

# Hobbies

## WEEKLY



LARGE FREE DESIGN  
SHEET FOR MAKING A  
**CLOCK**

October 16th. 1937

HOW TO MAKE  
**A UKULELE**

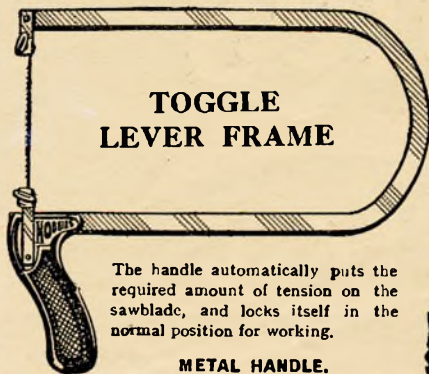


Vol. 85. No. 2191

# 2<sup>D</sup>

**THE FRETWORKER'S AND  
HOME CRAFTSMAN'S JOURNAL**

# GOOD TOOLS for GOOD WORK



**TOGGLE  
LEVER FRAME**

The handle automatically puts the required amount of tension on the sawblade, and locks itself in the normal position for working.

**METAL HANDLE.**

12in., 3/3; 14in. 3/6; 16in., 3/9

**BAKELITE HANDLE.**

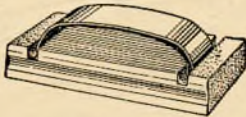
12in., 4/3; 14in., 4/6; 16in., 4/9

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BLOCK.**

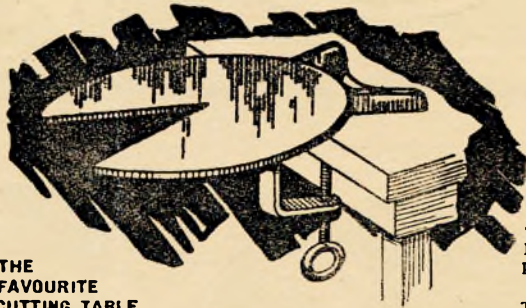
The handle keeps the glass-paper strip taut. Price 3in., 5d.; 5in., 10d.

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*Good Tools pay dividends in good work well done.*

A specialist, whether in medicine or tools, naturally knows more about his own particular line of business than the fellow who has a little knowledge of many subjects. Hobbies specialise in fretwork tools. The tools on this page are typical examples of Hobbies leadership and value. Are they in your tool-kit?



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A strong rigid table with just the right opening for average fret-cutting. The steel clamp is detachable from the table.

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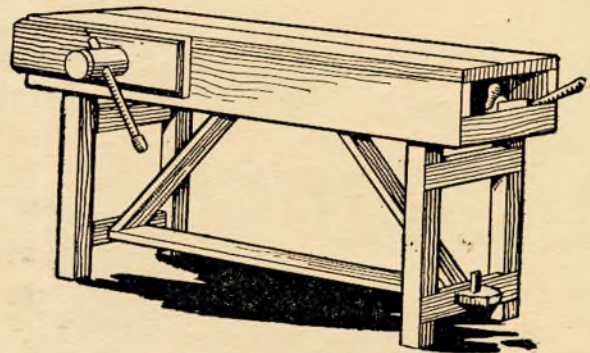
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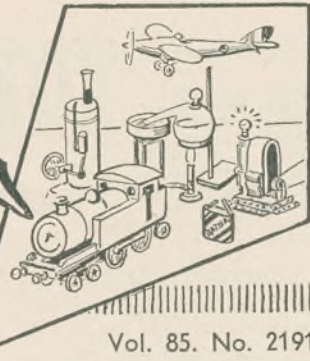
*Carriage forward*

Send today to Hobbies Limited, Dereham, Norfolk, for illustrated list showing how easy it is to buy a good bench under this easy payment plan.



# Hobbies

## WEEKLY



October 16th. 1937

Vol. 85. No. 2191

I BELIEVE some of you people are not making up articles you want because it means drawing out the parts full size from the squared drawings we give here. Shame on you, if so, because it really is quite a simple process, and it is impossible for me always to give them full size. Of course if you have a pantograph it is so much easier, but in any case, there is very little trouble. Shapes of parts are shown here drawn in squares. All you have to do is to pencil full size squares on the wood or part concerned and then sketch in the outline shown in the small drawing. So, you see, you have a full size pattern quite easily and, next time you are trying to make up your mind about it—try the job for yourself. Then, if you cannot do it—well I am always prepared to help by supplying a full size drawing for you. But remember these take a time, and I am afraid I must ask you to send 6d. or 1/- along—according to the amount of work involved—and I will have the patterns prepared in pencil for you full size.

ALL you model makers will be delighted to hear of another Ancient Ship coming next week. This time I have delved right back into history to the time of the Romans, and you will be able to build a replica of the ships in which they used to ply their merchandise. It is, to us, a queer looking craft, with a huge eye on the front sail (presumably to see where the ship was going!) and a bull (or what seems to be a bull) on the mainsail. The ship is quite easy to build, however, and I feel sure will be as popular as any of its predecessors in these designs.

I EXPECT all of you are waiting anxiously for the result of the Crossword Competition in our issue of Sept. 11th. It proved more of a teaser than I imagined and nobody got all clues correctly solved. There were, however, five clever people who only had one mistake,

and of these one stood out beyond the others for a neat entry. This was, therefore, awarded the First Prize and a Gem Machine has been sent to S. T. Brehaut, of Southampton Road, Eastleigh, Hants. The Guinea Swan Pen went to the second best—forwarded by Jack Eddon of Marfleet Lane, Hull, whilst consolation prizes have been sent to J. Pogson of Nottingham, E. Chalwin, of Camberley, Surrey and R. Stacey of Barrow-on-Humber. A very clever effort was sent in also by Thomas Hill of Bolton, and although his Crossword was not correct I have sent him a special prize for his ingenuity and labour. Remember, it is always worth doing your best when entering any competitions, for neatness and originality count as points when other things are equal. I cannot, by the way, give you the solution, because the Overseas Section is not closed.

DO you happen to live near Manchester? And are you interested in flying model aeroplanes? If you can answer both these questions with a "Yes" then you will be glad to know of a Club being formed by William Batley of 28 New Allen Street, Miles Platting, Manchester, 10. Several fellows in that district are getting together and other readers may like to know how they can join. Full particulars can be obtained if you ask for them and send a stamped addressed envelope to the address mentioned.

A NUMBER of readers are asking the Registrar of the League about the Hobbies Clubs in various towns and districts. I hope you will make a point of letting him know when you form new ones or would like to form new ones because then he can tell other League Members in the district.

JUST one final word before we close the page. Look out for Fireworks next week!

**The Editor**

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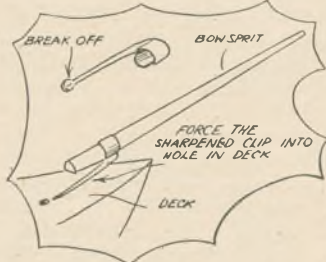
Send your own simple tips to The Editor, Hobbies Weekly, Dereham, Norfolk. Keep them short and add rough pencil sketches if possible.



For original Tips published the sender will receive a Hobbies Self-Filling Fountain Pen. We cannot acknowledge or print all tips sent in.

### Bowsprit Holder

**T**HIS useful tip is a practical one for all those model ship makers who cannot make a satisfactory job of fixing the



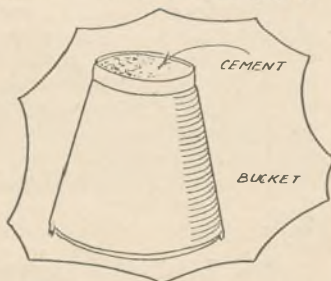
bowsprit. First procure an ordinary pencil clip, with a small knob on the end. Cut the knob off with a pair of pliers or file and shape the end into a sharp point. Clip it on to the bowsprit as shown in sketch and then force the point of the clip into the front of the boat so that it is in its proper place.—(T. Heighway).

### Simple Hose Spray

**H**ERE is a simple tip for a spray fountain. All you need is a rubber bulb of a horn costing about 6d. at a stores. Make a whole lot of pin pricks in it and attach to a hose. When you turn on the tap you have a fine spray according to the number and size of holes made.—(No name).

### Broken Buckets

**B**UCKETS with broken bottoms can be simply mended. Fill in the rim with a



thin layer of cement as shown, and leave to harden. Buckets treated like this will last for over a year.—(J. K. Keele).

### Paint Strainer

**I**F you use paint which has previously been in use you may find on opening the tin that the skin has formed and broken. If so, cut a piece of perforated zinc (as used for meat safes) 4ins. square and bend the edges up about  $\frac{3}{4}$ in. all way round. Hold this above a jar or tin and pour the paint slowly, using the perforated metal as a strainer. The result is paint entirely free from skin.—(H. W. Saurrell).

### Cleaning the Bottle

**I**F you have any oil bottle or other dirty bottle, here is a tip for cleaning it. Pour a little warm water into the bottle, cut some soap into small pieces and put this into the bottle and also add small stones. Cork the neck



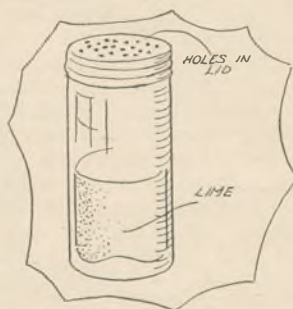
of the bottle and shake thoroughly. Remove the cork and empty the dirty water. If the oil or dirt still remains in it, do this over and over again until the bottle is clean.—(Md. Ibrahim, Klang).

### For Model Ships

**A**LL you need is some flags out of cigarette packets and have some paint handy. Put the face of the flag on the window and trace it through to the back with a pencil. Then with thin paint so that it will not be smudged, paint the back of the flag the same as the front. This makes the model ships a good finish for decoration.—(P. McKay).

### Damp Preventer

**T**HERE is nothing more detrimental to tools, than if they are exposed to damp in any shape or form. So obtain a glass jar with a screw top, and after boring



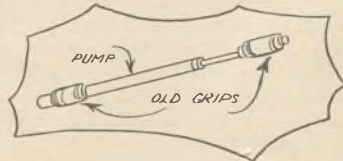
some holes through this, fill the jar about half-way up with unslaked lime, obtainable from any builders' merchants. When the lime is in the jar, simply stand inside the damp cupboard, or with tools.—(B. E. Shrimpton).

### Renewing Dry Batteries

**A**NEW lease of life can be provided for most batteries that have been discarded, by making a few holes in the black scaling mixture found on the surface, and soaking the whole cell in a strong solution of sal-ammoniac. Then the cell is taken out, the surplus wet drained off, and the holes repaired with ordinary sealing-wax. This will make an old battery work for quite a long while.—(E. Huntingford).

### Use for Old Grips

**T**HE next time you have an old pair of handlebar grips, do not throw them out. They may be used to improve your tyre



pump. One should be slipped on to the top of the pump and one to the bottom—and then you can inflate your tyres in comfort.—(M. Wright).

# The "EAGLE" CLOCKCASE

**W**ORKERS are given this week the opportunity of making up a practical piece of fretwork for their own homes or for that of their friends. As can be seen from the illustration, it takes the form of an ordinary clock, and by a special method in designing the cost of it is considerably reduced, and the work brought down to a minimum.

