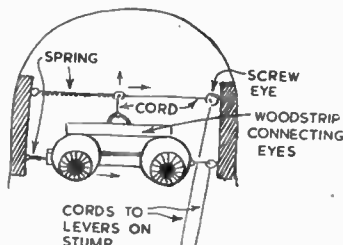


Mouth and eyes Mouth parts (1)

metal spring or a piece of stout elastic. On the underpart of (B) a cord is fixed with a ring attached to its end.

### Thumb Operation

This cord passes out through the back of the neck a little way down the 'stump'—the wooden continuation of the neck—and the operator, with his thumb in the ring, pulls down the string to open the mouth. When the pull is released the spring from (D) and (B) pulls the jaw back into its normal position again. When the mouth action is set and finished to the showman's satisfaction, a piece of chamois leather is fixed neatly to the chin and to the neck to hide the cavity caused by the jaw movement.

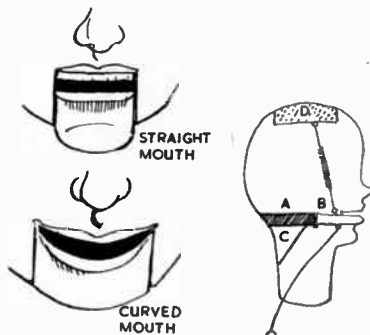


Details of eye movements

In some heads the mouth action is made by a movement of the lower lip only. The piece cut out with the lip does not take away the chin as well, this part remaining on the actual head. The mouth action is produced in the same

way as already described and the cavity between the lip and chin where the movement occurs is masked by carefully applied chamois leather as described above.

The eye movements are a much more



Mouth action (2) Mouth movement (3)

complicated matter than the opening of the mouth. They may be designed to move the eyes sideways, or up and down. The principle on which these actions are performed is the same as that used for the mouth movement. The eyes are pulled in a certain direction, horizontally or vertically by means of a cord or wire and are brought back into their normal position by means of counter-pulls in the form of springs. The controlling strings pass down the stump, through guiding screw-eyes and have rings or levers at their ends for the operator's fingers.

Large size 'sleeping' doll's eyes with 'balancing' fittings can be bought at doll shops. These could be used for an 'automatic', tilting, closing effect.

When the head and its movements are completed satisfactorily, ears may be modelled directly on to the sides with plastic wood, and wigs of hemp or crêpe hair affixed to complete the character.

### The Stump

The stump is simply a wooden extension of the neck with a pointed or smoothly rounded end. It should be long enough to rest on a block of wood at the puppet's waist. Some 'vent' heads have the stump made of an ordinary broomstick. This must be fixed securely into a circular disc of wood, about 1in. in thickness cut to fit the base of the papier mâché neck. On this stump are the cords which control the head action.

(To be Continued)

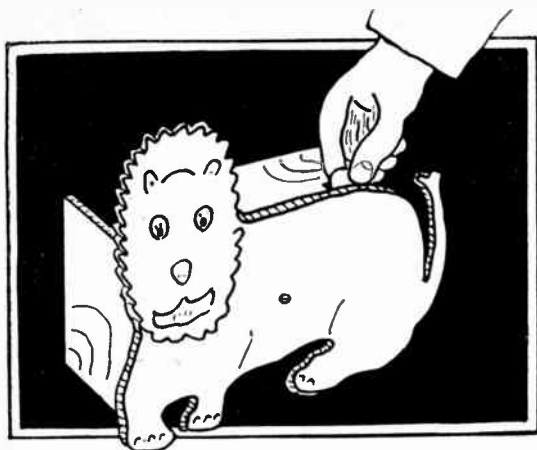
## Do you make Model Galleons?

From time to time we have published in these pages pattern sheets for all the most popular ships of history—'Santa Maria', 'H.M.S. Bounty', 'Ark Royal', 'Cutty Sark', etc.—and kits were provided so attractive models could be made. Readers may be interested to know all these designs and kits are still available from any Hobbies Branch, or an illustrated leaflet of them can be obtained free on request to Hobbies Ltd., Dereham, Norfolk.





# A simple mechanical novelty to make is this LAUGHING-LEO MONEY BOX



**A** YOUNGSTER who has this amusing little toy will learn the habit of thrift the easy way, because each time a coin is pressed into the slit Leo's fierce expression changes to a smile, and the child will want to 'do it again' for as long as the pennies last.

The construction is quite simple, and oddments of wood only are required. It will be seen that the cut-out lion is supported by two side pieces at rightangles, and between these is fitted the box for holding the coins. Between the box and the front, however, is a moving piece, held to the front with a single bolt. It is on this piece that the two sets of features are painted, and they show through suitable slits made in the front cut-out.

When a coin is pushed in, it presses on to the movable piece for a moment before sliding into the box, which causes the piece to tilt up and bring the second face into position. The piece is so balanced that it falls back into its original place as soon as the coin drops into the box.

## Cutting Out

Make a start with the front. Fig. 1 shows a suitable shape for the lion, and it is ruled in 1in. squares for easy copying. It will be seen that the main outline of eyes, nose and mouth are also cut out in this piece. Several other lines need to be painted in on the wood, to complete the effect. The inner edge of Leo's name, for instance, is better added by this means; and also the ears and whiskers on either side of the mouth.

Handymen with an artistic turn of mind will have their own way of doing this; but there is no need to worry about producing a perfect lion—the main thing is to make an amusing toy, and if the result is something of a caricature, so much the better.

## The Moving Piece

Fig. 2 gives the dimensions for the

the coin passes through, but not without it moving the piece as it goes by.

The rest of the case is shown at Fig. 3. Note that the inside upright is cut about  $\frac{1}{4}$ in. shorter than the end two. This is to allow for the movable piece between front and box, and so it is a good plan to glue in this piece last, when the moving piece can be tried in position, and the exact width of this inside upright piece gauged accordingly.

The lid comes right to the front, over the top of the moving piece, except that at one end a piece is cut out for the coin to enter, and this comes immediately over the little coin block glued to the top of the moving piece.

## The Expressions

Paint on to the moving piece the two expressions. One suggestion is given in the sketch; but readers who are handy with a paint brush can, of course, enlarge upon this as much as they like. The only thing to remember is that the laughing face must be below the fierce one, because the insertion of the coin tips the movable piece down at the back and up at the front.

It is a good plan to experiment with a few expressions on pieces of paper, trying them through the holes in the cut-out, before actually putting on the

final effect. Lay the cut-out front on to the paper and mark round the eyes, nose and mouth holes with a pencil. This gives a guide as to where the expression marks will fall, and some very amusing results can then be obtained.

It will be found that lines turning downwards at the ends tend to produce a savage look, and lines turning upwards a smile (or as near to smiling as can be

CUTTING LIST for wood of $\frac{1}{2}$ " thickness		
No.	Description	Size
1	Front	$8" \times 6"$
2	Ends	$3\frac{1}{2}" \times 3\frac{1}{2}"$
1	Centre Partition	$2\frac{1}{2}" \times 3\frac{1}{2}"$ (approx.)
1	Base	$6" \times 3\frac{1}{2}"$
1	Box Lid	$3\frac{1}{2}" \times 3\frac{1}{2}"$
1	Box Back	$3" \times 2\frac{1}{2}"$
1	Movable Piece	$5" \times 2\frac{1}{2}"$

expected of a lion!). Similarly, large black eyeballs arranged to show just in the middle of the cut-out holes add to the fierceness, whilst smaller eyes, showing through at the bottom of the slits, with thin lines running upwards from them, will add a merry touch to the face. Teeth showing in the upper of the two expressions can be followed by a wide open mouth and tongue to add to the happier look.

It will be noted that the two sets of expressions are not exactly underneath each other, since the tilt of the moving piece is in the direction of an arc and consequently the lower must be painted

(Continued foot of page 90)

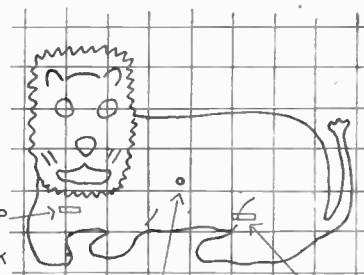


Fig. 1—Outline of figure with position points

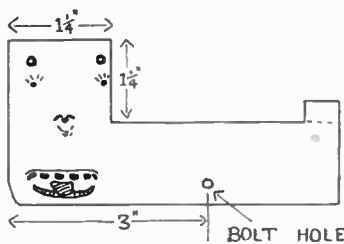


Fig. 2—The lifting feature portion and end view

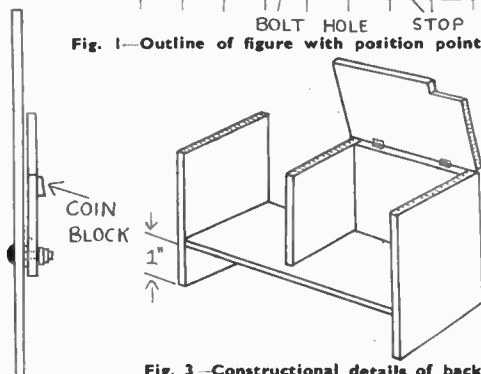


Fig. 3—Constructional details of back

# Some wall board or wood can be turned into practical KITCHEN CONVENIENCES

If you intend to re-organise and rebuild some of the fittings in your kitchen it is a good plan to work it out now so you may be able to cut up some of the larger pieces of panel board in your shed and have them ready when you want to start. If you look carefully you will probably find a lot more space in which you can store trays, brushes and other items of equipment which would otherwise hang around in the way.

## Sink Cupboard

First of all, if the sink is not enclosed you will find that a cupboard here can hold tins of polish, oils for small items and few spare brushes. Being enclosed as in Fig. 1 it may be a little damp, and holes should be drilled in the top of the doors for ventilation.

The average sink would be about 2ft. from the floor, according to its depth. It would be about 18ins. deep which gives you a very good cupboard space. As you are having cupboards at the sides the one framework will do for the front and could be assembled ready to fit in.

Note that the base is made with a board and a cut-out is allowed for the feet. To take the front right down to the floor is a mistake because it puts the person at the sink standing in a very uncomfortable position.

## Upright Spaces

Between the copper and the sink you have another narrow space which is ideal for small hanging items. Make full use of this with the tall narrow cupboard (Fig. 2) which also gives you a handy additional shelf when washing up.

Bring this to the height of the sink or the copper, whichever you think best. Such things as the scrubbing board, spare trays, copper sticks and a short brush or broom will find a home in here.

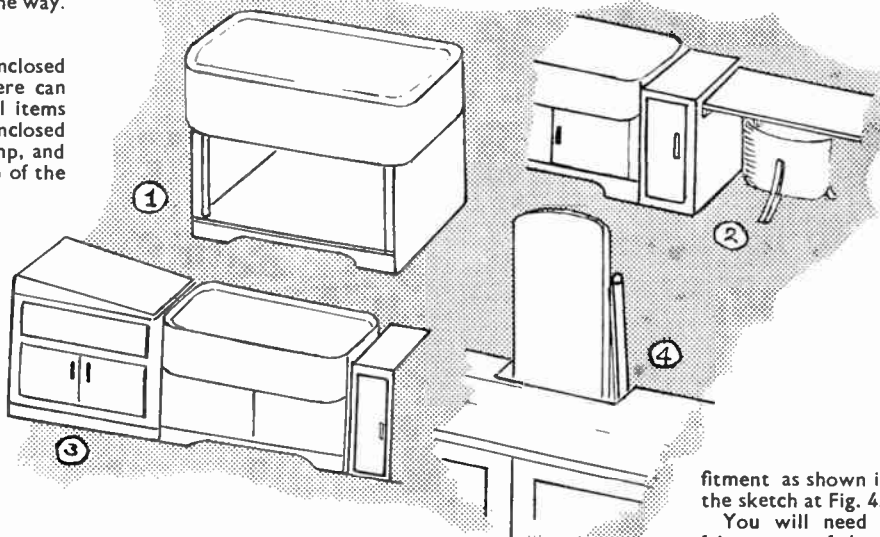
On the opposite side we have another cupboard which can be split (see Fig. 3). In the top we have the tea trays and other flat items. Below is a cupboard which can hold spare saucepans and tins, and you should arrange the shelves to suit the goods you intend to use it for.

As a special and more hygienic way the removable floor is a great asset. As

Work in the kitchen can be made easier by the correct placing of items, for preference under cover in cupboards.

## Ironing Board Holder

One of those items which seems to never find a home is possibly the ironing board when folded up. In your re-planning you may have a cupboard at the back of which you can allow a slide-in



fitment as shown in the sketch at Fig. 4.

You will need a fair amount of clear-

ance room as the average ironing board measures at least 4ft. 6ins. when folded and therefore has to be drawn upwards to get it out. The width would be about 12ins. and a gap of 4ins.

In re-planning you may be able to allow for a let-down ironing board and if you do this consider the posture of the person using the iron and give the correct height from the 'pressure' point of view. Many shop-bought ironing boards are too high, and many kitchen sinks are too low.

(246)

## Money Box—(Continued from page 89)

a fraction nearer the middle to be in the correct place when the piece is tilted upwards.

## Assembly

When the expressions are right, fix the movable piece to the front by means of a short bolt. The nut on this bolt must be left loose enough for the piece to swing easily on it, and it is a good plan to lock the nut in the correct position by screwing on another one on top of it.

Now take a look at Leo's face and check just how much movement is required to change the expression from the top one to the lower. By this means the correct position for the two little blocks at the back, will be seen. The one nearest the head will support the

movable piece in its stationary position, and the other is placed to stop the movable piece when it has tipped back sufficiently, on the insertion of the coin.

Try pressing the piece down at the end, on to this stop (when the glue is hard), and if it does not fall back smoothly to its first position, weight it at the front with an oddment of lead or other heavy metal, screwed on the inner side.

## The Coin Stop

Having prepared the front, with its movable piece, and the casing forming the back, we can now add the two together. Before they are finally fixed, however, the coin stop must be made to work efficiently. Hold the front on temporarily and then, with the lid of the

box shut, try a penny in the slot.

The coin stop will probably prevent it from going in, and now this piece should be carefully pared off, at an angle, a little at a time, until the coin will pass into the box by rubbing closely against it. This contact must be sufficient to tilt down the moving piece, as the coin goes by it. When this has been nicely adjusted, glue or screw the front on to the case and the construction is complete.

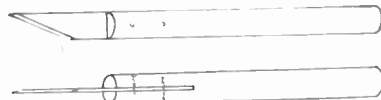
## Finishing Off

Fix a little fastener on the inner side of the coin box, to engage in a keeper of the ringed-screw type put in the edge of the lid. The toy can then be finished off in gay colours, and if necessary a few finishing touches added to the face. (291)

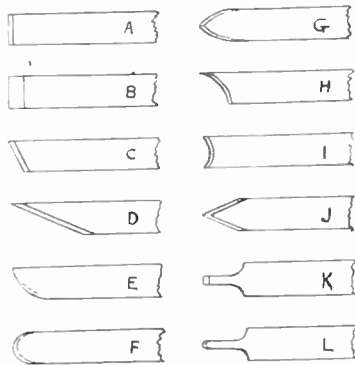
# Some useful shapes and method for a set of CRAFTSMAN'S KNIVES

**A**n ordinary pocket knife is the favourite tool of the schoolboy, and it is, indeed, amazing the amount of useful work that can be accomplished with it. With a little practice and a certain amount of patience some very intricate carving and quite a lot of model making can be done with just a knife alone.

To the craftsman who does a lot of this kind of work the set of knives illustrated will be a real boon and the short time required to make them will be amply repaid very quickly.



The knives fitted to a simple handle



Various shapes for use

The tools are simple to make, besides which they need not cost you anything except the time taken. The steel blades are made from an old clock spring, and dowel rod is used for the handles.

## Suitable Steel

The spring can be obtained from a watchmaker—he would most likely be glad to give you one, or if he does charge you a few coppers this should supply enough to make dozens of blades. Ask for a spring having a width of about  $\frac{3}{16}$  in. or  $\frac{1}{4}$  in. and the thickness should be round about  $\frac{1}{32}$  in.

A spring which has been tempered to a pale straw is best for the job, although the actual hardness can vary considerably owing to the different grades of steel used in the manufacture.

## Straightening

The spring will be coiled up somewhat and will require straightening and the best way of doing this is to hold it in a piece of rag, the thumb pressing on the convex side and the fingers on the other. With the other hand pull the spring through the rag, applying pressure with the thumb. By passing it through the hand a few times it should be sufficient to make it quite straight. If

any difficulty is experienced here the watchmaker would probably be able to do it for you.

## Short Lengths

With a strong pair of pliers break off pieces about  $2\frac{1}{2}$  ins. long which will be ample for the blades. One half of each piece should be heated in a spirit lamp or gas flame in order to draw the temper and make it soft enough to make the fixing holes.

You may soften the steel until it turns blue or you may even make it a dull red, but be very careful that you only do half the blade. By holding the other half in a pair of cold pliers you will prevent the heat from travelling along any further.

## Fixing Holes

The two fixing holes can be either drilled or punched. If you drill them apply plenty of pressure and use a slow motion. The blades may be punched by placing over a piece of steel with a hole in it and giving a sharp hit with a hammer and punch. Or you can put the blade on a flat block of lead and punch in the same way.

File off any rough pieces and clean up

with a piece of fine grade emery cloth.

The blades can now be fixed into the handles of dowel rod, which should be the same size as the width of the blades. A handy length for the handles is  $4\frac{1}{2}$  ins., but this may be varied to suit your particular requirements. Cut a slot to exactly fit the blade with a fine saw, drill the two holes and firmly rivet in position. The handles may be left in the natural state or they may be french polished.

## Grinding

The knives can now be finished off by grinding the ends to the shapes required, and making the cutting edges to the correct angles, which will depend somewhat on the kind of materials to be cut. A and B shows a chisel edge with different cutting angles. All the knives may have the cutting angle on one side only, or some may be ground down on both sides of the blade.

If you are using an emery wheel and doing the grinding dry be careful not to overheat the thin steel blades or you may soften the metal and spoil the cutting edge. It is best to do the grinding on a grindstone, using plenty of water. (272)

## A New Book for Ship Modellers

*The Ship Modeller's Workshop*

By R. K. Battson

Percival Marshall & Co. 3/6

**THE** choice of subject open to the ship modeller is so great that there is always room for another good book on this fascinating subject.

In this new work the author has made a praiseworthy effort to provide the ship model makers with what may be termed a manual of workshop practice.

There are many good items, the method of making gratings on page 29, and the way to 'joggle' the deck planks, pages 54-56, to mention only two; this last is, more often than not, overlooked by the ship modellers through lack of knowledge of ship-building practice. It is, of course, not practical on very small scale models, but a worthwhile improvement on models made to  $\frac{1}{4}$  in. scale and upwards.

Ship fittings of various kinds and periods are taken in alphabetical order and the methods given for making each part have the merit of being both practical and simple.

Chapters on materials, carving and the making of hulls will be of invaluable

help, while the section on painting will help towards attaining that finish that means so much to the appearance of the completed model.

It would have improved the reference to davits had the author included, for the sake of the beginner, a suggestion for a jig to enable the model maker to turn out davits with exactly the same curvature.

Two omissions have surprised, no reference is made to ventilators, nor is any suggestion given for the making of rails and rail stanchions, both items are often troublesome and appear out of scale on many amateur models, and often badly shaped.

It would be impossible in a work of this size to include samples of all ships fittings, in fact several volumes would be necessary for the purpose, but sufficient is given to make this little work one that should be on every ship modeller's workbench, a constant guide, always at hand to help with that ticklish problem.

'Whipstaff'

# A PHOTOGRAPHIC ALPHABET

## V and W

### V stands for—

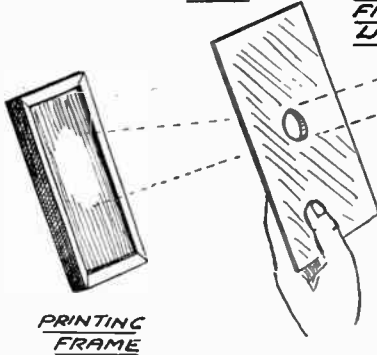
#### Vignetting

YOU will all have seen that type of photograph where the picture, often a head and shoulders, fades away on all sides to plain white paper. These pictures have been vignetted, and like many of the best effects in photography the method used to get the shading is almost laughably simple.

A card of a size bigger than your printing frame is cut, and out of the centre of this is taken a circular hole of anything from  $\frac{3}{8}$  in. to 1 in. diameter—according to the dimensions of the

CARD

LIGHT FROM LAMP



PRINTING FRAME

print. Experiment with an empty frame first. Set this up at the usual distance you do your printing from the light and hold the card in front as shown. A circle of light will fall on the frame, but with soft, diffused edges. The size of hole can be altered by moving the card nearer to or further from the frame.

Well, that is how it is done. Put in your negative and paper and spot the head and shoulders or whatever it is with light through the hole, and make the print thus.

It is good to diffuse the edges more still by moving the card alternately nearer and further from the frame, though a small distance, during the exposure, keeping the required image central, of course.

### W stands for—

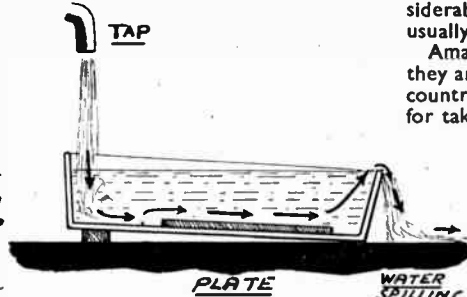
#### Washing

AFTER 'fixing' plates, films, gaslight paper and bromide paper must be washed, and you will find that great importance is always placed on the thoroughness of this. Perfect washing is also needed after (or during) other photographic processes such as intensification.

Care has to be taken to make washing really effective, the main point being

that the water must flow sideways over the prints or plates and then drain off readily. This because the washing water is actually carrying away unwanted residues.

Thus washing in a too deep container is no good, as water can enter in top layer, as it were, and flow away, leaving the films or prints at the bottom almost



unaffected. Similarly, a batch of prints lying one on the other are not being truly washed.

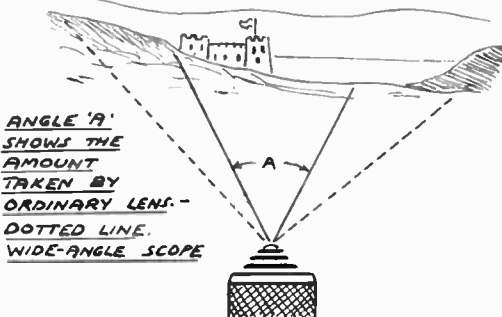
Good washing arrangements are always of the cascade type with the water flowing in one way or another across the surfaces, but much can be done by the beginner to help the washing in ordinary utensils. Never attempt to wash too much material together.

If it is prints that are being dealt with, keep them on the move so they are floating up and down in the water. Let the tap run into one end of a dish and see to it by slightly tilting, that it is spilling out at the opposite side, not falling back over the same edge.

The aim of much washing is to remove every trace of hypo which if left in a print or film will shortly cause brown stains. Washing must be particularly good if any after-treatment is to be tried, hypo being fatal to good intensification, reduction, sepia toning, etc.

#### Wide-angle Lenses

THIS is a term often seen used in the description of a second-hand camera.



ANGLE 'A' SHOWS THE AMOUNT TAKEN BY ORDINARY LENS.—  
DOTTED LINE.  
WIDE-ANGLE SCOPE

Imagine two invisible lines going from the lens of a camera to the extreme left and right objects that will appear on the film. These lines will form an angle at the optic which is sometimes called the 'angle of view'. The bigger the angle more of the scene will be taken in.

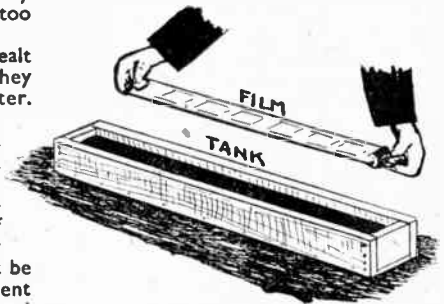
A wide-angle lens takes in no particular amount of a scene but embraces considerably more than the type of lens usually fitted to the camera in question.

Amateurs find 'W A' lens useful if they are keen on taking broad sweeps of country. Professionals use them mainly for taking interiors where both sides of a wide hall have to be included in the one print.

#### Water Bathing

THIS is a novel way of developing films or plates which any amateur can try. It has the effect of bringing out every bit of detail all over the surface, especially in the shadow—so it is a very good method for known under-exposure.

The system is simply this—the film or plate is placed in developer for about 30 seconds and placed carefully in plain water for a moment, then put back in



the developer for about 1 minute, and then in the water for a correspondingly longer time. This alternate developer and water continuing, the times increasing, till development is complete.

With plates, working the system is simple as it only requires a second dish, filled with plain water. With films, it is rather more difficult as they roll up. The best way, therefore, is to put a 'bulldog' clip on either end and work beside a bath with a little water in the bottom in which the film can be quietly laid, face up, the clips preventing any tendency to roll. Woodworkers might think it worth while to make the simple wooden tank shown.

(To be Concluded)

**INTRODUCTIONS.** Pen friends, companionship or marriage.—V.C.C., 34 Honeywell Road, London, S.W.11.

**MAKE 5/-** an hour, genuine home employment. Full instructions, 3/—R. Lowes, Simonburn, Northumberland.

**STAMPS**—world mixed, 1/- a 100; S5/- a 1,000. Gift voucher free.—Selby, 66 Donnington Road, London, N.W.10.

**PENNY** Black and Sir Rowland Hill on stamp of Cuba, absolutely free. Request approvals — Hubert Rajski, 211a Thornes Road, Wakefield.

**EMPIRE** stamps—200 different, 4/- 10 Victory, 9d. Free pictorials with approvals.—Robert J. Peck, 7A Kemp Road, Bournemouth, Hants.

**SAVE** pounds. Sole your shoes in five minutes. Self-stick leather soles, no nails, no glue. 2/- pair.—Butterfield, Powell Road, Bingley, Yorks.

**5x5** SNAP enlargements, 6d. Films developed, 6d. Return service.—Bailey, 72 Marshfield Road, Goole, Yorks.

**ENJOYABLE** smoking mixture. Virginia blended, for pipe or cigarettes. Make it yourself and save pounds. Formula only, 1/- S.A.E.—Dept. 2, 48 Russell Street, Derby.

**BEHIND** the scenes. Interesting work for ingenious amateur carpenters, electricians, mechanics and handymen. Materials, tools and workshops provided without cost. Apply—Stage Director, Toyntee Hall Theatre, 28 Commercial Street, London, E.1, or 'phone BIS. 6555.

**STAMP** mixture off paper. 1,000 for 3/6, 500 for 2/—Thomson, 46 Beil Dr., Glasgow, W.3.

**STAMPS FREE!!** Twenty unused (2½d.).—G. H. Barnett, Limington, Somerset.

**NOVEL** Calendar Designs painted on plywood for cutting out. With date cards. Inexpensive gifts, profitable to sell. Sample, 2/-; half dozen, 10/-, including postage.—Cleaver, 50 Windsor Road, London, N.W.2.

**HOMEWORKERS** required, either sex, light assembly. Part or full time. S.A.E.—Esprey, Box 18, 41 Wade Street, Lichfield.

**HOME** Watch and Clock Repair Outfit. Includes watchmaker's magnifying eyeglass, tweezers, screwdrivers, oilers, oil, brush, dusting powder, plus illustrated explanatory book. Watch and clock repairing simplified. In container, 12/9 inclusive.—D. Bolster (Dept. H), 5a Station Parade, Ashford, Middlesex.

**HARDWOOD** Ball Beads, ¾in. diameter, suitable for children's counting frames, etc. 5/3 per hundred, plus 1/9 P.T.—Joyden Toy Co., 193 Chase Side, London, N.14.

**PERSPEX** and acetate, cut any size from 2/6 sq. foot.—W.M. Products, 2 The Mall, Ealing, W.5. Eal. 3881.

**MAGICIANS** Tricks, crazy cut-outs, only 1/3; parcels, 5/6. An evening's entertainment. Lists, 3d.—De Hempsey, 363 Sandycombe, Kew Gardens, Surrey.

**PLYWOOD.** 72×4½×½in., 20 for 25/-; Gaboon, sanded two sides; Birch, 36×9×½in., 10 for 15/-; Veneered Plywood, 24×24×½in., 5 for 35/-; ½in. thick, 2 for 25/-; Strips Block-board, ¾×¾×27ins. long, 3/- doz. Softwood lids, 39×13½×½in., 7 for 20/-.

List of other Plywood and Oak, 2d. All above prices carriage paid for C.W.O. Dept. H.3, JDD. Storage, 71 Northcross Road, S.E.22. BRI. 7441.

**CONJURING.** 3d. for new lists and free magical competition.—De Hempsey, 363 Sandycombe, Kew Gardens.

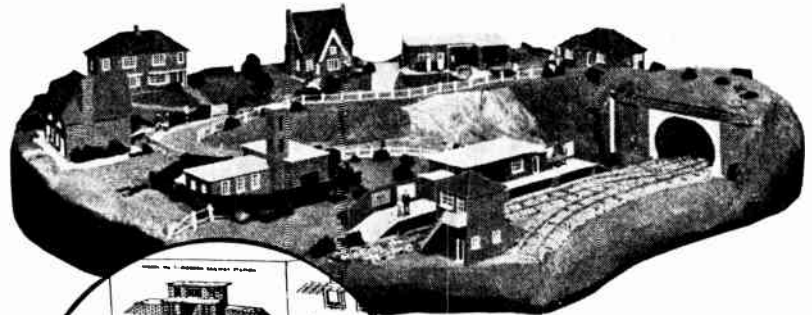
**WHEELS** for Toys, and other accessories. Full lists will be sent on application to The Joyden Toy Co., 193 Chase Side, London, N.14.

**10 ASSORTED** Keyless Pocket Watches. Very handy to watch repairers to-day. Take £2 the ten. 10 Wristlet Watches, 50/- the ten.—Merkels, Jewellers, Pilgrim Street, Newcastle-on-Tyne.

**PITMAN** or Gregg Shorthand. Rapid Postal Courses. Particulars—Shaw's Commercial School, Lancaster.

**USE** spare time on profitable homework, making fancy goods. Write for free booklet.—(Area 544), 54 Southgate Street, Leicester.

**MAKE** your own Jig-saw Puzzles. Fine Art Pictures, various reproductions and sizes. Also suitable for framing. Stamp for full list.—Joyden Toy Co., 193 Chase Side, London, N.14.



**Build this Realistic Model Village with**

**BRICKPLAYER**  
Bricks and Mortar Building Kit and Accessories

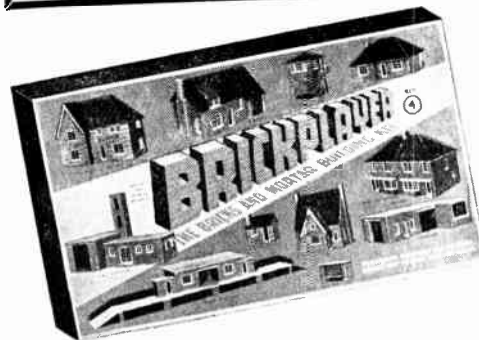
**ENTER FOR THE BRICKPLAYER COMPETITION**  
Prizes of £10 10s., £5 5s., and £3 3s. and a number of consolation prizes of Brickplayer Accessories will be awarded for winning models.  
Write for full details.

The Brickplayer Kit contains miniature bricks in all required shapes, mortar, roofing, metal windows and doors, plans and instruction booklet. All models are architect designed to 'O' gauge scale. Buildings can be permanent or dismantled by merely soaking in water, and the bricks used again and again. Brickplayer Kits at 25/- and 47/6 and Accessories are available from good toyshops and stores.

If your dealer cannot supply, write for address of nearest stockist to:

**J. W. SPEAR & SONS LTD.**  
Dept. "H", Enfield, Middlesex

**YOUR IDEAL CHRISTMAS GIFT**



**9.5** Film Library, projectors, films, for sale. Stamp for lists.—Wayland, 223 Longley Road, Tooting, London.

**PLYWOOD** Offcuts,  $\frac{3}{8}$  in. and  $\frac{1}{2}$  in. up to 12ins. x 9ins. Ideal toymaking, etc. In parcels, 5/6 post free. Apply Ansell's, Barnabas Road, Birmingham, 23.

**100,000** Government surplus bargains. Inter-room telephone sets, ideal household (sick room/kitchen, etc.) use, 8/6, post 6d.; single bell flex, 25yds., 1/-, post 6d.; sponge rubber strip, approx. 18ft. x  $\frac{1}{4}$  ins. x  $\frac{1}{8}$  in., 2/-, post 9d.; aluminium rivets, approx. 1lb. asstd., 2/6, post 6d.; 12 volt drills (work from car battery) 10 amps., 19/6, post 1/6. Huge stocks of Electrical Switches, Motors, Resistances, etc., etc. Send 3d. stamp for full list of bargains.—Milligan's, 24 Harford Street, Liverpool, 3.

**PLYWOOD** Offcuts. Birch and Gaboon in various thicknesses. Handy sized parcels for the cabinet, toy, model maker, and all handicrafts. Parcels made up in £1 and 10/- lots. Carriage paid. Send P.O. to Reeves, Plywood and Timber Merchant, 33 Front Street, Monkseaton, Whitley Bay. Tel. W.B. 4677. Parcels are now despatched on day of receiving order.

**FASCINATING** and Profitable hobby, casting ornaments, toys, etc. You can easily make these yourself. Paints, brushes and all accessories. Illustrated catalogue of 700 Moulds, plus latest list of Rubber Moulds, with instructions, 9d. post free.—Cock of North Moulds (H), 140 Hollings Road, Bradford.

**AMERICAN** Magazines post free for one year. Popular Mechanics, 32/-; Popular Science, 28/6; Mechanix Illustrated, 22/6; Popular Homecraft, 18/-. Stamp for full list of others.—Willen Ltd: (Dept. 57), 101 Fleet Street, London, E.C.4.

**PRIME** imported recessed hardwood wheels, 2 $\frac{1}{2}$  ins. diameter, 3/- dozen, 14/- half gross, 26/6 gross. Post free. Pressed metal, hardwood and metal disc wheels, doll's house windows, doors, papers. Catalogues, 6d.—Jasons, 135 Nags Head Road, Ponders End, Middlesex.

**BE** Taller. Quickly! Safely! Privately! No appliances—no tablets—no dieting. Details, 6d. stamp.—Malcolm Ross, Height Specialist, BCM/HYTE, London, W.C.1

**LEARN** Shorthand by December 8th (1 hour's study nightly). 1st lesson, 2 $\frac{1}{2}$ d. stamp.—Duttons (Dept. HB), 92 Gt. Russell St., London, W.C.1.

**MODELS.** You can make lasting stone-hard models with Sankey's Pyrama Plastic Cement. Supplied in tins by Ironmongers, Hardwaremen and Builders' Merchants. Ask for instruction leaflet.

**TRANSFERS** for decorating toys, trays, furniture, fancy goods. List and samples, 3d. Flowers, pixies, dogs, nursery rhymes.—H. Axon Harrison, Jersey.

**RUBBER** Tyred Metal Disc Wheels finished in red, green or blue enamel. 2ins., 2/6; 3ins., 3/- per set of four. Post paid. Other sizes available up to 9ins.—The Joyden Toy Co., 193 Chase Side, London, N.14.

**DOLL'S** House fittings and papers; send S.A.E. for list. Doll's house plan special; send 2/6. Trade supplied.—Zimplan, 88 Ware Road, Hoddesdon.

**CONSTRUCTIONAL** Kits, 4mm. and 7mm. scale Lorries. Also large range spare parts from which to build to your own design. Price lists, 1d.—Wilson's Lorries Ltd., Dept. H., 1/6 Gt. Winchester Street, London, E.C.2.

**EARN** £££s weekly with '14 Ways to be Your Own Boss'. 5/6 only, money back if dissatisfied.—Stebbing Publications Ltd., Naphill, High Wycombe.

## YOU CAN BECOME A HANDICRAFTS INSTRUCTOR

### Experience not essential

Men who enjoy making things in wood or metal can turn their hobby into a permanent and interesting Career. Short hours, long holidays, and security in a job you would really enjoy, can be yours if you become a Handicrafts instructor. Let us send details of the easiest and quickest way to get the necessary qualification.

**We definitely guarantee "NO PASS—NO FEE"**

If you would like to know about our unique method of preparing you for one of these appointments, write to-day, and we will send you our informative 176 page Handbook—free and without obligation. Mark your letters "Handicrafts Instructor."

**BRITISH INSTITUTE OF ENGINEERING TECHNOLOGY**

595 Shakespeare House  
Stratford Place, London, W.1

# BIET



### THE BOLSTER HOME WATCH AND CLOCK REPAIR OUTFIT

These precision jewellers instruments, include watchmaker's magnifying eyeglass, finest watch tweezers, set watchmaker's screwdrivers, watch and clock oil, oilers, dusting powder, clock brush, plus illustrated instructional manual for the amateur. In container 12/9 post free.

**BOLSTER INSTRUMENTS,**

Senior Outfit includes everything above, plus watch jewels, luminous compounds, dial renewer, jewellers rouge, explanatory book. Price 21/- post free. (Dept. H. W.) 5a Station Parade, Ashford, Middx.



### GREAT NEWS!!!

Introducing the amazing new 'TRUKIT' series of constructional outfits, which by reason of their genuine simplicity, realism and low price are revolutionary. Our No. 1 Truck Kit builds into the superb '00' 4mm. scale American Freighter (illustrated). Send P.O. to-day for 10/- post free. Other models are following, so start your 'TRUKIT' collection now.

