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NEW VOLUME

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**GRAND FREE
DESIGN!**

**Make a 24in.
scale model of a
graceful working
liner**

'EMPRESS OF BRITAIN'

THE new 'Empress of Britain', which was launched in 1955 for the Gt. Britain to Canada run, is the third vessel of that name to enter the service of the Canadian Pacific Steamship Co.

Built on the Clyde, she has a gross tonnage of 26,000 and as the photographs indicate, she is an extremely graceful vessel, her streamlining giving an indication of speed through the water.

We are grateful to the steamship company for their assistance in enabling us to bring out this authentic model, particularly by loaning plans of the

vessel and supplying photographs, which will enable keen modellers to add other details not covered in these instructions.

The 'Empress of Britain' makes a grand subject for a working model — one which owners will be proud to take down to the water, where her gleaming whiteness will make it a centre of attraction — a real Empress.

With a length of 24ins. and a beam of 3½ins., our semi-scale model has been slightly increased in width and depth to house the batteries and motor comfortably, and there are also modifications in the rudder and stern make-up to accommodate the propeller. Provision

is made for only one propeller, but there are two on the Canadian Pacific liner. Otherwise all details on our model are to scale.

The prototype floated perfectly, and with the batteries and motor in position it was found that 27 ozs. of lead ballast were needed to obtain the proper trim. This gave a perfect setting in the water. It will thus be seen that if enthusiasts wish to incorporate radio control, the extra weight can easily be accommodated with an adjustment of ballast, so as not to affect the trim.

The principle adopted in building the model is partly bread-and-butter with

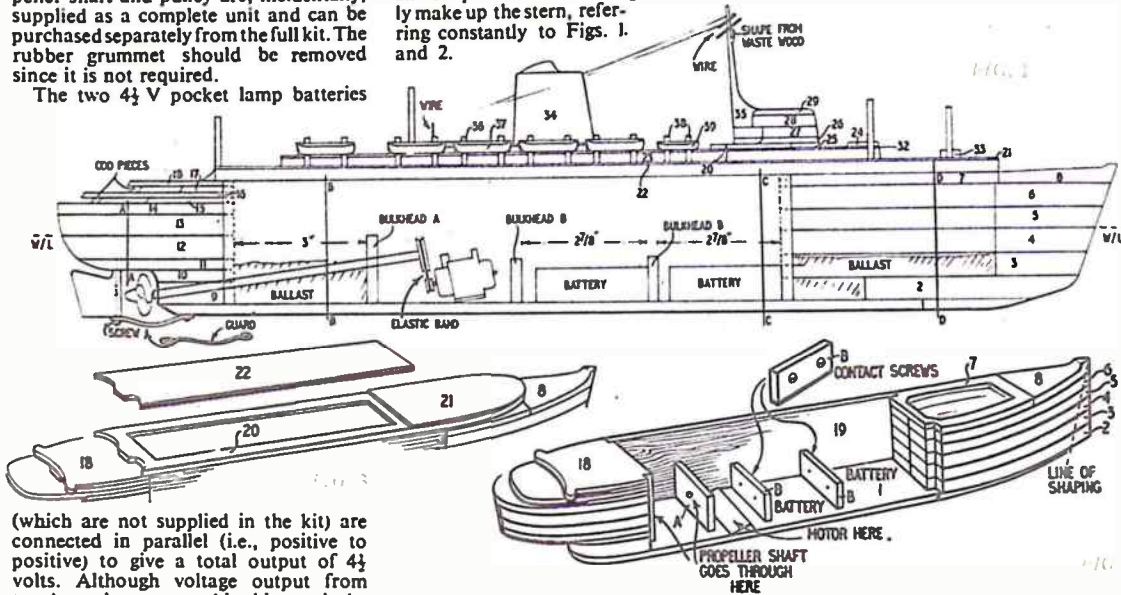
**FOR MODELLERS, FRETWORKERS
AND HOME CRAFTSMEN**

4½

slab sides. The stern and bow, which are made bread-and-butter fashion, are connected by a keel or base piece (1) and also by the two sides (19). Owing to the restriction of space on the design sheet, it will be seen that most pieces are shown 'half only' but as they are symmetrical shapes it will be easy to trace and repeat for the other half to complete the full shape.

The well-tried and thoroughly competent Mighty Midget motor is used for power, and this gives excellent results. The drive is taken up by means of a rubber band and pulleys direct to the propeller shaft. The stern tube, propeller shaft and pulley are, incidentally, supplied as a complete unit and can be purchased separately from the full kit. The rubber grummet should be removed since it is not required.

The two 4½ V pocket lamp batteries



(which are not supplied in the kit) are connected in parallel (i.e., positive to positive) to give a total output of 4½ volts. Although voltage output from two batteries connected in this way is the same as from one, it will be found in practice that there is a much more proportionate longer life and it also improves the general running.

The first step in making the model is to trace all the pieces and transfer their shapes to the appropriate thicknesses of wood by means of carbon paper. Then cut them out with the fretsaw. This



Another view to help with the details

done, study Fig. 1 thoroughly to get an intimate working knowledge of the layout and positioning of all parts.

Assembly can now be commenced, and the use of waterproof glue is advocated in all stages. The hull is the first section to be assembled, as shown in Fig. 2. Note that there are two each of such pieces as 2, 3, 4, 5, 6, 12 and 13, which are glued together in pairs for each step, one right-hand and one left.

Begin, therefore, by gluing the two pieces 2 to piece 1, then adding the two pieces 3 to pieces 2, and so on. Note that piece 8 is cut from pin wood and shaped as shown in Fig. 1. Similarly make up the stern, referring constantly to Figs. 1 and 2.

Now add the sides (19), fitting them into the grooves and levelling them off in line with pieces 7 and 18. The two bulkheads (B) which measure 3ins. by 1in. by ½in., are now ready to be glued in position, but before doing so, fix in them the contact screws for the batteries. The bulkheads (B) are glued to piece 1 and the sides (19) as seen in Fig. 2.

When all this gluing has thoroughly hardened, shape the hull to the sections given on the design sheet. A Surform file or plane will do this job admirably, or the worker can use a modelling knife and rasp, finishing off with glasspaper.

At this stage it is advisable to drill a hole through the stern to take the stern tube and

MAKE IT WITH A KIT

Kit No. 3206 contains all materials for making the 'Empress of Britain', including electric motor and propeller. Price 5/5 from branches or Hobbies Ltd., Dereham, Norfolk (post free).

(Next week we shall conclude with details for adding the superstructure, motor, etc. and finishing the model.)

A Word in your Ear

From the Editor

GIVING pleasure to others — especially children — seems to be a particular characteristic among readers of *Hobbies Weekly*, and it also gives me much pleasure this week to print the accompanying picture of hospital staff admiring a truly magnificent fort.

knights, squires and yeomen in shining armour, whilst gay flags and pennants fly from every tower and turret. In the dungeon beneath the hall languish unfortunate prisoners and in the great hall hang coats of arms in full colour just as they did in the days when knights were bold. Nothing has been forgotten.