In addition to the oak supplied for the actual work, Hobbies have an eight-day or 30-hr. clock of reliable movement which fits this particular design. The wood costs only 2/6 whilst a cheap 30-hr. clock movement is obtainable to complete it for 6/9.

The whole thing, therefore, can be made for less than 10/- and should honestly be worth nearly double that when complete. If nicely finished with the oak stained down, then a dull polish provided by the use of waxine, a striking and very attractive piece of work is the result.

## General Construction

The construction, as has been mentioned, is quite straightforward, and actually there is no clock case in the usual sense of the word. The whole movement is contained in a single upright piece of wood, but the thickness of the clock barrel is disguised and beautified by a rim of pliable plywood and overlays on the front.

A back view of the clock is given herewith, and this illustrates clearly the single piece forming the main upright and the projecting piece at the back.

It also illustrates the fancy fretted figure of the eagle—from which the clock takes its name—and how it is screwed on immediately above the barrel. Those who prefer, of course, can thus easily omit this piece of fancy work, and have a plain front to the clock.

## Wood Required

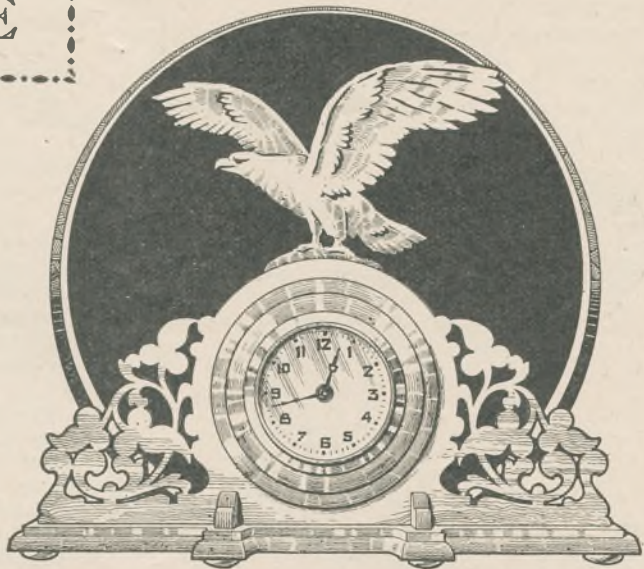
The wood for most of the parts is  $\frac{3}{4}$  in. thick, but the boards supplied by Hobbies are specially selected to be quite easily cut with the fretsaw. The patterns can be pasted down or traced out ready for cutting. Notice in the case of the plywood that a scale drawing is given.

The part is  $9\frac{1}{2}$  ins. long and slightly under 2 ins.

## MATERIALS SUPPLIED

*For making this clock case, we supply a parcel of selected Oak, including six round toes, for 2/6 or post free 3/-. Clocks—A special 8-day Clock (No. 5504a) for 13/6, or a reliable 30-hour Movement (No. 5503) 6/9, postage 6d. When Wood and Clock are sent together 6d. only is required for postage.*

wide. It should have the grain running across the wood to make it more bendable. There are only about half a dozen parts to be cut, and beyond the actual fretsaw work shaping must be



Made from patterns on Design Sheet 2191

undertaken to round off the edges of some of the pieces.

## Overlay Rims

The two overlay rims round the clock face, for instance, must be nicely shaped down so that the thickness of wood does not appear so great in the finished article. This is done first with a fairly rough 6 in. or 8 in. flat file, then finished off with glasspaper, getting a nice curve on the whole circle.

A rim is also provided on the back to hold the plywood casing round the barrel, and this also has to have its outer edge shaped nicely round. Indeed, this piece has to have two edges rounded as can be seen in the detail given herewith of the casing round the clock movement.

Do not be in a hurry with this shaping. It may take a little longer, but it is certainly best to have patience and get a good shape. The curves on the overlay rims on the front will naturally be seen very clearly, and should thus be an exhibition of your best work.

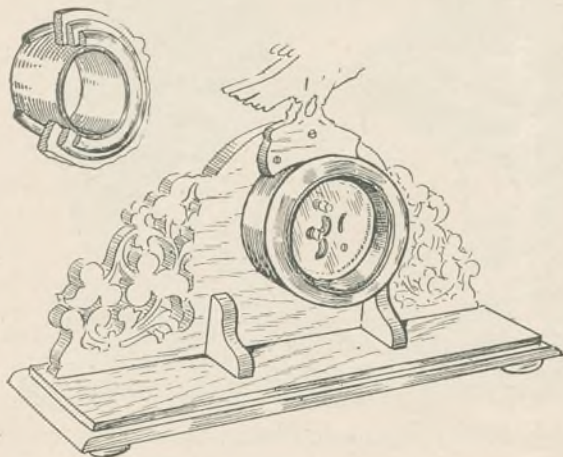
## How to Cut

A good plan is to cut the outer circle of these parts, then do the shaping up with file and glasspaper before cutting the interior opening. If you cut the inner circle first, then the outer one, you have a much more fragile rim to handle when doing the filing.

All parts, of course, must be carefully cut and a medium fretsaw blade (about No. 1) is suitable for the  $\frac{3}{4}$  in. boards to be cut. Any little errors in the actual fretwork can possibly be obliterated by use of the tiny fretwork files.

Get the curves of the conventional ivy design—always a popular pattern—nicely running from one to another with the leaves evenly balanced not only in each part, but one with another in each half.

The interior narrow frets of the eagle forming the feathers, beak, eye, etc. must be cut with a fine saw. Make the drill hole at the widest part of the opening, then gradually work down tapering the line to the vanishing point at the end.



*A back view showing construction and a detail of the clock casing from the front*

Hold the wood securely to the table and control the saw thoroughly, if not, you will find it is apt to jump across the narrow neck of wood and gash the board beyond.

#### Putting it Together

When all parts have been cleaned and are ready for fitting, the construction can be undertaken. The upright is fixed more firmly to the base by two little support brackets which are halved in at C. Get these two to fit snugly into the larger piece in the positions shown. Glue them in place,

then glue the whole lot down to the upper base of  $\frac{1}{4}$  in. material.

It is advisable to add flat headed screws through from the underside, but be sure to get their heads below the surface of the wood, if not, that part will "rock" on the other base later.

This lower base—in  $\frac{3}{8}$  in. wood—has its upper edge nicely rounded as shown by the section. It is glued centrally on to the upper base so there is  $\frac{1}{4}$  in. or  $\frac{3}{8}$  in. projecting all round.

#### Fitting the Clock

To fit the clock movement in, a reference to the detail drawings will be helpful. The two overlay rims are glued to the front with the inner circle flush in all three parts. These pieces should be cramped together or weighted down, and allowed to set before the plywood piece is added.

This plywood strip is turned around inside the circular opening, and its actual length should not be cut off until it has been tested in place.

Then glue it around the inside of the upright rings, and finally glue to the back edge the rim for enclosing the clock casing. This piece is also in  $\frac{3}{8}$  in. wood and thus forms a useful and strong holder for the casing itself.

Test the actual clock movement in place, and see that it does not come up to the edge of the back rim by about  $\frac{1}{16}$  in.

#### Suitable Small Feet

Now you can glue on the fretted eagle if you wish, standing it on to the plywood ring, gluing it in place and adding one or two screws if necessary to strengthen. The whole thing is finished off by means of half a dozen small flat feet. These are supplied in the parcel and are glued two at each end and one below each projecting portion.

Scratch up the surface of these little feet to get the glue to hold more firmly, and drive a tiny fretnail through into the base. Do not let the head project beyond, and for preference cut it off so there is no question of scratching when the clock is in use.

## Two Coronation Coach Builders



IT would be impossible for us to reproduce, or even mention individually, the hundreds of pictures sent in by proud makers of the Coronation Coach Design. Here are just two picked out at random to illustrate the interest and enthusiasm of our workers. The one on the left is W. J. Devey of Bedminster, whilst that on the right is Frank Aston of Broadwell, Glos. That Coach model has been made literally all over the world, and even now is still in great demand. It was design No. 203 Special which is obtainable for 10½d. post free.



# A HOME-MADE UKULELE

**A** UKULELE, of course, is just an instrument for vamping or harmonizing in accompaniment with (chiefly) a vocalist or yourself, whether humming or singing. The construction presents little difficulty, more consideration being given to the tonal qualities of the wood selected for use.

Ordinary thin birch plywood could be used throughout. This, however, is not so sonorous and resonant as plain thin fretwood such as white chestnut, silver spruce or deal. Birch fretwood, and other hardwoods like beech, sycamore and padouk produce quite a good tone.

Any of these can be also used for the neck handle, although whitewood is often employed. An excellent combination would be a birch handle, with a padouk body surface and birch back. The bent sides could be  $\frac{1}{32}$ in. thick birch plywood cut short-grained to alleviate the bending, with the interior flanges cut from  $\frac{1}{8}$ in. stuff, the blocks, of course, being  $\frac{3}{8}$ in. deal.

## Construction of the Body

Commence work by striking out the body shape as seen at Fig. 1, this being mostly compass work. Be sure to find the correct radius centres, otherwise the radii lines will not meet properly. The sound hole, naturally, is only required in the face piece which, as mentioned, could be cut from padouk to give a nice contrast to the rest of the work.

Having cut it out and trimmed neatly with glasspaper, use it as a template for marking out the back piece. The shaped flange pieces are cut in separate portions, i.e., they stretch from top to bottom only; the cross bars are affixed separately later. One cut-out flange will mark for the other three required.

The body can now be assembled. To do so, glue the flange parts around the edges, allowing



All parts supplied in Parcel No. T.M.355 for 5/6, or sent post free for 5/9.

$\frac{1}{8}$ in. space at top and bottom (in the centre) for the blocks which measure  $1\frac{1}{2}$ ins. long by  $1\frac{1}{8}$ ins. wide by  $\frac{3}{8}$ in. thick. The face of the bottom block is rounded to conform with the curvature of the body. Incidentally, the blocks and flanging must show an even  $\frac{1}{16}$ in. wide margin all round as in Fig. 1.

## The Plywood Sides

When the cross bars are fitted and glued in position, glue and panel pin the shaped face and back portions to the blocks—or, if possible, just use glue, a powerful tube glue such as Certofix. The sides are formed with two separate strips of thin plywood meeting at the corners of the violin shape, the topmost strip measuring about 15ins. by  $1\frac{7}{8}$ ins. by  $\frac{1}{32}$ in. thick, with the bottom strip about 12ins. long by the same width and thickness.

Glue the bottom strip around first, the ends being mitred neatly at the corners. If there is much resistance in bending, the strip should be steamed into the desired shape. It is held firmly in place with strands of cord or tape tied around same and the framing until the glue dries. The topmost strip is also centred, then nailed to its block and bent around to "test" for the correct mitre length.