MURRAY HILL & CO., Mail Order House, Bedford Square, Sidmouth, Devon

## THE MOTOR SHOW IS COMING! "WHERE'S THAT CAR FROM?"

and  
**"POPULAR CARS"**  
(40 illustrations)  
**6d. each**

from all Booksellers and Stationers  
**Raleigh Press, Exmouth**



### BRANCHES

#### LONDON

78a New Oxford St., W.C.1  
(Phone MUSEum 2975)  
87 Old Broad Street, E.C.2  
(LONDON Wall 4375)  
117 Walworth Road, S.E.17

#### GLASGOW

326 Argyle Street  
(Phone CENTral 5042)

Head Office & Factories—HOBBIES LTD., DEREHAM, NORFOLK

#### MANCHESTER

10 Piccadilly  
(Phone CENTral 1787)

#### BIRMINGHAM

14 Bull Ring  
**SHEFFIELD**  
4 St. Paul's Parade

#### LEEDS

10 Queen Victoria Street  
(Phone 28639)

#### HULL

10 Paragon Square

#### SOUTHAMPTON

25 Bernard Street

#### BRISTOL

30 Narrow Wine Street  
(Phone 23744)

## WEBLEY

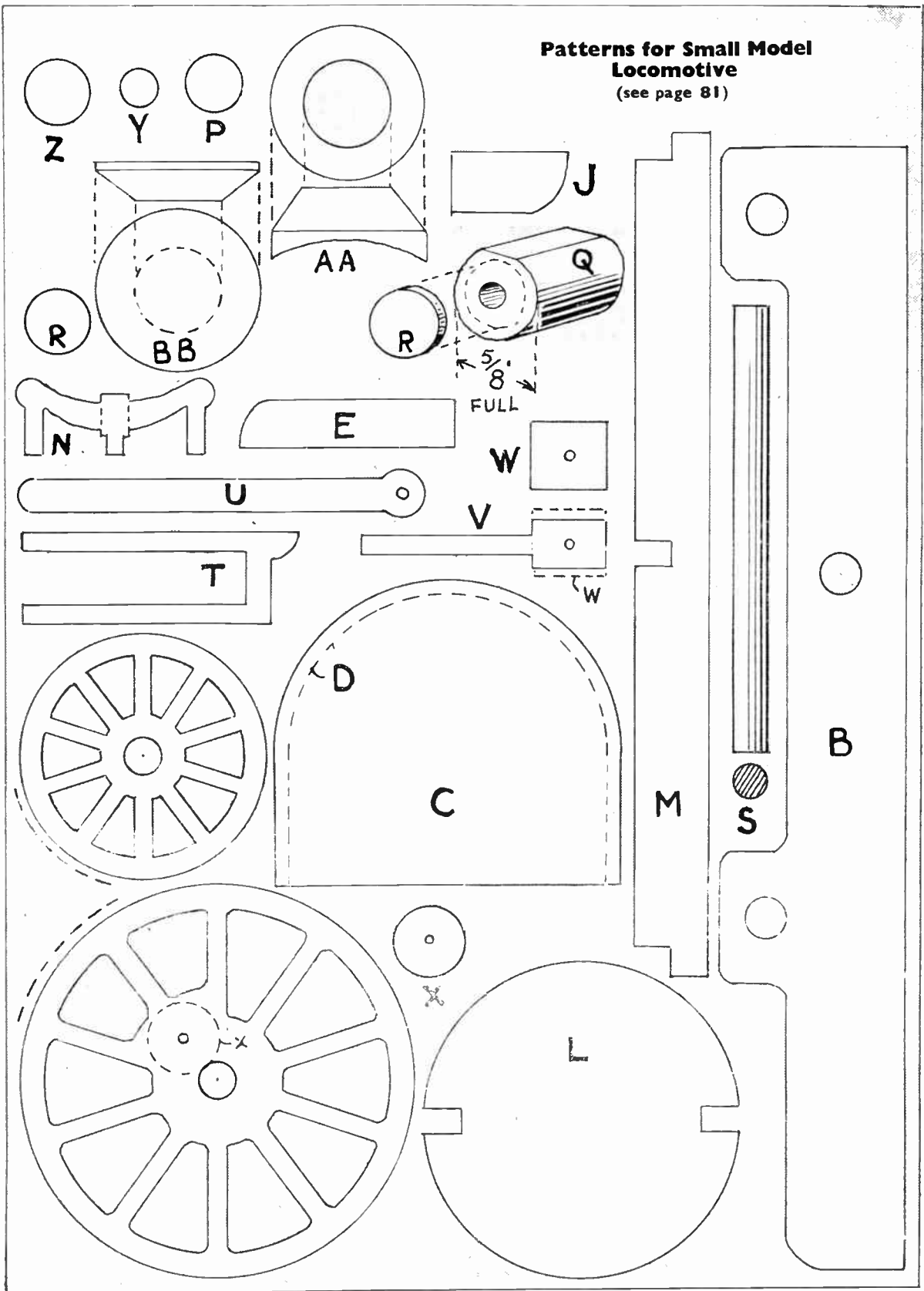
### AIR PISTOLS

Marvellously accurate for target practice.  
No licence required to purchase.

Senior Mark 1  
Junior Webley Air Rifle  
Write for List. **WEBLEY & SCOTT LTD.**  
166 WEAMAN STREET, BIRMINGHAM, ENG.



**Patterns for Small Model Locomotive**  
 (see page 81)



# THE STEPPING STONES TO SUCCESS!

Don't hesitate about your future! Go forward, confident that The Bennett College will see you through to a sound position in any career you choose. The Bennett College methods are individual. There's a friendly personal touch that encourages quick progress and makes for early efficiency. Take the first important step NOW and fill in the coupon below.



## THE BENNETT COLLEGE

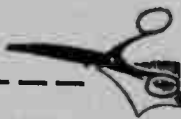
### CHOOSE YOUR CAREER

Accountancy Exams.	General Certificate of Education Examination	Radio Service Engineering
Aviation (Engineering and Wireless)	General Education G.P.O. Eng. Dept.	Road Making and Maintenance
Book keeping, Accountancy, and Modern Business Methods	Heating and Ventilating	Salesmanship
Building, Architecture, and Clerk of Works (A.R.I.B.A. Exams.)	Institute of Housing Engineers	Sanitation
Cambridge Senior School Certificate	Institute of Municipal Journalists	School Attendance Officer
Carpentry and Joinery	Languages	Secretarial Exams.
Chemistry	Mathematics	Sheet Metal Work
Civil Engineering	Matriculation	Shipbuilding
Civil Service	Metallurgy	Shorthand (Pitman's)
All Commercial Subjects	Mining, All Subjects	Short Story Writing
Commercial Art	Naval Architecture	Surveying (R.I.C.S. Exams.)
Common Prelim. E.J.E.B.	Novel Writing	Teachers of Handicrafts
Diesel Engines	Plastics	Telecommunications (City and Guilds)
Draughtsmanship, All Branches	Play Writing	Television
Engineering, All branches, Subjects and Exams.	Police, Special Course	Transport Inst. Examinations
	Press Tool Work	Viewers, Gaugers, Inspectors
	Pumps and Pumping Machinery	Weights and Measures Inspectors
	Quantity Surveying	Wireless Telegraphy and Telephony
	—Inst. of Quantity Surveyors' Exams.	

If you do not see your requirements above, write to us on any subject. Full particulars free.

### COUPON. CUT THIS OUT

IF YOU ATTEND TO THIS NOW IT MAY MAKE A WONDERFUL DIFFERENCE TO YOUR FUTURE.



TO DEPT. 62  
THE BENNETT COLLEGE LTD.  
SHEFFIELD, ENGLAND.

Please send me (free of charge)

Particulars of..... (Cross out line which does not apply.)

Your private advice

about

PLEASE WRITE IN BLOCK LETTERS

Name.....

Address.....



all made with-



## Croid

THE MODERN GLUE

Aero Glue. The strongest glue in the world.

Universal Glue. Cold glue ready for use from tube or tin.

Waterproof Cement. Specially prepared for balsa wood.

Whyte Paste. For paper work and photo-mounting, etc.

CROID LTD., IMPERIAL HOUSE, KINGSWAY, LONDON, W.C.2



"I said exercise!..."

And I don't mean P.T. I mean practising a war operation in peace-time with action conditions laid on. That's how the Navy keeps efficient. Here's Cleopatra doing her stuff in the Med. with the R.A.F. flying the "enemy" planes. Asdics, radar, torpedoes, gunnery — we see 'em all when we go to sea. We see life ashore, too — from Pompey to Port Said. We certainly do. Well, so long . . . be seeing you."

Make the **ROYAL NAVY** your career

The **NAVY**  
wants the  
**RIGHT MEN**  
**NOW**

WRITE TO-DAY for FREE COPY of booklet to: — D.N.E., DEPT. P/37, ADMIRALTY, LONDON, S.W.1.

(Applications from U.K. only)

Name .....

Address .....

Age .....



# Hobbies

## WEEKLY

### CONTENTS

	Page
Traffic Indicator - -	97
Pull-along Car - - -	99
Woodturning - - -	100
Battery Bed Lamp -	101
Enlarger Notes - -	102
Billiards Marker - -	103
Washing-Day Savers -	104
Books to Read - - -	105
Blackboard and Easel -	106
Photography - - -	107
Traffic Model Patterns	108

SUPPLEMENT DESIGN  
FOR MODEL OF THE  
CORONATION CHAIR

November 15th, 1950

Price Fourpence

Vol. III No. 2872

## Patterns for an electrically-operated model TRAFFIC INDICATOR

**T**HIS should make an interesting model both for home amusement and exhibitional purposes. A switch is added to control the lighting sequence, and the changing of the lights is fascinating to watch. It is not a difficult model to construct, but some care is necessary when wiring the lamps.

Most of the parts are shown full size on the pattern page. For a start cut four of A from  $\frac{3}{4}$ in. wood. Bore the holes through, and in two, at the bottom, make a saw kerf  $\frac{1}{4}$ in. deep. In the other two make the saw kerfs at the top. On the right-hand edge bore small holes with a bradawl, where shown by the dotted lines, about half-way through for the screw contacts.

### Contacts

Cut parts B and C from  $\frac{1}{2}$ in. wood, then two of parts D to the full dimensions from  $\frac{1}{2}$ in. wood, and two to the narrower dimensions down by the dotted lines. In parts A drive  $\frac{1}{2}$ in. round-headed screws in the side holes. For the stud contacts cut from thin sheet metal 12 of part E, and bend as at F. These are screwed to parts A, left-hand edges, so that the bent portion will come over the holes, as in the detail F.

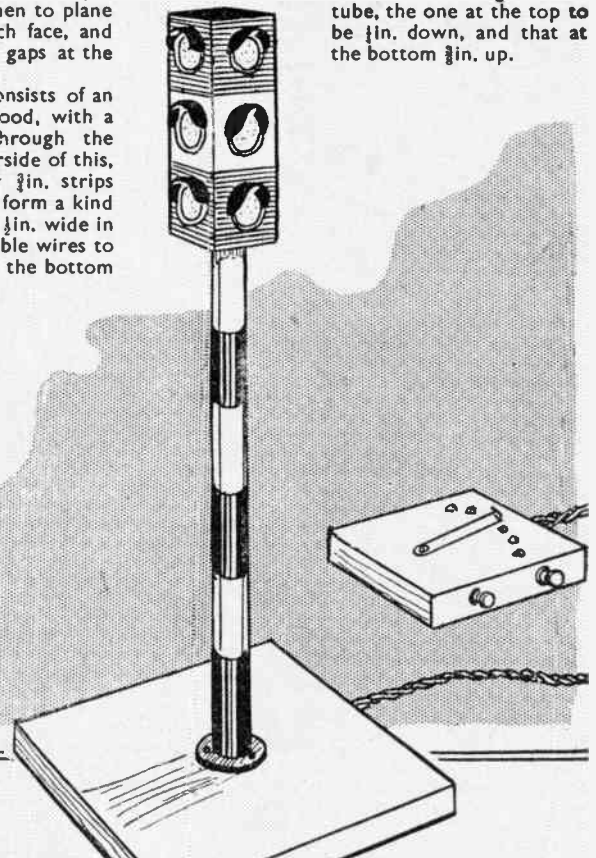
These four parts, which contain the lamp bulbs, are nailed to top piece C and bottom piece B. Note their position is a little out of centre, as indicated by the dotted outline on both B and C. The diagram, Fig. 1, gives a good idea of the lamp box, as we can now call it. The parts D are now screwed to cover the sides of this lamp box, as the horizontal section will make clear, in Fig. 2. Be sure to make up with close fitting joints,

an important point as regards the subsequent appearance of the model. It would be a good plan to cut parts D a little full in width, then to plane their edges to fit each face, and so leave no awkward gaps at the corners.

The base, Fig. 4, consists of an 8in. square of  $\frac{3}{4}$ in. wood, with a  $\frac{3}{4}$ in. hole bored through the centre. To the underside of this, glue and nail  $\frac{3}{4}$ in. by  $\frac{3}{4}$ in. strips of wood all round to form a kind of rim, leaving a gap  $\frac{1}{2}$ in. wide in one side for the flexible wires to emerge. Cover in at the bottom with another 8in. square of wood, screwed on for easy removal afterwards. At about the position shown in the drawing, screw five lengths of thin brass, 1in. long, for connections.

The pillar of the model is a 12in. length of  $\frac{3}{4}$ in. diameter metal tubing. Brass would be suitable for this and if possible choose a thin walled tubing to allow as much space as possible inside for wiring. For fixing this tubing to base and lamp box, cut from  $\frac{1}{8}$ in. metal two discs, as at G on the pattern page, and bore or cut out

central holes  $\frac{3}{4}$ in. as a tight fit over the tube. Also drill suitable screw holes where shown. Push the rings on the tube, the one at the top to be  $\frac{1}{2}$ in. down, and that at the bottom  $\frac{3}{4}$ in. up.



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

Here the rings are soldered to the tube. Be generous with the solder, so that a good fillet of it is worked on. Any roughness or unevenness is levelled off with a file. Screw to the base, as in Fig. 3, and similarly to the bottom of the lamp box.

### Painting

Now glasspaper all the outside wooden parts of the model. The sharp corner edges of the base, and top of the lamp box are rubbed off, but not too much. The whole can then be enamelled, the base white, pillar in bands of white and black, and lamp box black at top and bottom, with white at the middle. Now leave for the enamel to set, then remove the side parts D and unscrew the box from the tube for the wiring operation, an interesting and rather touchy business, requiring the instructions to be carefully followed to avoid annoying mistakes.

For the lamps, 12 2.5 volt bulbs will be required, of the kind fitted to the small torches. Press these lamps in the holes in posts A and tighten the side screws to contact them. Also see that the bottom stud of each presses against the brass parts E. Obtain a length of bare copper wire and wind the end of it tightly round a bottom contact screw, then up and round the middle and top screw. Carry the wire across the next post A, pressing it in the saw kerf, then twist it round the three screws, and so on until the wire connects every screw contact of the 12.

### Testing

It will be convenient if, when fitting posts A to the top and bottom, to arrange them so that a bottom saw kerf comes next to a top saw kerf, then the wire can cut across each post at the nearest point to its last contact screw. Cut off surplus wire at the last screw, leaving just  $\frac{1}{2}$  in. To this twist the end of a length of D.C.C. wire, and pass the latter between the posts and through the hole in the bottom of the lamp box.

A test should now be made to see if all lamps are properly contacted so far. Connect the wire from the screw contacts to a terminal of a 3 volt battery, then with a wire twisted round the other terminal, touch each of the brass stud contacts in turn. Each lamp should light, if the contacts, screw and stud, are functioning alright.

For the second wiring, note the order of the colours, shown in Fig. 6. To lessen chance of error, it would, perhaps, be wise to letter the posts where the lamps come, red, amber and green. To the red light connect a double wire, making two leads, by either twisting the bared ends round the stud contact (that piece below the fixing screw), or soldering it to it.

Pass it between the posts and through the hole in the bottom of the lamp box. To the green light connect one lead similarly, and to the amber one, two leads. To the ends of these wires, gum slips of paper, denoting which lamps they connect.

To facilitate this it will be as well to mark each face N., S., E. and W. re-

spectively. On the slips mark the leads N. red 1, N. red 2, N. amber 1, N. amber 2, N. green. When all the lamps are connected, push the bunch of wires

### MATERIALS NEEDED

For this model the following panels will be enough: H.4 one; G.2 one; softwood, G.D.6—three. A spare piece of boxwood or plywood can be used for covering the base at its bottom.  
18— $\frac{1}{8}$  in. round-headed screws.  
24— $\frac{1}{8}$  in. flat-headed screws.  
48— $\frac{1}{8}$  in. round-headed screws.  
2 brass terminals. 1ft.  $\frac{1}{8}$  in. diameter metal tube.  $\frac{1}{2}$  in. brass sheet, 1 $\frac{1}{2}$  ins. by 3 ins. Small piece of thin brass sheet for contacts and switch.

through the tube, removing the bottom of the base first.

These wires must now be soldered to the brass contacts already fixed there, and numbered 1 to 5. It is as well to add that as several wires have to be twisted together, a not too stout gauge of wire is advisable. No. 24 D.C.C. would do.

### The Wiring

Firstly, take the single wire, leading from the screw contacts, and solder this to contact 5. Now observe the following order, after sorting the wires out.

Take wires N. and S. red, E. and W. green (four leads), twist the ends and solder to contact 1. For the second signal, N. and S. red, N. and S. amber, E. and W. amber. These to contact 2. For the third signal, N. and S. green, E. and W. red. These to contact 3. For the fourth signal, N. and S. amber, E. and W. red and amber. It will be noted that there are six leads to signal 2 and 4, and four leads to the others. It all sounds more complicated than it really is. When connected, test the lamps again with the battery.

For the flex connection from model to switch, cut five lengths of single flex, as

long as the connection required. Solder the ends to the brass contacts in the base, and to help identifying them afterwards, label them respectively 1 to 5, corresponding to the contact they are soldered to. Now twist the cords together or plait them as preferred.

It will be advisable now to test again with the battery, it only takes a minute, and if an error is made it points it out and saves time later on. Connect cord 5 to the battery and see that when the other cords contact the remaining terminal, the correct lamps light up.

### Light Hoods

Before replacing the lamp box covers D, cut from  $\frac{1}{8}$  in. fretwood 12 of parts H for the spectacle rims, and 12 of parts I from tinplate, for the hoods. The latter are enamelled black, and the spectacle rims white or black, to match the covers. Bore three screw holes in each rim where shown to pass  $\frac{1}{8}$  in. round-headed screws.

For the coloured spectacles, as glass will probably be out of the question, thin coloured plastic could be substituted or coloured paper. The last would be the easiest method, and should be covered with mica.

Any difficulty about the mica can be solved by purchasing one or two mica windows, as used in oil stores from the hardware stores. Cut both into 1 $\frac{1}{2}$  in. squares and fix behind the rims with a touch of glue, then trim with scissors to the edge of the rims. Bend the hoods to the curve of the rims and screw both rims and hoods to the covers, one screw at the top entering both rim and hood. The two side lugs on the hood will come behind the rim lower down and the remaining two screws to each will secure. Now refix the covers to the lamp box.

### Switchboard

The switchboard, the last part to make, is shown at Fig. 5. It is a rectangle of  $\frac{1}{2}$  in. wood, with rim pieces of  $\frac{1}{8}$  in. wood round, underneath, with a bottom cover of  $\frac{1}{8}$  in. wood, screwed on. At 1 in. from the bottom end make a mark and from there, with a radius of 2 ins., strike an arc. On this arc, at  $\frac{1}{2}$  in. centres, drive six  $\frac{1}{8}$  in. round-headed screws. Turn over and file the projecting points of the screws down to leave flats to which the flex leads can be soldered.

For the switch, cut a  $\frac{1}{8}$  in. strip of brass to a length of 2 $\frac{1}{2}$  ins. long. Drill a hole at one end, and make a small hole through the wood for the switch screw, a  $\frac{1}{8}$  in. round-headed brass one. Place a washer under the switch and one above, push the screw through the lot and drive through the wood. The far end of the switch can be turned up a little. Run a file over the screw studs to render them all level. In the side of the switchboard fit a pair of brass terminals for connection to the dry battery.

Cut a channel through the rim of the board for the flex leads to enter, then solder leads 1 to 4, to the studs, leaving the end ones as 'dead' points. Lead 5 is

(Continued on page 109)

## A Model of the Coronation Chair

For making this historic model patterns are given on our free design sheet. A kit of wood, No. 2872, is supplied by Hobbies Branches and stockists for 3/11 or by post from Hobbies Ltd., Dereham, Norfolk for 4/9.



# Any youngster would be delighted to have this CHILD'S PULL-ALONG CAR

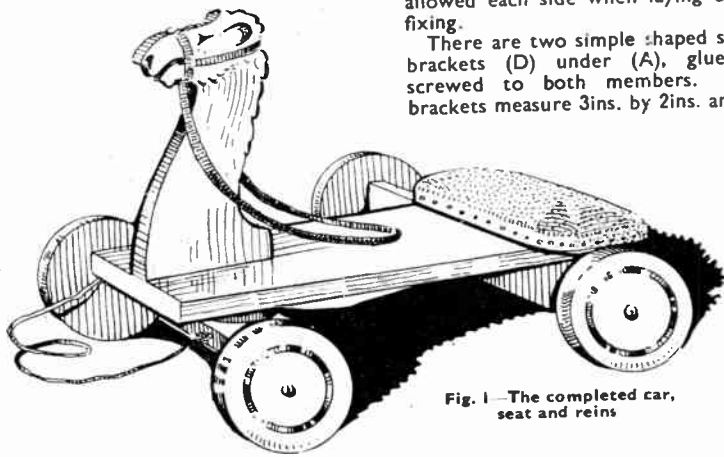


Fig. 1—The completed car, seat and reins

WE show on this page a splendid little runabout car for the quite young baby or youngster. We call it the 'Camel Car' because, as will be seen from Fig. 1, it has a realistic figure-head of the camel. The car can be used as a pull-along toy, with baby sitting on the padded seat and the big brother to pull it along.

A plan of the toy is given in Fig. 1, and some measurements are included which will help in the assembly. In Fig. 3 we see a side view showing the position of the various pieces in conjunction with the plan view. The piece (A), forming as it were the foundation piece, will first be marked and cut. It is a plain oblong measuring 16ins. by 4ins. by  $\frac{3}{8}$ in. thick, and at the front end a mortise will be cut in it 2 $\frac{1}{2}$ ins. long by  $\frac{3}{8}$ in. wide to take the head of the camel.

The next piece to cut will be piece (B), and this measures 6ins. by 5ins.; two corners will be trimmed away, as shown in the plan Fig. 2. This piece may be of either  $\frac{3}{8}$ in. or  $\frac{1}{2}$ in. stuff, and is glued and screwed to the end of piece (A).

The axle piece (C) is another plain oblong 10ins. long by 3ins. wide and this should not be thinner than  $\frac{3}{8}$ in., as it has to take the wheels. It would be a good plan to nail or screw this piece (C) to the platform (A) before piece (B) is fixed, and see to it that an equal width of 3ins. is

allowed each side when laying out and fixing.

There are two simple shaped support brackets (D) under (A), glued and screwed to both members. These brackets measure 3ins. by 2ins. and have

their outer corners removed, as seen in Fig. 3 and in the detail Fig. 5. This now completes the seat end of the car, with the exception of a cushion to go on top of piece (B).

The first member to make for the forward end of the car will be the turntable piece (E), which will be glued and screwed to the underside of the floor (A), see Fig. 4. Describe a circle 3 $\frac{3}{4}$ ins. diameter on a piece of  $\frac{1}{2}$ in. wood and cut round with the fretsaw, afterwards cleaning up the rough edges with glass-paper. A hole should be bored in this piece centrally to later receive the screw which will be put down through the mortise slot in (A) and through the hole in (E), just mentioned, and into the movable board (F).

Note here that the hole in (E) must be a fraction larger than the screw used, so as to allow the underparts (F), (G), etc., to move freely. A round-head screw should be used, at least 1 $\frac{1}{2}$ ins. long, and a thin iron washer should be laid over the hole in (E) before the screw is driven in.

To clear the head of the screw and the washer it will be necessary, when making the camel head upright, to cut out a circular notch in the tenon at the base, as seen in Fig. 7. A detail of the completed movable front axle is given in

Fig. 6. Board (F) measures 7ins. by 3ins. by  $\frac{3}{8}$ in. thick, and screwed and glued to this is the axle board (G) measuring 7ins. by 3ins. by  $\frac{3}{8}$ in.

To stiffen the fixing of the latter, two brackets (H) are put on, one either side of (G), as seen in the detail Fig. 6. The brackets are cut from wood measuring 2ins. by 1in.

The task of making the camel's head can now be undertaken, and a board of  $\frac{3}{8}$ in. thick wood will be wanted measuring 9ins. long by 5ins. wide. On this board set out the 1in. squares shown in Fig. 7, and draw in the outline of the head and neck, keeping strictly to the guide lines in the illustration.

Use a coarse fretsaw blade for the cutting, and keep strictly to the drawn line. Keep well to the outside of the drawn lines when cutting the tenon, so as to ensure a good fit when it is glued into the mortise. See that the tenon and the flat surfaces each side of it fit properly before actually making the glued joint. Two strong screw eyes should be run into the front edge of piece (F) to take the cord for pulling the car along.

The wheels may be obtained already finished and painted and bored ready for fixing from Hobbies Ltd. They are 4ins. in diameter and the round-head screws with washers are supplied with the wheels.

Before the wheels are put on, however, the car should be nicely painted up in bright colours. Two coats of paint should first be put on as a filler for the grain, a light rubbing with fine glass-paper being given between each successive coat. The finishing coat should be enamel of any chosen colour. The markings of the camel's head should be put in black or brown to show up well on the ground colour.

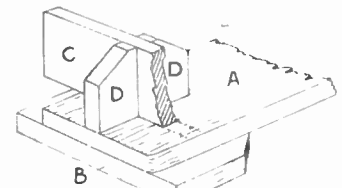


Fig. 5—Support brackets

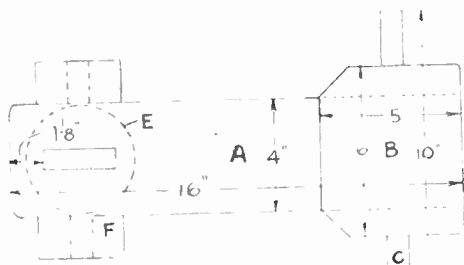


Fig. 2—Plan of platform and axles

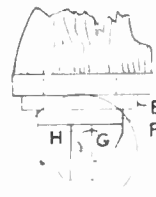


Fig. 3—Side view of undercarriage parts

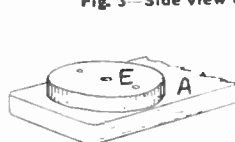


Fig. 4—Turntable part

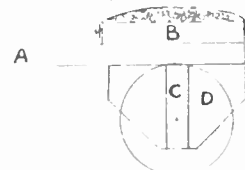


Fig. 6—Front axle

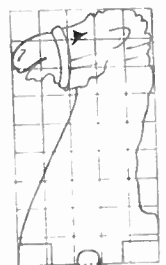


Fig. 7—The head shape

# Some useful and simple everyday articles to make in WOODTURNING

**N**EW tool handles are often required in the workshop, and these are easily produced on the lathe. There are two main types of handle, one intended for saw-files, bradawls, etc., and the second for chisels and similar tools. An identical method of working is used for both types.

## Handle Turning

A piece of ash 6ins. to 8ins. long according to requirements, and about 1in. square, is turned to a cylindrical shape. The edge shaping is roughed out with the gouge and finally smoothed with the chisel. The parting tool is used to cut into the thickness where the diameter is to be reduced for the brass ferrule, and in the case of the chisel handle three lines can be put round the body with the same tool. The thinning down at the ferrule end and the half-round shaping at the end of the file handle is done with the chisel. Figure 1 shows the two types of handle.

A handle of much the same type as that used for a file may also be used for a rolling pin (Fig. 2). In this case, however, a fairly long projecting dowel is



Fig. 1—Two tool handles



Fig. 2—Rolling pin handle

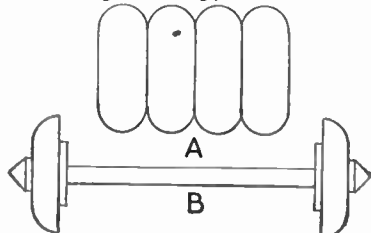


Fig. 4—Wheels and door knobs

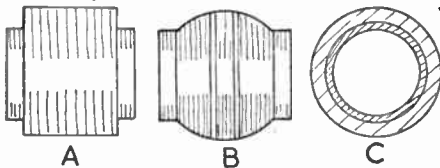


Fig. 6—Styles for serviette rings

left at the end of the handle so that it may be glued into a hole bored in the end-grain of the cylindrical roller.

Legs for small occasional tables give plenty of scope for good craftsmanship. Fig. 3 shows two types of leg that may be turned quite easily. No specific

dimensions have been given as these will vary according to requirements, but the proportions are approximately correct. In both cases the work is started by first reducing the wood to a cylindrical shape from a point 4ins. from the top down to the bottom of the leg. The parting chisel is then used to cut in the depth lines, the wood is reduced between them as necessary, and the final shaping is done with gouge, chisel and scraper; the drawing shows the appearance of the leg after the preliminary cutting in stage.

Much time and trouble can be saved in lathework by working 'in duplicate' whenever this is possible. For instance, in making a set of wheels these could all be cut and shaped up at the same time, being separated, when finished, by the parting tool (Fig. 4a). Similarly, the door-knobs shown in Fig. 4b could be made as a pair with a long connecting dowel.

## Light Standards

Two turned items that are in constant demand are the lamp standard and candlestick. These can be cut out of the solid, but the method is very wasteful of material. The normal procedure is

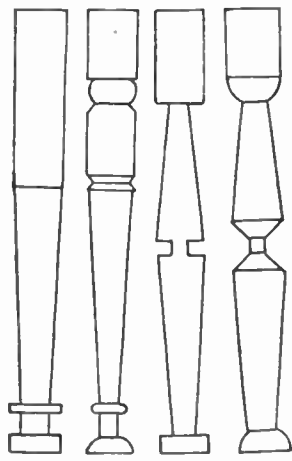


Fig. 3—Some shapes of leg turning

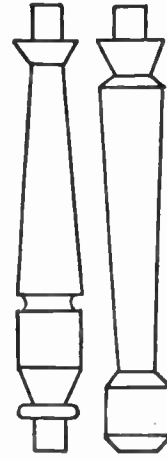


Fig. 5—Lamp standards

to turn the base separately on a faceplate (see below), leaving a dowel at the bottom of the column to fit into the base. Two simple columns are shown in Fig. 5.

So far only turning 'between centres' has been considered, but for thin work of large diameter (e.g. lamp standard bases) or hollowed work like bowls, the face-plate must be used.

For this, a metal face-plate is necessary, usually tapered so it fits into the head-stock spindle. A temporary wooden face is screwed to the face-plate from the back, and the block to be turned is glued (or sometimes screwed) to the

wooden face. A layer of newspaper between the two pieces of wood will allow of their being easily separated when the finished item is to be removed from the lathe.

The process of face-plate turning is quite simple. The work is first reduced to its outside shape, then the tool-rest is turned at right-angles so that the inside may be cut away. When doing this last operation the cutting is started from the outside and runs towards the centre, using the gouge or chisels as necessary.

## Serviette Rings

For a first attempt at this form of work a serviette ring could be made (Fig. 6). Here a 2in. long piece of wood is reduced to 2in. diameter, then grooves 1/4in. wide and deep are worked on the two ends (Fig. 6a). With the chisel the projecting rim is half-rounded and a couple of scribed lines are made round the centre of the rim (Fig. 6b). The tool-rest is then turned at right-angles and the inside is hollowed out to within 1/4in. of the outside edges. Fig. 6c gives an end elevation of the finished ring.

An even simpler piece of work would be to turn the lamp standard base to the

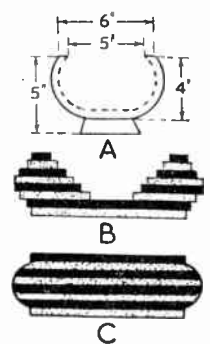


Fig. 8—Turned fruit bowl

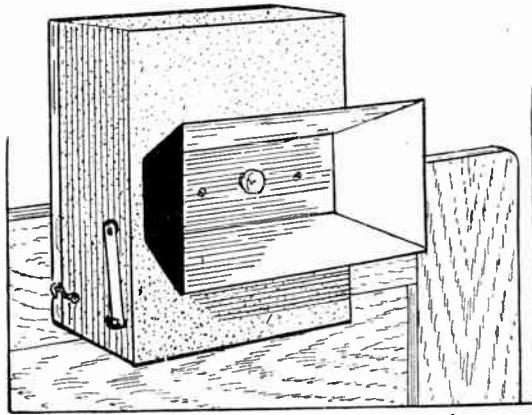


Fig. 7—Bases

shape shown at Fig. 7. When any considerable depth of hollowing out has to be done, the chisel may project long way beyond the tool-rest, and it then becomes awkward to handle, being very liable to slip and disfigure the turned work. To overcome this a 'rest' is used. This is a long piece of metal having a short right-angle bend at the bottom and fitted with a chisel handle at the top. In use, this handle is held under the armpit while

(Continued foot of page 104)

# Made complete with reflector and rail clip is this BATTERY BED LAMP



**R**EADERS who enjoy reading in bed, and cannot fit the usual type of electric lamp owing to the absence of house current, could make the lamp illustrated, which employs a dry battery. Naturally, there is not the same volume of light, but by concentrating the beam on to the book there is enough to read by. A cycle lamp battery, which has a comparatively long life, supplies the current, and provided the light is not stretched unduly, will last a reasonable while.

## Wooden Case

The case is made of  $\frac{1}{2}$  in. thick fretwood, except the front, which needs  $\frac{3}{8}$  in. thick wood. The wood parts of the case are grouped together in Fig. 1. The front (A) is, as mentioned, cut from  $\frac{3}{8}$  in. wood to dimensions given. Centre it and there bore a  $\frac{1}{8}$  in. hole through for the lamp. Cut the front across, on the line, to make two parts. Making a small hole first, drive a  $\frac{1}{8}$  in. thin brass screw into the cut edge, it should enter the hole and make contact with the lamp when the latter is in place.

Opposite this, on the edge of the smaller piece, saw out a semi-circular piece, as shown by the dotted lines. To the protruding edge of the screw head twist a few inches of copper wire, as in detail (D) in Fig. 2, for connection.

The back of the box is cut the same size as the front, but of  $\frac{1}{2}$  in. wood. Now cut two sides to dimension at (B). On

what will be the left side, a switch arrangement is to be fitted. First, at  $\frac{1}{2}$  in. from the bottom drive in two  $\frac{1}{8}$  in. round-headed brass screws,  $\frac{1}{4}$  in. apart, and where shown in the diagram. Above these make a small hole for the switch screw.

The switch is a piece of  $\frac{1}{8}$  in. wide springy brass strip, as at (E) in Fig. 2. Bore a hole for the screw near the top of it, then fix to the box with the screw, putting a brass washer under the switch first. The end of the switch arm can be curled up a little for easier grasping. Turn the wood round, and file the protruding tips of the screws a little. To those belonging to switch, and bottom right contact screw, solder lengths of copper wire for connections, as at (E).

The ends of the box (C) are now cut. To the one that will be the top of the box, find the centre on the underneath surface, and there drive, partly in, a  $\frac{1}{8}$  in. round-headed screw, to make contact with the top terminal of the battery.

To this screw another length of copper wire is attached, as at (F). Glue and nail the sides and ends of the box together. The back is hinged at the top, and a pair of hook and eye fasteners are fitted, near the bottom, to keep the back closed.

## Wiring

The larger portion of the front of the box is fitted on, then the connections can be made. No separate diagram is really needed here. The wire from the lamp hole is joined to the wire leading from the switch arm, and the wire from the bottom switch stud to that attached to the screw in the top of the box. Use D.C.C. or enamelled wire, for connections and have those portions of the wires soldered to the screws, or twisted together. Tuck the wires inside the box neatly to not impede the placing of the dry battery. Now test.

Screw a lamp in the lamp hole and see the screw, driven in the edge, contacts it efficiently. Place a battery in the box and take note that the terminals of it contact

the screw at the top and the tip of the lamp in front. Now switch the arm to the right stud, and if all is O.K., the lamp will light up. If it does not, in all probability the terminals are not contacting properly and should be separately tested. When all is right, screw the other part of the front on. Remove the battery, then varnish or paint, as preferred, the box.

## The Reflector

The reflector, Fig. 3, is made from a suitably sized piece of bright tin plate. The pattern is drawn over  $\frac{1}{8}$  in. squares and these squares should be copied full size on to thin white paper and the shape carefully pencilled on. Note the narrow laps at top and bottom wings. These are for soldering the reflector when shaped up.

Gum the pattern to the tin, and then cut out the shape. Turn over the laps and cut out a hole in the centre, large enough to fit over the lamp. Two smaller holes are punched through, either side of the lamp hole, for the fixing screws. Soak the tin in warm water to remove the pattern, and then dry it. Bend up the wings to 45 degree angle, and solder the corner joints.

If the cut edges at the front are objected to, when cutting the shape allow an extra  $\frac{1}{8}$  in. to the outer edges of the wings, and when the reflector is soldered to shape, turn over these extra  $\frac{1}{8}$  in. and hammer down on the outside.

## Paint and Polish

Give the outside of the reflector a coat of black enamel, then fix to the front of the box with a couple of  $\frac{1}{8}$  in. round-headed screws. Polish up the inside surface with a metal polish, making it as bright as possible.

If the lamp is to be fitted to one of the wood frame bedsteads, a simple metal clip, as at (G) in Fig. 4 will suffice. It can be bent up from stiffish brass or aluminium strip, and be screwed to the back of the box. Bend it to suit the thickness of wood of the bed-head.

An iron bedstead requires something different, obviously, so a fastener of the pattern shown at (H) will probably suit

(Continued foot of page 102)

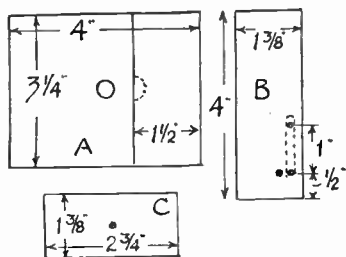


Fig. 1—The wooden case parts

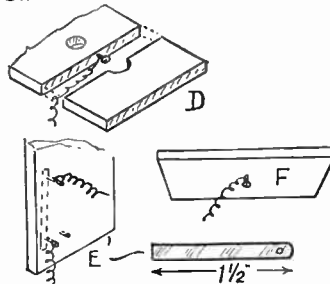


Fig. 2—Detail of wire and switch

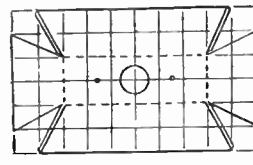


Fig. 3—Reflector shape

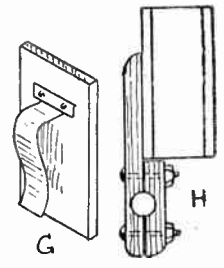


Fig. 4—Rail fixing and clip

# Some additional notes for photographers— ENLARGER HINTS

**O**UR article on the making of a fixed-focus photographic enlarger in our issue of August 30th has attracted a good deal of interest, and many readers have written in for further details, chiefly in connection with a lens of a different focus to that mentioned, or for taking, say, 2½ in. square negatives instead of the usual rectangular '120' size.

The following additional notes will, therefore, be of interest. Regarding the lens, apart from using a watchmaker's eyeglass of 5½ ins. or any other focus, the lens from an old camera may be used. At junk stores and on street market stalls one often sees cameras of 1910-ish vintage. This is with spool and plate-holding arrangements quite out of place for modern needs but having the lens intact even if the shutter mechanism has failed.

Such cameras can be obtained very cheaply merely for the lens. The camera should be taken to pieces carefully, particular note being taken of the distance from lens to surface of plate or film. Keep the lens in its original setting, on the front board.

## Proportionate Enlargements

For proportion of negative to enlargement, such sizes as 2½ ins. by 3½ ins. are directly related to ¼-plate sizes and, more or less, to a postcard size. In other words, the whole of a small negative will more or less exactly cover a larger size sheet of the size just mentioned.

Where the not-unusual 2½ ins. square size is concerned, the best proposition is to construct the enlarger to take square enlargements. A size 4½ ins. square will be quite sufficient for most people, and 3½ ins. square may be better. With a fixed-focus enlarger of this type, the practice of making, say, ¼-plate enlargements from rectangular portions of a 2½ ins. square negative is not really possible.

To vary dimensions, draw, on a sheet of paper very accurately, a diagram, as shown. First set up a line to represent the negative, (C) representing the longest way of the negative. From its centre, a horizontal line is drawn. Along this, set off distance (A). This will be known, as it is the focal length of the lens.

From the ends of (C) draw lines through point (X). Within this 'wedge', so to speak, set off distance (B) (found by trial and error) where (D) will represent the long way of the enlargement. The whole problem may be worked out quite easily by mathematics but we do not assume that all readers have this knowledge.