The matron and nursing staff admiring Mr. Williams' fort which is mounted on wheeled legs so that it can be moved about wheelbarrow fashion

This is now in the children's ward of the West Bromwich General Hospital, the generous donor being Mr. Leslie J. Williams. Working from *Hobbies Design No. 248 Spl.* Mr. Williams has really 'gone to town' on his elaborations, and I quote from a report on an exhibition where the fort was on show.

'Outstanding among the exhibits is a truly magnificent model of a mediaeval castle complete with outer defences, curtain wall with ramparts and central hall. It is equipped with workable portcullis and drawbridge and manned by

What a marvellous plaything for kiddies so unfortunate as to require hospital treatment. And what a wonderful kick Mr. Williams must get from the knowledge of bringing so much happiness. He can, indeed, be likened to one of those gallant knights in armour!

JANUARY WINNERS

READERS seem to have taken quite well to our monthly competitions, which allow plenty of scope for the ingenuity of the individual. Most of the

OUR 'NEW LOOK'

WE hope readers will like the 'new look' of this issue of *'Hobbies Weekly'*. The magazine is now printed by the offset litho process, which enables us to use a second colour throughout and thus give an added attractiveness to special features.

The page length has been cut by ½in., but by using smaller type for headings and effecting other economies in the size of illustrations, etc., readers can be assured that the quantity of material in each issue will not be affected.

This is the start of a new volume, and readers who use Easibinders and thus retain their magazine as a permanent easily consulted library of immense value, will note that a slightly smaller binder is necessary from now on. When ordering for this and subsequent volumes, please specify Type B.

There are many readers, however, who have back numbers of *'Hobbies Weekly'* for which they require Easibinders and the former size is still available (Type A). One Easibinder holds two volumes (52 copies) and costs only 8/6 post free from Hobbies Ltd., Dept. 99, Dereham, Norfolk. Each magazine is inserted by means of a flexible steel wire and can easily be removed if necessary.

entries for the January contest indicated that a lot of thought had gone into the planning of a military badge, and some of the fretcutting was finely executed.

The winner of the 'Senior' watch was Mr. W. G. Galer of 58 Rosemary Avenue, Finchley, London, N.3. In the shape of a circle, the design included rockets and the words 'Loyal Stratosphere', which was as fine a piece of letter cutting as we have seen for quite a long time. Mr. Clifford Keay, of Stoke-on-Trent, Staffs, submitted a very practical suggestion based on the 'Royal Atomic Rescue Service', and he and five others received consolation awards.

Suggestions of space travel were much to the fore in the entries from the juniors. Owen Taylor of Bridge Foot, Stickney, Nr. Boston, was the winner of the watch for his entry based on the 'Royal Army Atomic Corps'. Of the runners up I liked particularly the design of Barry Limbert of Garforth, Nr. Leeds, who is only 10.

EXPANDING THE ONE-VALVER

MANY readers have written in expressing praise for the Ultra Short-wave Receiver whose construction was described in the July 11th, 1956 issue of *Hobbies Weekly*. Although this set was very simple and cheap, consisting of only one valve, its performance was extremely good. The fact that Television sound transmissions could be received on it proved to be a special attraction.

a domestic set, if necessary, for loud-speaker listening. Details are given later in the article.

Turning first to the battery amplification. The amplifying section is placed adjacent to the receiver already built. A chassis similar to that of the receiver will do. This can be of 24 to 20 gauge aluminium, bent over at back and front. The depth will depend on whether the intervalve transformer is placed above or below the deck. A small midget type can easily be accommodated below, if the depth is 1½ ins. or so. Larger types must go above and so the depth of the chassis need not be more than ¾ in.

The front panel of the original set may be discarded and replaced by one twice as long, to which both chassis are attached. It must be noted that the position of the variable resistor is different on this new front panel. Moreover, like the intervalve transformer, it can be placed above or below chassis as desired.

Fig. 1 shows the theoretical diagram for the extra one valve amplifier for phones, and Fig. 2 shows the practical wiring arrangement — this view is of underneath the chassis. The original set is shown in broken line, as all the components were above chassis and cannot be seen from underneath.

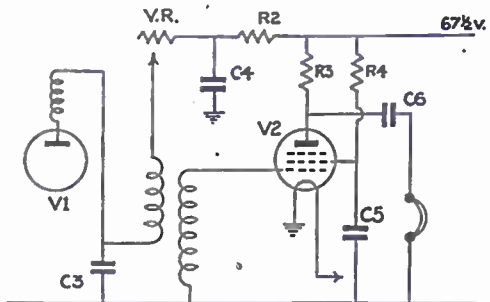


Fig. 1

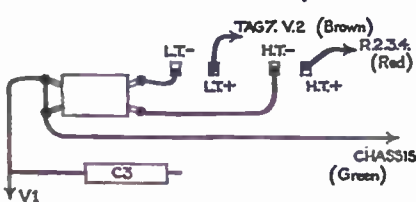


Fig. 3

There have been requests for the one-valver to be expanded up to two or three stages as far as loudspeaker output. A mains version has also been the subject of enquiry.

To meet these requests the present article has been written.

As far as the battery version is concerned, the reader is shown how to add an extra valve for increased phones output. After this, when funds permit, another valve can be added to give loudspeaker results. The additions are easy and relatively inexpensive.

The mains version will give greater scope, as it uses a specially designed ultra short-wave valve. This version can be used with phones, but will be particularly useful to those with an amplifier, or a domestic receiver fitted with a pick-up socket.

Incidentally, the original battery set can be attached to the pick-up socket of

COMPONENTS LIST

Intervalve Transformer 3:1 or 5:1
R2 (20K), R3 (1M), R4 (1M), R5 (2M),
R6 (900)
C4 (4 mfd.), C5 (-1), C6 (-1), C7 (-01)
Valves 1T4, 1S4
Output Transformer to match 1S4
3½ in. Elac Loudspeaker

When the amplifier chassis is cut out and bent to shape, valve-holder and bolt holes should be made. If the intervalve transformer is to be above chassis, then holes should be drilled to allow the leads to pass through to the underneath of the chassis. These should have rubber grommets inserted.

By A. Fraser

Although in this first version only one extra valve is used, it is just as well to drill the other valve-holder and bolt holes at the same time, so that they are ready, when required, for the loudspeaker version.

For those stopping at the phones amplification, it will be seen that the output goes to the phones socket set in the front runner of the new chassis.

The wiring is straightforward as will be seen from the drawing. Wiring should be carried out, using the practical and theoretical diagrams to check each other.

