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



'VIKING' PLAQUE (with thermometer)

353

FREE £200 CONTEST

*Cut this Design and
win a valuable prize*

ALL readers of *Hobbies Weekly* should take advantage of this wonderful opportunity to win valuable prizes in Hobbies 1959 Fretwork Competition. Awards to the total value of £200 are offered, and details are given on page 354.

Vouchers are offered as prizes enabling winners to obtain any of Hobbies goods listed in their Annual, to the amount of the voucher. Tools, kits, machines, materials, etc. all come within this category, giving a grand opportunity for competitors to add to their workshop equipment and hobby requirements.

The competition piece is quite simple to cut, and entry is free. The subject is the Thermometer Plaque illustrated on this page, and the competition will be judged in two sections — for Seniors (16 and over) and for Juniors (15 years and under). The subject for competition is the same for both classes.

FOR ALL HOME CRAFTSMEN
Over 60 years of 'Do-it-Yourself'

World Radio History

4¹/₂

In addition to the main awards enumerated, there are also many £1 vouchers for those who just fail to enter the main prize list, and dozens of other valuable consolation awards and certificates of merit for work which qualifies according to the decision of the judges.

A KIT FOR 3/3

Hobbies Kit No. 3280 for making the Galleon Plaque costs only 3/3 from branches, or by post from Hobbies Ltd, Dereham, Norfolk (postage 9d. extra).

The winner of the first prize in the Senior section will become the champion fretcutter for 1959. He or she will hold the magnificent Silver Challenge Cup for a year and retain a permanent replica.

The Open Section and the Junior Section will be judged independently and young workers aged 15 and under who compete with other entries in this limited age group, therefore stand an excellent chance of winning a prize. In the Junior Section it must be thoroughly understood that competitors should have received no help from an adult, and the receipt of an entry will be taken as an honourable guarantee that this is in fact their own work.

As this is a fretwork competition, the main accent in the judging will of course be concentrated on the cutting. All things being equal, an attractive finish will also be taken into consideration, but competitors who paint their plaques must remember not to apply it so thickly as to obscure any delicate cutting lines.

The design involves the gluing of an overlay on to the main base, and competitors must ensure that this part of the work is done thoroughly. In

previous years many of these overlays have come apart, and workers should scrape the base where the overlay is to be fitted, in order to obtain a good adhesion.

The Thermometer Plaque makes up into a very attractive novelty and lends itself ideally for working on as gifts throughout the year.

The rules of the competition are set out below. Read them carefully and make up your mind to be in the 1959 Prize List.

Making up the Plaque

The make-up of the Thermometer Plaque is quite simple, consisting of only two pieces of wood (1 and 2) both of $\frac{3}{8}$ in. thickness. These are shown full size on the design sheet.

Trace their outlines from the design sheet, and transfer them to the wood by means of carbon paper. Cut them out carefully with the fretsaw and clean up well with glasspaper. As an alternative to tracing and transferring the designs, workers can paste the design down to the wood and cut to the outlines, but this, of course, necessitates scraping off all the paper before finishing.

Particular care will be needed in cutting some of the very fine frets, and it must be remembered that it is here the judges will look for their final decisions.

Note that the thermometer should be a tight fit in the opening provided in the sail in piece 2 which is glued to piece 1 as indicated by the dotted lines on the design sheet. A Hobbies No. 121 hanger is screwed on the back of piece 1 for hanging purposes.

Finish is left to the discretion of the worker. The wood can be left plain or stained and polished. Alternatively the plaque would look attractive if painted as suggested in the key on the design sheet.

Workers might also be interested in the other suggestion on the design sheet for the plaque to be worked in marquetry, but it must be understood that this method will not be accepted for the purposes of the competition.

1959 COMPETITION RULES—PRIZES TO THE VALUE OF £200

OPEN SECTION

Winner receives cup and replica

1st Prize	.	.	.	.	Voucher for	£15	15	0
2nd Prize	.	.	.	.	"	£12	12	0
3rd Prize	.	.	.	.	"	£10	10	0
4th Prize	.	.	.	.	"	£7	7	0
5th Prize	.	.	.	.	"	£5	5	0
6th Prize	.	.	.	.	"	£4	4	0
7th Prize	.	.	.	.	"	£3	3	0
8th, 9th and 10th Prizes	.	.	.	.	"	£2	2	0
11th and 12th Prizes	.	.	.	.	"	£1	10	6

JUNIOR SECTION

(15 years of age and under)

1st Prize	.	.	.	.	Voucher for	£12	12	0
2nd Prize	.	.	.	.	"	£7	7	0
3rd Prize	.	.	.	.	"	£5	5	0
4th Prize	.	.	.	.	"	£3	3	0
5th, 6th and 7th Prizes	.	.	.	.	"	£2	2	0
8th, 9th and 10th Prizes	.	.	.	.	"	£1	10	6

Vouchers for £1 will be awarded for the next best entries

In addition, dozens of other valuable prizes and Certificates of Merit will be awarded. Winners of the vouchers may choose any Hobbies goods to the value of the prizes won.

RULES

- All entries must be made from Hobbies Design No. 3280, presented free with this issue of *Hobbies Weekly*.
- Points will be awarded for the quality of the fretcutting, plus the excellence of the finish.
- An entry must be the unaided effort of the competitor. This rule must be strictly adhered to.
- Entries must be sent to the Competition Dept., Hobbies Ltd., Dereham, Norfolk, to reach there not later than April 30th, 1959.
- A label bearing the name and address of the competitor, age, and Section of the Competition for which the entry is to be judged, must be firmly affixed to the entry. Competitors who wish their entries returned must include a 1/- P.O. to cover cost of repacking and postage.
- Because of Customs restrictions, etc., entries are confined to those from Great Britain and Northern Ireland.
- Prizewinners will be notified by June 30th, 1959, and details will also be given in *Hobbies Weekly*.
- Hobbies Ltd. cannot accept responsibility for any loss or damage to entries, but all reasonable care will be taken with them.
- The judges' decisions are final, and no correspondence can be entered into.

PANNING FOR SPEED

THE need for keeping a camera perfectly still during the moment of exposure is so often emphasised that anyone may be excused if they overlook that this is *not* so for rapidly moving subjects. This applies equally to all sorts of shots, whether they are of foot or cycle racing, etc., or have very rapid motion, as arises in motor racing

subject comes into view. So much a matter of split-second judgment will this be that, with really fast subjects, the frame will be empty of competitors — or show the rear wheels of a car disappearing from the picture. Even if the subject is caught, its movement will make it blurred to some extent, while the background will be clear.

every chance of getting the chosen car, or whatever it may be, in the picture.

Eye-level finder best

For this kind of shot an optical or direct-vision eye-level finder is far the best. It gets the camera well up, over fences, etc., and is the most natural position for sighting. Such finders are present on most modern cameras. If not, it is generally possible to make a wire frame, through which to sight, and to secure this to the camera with elastic bands or other means.

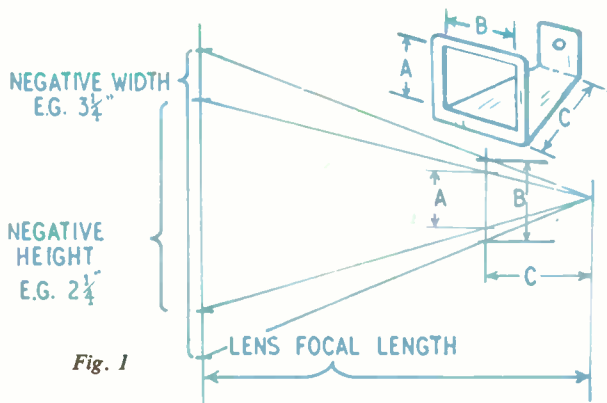


Fig. 1

and similar sports. Instead, the camera should follow the subject — a process known as 'panning' or moving the camera horizontally during exposure.

Anyone lucky enough to gain a near, track-side position at a speedway, motor trials, or other sports occasion, need not unduly envy the press photographers with their high speed shutters. The success of the shots depends rather more upon the photographer himself, and it is here that a little knowledge will help to avoid failure.

It is hopeless to sight upon a part of the track, and click the shutter as the

The situation is reversed when the camera follows the subject. The subject is sharp, and the background more or less blurred, which is much more satisfactory. In addition, as the camera follows the subject exactly like a gun being aimed at a moving target, there is

Fig. 3—(right) An ultra-rapid shutter is not essential, as this shot with a folding camera shows.