## Alternative Use of Old Camera

Instead of taking an old camera to pieces it can be built into the enlarger. This is shown diagrammatically and without constructional details (which a handyman can work out for himself) in the appended sketch.

What it amounts to is that instead of there being one long box with a centre partition carrying the lens, as in the

electric light may be used. Obtain, if possible, a piece of flashed opal glass. Failing this, get two pieces of ground glass and separate them by two ¼ in. thick strips of wood at the edges. Hold the lot together with rubber bands, etc., and treat as one piece of glass.

Lay the glass over the negative end of the enlarger. A 100-watt electric lamp may then be used, placed a short distance away. A 4½ in. enlarging condenser would give more speedy printing, but this would add to the expense and carry this enlarger beyond the simple model originally envisaged.

## Focusing

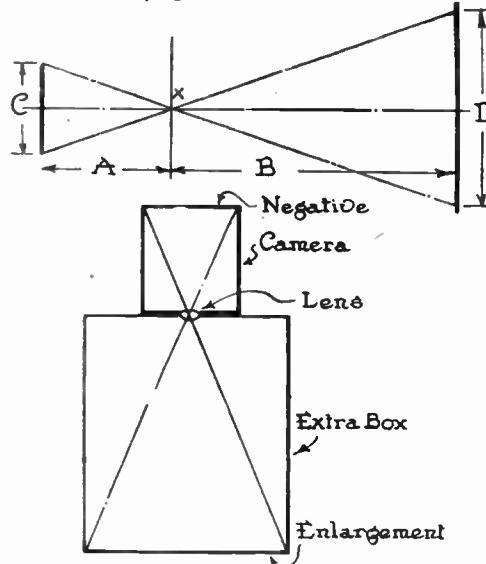
The chief problem is to get correct focus and except by a lucky fluke, it is unlikely that this will be obtained at a first trial. The following is a simple yet effective way of testing.

Between the glasses of the negative holder, place one or two human hairs. Make up the enlarger so that one side can be taken off and do not fix the lens holding panel permanently, but arrange so that it can be moved back and forth a little. Fix a piece of white paper in the place where the photographic paper will finally come. With the aid of an electric lamp and opal glass, as just described, let light shine through the lens on to the paper.

It will greatly help if the electric light and the negative-to-lens part of the box are screened with a large cardboard carton, bits of blanket, etc., so that the only light that matters is cast, via the lens, on to the white paper.

At first, just a blob of light will appear, but if the lens board is racked to and fro, there will come a time when the hairs in the negative holder are seen to the best advantage, sharp and clear.

Of course, the paper-holder may also be temporarily fixed by means of, say, sticking plaster, so that it can, too, be moved. The slightest adjustment usually results in a contrast between a blurred enlargement and a sharp one. When the correct distances have been found, the various parts are fitted permanently together. (297)



original model, we now have two separate compartments, one being the camera and the other being a plywood, light-tight box, fixed firmly and permanently together. The negative and the paper holders can be designed from instructions already given in the original article, whilst distances can be worked out from notes just given.

## Illumination

For winter evening work where the use of daylight is out of the question,

## Bed Lamp—(Continued from page 101)

as well as anything. This is practically self-explanatory. It is a piece of 1 in. thick hardwood, 6 ins. long, and 1½ ins. wide. At 1½ ins. from the bottom, a hole to fit the diameter of the steel tube employed to make the bedstead frame is to be bored through, but before boring, drill a ¼ in. hole through, just above, and below, where the larger hole is to come.

These holes are bored at right-angles to the larger hole.

Now saw the wood strip into two ½ in. ones, and cut one of these to 3 ins. long, measuring from the bottom. Join both together with 2 in. iron bolts, fitted with wing nuts. The upper half of the fitting is screwed to the door of the lamp box. The fitting then goes over the rail of the

bedstead, and is tightened with the bolts and nuts.

A 7 ins. by 14 ins. panel of ¼ in. fretwood will be ample for the box, and leave a handy piece over for another job. The thicker front can be cut from any suitable scrap of wood at hand. One pair of ¼ in. brass hinges will be required, and a pair of hook fasteners.

# For any size of table it is essential to have A BILLIARDS MARKER

**W**HETHER one plays billiards on a full-size table or on a simple home-made affair that rests on top of the dining-room table, a marking board is essential. The full-size board described below can be made with the simplest of tools.

The first step is to make up the main box framework, using wood  $\frac{1}{2}$  in. wide by  $\frac{1}{2}$  in. thick. This must be chamfered off for  $\frac{1}{8}$  in. along the top edges, while a rebate  $\frac{1}{4}$  in. wide by  $\frac{1}{2}$  in. deep is worked along the bottom edge. In end-section the wood will then resemble Fig. 1.

## Box Frame

Two strips 1ft. 6ins. long and two  $6\frac{1}{2}$ ins. long will be needed for the framework. The ends of these are cut down in a mitre box through the 1in. thickness so that they can be assembled into a box with outside dimensions of 1ft. 6ins. by  $6\frac{1}{2}$ ins.

This box must be glued together at the corners. If suitable mitre cramps are available these can be used to hold the corners until the glue has set. If not, a stout piece of cord should be passed round the outside of the box and firmly knotted. Two small blocks of wood can be put between the string and the moulding at each side, and when the joints have been glued these blocks are forced outwards towards the corners, thus bringing pressure to bear on the joints.

The box should be left in this improvised clamp until the glue has set hard, when two holes can be drilled through each joint with an archimedian drill, and some fine panel pins driven through these holes to make the corners secure.

## Fancy Top

A pediment 8ins. long,  $\frac{3}{4}$  in. wide and  $\frac{3}{4}$  in. thick, is then made, this having a simple half-round shaping at each end (Fig. 2). Two small triangular brackets are fixed at the back of this, and by means of glue on the bottom edges of the fitment and screws driven through the brackets, the whole is fastened to the top

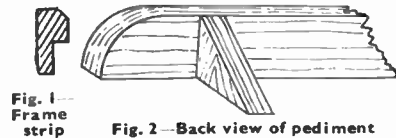


Fig. 1 - Frame strip

Fig. 2 - Back view of pediment

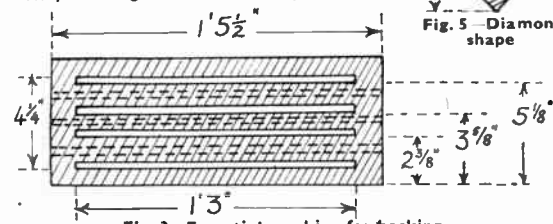


Fig. 3 - Essential marking for backing

of the box. It is fixed so that it is mid-way along the length, and with its outer face flush with the outer surface of the box moulding.

There are two ways in which the front panel can be made.

The simpler method is to use a sheet of  $\frac{3}{8}$  in. plywood measuring 1ft.  $5\frac{1}{2}$ ins. long by 6ins. wide. Four slots, all 1ft. 3ins. long by  $\frac{1}{2}$  in. wide, are sawn from this with a fretsaw, their position being shown in Fig. 3. The edges of these slots must be cleaned up with a chisel so that they are perfectly straight.

A less satisfactory method is to use five pieces of  $\frac{1}{2}$  in. solid wood, two being  $\frac{3}{4}$  in., two  $1\frac{1}{2}$ ins. and one  $\frac{3}{4}$  in. wide. These must be fitted into the rebates of the box so as to leave the  $\frac{1}{2}$  in. wide spaces between their inside edges, thus matching-up with the plywood panel. A small strip  $\frac{3}{4}$  in. long by  $\frac{1}{2}$  in. wide must be glued between the strips at each end to close in the grooves (Fig. 4).

Whichever method is used for the panel, the completed item is put into the rebate of the main box and is held in place by a few picture-frame sprigs.

## Markers

Four markers will be needed. The front of each is cut to a diamond shape from a piece of wood measuring  $\frac{1}{2}$  in. long,  $\frac{3}{4}$  in. high and  $\frac{1}{2}$  in. thick. The measurements for the diamond are given at Fig. 5.

A strip of  $\frac{1}{2}$  in. square wood is glued behind each marker, its edge being level with the widest part of the shaping, while its sides are shaped off flush with the sides of the markers (Fig. 6). Each marker in turn is put into place from the front of the panel, and a small piece of  $\frac{1}{2}$  in. wood is glued to the back of it to hold it in place. Each marker should slide quite freely along its slot.

Three  $\frac{1}{2}$  in. wide strips, 1ft.  $5\frac{1}{2}$ ins. long, are then fixed at the back of the box, the

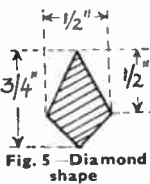


Fig. 5 - Diamond shape



Fig. 4 - Forming the marker grooves

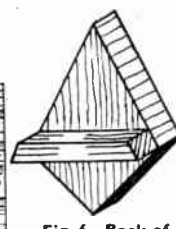


Fig. 6 - Back of marker

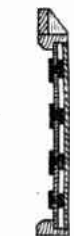


Fig. 7 - Section of board

position of these being shown by dotted lines in Fig. 3. The ends of these strips must be supported on  $\frac{1}{2}$  in. thick strips at the ends, the object being to prevent the front panel from being pushed in as the markers are slid along.

## Backing

The board is completed by fastening a sheet of plywood or stout cardboard in the back, holding this in place with picture-frame sprigs. Fig. 7 gives a section through the completed box.

At this stage the box can be thoroughly cleaned up with glass-paper and be either stained or lacquered. 'Centre points' for the numbers should then be lightly marked in pencil on the front panel. These numbers can be painted on, if so desired. They are drawn in the appropriate places (as shown on the sketch of the finished article) and may be painted either black or white. A neater method, particularly if the worker is not a good draughtsman, is to use small-sized transfers or printed figures, taking care to line up the bottom of the figures.

These small transfers are not too easy to apply because of their size, and should in any case be coated with clear varnish afterwards to preserve their face.

If the woodwork has been stained, it can be finished with a light coating of wax polish, while a lacquered finish can be 'burnished' to a certain extent with a soft duster. To finish off the work, the markers that fit in the top and third grooves should each be marked with a small dab of white paint so that the 'spot' and 'plain' players each have their separate set of markers. (295)

# These gadgets cut out much labour as WASHING-DAY SAVERS

**A**NY time saved on washing-day is a blessing to the housewife and a chance for the handyman to show his ability in making suitable gadgets and labour-saving articles.

The ordinary clothes prop is not always so handy when it comes to various heights of line and shifting, perhaps, from one part of the garden to the other. One can make a very good extending one (Fig. 1) which can be adjusted from 1½ ins. by 1½ ins. wood, which is quite strong enough for this.

## Prop Adjustment

Adjust your lengths so that you can use two sections and at the base of each drill some holes about 2 ins. apart and ¾ in. in diameter to take a long nut and bolt. As shown in the sketch you will see that the prop can then be fixed to suit you by adding other holes.

Props also have a habit of slipping from the line. Here again, make the prop from 1½ ins. square wood. Then 3 ins. from base, drill a hole ½ in. diameter. Make a panel of 1 in. wood about 8 ins. by

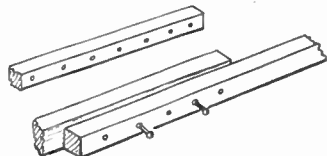


Fig. 1—A prop extension piece

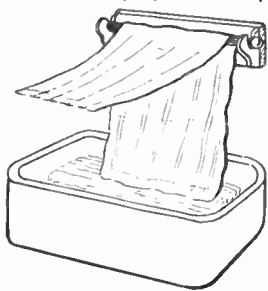


Fig. 4—A handy blanket holder

10 ins., although the size is not all important as it only serves as an anchor.

Buy two ordinary flat angle brackets of 3 in. length and screw these to the centre of board, leaving a gap so the prop can be moved backwards and forwards freely. Fix the prop on the brackets with a large nail or nut and bolt.

Space for drying small items is always a problem and yet 17 ft. of airing space can be made over the cooker or gas range with the aid of our usual old stand-by, the dowel rod, which is now obtainable in all sizes.

One can make this arrangement, as seen in Fig. 2, with a toy wheel of soft wood about 6 ins. in diameter. Failing this a disc cut with the fretsaw will do. Fix the wheel in the wood vice and drill holes round to take lengths of dowel about 15 ins. long. Make sure you get them evenly spaced and also at the correct angle. You can do this by continuing the direction of drilling to the centre.

Glass-paper all the parts and drill a hole through the centre to take a length of ½ in. dowel. If you continue this through below the disc by 6 ins. you can make a further one to hang underneath, provided space permits. This will double the airing space right away.

## Driers

Wet washing days cause considerable inconvenience, especially in airing large items. Some people keep three lengths of 7 ft. 1½ ins. by ¾ in. flat wood handy and this they use to put across from the backs of two kitchen chairs in front of the

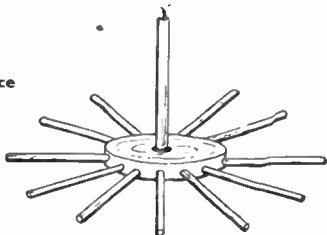


Fig. 2—A hanger for 'small's'

fire. It is surprising how quickly these items will air this way and the idea is not so difficult as the hanging airer. In such cases, the wood must be well glass-papered and clean.

Space is a great bugbear where airing is concerned. Some domestic stores sell what is known as a 'Clothes Maiden' which is smaller than the normal airer. In case readers are not familiar with it they will soon get the idea of its shape from the drawing at Fig. 3 and no further details will be needed in its construction.

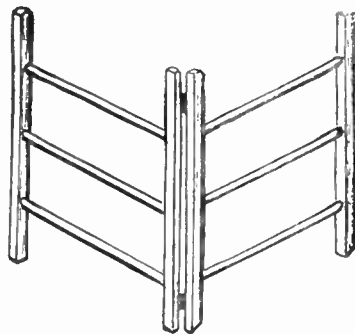


Fig. 3—A small handy clothes horse

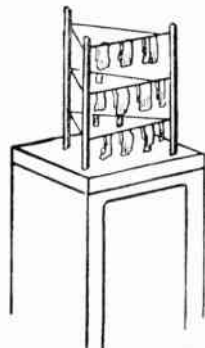
It is simple and only needs clean 1 in. square wood and ½ in. dowels. Perhaps the reader would prefer to make his own style and therefore save space on the position of his cross bars. The main idea is to have two sides hinged either with hinges or webbing and complete the triangle with a third section which can be made tied with tape. As will be seen this gives ample drying space and can be stood on top of a cupboard in the kitchen or scullery.

## For Heavy Work

Single handled, heavy towels, blankets and sheets are very difficult to handle and the sink is not the easiest place in which to manipulate these items when fully soaked in water. At the same time it is the best place for it.

Here is a simple idea, illustrated at Fig. 4, for the handyman. Fix, so it can be taken down when not in use, a towel roller large enough to take the blanket when folded. This enables both hands to be free and as the article is rinsed in the sink you draw it up and over the roller.

The weight is not on the arms as in the old way and you save any chance of marking the blanket or curtain. Rawl-plugs could hold it or you could make it a fixture and raise the top of the holders so



that a handy shelf could be fitted. Leave ample room for the thick texture to go through. A removable roller would be best and this can be scrubbed clean each time as unlike the towel roller, considerable dye stain may come off and damage other articles. (267)

## Woodturning—(Continued from page 100)

the hooked end projects beyond the tool-rest, giving support to the front of the cutting chisel.

A fruit or nut bowl always looks well in turned work. Suggested dimensions for a useful bowl are given at Fig. 8a, and the method of working is obvious. Such a bowl would look very well if carried out in walnut.

The only drawback to this bowl is that it must be worked in solid wood, with a great waste of material. Given sufficient panels of ½ in. or similar thickness wood, however, it is possible to make a laminated bowl. This would look particularly well if two contrasting woods were used. (Fig. 8c). You can use two varieties of wood in alternate

layers or vary each one right through.

With a fretsaw the centre could be cut out of each panel (leaving that piece of wood available for future use and also lightening the subsequent work of turning) and the pieces are glued above each other to gain the requisite height (Fig. 8b). The turning would then be done in the normal way. (262)



# Books to Read!

A review of interesting books for craftsmen which have been recently published. Obtainable through newsagents or booksellers or direct from the publishers mentioned.

## Junior Science by Stuart Miall

THIS is a new three-volume work which deserves a place in the home of every intelligent and thinking reader. It is of absorbing interest and lasting value, because it sets out in such simple way the fundamentals of science in its various phases. There are 70 chapters, running to 892 pages each one of which is illustrated with large, clear understandable diagrams or actual photographs. It covers Engineering, Astronomy, Mechanics, Physics, Chemistry, Mathematics and Natural Science and covers not only their elements and principles, but shows their practical application in everyday life. The pages and print are large and clear, and each volume is beautifully bound in embossed red cloth with gold blocking—so forming a worthwhile addition to the home bookshelves. Just the set of books for junior to persuade dad to buy, knowing they will both be intensely interested in its educational pages. A clear understanding of principles and practice is easily attained, whilst those definitely studying for school or university examinations will, undoubtedly, find all the information they need presented in concise, but helpful manner. The author, undoubtedly, knows his subject and the way to present it to prove fascinating reading. The free brochure offered by the Publishers should certainly be in the hands of all keen readers.

Published by The Caxton Publishing Co. Ltd., Clun House, Surrey Street, London, W.C.2—Price 85/6 in cash or 90/- on monthly payments.

## Wood Finishing by W. A. G. Bradman

ALL too often we find what would otherwise be an excellent piece of woodwork, is spoiled by the finish. For some reason amateurs will spend happy hours with carpentry tools in the construction of the article in hand, but will rush the last operation of finishing, and literally spoil the whole thing. This applies to painted toys, to coloured models, and to home carpentry articles. It should never be—particularly when there are such helpful books as this to help out. The author has experience to help him and is able to convey his knowledge so any amateur can follow. The processes of finishing are not speedy—and, perhaps, it is this urgency which results in bad completion. At the same time a really good piece of work demands a good ending, and there is nothing more beautiful than a well-finished article in wood. The whole

technique of staining, polishing, varnishing, french polishing, and the more modern spraying are dealt with in a thorough and helpful manner.

Published by W. & G. Foyle Ltd., Charing Cross Road, London, W.C.2—Price 2/6

## Practical Upholstery by Charles H. Hayward

THERE are few who have been in possession of a home long, who have not required the services of an upholsterer, and many is the piece of furniture discarded because it requires this attention and never gets it. The work of course, is a specialized trade, but with a book such as this, there is every possibility of the average home handyman being able to do his own repairs and general upholstery work. It is worth it, too, when professional repair and material are so costly. At least a trial can be made on the wanted job, and a fascination and pleasure can be found quite easily in the work. This excellent book is written by a practical man with years of experience and in its clear-type pages, diagrams and photographs, every need is covered, concisely and easily, whether for amateur or professional. Whether you want to cover a slipper box or a settee, the book tells you how.

Published by Evans Brothers Ltd., Russell Square, London, W.C.1—Price 7/6

## The Railways of Britain by W. H. Boulton

WHETHER you are a railway fan or not, you will find this book immensely interesting, with its fascinating story and factual coverage of the

systems of railroad from their introduction in 1825. The story is built up as various early lines were laid down in the different districts. There are chapters of the old provincial systems of 120 companies and their amalgamation into four after the 1914-18 war and final conversion into the monopoly of British Railways. The vast organisation of a railway is explained, the ancillary business of docks, canals, road and air transport, the tubes and electrification, post office mails, etc., are all dealt with by an author whose lifetime of service and ability to write provide a story worth reading and a book worth keeping. The book itself is beautifully produced on art paper with clear photographs and large type covering 384 pages. As a book of reference it is invaluable, as a railway story it is delightful.

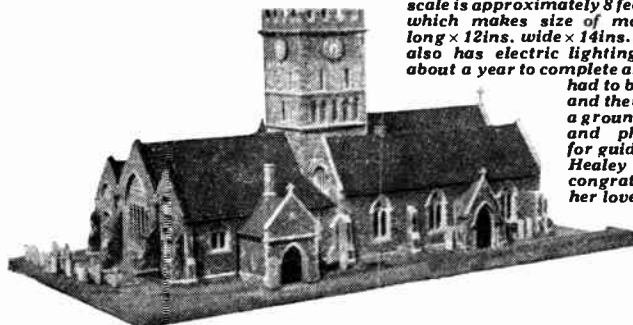
Published by Sampson Low, Marston & Co. Ltd., 25 Gilbert Street, Oxford Street, London, W.1—Price 21/-

## The Legend of Aladdin

THIS is certainly more than a book, because it not only tells the story, but provides colour card cut-outs so you can build a model miniature theatre, with colourful scenery, figures, backcloths and effects. Many of our readers will make the whole thing more permanent and usable by mounting the card on thin wood and cutting out the parts with a fretsaw. The construction of the little model is straightforward, and when complete can be used as a puppet show with the story, dialogue, and even musical score provided. This new pro-

## An Attractive Architectural Model

OUR readers are always bursting out in original places, and here is another instance of realism and ingenuity. This 20in. model is a replica of St. Laurence-in-Thamet Church, a real gem of English architecture, built nearly 900 years ago. The builder was Miss E. Healey of Grange Road, Ramsgate, who had it on show recently at the local Model Club Exhibition. The model is made entirely by hand, of plywood of varying thicknesses, and the flint and stonework painted on. The stained glass windows are done with Perspex, and are painted in colour at the back. The scale is approximately 8 feet to 1 inch, which makes size of model 20ins. long x 12ins. wide x 14ins. high. It also has electric lighting and took about a year to complete as drawings had to be prepared and there was only a ground floor plan and photographs for guidance. Miss Healey is to be congratulated on her lovely work.



duction is sure to be as popular and successful as its predecessors in the same series.

Published by Medallion Press Ltd., 5 Dowgate Hill, Cannon Street, London, E.C.4—Price 3/-

### Table Games

by Ray Marran

ALREADY we are beginning to wonder what we shall do at Christmas and hoping the time will not 'hang' for want of something to do. Readers of *Hobbies Weekly* will find plenty of suggestions to prevent such a situation and this book should be also borne in mind for certain occasions. These games are almost all confined to the simple card type of 'snakes and ladders' or 'ludo', but have a wide range of novelty and interest for lasting amusement. There are for instance 12 varieties of tiddley-wink games, nine checkerboard games, and an amazing range of spinning, counter and running games. There are altogether 60 to choose from, all played with simple board bases, spinners, counters, etc., the production of which is plainly told at the beginning of each section. Get the book now, and you will ensure peace and

happiness for many moments, either when the party begins to flag or your own interest wants a change.

Published by Nicholas Kaye Ltd., 1 Trebeck Street, London, W.1—Price 6/-

### Motor Cars, Railways, Ships and Aeroplanes

THE comfort, speed and science of modern transport by air, sea, road or rail cannot surely have been put into any book more completely, more lucidly and in a more interesting manner than this latest book of the well known series. There are over 300 illustrations in its 384 pages and the features cover all the latest developments introduced into the various services dealt with. Apart from the excellent photographic pictures there are dozens of drawings with cut-away how-it-works details which clearly illustrate many of those intriguing processes about which the average reader has so often wondered. Jet, rocket, diesel, radar are all up-to-the-minute processes introduced into modern travel and here you find how they serve. Altogether a fascinating book to read—and one to pick up at any time again and again to learn a little bit more.

Published by the Book Dept., Odhams Press Ltd., Long Acre, London, W.C.2—Price 8/6

### Handtools for Wood and Metal Work

by R. Harries

TOO frequently the handyman treats his tools with casual disregard and forgets they are the real asset to his hobby or work. Too often they are used without proper knowledge, and allowed to become unkempt and uncared for through lack of interest. Tools are valuable for the excellent work they produce and a book such as this shows you really how to use them to get full value. Even though you do not possess all those dealt with, every reader will have many of them, and a perusal of the details will prove what better service he can obtain by a more thorough knowledge of their use, care, and repair. Such common subjects as rust, space, storage, edges, etc., troubles we all encounter, and how to deal with them is one of the many things worth knowing and sufficiently dealt with in this book.

Published by G. Bell & Sons Ltd., York House, Portugal Street, London, W.C.2—Price 5/-

## Plywood, battens, hinges and paint easily converted into A LIGHT EASEL

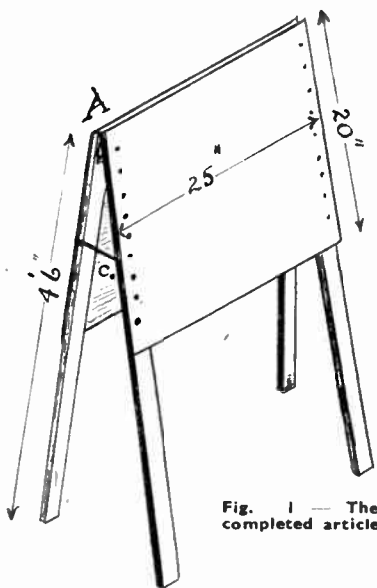


Fig. 1—The completed article

USEFUL toys these days are costly items, and many of the dear ones are not made for long intervals. To suit a child of seven to ten years, and at a cost of only a few shillings, you can construct this light easel and blackboard, which will show no signs of collapse after three years' hard wear.

To make the model you will require four battens of white deal each 4ft. 6ins. by 1½ins. by 3in. for the legs, two sheets of 3-plywood 25ins. by 20ins., three

dozen ½in. round-head wood screws, two 6in. gate-hooks, two 1in. hinges, and a quarter of a pint of Ripolin black paint.

You should begin by making the legs from the four battens. Mark these out, saw to required length, plane up the faces, and test them with the try-square. Then fix the two 1in. hinges in position to make two pairs of joined battens, as seen at (A) in the diagram. The perspective view in Fig. 1 shows how easily this can be done, whilst a detail of the hinge is given at Fig. 2.

#### Plywood Boards

Now you can turn to the plywood sheets. Draw a pencil margin of 1½ins. down each of the 20in. sides, and set out nine clear pencil points at 2in. intervals in the centres of these marginal spaces. Then with a small drill make the eighteen holes in each sheet of plywood. Now screw one sheet into position on each pair of the joined legs.

Support the other temporarily in a horizontal position by fixing four of the screws, one at each marginal hole in the sheet, into four blocks of scrap wood. With a two-knot distemper brush apply three even coats of the Ripolin black to the surface of this sheet of plywood. Remember that one coat of Ripolin black must be thoroughly dry before another is attempted.

This blackboard, which is so serviceable for coloured as well as white chalks, can be screwed into position on the other two legs. Here is a useful hint, by the way, about this blackboard. A slightly moistened cloth is better than a dry one

to remove the first chalk marks from this surface.

The model is now ready to be stationed with the two 6in. gate hooks. Fig. 3 shows how the gate hook is fixed, and a useful guide for the position of the screw and eye is the sixth marginal head screw on the plywood sheet.

Put the gate-hooks into position and then notice how the fixed angle between the boards of the easel has lifted the right-angled feet of the legs from the floor. You can correct this by sawing

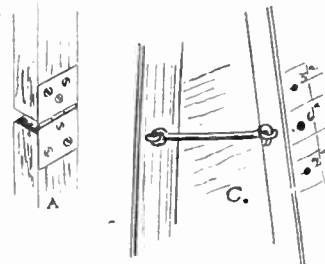


Fig. 2—The hinge fitting

Fig. 3—The fixing hook

through the nearest bottom of each leg parallel to the surface of the floor.

To give the easel a nice finish you could brush all the woodwork except the blackboard, in green enamel paint. When the easel is finished the child can either sit or stand to paint and draw. Papers for painting are fixed to the green painted plywood sheet with drawing pins, and wet work can always be conveniently left to dry. The board is thus handy and always usable.

# Additional pleasure is obtained in photographing by HOME PROCESSING

**H**AS it ever occurred to you what an enormous number of cameras are in use during the summer months? It is some years since any figures were given and even then it ran into some millions. That may sound an exaggeration to some folks, but those who are in a position to ascertain fairly accurately, have reckoned that there is a camera of some sort in every family in Great Britain. In some, probably three

## The Whole Process

Doing your own processing is, in the minds of all advanced and enthusiastic amateur photographers, essential if you wish to achieve success with your hobby. By processing is meant the 'bringing out' in the portion of film and on a piece of paper the result of the action of light when you made the exposure. In other words developing the film to produce a negative and, also, the piece of paper to produce a positive print.

chemist it has made a hole in the pocket money, and, what is much more to the point, you have not had the extra pleasure which those derive from the hobby who 'do their own work'.

## Where to Work

Now let us tackle the question of room. You will, perhaps, remember the article on Tank Development which appeared in the issue of *Hobbies Weekly* of January 18th this year. In that you were very definitely shown that a dark-room is not necessary for developing films. Neither is it for the development of Contact (Gaslight) or Bromide printing papers.

A darkened room, yes. But the kitchen, bathroom or even the dining room can be made this by simply switching off the light. Why should the work be messy? One has to use chemical solutions but it is up to the operator to use a moderate amount of care, and a newspaper spread over the table or floor will stop any drops of solution that are accidentally allowed to escape from the dish staining the carpet.

If the work is done in the bathroom one need only put a few inches of water in the bottom of the bath as a means of preventing any mess. It follows that if it is possible to turn a loft or a roomy staircase or other cupboard or even a small lumber room into your very own photographic den, then you are in clover. For then you have a place in which to keep all the apparatus and kit together. This can be all easily stored in a wooden box 18ins. by 15ins. by 12ins.:



A striking composition for the album

or four could be found and it also follows that there are some where no camera could be found.

Let us leave cameras and try to get some idea how many films have been exposed during the last 12 months. Somewhat bewildering isn't it? Hardly know how to start making the calculation. One can only estimate very roughly the number of spools the average amateur uses, and it is generally admitted that the great majority of cameras are only taken out during the two or three weeks holiday or on bank holidays and other special occasions.

Well you will be somewhere near a correct solution if you allow an average of three spools per camera and 10 exposures per spool. Yes, there must be a colossal number of negatives about!

## Storage of Negatives

How many good negatives have you secured this season? Where are they and how do you keep them? These are questions which should receive some consideration. And if you cannot give a satisfactory answer to the last query, then we would urge you to collect all negatives, sort out the good from the bad and indifferent and place them in separate bags or envelopes for the time being.

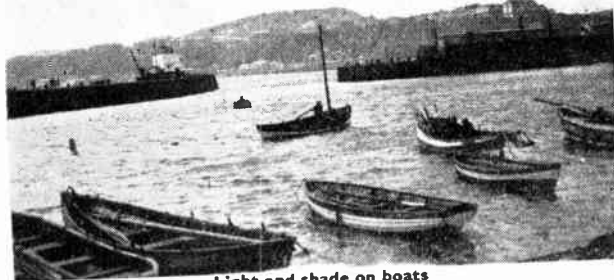
In the near future we hope to print an article on Filing or Storing Negatives, a system by which any one negative can be found in less than a couple of minutes. If you are interested in becoming a practical photographer you will be well advised to look out for the article and meantime get those negatives together and in a dry and safe spot.

If you were to ask a keen amateur why he does this work, he will tell you it is the most interesting branch of the hobby. The initial work of exposing a film is only a first step. It is in the darkroom where the real work of picture-making is done and where one gains experience most valuable to him.

After many years experience the writer is convinced that verdict is correct. The best photography, pictorially and technically, is produced by those who understand, and can by their own skill, carry through the whole process of picture-making from exposure of the film to the mounting of the finished print.

If you are really keen and wish to make the best use of your hobby, why not make a start now? Do not harbour the idea that it is expensive, messy or requires a lot of room. Obviously one cannot run any hobby without spending a little cash on it, and you who own a camera, you have already incurred what is likely to be the heaviest outlay for a long time to come.

Each time you take a spool to be developed and printed by the local



Light and shade on boats

such a box has been the writer's store cupboard for years.

To turn the bathroom into an effective place for the work it is necessary to exclude all daylight and usually a blind of opaque material will do this. If your work is a winter evening occupation, then the blind is not wanted.

We come now to the matter of apparatus. This is, of course, an initial charge and one that cannot be avoided, but with care each piece will last for years. It is almost impossible to give

present day prices of the articles but a visit to your local photographic dealer will soon prove that the outlay is not likely to be very excessive and it will give you the opportunity to select according to your choice.

### Apparatus Needed

Here is a list of the necessary pieces:—two (three if you can manage it) deep dishes, 6½ ins. by 4½ ins.; one 10oz. and one 2oz. measure; one printing frame, size to take your films, complete with a piece of glass; one darkroom lamp fitted with orange and ruby glass. You can make a start with this set and there is no need to increase it unless it is your intention to make up a particular formula for the processing; in that case a small set of scales and weights will be wanted.

While on the question of apparatus, let us remind you that an ordinary glass tumbler holds 10ozs. (½ pt.) of water and a tablespoon holds 1oz., dessertspoon ½ oz. and a teaspoon ¼ oz. of liquid (approx.).

### Chemicals

It is a mistake for any beginner to lumber himself with a lot of bottles of chemicals. It is not chemical research that you intend doing and they are not necessary. Therefore, you are well advised to use the ready prepared powders or solutions, such as Johnson's Pactus Metol-Quinol developer which are obtainable everywhere. The other chemicals required are a ½ lb. tin of acid-fixing powder and we would suggest a 1oz. bottle of potass. metabisulphite. If you specially desire to make up a formula, then only purchase the smallest bottle of each of the ingredients.

The last item is the printing paper. There are, as already mentioned, two types—Contact and Bromide. But there are numerous varieties of each of these, different surfaces, grades and speeds, and there are several makers.

### Standardizing

It is well not to allow yourself to be confused with the variety. Start with one of a well known make of a glossy or matt surface whichever you prefer and of a normal grade. Papers are sold in packets of all the standard sizes and no difficulty should be experienced in purchasing paper to fit your films.

In order to avoid wasting time and paper by guess work or expensive tests it is very advisable to sort the negatives you intend to print into at least three groups—dense, medium and thin. Once you have ascertained the correct exposure required for any one of the groups it will help to give that for the others.

This sorting is a first step towards what might be termed 'standardising'. The light by which exposures will be made is standard, the developing solution is also standard and so is the paper. Now there is only one other detail, and that is the distance between the printing frame and the light by which the exposure is to be made and this can be 'standardised' at 12 ins. Although it is only possible to give approximate exposure times, it may be of help to have these by you for reference.

Assuming that a normal grade of contact paper is in use and one of the normal or average density group of negatives, the exposure with a 40 watt electric lamp would be about 6 seconds, the same for incandescent gas and, say, 30 seconds for a duplex paraffin lamp.

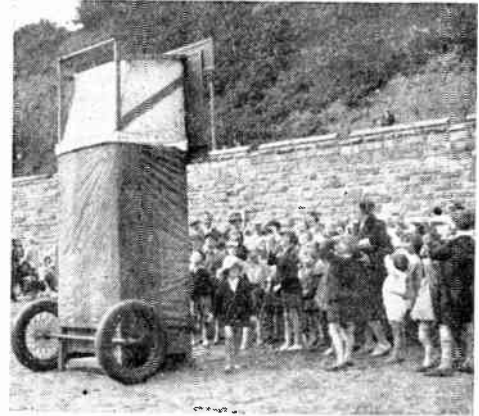
The Pactus Metol-Quinol makes up to 4ozs. of developer for contact paper. That is sufficient to develop about 40 pieces of 3½ ins. by 2½ ins. paper if you can complete this number of prints in one evening. To make the fixing bath take 2ozs. of the acid-fixing and dissolve it in 30ozs. of water. If a smaller quantity is desired, then keep to this proportion. In any case the solution keeps almost indefinitely if stored in a well corked bottle, but do not use to exhaustion.

### Paper Economy

In order to prevent waste it is necessary to avoid all haphazard work and in this respect guessing at the exposure required for any negative is bad practice until some experience has been gained. So commence operations by selecting an average negative, place it in the frame with a sheet of the paper laid face downwards on the film side of the negative. This must be done with the orange light on.

Stand the frame 12 ins. from the lamp and expose for 6 seconds. Switch off the light and cover about one-third of the framed negative with a piece of card. Then expose the rest for a further 3 seconds and cover up with the card two-thirds of the film. Give a final 3 seconds to the section of the film that has not been covered by the card.

You will recognise that on that one piece of paper there are three ex-



A popular Beach Scene

posures and when this test strip is developed it should indicate which time is correct or nearest. Place the paper in a dish with the emulsion side up and pour the developer carefully, without making any air-bells, completely over the paper. Development takes from about ¼ to 1½ minutes, but if the outline of the image does not appear in, say, 30 seconds, the print is under-exposed. If it flashes up and goes black immediately it is a case of over-exposure, but that test should give you a very good idea what is wanted to make a good print from that negative.

### Three Dishes

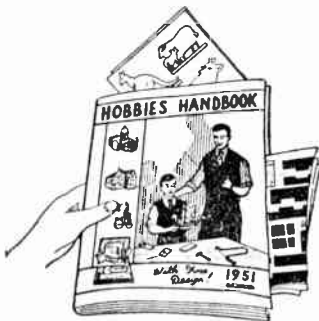
You will remember we suggested three dishes are desirable. One is for developing, another for the fixing and the third for a 'stop' bath. This last is prepared by dissolving 1oz. of potass. metabisulphite in 20ozs. of water, a solution which keeps indefinitely. It is for use as follows.

When the print is developed, plunge it quickly into this 'stop' bath before placing it in the fixing bath. Leave it there for about 3 minutes and then put it in the fixing bath and leave it there for 15 minutes. Then wash it in running water for ½ hour or in four changes and it is ready to dry.

The great advantage to be gained by the use of the 'stop' bath is that its action kills any further action of the developer and thus prevents brown stains occurring on the print. If you do not make use of the 'stop' bath, then be sure to place the print into the fixing bath immediately it is taken from the developer, otherwise stains may arise. The white light can be turned on when the print has been in the fixing bath 5 minutes.

## The New 1951 Hobbies Handbook

Now on sale everywhere. It contains 112 pages and suggestions for hundreds of things the craftsman can make. A large design sheet (alone worth 1/-) is given for a lovely model Doll's House, and there is a special colour sheet of animals and birds to cut out as standing figures. There is also a large new colour section, and a complete catalogue of tools and materials. Ask at your usual newsagent for Hobbies Handbook, Price 1/-.. Or any Hobbies Branch or stockist, or by post for 1/3 from Hobbies Ltd., Dereham, Norfolk.