Certain additions are necessary to the switch and sockets in the original set and these are seen in Fig. 3. They consist of extra leads from H.T.+ and L.T.+

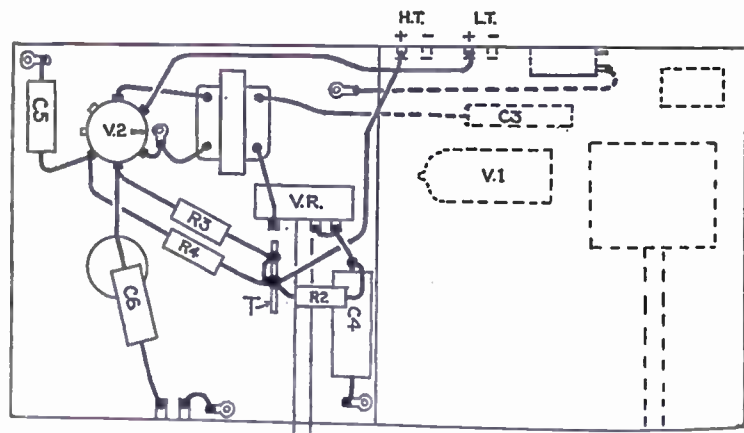


Fig. 2

sockets and to the joined tags at the far end of the switch. To avoid mistakes, use coloured wires as shown. The green lead is joined to any part of the second chassis.

If the 1S4 addition is not envisaged, then R2 and C4 can be omitted, and the variable resistor connected directly to the H.T.+ tag board (T).

The smaller primary winding of the intervalve transformer is connected to the variable resistor and the choke/C3 joint, while the secondary is joined between valve grid and chassis.

For the speaker version, C6 (-1) is replaced by C7 (-01) preferably, and this is led to grid (tag 3) of 1S4. The extra wiring is easily seen for this stage, starting with the L.T.+ lead from V2 to V3 (tags 7). The H.T.+ supply for V3 is taken from the H.T.+ tag-board (T) and led straight to tag 4 (V3) and from there to the output transformer. The secondary leads of this latter are led

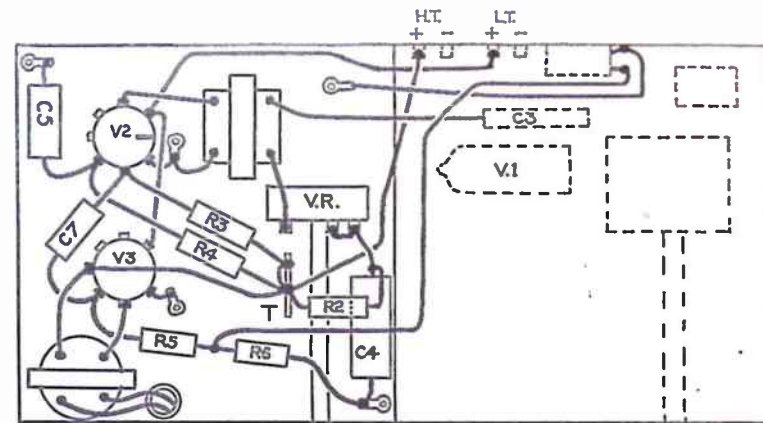


Fig. 4

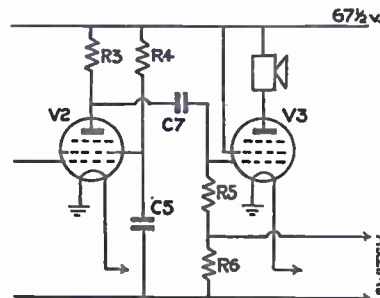


Fig. 5

through the chassis to the speaker. The speaker should be 3½ in. Elac type. This stage is clearly seen in Figs. 4 and 5.

Further alterations are necessary for the switch in the loudspeaker version. These are shown in Fig. 6. It will be seen that the connection across the far

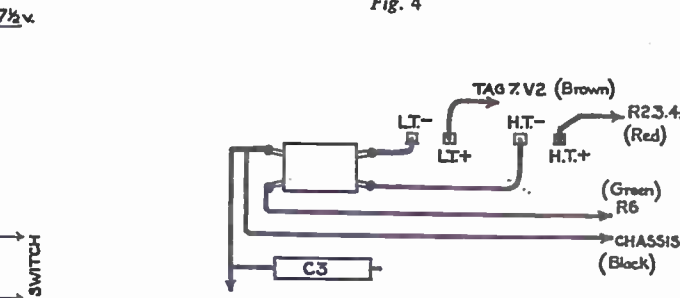


Fig. 6

end tags of the switch is removed. A black lead is attached to one tag and led to the chassis of the new amplifier. The green lead from the other tag on the switch is disconnected from the amplifier chassis and taken to the bias resistor R6. It will have to be lengthened,

so to insulate the joint. The coloured leads will prevent mistakes.

In this speaker version it is advisable to include R2 and C4 as a decoupling precaution. (Next week A. Fraser will deal with the mains version.)

Continued from page 9

are pieces of coke painted green. Extras such as small white stones (which can be made from plaster), sawdust or sand will prove useful as an added touch of authenticity.

Begin laying out the model by placing the tomb and stone in position on the base-board (Fig. 2). Now take some earth and line it around the outside of the tomb. Press pieces of grass and moss and small stones into the earth at intervals. At the right-hand side of the model lay the earth to roughly lin. in depth. Take a few of the leafy twigs and strip off the bottom leaves so as to leave a stem or trunk about 2 ins. long. It will be realised that the more leafy the twigs,

the greater will be their resemblance to real trees. Arrange the twigs of fir leaves so that they overhang the tomb. Moss and grass placed around the base of the stems will add to the general appearance. A path of sand or sawdust leads from the front of the tomb, up the hillside, to the crosses. This should now be sprinkled on the base until it reaches a line level with the rear of the tomb.

There are two methods of building the hill. The complete hillside may be modelled in soil, the valleys and slopes culminating in the crosses. Alternatively balls of paper can be laid on the base-board and covered with successive layers of paper and soil. (See Fig. 4).

ought to be at least ¼ in. of earth on top of the hill to support the crosses, which are cut from cardboard.

Once the hill has been built up, the grasses, twigs, mosses, etc., should be added. A background, although not essential, helps to give further depth to the model, and is simply a sheet of cardboard painted to resemble distant hills. If you are contemplating using this background, then you should execute it with poster colours, as they possess more 'body' and covering properties than water-colours.

Next week we shall give details for making an attractive cupboard to fit into the corner of a room. Also a 2-page marquetry design and fretwork pattern.

MAKE A PAIR OF STEPS

Says R.H.W.

ONE of the most useful items in a household is a pair of steps, and this is where the handyman can show his worth. They are not at all difficult to make at home and the result is, naturally, cheaper and very often stronger and more durable than some sold in shops.