Owing to the "inside" curvature, you will—after having tied string around—need to force wedges of wood in at this point, or better still,

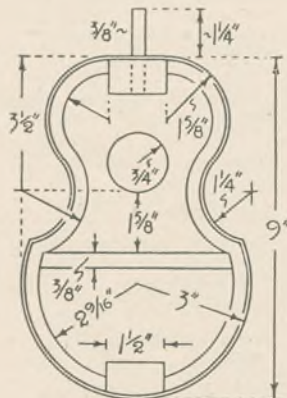


Fig. 1—Back view of body front showing dimensions and general parts

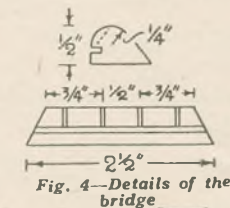


Fig. 4—Details of the bridge

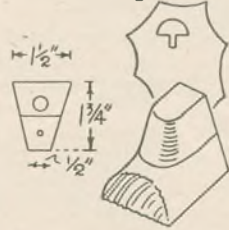


Fig. 3—Shaping of neck at shoulder with sectional front view

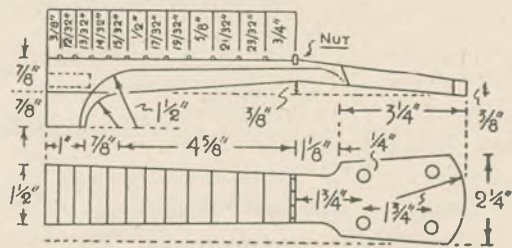


Fig. 2—How to mark out and shape the neck

use similarly shaped pieces of wood and wedge the whole between two upright lengths of  $\frac{3}{4}$  in. diam. dowelling in a scrap piece of thick wood, the projecting tops of the dowels being pulled into alignment with cord.

### The Neck

The neck is cut and shaped as detailed at Fig. 2 from a piece of wood measuring 11 ins. long by  $2\frac{1}{2}$  ins. wide by  $\frac{7}{8}$  in. thick. Before doing so, however, set out the fret positions with pencil and square and score or cut across them to a depth of not more than  $\frac{1}{16}$  in.

A small block of the same wood (2 ins. long by  $2\frac{1}{2}$  ins. wide) is glued to the shoulder end, whereupon the top and side shaping can be carried out with a panel saw and keyhole saw, the rest of the neck being cleaned up with the spokeshave, rasp and glasspaper. The shoulder end must be dead

### MATERIALS REQUIRED

- 1 handle (birch)  $13\frac{1}{2}$  ins. by 2 ins. by  $\frac{7}{8}$  in. thick.
- 1 body back (birch) 9 ins. by 6 ins. by  $\frac{1}{16}$  in. thick.
- 1 body front (padouk) 9 ins. by 6 ins. by  $\frac{1}{16}$  in. thick.
- 2 pieces plywood (flanges) 9 ins. by 5 ins. by  $\frac{1}{8}$  in. thick.
- 2 end blocks (deal)  $1\frac{1}{2}$  ins. by 1 ins. by  $\frac{1}{8}$  in. thick.
- 1 plywood side (birch) 15 ins. by  $1\frac{1}{2}$  ins. by  $\frac{1}{32}$  in.
- 1 piece plywood side (birch) 12 ins. by  $1\frac{1}{2}$  ins. by  $\frac{1}{32}$  in.
- 1 bridge (birch)  $2\frac{1}{2}$  ins. by  $\frac{1}{2}$  in. by  $\frac{1}{8}$  in. thick.
- 4 wooden pegs.
- 4 (set) gut strings. Opposite obtainable locally.
- 1 felt plectrum.

square. It is bevelled as seen at Fig. 3, then drilled for a  $\frac{3}{8}$  in. dowel  $1\frac{3}{4}$  ins. deep and for an  $1\frac{1}{2}$  in. by 6 flathead iron screw, this necessitating counter-sinking. The peg holes are drilled with a  $\frac{1}{4}$  in. bit.

A dowel hole to correspond with that of the

handle is made in the body so that the finger board is flush with the surface. The bodywork is glasspapered prior to gluing and screwing the neck in place; fill the screw hole in with plastic wood.

### The Bridge and Frets

The bridge, being made from wood and the sole anchorage for the strings, is made and glued in position at this juncture. Shape it from a piece of hardwood  $2\frac{1}{2}$  ins. long by  $\frac{3}{4}$  in. wide by  $\frac{1}{2}$  in. thick as shown at Fig. 4. First cut a kerf along one side (see section above) then round the top and bevel in the manner shown, the string cuts being made with a tenon saw as indicated by the dotted lines.

The inset at Fig. 3 shows a sectional view of fret wire. You will need a 24 in. length or two 12 in. lengths, there being enough allowance in case of accident. This wire is obtainable at most local musical instrument shops. It is cut into suitable lengths and then tapped into the sawcuts.

Check the handle  $\frac{1}{8}$  in. by  $\frac{1}{8}$  in. for the nut which can be either a piece of hardwood or bone  $1\frac{1}{4}$  ins. by  $\frac{1}{2}$  in. by  $\frac{1}{8}$  in. (see Fig. 2). Glue the nut in place and divide its rounded top into four as shown.

### Suitable Finish

As a finish, the whole woodwork should be given a coat of clear varnish stain or polished. When dry, insert the pegs and affix the gut strings, the end knots fitting in behind the bridge kerf. Reading from left to right, the instrument is tuned to G.C.E.A. or according to the key in which melodies are played. A felt plectrum is used; but most players are content with strumming with the thumb.

## HOBBIES LEAGUE CORRESPONDENCE CLUB

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# MAKING A SIMPLE HYDRO TURBINE

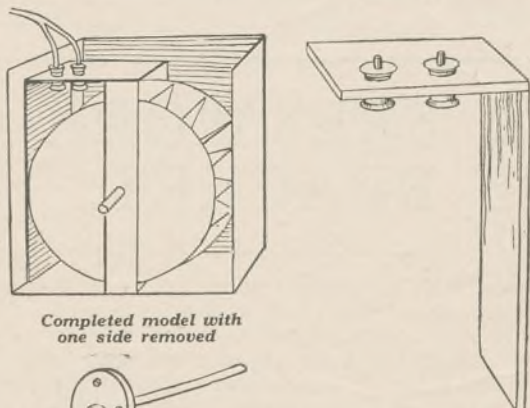
THE fact that water-power costs nothing has always been an attraction to anyone searching for a means to drive dynamos, working models, etc. The trouble is that the splashing from a home-made water-wheel usually extends to the machine being driven.

Here, then, is a simple but more effective water-wheel—a hydro-turbine which will be found quite powerful.

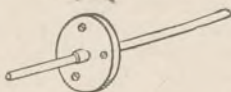
We first need a large biscuit-tin. For a turbine with a diameter of 9ins. the tin must be at least 1ft. 2ins. square. This will give a clearance of 1½ins. at the bottom and 3½ins. at the top.

Now take a sheet of good quality three-ply and with a fretsaw cut out two circles 9ins. in diameter. These are the two sides of the turbine and are screwed to each end of the hub.

To make the hub, take a rectangular block of



Completed model with one side removed



Fixed wheel for securing turbine to axle

The mounting for water jets

wood, 3ins. deep and 2ins. square. Stand this on end and chisel off the corners until the block is as near a perfect cylinder as possible. The two discs should be fastened to this with ½in. brass screws. Take care that the centres are exactly opposite.

## The Vanes

The framework is now ready to receive the vanes. These are spaced every 2ins. and since the turbine we are making has a circumference of just over 28ins., we shall need fourteen of them.

They are simply square pieces of plywood, 3ins. by 3ins. Screw a small block of wood, ¾in. square, to the two edges of each one. These act as angle brackets to secure the vanes to the framework.

Now slide the vanes between the two sides of

the turbine, 2ins. between each one, and taking care that the ends of the vanes do not project beyond the outside edge of the two discs. Use only one screw on each side so the angle of the vanes may be altered to get the best results.

We can now fit the axle which is a metal rod ¼in. in diameter and 8ins. long. Drill a hole slightly smaller than the rod through the hub of the turbine. Start the hole from both sides and be very careful to keep the drill vertical.

## Fitting the Axle

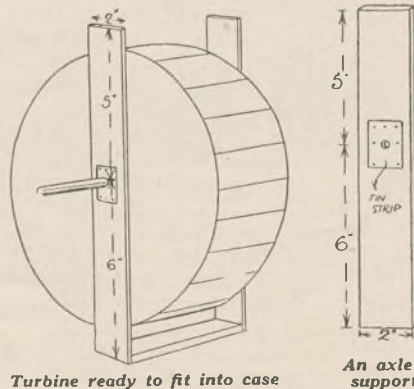
More important than getting an axle exactly ¼in. in diameter is to get one on which you can fit two wheels. One of these is the driving-wheel and should be 3ins. in diameter, the other is simply to fasten the wooden turbine to the axle. For this purpose, it should be solid but with a few holes in its face.

Force the axle through the hub of the turbine and fasten the smaller wheel hard up against it. The holes in the small wheel will take screws to prevent the turbine slipping round on the axle.

## Mounting the Turbine

We can now mount the turbine. To do this, take two lengths of wood, 11ins. long, 2ins. wide and ½in. thick. At a point 6ins. from the end of each bore two holes ½in. in diameter and over each of these tack a strip of tin. Then, with a slarp fat nail, punch a hole in the centre of each strip. Make these holes carefully so the axle just fits through them and turns easily.

Slip these uprights on to the axle on either side of the turbine and screw the base of the uprights



Turbine ready to fit into case

An axle support

to either end of a baseboard. This should be 5ins. long, 4ins. wide, and 1in. thick.

Now make the water-jets. These are simply two cotton-reels with 1in. lengths of ½in. tube fitted in one end. Mount these on a frame, as shown in the illustration, and screw the frame to

the side of the biscuit-tin so the two jets overhang the turbine.

The beam in which the jets are fitted is 7 ins. long, and the jets themselves are 2 ins. and 3½ ins. respectively from the upright supporting the beam. This upright is the same height as axle supports—1 ins.

The position of the turbine in its case is found by moving it until the two axle supports fit directly beneath the end of the overhanging beam. The beam should then be screwed to the top of the axle supports.

After this, screws can be driven with washers through the bottom of the tin to secure the base-board of the turbine to its casing. A ½ in. hole will have to be cut in the side of the casing to allow the axle to project.

Now fit lengths of rubber tubing on to the short tubes stuck in the cotton-reels. Lead the tubing away through holes cut in the casing. Once outside, they are merged into a single rubber pipe by means of a Y junction. Fix the piping over a tap, and the turbine is ready for work.

First, however, the wooden parts must be given several coats of creosote. Paint will do, but creosote is a better preservative against water. It is best to do this before any of the parts are screwed into the casing.

Waste water is got rid of by punching a sufficient number of holes low down in the casing to prevent it collecting and obstructing the vanes. This method can obviously only be used when the turbine is placed in a sink. In other places, it can be led away through rubber tubing fitted over in. lengths of metal tubing soldered into the casing.

If the pressure in the tap is high, the holes in the cotton-reels may be enlarged. Thus there will be a greater *volume* of water falling on the vanes while the pressure remains about the same. The angle of the vanes must also be experimented with.

If a big enough tin can be found, better results will be obtained with a turbine a foot in diameter. The size of the other parts must, of course, be increased proportionally.

Finally, different sized driving-wheels will increase the usefulness of the turbine. Thus, where sheer power is more important than revolutions per minute, a small driving-wheel is best. But for driving a dynamo a 3 ins. wheel is the best size.

A hydro-turbine made on these lines will be found surprisingly powerful, and provide power with little attention and no cost.