# Patterns for Traffic Indicator

(See page 98)

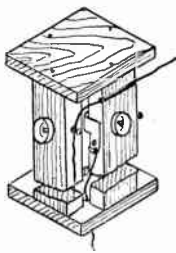
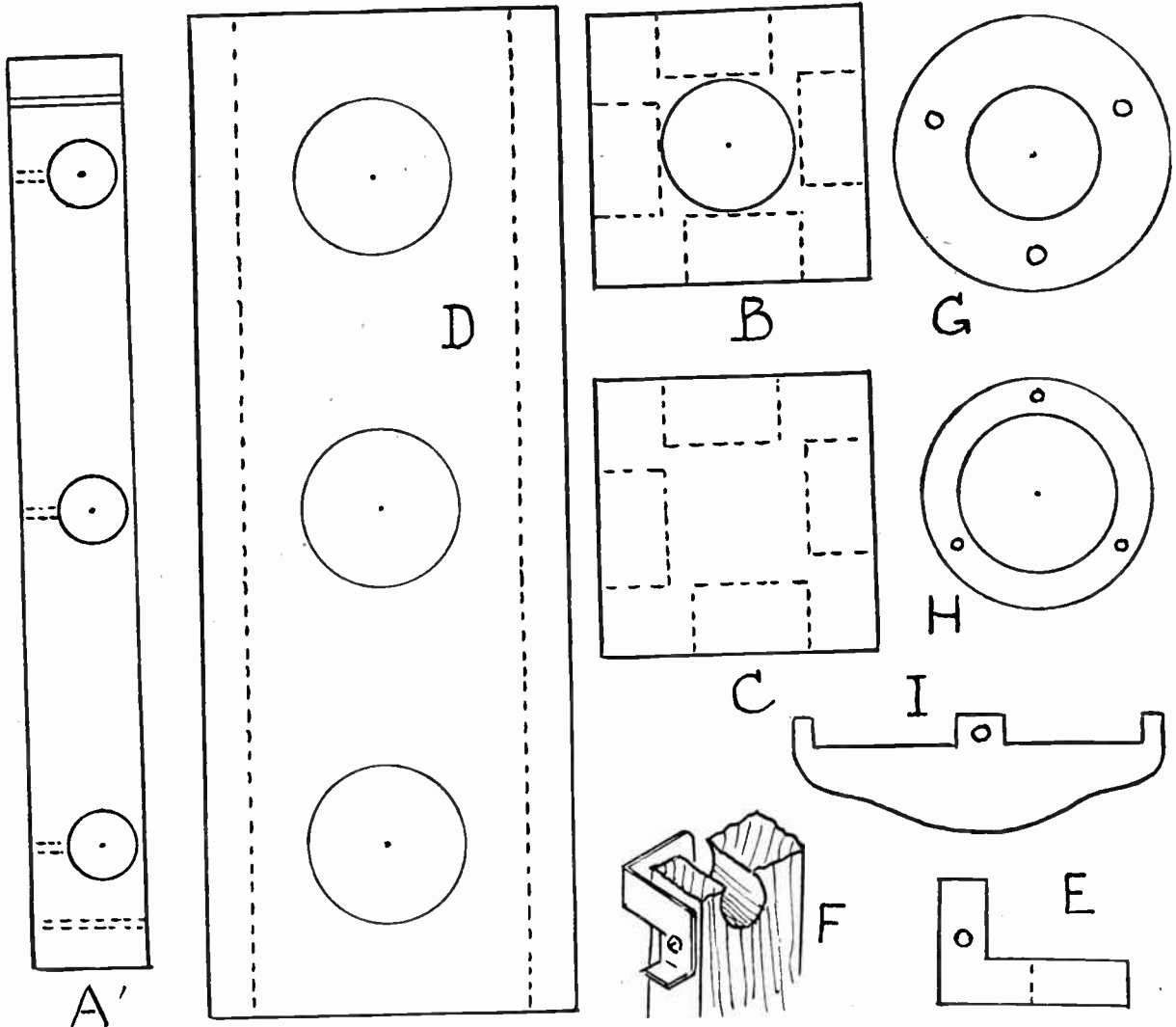


Fig. 1—The lamp box

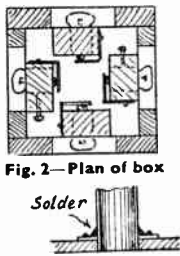


Fig. 2—Plan of box

Solder

Fig. 3—Pillar fitting

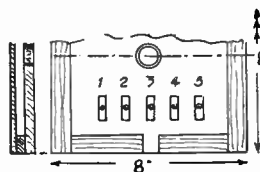


Fig. 4—The baseboard

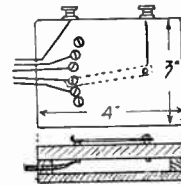


Fig. 5—Baseboard plan and section

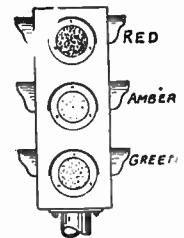


Fig. 6—Lamp colours

soldered to one of the terminals, and a wire is soldered to the remaining terminal and switch screw. These connections are indicated by thick black lines in Fig. 5.

A cycle lamp battery may suit for the model, and if the question arises as to why this battery cannot be accommodated inside the switch board, the answer is it can, but is really better

outside. If enclosed, there will be a constant temptation to friends and relatives to switch on the lights when they pass the model and the battery will not last so long.

The sequence of the lights is as follows looking at the N. face.

Stud 1. Red (STOP). W. and E. faces green.

Stud 2. Red and amber (GET READY).

W. and E. faces amber.  
Stud 3. Green (GO). W. and E. faces red.

Stud 4. Amber. W. and E. faces red and amber.

In some traffic indicators the words STOP, etc., are printed on the coloured spectacles, but not always so. Readers can, therefore, use their discretion in the matter.

## YOU CAN BECOME A HANDICRAFTS INSTRUCTOR

### Experience not essential

Men who enjoy making things in wood or metal can turn their hobby into a permanent and interesting Career. Short hours, long holidays, and security in a job you would really enjoy, can be yours if you become a Handicrafts instructor. Let us send details of the easiest and quickest way to get the necessary qualification.

**We definitely guarantee  
"NO PASS—NO FEE"**

If you would like to know about our unique method of preparing you for one of these appointments, write today, and we will send you our informative 176 page Handbook—free and without obligation. Mark your letters "Handicrafts Instructor."

**BRITISH INSTITUTE OF  
ENGINEERING TECHNOLOGY**

595 Shakespeare House  
Stratford Place, London, W.1

# BIET

# BE TALLER

I Guarantee to increase your height in 12 days or return your money. New gland and spinal discovery increases height 2 to 5 inches.

'I have gained 4½ inches in height and feel fresher first thing in the morning. My weight increased from 9-stone 4-lb. to 10-stone 3½-lb.—P. D., Witham. Since taking your Course I have increased in stature from 5 feet 1 inch to 5 feet 4 inches, a matter of 3 inches'—H.G., Chesterfield. 'My increase is 2 inches and I really do feel ALIVE!'—E.T.

Guaranteed harmless. Full Course 10/- post free, Air Mail 14/-. Details free for 1d. stamp. Sent under plain cover.

**J. H. MORLEY**

(H/83), TERRY HOUSE, NAPHILL, HIGH WYCOMBE, ENGLAND  
Established 1936

## 'Handicrafts' NEW LIQUID PLASTIC

Make your spare time profitable pouring beautiful castings at home. We supply everything and show you how. Amazingly simple. Rapid production. Immediate results. Also other Novel Plastics. Make Xmas gifts. Good proposition for both women and men and younger generation. Send 2½d. stamp for exciting Book and Market details. No obligation.

**QUALITY PLASTICS LTD.**

(Dept. H.1.)

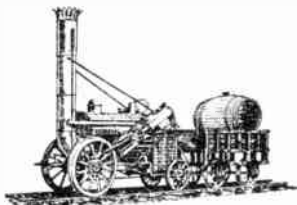
**BRENTWOOD,  
ESSEX.**



### MODEL MAKERS!!!

Here is the second model in our 'TRUKIT' series constructional outfits. The No. 1 Locomotive Kit builds up without any difficulty into probably the most fascinating of all models. Stevenson's 'ROCKET' to gauge 'O' 7 mm. scale. This is a truly magnificent little miniature and costs only 12/3 post free. Send P.O. to-day.

MURRAY HILL & CO, Mail Order House, Bedford Square, Sidmouth, Devon.



### ALLOY CIRCULAR CHAIN GUARD

Very latest idea. Clips on cycle chain wheel as shown. Any make. No gearcase clearance necessary. Polished like chrome. Looks very 'De Luxe' and saves trousers getting dirty or caught.

Trouser clips unnecessary  
State if chainwheel has 46 or 48 teeth.

**3/9**

Post 3d



### CYCLOP FLOOD LIGHTING REFLECTORS

for cycle lamps give car-type road lighting. Treat yourself. BATTERY MODEL, 12-sided, 1/6 DYNAMO, 12-sided, 2/6 All from Halfords and up-to-date cycle dealers or direct

KORVING LTD. (HB), 12 Duke Street, London, S.W.1



# NICOTEXIT

## THE GUARANTEED SMOKING DETERRENT

- ★ POSITIVELY STOPS SMOKING IMMEDIATELY and for several hours after each application. Purchase price refunded if it fails to do so.
- ★ ONE BOTTLE IS USUALLY SUFFICIENT to establish control of smoking in any form. It is not poisonous.

*Invaluable to all who smoke too much*

**5/6** Per Bottle  
Post Free

Obtainable only by post from Sole Concessionaires for Great Britain:—

**THE NICOTEXIT COMPANY (Dept. B.6.)**  
62 High Street, Croydon, Surrey

## IT'S New- but ANYONE CAN DO IT!

WRITE TODAY FOR YOUR KIT



PRINT YOUR OWN PHOTOGRAPHS ON SCARVES, TIES, HANDKERCHIEFS, GREETING CARDS, ETC., ETC.

With the YANKEE PHOTO KIT it's easy to make up to 150 perfect permanent prints from your own negatives on cloth, paper, cards and almost any surface. Simple and easy. Cannot harm fabric or negative. Send today for kit with complete instructions.

**5/-**

Y.P.K. PRODUCTS COMPANY (Post 4d)  
Major Size 8/6  
688 Christchurch Road, Boscombe 3, Hants.

# BODY BUILDING

Thousands of testimonials from men of all ages have been received in the last 22 years, praising these famous Body Building Courses by LIONEL STEBBING, whose articles have appeared in 120 newspapers. Over 125,000 Courses sold. Established 1928.

**POWERFUL ARMS.** How to add 2 to 7 inches of rippling muscle to your arms, or money back. 2/9

**POWERFUL CHEST.** How to gain 5 inches across your chest and double your stamina. 2/9

**POWERFUL LEGS.** A complete Course for the development of strong muscular legs. 2/9

**POWERFUL ABDOMEN.** How to develop a dynamic muscular abdomen and attain real 'he-man' strength. 2/9

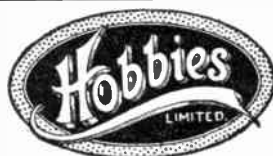
●Special Offer. The above 4 Courses, 10/- only (or \$1.50) post free.

**BE TALLER.** You can be inches taller in 14 days or money back! Stebbing System activates the Growth Glands, quickly brings a permanent gain in height. Guaranteed safe. Recommended by 'Health and Strength' for 22 years. The first original and the one Guaranteed system. R.M., Patel, gains 2 ins. L.P., age 25, gains 3 ins. S.J., age 17, gains 4 ins. A.J., age 63, gains 2 ins. C.T., age 34, gains 3½ ins. Complete Course, 6/6 (\$1.00)

Send under plain cover. Particulars 1d.

LIONEL STEBBING, 28 (H/88) Dean Road, London, N.W.2.

Builder of Men for 22 years.



BRANCHES

LONDON

78a New Oxford St., W.C.1  
(Phone MUSEUM 2975)

87 Old Broad Street, E.C.2  
(LONDON WALL 4375)

117 Walworth Road, S.E.17

GLASGOW

326 Argyle Street  
(Phone CENTRAL 5042)

Head Office & Factories—HOBBIES LTD., DEREHAM, NORFOLK

MANCHESTER

10 Piccadilly  
(Phone CENTRAL 1787)

BIRMINGHAM

14 Bull Ring

SHEFFIELD

4 St. Paul's Parade

LEEDS

10 Queen Victoria Street  
(Phone 28639)

HULL

10 Paragon Square

SOUTHAMPTON

25 Bernard Street

BRISTOL

30 Narrow Wine Street  
(Phone 23744)

# PROFITABLE LEISURE

Everything wanted for Perfect Pastimes for Pleasure and Profit is listed in:

## CRAFTWORKER

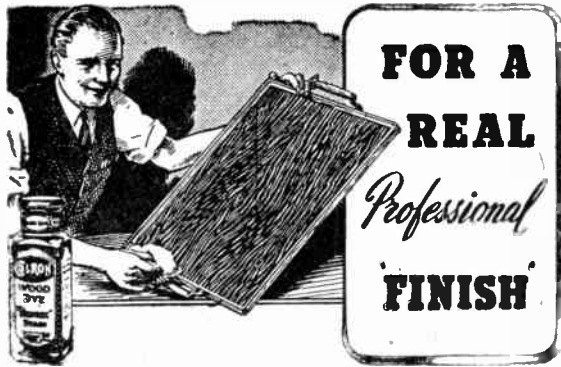
THE MODERN MAGAZINE OF CRAFTS FOR ALL

- Every kind and type of tool and material is offered in *Craftworker*
- Instructions in all Crafts at Home are published in *Craftworker*
- A Market Section is included in each issue of *Craftworker*

A COMPLETE SERVICE

Specimen Copy 1/2d. from the Publishers

Craftworker (DEPT. H.W.), Broadway, Broadstairs



**FOR A  
REAL  
Professional  
FINISH**

'FINISH' is the true test of craftsmanship. It's easy to impart a real professional 'finish' to woodwork and furniture you make at home with "COLRON" WOOD DYE—the finest strain for all practical purposes.

One coat of "COLRON" is all that is required to emphasise the natural beauty of the wood grain. No smears—no "overlaps"—no trouble. Leave from two to three hours, burnish with rough dry cloth and you have a perfect base for french polishing or for waxing with "RONUK" FLOOR POLISH.

**COLRON** WOOD DYES

12 SHADES—ALL SIZES

Write for colour guide and full details to:

RONUK LTD. (Dept. 62) Portslade, Sussex

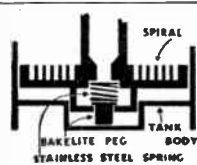
## TO ALL AMATEUR PHOTOGRAPHERS

The old-fashioned method of developing roll films by splashing them up and down in a dish is out. The modern method, used by amateur and professional workers alike, is to employ a daylight developing tank.



### JOHNSON J-20 TANK

A most economical little tank specially designed for the popular size 20 film (2½ ins. wide). The one-piece spiral film-holder is easily loaded in the dark, the lid is replaced and then developing and fixing can be carried out in daylight. Only 10½ ozs. of the developer are required to fill the tank. The lid is triple light-trapped and has an extra deep, built-in funnel for easy filling. An ivoryine rotating calculator gives the correct developing time for most popular films, when using Johnson developers. A pouring lip on the side of the body for emptying.



All the latest J-20 developing tanks are fitted with the new Two-way agitation movement which ensures even development

PRICE 22/6

Your dealer will let you examine one and explain how it works.

JOHNSONS OF HENDON

# ENGINEERS

## ★FREE BROCHURES★

### NEW COURSES

Technical training is vital to your success. Our Home Study courses have now been very widely extended in range.

Write or 'phone for FREE BROCHURES detailing our courses of TECHNICAL TRAINING IN ALL BRANCHES OF ENGINEERING covering the syllabuses of the examinations for A.M.I.Mech.E., A.M.I.E.E., A.M.I.P.E., City and Guilds, etc.

'THE COLLEGE BACKED BY AN INDUSTRY'

Write to Dept. 31

## E.M.I. INSTITUTES

10, PENBRIDGE SQUARE, NOTTING HILL GATE, LONDON, W.2. TELEPHONE: BAYSWATER 5131/2

Associated with  
"H.M.V."  
MARCONIPHON  
COLUMBIA  
ETC.

# RAWLPLUG PRODUCTS

**INDISPENSABLE  
IN THE WORKSHOP  
HANDY IN THE HOME**



## DUROFIX

The indispensable adhesive for instant use on crockery, glass, wood, metal, celluloid and the thousand and one things handled by the hobbies enthusiast. Instant drying, insulating, waterproof and heatproof. Durofix is grand for repairs to electrical, sports and leather goods. Tubes 9d. and 1/3d. Tins 2/9d. and 7/6d.



## DUROGLUE

**UNDILUTED ANIMAL GLUE OF INCOMPARABLE STRENGTH**

Ready for instant use for the many purposes for which an extra strong glue is needed. Wood, cloth, fabric, felt, leather and any greasy surface can be stuck with Duroglue. Tubes 6d. and 1/- Tins 2/3d. and 3/9d.



## PLASTIC WOOD

**APPLIED LIKE PUTTY, DRIES LIKE WOOD**

Can be cut, planed, polished & painted like wood. Will take nails and screws like wood. It does not blister, crack or decay. Rawlplug Plastic Wood is actually the best quality product of its kind on the market. Tubes 9d. Tins 2/- and 5/-.



## TILE CEMENT

**Rawlplug Tile Cement is a liquid cement possessing**

very strong adhesive qualities. For replacing tiles to walls, floors, fireplaces, hearth, curbs, etc., in kitchens, lavatories, bathrooms, halls, bedrooms, reception rooms, etc. 2/3d. per tin.

B389A



## SHARPENER

For re-sharpening Tools, Scrapers and Domestic and Garden Implements. An

efficient Tool with a great number of uses. Hardwood Handle, polished and varnished with Sharpening Stone of medium grading. Use water, or a thin clear oil if stone cuts too rapidly. For cleaning stone—wash with paraffin. 2/- each.



## SCRAPER

A remarkably efficient and economical scraper, built to last a lifetime. Gives smooth

finish without chatter or scratching. Easy-grip handle made solid with blade carrier in seasoned hardwood, polished and varnished. Total length approx. 6". Fitted renewable 2 1/2" Cadmium Plated Steel Blade, with cutting edge ground like a razor. 3/- each.



## FUSE WIRE

**BE PREPARED FOR BLOWN FUSES**

A useful card carrying 3 gauges of fuse wire (5 amp.

for lighting, 10 amp. for heating and 15 amp. for power). Directions for use are printed on the card which is punched for easy hanging near the fuse box. 3d. per card.

### RAWLPLUG FIXING DEVICES & TOOLS

Whatever your fixing problems, there's a Rawlplug Device that will solve it for you—easily and quickly. Rawlplugs make neat and absolutely firm fixings in any material from plaster or brick to stone or slate, with a size for every screw from No. 3 up to 1" coach screws. Rawlplug Tools are easy to use and ensure a perfect hole without damage to surrounding surfaces. Other Rawlplug Devices include Rawlbolts for heavy duty fixings, Rawlanchors and Toggle Bolts for thin or hollow materials and Rawlclips for instant fixing of conduits and cables to girders—a device in fact for every need.

Rawlplug fixing devices and products can be obtained from Ironmongers, Hardware Dealers, Stores or Model Makers Suppliers.

**THE RAWLPLUG COMPANY LTD. LONDON. S.W.7.**

## MODEL CONSTRUCTIONAL KITS

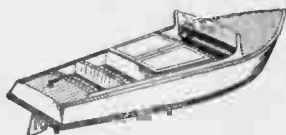
that are well known for quality and low price

### AIRYDA MODEL AIRCRAFT



Include both flying and non-flying types; sizes and prices to suit all Modellers. Each kit complete with plan, building instructions and all necessary parts.

### AQUILA MODEL SHIPS & BOATS



This series includes Motor Launches, Cabin Cruisers, Motor Yachts, Cross Channel Steamers, etc. Sizes range from 20ins. to 39ins. in length; and prices from 18/- to 62/6.

### ANORMA MODEL BUILDINGS



This range of Model Buildings includes shops, houses, factories, railway buildings, etc., which are all designed to 4 mm. scale suitable for OO gauge Model Railway lay-outs, etc.

Full particulars can be obtained from your local dealer, or send for particulars to:

**MODELLERS SUPPLY LTD.**

DEPT. HO/1

**ASPLEY, HUDDERSFIELD**

## PROMOTION

WITH INCREASED PAY

That is what the younger generation are seeking—Promotion, and more money. How to get it is the big question. There's only ONE certain way and that's by systematic training such as the I.C.S. have given to millions and are giving today to tens of thousands of ambitious young men striving to add to their earning power.

Find out how the I.C.S. can help YOU. We teach a Wide range of subjects. Here are some of them:

Accountancy	Commercial Art	Radio and Television
Advertising	Commercial Training	Radio Engineering
Architecture	Coal Mining	Salesmanship
Building	Draughtsmanship	Sales Management
Business Management	Electrical Eng.	Sanitary Eng.
Carpentry and Joinery	Horticulture	Structural Eng.
Chemical Engineering	Mechanical Eng.	Surveying
Civil Engineering	Motor Engineering	Works Management

### LETTERS AFTER YOUR NAME

Do you wish to put 'letters after your name' that will give you recognized professional status of great and life-long value? I.C.S. students have won brilliant successes in various Technical, Commercial, Professional, Civil Service, and other Examinations, including the following:

<i>Technical Exams:</i>	Home Office Mining	C. Inst. Accts.
R.I.B. Arcs.	M.O.T. Certifs.	C. Inst. Secs.
Inst. of Builders	B. Inst. Radio	Corp. Inst. Secs.
Inst. Civil Engrs.	P.M.G.	Inst. Book-keepers
C. & G. Elec.	C. & G. Wireless	Inst. Sales Managers
Inst. Fire Engrs.	R.A.F. Wireless	U.C.T.A. in Sales
Inst. Marine Engrs.	I.I.A. Foremanship	General Certificate
Inst. Mech. Engrs.		of Education
I.M.E. for Bldg. Insps.	<i>Commercial and Educ.</i>	University Entr.
Inst. Municipal Engrs.	<i>Exams.</i>	School Certif.
Inst. Struct. Engrs.	Advertising Assoc.	Coll. of Precepts
R.I.C. Surveyors	I.I.P. Advertising	

I.C.S. Examination students are coached until successful and all Instruction Manuals and Textbooks are supplied to them free.

**International Correspondence Schools Ltd.**

(Dept. H.B.10) International Buildings, Kingsway, London, W.C.2





# Hobbies

## WEEKLY

### CONTENTS

	Page
A Xylophone - - -	113
Easy Chair Workbench	115
Winter Woodwork Jobs	116
Perpetual Calendar	117
Mounting a Fish - -	118
Model Shocking Coil	119
Tool Sharpening - -	120
Ventriloquist's Doll	121
The Editor's Notes	122
Silk Screen Printing	123
Draining Racks - -	124
Calendar Patterns	127

November 22nd, 1950

Price Fourpence

Vol. III No. 2873

## How the handyman can make a HOME-MADE XYLOPHONE

**T**HE Xylophone illustrated is a real instrument of music, having a compass of  $2\frac{1}{2}$  octaves. For the notes there is some choice of wood having a certain tonal quality. Some xylophones have, in the place of the usual wooden notes, metal tubes, but these are metallic in sound and have not the mellow notes of wood.

Selected rosewood is generally used for professional instruments, but this is very expensive and generally gives way to pine which is quite a good wood except it is a bit soft to stand up to long usage.

Oak is a good second choice and is recommended for this instrument. It should be straight-grained and free from knots. It is planed to a finished size of 1 in. broad and  $\frac{3}{8}$  in. thick. For appearance sake, the wood is slightly rounded on its upper surface, as the detail Fig. 1 shows.

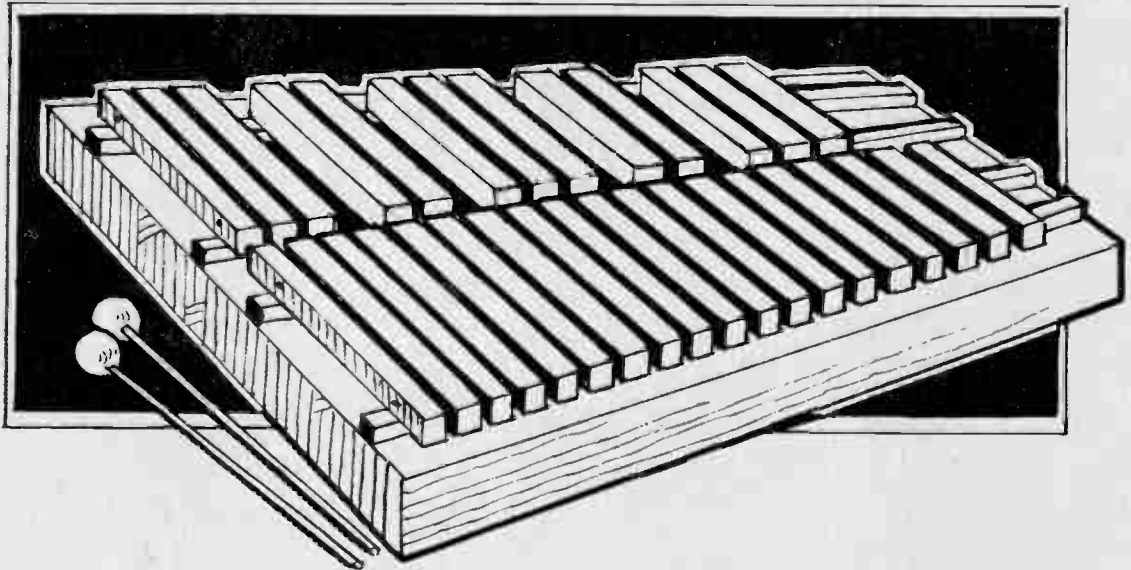
### Notes and Beaters

The length of the lowest note is approximately  $13\frac{1}{2}$  ins., and that of the highest  $5\frac{1}{2}$  ins. These measurements are given, however, only as a guide, as different woods have different notes, though of the same length. Even

samples of the same wood and cut from a single board will vary in tonal quality.

The beaters should be made first, as they will be required for tuning as well as for actually playing the instrument later on. At (B) in Fig. 2 a pair of beaters is shown. Each consists simply of two hardwood balls about  $1\frac{1}{2}$  ins. in diameter, with a hole bored through for a length of stout cane which must be securely glued in. A pair of ready-made beaters could be purchased, of course, at any good class instrument shop.

To lay the notes on while tuning, cut a pair of blocks off a piece of  $\frac{1}{2}$  in. square fillet of stripwood, and cover these with



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

a layer or two of felt. Now for the notes. Cut off a length of wood for the lowest note, lay it across the blocks and strike it

Tuning is a tedious job and should not be continued too long at one time or the ear becomes dulled. If you cannot do it yourself, get a musical friend to undertake the job. When the notes are cut and tuned, lay them in order on the

to keep them apart. The extra space between the sharps is filled with lengths of thin rubber tubing over the cords (see Fig. 3). Do not tie the cords tightly against the wood notes but leave them free to a certain extent to just move.

The size of the sounding box upon which the instrument is mounted can now be decided. It should be just  $1\frac{1}{2}$  ins. larger all round than the space occupied by the notes when the latter are laid side by side, as in Fig. 2, with a space of  $\frac{1}{4}$  in. between them.

### Plywood Bottom

The bottom of the sound box should be of  $\frac{1}{4}$  in. wood. Plywood is best here. The sides are of  $\frac{1}{2}$  in. by 2 in. wood, and the top of  $\frac{1}{2}$  in. pine. Instrument pine is, perhaps, a little difficult to obtain, but it is the best for the job. The pine cannot generally be bought in wide pieces, and it will be necessary to glue together two or more boards to get the required width. A narrow strip of wood as a mid support to the top can, with advantage, be glued and screwed across underneath.

The bottom is glued and screwed to the sides, but the top is best glued only and should have a few  $\frac{1}{8}$  in. holes bored or cut in it before gluing up. Two rows of six holes each will answer, and they should be made to come directly under the middle of the notes.

### Note Bearers

The bearers to support the notes consist of lengths of  $\frac{1}{2}$  in. square stuff, stripwood as sold by Hobbies being admirable for the purpose. The strips should be covered with baize and padded with a strip of felt beneath. A cross section through one of the strips is shown in Fig. 4.

Glue the bearers on the box to come directly under the cords which fasten the notes together, and lay the latter on top. The diagram (Fig. 5), which again is a cross section of the finished instrument, gives the appearance of the finished instrument.

The top of the box should be carefully polished and the sides and bottom varnished. All the notes should be clearly marked before the instrument is used.

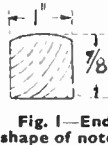


Fig. 1—End shape of notes

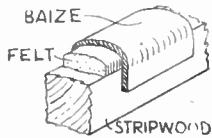


Fig. 4—The bearers

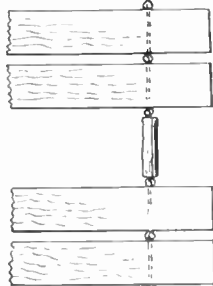


Fig. 3—Spacing between notes

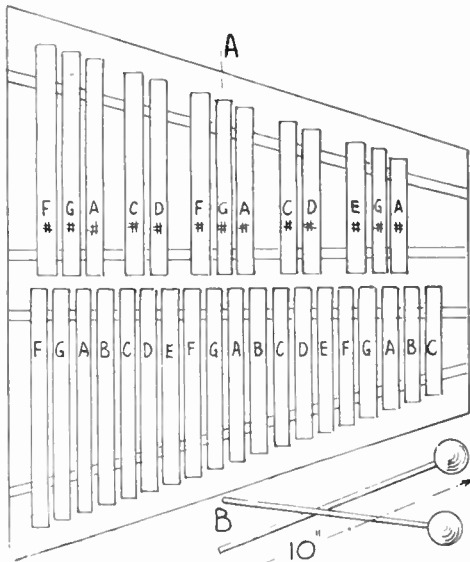


Fig. 2—Lay-out of notes and detail of bearers

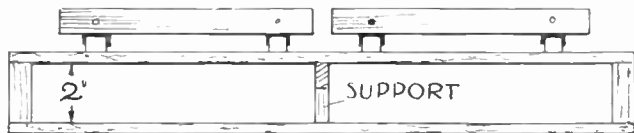


Fig. 5—Section through box showing support and note bearers

with the beater. A piano is good for tuning by if the instrument is to be tuned to concert pitch, but any instrument can be used for the same purpose—even a tuning fork.

Tune the naturals first, then the sharps. To sharpen the tone of a note, saw or plane a little of the wood off the ends. To flatten, if the note is just a little too sharp, turn it over and gouge a little out of the bottom lengthways. If a note is spoilt, it can be used for another higher up the scale.

table and mark the position of the holes, by which they are strung together, by pencil lines.

### String the Notes

Start  $1\frac{1}{2}$  ins. from the ends of the lowest note and finish 1 in. from the ends of the highest. Now bore the holes midway through the thickness of the notes, and use the pencil line on top as a guide for the correct rake or angle.

For stringing together, use whipcord and tie double knots between each note

keep it out of harms way.

### Fixing Knobs

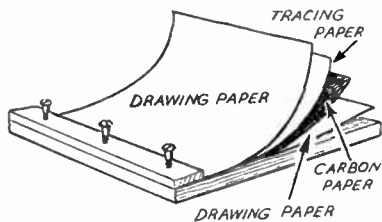
IN using a small wooden knob you may find glue will not hold it. If so, place



the knob in the hole and hammer a nail into the end. This is on the same principle as the wedge in the top of a hammer, but if nail is too long, cut it off. This holds a knob in position better than glue, and makes it permanent.

### Saving Designs

WHEN a design is drawn by an amateur, the paper often becomes dirty, and when a fresh model is made the design has to be redrawn. The base



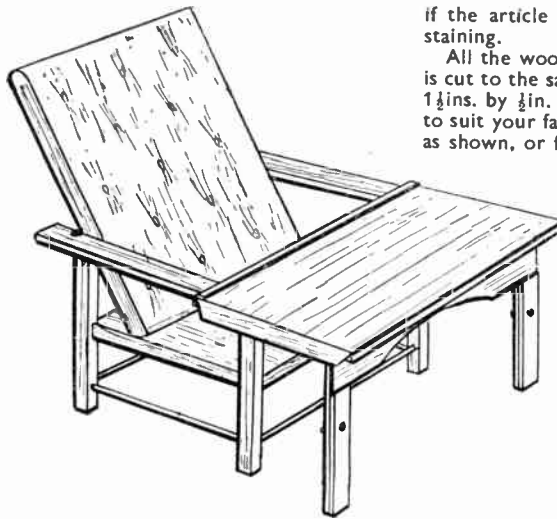
of the apparatus is 4-ply 10 ins. by 12 ins., and at one end of this base a piece of stripwood 1 in. by  $\frac{1}{4}$  in. is secured by three

screws. When a design is drawn out, the paper is placed between the piece of stripwood on top of a leaf of tracing paper, a leaf of carbon paper and a piece of drawing paper. The design is held perfectly still while being drawn and a duplicate is made at the same time.

### Leaky Valves

IF you should be stranded in the country, miles away from a garage or bicycle shop, through having a leaky valve, inflate the tyre and when it is hard, unscrew the pump, leaving the connection on the valve. Bend the connection and tie it with string as you would tie the nozzle of a football bladder. Before going on the road again, tie the connection to a spoke. This will

# Fireside jobs can be undertaken comfortably on this EASY CHAIR WORKBENCH



if the article is finished by painting or staining.

All the wood for the legs and framing is cut to the same width and thickness— $1\frac{1}{2}$  ins. by  $\frac{3}{4}$  in. You may make the joints to suit your fancy: they can be dowelled as shown, or for an easier job, a halved joint is quite effective.

A mortise and tenon joint would, of course, give a really first-class finish to the bench, besides making it nice and strong. If you decide on either of these last ones, some of the boards must be cut 3 ins. longer in order to produce the necessary joint.

## Top Framework

Commence by making the bench top framework—two pieces 20 ins. long for the ends and three pieces 21 ins. long for the bars (or 24 ins. if lapped or mortise joint). The top which is thin plywood, say, about  $\frac{3}{8}$  in. thick is cut to the width of the framework, but the length must be 1 in. more. This extra  $\frac{1}{2}$  in. on each end will cover the guide bars fitted to keep the bench from sliding off the arms of the chair. They are 20 ins. long and have the ends tapered off, as shown in the side view.

All these parts can now be glued together, a few fine panel pins can, with advantage, be used to fix the ply top more securely.

Along the entire length of the top edge and opposite to the legs a narrow strip of wood is fixed to keep papers and books from sliding off when the board is tilted at an angle for reading purposes. This need not be more than  $\frac{1}{4}$  in. thick and about  $\frac{1}{2}$  in. wide.

Cut two pieces of wood 24 ins. long for the main part of the legs, and two more  $19\frac{1}{2}$  ins. long to act as the extension pieces. A slot 9 ins. long and just over  $\frac{1}{4}$  in. wide is cut in each of the main pieces, which should be ample for adjusting the height and slope of the bench top.

The top of the slot starts about 10 ins. down, and when both pieces are resting on the floor this is also the position for the hole in the shorter extension leg. A  $\frac{1}{2}$  in. bolt and wing nut is used to hold the two pieces together and make adjustment easy. Put a fairly large washer over the head of the bolt before inserting it through the slot and hole.

## Leg Fitting

Join the two legs with a bar at the top, making the width correspond with the top framework which in this case is 24 ins. A strip of thin plywood  $4\frac{1}{2}$  ins. wide and shaped as in the sketch is added to the front of the legs in order to make these more rigid. It will also act as a stop for the extension legs.

A thin strip of wood or even plywood is fastened on to the inside edge of each extension leg. Its width of 1 in. allows it

**The Hobbies 1951  
Handbook is now on  
sale everywhere 1/-**

to overlap the other leg and keeps them both level and to slide easily when adjustments are made to height.

Two strong iron hinges can now be fitted, and it is essential these do not open or close too easily. It may be necessary gently to hammer the joints of these slightly in order to close them and make the working somewhat stiffer.

If the hinges worked too easily the table is liable to slip off the chair arms when in use.

## Match Stain

After the wood has been glasspapered smooth and stained if necessary to match any existing furniture, the most satisfactory finish is, undoubtedly, french polish, but you may possibly have other ideas regarding this.

The measurements given are for an average size easy chair, but it may be necessary to make some slight adjustments to suit your own particular requirements.

(276)

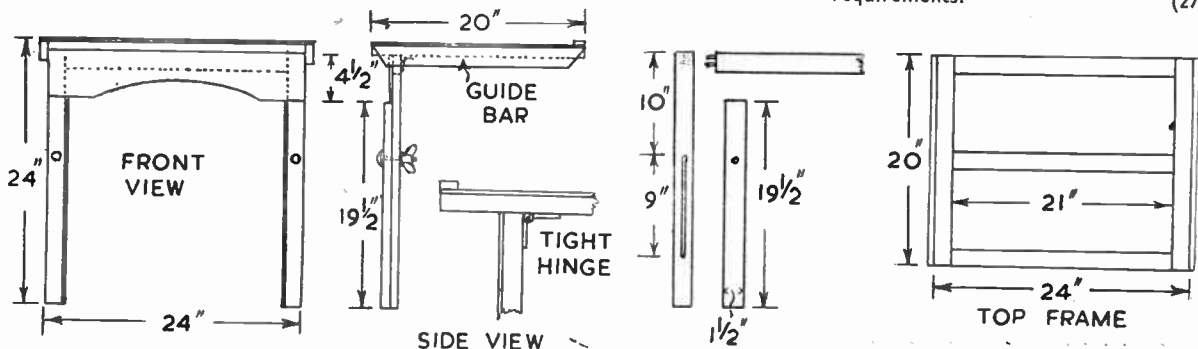
**W**ITH the coming of the long winter evenings, our thoughts turn to the fireside and a nice comfortable easy chair. It is not wise to always be lolling about in an easy chair, but a little well-planned recreation can be most beneficial. There are quite a lot of really useful jobs that can be done when one is more or less taking it easy.

The use of a table is really a necessity for most jobs, but when sitting in an easy chair it is generally not at all possible to use an ordinary table with comfort. With the aid of the little attachment shown here a useful work bench or desk can be set up and brought into use very quickly.

## Adjustable Legs

The two adjustable legs allow it to be used on any easy chair irrespective of height, and they also allow the top to be elevated at different angles. This makes it a most versatile bench, as it can be used flat, or for drawing and reading, it can be made to slope at quite a good angle.

The wood to be used should if possible match the chair on which the bench will be used. Oak or walnut are good for the purpose, although a softwood can be used



# The handyman will find construction and repair in these WINTER GARDEN JOBS

**I**N these cold damp days there is little doing on the garden or allotment and the gardener may well feel inclined to rest on his laurels and enjoy the fruits of his labours until the next 'spring offensive'.

This is largely true, but there are always odd jobs to be done in the way of making new equipment and repairing old . . . jobs that might well be done now instead of leaving them until later when one might have one's hands full of work.

## Potato Trays

For example, what about making seed-potato trays now? (Fig. 3). Well made, they will last a very long time. The actual size is not very critical. The writer made his 2ft. by 1ft. by 3ins. deep. The sides are nailed to four supports which project 3ins. upwards, thus enabling the trays to be stacked one on top of the other with enough space for light and air to get to the contents. Commercially, triangular section wood is used for the corner posts, but the amateur is not so likely to get this.

The cross bars are quite optional, but they form good handles for lifting. The boxes, if well made, are useful for storing other things besides seed potatoes.

## Seed Boxes

Whilst on the subject of boxes, what about seed boxes with one removable end? The sketch (Fig. 3) shows the idea at a glance. When transplanting the seedlings, the end is removed and a small trowel can then be very easily inserted to remove the delicate plants without undue disturbance.

The seed boxes will last years longer if given treatment with special trade preparations such as can be obtained from chemists specialising in horticultural supplies. These are usually weird-sounding chemical solutions recommended by the Ministry of Agri-

culture or The Forestry Products Research team, and put out by private firms under trade names. Do not use creosote on the boxes.

A good supply of plant labels will be needed for the coming season and it pays, especially in greenhouse plants, to have really decent labels—not mere pencilled slips of wood that rapidly rot and become dirty and illegible. A very simple and inexpensive method is to write on the wooden slips with pencil (Fig. 8) and then dip them in a jar containing either spar varnish or shellac varnish (orange shellac dissolved in methylated spirit) (Fig. 7).