Any ordinary wood will do, and it need not necessarily be new, so long as it is sound. Wood with warps or twists in it should be avoided. Likewise, any with splits or cracks. Remember that defective wood which fails to stand up to the strains imposed on it, can cause serious accidents. So see that each piece is really sound.

In making the steps, one will first need the two side boards (B). These should be 5ins. by ½in. or ¾in. thick. Their length, to start with, should be at least 48ins. for the design shown here. This has four steps, including the top, but the reader can make a higher pair of steps to suit his own purposes. In this case, the side boards will need to be appropriately longer to accommodate the extra steps.

Having got the boards, each should be treated as follows. With a square, square off the end of the board, leaving about ½in. to waste. Make a clean thin pencil line. Then from this line, down one side, measure 2½ins. Join this point (Q) to point (R) on the other edge of the board (Fig. 1). This is to get the angle of the steps.

From (Q) measure 10½ins. along the board edge, and mark. Do the same from point (R). Join points (S) and (T). Parallel to the line (ST) draw another line underneath (UV) ½in. or ¾in. away. This represents the position of the step below the top step, and will be ½in. or ¾in. according to the thickness of the wood you choose for the step. The thicker, of course, is stronger, but adds to the weight of the steps.



While still cramped, it is advantageous to saw off the two ends, thus cutting both boards at one go and with perfect matching.

Remove the cramps and treat each board as follows. Below the positions marked for each step, fix a batten for the step to sit on. This batten should be ½in. by ½in. stripwood, and its upper edge should lie exactly along the line (e.g. UV) representing the bottom of the step.

The batten, however, for the top step, comes flush with the top edge of the side board. The battens are shown in Fig. 1. They should be both glued and screwed into position. Countersunk screws are best.

Cutting the steps

The steps can now be sawn out. The wood, as mentioned before, can be ½in. or ¾in. thick and should be 6ins. wide by 14ins. Use a square to mark them off and see that all are identical in shape and match each other exactly. The top step, note, is 17ins. by 7ins.

Before fixing in the steps, saw out the crosspiece (D) (Fig. 2), which fits across the side boards at the top and back. This should be of ½in. or ¾in. thick board, 4ins. deep and 17ins. wide. The top edge is chamfered off, preferably, to sit snugly under the top step, when fixed. (See Fig. 3).

The steps may now be fixed to the side boards, followed by the crosspiece, piece (D). Use glue and countersunk brass screws to fix. Holes should be drilled before screwing, to avoid splitting the wood. A tri-square is very useful in ensuring the steps and cross-piece are perpendicular to the side boards.

Next, under the bottom step, glue and screw a piece of batten (W) (Fig. 4), and

to this and the side boards, glue and screw the stays (Z, Z). These help to keep the structure firm, and can be ½in. or ¾in. by lin.

The step section can now be completed by rounding off the points on the feet and the steps, including the top step. The sharp corners on the top step especially are often liable to do damage, so it is wise to reduce the danger. Lastly, bore a ½in. hole in each side board, just above the first step, for the rope. Round off the edge of the hole where the rope comes out, to prevent fraying.

The back support

Now proceed to make the back support for the steps. This can be seen in Fig. 2. The two legs (K, K) are of ½in. by 1½in. or 1¾in. wood and are 38ins. long. (Larger steps, of course, will need longer ones than these.)

The cross-batten (M) is first fixed across the legs (K, K) at the top, using glue and screws, and a tri-square. This cross-batten should be ½in. or ¾in. thick, 2ins. or 2½ins. deep, by 18ins. wide. The space left between the insides of (K, K) should be 15½ins. The tops of (K, K) should be rounded off as shown in Fig. 5.

The bottom cross-batten (N) should be fixed next. This should be similar to

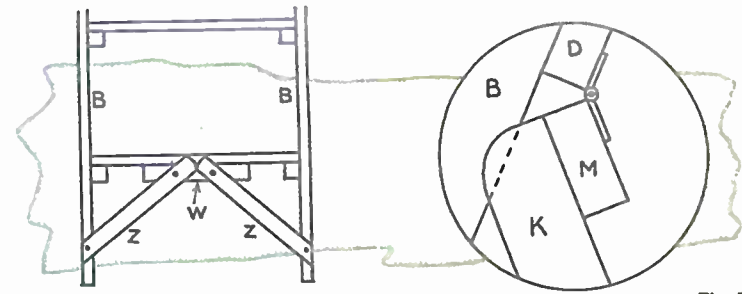


Fig. 4

Fig. 5

the top batten (M) but of length 19ins. and should have a ½in. hole bored for the rope. It should be fixed with glue and screws 12ins. from the bottom of the legs.

The stay (L, Fig. 2) should be of ½in. or ¾in. by 1½in. wood and should be fixed as shown, again using glue and screws.

Round off the bottom of the legs and then fix strong brass hinges to the top crosspiece (M) as seen. The other flaps of the hinges are attached to the cross-board (D). For safety, three or even four, hinges can be used, and are advisable.

The rope comes last. This should be

ordinary hemp rope used for clothes lines and should be new. The length of the rope must be ascertained by setting up the steps to stand correctly and measuring from hole to hole. It should be about 22ins. or so. To this length must be added extra for the knots at each end. A yard of rope for each side should give plenty to work with. Two firm knots should be made at each end and see that both ropes have equal tension when the steps are set up.

The steps should be given a thorough glasspapering and either left as they are, or given two coats of varnish to preserve and waterproof the wood. This is recommended.

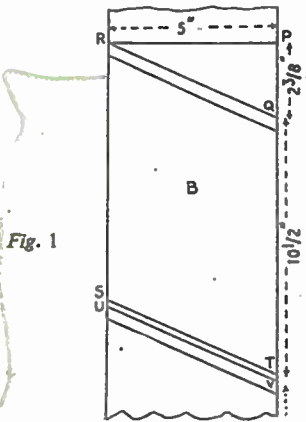


Fig. 1

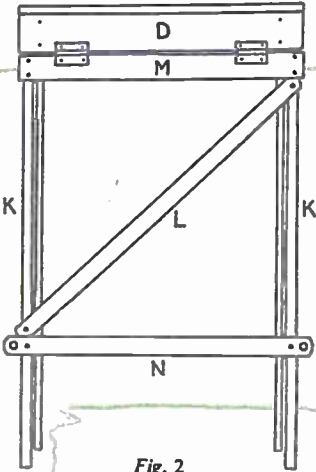


Fig. 2

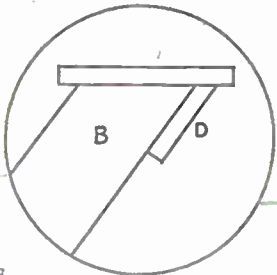


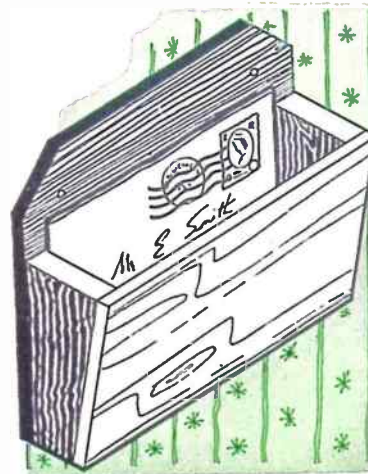
Fig. 3

From (U) and (V) along the board, measure 10½ins. again, joining the points, then drawing another parallel line below, the thickness of the step away.