## SMALL FRETWORK VASE BRACKET

**Q**UITE a novel little type of vase holder complete with vase, can be made from the patterns illustrated on the centre pages of this week's issue, and the finished result is shown in the picture herewith. All you need is a few odd pieces of fretwood and the

special handsome vase which is obtainable from Hobbies. The catalogue No. is 6029 and the cost is 1/- post free. This little vase is quite shallow and stands on a shelf pedestal which in turn fits on to a back intended to hang on the wall.

The parts shown are all cut 3/16 in. thick with the exception of piece B which is 3/8 in. Any normal fretwood can be used, and the patterns as printed should be cut out and pasted down on the wood.

Notice that half only of the piece A is printed, but it is a simple matter to measure out the sizes and mark them on to the wood without even pasting the pattern down.

Cut out all the parts and clean them up in the

usual way. The dotted circle on the part B is not to be cut out, but merely indicates the position of the adjoining piece glued to it.

The construction is quite simple. Take the back A and into the two mortises at D fit the upright brackets. Be sure to get the top of these two brackets level.

Now take the top piece (A) and glue to it piece B flush with one long edge, but 1½ in. inwards from each end. On the top of this glue the piece C. This again is flush with one edge but projects about ¼ in. round the other three sides of the part B.

### Glue and Screw

The dotted lines on the pattern of the back show these three pieces clearly, and when all are glued together the whole thing can be fitted on to the brackets. It is there glued in place as well as to the main back. If necessary, thin screws can be glued from behind. The vase, as can be seen in the picture, is stood in the hollow of the piece C.

The whole thing should be nicely stained and can then be given a coat of varnish.

If you happen to have used plywood then you must stain very dark so the ugly ply at the edges cannot be seen. It is, of course, much better to have used fretwood such as mahogany, satin walnut or oak.

# NOTES ON OXYGEN

## HOME CHEMISTRY



**T**HOSE people who are unaware of the fact that nearly 80% of the air we breathe consists of nitrogen may be excused for thinking that oxygen is the most important gas in existence. That it *is* important cannot possibly be denied, for without oxygen we could not live; also, oxygen is very widely distributed in nature, forming eight-ninths of water and nearly 50% of the crust of the earth.

The solubility of oxygen is of very great importance, for fish and sea creatures generally breathe in oxygen as we do, so that if this gas were not soluble in water they, too, could not live.

It is equally vital to us that oxygen combines with hydrogen, for without this fact there would be no water. Without oxygen there could be no flame, but although it is universally known that oxygen is a most powerful supporter of combustion it may come as a surprise to many folks to know that the gas itself is not inflammable.

### How to Make Oxygen

Oxygen may be produced very simply by heating combinations of metals and oxygen in test tubes. To be more explicit, if some mercuric oxide, which is of course a combination of mercury and oxygen, be placed in a test tube and strongly heated, the oxygen is freed and metallic mercury is left in the form of shining globules adhering to the sides of the tube.

The best laboratory method is to heat a mixture of potassium chlorate and manganese dioxide in the apparatus as shown in the sketch. Mix the ingredients in the proportion of 3 : 1. The gas is collected in the usual way over water. You will find that oxygen is produced very freely and it should be possible to collect at least half-a-dozen jars of the gas.

### Testing

Having provided yourself with such a supply you are well equipped to test its properties. The most elementary of all tests is to light a splinter of wood, blow the flame out and immediately insert the still glowing end into one of the jars. It will instantly become re-kindled and will burst into flame. Even thin wire can be burnt in this way; try it, and the result will surprise you.

Some remarkable effects may be obtained by inserting various other substances in oxygen, and

this is best done by means of a deflagrating spoon. Although these may be purchased from firms stocking chemistry apparatus you can very easily make one by sticking a length of stout wire through the circular lid from a cocoa tin and bending the end of the wire up in the form of a loop or cup.

### Experiments

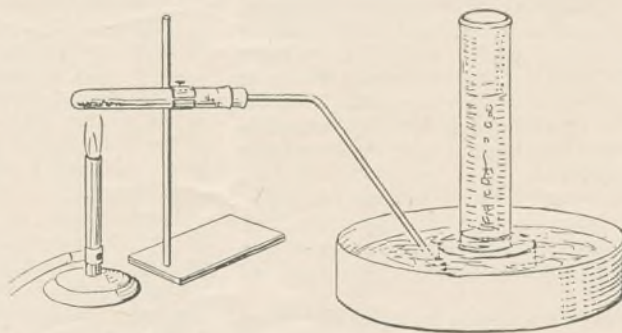
Try using a piece of soft charcoal, which you have previously heated; it will burn much more brightly than it did in air. Similarly, a piece of wax candle will quickly burn itself out.

But the most striking effect is obtained by lowering a small lump of hot sulphur into a jar of oxygen. It burns with a beautiful mauve flame and the jar becomes filled with the characteristic choking fumes of molten sulphur.

The technical reason for all this is that oxygen exhibits great chemical activity and has the power of entering into direct combination with almost every other element to form oxides. Fluorine is the most notable exception. So active is oxygen that some substances oxidise even at normal temperatures, as, for instance, iron. The everyday term, "rusting," really covers the fact that by a rather marvellous chemical process the iron has quietly oxidised its outer surface.

### Ozone

Although you are not likely to meet with ozone, in view of its presence in the atmosphere we must mention it here, particularly as it is quite an



The apparatus for preparation of oxygen



Home-made deflagrating spoon

interesting substance. It is, in actual fact, an allotrope of oxygen, or a modification of oxygen.

The chemical difference between the two gases is that a molecule of ozone contains 3 atoms, and a molecule of oxygen contains only 2 atoms. You know, of course, that it is ozone which gives

that distinctive smell to sea air, in which its presence is believed to be due to electrical action.

Ozone, which incidentally is seldom found without four times its volume of oxygen being present, is a powerful oxidising agent, much more vigorous than oxygen itself. This is probably the reason why silver ware requires more keeping clean in seaside homes; it becomes blackened by the formation of silver peroxide.

At ordinary temperatures ozone is pale blue in colour, whilst in the liquid form it darkens as to be almost black. It is a most difficult gas to obtain in a pure state, and is then very explosive. The third atom is very unstable, thus it is only necessary to apply heat to ozone in order to change it into oxygen. The dust particles in the lower

atmosphere also produce this effect, which is probably why the proportion of ozone in the air we breathe is so limited.

The most important commercial use for ozone is as a purifier. You may not know that the air in London's undergrounds is kept pure by this means. Ozone is also used for purifying the water in reservoirs which supply large towns and cities.

The gas is produced by passing cool dry oxygen between two glass tubes, when an electric current passing between them causes part of the oxygen to become ozone. This is bubbled through the main supply in the water tower, and is a very important step in the vital problem of keeping drinking water pure.

## BLACK MAGIC!

**B**LACK Magic is an uncanny, frightening sort of illusion—a trick which, nevertheless, is interesting and not in the least harmful. It will prove to you whether you (or your pals) have will-power and pluck, for by its means, or rather, by its strange ritual, you can see what appears to be a spirit of your own brain...

You will be amazed at the interwoven, thread-like, dull-grey mass of matter floating before you. It is outlined against a black-red background, and you can keep on looking at it as long as you wish. With most fellows, however, a few seconds is long enough. The whole performance, you see, is not unlike a spiritual seance, with yourself as the medium.

### The Seance Room

The illusion can only be performed in almost darkness, and that is what makes it extremely difficult with a majority of would-be mediums, especially if they are not told that it is nothing more than an optical trick. And if they have boasted loudly that they are not afraid to do it alone, they have—when they see the "seance room" and its special black screen—a really trying time in not backing out and "eating their words," so to speak.

The "seance room" can be a dark scullery, hall, lavatory, bedroom, etc. To get the best out of this exciting trick, it should be carried out at night in pitch darkness and where there is absolute quiet.

To prepare the room, obtain an 18in. square or more of black cloth or velvet. It is affixed to the wall or door (with drawing pins) at a height sufficient to make the performer look up slightly while standing.

A candle is now required, lighted and given to the performer. This must be the only illumination and, in view of melted wax dropping on the floor, the candle should be in a holder or a night-light could be used, this being a squat, candle affair.

Holding the candle in his left hand, the performer is told to keep it held at elbow length and about 12ins. away from his body which, incidentally, should be 18ins. from the black screen. Standing thus, he must keep looking upwards at the centre of the screen and slowly move the candle from side to side, i.e., from left to right.

He must not allow his eyes to wander or waver with the movements of the candle, but keep them firmly affixed on the screen and endeavour not to blink his eye-lids too much. He should, indeed, be staring up into the top eye-lid.

### An Explanation

At first, he will see nothing, but after a few more movements of the candle, the strange, congested mass of veins and tissues will gradually appear before him. He must really look for the mass and not expect it to appear of its own accord. It depends largely on concentration and the will to carry out instructions faithfully.

One is not, of course, doing anything that might be regarded as wrong or against God's word. It is just a mere trick—an optical illusion equivalent to the X-ray effect produced by a feather between pieces of card having a central eye aperture to look through.

Black Magic, to use an old expression, "has the name, if not the game." You are not really looking at your brain. The "apparition" is caused by the wavering candle light penetrating the lower part of the eye-ball and reflecting the "reticle" of same or the retina in a direct oblique way on the pupil or "star" of the eye.

It is certainly a fascinating illusion and one that is apparently real. Boys who play at make-believe Hoo-Doo and similar gangs and college youths who have their own pet organizations might be invited to include this trick in their weird "initiating" programmes in place of a more harmful one. What about it, you initiators?