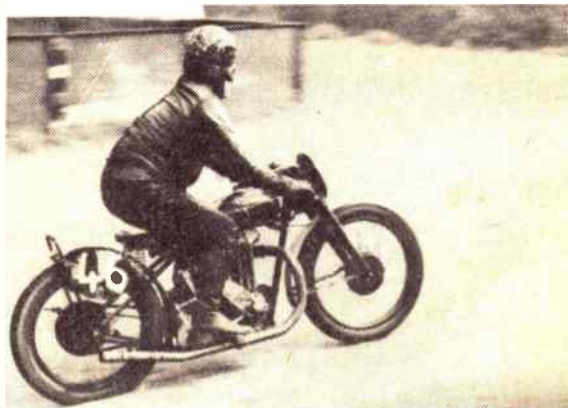
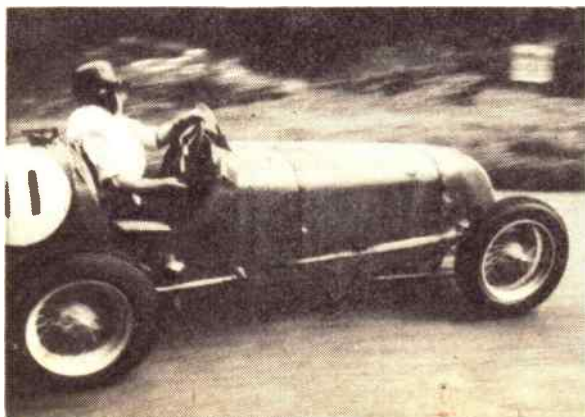


Fig. 2—(left) A racing car at speed, camera motion matching that of the car.



ment will be at its fastest just as the subject passes opposite, slowing down again as the distance increases. After a few trials in this way the shutter may be released. Fig. 2 shows such a shot — a racing car at speed. Without panning, spectators opposite would be clear, and

the car a blur.

Shutter and film do not require much thought, because it will be best to use the fastest shutter speed, and the fastest film. To try to use slow shutter speeds and slow films is only to make the shots more difficult. Good films to use would be HP3 and HPS, which will give good negatives with even poor light.

The more costly camera will have a shutter speed of up to 1/300th, 1/500th, or, in a few cases, 1/1000th second. But these are in no way essential with good panning. As an example of this, Fig. 3 shows a motor cyclist broadside on, and was secured with the 1/200th second setting provided on a simple folding camera.

The lens should be focused at about the distance at which the shot is to be taken. Fast films will here also prove of advantage, as it will be possible to stop down, thereby obtaining good depth of focus. With good daylight or weak sunshine, an aperture as small as $f/11$ will be possible, so that any subject between about 11ft. to 30ft. away will be sharp, if the lens is adjusted to 16ft. This will be found a good general setting for most purposes.

With slow shutters

Cameras of cheaper kind may not have 1/200th, though very few fail to have 1/100th. Here, good shots are still possible, but more care in panning will be required, so that the movement of the camera exactly matches that of the subject.

Alternatively, the photographer may

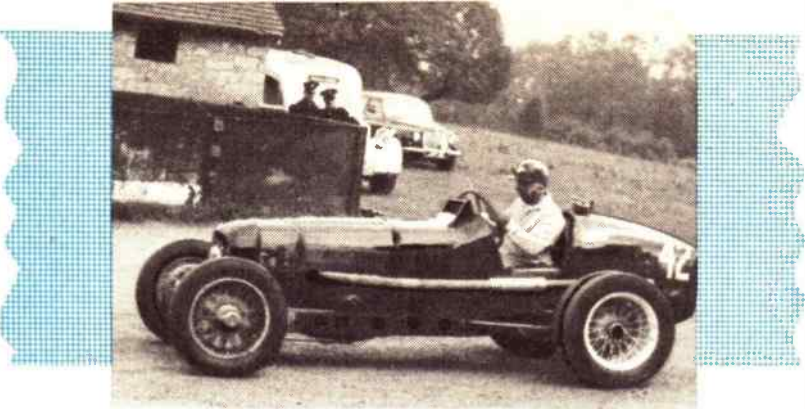


Fig. 4—A shot possible with any camera

prefer to simplify the matter, and increase his chances, if he has no speed over 1/100th. One solution is to obtain a position where the cars or cycles start, or halt, and to take them before they have got fully into motion. Fig. 4 is a shot of this kind, being taken while the car was accelerating for a return run. In such cases 1/50th or 1/100th, with smooth panning to match the motion of the subject, will be sufficient.

Another solution is to take the subjects as they are approaching, as their apparent speed of movement is then much less than when they flash by. It will probably be necessary to focus 20ft. to 30ft. down the track, and take the shot as the subject reaches this distance. Again, a corner will be a good position,

since the competitors will then be slowing a little.

Good motion pictures depend, then, on tackling the subject in the right way. This should encourage all photographers to try their hand, when an occasion arises. For perfect panning, the camera motion should be just the same as that of the object.

The finder in Fig. 1 may be bent up from thin metal, the small eye-hole being about $\frac{1}{4}$ in. in diameter. The dimension (C) is of no importance, provided dimensions (A) and (B) are measured off to suit. About 1 in. to 2 ins. would do well for dimension (C). If the focal length of the lens is not marked, this distance may be found by measuring the distance between lens and film.

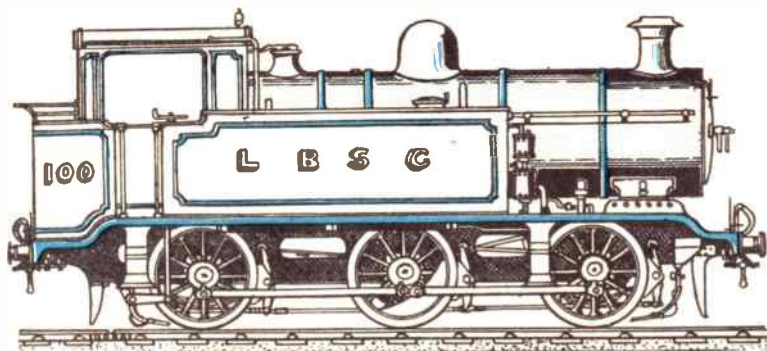
Interesting Locos - No. 12

THE neat little six wheels coupled side tank engine shown in our illustration was designed and built by Mr L. B. Billinton at Brighton in May 1913.

The class numbered five engines, Nos. 100 to 104 inclusive and were known as class 'E2'. No. 100 is of especial interest as it was Mr Billinton's first product for the L.B. & S.C.R. since becoming chief of the locomotive department at Brighton in January 1912.

These engines were built primarily to replace the older engines of class 'E1' which were in course of being broken up. In 1915-16 a further five of the class were built, and were numbered 105 to 109 inclusive. They differed somewhat from the first five in that the side tanks were extended further forward in order to increase the water capacity to 1256 gallons.

The following were the leading details. Cylinders, $17\frac{1}{2}$ ins. by 26 ins., wheels diameter, 4ft. 6 ins. Total heating surface



L.B. & S.C.R. 0-6-0 TANK ENGINE

1,100 sq. ft. Grate area 17.35 sq. ft. Working pressure 170 lbs. per sq. in. Weight in working order 52 $\frac{1}{2}$ tons. Total length over buffers 33ft. Capacity of tanks 1090 gallons, (except Nos. 105-109). Coal space bunker, 2 $\frac{1}{2}$ tons.

Tractive force at 85 per cent boiler pressure, 21,307 lbs.

In 1914, Nos. 103 and 104 were used in auto-train passenger working and were painted in passenger livery, which they retained for several years.

Concrete Garden Ornaments

CONCRETE garden ornaments are easy and cheap to make, and can add a unique touch to your garden. Here are some ideas for using concrete in this way, and they may suggest other possibilities which you can adapt to your own particular needs.

For this work, always use a good strong cement mix — 1 part Portland cement to 2 parts clean dry sand, mixed to the consistency of thick porridge.

Simplest of all is a concrete birdbath. This is made in two sections, the column and the bath itself.

The column is reinforced by a metal bar or rod, which is driven into the ground where the birdbath is to be placed. For the mould, use a cylindrical tin, about 4ins. in diameter, with the top and bottom removed. Slip the tin over the rod and fill with cement. After 24 hours, slide the tin upwards to within $\frac{1}{2}$ in. of the top of the cement and fill it again; (A). Repeat this until the reinforcing rod is covered and the desired height is reached.