Proceed in this way, until the positions of all steps have been marked. Then treat the other side board similarly. Or, place the boards together, clamp them, and use the square to transfer the measurements from one board to the other.

Young woodworkers' project

A Wall Letter Rack



By Keith John

THIS useful letter rack can be made by young woodworkers from off-cuts in an hour and a half. Gaily painted, with a transfer applied to the front, it will hold many letters and makes an ideal present.

Materials required are 1 piece plywood (or hardboard) 11ins. by 7ins.

1 piece softwood 4ins. by 2½ins. by ½in. Mark out the back and front as in Fig. 1, ½in. holes being bored at a distance of 1in. from the top and side edges. These are for fixing to the wall or cupboard and if it is intended to use screws for fixing, the holes should be countersunk.

The centre strip, shown in Fig. 1 is the bottom — this piece must be made from plywood or thin solid wood. Plane up the edges of the back and front, and glasspaper these edges and all the surfaces perfectly smooth.

The two ends are made in a pair as in Fig. 2. When they have been sawn in two, plane up the edges and glasspaper

the surfaces smooth.

Assembly is by means of glue and ½in. panel pins. When dry, any surplus glue can be removed and any proud edges trimmed down with a smoothing plane. The bottom should be cut to length (6ins.) and the front edge bevelled to match the slope of the front. It should be a good fit, dropping in from the top. When fitted this, too, can be glued and nailed.

Two coats of paint, rubbing down in between with fine glasspaper, and a cheery transfer if desired, will finish off the job. A curved or fretworked front could be substituted for the plain one if desired.

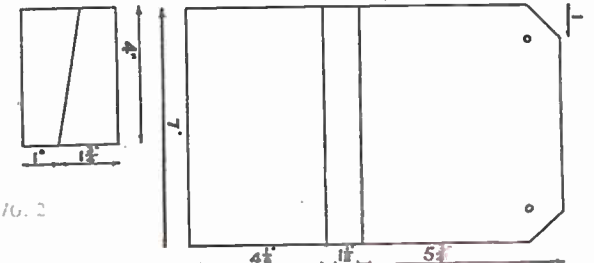


Fig. 2

Fig. 1

PHOTOGRAPHIC MOUNTS

NO doubt you will have often seen photographs, pictures and etchings mounted on thin cards bearing a sunken position for the picture and rimmed by a neat creased edge on the mount. This is an operation known as plate marking, and although it gives a professional touch to your pictures, it is easy to do the job yourself with such simple materials as cardboard and a knife handle for the tool. You cannot plate mark the heavier type of mount, of course, and the method to be described refers to lightweight cards, Whatman or cartridge papers.

You will appreciate that even a small picture often calls for quite a large mount, thus we find that a whole plate print measuring 6½ ins. by 8½ ins. may be mounted on to a card measuring 12 ins. by 10 ins. The reason for this is simple. We want the picture to be isolated from other distracting features, but in mounting we have to observe one or two rules. For example, the side borders may be equal, but it is advisable that the lower border is about twice that of the upper one, and this need not necessarily be the same width as that of the sides.

These factors must be remembered when marking out the picture space on a piece of cardboard, exactly equal to the size of your proposed mount. (Fig. 1)

Whatever the size of your mount, follow the above mentioned rules, before marking in the picture area with pencil, then mark out another oblong outside, a ¼ in. larger in each direction. This second oblong shows the position of the recessed plate mark we are about to produce.

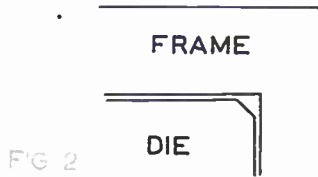
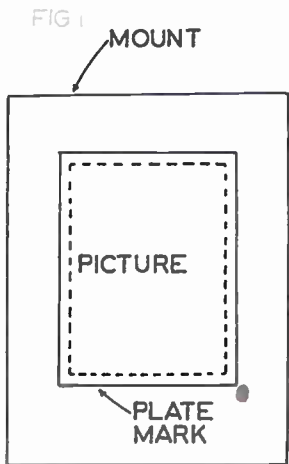
Now cut out the larger area with a sharp knife, using care to get a clean cut, for we shall require both pieces of the card. Cutting out leaves us with a frame and an oblong piece of card slightly larger than the picture area, which we

may term the 'die'. This is the portion which will actually make the mark, but before using, trim away each corner as shown in Fig. 2. There are two reasons for this trimming. It enables the card to be freely removed from the frame and secondly, it gives a slightly rounded corner to the impression.

The frame and die are taken together and reassembled as before cutting and laid in exact register with the mount it is proposed to mark. Place these on a table so that they lay just over the edge a little. With the left hand, hold the die firmly on the mount, removing the frame with the right hand, and laying aside for the moment. While still holding die and mount quite firmly, turn

The back of the mount is now uppermost with the die lying in position on the underside, and we have reached the actual point of making the plate mark. Take an ordinary table knife, held by the right hand near the handle, with the left hand keeping the mount and die firmly in position. The knife handle has to be forced round the edge of the die, so that the mount is creased to its shape. To do this, start with the knife almost near the centre of the mount, pushing it forward until you can feel when it engages with the edge of the die. Run the handle along the edge and round the corner, along that edge and around the next corner, but always using the knife, so that there is a very slight angle from the centre outwards.

It is a very simple matter to run the knife round the die, taking only a matter of a few moments, but before releasing the mount, make quite sure that you have been all the way round. On turning the card over you will find a perfectly made plate mark, ready for mounting your picture.

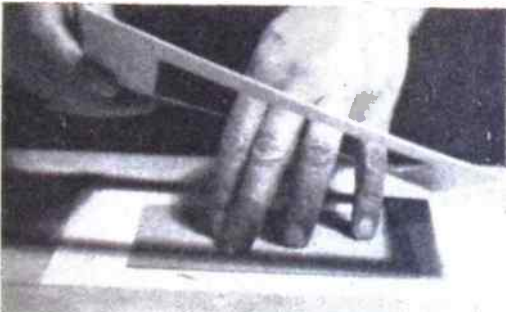


both over on to a clean board.

It is a good plan to prepare a special board for the job by sticking a sheet of fine glasspaper to a piece of hardboard, giving a perfect non-skidding surface.

The frame can also be used as an accessory for mounting both plate marked pictures or those where no plate mark has been prepared. Laid on the mount, there is no fear of surplus mountant soiling other parts of the mount.