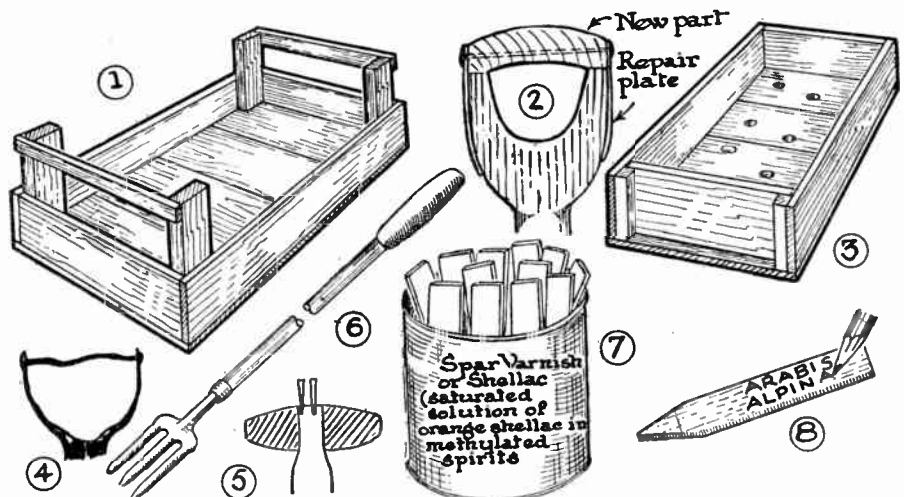
A much-needed job will probably be to repair handles of spades and forks. If they are in a very bad condition or have rotted right away at the base so that they have broken off, a new shaft is indicated, but this expense can often be

whittled down another end to take the cross piece again. One or two wooden or steel wedges will make a really tight job.

## Handle Repairs

Some spades have a tubular cross-piece at the top which, after much hard use, often breaks out, leaving just a metal core across as at Fig. 4. The obvious remedy is to cut across this bar with a hacksaw so that it can be removed. A new wooden cross-piece is prepared, ash being a most suitable wood. Common deal is useless. A hole is drilled the full length and a new metal rod prepared. Before dismantling the old handle, take note of the simple arrangements of washers and riveted heads.

When the top of a solid wooden handle goes it is often possible to make a cross-bar on the principle of the one just



avoided. A slightly cracked shaft, for example, can be spliced and bound with suitable wire, the free end of the wire binding being secured to the shaft by means of a small staple driven in.

Some tools have a simple cross bar (as in Fig. 5) which eventually comes off. The remedy here is simple. One cuts away the damaged part of the shaft and

described. Repair plates may be used at the sides (Fig. 2). The spade handle seems obvious but (if well made) embodies the requirements made by many generations of spade users—a comfortable handle that will not unduly blister the hands with long use. Take care to ensure then, when repairing a handle, that the final job compares with the original.

Apart from repairing old tools, the simple tool shown in Fig. 6 may be made. This is simply a small hand-fork, minus its small handle, with a longer handle added (this is shown conventionally broken in the drawing for economy of drawing space) and a handle from, say, an old cycle handlebar grip added. Such a tool is very handy for grubbing around the bases of plants in places where a fork would be far too large. It saves a great deal of stooping.

These do not exhaust the list of possible jobs, but they are enough to keep you busy, always with the mind on the lighter warmer days. (308)

## A Diary for the Photographer

**R**EADERS who follow our photographic feature will be interested to learn of the special Amateur Photographer Diary available now for 1951. Its reference pages contain, in compact form, all the essential information that the keen amateur photographer needs for his everyday work, including exposure tables for both daylight and artificial light. The reference pages include information on exposure, developers and development times, the hardening, fixing and washing of negatives, their intensification and reduction, and the making of prints on gaslight, bromide and self-toning papers. There are sections on enlarging, and toning, finishing and mounting prints. Other printing processes—carbon, Carbro, bromoil—and the making of slides, are also dealt with. Optical tables and formulae cover hyperfocal distance, depth of focus, supplementary lenses and projection data for still and cine projectors. There are also articles on colour photography, and specialised work like copying and air photography, as well as a number of smaller matters such as the use of an exposure meter. There is a section for recording exposures made, and the diary shows one week to each page. The diary is published by Iliffe and Sons Ltd., for 5/6 and obtainable at the usual booksellers.

# Patterns on page 127 for this small desk PERPETUAL CALENDAR

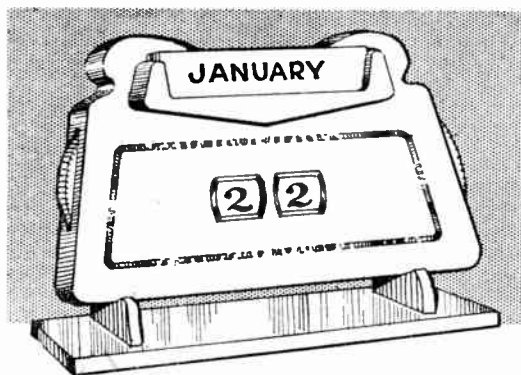


Fig. 1—The completed calendar in use

**T**HE form of calendar shown in our illustration is very popular for standing on side table or mantelshelf. It is quite compact and easily made from a few pieces of wood with the aid of the fretsaw.

The principle of the changing date figures can almost be seen from the illustration Fig. 1, but it is well, perhaps, to explain it in detail. There are two shaped pieces forming a front and a back, and between these two layers are three spacing pieces between which two discs turn, these discs bearing each a set of figures to make up the complete days of any month.

The discs protrude slightly beyond the edges of the front and back uprights to facilitate their movement with the forefinger as the dates alter from day to day.

The months of the year are contained on six cards and these rest compactly in a slotted frame at the top of the calendar. Thus, month and date are interchangeable, and the whole becomes a perpetual calendar and will last for all time.

In construction and assembly of the calendar, a word should be said regarding the wood to be used. This can all be  $\frac{3}{8}$  in. thick with the exception, perhaps, of the cover piece or overlay which goes in front of the monthly cards; this can be  $\frac{1}{2}$  in. or even  $\frac{1}{4}$  in. thick.

## The Base

Commence work upon the base, which is given in detail in Fig. 2 and needs, therefore, no further comment. Upon the base is glued and screwed two uprights, the outline of one is given on the pattern sheet included here. Talking of these diagrams the others included with it, may all be cut from one piece of wood, the several outlines being simply stuck down to the wood.

Turning again to the page of full-size patterns we next cut from it, or trace off, the outline of the front and back up-

rights. Note on the diagram some of the calendar cards are included. These must be cut round with the scissors and removed for future use.

Both front and back pieces are identical in outline, but in the front piece two 'windows' (C, Fig. 3) will be cut out; these allow the figures to be seen as the discs are turned. When the spacing pieces (A) and (B) are cut and their edges cleaned off they must be glued to the back upright in the positions shown by the dotted lines.

Now cut the two paper discs bearing the sets of figures from the page and stick them to  $\frac{3}{8}$  in. wood and cut them round. Cut round also the circle (C) in the interior of each, being very careful to keep strictly to the line to form an exact and true circle. It is round these smaller discs that the larger ones revolve, so this is the reason for the above warning in cutting.

Glue the two discs (C) to the back

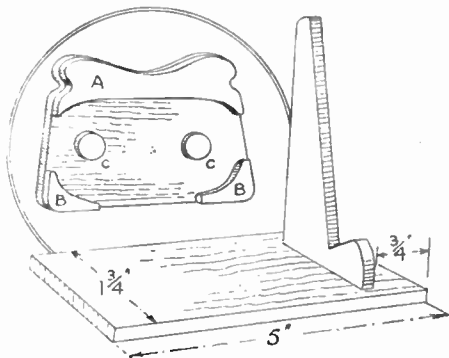


Fig. 2—Base and support piece

upright in their proper positions, these being got by pricking on to the wood from the pattern before the paper is glasspapered off. The whole back upright should now look like the circled diagram in Fig. 2. The edge of each numbered disc (the paper from these being not removed, of course), is next filed across at  $\frac{1}{8}$  in. intervals with a vee file to form a grip for the fingers when turning them for altering the numbering.

Each disc may now require a slight rubbing down all over at the back to allow it to revolve freely—but not loosely, between the front and back uprights. Care must be taken when putting the figured discs over their respective centre discs, to keep that one bearing only the six figures on the left, and the larger number on the right. Thus when the forefingers draw the discs downwards in both cases, the

proper rotation of the figures is assured.

It only remains now to put a touch of glue on each of the spacing pieces (A) and (B) and lay on the front, being careful to get the exact position in relation to the back upright. Test the rotation of the figuring and their appearance through the 'windows' before the glue has set hard and make any minor adjustments which may be needed.

The slotted fitting for the monthly cards is easily made from the two parts (D) and (E) on the pattern sheet. Cut (E) from the  $\frac{3}{8}$  in. wood and (D) from  $\frac{1}{2}$  in. or  $\frac{3}{4}$  in. stuff. Glue the two together and finally glue the whole to the top of the front upright. The edges of the completed upright should receive a final cleaning up with fine glasspaper before it is glued in place to the uprights on the base.

To make the monthly cards, cut out with scissors along the lines those given on the pattern sheet, each oblong being then  $2\frac{1}{2}$  ins. long by  $\frac{3}{4}$  in. wide. Paste the remaining eight months to pieces of thin card (one each side) and put under weight until dry and flat.

The woodwork can be finished as desired, either stain and wax polished according to the class of wood used.

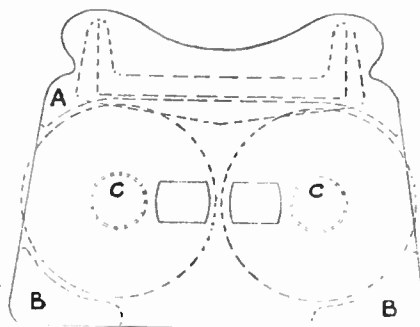


Fig. 3—Outline of back with windows

Paint, using matt colour in art shades would again make a very desirable finish.

If paint is adopted, then certain parts can be picked out in contrasting colours such as the edging of the top monthly frame and the edges of the back supports and the edges, too, of the base. A border or frame could be added in some suitable colouring, as shown, to fill the somewhat open space of the front.

## Cleaning Wheels

**W**HEN cleaning an awkward article such as the wheels of bicycles or perambulators, an old tooth brush is very useful for cleaning in the small spaces satisfactorily.

# How you can undertake the job of stuffing and MOUNTING A FISH

**A** SHORT while ago two articles dealt with the stuffing and mounting of birds; in this one it is proposed to show how fish may be similarly treated. Many fish have most attractive colouring and make beautiful cases, and as the bottom fishing season has not long begun, there is now an opportunity for obtaining excellent specimens.

They vary a great deal in size, according to the species, but the beginner is advised not to attempt a fish of less than about three-quarters of a pound in weight.

## Skinning the Fish

The first step is to take notes of the colouring of the fish. This comes in useful at a later stage when it is necessary

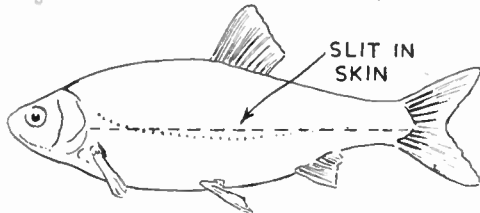


Fig. 1—Position of slit for skinning a fish

to touch up the completed specimen. After the colours have been noted, lay the fish on a piece of paper and sketch round the outline so that a copy of the natural size can be preserved.

Now lay the fish on a fresh piece of paper upon which the work of skinning is to be carried out. Slit it along one side from behind the gill to a point between the flanges of the tail. Working with a blunt knife and pair of scissors, commence to free the body from the skin, taking care not to rip or tear the latter.

Particular attention must be paid to the base of the fins, which will have to be severed with the scissors where they join the skin.

When most of the body has been freed, sever the spine as near to the base of the tail as possible. Next deal with the part at the base of the skull in the same way. Scrape the flesh away at this point, and make a small hole through

## To Keep Brushes

**T**O keep paint brushes in a jam jar, first bore a narrow hole through the wooden handle, then push a piece of bicycle spoke through, rest it on top of the jar, so that the bristles do not touch the bottom. This will keep them in shape and usable.

which it is possible to remove the brains. Cut out the tongue, and scrape the inside of the mouth and remove the eye-balls.

It is most important that all the flesh should be removed from the whole of the head area. If this is not done, and any is left behind, when it dries, the skin will shrink and give the head a warped appearance. Wash the skin well in fresh water, dry with a piece of cloth, and paint it with arsenical paste (see Fig. 1).

## Preparing the Body

The artificial body is now prepared. Sand is normally used in this operation, as when the skin has been successfully stuffed, the 'give' of the sand enables it to be gently massaged to its correct form.

First cut a piece of cork which will form the core of the body. It should be flattish and roughly rectangular, and the size will vary according to the size of the fish.

One wire, about size 12, pierces this cork lengthways; and two others pierce it at right angles to the flattened side, and may be wound round the cork once to make them secure. The first wire must be cut to the length of the fish; and the other two, which

are used to mount the fish to the board against which it will be set, should be cut off to about 5ins. in length (see Fig. 2).

## Stuffing the Skin

Lay the skin on a piece of clean paper, and insert the artificial body, gently easing the long wire into the tail and head. The other two wires should now be sticking upwards at right angles to the side of the fish. Fill the skin with sand, packing it tightly and approximating it to the normal shape of the skin.

When this is completed, sew up the slit with strong thread and neat stitches, leaving the two wires projecting. After the sewing is complete, compare the shape of the fish with the sketch: any additional sand which may be needed to fill it out can be inserted through a gill slit and eased to the required place. Pat the skin to the exact shape.

Put a little putty at the eye sockets, and insert artificial eyes. These are of plain uncoloured glass, with a black pupil.

Wash the fish under a running tap to remove all traces of sand, and dry off with a clean cloth. Cut pieces of white paper and pin these over the fins to keep them in their proper position while they dry. The dorsal fin should not be raised to its full height, but rather about half of this.

Take care not to pierce the fins with the pins. The skin may now be given a fine coating of clear gum. This helps to

set the scales. The specimen can now be put aside to dry, and this takes about three weeks.

## Touching Up the Completed Fish

When the fish is dry it will be found that almost all the natural colours have faded. This is when the notes of the colouring become most useful.

Artists' oil colours should be used, and a variety of greens, browns, whites, and black will be needed. Other useful colours are chrome yellow, vermilion, and burnt sienna. In the case of perch, the bars must be carefully shaded into place again, and the spots of trout and salmon would need special attention.

Fish of one colour are, perhaps, the hardest to touch up, because of the gentle shading which is needed. A yellowish green shading will be needed for the upper part of the belly. Thin the oil paints with a little turpentine before use. Lastly, when the colours are dry, give the skin a coat of white varnish, thinly applied.

## Mounting the Specimen

When in position in its case the fish should have about double the space above and below it, as it has at either end. If there are 3ins. between the head and tail and the end of the case, there should be 6ins. above and below, from the dorsal fin and the bottom of the belly.

The case should be of plain board of thickness in keeping with the size of the fish. The two mounting wires are passed through the back of the case and clenched to secure, and the fish should stand out a little from the back itself.

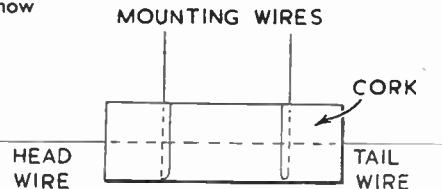


Fig. 2—Looking down on the artificial body with wires

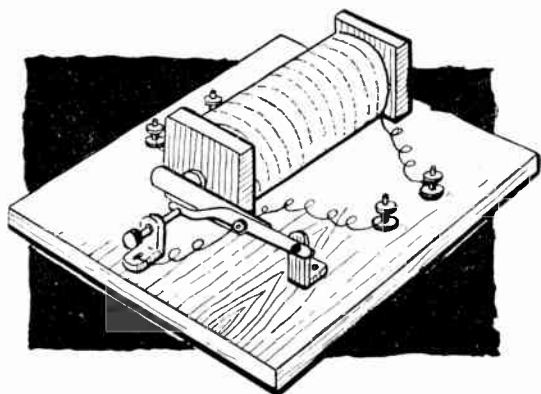
Decorate the bottom of the case with sand and pebbles, glued into position. Reeds, dried so they are stiff, can be glued at the back of the case, and shorter stems and a little grass may be used for the front part.

A little lichen, such as grows on pebbles, can be glued to one or two of the stones. The stones can be given a touch of white varnish to effect a slight gloss. Nothing but aquatic objects should be used for the decoration of the case.

A sliding glass front, riding in grooves at the sides, is useful, as this can be removed at any later time when it is desired to touch up any colours which may have faded. The outside of the case may be varnished or painted as desired.

(286)

# The amateur electrician can easily construct a MODEL SHOCKING COIL



**T**HIS shocking coil works from a small dry battery, stepping up the voltage so that a strong (but harmless) shock is obtained. The amusement such a coil can provide is well known. Persons may see who can endure the strongest shock, or hold hands in a ring. The shock is obtained from two metal handles and by putting one in a vessel of water and holding the other it is possible to see who has the strongest will-power and can pick up a coin or other object out of the water.

As the current output is very small the coil is not dangerous, but shocks should not be given to anyone without their previous knowledge (such as by connecting the coil to the door-knob), as they will be too startled.

## How the Coil Works

The circuit is shown in Fig. 1, and this serves as an aid to explanation. A battery of, say, 3 to 6 volts is connected to the primary 'P' via the contact and trembler. The current magnetises the core of the coil, which attracts the trembler, resulting in the circuit being broken. The trembler then springs back against the contact, and the procedure is repeated at high speed, resulting in a buzzing noise.

These interruptions of current allow the coil to function in the same way as a transformer, and as the secondary 'S' has a great many more turns of wire than the primary, the voltage output at the handles is alternating and many times the voltage of the battery.

By changing the voltage of the battery and adjusting the speed with which the armature vibrates, the strength of the shock can be adjusted. The number of turns on primary and secondary also governs the strength of the shocks, but is not in any way critical.

## Making the Parts

The individual parts are illustrated in Fig. 3 and can be made up from almost any oddments. The bobbin on which the coil is wound is shown at 'A'. The

centre piece must be of iron or similar magnetic material.

Its size is not critical but something about  $\frac{1}{2}$  in. in diameter is most suitable, and a length of an iron bolt or large nail can be used. It does not matter whether the material is round, square, threaded or plain. Ten or twelve lengths of iron wire bundled together can be used provided all the ends are flat at the trembler end.

Two cheeks are cut from thin wood, as shown, and have a hole so that they can be pushed on each end of the core, leaving a short piece projecting. Before winding the coil (as described later) bind a strip of stout paper round the iron to act as insulation.

The armature 'B' can be cut from a double thickness of tin ('tin' containers are really tinned iron). A single thick-

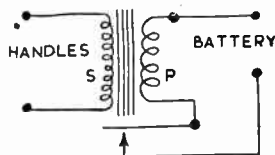


Fig. 1—The electrical circuit

ness of the same material or a thin piece of brass is used for the springy contact strip and these two are fixed together with a small bolt (see Fig. 2). This strip is shown at 'C'.

Tin can also be used to make the bracket 'D' and the hole through which the contact screw passes is level with the coil core. A small bolt with two nuts forms the contact screw.

## Winding the Coil

For the primary, wind on two or three layers of wire of about 22 to 24 S.W.G. Cotton or enamel covered wire can be used. Leave the ends projecting through tiny holes drilled in the ends of the bobbin.

A strip of strong paper should now be wound round on top of the primary winding and tied with cotton. Keep the

edges of this paper right up against the insides of the bobbin ends. The secondary is wound on top of this paper. About 20zs. of 42 S.W.G. single silk covered wire is most convenient, and there is no need to count the number of turns. Winding of the secondary will be speeded up if one end of the iron core is gripped in a geared drill so that the wire is wound on as the handle is turned.

## Fixing Coil

When the coil is finished put on a further layer of paper to protect the winding and fix the bobbin to the baseboard. Here, glue can be used, or small screws driven up from the underside.

The positions of the parts will be seen from Fig. 2. The completed armature is mounted on a second small bracket, as shown. A space of about  $\frac{1}{8}$  in. is left between the armature and end of the coil pole. The contact screw bracket is now fixed and the screw adjusted until it bears quite firmly on the springy strip. For battery and handle connections, terminals or wood-screws can be used. The thick primary is connected to battery and trembler bracket. The thin secondary to the handles. A lead goes from the contact screw bracket to the battery (see Fig. 2).

## Adjusting the Coil

For the handles, any metal objects can be used. Connections should be made to them with lengths of insulated flex taken from the screws at which the secondary terminates, as shown.

The armature will buzz in lively fashion, and by adjusting the strength with which it bears back against the contact screw, and the space between armature and coil pole ending, the strength of this buzz (and consequently the shock) can be varied. A strong new battery will also give a stronger shock than a smaller battery. However, it is unlikely anyone will be found who can endure the full power of the coil and a quiet buzz from the smallest type of dry battery will be enough for many people.

In the unlikely event of no shocks being obtained, the fault will almost always be found in the secondary or its connections. Care should be taken not to break the thin wire when winding it on.

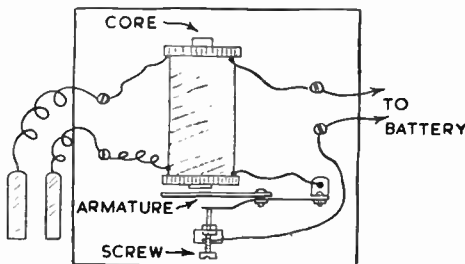


Fig. 2—Plan view showing layout

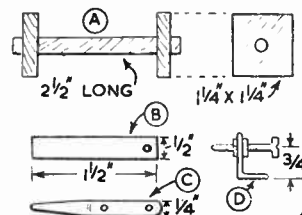


Fig. 3—How to fashion the parts

# You get better work if you follow these hints on TOOL SHARPENING

**T**HE woodworker should always insist on having first-class cutting edges on his tools. Blunt edges on chisels, planes, scrapers, etc., lead to bad workmanship, and take much of the pleasure from the craft. It is a fact that a blunt chisel can be more dangerous in use than a sharp one.

Invest in a good oilstone, and look after it. There are many varieties from which to choose. A rough stone is useful for quickly renewing a badly worn edge, but a smooth stone is essential for producing a fine edge, so, although many woodworkers manage with one fairly smooth stone, it is an advantage to have two, or one of the oilstones which have a rough surface on one side and a smooth surface on the other.

During use, keep the stone well

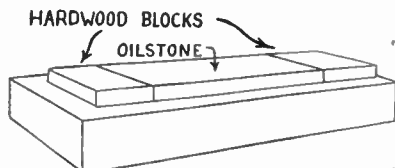


Fig. 1—An oilstone hint

lubricated with a thin machine oil, or neat's-foot oil. This causes the particles of metal and stone to float away, and so prevents the pores of the oilstone from becoming clogged up. After use wipe the surface of the stone clean, and store carefully. Should the surface become dirty or glazed, clean it with a rag soaked in paraffin.

## Use of Stones

Stones are fragile, do not use yours as a door-stop, or as a hammer. The best way to keep it safe from dirt and damage is to make a box for it, complete with lid. A useful tip when making the box is to insert two hardwood blocks, end grain up, level with the surface of the stone, as shown in Fig. 1. This increases the effective length of the stone. Make the stone fit snugly in the base of the box, but it should be removable so that both faces can be used, and also the edges when necessary.

Should the surface of the stone become hollow through frequent use, rub it face down on a flat piece of sandstone, using water as a lubricant. Another method is to use a sheet of emery cloth tacked onto a piece of board. Try to prevent the stone from acquiring a hollow surface by using the whole area of the stone, not just the centre.

Here are some hints on sharpening chisels and plane irons; both tools require the same treatment. Examine the business end of a chisel and you will notice two bevels, as in Fig. 2. The small one is the sharpening bevel, the longer one is the grinding bevel.

When sharpening on the oilstone,

place the smaller bevel flat on the surface, so the tool will be at an angle of 35 degrees (Fig. 3). Using a firm pressure, move the tool along the stone, taking care not to vary the tilt, otherwise a curved surface will result. Keep the body still, only using the arms. There is a certain amount of knack in this operation, which some people acquire only with difficulty.

## Backing Off

About a dozen strokes should suffice to restore the edge of a fairly sharp chisel. The sharpening is not complete yet, however, as a burr forms on the back of the tool, which must be removed by 'backing off'. To do this, place the back of the tool perfectly flat on the oilstone, and rub with a circular motion. The wire edge will then be left on the stone. Test the edge of the tool with

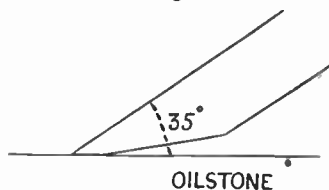


Fig. 3—The sharpening angle

the fingers to ensure that the removal of the burr is complete.

After sharpening, an even keener edge can be obtained by stropping the tool on a strip of leather coated with tallow and fine emery powder.

Careless backing off will eventually produce a bevel on the back of the tool. If this happens, or if the tool has been allowed to get into a bad condition, you should re-grind it. For this you need a grindstone. Small hand grindstones can be obtained at reasonable prices, but when using any grindstone, be sure to keep the stone well moistened with water, otherwise the heat produced will destroy the temper of the metal.

Hold the tool at an angle of 25 degrees, so the grinding bevel is flat on the surface of the stone. After grinding, renew the sharpening bevel on the oilstone.

Paring gouges—curved chisels having the bevel on the inside of the curve—are sharpened by means of specially shaped pieces of stone known as oilstone slips. It is best to buy the correct size of slip when you obtain the gouge. For backing off, use an oilstone in the ordinary manner.

Firmer gouges—those having the bevel on the outside—can be sharpened

in the same way as flat chisels, except that they must be rolled so as to produce a smooth curve. Backing off requires the use of an oilstone slip.

To check whether a cutting edge requires sharpening, hold the tool up to the light, and look at the edge. An edge needing renewal will reflect the light so that a thin white line is visible. A sharp edge reflects no light.

A scraper is a flat piece of hard steel used for smoothing wood prior to glass-papering. If the edge is badly worn, remove it by filing. Then make the edge perfectly smooth and flat by rubbing it on an oilstone. The scraper is now ready to have the burrs replaced.

The object of this is to turn over the edges of the metal so as to form the shape shown in Fig. 4. This can be done with the back of a gouge, or any suitable rod of hardened metal. Hold the scraper firmly against the bench, and draw the gouge up the full length of the scraper, using a good pressure. Repeat this four times.

For subsequent sharpening you need not file down the edge of the scraper. Simply remove the old burrs by laying the scraper flat and drawing the back of the gouge along them. Then put on the new burrs as already described.

## Centre Bits

Centre bits can be kept in good condition by using a half-round file. The cutting edge and the spur need attention

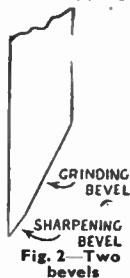


Fig. 2—Two bevels

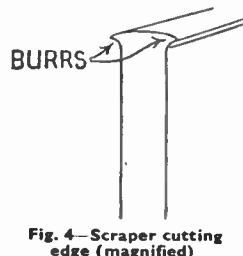


Fig. 4—Scraper cutting edge (magnified)

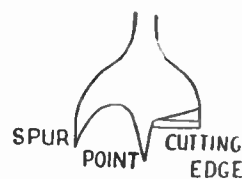


Fig. 5—The centre bit

(Fig. 5). On both these parts use the file very lightly, removing as little metal as possible. File the spur on the inside only. Notice, too, that the spur must project lower than the level of the cutting edge; filing too much metal away might ruin the bit.

Twist drills are tricky to sharpen, requiring careful work with small files. Sharpen the spurs on the inside, removing only a little of the metal.

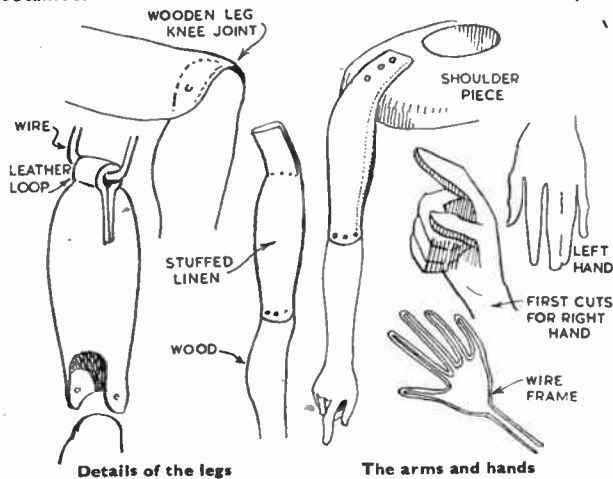
A word about saws. Although it is possible for the amateur to sharpen his own saw, it can turn out to be false economy. It is much better to leave saw sharpening to the expert, and to delay the time when the saw will need attention by using it carefully. Attempting to saw through nails does the teeth of the saw no good. (287)



# The second and final article on how to make A VENTRILOQUIST'S DOLL

In the former article we dealt with the methods of making the head and face with controls. Having completed that portion we can finish it with the necessary make-up.

Some artists make-up their puppets with actor's grease paints before each show; but, for the ordinary showman the head and face can be painted with 'flat' oil colours. Using cream or white 'undercoating' as a basis, and tubes of student's oil colours for tinting the cheeks, lips, and eye shading, a very good finish to the papier mâché head may be obtained.



and papier mâché and has an opening in the back for the hand of the operator to control the head.

In order to keep the figure rigid when seated the lower or waist section of the body is made of a heavy solid block of wood, known as the seating block. This block has a perfectly flat surface at the waist, and on this surface rests a much smaller circular block. This second block (it is really a disc about 1in. thick) is not fixed, it can be removed. When the head is in position the rounded base of the stump rests and rotates on the disc.

The shoulder-piece with the hole for the neck is held in position by means of wooden side supports fixed firmly to it, and to the seating block. The head or its stump, is let down through the neck-hole on to the waist block.

Some of the ventriloquist's dolls have a wooden frame-body but instead of a papier mâché outer form, the rounding out of the body is made by a padded covering, usually

of cloth; over this shape the puppet wears its actual clothing.

The accuracy of these puppets are made to the height and proportions of a child but full life-size adult figures are also used by many expert showmen. Animals and birds have also appeared in ventriloquial acts.

## The Limbs

Some exponents of the art have dummies which they can make to 'walk' about the stage. In many cases this action is very well done, but in many other acts the walking is a stiff, jerky piece of manoeuvring, obviously mechanical in appearance, and detracts from, rather than adds to the realism of the figure. In any case, the walking action calls for a very elaborate system of 'works'. But for general amateur use, there is no real necessity for the doll to walk at all.

The legs of the puppet can be, like the legs of a marionette, entirely of wood, or they can consist of wooden lower limbs and feet, with the upper halves, knee to hips of padded or stuffed linen.

The latter method is easy and quick to make but, at the same time, a pair of well shaped and neatly made wooden legs, with good knee joints would give much better form to the figure than the stuffed thigh. What is more important,

the all-wooden legs would give the figure more poise and rigidity when standing up. The knee-joint should be made to work very freely, so that when the knee is lifted, the lower half drops easily.

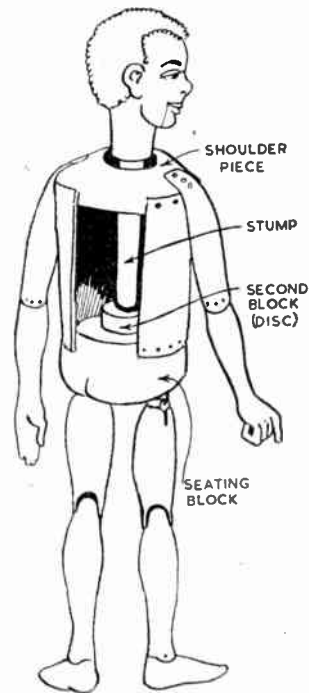
The feet can be fixed to the ankles or jointed with a tongue and groove. They are generally finished off with a pair of child's shoes. As a matter of fact children's clothing can be used for the complete dress of the puppet, unless, of course, some specially designed costume is required for the character, such as a particular kind of period dress.

Very thick and stiff material should be avoided especially for jackets, as it interferes with any movements of the limbs it may be necessary to make.

The legs can be joined to the thighs—the seating block—by means of leather loops inserted in the tops of the thighs of the all-wooden legs. To hold these loops, wire staples, with long ends can be fixed, upwards, in the seating block. If the padded linen thigh sections are used these can be fixed to the base of the block with long carpet tacks.

## The Arms and Hands

These may be made in a similar manner to the legs. The lower half, including the hand, is made in one piece and is carved, usually, in wood. The



The completed puppet

upper half, elbow to shoulder may also be a stuffed linen tube after the style of the thigh joint already mentioned. The

Before painting it is a good plan to give the head a light coating with 'Alabastine', made up into a creamy paste and painted on with a stiff brush. When this coating is dry it should be rubbed down well with glasspaper to make a smooth surface for the paint. Several coats of undercoating should be put on, and sand-papered before the final painting is done.

## Painting Effects

One of the advantages of a well painted head is that it can be kept clean and freshened up with a slightly damp cloth or sponge.

One rather unpleasant fault with a lot of puppet makers is that they overpaint their faces, giving them scarlet cheeks and noses and other violent colourings. The puppet should be well coloured, otherwise it will 'pale' before the stage lighting, but the rosy lips and cheeks may still give a true effect without being deep scarlet. Vermilion tint is a very useful colour for this purpose but even this should be handled very carefully. Avoid blackish-grey tints for the eye shadows; pale Prussian or Antwerp blue, mixed with cream, make a much cleaner looking shadow.

The body of the puppet is a hollow framework. It is usually made of wood

arms can be joined to the shoulders with carpet tacks like the stuffed thigh joint.

The hands are best when carved in wood. In size they should be smaller than the puppet's face, although the normal length of the human hand is about equal to the distance between the hairline and the chin.

#### Wire Frames

For those who feel that they are not capable of carving their hands, there is always the method of making a wire finger frame—like a miniature glove stretcher—binding the palm and fingers with this tape, bending this wire skeleton into the particular position required, and finishing off the actual modelling with plastic wood. The wire of this frame hand should be left long at the wrist for fixing it to the wooden forearm.

The ventriloquist's doll does not make great play with its hands. As a rule the face and character of the figure are its principal attraction. At the same time certain attitudes will occur in which the puppet's hands will be seen by the audience, and for that reason they should be made clean in appearance and graceful in shape.

#### Finger Manipulation

A beckoning hand, one finger raised, is a useful form for a right-hand, and if the rest of the fingers can be turned in to hold articles, a bunch of flowers, for example, the hand can be used at times to draw the attention of the audience away

from the operator—the puppet master.

This business of controlling attention and directing it away from the face and lips of the ventriloquist is a very important part of the art, and one which depends a lot on the personality and activities of the dummy. The audience will judge the direction of a sound partly through their sense of sight. When the ventriloquist opens the mouth of his puppet the audience will assume that the sounds which the showman is making come from the mouth of the dummy. They know this is not true but they like to believe it is so.

So it follows that the more active the figure is, the less important will the operator become and that is just what the showman really wants to happen. A turn of the puppet's head, a movement of the eyes; everything is of the greatest value to the manipulator and a good showman will seize on these things and make much of them.

#### Rehearsals

It follows that much careful rehearsal will be necessary before the beginner can put on an act before a strange audience. By rehearsal is meant the handling and manipulation of the puppet to synchronise with the voice and gestures of the showman. Every movement in the act will need to be done over and over again until it is time and action perfect. A good plan is to rehearse in front of a mirror, then the showman can see his act as others,

perhaps, will see it.

So much for the ventriloquist and his doll. Of course, ingenious craftsmen will devise new tricks of movement or fresh mannerisms for his mouthpiece. He may try his hand at running a dialogue with two figures, one on either side. In this case the stringing of the facial movements will have to be set for right or left-hand.

#### Working Two Puppets

Two puppets will also mean the cultivation of two separate voices apart from the speaker's normal speech and a good deal of rehearsal of the vocal changes will be necessary. This multiple voicing is done extremely well by some of the modern ventriloquists, and it enables them to give wider scope and more variety to their acts.

To manipulate two puppets simultaneously will require even more rehearsals than that of a single doll before the act can take the stage, but with slight, but carefully arranged, pauses in the dialogue, the operator will get opportunities to concentrate on the puppet next to speak before going into his change of voice.

The illustrations accompanying this series must be regarded as guides rather than as the exact details of a blue-print. So that, while they give reliable information on the points in question, the actual scale and dimensions of the doll and its parts are left to the judgment and requirements of its maker and showman.

---

## From The Editor's Notebook—

OUR recent series of articles on woodturning brought a letter from Mr. C. Robinson of Hebden Bridge, Yorks., telling me he still uses the Hobbies Companion Lathe he had over 40 years ago, and the handframe bought 50 years ago. Some good things almost last forever, you know!

\* \* \*

WHEN you send in a postal order in reply to some of our interesting advertisements, what do you do? I ask because some of the advertisers have written me that readers are signing them at the bottom, and so causing considerable trouble. When this is done the Post Office will not cash them and so they have to be returned to the sender with an explanation and request for alteration. A postal order should have entered on it the name of the person or firm to which it is being sent, and just crossed 'and Co.' as a safeguard.

\* \* \*

MAKING model galleons is a most popular hobby now, but not many readers are able to complete them inside an electric torch bulb. It can be done, however, for Mr. J. Dobson of Plymouth has succeeded, to the amazement and admiration of all who have seen

the result. He first had to get the bulb away from the metal holder and this was done only after half-a-dozen failures. Moulding the Plasticine sea inside was done with a pin, whilst human hair was used for the shrouds and ratlines. The sails, of paper, were inserted horizontally and then raised into position, the manoeuvring being done with a needle and 5 amp fuse wire.

\* \* \*

I STILL hear occasionally of would-be readers who find difficulty in obtaining *Hobbies Weekly*. Of course, it is not always possible to stroll into a newsagent's shop, or stop at a bookstall to pick up a copy, but you can have a copy ordered for you for regular delivery. It is no use leaving it to a casual 'pick-up', because something you may want very badly is almost sure to be in the copy you missed. So by ordering a copy from your usual supplier, you can be sure of not missing a single copy.

\* \* \*

AN Index to our volumes is always a useful thing to have as a means of reference for something you want to make and which has appeared in a forgotten issue. The index tells you where you can find just what you want to know. Or if you are undecided what to

do next, the Index will suggest a wide range of subjects from which you can choose. By the way, our Volumes are for six months, commencing with the first issue in April and the first issue in October. The actual number of the issue and the volume are always given on the first page, every week. The Index, No. 110, for six months up to the end of last Sept. is now available for 1/- post free.

\* \* \*

THE Nottingham Rotary Club are already planning for a Hobbies Exhibition to be held at the Cottesmore Schools during Easter week next year, and readers in the district should make a point of sending something in. There will be fuller announcements about it later on.

\* \* \*

READERS have shown great interest in our feature of The Ship Modeller's Corner, and already our expert 'Whipstaff' is being bombarded with all kinds of queries of reader's individual problems. Nothing has so far been beyond his ability to deal with, and all prove of much interest. Notes on the various matters will appear in these pages and, no doubt, be of great assistance to all the other enthusiasts.

The Editor

# The second of our articles for the amateur on SILK SCREEN PRINTING

IN this, our second article on silk screen printing, we discuss how to produce colour printing at home, with the equipment as already described. Now we can deal with making the stencil and printing the job.