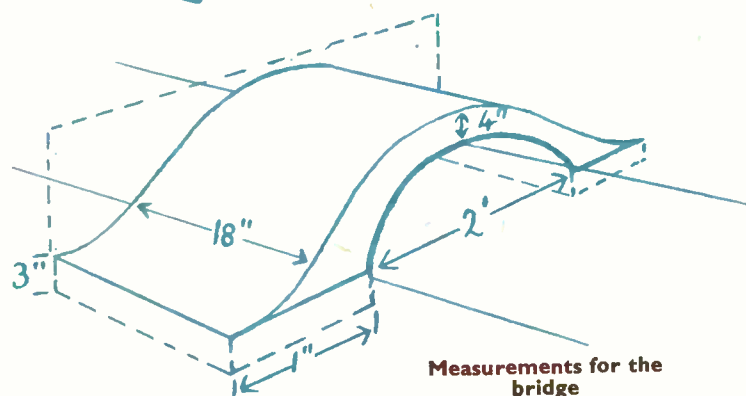
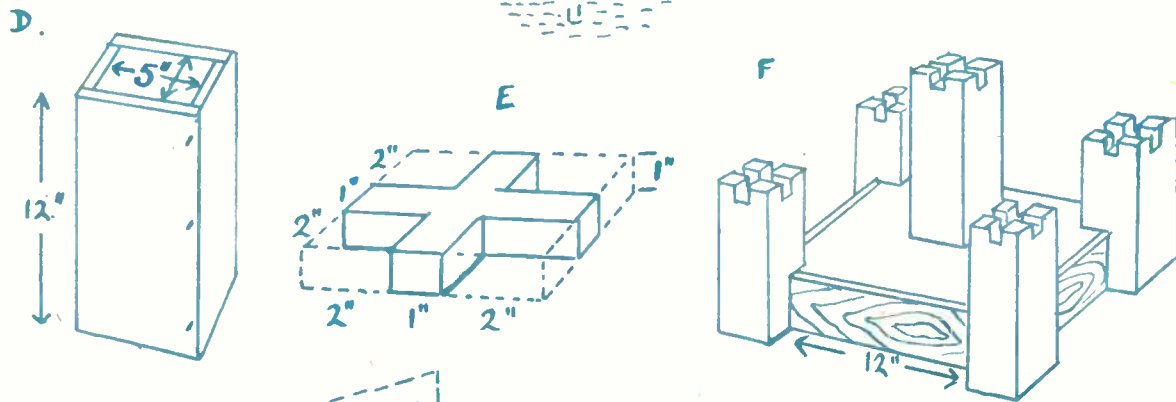
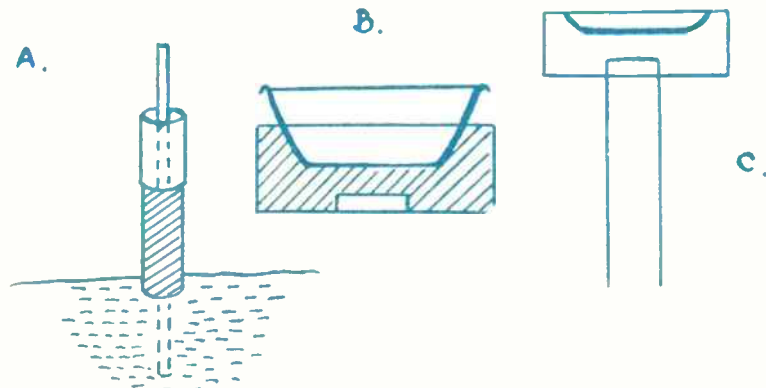
The mould for the bath is any tin of suitable size, such as a 9in. diameter

baking tin. (A removable bottom makes it easier to take out of the mould.) A tin lid, of the same diameter as the column on which the bath will rest, is fixed to the centre of the base of the mould with a spot of solder or waterproof glue. This will leave a socket in the base for fitting to the column. The mould is half filled with cement, and a smaller bowl, about 6ins. across, is placed on the cement. The remaining space between the bowls is filled with cement until the

mould is filled (B). The small bowl may have to be weighed down to prevent it floating up in the cement.

When the cement is hard — it is best to leave it for 48 hours — remove it from the mould and cement it to the column, lightly coating the hollow in the base of the bath before fitting it to the top of the pillar (C). Leave the birdbath for a few days before adding water to the bath.

If you want to be more ambitious try a model building in concrete. A



Measurements for the bridge

Norman castle, for example, can look very attractive, and what boy would not welcome a real stone castle to play with?

For this, a wooden mould 5ins. square on the inside and 12ins. high, is lightly tacked together. No ends are needed (D). A 5in. square of wood, 1in. thick, is cut to the shape shown in (E). Nail the wooden shape (E) to a flat piece of wood and place the mould over it. Fill with cement and leave for 48 hours, then gently lift the mould from the base.

Remove the sides of the mould from

● Continued on page 359

PARCHMENT LAMPSHADES

FIRST class lampshades can be made from imitation parchment and it is an even easier matter to re-cover an old shade where the existing material will serve as a pattern when removed. Imitation parchment is quite reasonable in price and you will find several varieties to choose from at any of the arts and crafts shops. For example, there are imitation oiled parchments which are waterproof and dust resisting. These mellow in time, yet retain an attractive appearance, while modifications will be found in the same materials printed with polka dots in various colours, including gold and silver, that is, something to match almost any colour scheme.

In the range of imitation sheepskin parchment there are several self-colours to choose from and of course this allows the opportunity of making a shade in one colour only or differently coloured panels, something after the style of

tions, making an impression of the wires by rubbing the fingers over the paper. This will produce a faint crease mark enabling you to cut out the pattern. Here you can test the section against the others to see whether they are the same size, when you need not trouble further. This method is most useful for hexagon shaped frames and you will also

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*By S. H. Longbottom*  
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find it helpful to make marks on the sections with corresponding marks on the patterns. Later we will discuss the assembly, but it should be noted that an additional $\frac{1}{4}$ in. should be allowed if a curve is required, but your test pattern should reveal this.

The shape known as 'empire', that is

to make the cover in two halves, but the same method may be adopted. Cut out your paper pattern, placing on the wire frame for testing purposes and if correct the parchment may be cut to correspond.

With the hexagon shape as a basis for the shade each panel is cut according to the separate patterns and punched for thonging. Holes are made with a leather punch and it will be advisable to mark a guide line so that all holes are equidistant from the edges. The purpose of these holes is to allow binding of the sections with decorative silk braid, or cord, to the wire frame. Let us now deal with a panelled shade as an example.

Take the prepared piece of parchment for one panel ruling a faint line all the way round $\frac{1}{4}$ in. or $\frac{3}{8}$ in. from the edge. Holes are to be punched on these lines. Holes are required round all the four sides, but it is important to note that vertical rows must be punched together

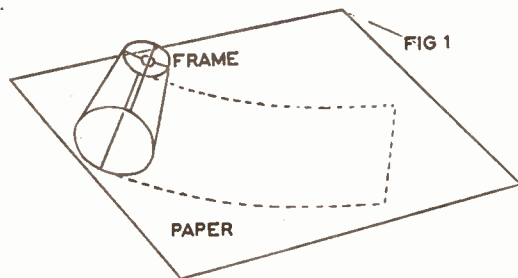


FIG 1

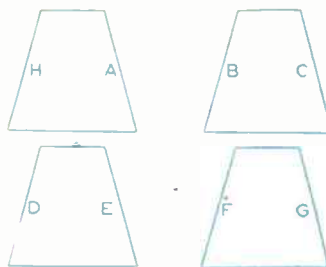


FIG 2

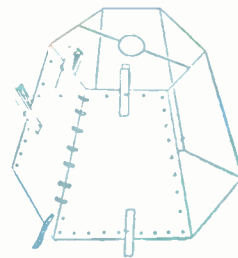


FIG 3

present day room decorations. This type is also ideal for lettering in indian ink, or for stencilling a pattern in the same medium; or you may decorate with coloured paper shapes or transfers. Foreign stamps and labels form original decorative schemes and these may be borne in mind at the finishing stage. Hobbies branches can supply parchment sheets 50ins. by 20ins. (3/6) and 25ins. by 20ins. (2/-).

Paper patterns

The best way of making a shade is to start with the preparation of paper patterns to fit the frame, although, as stated, you can sometimes use the pieces removed from an old shade. When there are several panels to be made it is wisest to make separate patterns for each panel, since it often happens that the wire frame is not so accurately made as it may appear.

Assuming that a wire frame is to be covered in panels, take a piece of newspaper, laying this over one of the sec-

tion, requires different treatment and a sheet of newspaper or brown paper will again provide the basis for a pattern. Pin the paper on the top of the kitchen table, with the wire frame at one corner as shown in Fig. 1. The method is to roll the wire frame across the paper in order to determine the exact size and shape of the covering. You will find it advisable to lay the frame in such a position that one of the upright wires is flat to the table, marking with a pencil at the edge of the wire. It will be realised that a complete revolution is necessary to make the pattern from the starting point you have just marked. Now roll the frame slowly across the paper, plotting its course by marking with a pencil at the top and bottom of the frame. This is shown quite clearly in Fig. 1 and when the frame has been allowed to make a full turn another vertical line should be made to indicate the end, but remember to add another $\frac{1}{4}$ in. to this for jointing. With very large shades of this type it may be necessary

with the adjoining section. Fig. 2 will make this quite clear if (A) and (B), (C) and (D), (E) and (F), (G) and (H) are placed together while reversed and punched.

Join by thonging

Circular, one-piece shades are punched at the top and bottom and down the joint — unless you prefer to omit the cord and join by adhesive. Should the material prove difficult to glue you have no alternative but to fasten by thonging.

Wire frames should either be painted in a light colour or completely bound with light coloured bias binding, not only for the sake of appearance but also for protection, and this done you may proceed with the thonging. You will find that fine silk cord, or braids in contrasting, darker colours give charming effects, although there are many types of plastic thonging available.

What we have termed as thonging is actually the process of lacing the parch-

ment shade to the frame, the cord passing through the holes, starting with a knot on the inside, over the wire frame, back round the edge of the shade and into the next hole. This process is continued until the shade is firmly laced to the frame. Do not draw too tightly or the parchment will buckle, or even tear, but on the other hand it must not be too slack, and to hold the shade during lacing, or one panel securely in position, a spring peg should be placed at the top and bottom as shown in Fig. 3. You will also find pegs suitable when lacing together adjoining sections. A bodkin, will be found useful for threading the cord in and out of the holes.