If you use the dry mounting method of mounting, you may lay on the frame, making a light pencil mark for the accurate position of your picture, again avoiding tedious measuring each time a print has to be mounted. (S.H.L.)



The die is being held firmly in place while the frame is removed.



A knife handle is being used to make the impression on the back of the mount.

MODEL OF GETHSEMANE



* BASIC SHAPE AT EYE LEVEL *



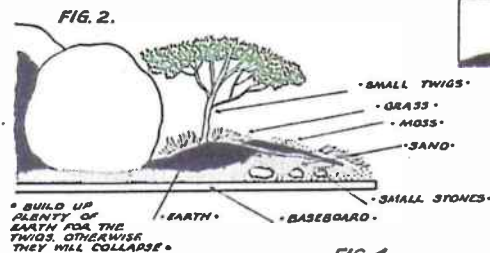
* TOMB PROMINENT IN THE FOREGROUND HILL AND CROSSES IN THE DISTANCE * FIG. 1

WITH the approach of Easter the thoughts of most of us will journey to the scene of the Passion, and to transfer these thoughts into tangible form this article shows how a charming little model of the Garden of Gethsemane may be constructed. Here

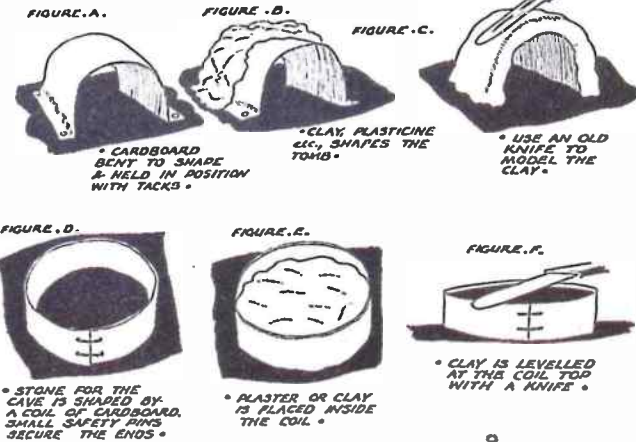
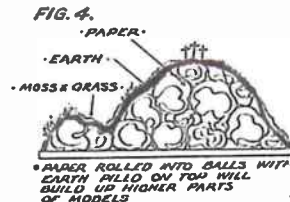
By J. MacIntyre

is a labour of love for those in schools, church communities or youth centres, a task that will recreate the scene of the world's greatest happening, a creation which must repay one hundredfold the time and care taken in its completion.

The materials needed are few, and they cost little. An exception, perhaps, is the modelling clay or plaster which is used for building the tomb. Even these items are priced at around only a shilling



* BUILD UP PLENTY OF EARTH FOR THE TWIGS, OTHERWISE THEY WILL COLLAPSE *



* STONE FOR THE CAVE IS SHAPED BY A COIL OF CARDBOARD, SMALL SAFETY PINS SECURE THE ENDS *

* CLAY IS LEVELLED AT THE COIL TOP WITH A KNIFE *

per lb., and you will find that 1 lb. is sufficient for the work.

The base-board on which the original model was built was from an old cardboard packing case measuring approximately 20 ins. by 16 ins. If the model is to be moved about it will, of course, require a firmer base, and it is recommended to use either hardboard or thin plywood instead of cardboard. Different views of the model are seen in Fig. 1.

Figs. (A), (B) and (C) will give the reader instructions as to how the tomb is made. A length of cardboard is simply bent to the required shape, and the ends either tacked down or held in position with gummed paper, while the building material is applied over and around the cardboard. Suitable material

for modelling is Plasticine, modelling clay, Alabastine, or plaster of Paris.

A simple way to make a mould for the stone at the entrance to the tomb is to take a thin strip of cardboard about 1 in. wide, and bend it into a circle. The ends may be either taped with gummed paper or held with small safety pins. (See Figs. D, E and F). The plaster is then poured into the mould and levelled off with a knife. When the plaster has set, the cardboard is removed.

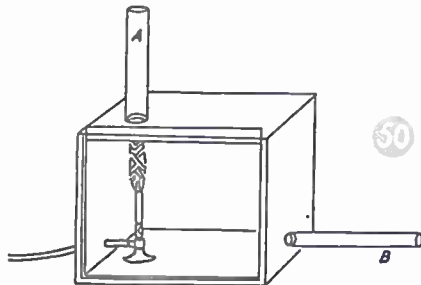
The remainder of the materials required such as moss, short-tufted grass, leafy twigs, fir cones, fir leaves, earth, etc., may be had for the gathering. Some difficulty may be experienced in finding such items as fir leaves and cones, but most parks and commons will yield these after a little exploring. (See Fig. 3). However, if a search does prove unfruitful, excellent substitutes

Investigating a Gas Flame

THE nature of the inner blue zone of a gas flame, such as from a Bunsen burner, can be investigated by supporting a match on a pin as in Fig. 49. Then turn on the gas and light it. For some considerable time you will find the match does not burst into flame.

The unburnt gas from the central blue zone of the flame can be conducted along a glass tube as shown, and it can then be burned at the end (A).

Test the temperature in various parts of the Bunsen flame by holding a piece of iron wire across it at various levels. In this way you will find which is the hottest part of the flame.



You should then see that the supports for the kettle and pans on your gas cooker are adjusted so that the hottest parts of the Bunsen flames impinge on their bases. In this way you will save much gas for the water will boil much more quickly, and once boiling has commenced, a very small flame will keep the water boiling.

The Ventilating Action of a Gas Fire

If you read about modern gas fires you will discover that one of their great virtues, in addition to warming rooms by radiation and convection, is that they also ventilate rooms, completely changing the air in them about four times every hour. The little model in Fig. 50 shows how this occurs.

A Model Gas Water Heater

For this model (Fig. 52) you will require about 6ft. of 1/2 in. diameter copper tubing. Form this tubing into a spiral by pulling it round a cylindrical piece of wood, such as a broom handle, held in a vice. The copper spiral is fixed into a tall cylindrical tin supported on three lengths of Meccano strip, which serve as legs. Each of the strips can be fixed to the tin, after drilling, with two Meccano nuts and bolts.

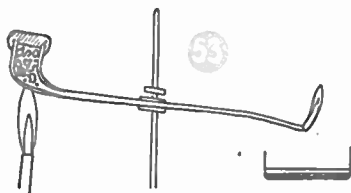
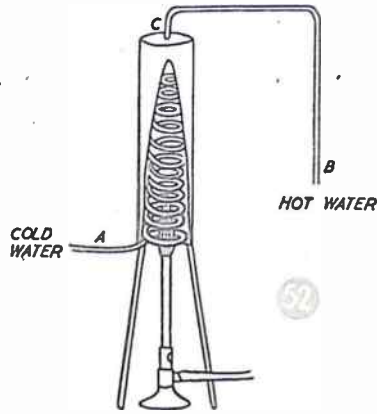
The end of the tubing (A) should be connected to a cold water tap with rubber tubing, the water is turned on gently and the Bunsen is lighted. Hot water leaves the tubing at (B). The temperature of the water emerging from (B) can be controlled by adjusting the rate of flow of the water.