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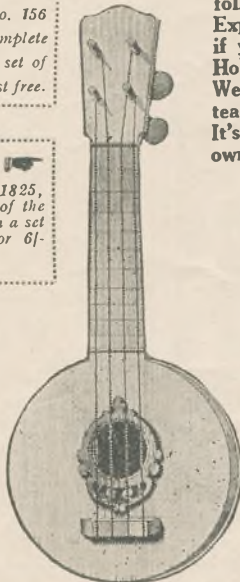
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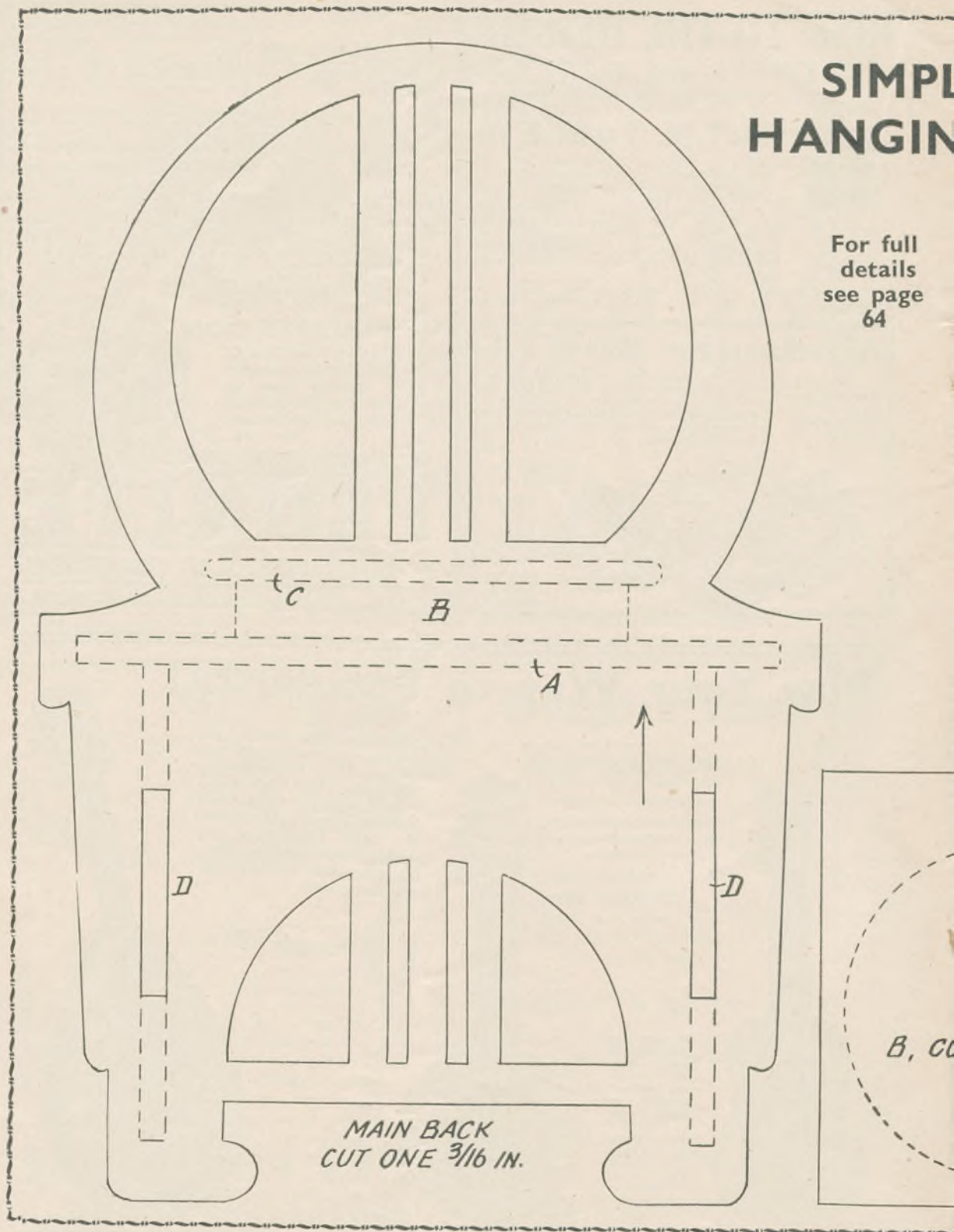
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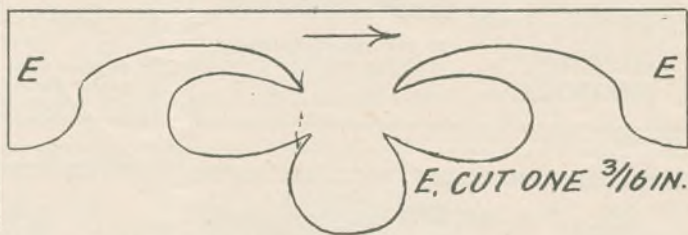
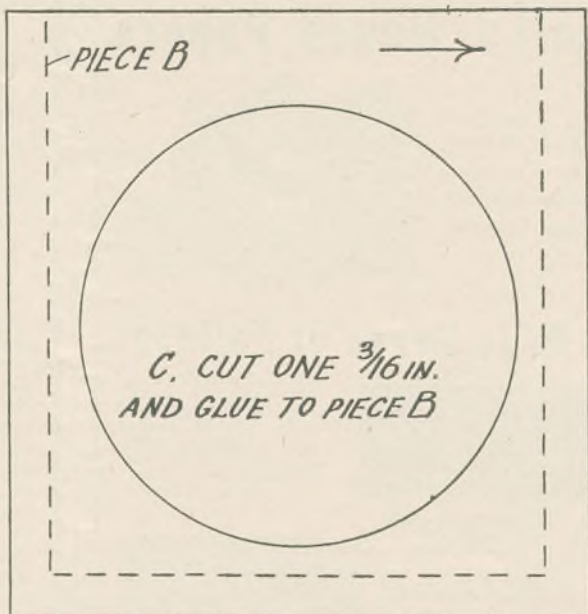
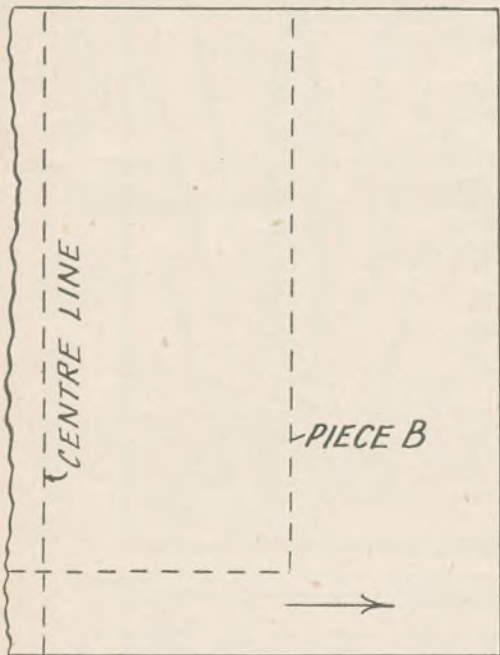


# SIMPLE HANGING

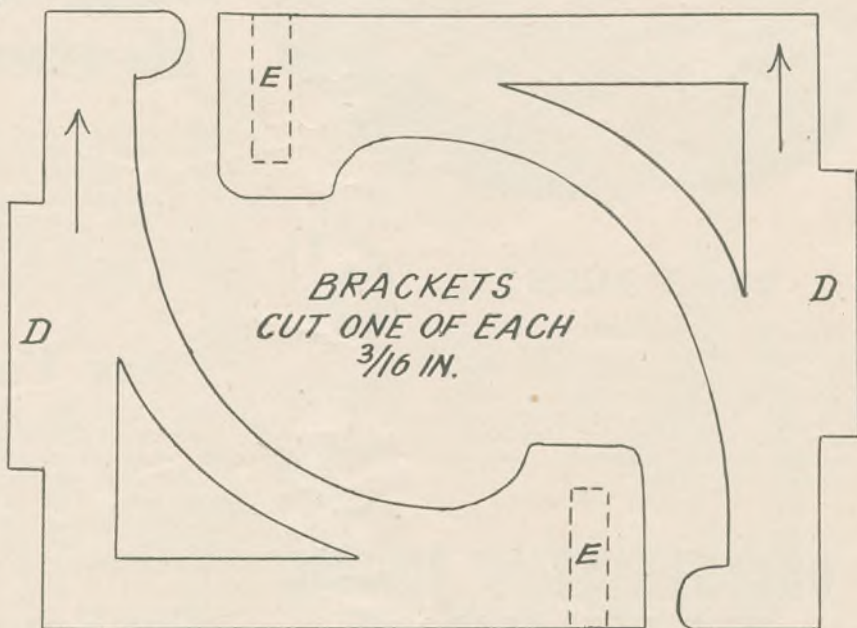
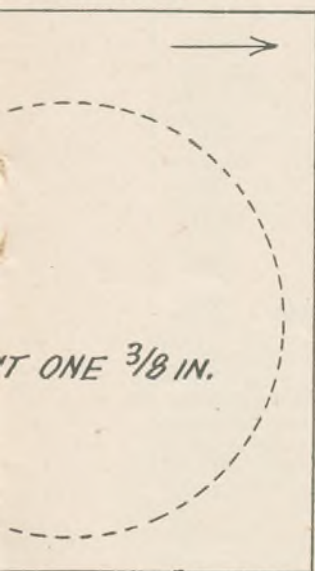
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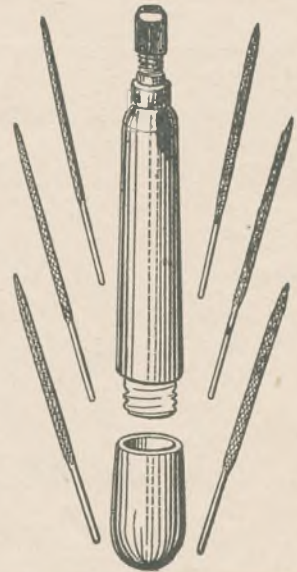
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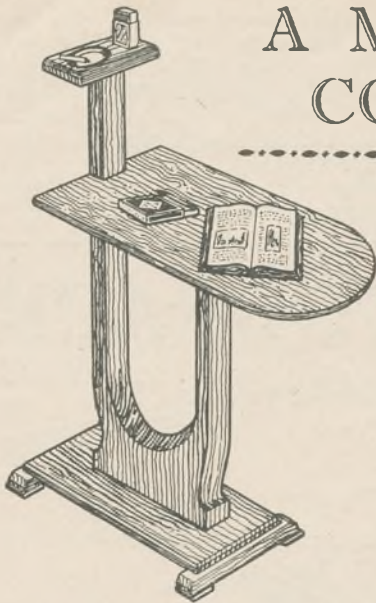
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# A MODERN SMOKER'S COMPANION STAND



**H**ERE is an ideal item of furniture to have by the side of an easy chair during that quiet hour with a book and pipe. The table part is handy for accommodating various things such as a cup of coffee, to-

bacco jar, cigarette casket or writing materials. The piece may be carried out in oak or mahogany or, for the sake of economy, birch plywood and one of the softer woods may be used. In the latter case, stain of almost any shade may be chosen.

A start is made with the shaped piece and Figs. 1 and 2 give an idea of its construction. The long pieces are 1in. by 2ins. in section. Eight blocks of the same material are glued between them and the whole thing shaped later. If this part is marked out full size on paper, the approximate lengths of the short pieces can be ascertained.

## The Main Stand

Starting with the longer leg, the first block is glued and nailed to it. A second block is fixed to the first and so on until the other leg is fixed to the rest of the structure. When the glue is thoroughly set, the lower end of the work is made perfectly square and true.

The surfaces may need a little attention with a block plane before the shape is marked out. A fretsaw is the best tool for cutting it out. If the work is laid flat on the bench and vertical cuts

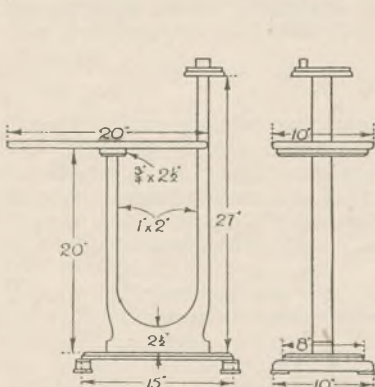


Fig. 1—Elevations giving sizes and shapes

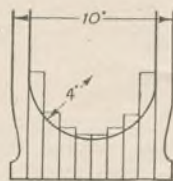


Fig. 2—The pieces forming the curved support

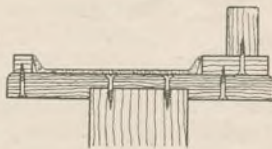


Fig. 5—The ash tray, etc., is fixed with screws

made through the thickness of the wood, splitting will be avoided. A spokeshave or file and glasspaper will produce a smooth finish. As will be seen at Fig. 2, the outer edges are also shaped near the bottom.