Having completed the thonging any further decoration is purely a question of individual taste, but the following suggestions may be helpful.

As mentioned earlier, foreign stamps, labels or similar small motifs may be

glued on or we can apply decorative transfers of all descriptions. Alternatively stencil patterns in indian ink may be used and these look extremely effective when the light is switched on. Another

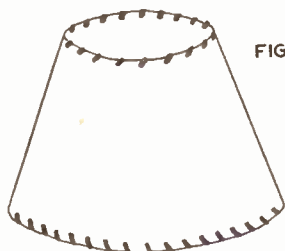


FIG 4

EMPIRE SHAPE

idea worth consideration is the addition of one or two motifs made from

'sculptured' parchments of a different colour, so that they stand out in relief. These may take the form of flowers, small dogs or whatever the skill of the individual workers can contrive, but all these can be prepared on surplus material, or in paper before actually attaching to the shade itself.

Normally, it will be found that the cord thonging alone is sufficiently decorative, but even so one can add braid at the upper edges, with matching fringe at the bottom, but remember that this will also add to the cost of production.

The wire frames for making lampshades are quite inexpensive with many shapes to choose from. Perhaps the most difficult to work for the beginner are those with curved sides, and it is recommended to start with the smaller panelled types suitable for table lamps or bedlights.

A GUMMED PAPER MOISTENER

HAVING to lick a lot of gummed paper can be a very dry and unpleasant job, especially when the gum has a nasty taste.

Here, then, is a handy little damper which relies on capillary attraction to supply moisture where needed. Moistening the fingers when counting sheets of paper or turning over the pages, and not forgetting the stamp collector's mounts are further uses for the damper and doubtless many others will be found for it.

All that is wanted is a jar with a screw top and a short piece of absorbent cloth. Quite a small jar will serve for most ordinary purposes, and this can be between 1 oz. and 2 oz. size with a top of about 1½ ins. diameter.

A metal screw cap is quite satisfactory if of aluminium, but should it be tinplate it is inclined to rust after a time. Plastic would however be more satisfactory and just as easy to make.

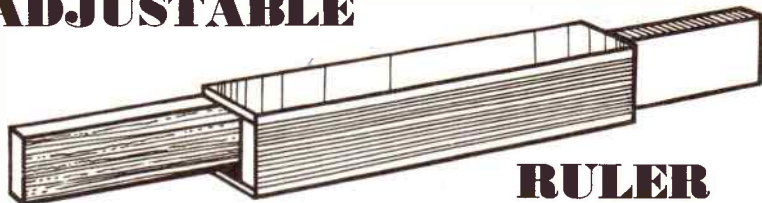
Cut two slots in the lid just over ¼ in.

wide as shown and make them as long as possible without weakening the lid. A fine fretsaw will do the job quite well, after which the slots can be trued up and smoothed off with a fine file and emery cloth.

Cut a strip of absorbent cloth such as a lamp wick to fit across the lid top, through the slots and down into the jar.

One side reaches to the bottom while the other only goes about half-way down. Fill the jar to about three quarters of the way up with water or so that the short side of the strip is well submerged and the damper will continue to function so long as this is covered. When first filled you must allow a little time for the strip to get soaked with water. (A.F.T.)

ADJUSTABLE



RULER

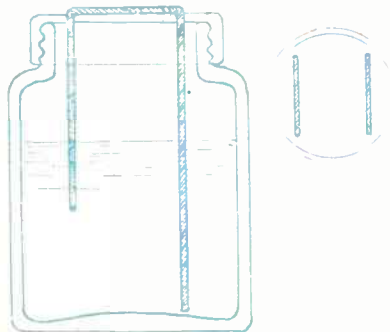
MEASURING in cupboards, at the back of small recesses, or, in fact, in any confined space, is frequently a somewhat tricky business, especially when it is essential to obtain a true reading.

A simply constructed but invaluable small piece of apparatus can be quickly made from two pieces of lath and some odd lengths of thin plywood. It consists of a small box frame fixed to one side of a short length of lath, with another length of lath free to slide through the box frame — in effect, a telescopic ruler which can be expanded or contracted at will to fit and give the desired measurement.

Measurements of the parts required are not critical. For average requirements, the length of the fixed lath can be 12 ins. with a similar length for the

sliding lath. The three sides of the plywood box frame should be about 6 ins. long and of a width to enable the moving lath to slide smoothly in the frame. As will be seen from the illustration, what is really required is a boxed runway for the sliding lath.

To use the ruler, close in the sliding portion and insert in the confined space to be measured. Pull out the movable length away from the fixed end until the ends of both laths are touching the boundaries of the space to be measured, then mark on the moving lath the extent of its expansion from the end of the box. Contract the ruler, withdraw from the recess, and, on the table, re-expand the ruler to the marked limit. The exact measurement of the ruler from both ends can now be accurately taken. (W.J.S.)



HEAT RADIATION

IF you examine the inner glass vessel from a Thermos flask you will see that the glass walls are silvered on the vacuum side. You have already seen how light is reflected from a highly polished plane surface. Radiant heat is reflected in the same way, and you can carry out quite simply a quite startling experiment to prove this. You will require two rectangular pieces of tin plate mounted on wooden bases as in Fig. 1. One side of one piece should be painted dead black with a mixture of soot and shellac, and one side of the other piece should be highly polished.

Now set the pieces of tin plate at equal distances from a piece of gas fire radiant supported by a wire from a retort stand above a Bunsen flame. The piece of radiant will soon emit radiant heat waves.

In a very short time the wax behind the tin plate painted dead black melts and the ball-bearing falls off. Moreover, if you place your fingers behind this piece of tin plate it will feel very hot.

The ball-bearing behind the other piece of tin plate will remain in position for a very long time and if you touch this piece it feels quite cool.

This experiment shows why the walls of Thermos flasks are silvered, and why the reflectors behind electric fires should be kept highly polished.

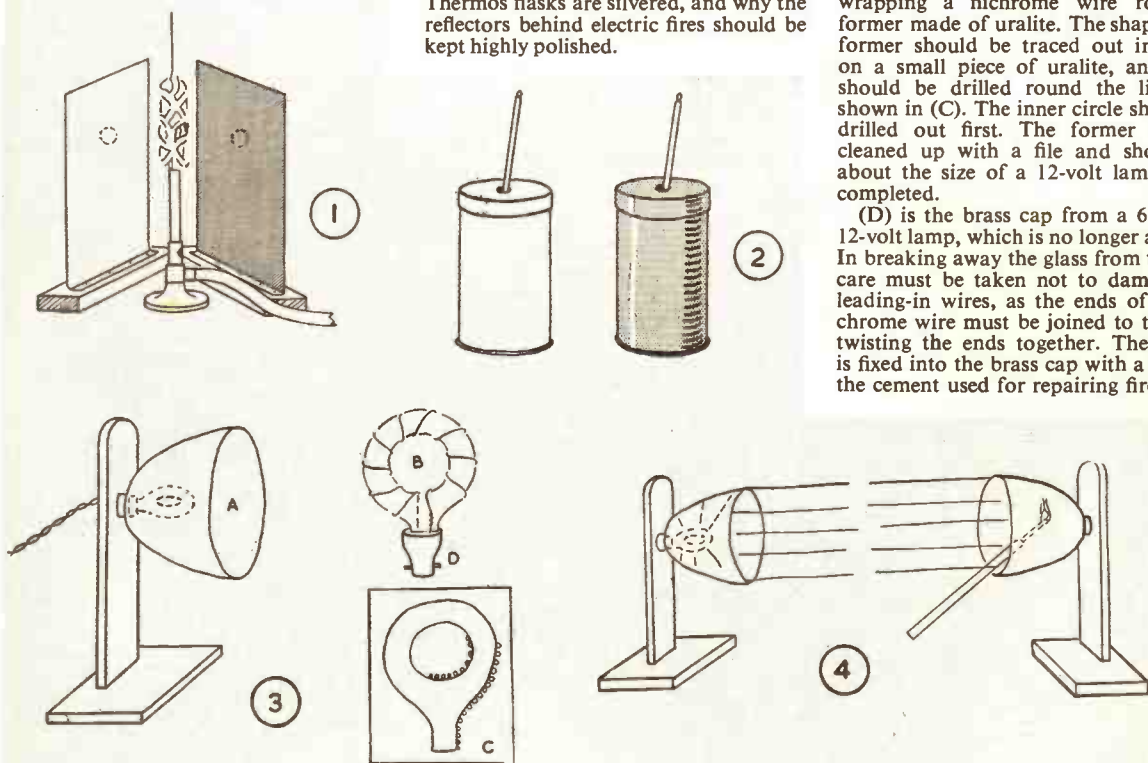
Place equal quantities of hot water in the tins and read the temperature of the water in each tin after each minute. Record your results in a table and then make a graph to show the rate of cooling of the water in each tin at minute intervals.

Curved reflectors

(A) in Fig. 3, is a reflector from a motor car headlamp. These can easily be obtained second hand from garages. The reflector should be complete with lampholder and it is supported on a wooden stand.