Always turn on the water before lighting the gas and turn off the gas before turning off the water.

Making Coal Gas

Fill the bowl of a clay pipe (church-warden type) with small pieces of bright coal and then seal it up with clay, or fire cement. Support it in a retort

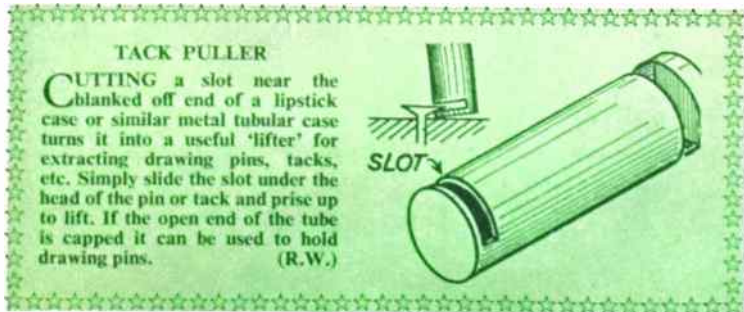
This represents a gas fire with a flue in a room. The radiant becomes red hot and sends out some heat horizontally; this warms the walls of the room which in turn warm the air in the room, but if you place your hand above the lamp-chimney you will realise that a high percentage of the heat is passing up the chimney.



stand as in Fig. 53, and heat the bowl gently with a Bunsen flame. In a short time coal gas issues from the end of the stem and may be lighted and a dark coloured, oily liquid begins to drop from the end of the stem. If you collect this liquid in a shallow glass dish you will see how it separates out into two layers, the lower layer being a tarry substance and the upper layer a clear liquid.

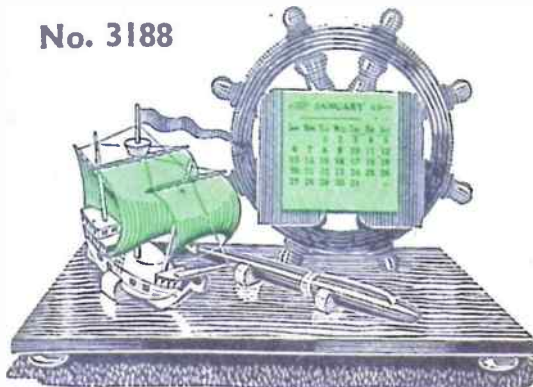
Fix a lamp glass (A) and a piece of glass tubing (B) about 1/2 in. in diameter, into holes made in a wooden box and suspend a piece of gas fire radiant above a Bunsen burner inside the box as shown. (T.A.T.)

Now hold a piece of smouldering brown paper near the end of the tube (B) and notice how the air passing into the 'room' draws the smoke in with it across the room and up the chimney. This illustrates how fresh air is drawn into a room under the door by a gas fire with a flue.



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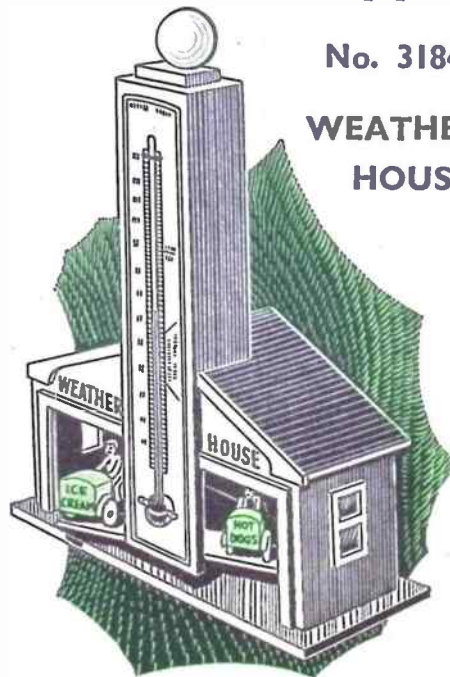
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Reply to Readers Is this YOUR Problem?

A SOFT white froth appears on the walls and floor of my cellar. If it is brushed away it reappears after a week or so. I have been told this is due to the presence of damp air, but am inclined to believe it is some form of fungoid growth. Can you give me an idea of what it is, and any steps to prevent it? (A.W.—Allerton).

THE fungoid growth complained of is common to any underground cellar. It is the result of humidity due to damp walls and lack of sufficient ventilation. Write to Devon Commercial Arts, Church Lane, Barnstaple, Devon, for particulars of MACSTET, a water-proof paint and invaluable in such conditions as above. This should at least lessen the nuisance. You should also improve the ventilation as far as possible, and the advice of a local builder would be helpful as to the introduction of a passage of fresh air to dry out.

I WOULD like to know how to remove a white stain from a polished table caused by a hot tea-pot. (T.D.—Blackburn).

HEAAT marks on a polished surface are very difficult to eradicate. Try rubbing over with turpentine and linseed oil. This will sometimes remove the marks if not too deep. If this fails, a gentle rubbing with methylated spirit on a clean rag pad should remove the marks, after which a coat of clear varnish or a rub with a french polish rubber will restore the original polish.

I HAVE some doors in the house which at some time were grained and varnished a dark brown. Now the varnish has gone, and I want to grain and varnish them again, but in a much lighter shade. How would you recommend that I should strip the doors, and what is the best kind of stain and varnish to use, please? (K. St. G.—Kingsdown).

YOU should remove the existing paint with Arrolite or Tix or other good proprietary brand of paint remover. As the dark colour of the graining is due most probably to age, the wood is unlikely to be stained itself, and a good rub over with silicon carbide

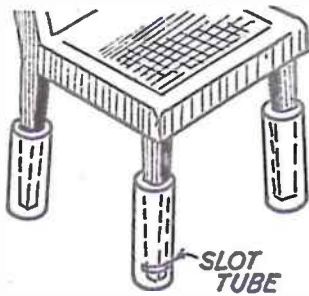
paper used wet should leave it light enough for a finishing coat of light oak combined stain and varnish. If it is intended to grain first, the appropriate light ground colour will serve well.

MY son and I have built the one-valve (ultra short-wave) radio described in 'Hobbies Weekly' of July 11th, 1956, following the instructions pretty closely. With a little adjustment of values here and there to suit the valve we used, excellent reception was obtained. However, my nearest neighbour who is a keen TV viewer, came along and asked me I using any 'electrical machinery' as her TV was 'completely wrecked'. So I switched the one-valve on and tuned in to TV Sound and went into her house to see. Her TV sound was perfect, but the picture was a uniform mass of diagonal lines. The set was run with L.T. taken to a good earth on a water pipe. When the TV Sound programme was being listened to, an aerial was connected. Your observations would be appreciated. (P.S.—Nth. Shields).