Having completed the making of the necessary equipment described in the first article, the amateur silk screen printer must now decide on a suitable design to reproduce. For the first experiment it will be best to choose some design which is not too elaborate and which can be printed in two, or at the most, three colours.

In this article we shall explain first how

as a knowledge of photography and unless the would-be screen printer is also a photographer, he would hardly be able to undertake them in his own home. Therefore, we shall confine ourselves to considering the other two methods in this article.

## 'Filler' Stencils

First, let us consider the 'filler' type stencil. When using 'filler' stencils the design to be printed should be drawn full size on a sheet of stout paper or flat card and placed on the base board of the printing table. Then the screen (which you will remember consisted of organdie, taffeta silk or bolting silk stretched

required are blocked out with 'filler', which is painted on with a brush. To avoid pin holes, it is usually best to apply two coats.

There are many suitable screen fillers and the chief requirements of a good one are that it shall not be affected by the colour printed—be it oil paint or cellulose—and that it can be removed from the screen afterwards, leaving all the fine mesh clean and open.

## Using Oil Paint

For oil and oil-bound paints—which are suitable for the beginner—a good 'filler' may be made of liquid glue, with poster or showcard white to give body and a little glycerine. The last is to keep the mixture flexible while it is being applied. On very wet damp days, the introduction of a little acetone will assist speedy drying of the stencil. Such a 'filler' will not be affected by oil colours and may be removed with warm water when it is no longer required.

Cellulose acetate is another 'filler' which may be used with oil colours. It is not affected by certain nitrate solvents and thinners which may be used in some of the colours but it may be removed easily with standard cellulose solvents. Of course, it cannot be used if the job is to be printed in cellulose.

## Knife Cut Stencils

In the case of the second type of stencil mentioned, i.e., the ones cut with a knife by hand, there are two materials which can be used by the home handyman screen printer. The cheapest is tracing paper. This is placed over the full size design which should be 'in register', i.e., in the registration marks on the baseboard, as already described. It is cut with a knife which must be very sharp. While a penknife would do, it is far better to invest in a proper stencil-cutting knife, which is inexpensive and may be obtained from any silk screen



A full size drawing is made (1) placed under screen and traced (2). Paint with filler as (3), where all but bottom left corner has been covered. Mesh is, naturally, finer than here shown

tightly across a frame hinged to the base board) is lowered so it rests on top of the design which will show through the mesh of the material used.

The design can then be traced on to the actual screen either with a dark pencil or with ink applied with a brush. Next the screen is raised but before the original design is removed, care must be taken to mark its exact position on the base by fixing suitable registration guides to the baseboard. These are placed along the bottom and left hand edges, as illustrated in the first article.

Then the portions marked on the actual screen where no printing is

to make the stencils, then discuss the materials with which to print the job, and finally, the actual printing procedure will be described. Let us deal with a two colour job; for in more complicated work the directions given for the printing of the second colour will also apply to all colours to be done subsequently, irrespective of their number.

## Three Types

There are three main methods of making stencils. There is (1) the 'filler' type stencils, in which the parts of the design where no printing is required are blocked out by painting on the screen with a substance which is not affected by the colour used, but which, of course, can be removed after the job is done, so that the same screen may be used again; (2) knife-cut stencils, which are made either of paper or profilm (described hereafter) and which, as their name implies, are cut by hand; and (3) photographic stencils which are used by the professional screen printer to reproduce designs which are either too fine to be cut by hand or painted on to the screen with 'filler', or are half-tone reproductions of photographs or wash drawings, etc.

To make photo-stencils, some fairly elaborate equipment is required, as well



(1) Screen raised, with stencil mounted, and job in register on baseboard. (2) Screen lowered and squeegee ready to draw across the screen to force colour through mesh. (3) The finished print in one colour

printing supply firm. A sign writer's foil-cutting knife will do equally as well and is cheap to buy.

As the stencil is cut, obviously all the unattached portions of the design, such as the centres of the letter 'O' for instance, will become loose, as they are cut from the main portion of the paper stencil. They should be kept carefully and if there are many of them, they may be numbered and given a key on the art work below to assist recognition.

#### Fixing the Stencil

When the stencil is completely cut, it should be placed over the sketch (still in register on the baseboard) and small dabs of glue should be applied to it at convenient places. The screen, which has been stretched across the frame which is hinged to the 'baseboard' should be lowered on to the paper stencil with its 'glue dobs' waiting to receive it. Thus the main portion of the paper stencil is attached to the underside of the screen

by the blobs of glue.

After this, all the smaller unattached stencil portions must be fixed carefully in place, taking great care to keep them in register by referring to the original sketch which is still on the baseboard in the 'register' guides.

#### Register Essential

This question of register is important, for it is the means of printing the second (and any other) colour in the correct position in relation to the first colour printed. Thus the job to be printed should be the same size as the card or paper on which the original sketch is made. For when actual printing begins, this sketch will be removed from the baseboard and the 'job' inserted instead. Accurate registration is ensured by always returning the partly printed job to exactly the same position on the base, i.e., to the register guides along the bottom and left hand side.

When preparing the stencil, whether

it be of the 'filler' or cut type, always remember that the printed job must go through the actual printing process for as many times as it has colours to be printed. A two-colour job will be printed twice and each time it will be placed on the baseboard in the same position by means of the register guides provided.

#### For Each Colour

Therefore, it is clear that there must be a separate stencil for each colour and that each stencil must be prepared so that it only permits one colour to be printed. Thus, the first stencil will 'leave open' only the portions of the design to be printed in the first colour, although in many cases where two colours meet, it is sometimes a good plan to leave a slight 'overlap' which will be covered when the next colour is printed. Practical experience will best teach when this should be done.

(To be Concluded)

## The home handyman has a choice of making DRAINING RACKS

**T**HERE is one place where we can always make some improvement and that is in the kitchen. So much work here is real hard work and just for the sake of a little planning our lot could be improved. Many people with a low sink spend far too much time bending down to wash up.

Build up a unit (see Fig. 1) to raise the washing-up bowl and also prevent the usual scratching of the sink base and its accompanying grease. Side pieces should be about 4ins. high and 9ins. long, and note the cut-outs to allow water to swirl freely underneath. Four or six  $\frac{1}{2}$ in. dowell rods can then be fixed through to a width of 15ins., according to the size of sink.

Many houses have a draining board which is a constant danger because of slipping. Here is a better idea, and you can even take it outside in the air and let the goods dry. It is made with two lengths of  $1\frac{1}{2}$ ins. by 1in. wood and 24ins. long. Round off the edges a little and secure with two cross pieces.

The rest (see Fig. 2) is made with  $\frac{1}{2}$ in. dowell rods about 7ins. long and fitted into intervals of 1in. Soup plates will need at least 2ins., but this you may adjust to your own idea. Have four for soup plates and the rest for the ordinary plates.

The following suggestion can only be used if you have the space but it would be a good plan to measure up the space available and get out a little sketch. Read this article first and picture out

what you can do with the material you can get. The main idea is to give a comprehensive draining board for as many of those things which do not get in the ordinary rack (see Fig. 3).

The base would be a 6in. shelf over the sink and along over the taps. Next, take up two uprights in 1in. wood to a height of 24ins. Many sinks have a window over them and in this case you would remove the fitment to one side.

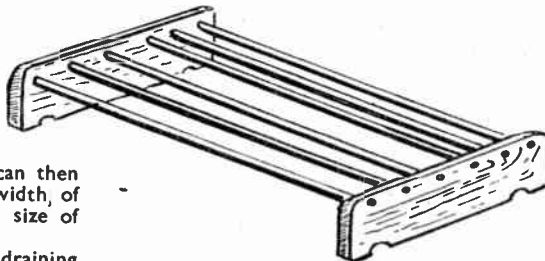


Fig. 1—A simple draining rack of dowel and end stands

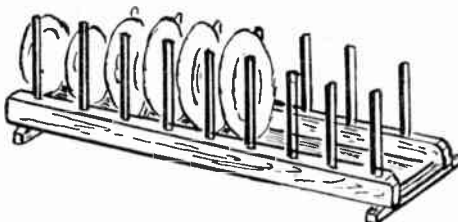


Fig. 2—With upright dowel posts and raised rack

Across the top fit your main section as shown. Measure down and also take the largest dish or plate so you do not waste space, allowing 2ins. for clearance.

A sloping board with slots, as shown, is now fixed right across and is tilted inwards a little (note the bent bracket). This shelf can be about 4ins. and slides

inside the fitment by 2ins., leaving a gap of 4ins. for the draining. The plates are then secure and held by bars running down the back on a batten across the top.

Below you should now have a space. According to what you usually wash up fix the dowel rods across to hold cups in one section and above prepare it for dishes and bowls.

Considerable time can be saved in a small kitchen if you use the racks for the

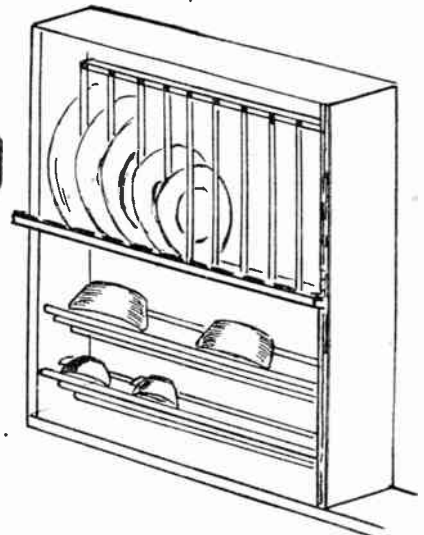


Fig. 3—Two types of rack in a wall cabinet

draining goods and also the one suggested in the first part of the article for the dirty 'crocks'.

Space permitting, other racks can be put up in odd places around the sink for we all know that in these matters you cannot have too many, especially when we have company. (228)

# MISCELLANEOUS ADVERTISEMENTS

**SAWDUST** as fuel. Heater plans, 1/6.  
S—J. Cook, 37 Springhill Avenue,  
Penn, Wolverhampton.

**CASTING** moulds for lead soldiers,  
Indians and cowboys, animals and  
novelties. Sample mould, 4/-. Catalogue,  
6d.—G. F. Rhead, 2 Waldegrave Park,  
Twickenham.

**3 GIANT** stamps Prince Ranier—  
Free. Request approvals and  
enclose S.A.E.—Jeffreys, 2 Bay View,  
Craigavon, Port Talbot.

**STAMPS**—world mixed, 1/- a 100;  
5/- a 1,000. Gift voucher free.—  
Selby, 66 Donnington Road, London,  
N.W.10.

**SAVE** pounds. Sole your shoes in five  
minutes. Self-stick leather soles, no  
nails, no glue. 2/- pair.—Butterfield,  
Powell Road, Bingley, Yorks.

**5x5 SNAP** enlargements, 6d.  
Films developed, 6d. Return  
service.—Bailey, 72 Marshfield Road,  
Goole, Yorks.

**INTRODUCTIONS.** Pen friends,  
companionship or marriage.—V.C.C.,  
34 Honeywell Road, London, S.W.11.

**MAKE** 5/- an hour, genuine home  
employment. Full instructions, 3/-.  
—R. Lowes, Simonburn, Northumber-  
land.

**BANDSAWS**, 10ins., from £6/6/0.  
Hand mortisers, £4/7/6. For par-  
ticulars send 2d. and S.A.E. 1d.—Cooke,  
37 Springhill Avenue, Penn, Wolver-  
hampton, 19.

**84 COLONIALS**, Foreign, Airmails,  
Pictorials, cost 15/-, price 3/6.  
Would resell 10/- easily. Smaller lot,  
cost 6/-, price 1/3.—Brown, 30 Meadow  
Way, Harrow Weald.

**HOMEWORKERS** send 2/- only for  
my atest employment list. S.A.E.  
please.—W. H. Willoughby, 56  
Capworth Street, London, E.10.

**STAMPS FREE!!** Twenty unused  
(2½d.).—G. H. Barnett, Limington,  
Somerset.

**BE** Taller. Quickly! Surely! Privately!  
No appliances—no tablets—no diet-  
ing. Details, 6d. stamp.—Malcolm Ross,  
Height Specialist, BCM/HYTE, London,  
W.C.1.

**MODELS.** You can make lasting  
stone-hard models with Sankey's  
Pyrama Plastic Cement. Supplied in tins  
by Ironmongers, Hardwaremen and  
Builders' Merchants. Ask for instruction  
leaflet.

**TRANSFERS** for decorating toys,  
trays, furniture, fancy goods. List and  
samples, 3d. Flowers, pixies, dogs,  
nursery rhymes.—H. Axon Harrison,  
Jersey.

**BLUSHING**, shyness, nerves, self-  
consciousness, fears, ended. Details  
under plain cover, 1d.—Stebbing Treat-  
ment, 28 (HB) Dean Road, London,  
N.W.2.

**PRESSED** Metal Wheels. 1½ins., 1/3;  
2ins., 1/9 per dozen. Or in stove  
enamel finish, red, green or blue at 6d.  
per dozen extra. Tax included. Post  
paid.—The Joyden Toy Co., 193 Chase  
Side, London, N.14.

**DOLL'S** House fittings and papers;  
send S.A.E. for list. Doll's house  
plan, special; send 2/6. Trade supplied.—  
Zimplan, 88 Ware Road, Hoddesdon.

**CONSTRUCTIONAL** Kits, 4mm. and  
7mm. scale Lorries. Also large  
range spare parts from which to build to  
your own design. Price lists, 1d.—  
Wilson's Lorries Ltd., Dept. H., 1/6 Gt.  
Winchester Street, London, E.C.2.

**100,000** GOVERNMENT sur-  
plus bargains. Inter-  
room telephone sets, ideal household  
(sick room/kitchen, etc.) use, 8/6, post  
6d.; single bell flex, 25yds., 1/-, post 6d.;  
sponge rubber strip, approx. 18ft. x  
1½ins. x ½in., 2/-, post 9d.; aluminium  
rivets, approx. 1lb. assorted, 2/6, post  
6d.; 12v. drills (work from car battery),  
10 amps., 19/6, post 1/6. Huge stocks  
electrical switches, motors, resistances,  
etc., etc. Send 3d. stamp for full list o  
bargains.—Milligan's, 24 Harford Street,  
Liverpool, 3.

**HARDWOOD** Wheels. 2ins., 1/-;  
3ins., 2/- per set of four. Tax  
included. Post paid. Other sizes avail-  
able.—The Joyden Toy Co., 193 Chase  
Side, London, N.14.

**PLYWOOD** offcuts. Birch and  
Gaboon in various thicknesses.  
Handy sized parcels for the cabinet, toy,  
model maker, and all handicrafts.  
Parcels made up in £1 and 10/- lots.  
Carriage paid. Send P.O. to Reeves,  
Plywood and Timber Merchant, 33  
Front Street, Monkseaton, Whitley Bay.  
Tel. W.B.4677. Parcels are now de-  
spatched on day of receiving order.

**£5** to £20 weekly earned at home,  
running your own Mail Order  
business. Details, 1d.—Stebbing  
Publications Ltd. (HB), Naphill, High  
Wycombe.

**FASCINATING** and profitable hobby,  
casting ornaments, toys, etc. You can  
easily make these yourself. Paints,  
brushes and all accessories. Illustrated  
catalogue of 700 moulds, plus latest list of  
rubber moulds, with instructions, 9d.,  
post free.—Cock of North Moulds (H),  
140 Hollings Road, Bradford.

**AMERICAN** Magazines post free for  
one year. Popular Mechanics, 32/-;  
Popular Science, 28/6; Mechanix Illus-  
trated, 22/6; Popular Homecraft, 18/-.  
Stamp for full list of others.—Willen  
Ltd. (Dept. 57), 101 Fleet Street, London,  
E.C.4.

**CONJURING.** 3d. for new lists and  
free magical competition.—  
De Hempsey, 363 Sandycombe, Kew  
Gardens.

**PLYWOOD.** 72 x 4½ x ½in., 20 for  
25/-; Gaboon, sanded two sides;  
Birch, 36 x 9 x ½in., 10 for 15/-;  
Veneered Plywood, 24 x 24 x ½in., 5 for  
35/-; ½in. thick, 2 for 25/-; Strips Block-  
board, ½ x ½ x 27ins. long, 3/- doz.  
Softwood lids, 39 x 13½ x ½in., 7 for 20/-.  
List of other plywood and Oak, 2d. All  
above prices carriage paid for C.W.O.  
Dept. H.3, JDD. Storage, 71 Northcross  
Road, S.E.22. BRI. 7441.

**BE** Taller in 14 days or money back.  
Details, 1d.—Stebbing's System, 28  
(HB) Dean Road, London, N.W.2.

**PITMAN** or Gregg Shorthand. Rapid  
postal courses. Particulars—Shaw's  
Commercial School, Lancaster.

**USE** spare time on profitable home-  
work making fancy goods. Write  
for free booklet.—(Area 544), 54 South-  
gate Street, Leicester.

**MAKE** your own Jig-saw Puzzles.  
Fine art pictures, various repro-  
ductions and sizes. Also suitable for  
framing. Stamp for full list.—Joyden Toy  
Co., 193 Chase Side, London, N.14.

**NOVEL** Calendar Designs painted on  
plywood for cutting out. With date  
cards. Inexpensive gifts, profitable to  
sell. Sample, 2/-; half dozen, 10/-,  
including postage.—Cleaver, 50 Windsor  
Road, London, N.W.2.

**HOMEWORKERS** required, either  
sex, light assembly. Part or full  
time. S.A.E.—Esprey, Box 18, 41 Wade  
Street, Lichfield.

**HOME** Watch and Clock Repair Out-  
fit. Includes watchmaker's magni-  
fying eyeglass, tweezers, screwdrivers,  
oilers, oil, brush, dusting powder, plus  
illustrated explanatory book. Watch and  
clock repairing simplified. In container,  
12/9 inclusive.—D. Bolster (Dept. H),  
5a Station Parade, Ashford, Middx.

**HARDWOOD** Ball Beads, ½in. dia-  
meter, suitable for children's count-  
ing frames, etc., 5/3 per hundred, plus  
1/9 P.T.—Joyden Toy Co., 193 Chase  
Side, London, N.14.

**PERSPEX** and acetate, cut any size  
from 2/6 sq. foot.—W.M. Products,  
2 The Mall, Ealing, W.5. Eal.3881.

**MAGICIANS** Tricks, crazy cut-outs,  
only 1/3; parcels, 5/6. An evening's  
entertainment. Lists, 3d.—De Hempsey,  
363 Sandycombe, Kew Gardens, Surrey.

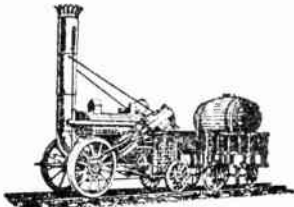
**ATTRACTIVE** Pictorial stamps on  
Approval.—G. Smith, P.T.S., 93  
Ocean Road, South Shields.

**MODEL**-Makers and handymen. Bum-  
per set of lists, books, plans and  
samples. 2/6.—Sutton Models, Billericay.

**EARN** £5—£20 weekly dealing in  
stamps. Booklet, testimonials, 1d.—  
M. Stebbing, Terry, Naphill, High  
Wycombe.

## MODEL MAKERS !!!

Here is the second model in our "TRUKIT" series constructional outfits. The No. 1 Locomotive Kit builds up without any difficulty into the most fascinating of all models, Stevensons's "ROCKET" to gauge "O" 7 mm. scale. This is a truly magnificent little miniature and costs only 11/5 post free. Send P.O. today. (Dept. H.)



MURRAY HILL & CO, Mail Order House, Bedford Square, Sidmouth, Devon.

## THE MOTOR SHOW IS COMING ! "WHERE'S THAT CAR FROM?"

and  
"POPULAR CARS"  
(40 illustrations)  
6d. each

from all Booksellers and Stationers  
Raleigh Press, Exmouth

## AMAZING Ex. BARGAIN SIGNAL LAMP

In stout double-compartment water-proof steel case.

- 3 1/2-inch lamp, for day or night use.
  - Swivel base with metal screw-in stand.
  - Viewfinder and reflector.
  - Morse key-board. Fully wired fitted to folding lid.
  - Adaptable as car, motor cycle or studio spot light and numerous other uses.
- Spare bulbs 1/3 each.

7/6

Post 1/3



Write for illustrated lists.  
**PRIDE & CLARKE LTD.**  
Dept. P.W., STOCKWELL RD., S.W.9. Phone: BRixton 6251

**OVER 5,000**  
ex-R.A.F. Apprentices  
have reached commissioned rank

✦ So may you — one day.  
If you are chosen to be an R.A.F.

Apprentice you will be trained for a skilled trade, and continue your general education. You will have far more opportunities for sport than most boys. You will be well fed and cared for, and receive good pocket money. And you may end up not only with a commission — but with a flying commission.

Send the coupon. It will not commit you to anything. It may lead to great things.

TO:—AIR MINISTRY, DEPT. HS.44H,  
VICTORY HOUSE, KINGSWAY, LONDON, W.C.2.

I am between 15 and 17. Please send details of R.A.F. Apprenticeship.

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_



## THE BOLSTER HOME WATCH AND CLOCK REPAIR OUTFIT

These precision jewellers instruments include watchmaker's magnifying eyeglass, finest watch tweezers, set watchmaker's screwdrivers, watch and clock oil, oilers, dusting powder, clock brush, plus illustrated instructional manual for the amateur. In container 12/9 post free. Senior Outfit includes everything above, plus watch jewels, luminous compounds, dial renewer, jewellers rouge, explanatory book Price 21/- post free.

**BOLSTER INSTRUMENTS**, (Dept. H. W.), 5a Station Parade, Ashford, Middx

## HANDCRAFT SUPPLIES (NORTHERN)

STOOL AND TABLE LEGS (Plain Turned). TWIST PATTERN SEAGRASS. Natural, 1/11 lb.; Coloured, 2/9 lb. (approx.). WOODEN WHEELS, 1 1/2 ins. and 2 ins., 3d.; 3 ins., 5d.; 4 ins., 8d.; 5 ins., 1/- each. BLACKBOARD PAINT, 1/3. LICENCE FREE TIMBER, PLYWOOD, HARDBOARD, ETC. MAIN HOBBIES AGENTS. DISCOUNTS FOR SCHOOLS, CLUBS, HOSPITALS. Carriage paid on all above. 15lb. orders can be sent C.O.D. PLYWOOD OFFCUTS, 5/-, 10/-, 20/- bundles. Carriage Paid. Send s.a.e. for Latest Price Lists. You can order by post with complete confidence—write to:

15-17 RIDLEY PLACE, NEWCASTLE-on-TYNE. Phone: 27950

## YOU CAN BECOME A HANDICRAFTS INSTRUCTOR

Experience not essential

Men who enjoy making things in wood or metal can turn their hobby into a permanent and interesting Career. Short hours, long holidays, and security in a job you would really enjoy, can be yours if you become a Handicrafts instructor. Let us send details of the easiest and quickest way to get the necessary qualification.

We definitely guarantee  
"NO PASS—NO FEE"

If you would like to know about our unique method of preparing you for one of these appointments, write today, and we will send you our informative 176 page Handbook—free and without obligation. Mark your letters "Handicrafts Instructor."

**BRITISH INSTITUTE OF  
ENGINEERING TECHNOLOGY**

595 Shakespeare House  
Stratford Place, London, W.1

# BIET

# CASCO

## COLD water GLUES



supersede this

Most hobbies require Glue—"CASCO" fills the bill for either new work or repairs. It is an absolute necessity for the Modelmaker for Fretwork, Toymaking, etc. Easy to mix in cold water Casco is simple to use and almost impervious to heat and moisture. "CASCO" Grade "A" is the world-famous Casein Cold Water Glue manufactured in Great Britain, Australia, U.S.A. and Scandinavian countries. Conforms to MODERN BRITISH STANDARDS SPECIFICATION 1444, TYPE A.

Stocked by Ironmongers, Builders' Merchants, Hardware Stores, etc.



### DISTRIBUTORS:

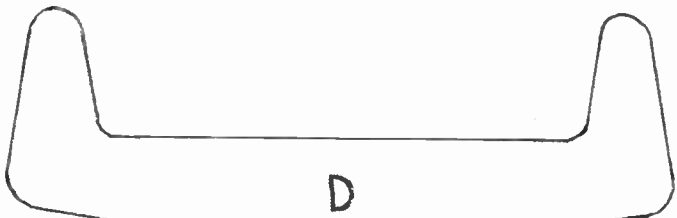
Gt. Britain: Charles Cleeve & Co. Ltd.  
45 Gt. Peter St., London, S.W.1.

Eire: C. B. Waller, 60 Middle Abbey St., Dublin  
M. J. Galligan, 16 Oliver Plunkett St., Cork

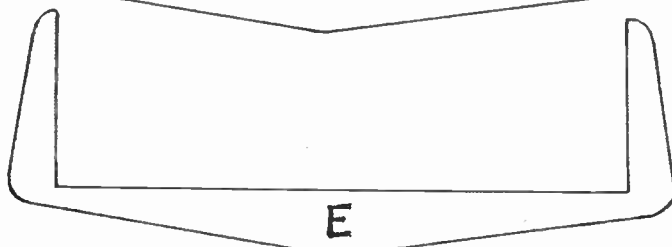
**FREE!** Send for literature and Free Sample to the manufacturers  
**LEICESTER, LOVELL & CO. LTD.**  
(Dept. HW), NORTH BADDESLEY, SOUTHAMPTON

**Patterns for small  
Desk Calendar**

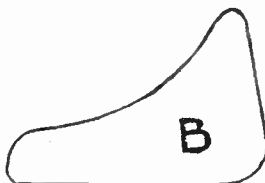
(see page 117)



D

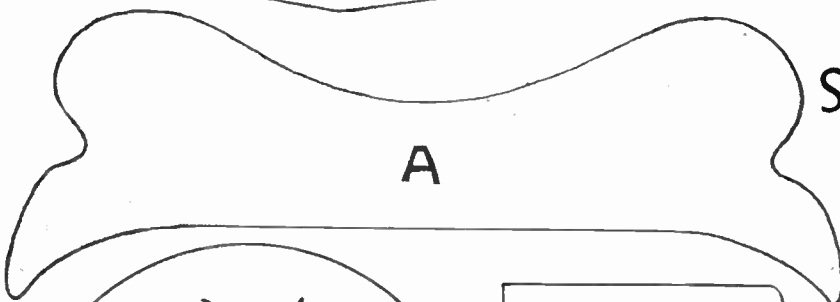


E



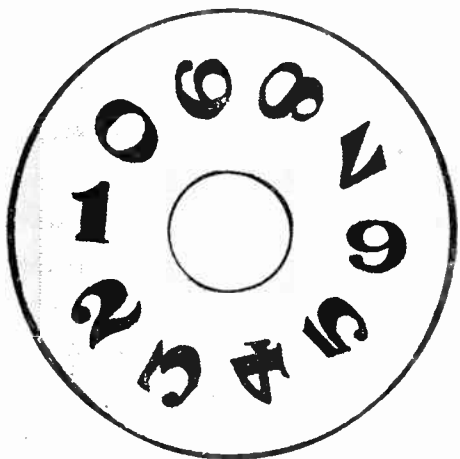
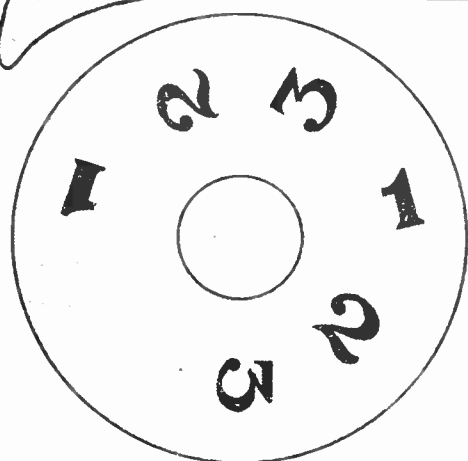
B

MAY  
JUNE  
JULY  
AUGUST  
SEPTEMBER  
OCTOBER



A

NOVEMBER  
DECEMBER



JANUARY
FEBRUARY
MARCH
APRIL

# THE STEPPING STONES TO SUCCESS!

Don't hesitate about your future! Go forward, confident that The Bennett College will see you through to a sound position in any career you choose. The Bennett College methods are individual. There's a friendly personal touch that encourages quick progress and makes for early efficiency. Take the first important step NOW and fill in the coupon below.



**CHOOSE YOUR CAREER**

- |  |  |                                      |
|--|--|--------------------------------------|
| Accountancy Exams.   | General Certificate of Education Examination | Radio Service Engineering            |
| Aviation (Engineering and Wireless)                            | General Education G.P.O. Eng. Dept.          | Road Making and Maintenance          |
| Book keeping, Accountancy, and Modern Business Methods         | Heating and Ventilating                      | Salesmanship                         |
| Building, Architecture, and Clerk of Works (A.R.I.B.A. Exams.) | Institute of Housing Engineers               | Sanitation                           |
| Cambridge Senior School Certificate                            | Institute of Municipal Engineers             | School Attendance Officer            |
| Carpentry and Joinery  | Journalism                                   | Secretarial Exams.                   |
| Chemistry  | Languages                                    | Sheet Metal Work                     |
| Civil Engineering  | Mathematics                                  | Shipbuilding                         |
| Civil Service  | Matriculation                                | Shorthand                            |
| All Commercial Subjects  | Metallurgy                                   | (Pitman's)                           |
| Commercial Art   | Mining, All Subjects                         | Short Story Writing                  |
| Common Prelim. E.J.E.B.  | Motor Engineering                            | Surveying                            |
| Diesel Engines   | Naval Architecture                           | (R.I.C.S. Exams.)                    |
| Draughtsmanship, All Branches                                  | Novel Writing                                | Teachers of Handicrafts              |
| Engineering, All branches, Subjects and Exams.                 | Plastics                                     | Telecommunications (City and Guilds) |
|  | Play Writing                                 | Television                           |
|  | Police, Special Course                       | Transport Inst. Examinations         |
|  | Press Tool Work                              | Viewers, Gaugers, Inspectors         |
|  | Pumps and Pumping Machinery                  | Weights and Measures Inspectors      |
|  | Quantity Surveying                           | Wireless Telegraphy and Telephony    |
|  | —Inst. of Quantity Surveyors' Exams.         |                                      |

If you do not see your requirements above, write to us on any subject. Full particulars free.

**COUPON. CUT THIS OUT**

IF YOU ATTEND TO THIS NOW IT MAY MAKE A WONDERFUL DIFFERENCE TO YOUR FUTURE.

TO DEPT. 62  
THE BENNETT COLLEGE LTD.  
SHEFFIELD, ENGLAND.

Please send me (free of charge)

Particulars of..... (Cross out line which does not apply.)

Your private advice

about .....

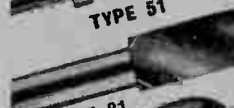
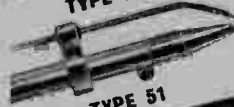
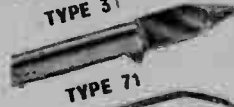
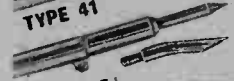
PLEASE WRITE IN BLOCK LETTERS

Name .....

Address .....



# WOLF ELECTRIC SOLDERGUNS



OFF-STRAIGHT EASY-GRIP HANDLE  
PERFECT CONTROL  
QUICKER HEAT-UP  
LOCALISED HEAT  
LOW CURRENT CONSUMPTION  
MAINTAINS CORRECT HEAT  
A MODEL FOR EVERY PURPOSE

Write for FREE illustrated technical literature with full descriptions of each model, its range of applications, and the features which make these fine Wolf solderguns the best value ever offered.



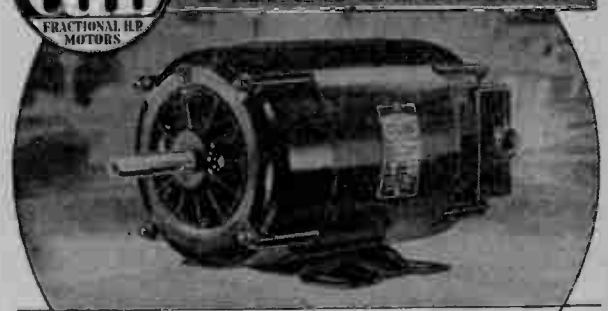
From all leading tool merchants and factors

**WOLF ELECTRIC TOOLS LTD.,**  
HANGER LANE, LONDON, W.5.

Telephone: PERIVALE 5631-4



THE EFFICIENT  
**FRACTIONAL**



For every purpose in the small home workshop... use a BROOK 'CUB' 1/2 h.p. motor. Single or split phase.

Electric Motors from 0.25 to 200 h.p.



EMPRSS WORKS HUDDERSFIELD

I.H.M.146



# Hobbies

## WEEKLY

### CONTENTS

	Page
Luggage Truck - - -	129
Tumbling Tanks Game	131
Ship Modeller's Corner	132
Compact Battery 3 -	133
Door Bell Indicator -	134
Hints for Handcraft -	135
Table Croquet Set -	137
Silk Screen Printing -	138
Open Log Basket -	139
Craftsman's Notebook	140
The Golden Hamster -	141
Anglers Folding Seat -	142

DESIGN SHEET FOR  
SERVIETTE RINGS AND  
BOX

November 29th, 1950

Price Fourpence

Vol. III No. 2874

## A 2ft. MODEL LUGGAGE TRUCK

**W**E give this week another interesting little toy that can be easily and cheaply made up. This little hand truck should afford the youngsters endless fun. It is really a porter's hand truck and is a proper little miniature, large enough to be able to run all over the room collecting up 'luggage' and depositing it where wanted.

### A Sturdy Toy

Such a toy as this requires to be built sturdily so it will stand quite a lot of handling and heavy usage. The truck when made up is over 2ft. long and is fitted with a pair of well-turned hardwood wheels 4ins. in diameter. These wheels can be bought from Hobbies at 1/6 per pair.

In commencing to make the truck the two main handles will first be prepared. They are each 2ft. long and cut from 2in. wide stuff  $\frac{1}{2}$ in. or  $\frac{3}{4}$ in. thick. Square off the ends of the two pieces, and then, taking up one of them, proceed to mark off the positions of the recesses, as shown in Fig. 1. Cut down on the lines with a tenon saw to  $\frac{1}{2}$ in. deep and clean out the wood with a chisel. Or, perhaps, the fretsaw frame fitted with a coarse saw would do the latter job more cleanly.

### Handle Shaping

The shape of the actual handles should be carefully studied from the illustration and the outline made direct on the wood and then cut with the fretsaw. Round off all the edges with a rasp and file and

finish up to make a smooth handle with coarse and fine glasspaper. At 1in. distant from the square end of the piece and on the plain and uncut edge, a semi-circular recess should be made with the rasp and file, as shown, ready for the  $\frac{1}{2}$ in. axle bar which will later on be put through.

Now lay this finished handle or rail upon the other plain piece and mark off the recesses along the top edge and also mark round the shape of the handle, and finish this section off exactly as the first one.

### Cross Rails

The next pieces to prepare are the cross rails holding the two handle rails together. Mark and cut three pieces 10ins. long by 2ins. wide by  $\frac{1}{2}$ in. thick and round off all the corners and then bore

four holes in each to receive the flat-headed screws.

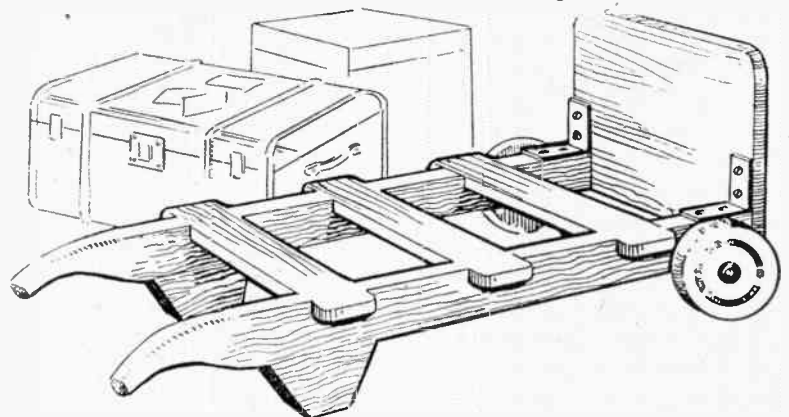
The distance these holes will be made from the ends will be  $\frac{3}{4}$ in. to the centres of them, thus making the handles when screwed on 8ins. clear width inside. The holes should all be countersunk and the screws driven in with their heads flush with the wood strips. Fig. 2 shows clearly how each cross rail will appear when fixed on.

### Bearers

The bearer brackets which hold the axle are two shaped pieces 3ins. long by  $1\frac{1}{2}$ ins. wide and  $\frac{1}{2}$ in. thick, and one end of each is cut to a slope, as shown at (A) Fig. 3. The pieces are glued to the ends of the handles and a long screw put into the shaped ends of each to give added strength.

The hole for the axle bar may next be completed, and made perfectly circular and smooth,  $\frac{1}{2}$ in. in diameter. It would be quite worth while taking the trouble to make two bushes or washers from thin brass bent round and inserted in the holes to make the axle run more easily than it otherwise would in the plain wood.

The axle bar consists of a length of  $\frac{1}{2}$ in. hardwood rod, and allowance must be made for a good clearance between



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

wheel and rail, so that the former work easily. The upright front board which holds the luggage in place on the platform is next made.

This consists of a plain piece of board about  $\frac{1}{2}$  in. thick and 9 ins. square, the two

centres, but it will, doubtless, be necessary to enlarge these to the required size to fit tightly on to the axle bar.

Two shaped feet will next be added, one to each handle to hold them clear of

through the sloping end of the feet into the rails.

As an alternative to the feet described above, they may be made from stout wire, two pieces about 9 ins. or 10 ins. long being cut off and bent up to the shape given at (C) in Fig. 3. The ends of the wires are flattened by

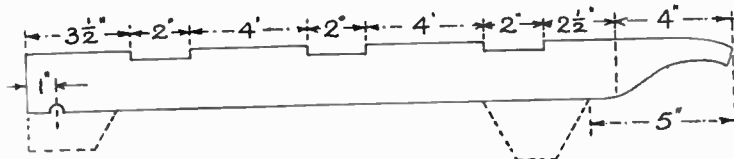


Fig. 1—Side view of handle with dimensions and shaping

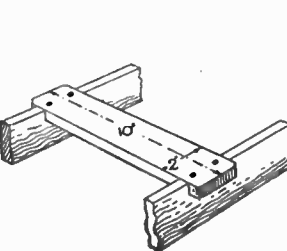


Fig. 2—The cross rails

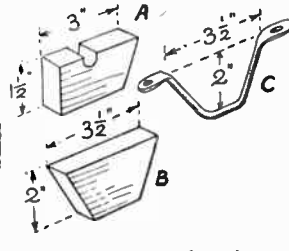
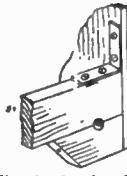


Fig. 3—Bearers on foot shapes Fig. 4—Angle plates



top corners being rounded off and made smooth. Screws will run through the board into the ends of the handle rails, and to stiffen up this fixing, two metal angle plates will be added, as shown in the detail in Fig. 4. The wheels as supplied have holes made in their

the ground. At (B) in Fig. 3 the size and shape of one foot is given, and, having cut one to shape, the second one can be accurately outlined by drawing round it. The proper position of the foot is given in the dotted lines in Fig. 1. Glue the feet on and drive in nails or screws

hammering, and holes then drilled to take round-head stout screws.