The heating element (B), is made by wrapping a nichrome wire round a former made of uralite. The shape of the former should be traced out in pencil on a small piece of uralite, and holes should be drilled round the lines, as shown in (C). The inner circle should be drilled out first. The former can be cleaned up with a file and should be about the size of a 12-volt lamp when completed.

(D) is the brass cap from a 6-volt or 12-volt lamp, which is no longer any use. In breaking away the glass from the cap, care must be taken not to damage the leading-in wires, as the ends of the nichrome wire must be joined to these by twisting the ends together. The uralite is fixed into the brass cap with a little of the cement used for repairing fireplaces.



You will also require two ball bearings and a piece of gas fire radiant.

Melt a little paraffin wax in a tin lid and while it is molten pour a little on to the back of each piece of tin plate, and, before it sets, place a ball bearing in position in the wax as shown by the dotted lines. Hold the pieces of tin plate horizontal until the wax sets hard.

Experiment in radiation

A highly polished surface is not a good radiator of heat. For this experiment you require two similar tins with lids. One should be painted dead black on the outside and the other should be highly polished. Both lids should have small holes for thermometers (Fig. 2).

With the heating element in position in the reflector as shown in Fig. 4, and connected to a suitable source of current, a parallel beam of heat can be reflected a considerable distance across a room, collected by another similar parabolic, reflected and focused on to a match held in a hole in the end of a stick, so that the match head is at the focus of the parabolic reflector. The match will burst into flame. (T.A.T.)

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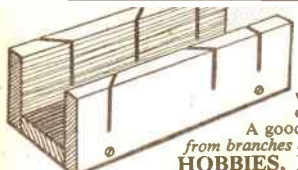
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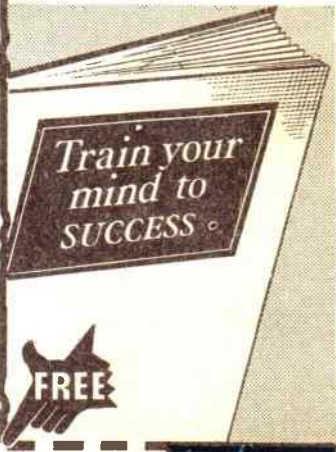
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CROSS AND SQUARE PUZZLES

PUZZLES may be made from crosses so divided that they will reform into their original shape or fit together as a square. And these puzzles have interested many races during the centuries, but here we will concern ourselves with the Hindu and Greek versions.

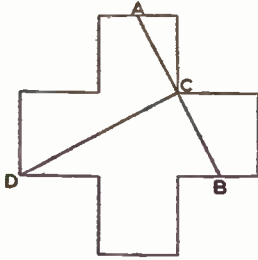


FIG 1

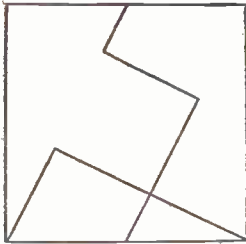


FIG 2

Reference to Fig. 1 will reveal a cross made from a piece of plywood measuring 3ins. square, each arm being 1in. wide, and it will be found best to first cut out the true cross shape before making the divisions, although the whole may be marked out before cutting. Mark the centre of the arms at (A) and (B), joining together through the corner (C). The next and final division is made from point (C) to point (D). Use a fine saw for cutting out, smoothing off carefully with glasspaper. Having proceeded so far, the next step is to fit the four shapes together in the form of a square.

Greek version

You may also prepare another cross of the same dimensions for the next puzzle, and it may be as well to try an experimental one of cardboard. The puzzle here is to divide the cross into five parts, so that a square can be formed. We may mention that this is the Greek version, the former being the Hindu version. Correctly made there are four exactly equal sections plus one other.

Careful examination of the diagrams shown here may be helpful. Reference to

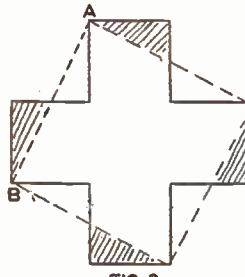


FIG 3

Fig. 2 will indicate how the pieces fit together to form a square in the Hindu version of the puzzle.

The Greek cross puzzle is much different, as will be seen, but hardly so complicated, and Fig. 3 shows how the cross should be divided to produce the five parts. First a square is produced with sides equal in length to the distance between (A) and (B). If a template is made and laid across the cross as indicated by the dotted lines, the shaded portions can be cut off, leaving a peculiar form of cross. With a little patience you will find that the four small triangles so removed will fit the larger portion to make the square. (S.L.)

FITTING A CABIN ON TO A HULL

IN a previous issue I dealt with the renovation of old hulls. One of the most popular uses that renovated old hulls are put to is to form a basis for building a cabin cruiser.

The flooring of the cabin *must* be removable, in order that any damage done to the hull beneath can be quickly repaired. Interlocking boards held by cross boards underneath, resting on movable wooden blocks, suit the purpose best.

In planning the cabin care should be taken that the structure will not make the craft top-heavy. Two things can do this. Firstly, if the materials used, especially for the roof, are too heavy; secondly, if the cabin is too high.

Unhappy experience

Most experienced boatmen with whom I have discussed this matter have condemned the 'I must have head room' mentality. If you are building a smallish hull, be content with sleeping and sitting room. Those who support the headroom theory may be interested in the story of the amateur who was working on a conversion on the upper reaches of a Thames tributary. He had planned to go on a long inland cruise for his summer holiday. When the time came for the maiden voyage of his new craft, he found that the very first bridge he came to was too low for the cabin to pass under. Instead of having a pleasant cruise he had to spend his holiday making adjustments to his boat!

The framework should be fairly

strong, because it has to bear your weight when you are constructing, painting and repairing the roofing. Strips of wood 1in. by 1½ins. should be used for the uprights. If the size of the hull justifies a high cabin, then these strips must be a lot thicker. The cross strips must always be stronger than the uprights.

As far as the covering is concerned Masonite or treated hardboard is ideal for the cabin walls; and the roofing could be a similar material, aluminum or even a thick canvas. The latter could be treated with rubber paint. Since the wall will probably not rise higher than two feet from the top of the hull, it should be an easy matter to cut out circular holes for the port holes with a pad saw, before the Masonite or hardboard strips are screwed onto the framework. Of course, the glass for these need not be circular.

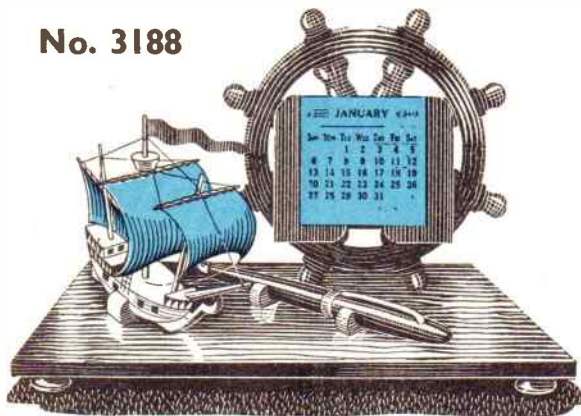
Best for balance

There is some divergence of opinion whether the cabin should cover the whole of the boat, from cockpit to the bow, or whether there should be quarter decking. I, myself, favour quarter decking as the best means of keeping a well balanced craft.

Two hatches, for airing purposes, are required for the smallish cabin. The covers should be made of plywood and 1in. square strips, and should fit neatly over similar strips that are fixed round the opening on the roof. Small double doors should connect the cockpit and the cabin. (G.E.G.)

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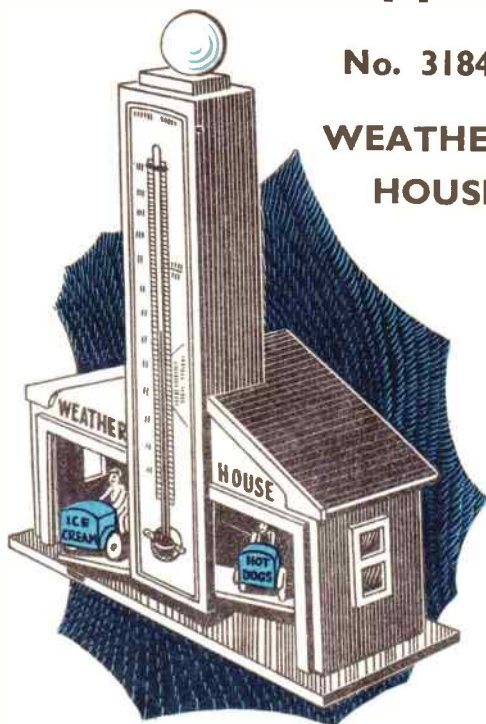