IF you are quite convinced that it is your set which is causing the effect on your neighbour's TV, then one must conclude it is due to either mains-borne or air-borne interference. Mains-borne interference (in this case) would be due to feed-back from your set directly through the mains wiring going from house to house. It can usually be cured by choke-condenser filters arranged in the mains leads to the victim's set. The proper course would be for the victim to apply to the local central post office, when their engineers will give the necessary technical advice. Operating your set completely from batteries (instead of mains) will prove whether or not direct mains interference is the case. But it would not discount the mains wiring picking up radiation through the air. This would still happen with batteries. Air-borne interference is very possible. In this case the oscillation of the valve supplies energy to the aerial and this is radiated, to be picked up by neighbouring sets. Where no aerial is used, then the quench oscillation is radiated from the coil.

As in the case of signal generators, the set could be screened completely by enclosing it totally in an aluminium box, to cut off radiation to a certain extent. But the aerial still remains as a radiator.

TIMELY TIP



LEVELLING LEGS

A SURE way of marking chair legs, etc., for cutting to exact length when curing 'rock' is to use a length of card tube which is large enough to slip over each leg. Cut a slot near the end of the tube. Slip over each leg in turn and with the tube resting firmly on the floor, mark the slot position on the leg. These will give cutting points for trimming all the legs to match.

(R.W.)

The last solution is to add a R.F. stage before the detector valve. This isolates the detector from the aerial and curtails re-radiation and dead spots and increases selectivity.

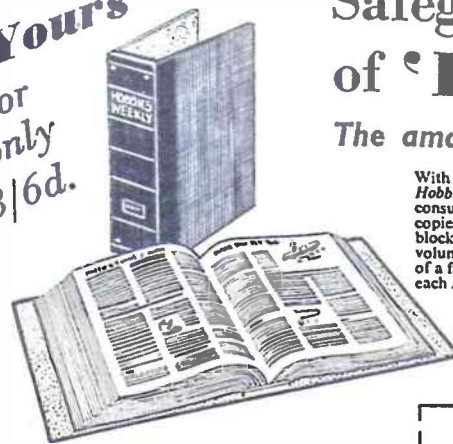
I HAVE some oak battens holding panelling in place, which are dark but unpolished. Is there any way in which I can make them lighter? (M.G.—Nr. Box).

THE oak battens have most likely been stained with creosote. If so, apply a coat of painter's knotting, then paint of any desired colour can be applied. Such wood cannot be effectively lightened as the stain has penetrated too deeply.

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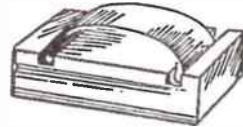
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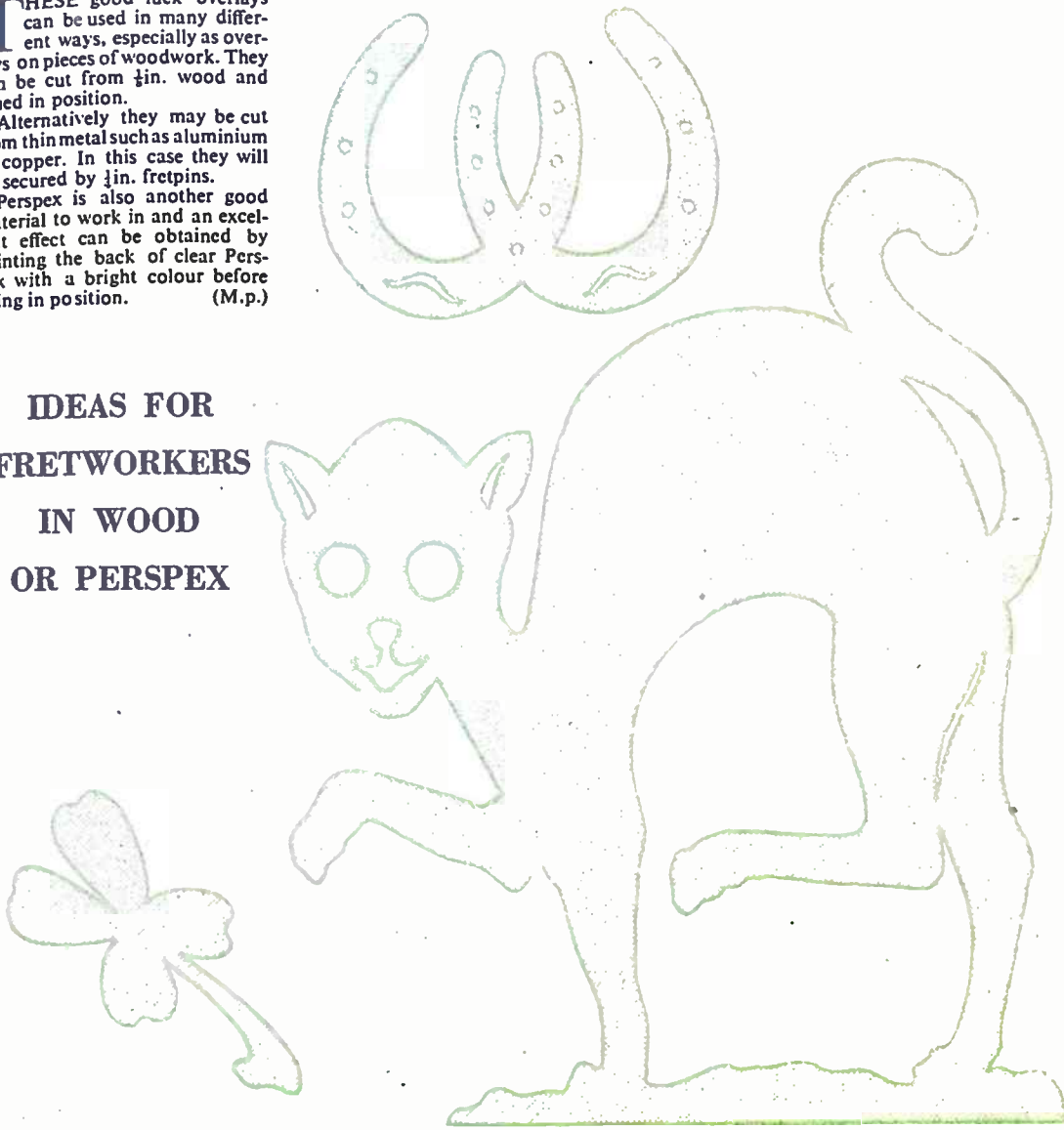
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Perspex is also another good material to work in and an excellent effect can be obtained by painting the back of clear Perspex with a bright colour before fixing in position. (M.p.)

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