The base is a piece of  $\frac{3}{8}$ in. wood, 15ins. by 8ins. with bevelled edges. This is supported on feet, details of which are given at Fig. 3. Two pieces of 1in. by  $1\frac{1}{2}$ in. stripwood each 10ins. long are required. The top edges are bevelled at each end, and blocks  $1\frac{1}{2}$ ins. by  $1\frac{3}{4}$ ins. by  $\frac{3}{8}$ in. thick are fixed underneath so as to leave an overhang of  $\frac{1}{2}$ in. at the sides and end. The feet are fixed with glue and a couple of  $1\frac{1}{2}$ in. screws driven from underneath into each.

## Fitting the Legs

At this point the legs are prepared to receive the top. A 9in. batten of  $\frac{3}{4}$ in. by  $2\frac{1}{2}$ in. material has a mortise or socket cut half way through its centre to take the top of the shorter leg as shewn at Fig. 4.

The lower edges of this piece are bevelled and holes are bored for screws to fix the table top. Incidentally these holes should be enlarged into long ovals to allow for swelling and shrinkage of the top. The batten is glued and screwed to the top of the shorter leg, making sure that it is level.

The table top is cut from  $\frac{3}{8}$ in. solid wood or  $\frac{1}{2}$ in. plywood. A piece 20ins. by 10ins. has a semicircle marked out at one end. A fretsaw is the ideal tool for the cutting out. The edges are finished off by rounding them slightly with a spokeshave and glasspaper.

## Top and Base

The table top is laid on the batten and the position of the notch on the longer leg for its reception is marked out. A piece  $\frac{3}{8}$ in. deep is cut away at this point. In addition, a notch is cut in the edge of the top. This will allow the back edge of the top to lie flush with the back of the leg. The top is glued and screwed through the leg but it is merely screwed to the batten.

Having proceeded so far, the base may be

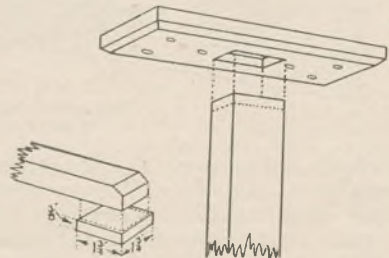


Fig. 3—Detail of feet

Fig. 4—How the top is supported

fixed, and three long screws from the underside will provide ample fixing. The ash tray and match holder now remains to be made.

As the size and shape of the metal or china ash tray will determine the size of the block of wood, the tray should be obtained first. A piece of  $\frac{1}{2}$  in. wood is used with an overlay of  $\frac{3}{8}$  in. material having an opening cut in it to form a recess for the tray. The upper piece stands in by  $\frac{1}{4}$  in. all

round as shewn in section at Fig. 5.

The matchbox holder is merely a block of wood,  $1\frac{3}{8}$  ins. by  $\frac{5}{8}$  in. by  $1\frac{1}{2}$  in. high, fixed near one end.

As a finish stain of an appropriate shade followed by "Hobbies Waxine" gives a very durable surface from which those inevitable marks caused by hard wear are removed easily. For a more brilliant result the reader will be wise to choose Hobbies "Lightning Polish."

## MAKING A HECTOGRAPH

THE hectograph copier is most useful where a large number of copies are not required. It is possible to get up to 50 legible reproductions of the original, so for circular letters, notice of meetings, etc. it is just the thing.

A shallow tin of some kind, about  $\frac{1}{2}$  in. deep will be necessary to hold the composition, a biscuit tin lid will be just about right for ordinary letters and notices.

If a convenient tin is not available, it is quite an easy matter to bend up the edges of a sheet of tinfoil or zinc to make one.

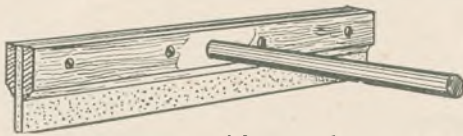
For the composition, get 1 oz. french glue, 10 ozs. glycerine, 4ozs. finely powdered whitening and 1oz. dextrine. Break up the glue over night and cover with water. In the morning the glue will have absorbed as much water as it can and the remainder should be drained off.

Place the jar of glue in a saucepan of water, add the glycerine and melt over a fire, then add the other ingredients and stir gently until well mixed and free from lumps. Pour this into the tin, then draw a sheet of card or stiff paper across the surface to remove air bubbles and leave for a few hours to set.

### The Original Copy

The original letter or notice should be written in special hectograph ink upon highly glazed notepaper, not the cheap kind.

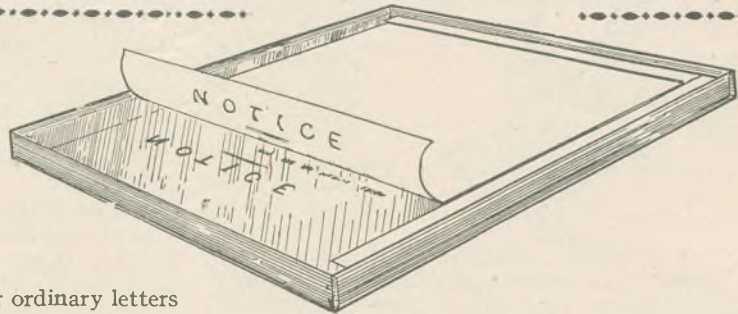
Damp the surface of the composition dry by pressing one or two sheets of paper on it, then



A home-made squeegee as described

place the original on the composition and press down with a squeegee. Lay a narrow strip of paper down one side and along the bottom to act as guides in laying subsequent sheets of paper.

After two or three minutes strip the original off and proceed immediately with the copying,



laying each sheet on the composition in turn and rubbing down with the squeegee, then stripping off.

### A Hand-made Squeegee

A roller squeegee, such as in used by photographers, can be bought for the purpose or one of the simple pattern illustrated can be easily made at home.

It consists of two strips of  $\frac{1}{4}$  in. by  $1\frac{1}{2}$  in. wood, nearly as long as the tin is wide, with a strip of rubber sandwiched between. A length of dowel rod will serve for a handle. In the absence of rubber strip, a doubled thickness of an old motor car inner tube could be used but this should be stiffened by a strip of thin wood inside. This pattern of squeegee is easier to make than the roller kind and quite efficient for such use.

After copying is finished, if the hectograph is to be used again at once, the old writing can be washed off with lukewarm water, otherwise it will gradually sink into the composition and disappear.

### The Ink

Purple hectograph ink is more generally used on account of its greater staining qualities. To make it put 1 part of methyl violet in 7 parts of water, add 2 parts of glycerine and warm up until the colour is dissolved. Keep this in a corked bottle and use only with a clean pen kept for the purpose.

Other coloured inks can be made by putting  $\frac{1}{4}$  oz. aniline black (soluble in water) into 2 ozs. methylated spirit and 2 ozs. water. Add 4 ozs. glycerine and warm until dissolved. For green ink substitute methyl green for the aniline black; for red use eosin.

## NOTES AND NEWS

# MODEL AIRCRAFT TOPICS

### A Flying-Boat Triumph

RECENTLY, reference was made to the magnificent flying-boat 'Ganda,' designed and built by Mr. H. E. White, B.Sc. This model, it will be recalled, is very large, and is driven by two rubber motors, each contained in a nacelle beneath the wing.

After a series of hand-launched flights, 'Ganda' rose successfully from the lake in Danson Park, Welling, and in so doing, won the C. H. Roberts flying-boat trophy of the North Kent Model Aircraft Society. So heavy a model could scarcely be expected to rise from water unassisted, when powered only by elastic, and the judges allowed a slight push. Despite bad weather, it rose in three yards, and alighted perfectly on the water after a flight of 25 seconds.

Mr. White has now constructed the 'Goose,' a smaller boat on similar lines, which has succeeded in rising from a canvas launching-tank.

### A Record-Breaking Seaplane

FLOAT-SEAPLANES have also been in the news recently. The S.M.A.E. awards annually the Lady Shelley Cup in a contest for this class of model, and this year there were 18 entrants.

In winning the contest, Mr. R. Smith, of the N. Kent M.A.S., raised the British seaplane record to 2mins. 28secs. His model, a high-wing monoplane with 134 sq. ins. of wing-area, weighed just over 2½ oz.

The same model, with the addition of a lower plane of 67 sq. in., and wheels in place of floats, has since set up two bi-plane records, 2mins. 41secs. rise-off-ground, and 2mins. 12secs. hand-launched.

### Petrol Model Champions

NOW that really small and reliable engines are available, the number of petrol-model enthusiasts is increasing rapidly. On August Bank Holiday, two contests for these models held by the Society of Model Aeronautical Engineers, attracted over 40 entrants to Fairey's Great West Aerodrome.

The planes and their engines have been considerably improved during the last year or two, and crashes were few indeed on this occasion. One machine struck the loud-speaker van a resounding blow, another normally a very docile type—dived to destruction through some obscure cause.

The Sir John Shelley Cup, restricted to British competitors, was won by the smallest model present, built in a few days, and brought to the drome untested, by Mr. C. R. Jeffries, of Shirley,

Birmingham. It had constant-chord wings of 4ft. 9ins. span, weighed 3lbs., and flew remarkably well, powered by one of the popular American 6cc. Baby Cyclones.

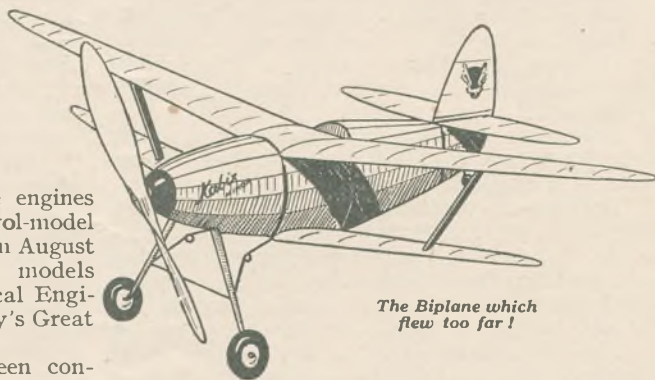
The design was a modification of Capt. C. E. Bowden's well-known 'Kanga Kub.' The flying would have been even more spectacular had the S.M.A.E. not wisely restricted the length of flight, in the interests of maximum safety for the spectators. In fact, reliability, stability, and controllability, instead of duration of flight, were the keynotes of the contest.

British, French, and American modellers competed for the Bowden Trophy. It was won for America by Mr. H. R. Fish, with a typically American parasol monoplane of about 7ft. wingspan, and mounting a 9cc. Brown Junior, a highly successful American two-stroke.

### Model Flying on King's Cup Day

AEROMODELLISTS had the distinction of being invited by the Royal Aero Club to give a display at Hatfield Aerodrome whilst the spectators awaited the arrival of the (full-size) aeroplanes competing for the King's Cup. The wind was so high that one or two full-size events had to be modified.

Nevertheless, eight models succeeded in giving a brief, but effective demonstration, circling above



The Biplane which  
flew too far!

the sheds and enclosures, and landing intact. One small tapered-wing biplane—a type generally regarded as inferior to the monoplane model in performance—was lost through flying right out of the aerodrome.

There was even a short flight by a petrol-model, its owner setting the time-switch for 20 seconds, and securing a perfect landing after that period.

The Airman



## DO'S AND DON'TS FOR DOG OWNERS

**H**ERE are a few brief do's and don'ts which dog lovers will find useful reminders.

Don't allow your dog to run after and bark at cyclists. This is a very dangerous habit. Don't allow your dog to chase cats. One day he will catch and kill a valuable animal belonging to some county magnate, and you will find yourself severely censured. Do aim at regularity regarding meal-times, so far as all your dogs are concerned. This is of vast importance if they are to be kept fit. Don't let your dog sleep in your bedroom. This is neither healthy for him nor for you.