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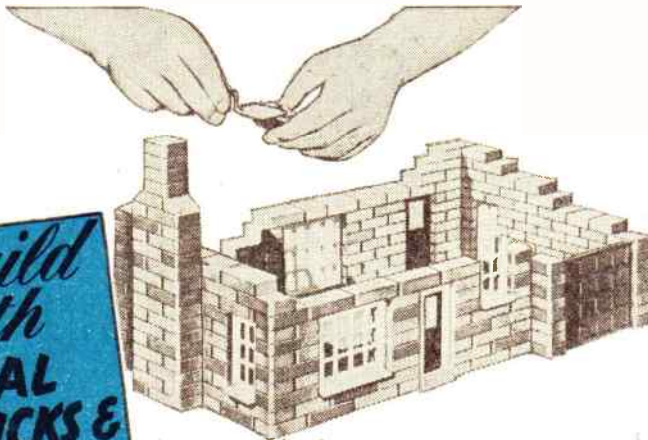
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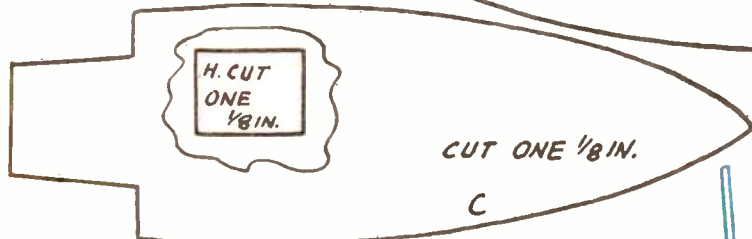
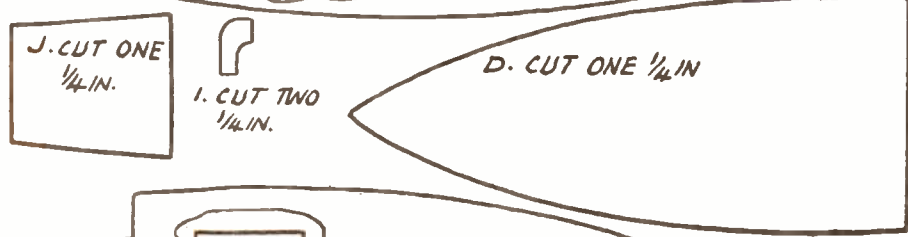
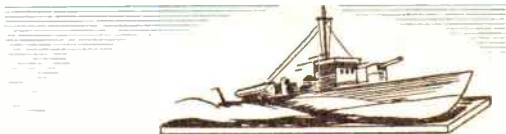
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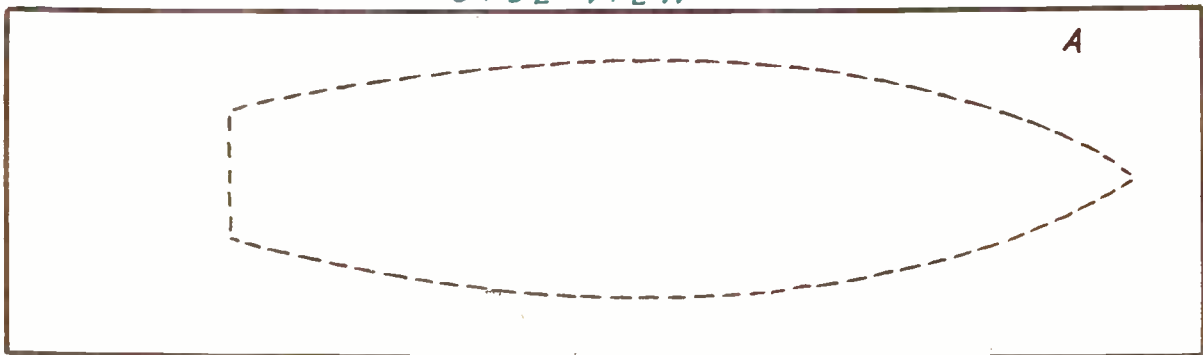
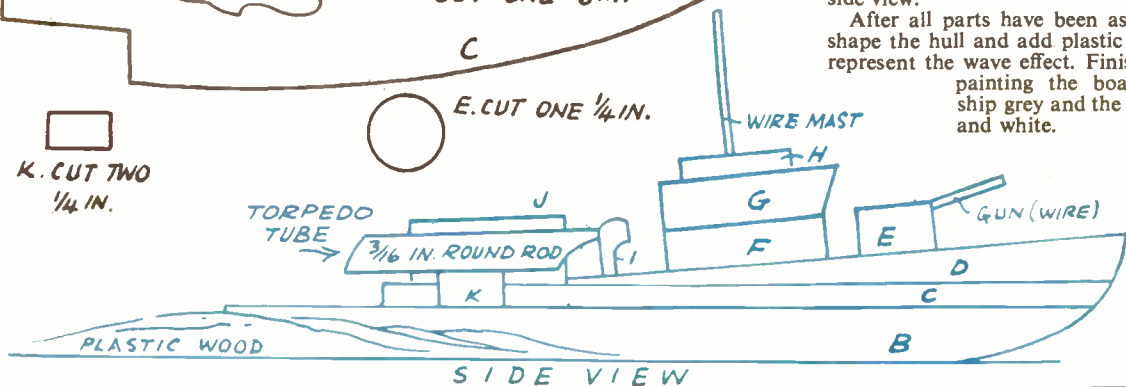


The base (A) is cut from $\frac{1}{4}$ in. wood and the other parts are glued in place, one on top of the other as indicated by the side view. The two torpedo tubes are made from $\frac{1}{2}$ in. diameter round rod and the mast from wire. Rigging is made

from thin thread glued to the deck.

Notice that parts such as (I), (G) and (D) must be shaped to conform to the side view.

After all parts have been assembled, shape the hull and add plastic wood to represent the wave effect. Finish off by painting the boat battleship grey and the sea green and white. (M.p.)





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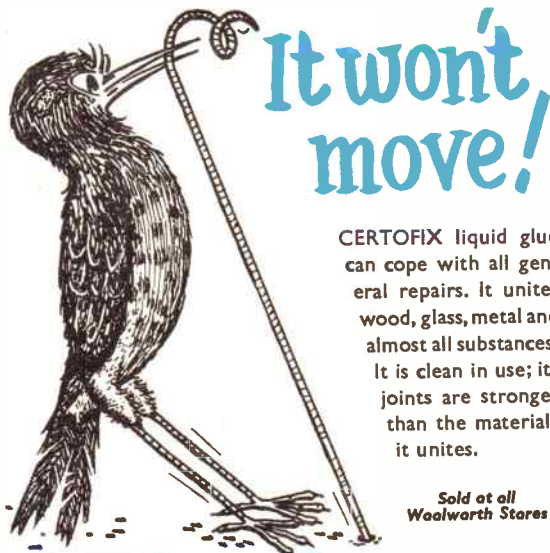
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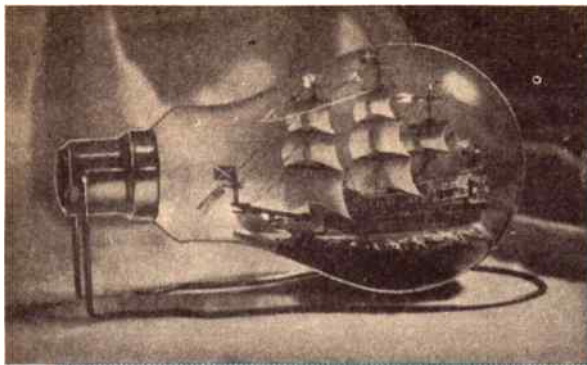


Photo:
K. Fry
Bristol

Galleon in a Light Bulb

A SHIP in a bottle is something which always excites the wonder and admiration of many people. Perhaps no style of modelling displays the skill and ingenuity of the model-maker to greater effect. Here is a novel and intriguing development of this popular branch of the hobby, sent in by a Weston-super-mare reader — the 'Royal Sovereign' in an electric light bulb!

In the construction of the model itself much help can be gained by reference to the Hobbies design of the 'Royal Sovereign' (Design No. 2157). Although the actual dimensions of the galleon must be worked out to suit the size of the bulb employed, the proportions of the model can be gauged from the design and, in addition, the details of colouring, rigging and sails. Naturally, all the details of the larger model cannot be included, but they can be easily simplified to suit the confines of the bulb, the degree of simplification depending upon the skill of the model-maker.

To gain the maximum effect select as large a light bulb as possible — a 150 watt bulb should prove excellent for the purpose — and do not forget it must be of clear glass and not the pearl variety.

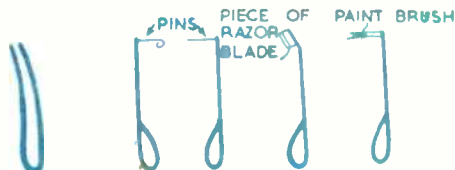
Wrap it in a piece of cloth with the brass cap exposed, and, holding the bulb in the hand, crack and remove the resin holding the two contacts, using a small chisel or nail. A small glass tube will fall out. Now remove the contacts and break the hollow glass stem carefully with a file. The filament, etc., can now be removed quite easily, and, using a file, the hole or opening in the bulb can be enlarged to the required size.

So far as the actual construction of the model is concerned, use thin dowelling or strips of bamboo for the masts and spars, good quality writing paper for the sails, and cigarette paper for the flags. The rigging of black

cotton should be completed, but the masts and bowsprit should not be glued into their respective deck holes.

Having thus far finished the galleon, the final and exciting stage of insertion in the bulb must be tackled.

Special tools for this job are shown in Fig. 1. They can be constructed from



TWEEZERS

Fig. 1

any thin strong wire. All should be from 7ins. to 8ins. long and the pins, razor blade portion and paint brush should be soldered to their relative wire handles.