Clean up all the wood surfaces, excepting the wheels, of course, which are already nicely painted and finished. Brush on a coat of clear varnish, allowing this to thoroughly harden before again handling the toy.

If preferred, the toy may be painted in bright colours, two coats being given to give a good finish. Some 'light' luggage can easily be made from card packing boxes or cartons which are now commonly used by provision merchants or confectionery stores. These could be covered with light brown paper and stiffened with card where necessary.

(299)

## Separating Perspex

**I** WOULD like to know of a preparation to unstick Perspex without damage to either face. (W.H.G.—St. Albans).

**W**E are not aware of any preparation that will unstick Perspex. It happens that the solvent which would soften the cement, also eats away the material as well. About the best method is to saw through the joint with a fret-saw, if practicable, if not, with a thin bladed hacksaw. The remains of the joint can then be filed away and a new joint made. Some little loss of material results, but it is about the best way to do the job.

## Oxydising Brass

**C**AN you tell me the correct method to use for producing an oxidised finish on brass? (N.F.J.—Wandsworth).

**T**O oxydise or bronze brass—that is, to produce a dark blue-black colour thereon—you will need a small quantity of bronzing acid which you purchase at small cost from Gedge & Co., 88 St. John St., Clerkenwell, E.C.1. The bronzing is done by first polishing the brass, then making it mechanically clean and absolutely free of any trace of grease. This is vital, as even handling the brass with the bare hand will show up finger prints on the finished work. Boiling in soda water, followed by washing in clean hot water, and drying off by rubbing with clean rag, will generally suffice. Handle the brass only by clean linen cloths (not fluffy kinds), then put a little of the acid in a clean china saucer, and apply it with a clean

swab of wadding or linen. The brass will at once turn blue-black in colour, but continue applying the acid until all is a uniform colour. Rinse in clean warm water and wash thoroughly, dry off in gentle heat; polish with a clean rag and then apply a coat of clear lacquer. The acid is very poisonous, as are the fumes, so avoid breathing any of it, and do the job in a well ventilated place. Take care also not to allow the acid to splash on to the handle or body.

## Glue Pot Hint

**W**HAT can I do to prevent glue from caking to the side of the pot? (W.E.—Islington).

**T**HERE is no way of preventing glue from adhering to the sides of the glue pot, but while the glue is hot, you can readily scrape off the semi-liquid glue with a hot steel blade, such as a knife, and let it melt with the rest of the glue.

## Invisible Ink

**I** FIND that if I write on paper with orange juice, it remains invisible until exposed to heat. Could you tell me if it is possible to use some other means of doing this without heat? (E.C.G.—N. Kensington).

**T**HERE are many ways of writing with the so-called invisible ink, which becomes visible under heat or when subjected to a suitable re-agent. For example, characters written with a weak solution of galls, only become visible when a weak solution of copperas is applied. Writing with rice water

becomes visible when developed by an application of iodine. Chemical solutions which become visible only when heated, and can be used for writing, include very dilute solutions of the mineral acids and common salt; solutions of chloride of cobalt, and of nickel. Also equal parts of sal ammoniac and sulphate of copper, act in the same way.

## Dynamo Weakness

**I** HAVE a second-hand dynamo and it isn't lighting well. When going all out, the light is only equal to about a 1 1/2 volt battery, and I have only a 2.5 bulb in it. (J.D.—Ballisodarre).

**U**NFORTUNATELY a transformer could not be used with advantage with the dynamo because any attempt to step up voltage would result in a loss of current which would make the final output even weaker.

The most likely causes of the trouble may be that the permanent magnet has become weak, or that the output of the dynamo has a voltage very different from that you suppose. For example, the output might be of quite high voltage, but low current, in which case it would not light a bulb taking a fairly heavy current at all well. The output should be marked somewhere on the dynamo. Also make sure the brushes touch well, if these are fitted.

Your description suggests this may be a type of motor, in which case little can be done to make it operate effectively as a dynamo. Try using a bulb of low current consumption.

# A novel and easily constructed version of the 'TUMBLING TANKS' GAME

**T**HIS 'tumbling tanks' game is a miniature version of the well-known fair-ground diversion and can be made at very little cost and played, at home, especially at parties, at no cost whatever, which is more than can be said for the professional showman's apparatus.

As can be seen from the photographic illustration, the game consists of a large board in which some rectangular holes are cut. The board is tilted, and down the slope roll 'tanks' . . . actually oval shaped mustard tins specially weighted. The idea, of course, is to direct the course of the 'tanks' so that they go into the highest-scoring holes. But 'there's many a slip . . .

## Board Sizes

Within reason, the size of the board may vary, the controlling factor being the size of the material available. Even if the plywood or other material is specially purchased, it is usually in ready-cut pieces and there is no need to cut these unnecessarily. The board illustrated measured 3ft. by 1ft., but this was chiefly because the writer had a piece of wood this size.

He would not recommend anything very much smaller, but though a larger board gives more scope (and looks more impressive if made up as a sideshow at a bazaar and amateur fun-fair for charity). There is not only the question of storage space but one must bear in mind that the holes will have to be cut with a fretsaw and must not be so far 'inland' as to be beyond the range of the saw.

In a similar way, the moulding round

the edge was of 1½ ins. by ¾ in. stuff, with a half-round top, but here again this was used because such moulding was handy and seemed of a suitable size . . . enough to stop the 'tanks' rolling off but not over-heavy.

The board can be of plywood or composition board (but not plaster board, of course). A somewhat inferior piece of plywood could well be used . . . one that is a bit warped and has slight hollows in it . . . since this would make for a more sporting (!) 'course', by deflecting the true course of the 'tanks'.

Take care, however, that the plywood is not too inferior, as may happen if tea-chests that have been left out in the rain are used. One does not want the layers of ply to separate when the holes are sawn.

## 'Tank' Preparation

Before the holes are cut, the 'tanks' are prepared. These are ordinary small mustard tins. Those used by the writer were just under 2ins. long, with approximately 1½ ins. by 1¼ ins. axles. The holes were planned accordingly and it is necessary to point out that if tins of any other size are used, the holes must be modelled proportionately.

Six tins are recommended. This means that one buys about a year's supply of mustard (or enough for several mustard

baths!). If the mustard is transferred to a screw-top jar, it will keep, and none will be wasted. It cannot be said to be unduly expensive.

Inside each of the otherwise empty tins a length of iron rod is placed, a trifle shorter than the length of the tin. Once again it is necessary to state that no definite dimensions need be given, as scrap iron rod will probably be used, about ¼ in. diameter. The home handyman usually has a box full of useful scrap.

## The Tumbling Effect

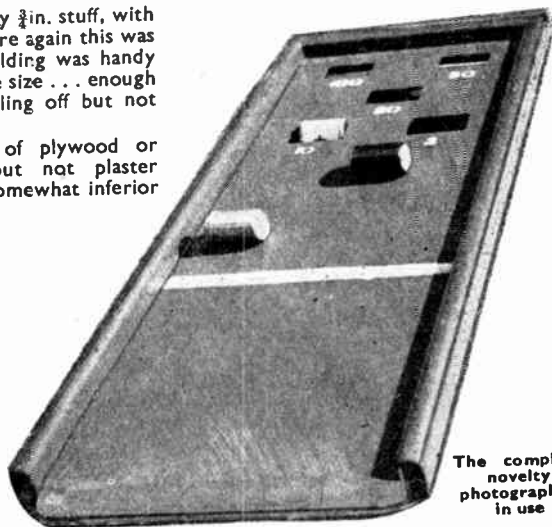
Some larger size ball bearings can also be used. The final test is that if the 'tanks' so provided with a loose weight are placed on the end of a slight incline, they tumble over and over in a curious way (see notes, later, on the slope of the board).

The lids of the tins should be soldered on, otherwise they will fall off, especially if dropped. Or children will soon 'investigate' the 'works'. Quite a light touch of solder is all that is necessary. The tins will be pretty clean, but the area in the neighbourhood of the soldering should be rubbed bright with fine emery paper and given a light smear with Fluxite or a similar flux.

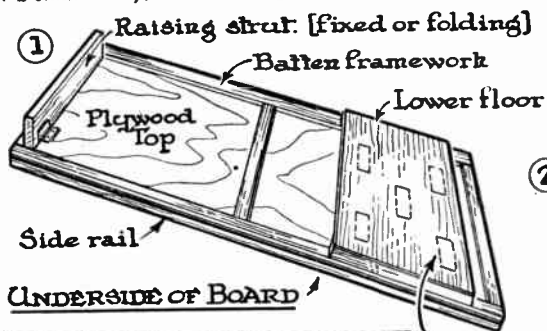
The soldering iron should be properly tinned first. This is done by heating it, giving a quick rub with a file, dipping in flux and touching the end of a stick of solder. If properly done, the end of the iron will take on a layer of solder and provided the iron is not subsequently overheated, the end will remain tinned.

In the soldering proper, the iron is heated, dipped into flux

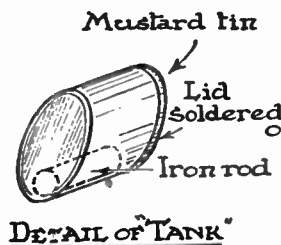
(Continued foot of page 141)



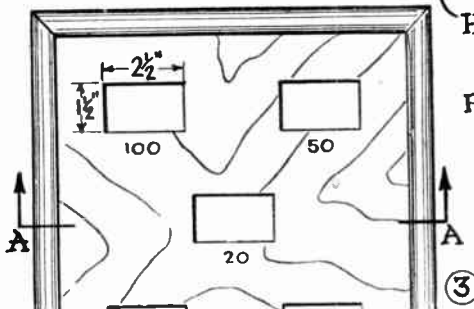
The complete novelty photographed in use



UNDERSIDE OF BOARD

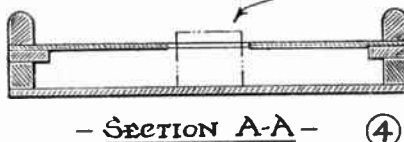


DETAIL OF 'TANK'



Holes in upper board

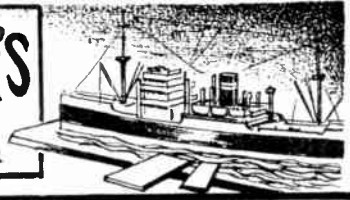
Position of one 'tank' in hole



SECTION A-A



# The SHIPMODELLER'S Corner



**T**HE making of models of sailing ships of all types (except those of the later types, when turnbuckles came into use) requires the making of large numbers of deadeyes and blocks.

In very small models of the miniature type these can be simulated by small blobs of glue, painted black. In models a little larger, but still in the miniature class, small beads and angler's split-shot will serve.

In Hobbies kits and all models above miniature size, we face a different problem. The scale and finish will have a great deal to do with the final appearance of your model; they must, to be shipshape, be neatly finished and uniform in size, etc.; above all they must be made to correct scale size.

We will take first the deadeyes in use in Elizabethan times, when they were heart-shaped and pierced with three anyard holes. Single hole deadeyes were known as 'bull's-eyes' (see Fig. 1).

There are three practical methods of making these. The first and an easy method is to purchase a heart-shaped punch and use this to punch out the deadeyes required from an old gramophone record that has been softened by heat. Afterwards they can be crowned on each side and a groove filed around the edge with a rat-tailed file, then drilled in a jig to ensure getting them drilled in a uniform manner.

For the second method take a piece of plywood the same thickness of the finished deadeye, and fret out twelve heart-shaped holes, exactly alike in size and shape. A piece of heavier plywood is used for the base and if two small bolts and wing nuts (or ordinary wood screws) are fitted, one in the centre at either end, you have a mould for turning out twelve deadeyes at one operation.

Before using the mould each time, give the holes a liberal dressing of three-in-one oil, to prevent your moulding material, plastic wood, from sticking to the mould.

Fill your holes with plastic wood to the level of the mould and, using a small punch made from three beheaded pins mounted in a handle of dowel, punch the three lanyard holes in each deadeye. Leave for six hours, then remove mould from base and gently push out each deadeye. Leave to harden until next day and you can then file the outside groove, finally crowning both sides (see Fig. 2).

The third, and by far the best method used by experienced modellers is as follows. Take a piece of dowel of the required size of your deadeye at its largest measurement, and with a small block plane and glasspaper, shape this

along its entire length until it is heart-shaped, as in Fig. 3.

Mark out the measurements for the individual deadeyes and file your grooves in. Cut off each one in a small jig to assure all are of the same thickness and crown both sides.

## The Making of Deadeyes

by 'Whipstaff'

Any of these three methods can also be used for the circular deadeyes of the later periods. The circular deadeyes can be easily turned on a lathe if you possess one. If you do not, a later article in this series will show you how to make a small hand-operated one at little cost, which will do all the turning required in ship model making.

**N**OW for a simple jig for turning the circular type, take a piece of hardwood 1in. square and 1½ins. long, down the centre of this piece, lengthways, drill a hole to make a smooth fit for your dowel. A second piece, circular for preference, is drilled through the centre to fit the dowel; this should be ¾in. thick and about 2ins. in diameter; from one edge drill a hole through to centre hole to take a locking screw made from an ordinary wood screw with the point filed off.

The first block is held in a vice, the dowel placed in both with the end projecting sufficient to form your first deadeye. With both blocks held together, tighten the locking screw. Now with a small needle file and rat-tail file, you can now crown the face and turn your groove while rotating the circular block with one hand (see Fig. 5).

In Fig. 4 we have an easily made box jig for cutting off deadeyes of both types, made by hand from dowel rod. For drilling deadeyes the small jig in Fig. 6 can be made; this consists of two pieces of plywood, cut square and of the same thickness of the deadeyes.

One piece is drilled with a hole the size of the deadeye and then glued to the second piece; when set, the second piece is drilled with the three lanyard holes, using the deadeye hole as a guide.

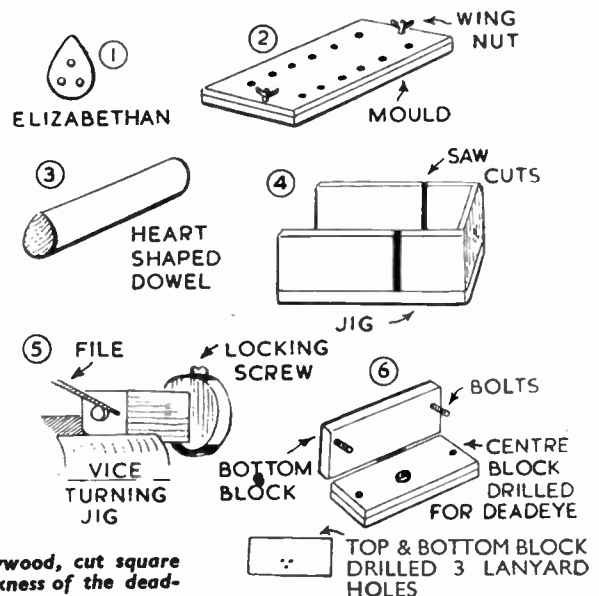
A third block is now needed of the same size for the base; the top unit is hinged to this base piece and then the three pieces are assembled for use. The base can be drilled the same as the centre piece, a hole the size of the dead-eye, to protect your drills, or three lanyard holes as in top piece.

The dead-eye is placed in the hole in the centre piece and the jig closed. It is then a simple matter to drill through the small holes in the upper section, thus ensuring every deadeye is drilled exactly the same.

**F**OR materials use erinoid for deadeyes, ¼in. and under; this is easily obtainable by purchasing erinoid knitting needles from any drapers or departmental store, of the size required for the dead-eyes. For sizes ½in. and upwards there is no finer material than boxwood or holly. For cutting off in jig use a Hobbies stiff-backed model saw.

If you are not certain of the size of your deadeyes for the model you are building, please send your request to this corner and if you are not building from a Hobbies kit, state if possible, the scale you are working to, and I shall be pleased to let you have the necessary scale size.

In a future article I shall deal with the various types of blocks and how to model them.





# The difference of back and front entrance shown by this DOOR BELL INDICATOR

**M**OST front doors are fitted with a bell push and electric door bell, and it is quite easy to fit another bell push to the tradesman's door to work the same bell. When this is done, though, an indicator board is needed to show at which door the caller is waiting.

When the indicator described here is in use and the bell rings, the current to the bell flows through one of the coils.

otherwise they can be made as follows. Use a washer cutter or a fretsaw to cut two plywood discs 1in. in diameter, with a central hole about  $\frac{3}{8}$ in. in diameter (Fig. 1).

A tube is made from a strip of paper  $1\frac{1}{2}$ ins. wide and about 6ins. long. Lightly smear the paper with glue and then roll it around a pencil, but slip the pencil out as soon as the rolling is finished. When the paper tube is quite dry, glue on the

## The Pendulums

Cut two pendulums from some sheet tin to the measurements shown in Fig. 4A. Bend the top over by pressing or tapping it around a nail. The half twist in the middle of the pendulum can be done with the use of two pliers (Fig. 4B).

Hang the pendulums on to the board with large headed smooth nails, so the

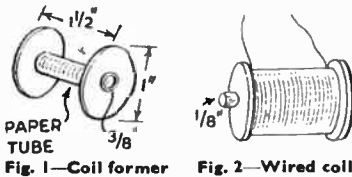


Fig. 1—Coil former Fig. 2—Wired coil

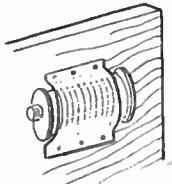


Fig. 3—Coil fixed in place

The iron core inside the coil becomes a magnet and attracts the metal pendulum hanging near it.

When the bell stops ringing, that is, the current stops flowing, the iron core can no longer attract the pendulum and this is released. The pendulum, however, swings to and fro quite a few times before coming to rest, and so indicates which bell-push has been used.

## The Coils

Two coils are needed and these are best taken from an old electric bell,

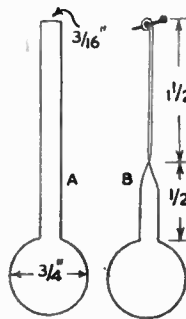


Fig. 4—Pendulums

ends as shown. Finish the coil by winding on No. 28 d.c.c. copper wire, leaving two free ends about 6ins. long (Fig. 2).

Cut two pieces of soft iron rod  $1\frac{1}{2}$ ins. long and push these into the coils so that  $\frac{1}{8}$ in. is jutting out at one end. These iron cores must fit quite tightly.

The baseboard measures 7ins. by 4ins. and the coils are kept in place with a 1in. wide strip of tin (Fig. 3). Bend the strip of tin around the coil to give it the right shape, then tap with a hammer to bend up the two flanges. Punch holes in these as shown in the diagram, and fix to the baseboard with small nails or screws.

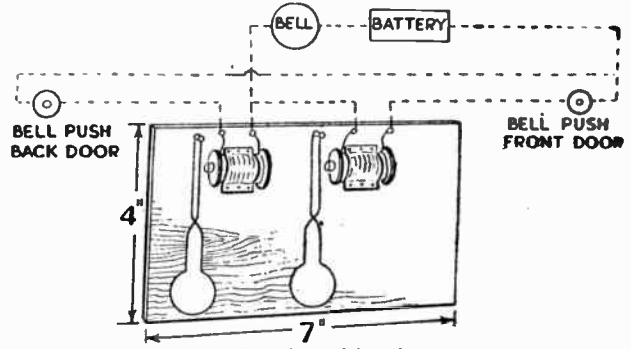


Fig. 5—Complete wiring diagram

swinging action is quite free. Differently coloured paper discs can be glued to the circular part of each pendulum.

The complete wiring is shown in Fig. 5. If desired, a mains transformer can be used instead of a battery. A suitable cover for the unit is shown in Fig. 6 and this can be made to hinge onto the base or to slip tightly over it. (285)

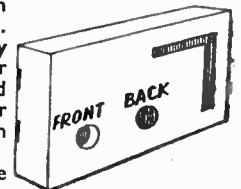


Fig. 6—A cover

## Battery 3—(Continued from page 133)

for wiring up. Lengths of flex are used for battery leads. A piece of twin flex about 18ins. long is also used for the speaker connections, going from H.T. positive and output plate as shown.

The coil connections are arranged as follows: Grid terminal of coil to fixed plates of tuning condenser. Wavechange switch terminal through chassis to switch. First reaction coil terminal to H.F. choke. Second reaction coil terminal to fixed plates of reaction condenser. Earth terminal of coil to securing bolt, in contact with chassis. If a wooden chassis is employed, take a lead from this terminal to the rear earth terminal anchoring the H.T. and G.B. leads, in Fig. 3.

Take care that no bare joints can touch the chassis. The Aerial lead-in is taken directly to the aerial terminal on the coil.

Switch wiring is shown in Fig. 1. In the first position, the set is 'Off'. In the second position, the low tension supply

is switched on, and the coil switched to 'Medium Waves'. In the last position, the L.T. supply is still on, but the coil allowed to operate on 'Long Waves'.

## Operating Notes

Insert the valves in the manner already mentioned and connect speaker, aerial, earth and batteries. After switching on, medium wave stations should be found without difficulty. If the reaction condenser does not build up volume properly, the two leads going to the reaction terminals of the coil will have to be reversed. For long waves, turn the switch to the next position.

A 120 volt H.T. battery will give most volume, though a 90 volt battery is satisfactory. H.T.2 may be taken to 72 to 108 volts, and the best grid bias voltages will be about 1.5 and 6.0 for G.B.1 and G.B.2 respectively.

For proper reproduction, it is necessary that the speaker be enclosed in a cabinet.

The front of the cabinet is shown in Fig. 4. A neat cabinet can be made by using  $\frac{3}{8}$ in. wood for top, bottom and sides, and cutting the front from 3-ply. All corners and edges should be rounded with a rasp, and the whole finished off with fine glasspaper. A quick-drying medium coloured varnish is then applied.

A square of silk is stretched across the speaker fret, inside, and the speaker screwed in position. Do not use screws which will penetrate completely through the panel. Also assure that there is room for the receiver to slip in from the back, with the control spindles projecting through clearance holes in the cabinet front.

The dimensions of the cabinet will depend upon the size of the speaker and chassis, and whether the batteries are to be accommodated or kept separate. The constructor should be able to settle this point with ease.

# You can improve your output and ability with these HINTS FOR HANDCRAFT

**R**EADERS are finding the usefulness of the fretsaw on more and more occasions, and although originally intended for fretwork designs, it is proving its worth in model making, for toy making, and a hundred and one occasions in the home, for general woodwork. We are always stressing its general usefulness for all sorts of jobs. It is also worth remembering that not only is there a fretsaw for wood, but another type for cutting sheet metal.

Very often, for instance, in radio repairs and simple metalwork, pieces of brass, copper, zinc, etc., are needed to a certain shape. We have known readers who endeavoured to use the ordinary fretsaw for this purpose, and strangely enough, they have frequently been successful for a short time.

At the same time, it is obviously much better to use the specially made blade for such work. This metal-cutting fretsaw is of the same size as the ordinary wood-

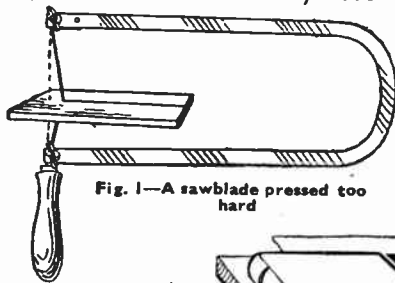


Fig. 1—A sawblade pressed too hard

cutting blade, but is fitted with a much larger number of teeth, and is manufactured of a special metal to stand up to the work. A wood

saw certainly does get hot if used long and arduously, but it is not really material.

A metal-cutting saw, however, should be lubricated in use to overcome the likelihood of intense heat, and consequently increased likelihood of breakage. The metal-cutting saw can be used in machine or handframe in the usual way, and the suitable lubrication can be obtained by an occasional rub of the blade through wax or grease, such as a candle or even with a spot of light oil dropped near the cutting line at infrequent periods.

## A Common Failing

In both these types of saw there is one common failing, even with the more experienced worker, and particularly to be found with the beginner. It is that of endeavouring to force the saw too hard through the work. There is, obviously, a natural tendency to speed, and an anxiety to get on with such pleasant work and see the results as quickly as possible. This is largely one of the causes of many breakages.

The cause can be overcome, not necessarily by a slower process of work, but by more careful control on the saw itself. The blade is fitted in the frame or the machine as tightly as possible, and with the special grips provided at the ends of all Hobbies tools, there is little likelihood of the blade pulling out.

## Fitting a Blade

If it does, that is because the wingnut or the screw and shackle at the top, have not been tightened up sufficiently. About half the blade is sufficient to insert between the holders, and if firmly fixed by the turned wingnut, there should be no likelihood of the blade bursting out.

At the same time, if you force it through on to the work, the blade must, naturally, bend somewhere, and in this connection, the illustration at Fig. 1 shows exactly what happens. You are putting an undue strain on the blade itself, and forcing the centre of it back as it passes through the wood or, of course, the metal. This would not be so bad if it happened only at the centre of the blade, as shown in the illustration, but you will realise that when you are bringing the frame down, the blade is also bent back as it gets towards the top, and in the

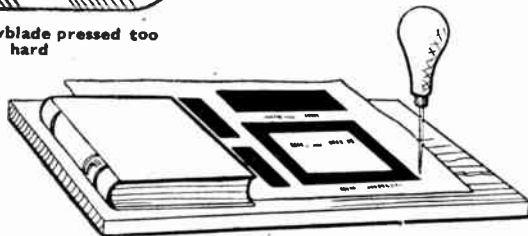


Fig. 2—Pricking off a pattern

reverse process when it gets towards the bottom.

In consequence a constant change of tension and pressure is present, and a breakage of some sort is sure to result. It may be the blade snaps in the middle, or just where it passes into the screw and shackle at the top. But the cause is the same. It can be prevented by maintaining an even up and down motion in cutting, and gradually going forward into the work on hand. There is no need to press on hard, because the saw will cut quite capably with the steady even pressure and without the undue push behind it.

## Paste or Trace?

Another point frequently raised by users of our design sheets is the question of whether to paste the patterns down or not. This is a matter of individual taste, but most expert model makers and toy makers do not do so. Indeed, except in the case of intricate fretted patterns,

there is no need, because it is a simple matter to transfer them direct to the wood.

If you place the pattern sheet over a piece of carbon, then pin the whole thing down to the board, you can trace the outline quite easily. Be sure to use a ruler for straight lines, and get the corners and any joints accurately marked out. Indeed, you do not need to go over the whole pattern outline, but merely to mark the corners off, or the angles, and then link them up on the actual wood with a pencil line after the carbon and pattern parts have been taken away.

## Marking out a Pattern

A step further than this is that you can merely prick through the position of the corners and then connect these holes with a pencil. You can see the method at Fig. 2. The pattern is just laid to the wood and held there temporarily by a book or some drawing pins.

A sharp pointed awl is pricking the position of the corner of the pattern, and it is the same with the other three corners of the rectangle required. When the design is taken away, you have the four holes, and these are joined by the pencil line along a ruler edge.

Apart from the carbon paper process, you can duplicate the pattern by means of tracing paper or any similar transparent substance. In this case, you go over the outline on the top of the design sheet and then turn it over to transfer it to the wood by going over the

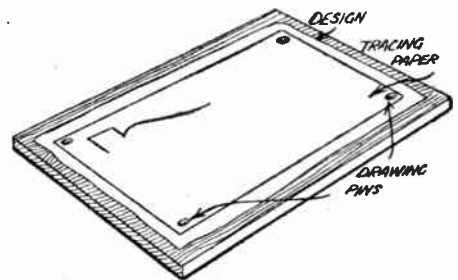


Fig. 3—Duplicating a design

lines again. The tracing paper can be turned over, providing the design outline is symmetrical. If it is not, then you will have to black in the outline on the reverse of the tracing paper, and put it down again right side up on to the wood before marking the outline required.

In using this method, as in the other, it is essential to hold the paper down securely. We have seen workers hold the whole lot down with one hand, and attempt to draw the design with the other. In the process, the paper has become moved and in consequence, when they cut out the part concerned, they are dismayed to find that it will not fit, and at a loss to know why. It is essential, therefore, to fit the parts

firmly and for this, drawing pins should be used. You can see the various layers in the details at Fig. 3.

Another point worth noting in this connection, is that the drawing pins

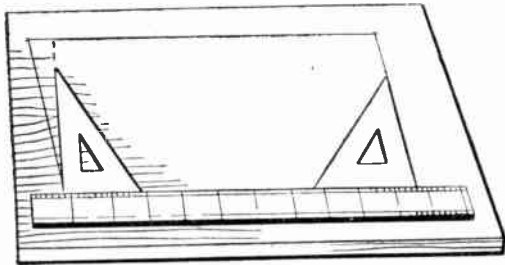


Fig. 4—A rule and squares ensure accurate angles

must be put in direct, and not pressed at all sideways. If this is done, the tracing paper may have moved or become loose at one corner, instead of being perfectly flat on to the work.

### Rule and Square

Whenever these drawings are duplicated direct on to the wood, be sure they are accurate so far as their angles are concerned. After all, you can have a rectangle of the given size, but which may at the same time be sloping and not accurate at its corners.

All right angle corners must have an angle of 90 degrees, or if you have half this angle, then, obviously, it will be 45 degrees. Both these are usually provided on a setsquare, and this is an essential instrument to ensure accuracy of your drawings. When you have pencilled the outline on to the wood, test it out to show accuracy of angles. You can do this in the usual manner, an illustration of which is shown at Fig. 4.

Here you see the ruler along the

bottom edge, and the setsquare raised to ensure that the line of the design is true. You will notice how at one end in this detail, the line is at the wrong angle, although possibly the point at the

corner measures the same distance from the other when marked out with the compasses. You can realise, too, how if cut like this, the whole thing would be inaccurate, and would probably result in a second piece having to be cut.

These little points of testing and accuracy in preparation, do make a big difference in time and labour involved. If you are continually having to cut two pieces because one is done wrong and wasted, obviously you are much more likely to tire of the work and lose half the enjoyment.

### How to File

Another point sometimes raised by readers is the use of a file to get a chamfer on the edge of wood. Indeed, some of our beginners do not realise that the actual shape of any chamfer required, is shown by a sectional drawing on the pattern concerned. This section is the shaded piece put near the edge of the part and, of course, always on the actual line to be dealt with.

The chamfer will reduce the thickness of the wood, and also make a more attractive appearance on certain occasions. For instance, if you have a fairly thick piece of wood serving as an overlay for a photograph. By chamfering the edge around the picture, the apparent thickness of the wood is reduced and does not appear

so unsightly. It also helps to lead the eye to the picture, apart from the surround material.

### Stop Chamfering

Then, of course, in models and ordinary work, the shaping and chamfering is necessary, and the use of a flat file is imperative. The way to hold this is shown at Fig. 5, and here you see how it is held in both hands at both ends, and drawn across the edge of the wood at right angles. You will find if you run the file lengthways you will mark the actual wood and not cut it away as is required.

The detail at Fig. 5 also shows you the type of chamfer sometimes referred to as a 'stop chamfer'. The edge of the wood is filed to an angle such as we mentioned in connection with the photograph frame just now, but is not carried the full length. It is stopped off a short distance

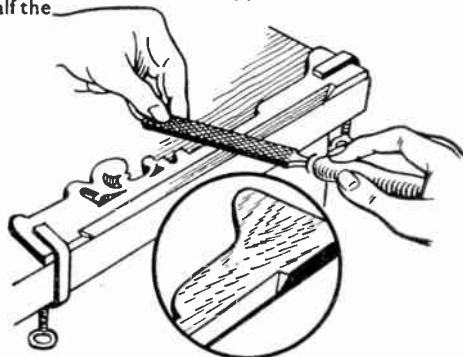


Fig. 5—The right way to hold and use a file

before getting to the end of the work. This again, in the case of the photograph frame referred to, is often an attractive means of adding to the appearance of the work in hand.

## SOME ELECTRICAL QUERIES

### Battery Leakage

**WHAT** is the cause of a grid bias battery running down within two weeks? (A.J.S.—Thaxted).

**IF** a new grid bias battery has run down in a few weeks, there must be leakage or partial short-circuit in the receiver, and the insulation and wiring should be examined to discover this. If the receiver is built on a metal chassis, insulation may have perished where a lead passes through, thus causing a short to the metal.

### Damaged Cone Speaker

**I HAVE** a loudspeaker which has a number of cracks in the cone. Is there a simple but efficient way of making good the damage? (A.C.—Tonbridge).

**IT** will usually be found quite satisfactory to repair cracks or breaks in a cone with strips of paper, secured with glue. The pieces of paper glued on should not be too large, an overlap of

about  $\frac{1}{4}$  in. each side the breaks being sufficient.

### Record Player

**I HAVE** an electric record player with the P.U. in the wireless. Please tell me if I can make a radiogram of it without using the wireless. (J.M.—Ranelagh).

**WHERE** records are played with a pick-up, some amplification is necessary, and apparently this is now being provided by a wireless receiver. If this receiver is not to be used, it will be necessary to construct an amplifier to replace it, so that the loudspeaker may be operated. This amplifier would be less complicated than the receiver, as no coils and other tuning arrangements would be necessary, and two or three valves should give all the volume required. Back issues of *Hobbies Weekly* contain constructional details of various amplifiers, battery and mains operated with details of pick-up and

other connections, and it is suggested that reference to these would enable a suitable type to be selected.

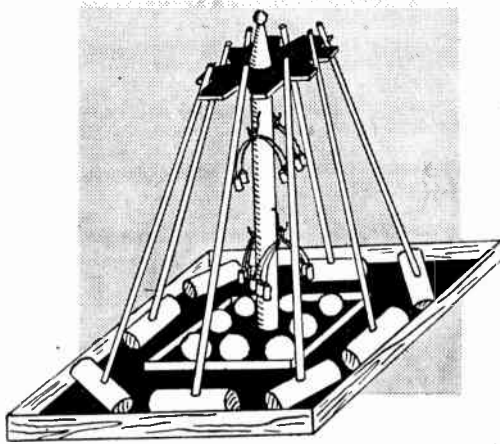
### Boat Motor

**I AM** building a 28 in. model launch, and I would like to fit an electric motor in place of a 1.3 C.C. diesel. Could you tell me of any particular motor or special voltage electric motor to get? (R.D.—St. Albans).

**WE** suggest you use any well-made permanent magnet field electric motor, suitable for working on a voltage of about 6 volts. This could be energised by three dry batteries (torch batteries), in series, and this combination should run your boat for half an hour or so at a good speed, if you eliminate all possible friction and choose a suitable propeller small enough to allow the motor to run at high speed when the propeller is submerged.



# A fascinating game to play and make is this TABLE CROQUET SET



**T**HIS fascinating indoor game will enable you to spend many happy evenings in your home. Make it in a few hours, and then invite some of your friends to have a game with you. Two may play, or any number desired up to eight. Your friends will not be satisfied with one game, for they will want to play many more, in order to become proficient in this game of skill.

## The Stand

The Stand should be made first. The wooden base,  $\frac{1}{2}$  in. thick, measures 10 ins. by 10 ins. Nail to this four  $\frac{1}{2}$  in. square strips, to form a square near the centre. Two lengths measure 6 ins. each, and two 5 ins. each (Fig. 1).

Then, using  $\frac{1}{2}$  in. wood, cut two lengths 10 ins. by 1 in., and two more  $10\frac{1}{2}$  ins. by 1 in. These are placed around the edges, the longer ones overlapping the smaller (Fig. 1). The centre rod is cut from a broom-stick, and is 9 ins. high. Screw it firmly to the base.

Next drill a small hole right through the piece of broom-stick, 1 in. from the top, and another hole 4 ins. from the top, taking care to make this second one cross the first boring. Insert through each

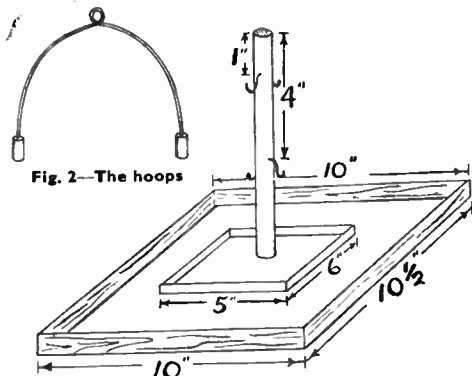


Fig. 1—Base parts and centre stand

hole a piece of thick wire, length 4 ins. Allow equal portions to protrude at each side, then bend the ends downwards. Turn up the ends to form loops capable of holding three loops of wire.

## The Hoops

You will need ten hoops to hang on these hooks. For each hoop take an 8 in. length of the thick wire, and bend the wire in the middle around a stout nail, to form a loop for hanging. Next curve the wire to form a hoop; this can easily be done if bent around a cocoa tin.

The feet for the hoop are formed of two pieces of  $\frac{1}{2}$  in. brass tubing, each 1 in. long. (Aluminium or iron tubing can also be used, and are cheaper and easier to obtain from an ironmonger). The tubing is not difficult to cut, if the 20 in. length of tubing required is placed in a mitre-box, and the 1 in. portions removed with a fine hacksaw or a metal cutting fretsaw.

Knock a piece of  $\frac{3}{8}$  in. dowel rod into each 1 in. tube. Let it penetrate about  $\frac{1}{2}$  in., and then neatly cut it off. Make a small hole in the centre of the wood, and insert the end of the wire, bending it underneath to prevent the wire being pulled out from the tube. The under portion of the tube will be open, and this should be filled with lead, to ensure that the hoops will not fall over when hit by the balls (Fig. 2).

## The Top

Now make the top of the stand with  $\frac{1}{2}$  in. wood; the required piece measures 4 ins. by 4 ins. When cut out, take a pencil and draw four lines  $\frac{3}{8}$  in. from the edges, neatly saw away the four corners, and cut out four V-shaped pieces from each side (Fig. 3).

Then screw it to the central rod, with two long thin screws, taking care to

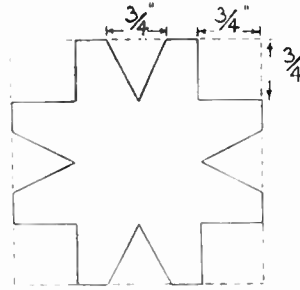


Fig. 3—The top stick holders

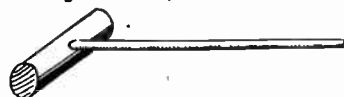


Fig. 4—The mallet stick  
137

leave the centre of the rod free for the handle to be screwed on. The handle is the screw-in type, obtainable at most ironmongers. Place the hoops on the hooks—three on each bottom hook, and two on each top hook.

## Balls

Table-tennis balls can be used, although heavier wooden ones are much better. The writer cut a small hole in his table-tennis balls, and filled them with sand. The hole was carefully sealed with glue, and glasspapered.

## Mallets

The mallets, eight in all, are easily made. For each obtain one  $9\frac{1}{2}$  in. length of dowel rod, and 2 ins. of the broom-stick. With brace and bit make a  $\frac{1}{2}$  in. hole in the centre of the portion of broom-stick, and insert the rod. Secure it firmly by driving in a nail (Fig. 4).

## Painting

Carefully glasspaper all the woodwork, then stain and varnish—walnut or mahogany will give a pleasing appearance. To identify the balls easily when playing, a line  $\frac{1}{2}$  in. thick should be painted around the middle of each ball, a different colour being used for each.

The mallet used with the ball should also have the same colour painted on its two hitting ends. (If several kinds of paint are not available, other means of identification can be used, such as dots and dashes).