Do be careful that your dog in his or her efforts to be friendly does not jump up and knock down invalid friends. The animal can easily break their arm or leg, quite apart from giving them a quite unnecessary fright.

Don't take your dog away with you on holiday. Let him have a holiday on his own account away from you. He will enjoy and benefit by the change. Don't let your dog drink dirty water. He will sometimes do so when very thirsty, but it invariably makes him ill. Don't allow your friends to give any dog of yours lump sugar. Dogs like this, as we all of us know, but it often brings on diarrhoea.

Do be more particular that dogs have plenty of bones regularly. These are absolutely necessary if their teeth are to be kept right. Don't feed dogs when well on soft sloppy food, as it generally proves too constipating for them.

Do not allow any of your animal loving acquaintances to offer your dogs bars of plain or milk chocolate. They will eat it with avidity but it almost always makes them sick shortly afterwards.

Don't dose your dog with all manner of widely advertised and so-called dog medicines. Leave this to a qualified vet.

Do be more particular that your dog gets an ample amount of exercise regularly each day. That is, take him out yourself, or get someone else to do so three times a day; in the morning, in the afternoon, and again in the evening, instead of allowing him to roam lazily about your garden all day, as so many people do, and become a great nuisance to every stranger or messenger who may call.

Don't take your dog with you when motoring. He or she often suffers severely from motoring sickness, and is upset for days afterwards.

Don't turn on your wireless till your dog is outside the house, and likely to remain so. Wireless distresses dogs just as much as, or more than it distresses, a certain type of neurasthenic human being.

Don't take your dog or your wife's dog with you, when you and she have business visits, to hotels. The dog will invariably be found in the way, and although he or she may be tolerated by customers, is usually responsible for the business done being much less than it should be, and the orders placed, smaller than they might be.

Do be careful in regard to any large dogs you own so far as children are concerned. Many a bite (and a most serious fright for the child), has resulted from the dog getting quite accidentally hurt during a romp with a strange child. If this happens more than once, there is generally very serious trouble.

Don't send small dogs by parcel post, even in specially labelled boxes "Live Dog by Post." They are almost always seriously upset by doing so.

Don't allow your dog to swim in dirty water, as even if you wash him well immediately afterwards, you by no means always get rid of the dirt and germs completely.

Don't allow any dog you own to roam about and nose amongst rubbish heaps. There are millions of germs in these, and some are certain to attack him. Quite apart from this, thousands of very undesirable germs can quickly be carried by such dogs into your house.

Don't allow your dog to snarl and growl at every other dog that passes when you are walking with him or her on a leash. This is ill-mannered behaviour, and implies that you yourself are also ill-mannered.

Don't allow your dog to bury bones and other food in the ground. This is almost always done, we must remember, in neighbours' gardens, and not in our own. They naturally resent it, and have a right to do so.

Don't allow your dog to hang around butchers' shops each day if you live in a town or in the suburb of one. It is not good for him, and in any case the butchers themselves do not like it.

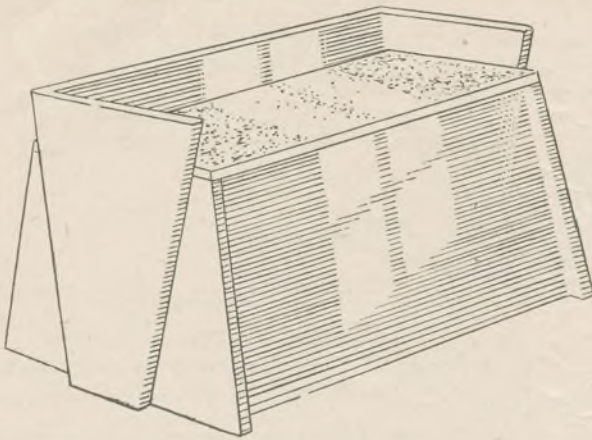
Don't take your dog with you to see Flower Shows in the summer time. He is almost always unwelcome at these functions.

Don't forget that your dog can quite easily catch cold if you are careless when giving him a bath. This should never be very hot, but he should be kept very warm for several hours afterwards.

Don't permit your dog to gnaw at wood logs or other similar objects. Give him a bone (free from meat and marrow), when he wants to do so.

Don't forget that the appearance of your dog's white coat can be greatly improved if you put some "blue" in the water each time you bath him.

# A MODERN BATHROOM SEAT AND CUPBOARD



**A** BATHROOM seat is always useful, and becomes a real necessity where tidiness and comfort are important. There is nothing at all difficult in the making of the little cupboard seat about to be described.

It may be constructed from almost any kind of wood, as the finished article should be enamelled before being put into use. The chief features are its unusual modern design, and roomy cupboard under the cork-fitted seat.

The seat is constructed throughout from  $\frac{3}{4}$  in. thick wood. There is no fancy cutting, although care should be taken to ensure close fitting joints. Good strong screws should be employed, and a conscientious use of plane and glasspaper will make the enamelling an enjoyable task with the corresponding addition to good appearance.

## Construction

Fig. 5 shows clearly all the main constructional details. Cut and fix the base and sides, the joints here are square to the surfaces. Next we come to the front and back pieces.

A certain amount of experimenting may be necessary to obtain the exact chamfer required, although you will be able to fit these pieces without any trouble if you follow the detailed drawings carefully.

Notice that the front piece is set back  $\frac{1}{2}$  in. This is to allow room for the seat to be pulled up with the fingers from underneath.

The seat itself is composed of two pieces marked ("a" and "b"). The part "a" is

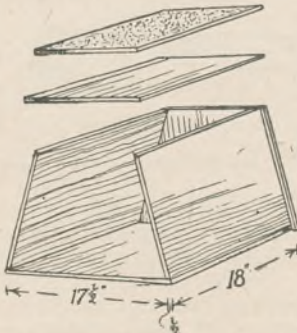


Fig. 5—Constructional details

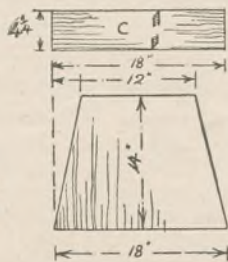


Fig. 6—The side pieces and C

placing.

## The Back

The last pieces to be fitted is the back "C" the top and bottom edges of which are chamfered to the same angle as the front and end pieces.

It is, of course, assumed that the cork matting

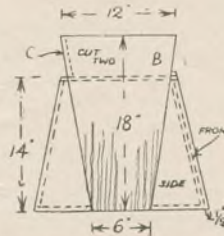


Fig. 1—An end view

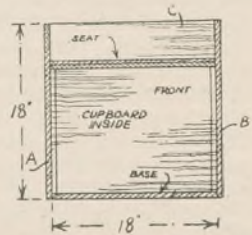


Fig. 2—A front elevation

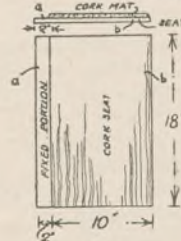


Fig. 3—Details of seat

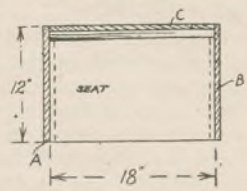


Fig. 4—A plan of seat and sides

has already been fitted in place. The seat is now completed and ready for the enamel. White or green may be used according to taste, and if a really good job is desired its application will be generous and painstaking.

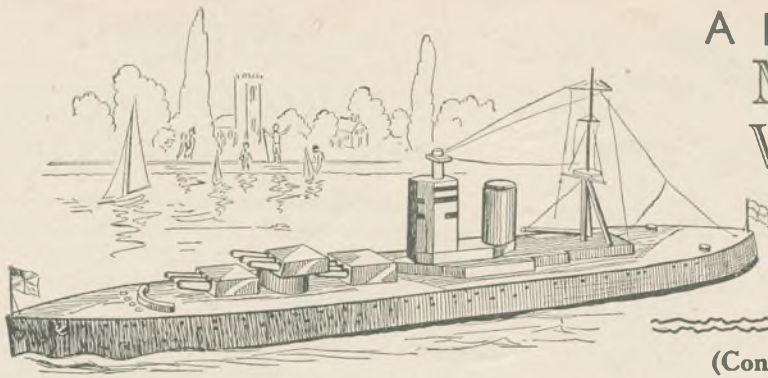
In spite of its simplicity an article of this nature repays the thorough worker by being a perpetual exhibit of good workmanship in the matter of joints and neatness generally.

**COMING SOON!**

**Details for making  
A HOME CINEMA!**

Fig. 7—The chamfer

# A Battery-driven MODEL WARSHIP



(Continued from Oct. 2nd.)

**I**N our last part of this article we gave instructions and details for making the hull and top fittings for the splendid model battleship shown here.

We would suggest that all our model makers who have not yet commenced upon this model do so at once, their skill and patience will certainly be well repaid. The model is 24 ins. long and the work therefore entailed in building up the hull is not difficult as all the pieces are of good size and most convenient to handle.

We concluded with advice on painting the hull and deck, and mentioned that the latter should not be permanently fixed to the hull. The interior works and motor may be thus easily got at for replacements or repairs.

This week we are going to talk about the interesting task of installing the motor and propeller for driving the ship, and also on the making and fixing of the nine big guns on the foredeck of the model.

## Setting the "Works"

The deck being removed, we have all the space available for the necessary marking out and placing of the motor and batteries and for the insertion of the propeller tube.

Now, it is the propeller which we shall handle first, and a little careful attention to detail will be necessary in the boring for the copper tube through which the propeller shaft passes.

A certain place being arranged for the motor, it is very necessary to have the tube of the propeller in alignment with it and at the correct angle so that the minimum of bend occurs in the flexible spring which attaches it to the spindle of the motor.

Looking at Fig. 1, we see a plan of the ship showing the correct arrangement of motor and batteries and giving the measurements which need to be set out on the "floor" of the boat. Below the plan is a section through the boat and it will be from this section that the angle for boring will be gauged.

The best method, of forming a guide to be used during the boring of the hole is to set out on a strip of paper the lines shown as A, A and B, B in Fig. 2.

From the horizontal A, A set up the line B, B

to the angle of the tube shown in the section. Extend this latter line well above the lower one as shown.

Now lay the hull of the boat on its side so that the bottom edge touches and remains on the line A, A. Allow the hull to be so placed that the line B, B shows about halfway up the stern as shown in Fig. 2.

All that is necessary now is to insert the point of the gimlet (a  $\frac{3}{16}$  in. one was used) exactly on the centre and  $\frac{3}{4}$  in. up from the flat bottom and commence boring, keeping a strict eye on the guide line B, B during this process and also from time to time noting that the gimlet is held parallel with the flat edge of the boat.

## Fixing the Tube

It will be found that the copper tube passes freely through the hole, and it may be held fast by first running in some glue mixed with fine sawdust, then inside the boat the tube may be bushed round with plastic wood and painted over. This should prevent any water from entering the boat.

Our next concern will be the fixing of the "Trix" motor. This is a most efficient little power unit, and the perforated base upon which it is held makes an admirable means of fixing when put into the hull.