Before inserting the model, prepare and insert the 'sea' which is made from pieces of cotton wool soaked in plaster of paris and painted appropriately when dry.

To insert the galleon, the masts and rigging must be neatly laid flat on the

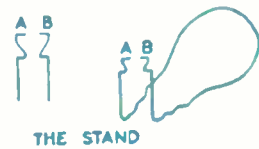


Fig. 2

Finally, the stand, as pictured in Fig. 2, is made from stout wire of about $\frac{1}{4}$ in. diameter, the size depending, of course, on the bulb.

Bend the wire to the shape shown, the ends (A) and (B) being inserted into the holes for the locating pins being sprung into position, or, if preferred, soldered from the inside. The brass cap should be filled with plaster or such substance, and glued back on to the bulb. (P.P.)

Continued from page 358

Concrete Garden Ornaments

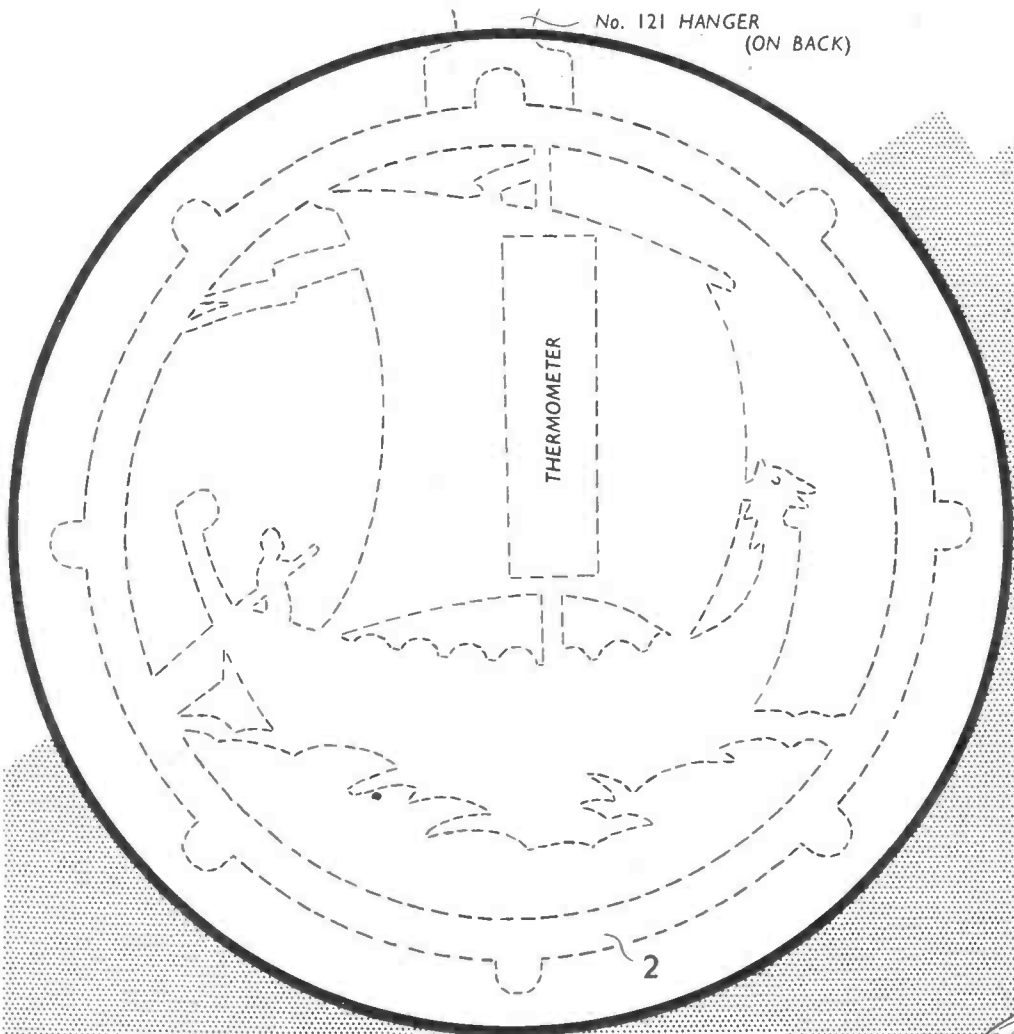
the cement, being careful not to damage the edges of the tower. The same mould should be used again to make another four towers.

When these are ready, place four of them in position in the form of a square, 12ins. apart, and use foot long pieces of wood to place between them for a mould (F). Fill the area inside the square with cement to a depth of 6ins. and set the fifth tower on the middle of this, letting it settle a little way into the wet cement to hold it in place. If the castle is to be purely ornamental, build it on a raised bank or flower-bed, but if it is to be used as a toy, the best place for it is to one

side of the lawn, where it will not get in the way of the grass-cutter, and no damage will be done to plants.

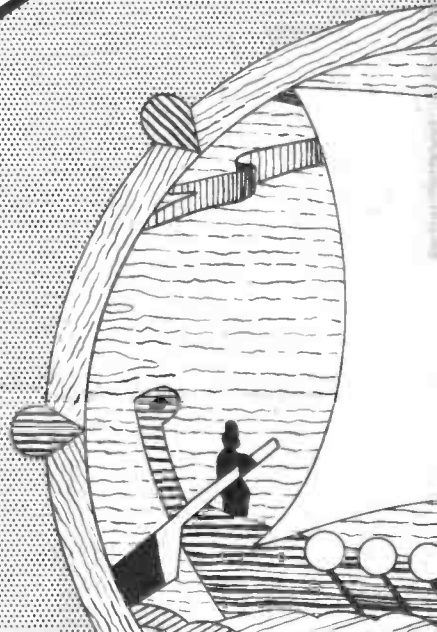
Lastly, a concrete bridge is an unusual way of crossing a flower-bed to a lawn, instead of having a path. Here, hardboard is easy to shape for the lower side of the arch, and wood is used for the sides. The cement mixture should be stiff, so that it will not creep down the slope of the arch while it is still wet. Smooth the top surface with a trowel and do not let the thickness of the cement in the middle of the arch go below 4ins. Do not walk over the bridge for a week at least, to give the concrete a chance to harden. (A.L.)

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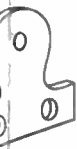
HOBBIES N
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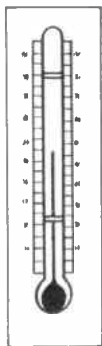
DESIGN

No.
3280

A THERMOMETER PLAQUE

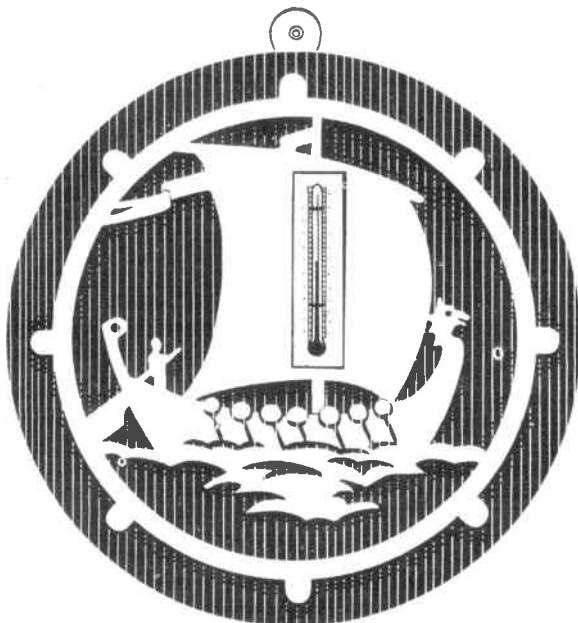


No. 121
HANGER.



HOBBIES
No. 5016
THERMOMETER.

THE ARROWS INDICATE
DIRECTION OF
GRAIN OF WOOD.



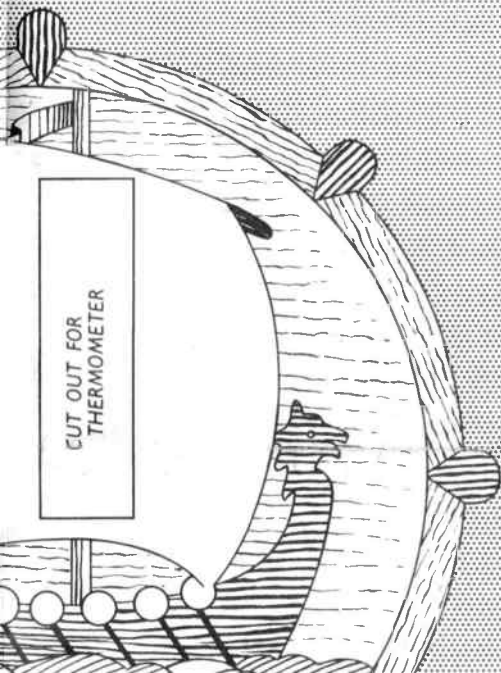
SIZE — 5½ ins. DIAMETER.