The Croquet set is now complete, and you will need a suitable table on which to place the hoops. To prevent the balls

(Continued foot of page 138)

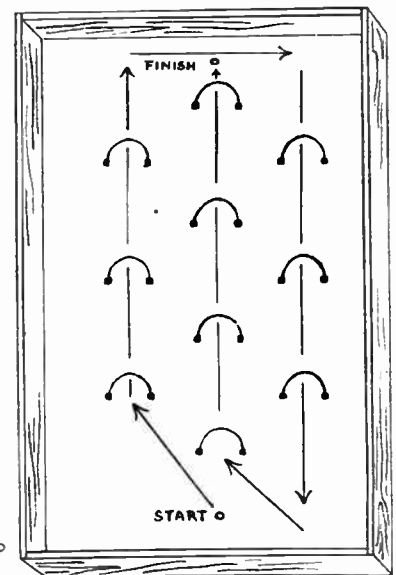


Fig. 5—The games board, with direction of play

# The last details for the amateur undertaking SILK SCREEN PRINTING

**H**ERE is the final article of our short series by which the craftsman can do printing by the latest and most popular method, for small posters, cards, pictures, etc.

A far more satisfactory way of producing hand-cut stencils is by using profilm. Profilm is a semi-transparent sheet which can be obtained from silk screen printers' suppliers and it is placed over the finished design (which is on the baseboard, in register) and being nearly transparent, this design can be seen under it.

Profilm is a duplex which consists of a paper backing and a tissue which supports a thin 'skin' of shellac. Between the paper backing and the tissue there is usually a coating of wax. When cutting a profilm stencil, no pressure should be used, for the object is to cut through only the shellac and the supporting tissue, thus leaving the paper backing quite uncut. The weight of the stencil knife is sufficient to do this if it is really sharp and so no pressure should be applied.

## Cutting the Stencil

Therefore, cut your stencil for the colour which is your immediate concern in profilm, working very lightly. You may not be successful at first, but the knack will come with practice. As you cut, remove the unwanted pieces of the shellac and tissue—which will come away quite easily if you lift them by one corner with the stencil knife—leaving the actual stencil attached to the paper backing. This method prevents the portions of the stencil such as the centres of the letter 'O' from becoming loose—for all are attached to the paper backing.

When the cutting of the profilm stencil is completed, lower the screen (which is hinged to the baseboard) on to it and apply a warm (not too hot) iron to the upper side of the silk or organdie. This will cause the shellac and the tissue to adhere to the mesh of the screen and will also soften the wax between the tissue and the paper backing.

## Backing Paper

After the ironing, the screen should be raised, and it will be found that the paper backing can be peeled off, leaving the shellac and tissue on the screen.

Thus the stencil will be transferred to the screen, accurately in register, with all the 'unattached' stencil portions safely in place. This saves a lot of work sticking the various centres into position—a job which has to be done if paper stencils are used.

So much for the stencils—which are the most complicated part of silk screen printing. Now for the materials to use.

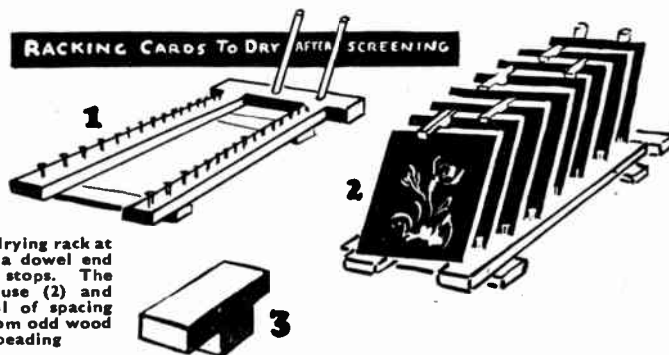
There are many excellent colours available for silk screen printing and the beginner is advised to buy them from a recognised house selling screen inks. Such houses also supply thinners and solvents suitable for each kind. But if the home screen printer confines himself at first to the group of colours known as screening posters he will be able to use turpentine to thin his inks if necessary and turps substitute or paraffin for

about as thick as cream) is poured onto the end of the screen and this is passed over the area to be printed by the squeegee which forces it through the mesh of the screen where it is unprotected by the stencil on to the job beneath.

## Cycle of Operations

The screen is raised, the printed job removed and placed in a rack (described in the first article) to dry, and another job inserted. This cycle of operations is repeated until all the jobs are printed. Then the screen is cleaned with rags soaked in the solvents of the inks used, the stencil is removed, and, in the case of a job having more than one colour, a new stencil is prepared.

When the first colour is dry, the next can be printed. Cellulose colours may



A handy drying rack at (1) with a dowel end and nail stops. The rack in use (2) and (3) detail of spacing pieces from odd wood or beading

cleaning his screens after the job is completed. Such colours will give him a wide range and they print well and dry with a pleasing matt surface.

If colours that dry very quickly are required, then a screening cellulose may be used and the necessary thinners obtained from the firm supplying the inks.

## Method of Printing

The actual method of printing is simple. Having prepared the necessary stencil for the first colour and fixed it to the screen, the original sketch is removed from the baseboard, leaving the register guides undisturbed. A sheet of the material to be printed is then placed on the baseboard in the register guides and the screen lowered.

Next the colour (which should be

dry within an hour, screening posters within five or six hours, and oil colours the following day.

## Material to Print On

Silk screen printing is suitable for a wide range of materials; paper, board, plywood (after the grain is filled), metal, wall board and glass being a few. There are, by the way, special colours for use on glass and these should be ordered from a supply house which specializes in these.

As the amateur gains experience in silk screen printing he will be able to find out new techniques for himself, for the greatest fascination about this means of reproduction is that it gives so much scope to the operator to work out his own ideas. In a world of ever increasing mechanical production, silk screen printing can remain a craft. (298)

## Table Croquet—(Continued from page 137)

rolling off the table, knock together four lengths of 1in. square wood in the form of a frame, to fit the outer edges of the table. A table cover—green baize is admirable—helps to keep the balls on the table.

## Rules

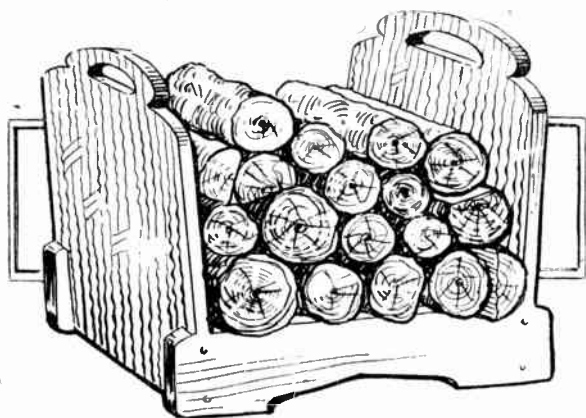
All you need to remember will be—

1. The ball must go through each hoop.
2. When a ball goes through a hoop, another shot is allowed.
3. The first player home is, of course, the winner.

The direction in which the balls should travel is given in Fig. 5. If a longer game is desired, continue to play

when reaching the 'Home' position by hitting the ball to the left. Continue down the three hoops on your left, and, coming round to the starting point, hit the ball under the three right-hand hoops. Then come down the four centre hoops, to the starting point again, and the one to get through the fourth hoop first is, of course, the winner. (288)

# An attractive addition to the fireside is this OPEN LOG BASKET



**F**OR sheer comfort and homeliness a good log fire cannot be beaten. Much wood will again be burnt this winter as a saving against coal. It is the usual custom to stack the supply of logs either on the stove itself or in the chimney corner. This creates an untidy appearance, especially objectionable to those more accustomed to the neat coal scuttle.

The log rack, therefore, shown here in our illustrations should be particularly welcome. In this rack the logs rest until wanted to replenish the fire. The rack is useful, too, for fetching in a further supply of logs from the wood shed. The rack is easy and cheap to make.

Wood  $\frac{1}{2}$  in. thick is suggested for its construction. Oak would be a good choice, but if too dear or unobtainable, a cheaper wood may be used. Even deal would do, for it could be stained and varnished and made to look quite nice enough for its purpose.

## The Side Rails

Fig. 1 shows the side pieces. Cut two to length and from a distance from each corner of 1 in. at top, and  $1\frac{1}{2}$  ins. from the bottom, mark off the parallel lines  $\frac{1}{2}$  in. apart for the grooves into which the ends fit. Cut the grooves  $\frac{1}{2}$  in. deep, using first a fine-tooth tenon saw with, say, a  $\frac{1}{4}$  in. chisel for clearing away the unwanted wood between the cuts. See enlarged detail Fig. 4.

The ends of the sides should be sawn off carefully and the corners rounded, as shown. The bottom edges of the ends may be simply shaped to the shape and dimension shown in Fig. 1. This lightens the appearance somewhat but is, of course, optional.

be cut with the fretsaw and made smooth with coarse and fine glasspaper. File off the sharp angles and edges, especially round the slots and tops, just where the hands will grip the rack for lifting. For a distance of 4 ins. from the bottom, cut off a strip  $\frac{1}{2}$  in. wide from each side edge.

## Sloping Ends

When cutting across the piece to meet the upward cuts, note the angle at which the sides make with the base pieces and cut to this angle. The cut will be at a very slight angle and is easily shown if the ends are fitted temporarily together with the base pieces and a pencil line drawn across the

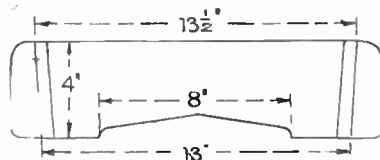


Fig. 1—How to mark out the sides

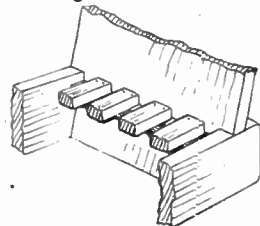


Fig. 3—The floor slats

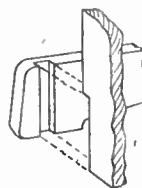


Fig. 4—End rail grooves

ends level with the sides. After cutting away the strips, the ends and sides can be fitted together permanently with glue and screws.

A slatted floor to the rack is provided to hold the logs. This is explained in

Fig. 3. It consists of 1 in. wide strips of wood, the  $\frac{1}{2}$  in. stuff will answer again for this, nailed or, preferably, screwed to a batten fixed along the ends.

These fixing battens must be  $\frac{1}{2}$  in. below the level of the base sides, as seen in the sectional detail Fig. 3. This then brings the floor level with the base sides when screwed on.

## Cleaning and Finishing

The whole of the woodwork must now be cleaned up with fine glasspaper and stained with oak stain. If deal has been used, then a dark mahogany stain would be appropriate, finished off with a coating of copal varnish. The varnishing should be carried out in a heated room, so that it flows evenly, and a flat brush should be used.

Another way of finishing the article if it is made of oak, would be to wax polish it over the stain, and a rubbing with a duster or soft rag being given periodically.

Some workers, when making up this log holder, would like to add the little decorative panel shown in Fig. 2. It can be cut with the fretsaw in the ordinary way after the pattern has been drawn on the wood. Make an outline on paper by using the 1 in. squares shown.

Draw the squares full-size over half the

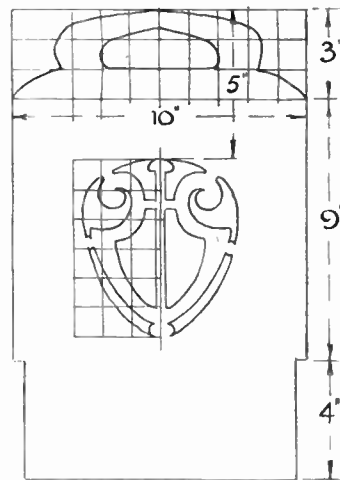


Fig. 2—Outline of sides with alternative fretted design

pattern, as shown, then follow the curves through each square. Transfer both halves, using the centre line and finally, using carbon paper, transfer the design to the wood.

**Tell your friends they can get a copy of Hobbies Weekly  
for themselves from any newsagent now, to order**

# A Craftsman's Notebook

## Hints and Tips

**N**EW whitewash brushes, and others intended for use in liquids, will wear better if put to soak in water for about twenty-four hours to swell the roots of the bristles into their sockets.

When fixing wire to a terminal, wrap it around in a clockwise direction so the nut tends to tighten it up as it is screwed in position.

Putty which is not required for use at once ought to be wrapped in grease-proof paper or left to stand on glass which will not absorb the oil.

If the divisions on your steel rule are not too easy to see, give it a rub with chalk to fill up the nicks and make them show up more clearly.

\* \* \*

## A Railway Museum

**T**O see a train dashing along at a hundred miles an hour would make us pause in wonder even in these modern times. Yet an even greater speed than this was achieved nearly fifty years ago. On May 9th, 1904, a Great Western engine named 'City of Truro' made a British and World speed record of 102.3 m.p.h. on a mail boat run from Plymouth to Bristol.

This veteran is no longer actively engaged but it is still carefully preserved and open to inspection, with other historic locomotives, in the Railway Museum at York. Anyone interested in railways, whether real or model, must find real pleasure in looking round this out-of-the-ordinary museum, and so I imagine do the many other visitors.

Exhibits date right back to the beginning of last century, when the piston moved vertically instead of horizontally as at present, and when the funnel was several feet high. Here, too, we can see what carriages used to be like—the open Third Class, the covered-in Second Class with plain wooden seats, and the more comfortable First. Numerous other exhibits, besides engines, give us an insight into the history of railways.

Something I had not previously heard of was the Dandy Cart, a small open truck used in the days when horses hauled trucks from the collieries. When a downhill stretch of track was reached, the horse was detached from the front, waited till the train had passed, then jumped into the Dandy Cart at the back to ride down the hill.

\* \* \*

## Marbles were Favourites

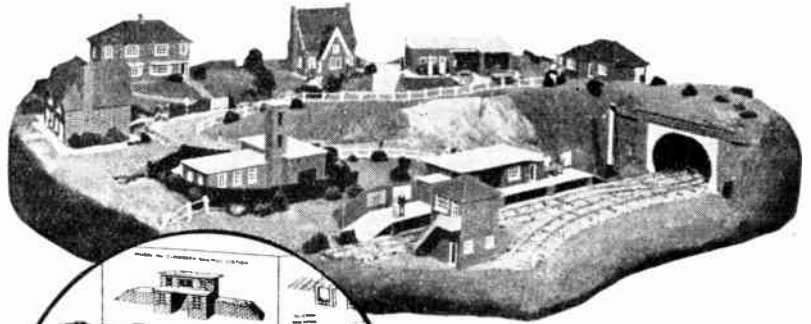
**T**IME was when every youngster boasted a bag or pocket full of marbles or 'taws' as they were called. And what a grand feeling it was to have more than other fellows, especially if

there were a few coloured or even plain 'gladalleys'—these being the glass sort, if the term happens to be new to you.

Nowadays marbles do not seem nearly so much in evidence, but they have always been good fun. In fact, although favoured mainly by boys, one could occasionally see men also playing marbles, or 'laking taws' if you like a variation of words. Local teams would sometimes match their skill with others from neighbouring districts.

Like many another game, marbles has its own words and phrases peculiar to the sport. Two such are mentioned above, then there is 'ferry' for the first player, 'seggy' for the second, and so forth; and I believe there are dozens of others which I do not just recall.

What different games can one play with marbles? Well, an exciting favourite is—or was—for players to roll a marble by the wall or along a curb in the playground, trying to hit that of their opponent, which marble belonged to who being distinguished by different colours. Then there is the one where players throw a handful in an effort to get as many as possible into a hole scooped out of the ground. Another is the cardboard boot box pierced with holes through which the marbles are rolled.



**Build this Realistic Model Village with**

**BRICKPLAYER**  
Bricks and Mortar Building Kit and Accessories

## ENTER FOR THE BRICKPLAYER COMPETITION

Prizes of £10 10s., £5 5s., and £3 3s. and a number of consolation prizes of Brickplayer Accessories will be awarded for winning models.

Write for full details.

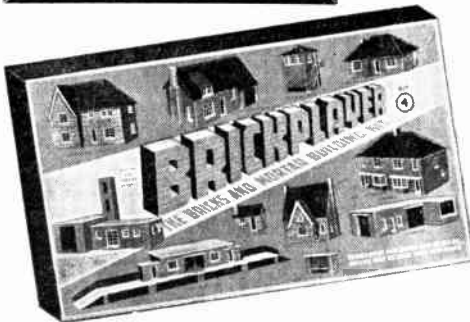
The Brickplayer Kit contains miniature bricks in all required shapes, mortar, roofing, metal windows and doors, plans and instruction booklet. All models are architect designed to 'O' gauge scale. Buildings can be permanent or dismantled by merely soaking in water, and the bricks used again and again.

Brickplayer Kits at 25/- and 47/6 and Accessories are available from good toyshops and stores.

If your dealer cannot supply, write for address of nearest stockist to:

**J. W. SPEAR & SONS LTD.**

Dept. "H", Enfield, Middlesex



**YOUR IDEAL CHRISTMAS GIFT**

# A novel, lovable 'Teddy Bear' pet to keep is THE GOLDEN HAMSTER

**T**HE Golden Hamster is a small rodent originating from Syria. It has been likened to a 'toy bear' and makes a delightful pet, docile, cleanly in habits, odourless. It is hardy, too, and with proper care and attention, suffers little from diseases.

The Golden Hamster is now stocked by many pet shops and is reasonable in price. It is a prolific creature and if the owner of a pair desires to turn his hobby into a profitable one, he can soon have a stock on hand for sale.

These few hints, however, are merely for the hobbyist who finds delight in keeping live pets. He will find the Hamster a charming animal, and also very amusing by its little antics. Some liken it to a small monkey, others to a squirrel minus tail, and so on. Actually it is different to any other and it affords much pleasure as a pet for adults or the younger folk. The Hamster is pretty in appearance, and of a golden colour on body, with white underparts, and bright eyes like tiny black beads. When buying, see your Hamster appears in good condition. Avoid any having a 'moth-eaten' look.

## Easily Housed

In the U.S.A. Hamsters are now being bred and sold extensively, for as novel pets they have caught the interest of the public. There, the Golden Hamster is often advertised as a 'tiny red bear' and this description of it seems as good as any we can imagine. It becomes quite tame and will readily come to one, and permits of fondling.

One recommendation about this pet is that it can be easily housed. Any person handy with simple carpentry tools can construct a suitable hutch out of a box or packing case. One point to note, when making the hutch. Be sure to see all the interior corners are close fitting, so nothing projects for the animal to gnaw. The Hamster has a propensity for

gnawing, therefore leave nothing in a rough state inside the box, or it will quickly get its sharp teeth to work.

Some pet-keepers finish off the interior joints with strips of tin. Ensure that there is ample ventilation at both top and bottom and sides of the hutch.

The size of hutch should not be less than 18ins. by 10ins. wide and 8ins. high. You can if you like make a run for your pets. You can even have wired runs containing a 'squirrel wheel' on which the little 'bears' amuse themselves.

The bottom of the hutch—and run—may be covered with a layer of sawdust or peat, or a mixture of both. If you put a nesting box in a corner of the box—presuming you set up with a pair of Hamsters—place some of the above

## SERVLETTE RINGS AND BOX

*OUR gift design this week is for making four serviette rings in wood, and a decorative box to hold them. The necessary wood, including special grooved corner moulding is obtainable from any Hobbies Branch for 6/4 or sent post free from Hobbies Ltd., Dereham, Norfolk, for 7/2.*

material on bottom and a handful of clean hay on top.

Your pets will, of course, need water and food, but here, again, Hamsters are easily catered for. They will eat all kinds of table scraps, and green stuff. Such scraps can be put in a small dish inside the hutch.

Feeding is simple and this fact simplifies keeping Hamsters. Lots of 'left-overs' from the kitchen can be supplied, together with apple peelings and such like. Many kinds of vegetables—and carrots, turnips, wheat, oats, and cereals generally. Greenstuff from garden or field, as dandelion leaves, which contain

medicinal properties, chickweed, and other green stuffs such as are fed to rabbits, are good for the health, and Hamsters are fond of such food.

Peanuts, too, may be given. Your pet will sit up like a tiny squirrel and 'shell' them neatly. Small dog biscuits are also useful, and the gnawing of these helps to keep the creature's teeth in good order.

As you will see from the above, the question of specially selected food does not arise where Hamsters are concerned. Indeed, their wants are easily supplied. Feed once a day.

## Ailments

Happily Hamsters are not prone to any specified disease and cause little anxiety in this respect. Common ailments include colds, mange, and skin diseases, especially in the case of older pets. In young ones any flesh spots can be treated with flowers of sulphur, if such spots are in a moist condition, and with sulphur ointment, if dry.

However, you will have little trouble with your Hamster pets if you follow these simple rules. Feed your pets regularly and provide wholesome food. Cleanliness is essential, so clean out thoroughly your hutch or hutches at least once a week, and disinfect. Keep your hutches in a dry, airy spot. Always avoiding placing them in draughts or in damp spots.

It is in the care and attention of Hamsters that success with your pets will lie chiefly. As regards breeding, there is little difficulty with Hamsters. They are prolific and you will require nesting boxes or breeding cages. Hamsters breed at eight weeks old, but the person who desires to add to his stock and to breed them to sell is advised to obtain a suitable book on the subject, or seek information from some breeder with experience. This short article is only intended for the pet-lover who keeps one or two Golden Hamsters for his or her own personal pleasure. (304)

## Tumbling Tanks—(Continued from page 131)

and some solder taken up from the stick and then run on to the mustard tin and lid.

The cutting of the holes in the top board will present no difficulty to those who are used to cutting with a fretsaw, though owing to the size of the board, the usual cutting table will probably be dispensed with. Take care to hold the wood steady so that the saw blade is not strained and broken by the vibrating wood. The angles of the holes should be neaten by glasspapering with the paper wrapped round a rectangular-sectioned piece of wood.

The number and disposition of the holes depends on the size of the board.

The board itself, after cutting the holes, is provided underneath with a

simple framework of battens, approximately 1½ins. by ¾in. section. Under the holed part, a 'lower floor' so to speak, is provided. The depth (from the upper surface to the lower) should be about 1½ins., i.e., enough for the 'tank' to drop in but leave just a fraction sticking up. This projecting part will probably bar the way of other tanks and is a legitimate hazard of the game.

The side rails are now fitted on (mitred corners make the best-looking job) and some kind of prop is fitted to the under front of the board so as to tilt it downwards. The height of this is best found by experiment (put books, etc., under until a slope is found which is neither too steep which makes the tanks hurtle down pell-mell, nor so little

sloped that action is sluggish). When this height is found, take note and prepare either a simple folding strut or, more simply, nail on a permanent block.

Glasspaper the job well. Give a priming of aluminium paint and then one or two coats of green. The score numbers are painted or stencilled in the front of the holes. In the model illustrated, the front two are numbered 2 and 10, the rear two, 50 and 100 and the middle one, 20.

A white line is painted across the board about a third of the way down. The tanks must not be handled below this line. The tanks themselves are either left plain or gaily painted with different enamels. Such a game is easily and quickly made. (307)

# A sturdy, light and easy-to-make ANGLER'S FOLDING SEAT

**T**HIS seat is light to carry, folds up flat, and when opened out is quite firm to sit upon, in no way wobbly. It is a standard pattern and worthy popular, quite easily made by the amateur woodworker if the instructions are carefully followed. As for the necessary wood, a hardwood such as beach, or birch is suggested as being hardwearing, but a good article can be made from common deal.

The seat bars and legs are detailed in Fig. 1. To save repetition, all parts are of  $\frac{3}{4}$ in. thick wood, except the cross rails on the legs and the seat slats, these are of  $\frac{1}{2}$ in. thickness. Cut two of the seat bars (A), trim one end to a semicircle and in the centre of the half circle bore a hole for a  $1\frac{1}{2}$ in. round-headed screw to slip through.

At the opposite end saw out the notch shown,  $\frac{3}{8}$ in. deep. This drops over the cross rail on the outer legs and fixes the seat when opened.

## Legs and Slats

The inner legs (B) are cut to length from  $1\frac{1}{2}$ in. wide wood. Both ends are rounded, and at the top ends holes are bored for the thread of the screws which pivot legs and seat together. Bore these holes just a nice size for the thread of the screws to cut its way in. In the middle of the legs bore a hole for the screw which holds both pairs of legs together and enables them to fold up. Now screw parts (A) to (B).

Cut four seat slats to size (D) in Fig. 2.

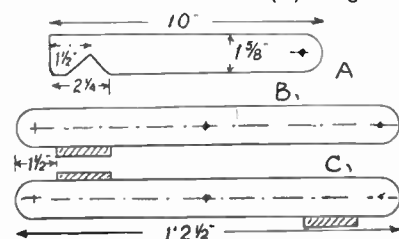
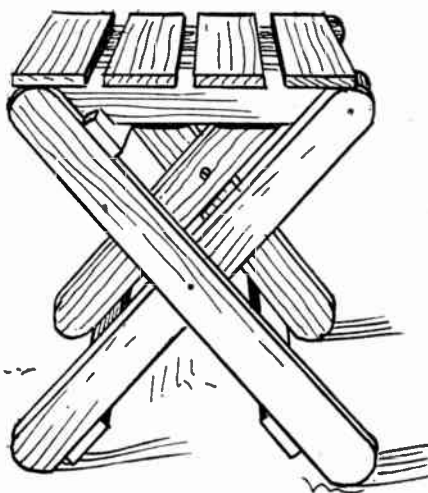


Fig. 1—Seat bars and leg shapes



Lay them together and mark across where the slats come with pencilled lines, spaced  $3\frac{1}{2}$ ins. apart. Nail these slats across the bars, spacing them  $1\frac{1}{2}$ ins. apart. Take care to keep both bars parallel during the nailing process. When this is done, fold the seat between the legs, and at  $1\frac{1}{2}$ ins. from the bottom of the legs screw bar (E) across.

Outer legs (C) can now be cut. These are rounded at each end, and a small hole bored in the centre. Through these

## LIST OF TIMBER

Seat bars (2)— $\frac{1}{2}$ in. by  $1\frac{1}{2}$ ins. by 10ins.  
Legs (4)— $\frac{1}{2}$ in. by  $1\frac{1}{2}$ ins. by 1ft. 2ins.  
Seat slats (4)— $\frac{1}{2}$ in. by 2ins. by 8ins.  
Cross bars (1)— $\frac{1}{2}$ in. by 2ins. by  $6\frac{1}{2}$ ins.  
Cross bars (2)— $\frac{1}{2}$ in. by 2ins. by 8ins.

holes drive flat-headed screws, well countersunk, to pivot both pairs of legs securely together. This screw pivoting is shown more clearly in the detail sketch, Fig. 3. Of course, the legs can be pivoted from the outside, in which case round-headed screws can be employed.

In using round-headed screws a thin brass washer can be slipped under the head to ease the action, and lessen friction. It might be a good idea, too, to sandwich a thin washer between the legs to lessen scraping of the surfaces as they are closed and opened.

Now cut two crossbars, like (E), but 8ins. long. Fold the seat between the inner legs, close the outer legs on them, and then screw one of the bars across the bottom,  $1\frac{1}{2}$ ins. up. Turn the whole over and screw the other bar across  $1\frac{1}{2}$ ins. down from the top.

## Hook Fastener

All being correctly fitted, the legs can now be opened, the seat swung up and dropped down, the notches in its under bar resting on the crossbar of the legs and there catching. It is as well to fit here a simple hook and eye fastener to keep the seat down while in use, otherwise, when lifted up the legs may fall anyhow and need to be straightened out again before the seat can be used.

The hook should be fitted to the outer surface on the crossbar on which the seat rests, and the eye screwed in the end seat slat, underneath, conveniently for the hook to engage in it.

If it is desired to paint or varnish the seat, this should be done before the parts are pivoted together. Do not forget to punch the nails of the seat slats well down, and glasspaper the seat to smoothness, especially the sharp edges of the slats.

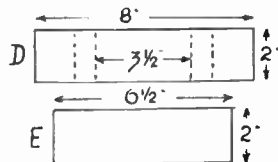


Fig. 2—The seat and cross rail

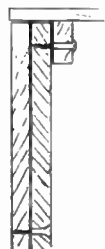


Fig. 3  
Screw pivot

## GREAT NEWS!!!

## GREAT NEWS!!!



Every model enthusiast is always on the look out for some new and particularly outstanding model to add to his collection. Here is such an opportunity for YOU. An exclusive and entirely original 'OO' 4mm. scale model American Heavy Duty Freighter, which is amazingly easy to build up with the aid of our 'TRUKIT' Series No. 1 Truck Constructional Outfit. Not only does it make a really superb model, but is, at the price,

unrivalled. It is simple, realistic and foolproof. Other models will be following equally fascinating, so don't delay, start your 'TRUKIT' collection now. The demand is heavy and we do not want to disappoint you, so send P.O. to-day for 9/3 post free, to ensure despatch by return.

MURRAY HILL & CO., (Dept. H.)

MAIL ORDER HOUSE, BEDFORD SQUARE, SIDMOUTH, DEVON



## ALLOY CIRCULAR CHAIN GUARD

Very latest idea. Clips on cycle chain wheel as shown. Any make. No gearcase clearance necessary. Polished like chrome. Looks very 'De Luxe' and saves trousers getting dirty or caught. **3/9**  
Trousers clips unnecessary  
State if chainwheel has 46 or 48 teeth. Post 3d

## CYCLO FLOOD LIGHTING REFLECTORS

for cycle lamps give car-type road lighting. Treat yourself. BATTERY MODEL, 12-sided, 1/6 DYNAMO, 12-sided, 2/6 All from Halfords and up-to-date cycle dealers or direct KORVING LTD. (HB), 12 Duke Street, London, S.W.1



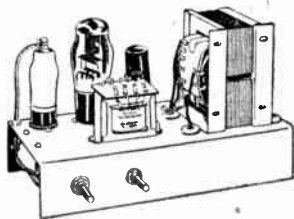
## THE BOLSTER HOME WATCH AND CLOCK REPAIR OUTFIT

These precision jewellers instruments include watchmaker's magnifying eyeglass, finest watch tweezers, set watchmaker's screwdrivers, watch and clock oil, oilers, dusting powder, clock brush, plus illustrated instructional manual for the amateur. In container 12/9 post free. Senior Outfit includes everything above, plus watch jewels, luminous compounds, dial renewer, jewellers rouge, explanatory book. Price 21/- post free.



BOLSTER INSTRUMENTS, (Dept. H. W.), 5a Station Parade, Ashford, Middx.

Interested in  
**HOME BROADCASTING  
or RECORD REPRODUCTION?**



then this  
**M-O-S 'AI'  
AMPLIFIER KIT  
IS A "MUST"**

With the M-O-S amplifier kit YOU can build this amplifier even if you have NO KNOWLEDGE of radio, and have never tried to make anything in the radio line. The instruction manual contains simple STEP-BY-STEP instructions and diagrams which show you exactly what to do. The kit is complete in every detail. Valves, chassis (pre-drilled), resistors, condensers, valve holders, transformers, etc., down to nuts, bolts and solder. All the resistors

and condensers are supplied on a pre-wired group board, colour coded for easy connection. This amplifier is ideal for building into a case to make your own record player, and its quality of reproduction is such that you can really enjoy your records. You can have endless fun at parties, giving your own 'radio' programmes. Send to-day for a copy of the instruction manual which will show you just how easy the M-O-S AI AMPLIFIER is to build.

FOR AC MAINS ONLY, 200-250V.  
Kit Complete with Instruction Manual - - - - - £4 2 6  
Instruction Manual - - - - - 3/6

RECOMMENDED ACCESSORIES  
Specially selected 10 inch high-performance speaker by a renowned manufacturer - - - - - 15/11  
Microphone with matching transformer. Desk type in Bakelite moulding - - - - - 7/6  
Cash with order—no C.O.D. orders please. Please write in block letters.

**M-O-S MAIL ORDER SUPPLY CO.,**  
Hobbies Dept., The Radio Centre,  
33 Tottenham Court Road, London, W.1

# STOP SMOKING

You can overcome the smoking habit in 3 days with the Stebbing Anti-Smoking treatment—or money back. Safe, pleasant, permanent. No Will Power necessary. The ONLY scientific method. Improve your health and save pounds. J. Conroy (Tipperary) writes: 'I stopped smoking in 2½ days. I've better health now'. E.F. writes: 'I had been an habitual smoker for 19 years. It is 19 days since I had a cigarette and I certainly shan't start again now'. T.R.: 'I have no longer the wish to smoke and feel 100 per cent better in health'. Not a physical culture course. Amazing results. Complete Course 6/- (or \$1.00 bill).

Details 1d. Sent under plain cover.

STEBBINGS, 28 (H/88) Dean Road, LONDON, N.W.2.

Established 1928

## YOU CAN BECOME A HANDICRAFTS INSTRUCTOR

### Experience not essential

Men who enjoy making things in wood or metal can turn their hobby into a permanent and interesting Career. Short hours, long holidays, and security in a job you would really enjoy, can be yours if you become a Handicrafts instructor. Let us send details of the easiest and quickest way to get the necessary qualification.

### We definitely guarantee "NO PASS—NO FEE"

If you would like to know about our unique method of preparing you for one of these appointments, write to-day, and we will send you our informative 176 page Handbook—free and without obligation. Mark your letters "Handicrafts Instructor."

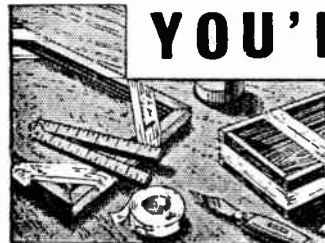
**BRITISH INSTITUTE OF  
ENGINEERING TECHNOLOGY**

595 Shakespeare House  
Stratford Place, London, W.1

# BIET

# EVERY DAY

Use Sellotape for fixing labels 'for keeps' on tins of screws and nails, etc. — then you can spot the tin you want at a glance.



# YOU'LL NEED

Use Sellotape to hold small parts in position while gluing. It's much quicker than string and just as strong.

# SELLOTAPE

Whatever your hobby—Sellotape can help. It's self-adhesive, sticks at a touch, leaves no mark on wood or metal. Get some today—

**BUT INSIST  
UPON SELLOTAPE**

Sourced by all good Stationers



THE POPULAR  
1/-  
DISPENSER

G & O

## AMAZING VALUE . . .

ASSORTMENT OF NEW WHITWORTH ROUND HEAD METAL THREADS AND PLAIN STEEL WASHERS TO SUIT.

2 GROSS M.T. SCREWS AND NUTS IN TIN BOX  
2 GROSS PLAIN STEEL WASHERS

**3/4** THE  
LOT



Useful for the Workshop, Garage, Model Maker, Electrician and in the House.

Plus 10d. postage

A handy and useful assortment.

MONEY BACK GUARANTEE IF RETURNED IN SEVEN DAYS

## WM. HURLOCK JNR. LTD.

HIGH STREET, THAMES DITTON, SURREY



# BRITFIX BALSA CEMENT

★ The ideal transparent cement for Balsa Ply Wood, Hard Woods, and Plastics, combining rapid drying with utmost tenacity.

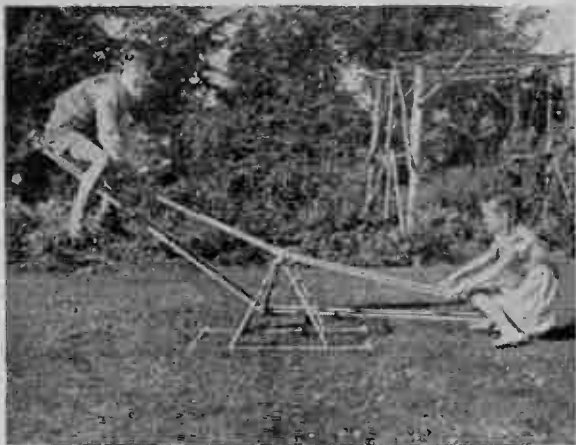
Small Tube  
Now  
4d.

Large Tube  
7d.

Remember  
**STICK BY  
BRITFIX**

**THE HUMBER OIL CO. LTD., HULL**

# 18 MODELS IN ONE KIT



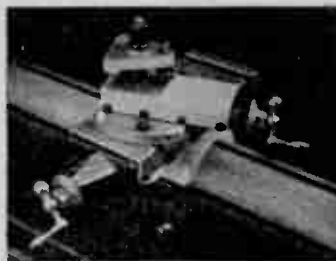
All built out of gaily coloured tubes and KEE KLAMPS. An inventive mind can create many more than the 18 structures listed: SWINGS, TRUCKS, CRANES, HOISTS—these and heaps of other absorbing models. Simple to construct and as simple to dismantle. Call at GAMAGES or HAMLEYS and see for yourself, or write to:

**JUNIOR CONSTRUCTORS LTD.**  
Gascoigne House, Berkeley Avenue, Reading, Eng.

# WOODWORKING FOR PLEASURE AND PROFIT

## MYFORD

The ML8 Woodworking Lathe (8" swing X 30") costs only £16 12s. 6d., and by means of numerous Myford attachments can be built into what is almost a complete woodworking workshop—compact, self-contained and driven by the one lathe motor. Pictured is the Compound Slide Rest which enables the turning of metals and plastics.



Other attachments enable:  
**SAWING**  
**GROOVING**  
**PLANING**  
**REBATING**  
**GRINDING**  
**SANDING**  
**POLISHING**  
**BOWLTURNING**

For further details consult any leading Tool Merchant or write to us now for free leaflets.  
**Myford Engineering Co. Ltd., Beeston, Nottingham**

*One plastic material*  
**MAKES MANY PERMANENT MODELS**

and utility objects, from simple instructions in illustrated Booklet—please read below.



**ONLY 4<sup>D</sup>**  
**IN STAMPS**  
**BRINGS BOOK**

... showing how such models as those above, and many others, can be made, without skill or special tools, from Sankey's **PYRUMA** Plastic Cement. Ready for immediate use in its plastic state, Pyruma sets or bakes to stone-hardness, and can be painted or enamelled in all colours according to instructions.

Pyruma is inexpensive, and easily obtainable in tins from Ironmongers, Art Material Dealers and Hobbies Shops. Send ad. in stamps for illustrated Instruction Book.



**J.H. SANKEY & SON, L<sup>TD</sup>**

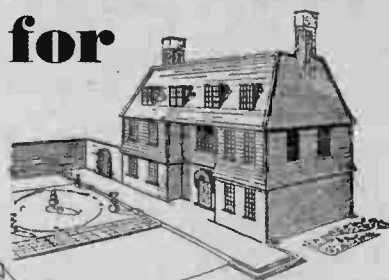
ILFORD

Est. 1857

ESSEX

# MODEL CRAFT LIST for 1951

**1/-** Post Free  
or from your dealer.



Galleons, clippers, strange craft, sailing yachts, power boats, war and merchant ships, aircraft, railway and roadside features, cars, lorries, trams, buses, etc., etc.



**1/- REFUND VOUCHER** is enclosed in every copy of the list for use when ordering Modelcraft goods from the list.

# MODEL CRAFT LTD.

**77 (F), GROSVENOR ROAD, LONDON, S.W.1**

Printed by **BALDING & MANSELL, LTD.**, London and Wisbech, and Published for the Proprietors, **HOBBIES LTD.**, by **HORACE MARSHALL & SON, LTD.**, Temple House, Tallis Street, E.C.4. Sole Agents for Australia and New Zealand: **Gordon & Gotch (A'sia) Ltd.** For South Africa: **Central News Agency Ltd.** Registered for transmission by Canadian Magazine Post.