All that is required is a block of wood  $\frac{1}{4}$  ins. by  $\frac{1}{2}$  in. thick, and over this the base of

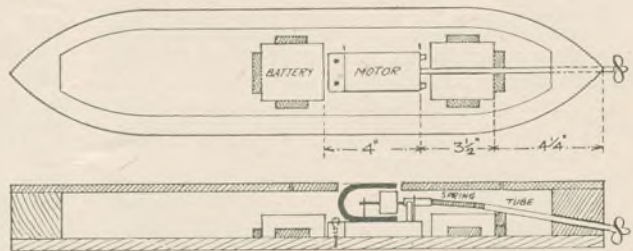


Fig. 1—A plan and section of how the parts are placed

the motor will fit and be held by two round-headed screws.

The block again should project beyond the base of the motor and this allows of two screws being put in to hold the whole securely to the bottom plank of the boat.

The positions of the two batteries are shown in the diagrams and they are held in place by

small square blocks of wood glued to the boat as in the shaded portions on plan and section.

That block towards the stern of the boat and coming directly under the copper tube should act as support to the latter, being just wedged gently in and glued. This is seen in the section Fig. 1.

The batteries should be easily removable so that new connections may be made when required.

To connect the motor with the flexible spring

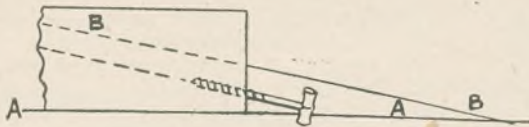


Fig. 2—How the hole is bored for the propeller

of the propeller it will be necessary to get a short length of stout wire—gauge No. 9, and shoulder down one end slightly to fit into the hole where the pulley wheel is fixed.

See that the wire stands out straight in line with the shaft of the motor before dropping on a little solder to secure it. The wire should project about 1 in., just sufficient for holding the flexible spring which should be brought over it and soldered.

This method makes a very secure attachment. It only remains now to connect up the batteries to the motor, and the proper way to do this is shown in the wiring diagram Fig. 3.

Fine brass or copper wire is used and allowance must be made in the various lengths for making a switch which would best be provided for at the stern end of the boat.

Note the wires carefully in the diagram and if uncovered wire is being used take care that the strands do not touch, especially so where they are being brought up to the switch.

A simple switch can be made by having two  $\frac{1}{2}$  in. roundheaded screws for "on" and "off,"

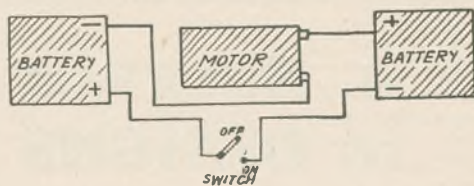


Fig. 3—The wiring diagram

and another at the junction of the lever which may consist of a short length of brass strip turned up at one end to form a handle to facilitate pushing forwards or backwards.

A little lubricating oil should periodically be dropped on the end of the propeller shaft just at the top extremity of the tube, this will ensure the smooth running of the shaft in the tube. Full instructions for running the motor are issued with the unit.

### The Guns

As previously mentioned there are nine guns on the foredeck of the ship, these are housed in three gun turrets which are made from satin walnut

wood and painted to match the rest of the work.

By referring to the side view of the ship Fig. 3 in our previous issue, it will be seen how the guns are mounted on the deck, the two marked K are pivoted directly to the deck while L, the middle one, is raised on a shaped block. Fig. 4 in the same issue gives the measurements for spacing the turrets.

### Solid Turret Blocks

Each of the three turrets is made from solid blocks  $1\frac{3}{8}$  ins. long by  $1\frac{1}{2}$  ins. wide by  $\frac{3}{4}$  in. thick, that edge which comes to the front where the guns are inserted being cut to a slight bevel.

It would facilitate the cutting and the boring of the holes for the guns if one long piece of wood were first marked out as shown in the sketch in Fig. 4.

In setting out the holes first mark off  $\frac{3}{16}$  in. then a circle  $\frac{3}{8}$  in. diameter (for the gun) and then another space of  $\frac{3}{16}$  in. and so forth until the division is arrived at for cutting off. Then

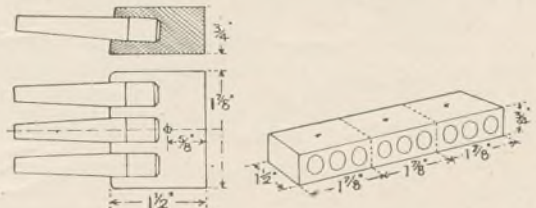


Fig. 4—A section and elevation of the gun turrets

How the turrets are marked and cut out

start off again  $\frac{3}{16}$  in. and so to the end of the block of wood.

As shown by the shaded sectional diagram in Fig. 4, the guns are run in at a slight angle so that when the twist drill is brought into use for boring, this angle must be carefully judged and maintained throughout.

### Fixing the Guns

The guns should be gently knocked into place with their muzzles all kept even and in alignment. The holes for the pivot pins are shown and must be bored straight down, and when the turrets are being put on, place between them and the deck a thin circle of card to allow freedom of movement for the turrets to swing round.

The block L, upon which the middle gun rests should be  $1\frac{3}{8}$  ins. long by  $\frac{3}{4}$  in. wide by  $\frac{3}{4}$  in. thick. The guns themselves should be painted grey as also should any other small deck fittings such as bollards, chain blocks bow, breakwater, etc.

Quite a number of "extras," no doubt, will be attempted by the builder of this first-rate little model. When all the deck is complete, the ship should be launched in a tank or bath of still water so that the water-line can be marked previous to painting.

The entire hull from about  $\frac{1}{4}$  in. above the actual water-line downwards should be painted two coats of black enamel. If it is found that one end of the ship sinks lower in the water than the other, then a little strip of lead tacked on will soon bring an "even keel."

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## METER STAMPS

**H**AS it ever occurred to the readers of *Hobbies Weekly* that there is a danger of the number of adhesive stamps becoming very appreciably less? Up to the present we have been in the habit of speaking of hundreds of millions of a certain value having been issued for use. But these times are fast passing.

Look at the next circular or sale catalogue which comes to you or to anyone else in your household. Most probably you will find that the old familiar adhesive stamp has been replaced by a printed device called a "Meter Postage Stamp." While naturally, as stamp collectors, we cannot help being sorry that this should be the case, we must certainly recognise two things in connection with this new method of franking postal material.

Both of them are in favour of it. Using the old adhesive stamps meant that somebody had to stick them on to the envelope, and generally that means licking them. At least that is what happens in a great number of cases. Certainly most offices provide a damper, but most office boys are too lazy (sorry—busy!) to fill them, and prefer to lick the stamps. With one or two this does not matter very much, but when the mail runs into hundreds a day then it must be a dry and decidedly unhygienic proceeding.

One would quite understand why the office boy at any rate prefers the small size stamp, and one would sympathize with a boy who on being sent to buy stamps at the post office realises that he will have the task of sticking them on envelopes and consequently asks for the small stamps in preference to the 'posters.'

The second point is that there is a definite loss of time because an adhesive stamp has to be cancelled with a postmark or other device. The Meter Postage Stamp machine does all at one operation.

The illustration is not a particularly clear specimen but then it is not a very difficult matter for you to find a clearer one and look at that.

The illustration shows clearly

what is meant by a printing from a Meter Postage Stamp machine, and all readers should be able to find a similar specimen. In some cases you will see that at the left of the date stamp cancellation is an advertisement or slogan, since users of these machines are allowed to print their advertisements or slogans alongside.

Then again you see the advertisement, in which the user of this system of Meter Postage is allowed to print his own advertisement or if he prefers a slogan (naturally there is a check on what is put).

Notice also there is a number on each stamp. That on the illustration is found at the bottom and



is PB 11, which is to enable the Postmaster General to identify just where the particular impression originates. So you must admit that the scheme is a good one, albeit that they make stamps for the future few and far between!

Do not collect two specimens which only differ in that the number at the bottom varies. Different styles of design and different values will of course be collected, but that should be sufficient; except that goes without saying that any such impressions from foreign countries will find a place besides those of Gt. Britain.

It does not seem likely that adhesive stamps will ever go out of use altogether—at least not for a very long time to come. So do not imagine that your hobby is going to die a natural death—not for a few years in any case.

We have thought of the advantages of these Stamp Meters; let us now for a few lines think of the advantages which the adhesives have over the printed type.

First the cost of making a machine to print these stamps is so great that it would not pay to

have them in the average household. One machine is necessary for each value so that there would have to be at least two machines in use unless one had a machine for halfpenny stamps only, and just put a letter in three times. Now suppose you go for a camping holiday, or even a 'hike.' Fancy having to add a meter machine to your equipment before you could write home!

Remember, of course, that they are in use in other countries too, and there is no reason at all why you should not set about making a collection of these. Possibly you will not want to take it quite so seriously as you do your adhesive stamp collection. Yet playing such an important role as it does now, it would be a very good thing to start early and make a collection rather than wait for others to start.

### Two New Catalogues

**T**HE two catalogues issued annually by Messrs. Stanley Gibbons Ltd. are now to hand. Their larger volume, "Stanley Gibbons Priced Catalogue of the Postage Stamps of the World" is 16/-. It is, however, a volume which no advanced collector can afford to do without.

Some idea of the care which has been taken over this volume can be gained by the fact that no less than 25,181 stamps have changed in price, all these are noted in it.

Compared with the 1868 pages of this book we have the 1,085 pages of the Simplified Catalogue selling at 5/- and for the average collector who does not want to worry about watermarks, perforations or shades of colour, the latter volume is ideal.

All illustrations nearly are full size, and there are over 7,000 in the cheaper book so that these volumes are a very great help in the task of identifying specimens.

Just as a book on gardening is a good present for a person starting gardening, so is a catalogue good for one starting philately; those who have already started realise that a catalogue is a necessity.



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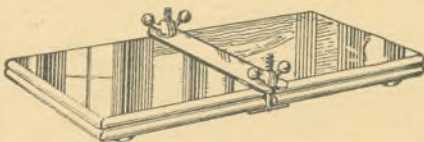
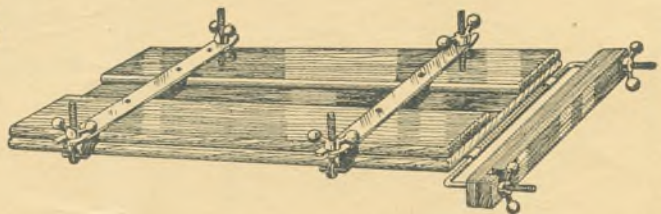
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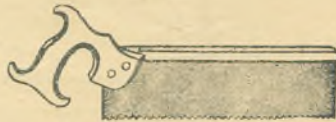
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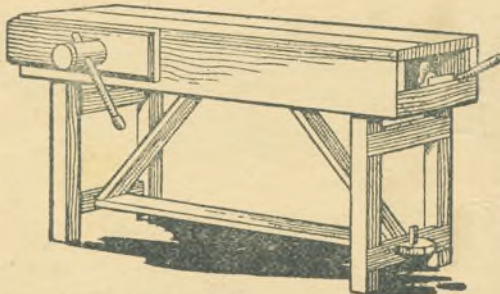
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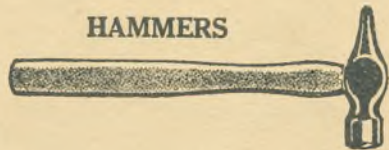
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