PANEL OF WOOD REQUIRED
FOR THIS DESIGN

ONE Q3

A KIT OF MATERIALS FOR MAKING THIS DESIGN
IS SUPPLIED BY HOBBIES LIMITED
DEREHAM, NORFOLK.

PRICE ON APPLICATION.



Use Croid POLYSTIK

IT'S DESIGNED FOR THE JOB

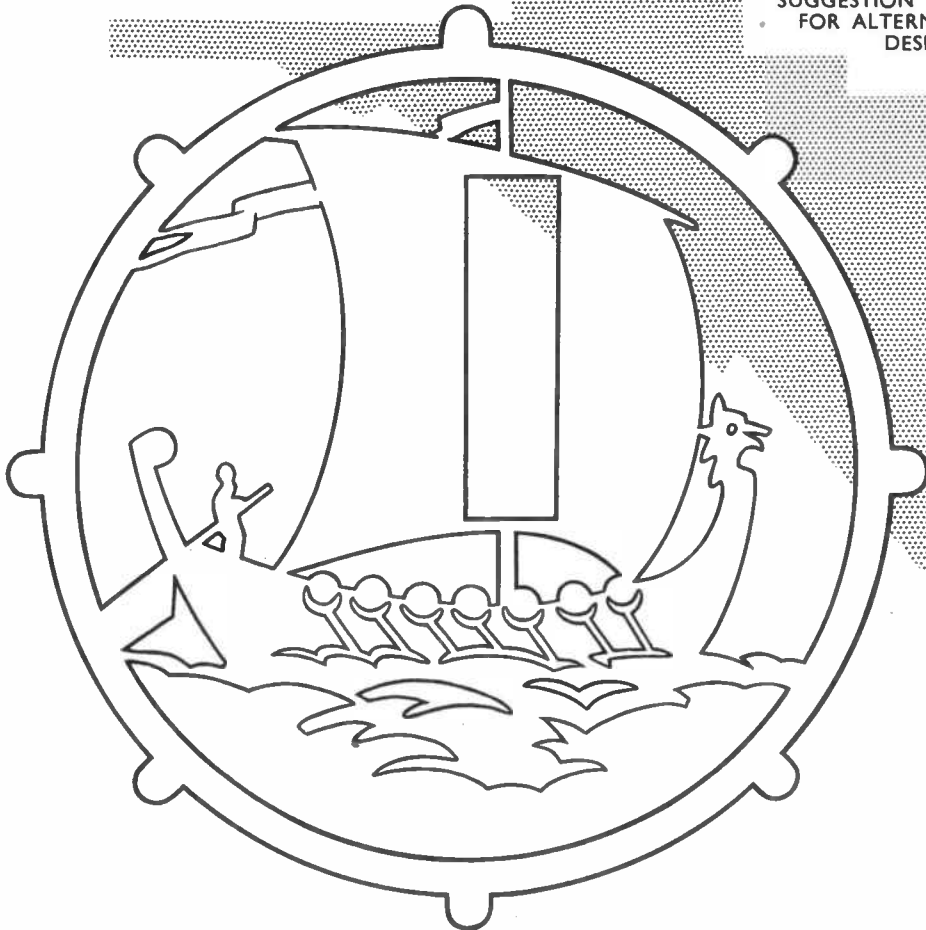
A cold liquid PVA adhesive combining
instant grip with immense and lasting
strength. Clean to use, non-staining. In
polythene bottle with spreader 2/6.

AVAILABLE FROM ALL BRANCHES OF HOBBIES LTD.

AN ATTRACTIVE GIFT

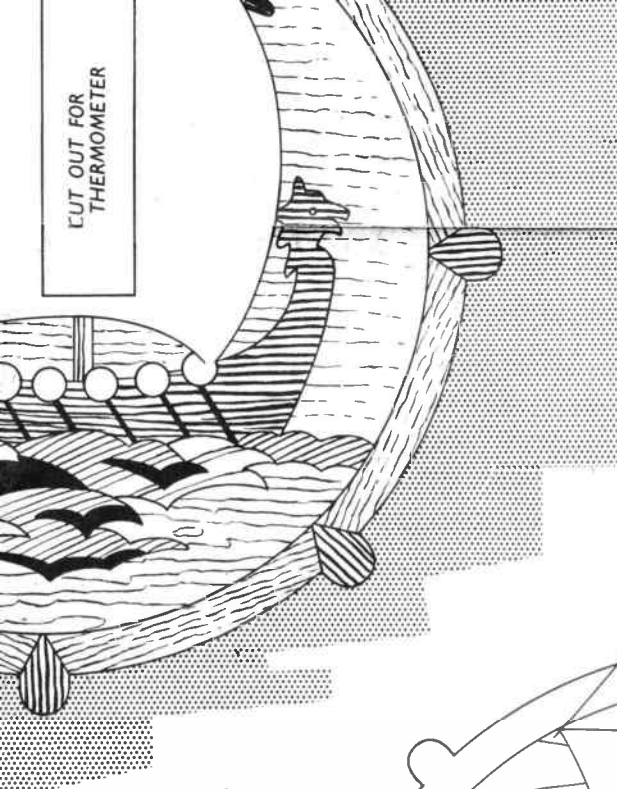
PIECE 2. CUT ONE $\frac{3}{16}$ in.

SUGGESTION
FOR ALTERNATIVE
DESIGN IN
MARQUETRY.



PRICE ON APPLICATION.

CUT OUT FOR THERMOMETER

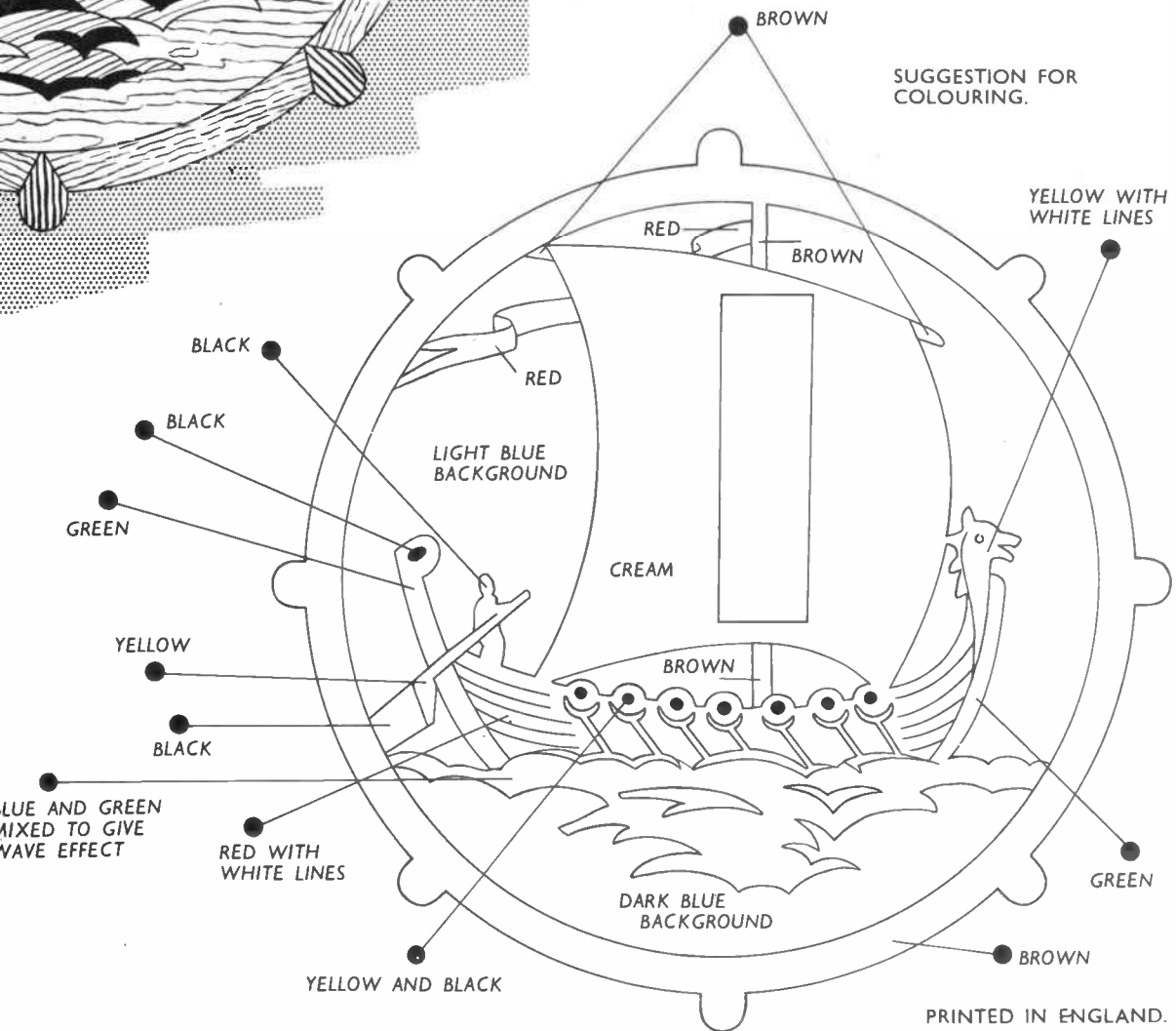


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