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

Ideal as a gift or for your home

THIS contemporary lamp is attractive enough to be made up purely for its decorative value. The miniature galleon will be admired by everyone. It would be an ideal wedding or birthday gift and no doubt many could be made up for sale.

The original purpose, however, is to exhibit your own models. A small galleon ship or aeroplane made up from a Hobbies kit can be spotlighted as it rests upon the platform where it is seen to the best advantage.

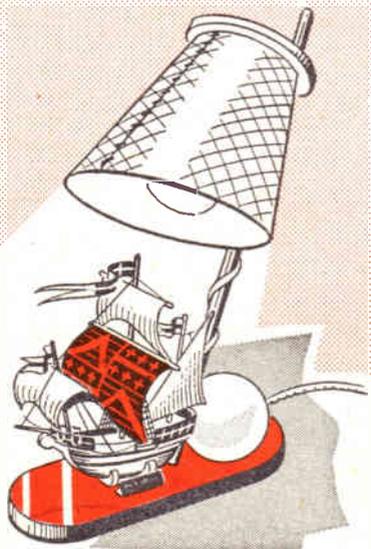
The shade is adjustable for height and models of up to 10ins. high can be

TWIN

PURPOSE

accommodated. Larger models will require some modification, but it will be a simple matter to increase the height and enlarge the base.

Fig. 1 shows the general layout with the various parts lettered. The base (A)



is cut from ¼in. wood, the dimensions being shown in Fig. 2, which also gives details of pieces (B) and (D). Cut these from ¼in. wood and shape piece (D) to the section shown. Note that the flex goes through the small hole in piece (B).

For exhibiting models or as a set piece

Piece (E) is a 2½in. turned wooden ball (price 1/3 from Hobbies Ltd. Dereham, Norfolk), which is secured to the base (A) by means of a countersunk screw (Fig. 1). The ball is drilled to take the flex as indicated by the dotted lines.

The lamp holder is held in place by means of a threaded plastic nipple which is screwed to piece (B). Lamp holders cost 2/-, postage extra, from Hobbies Ltd. Dereham, Norfolk. The flex winds round the column of ¼in. diameter round rod (C) and out through the ball (E). You will see from this that piece (B), which is not fixed in any way, will slide up and down the column to give varying heights for the shade. Clear plastic covered flex should be used if possible. The column (C) should be approximately 19ins. long.

Piece (D) is glued to piece (B) and

forms the support for the shade which is held in place by glue or small drawing pins. The shade is made from crinothene or parchment and is set out as shown in Fig. 3. At the point (G), where the extended sides of the shade meet describe

two arcs (HF) and (IJ). The length of the larger arc is equal to the circumference of the large end of the shade — approximately 30ins. Bisect the arc with line (LK) and measure 2ins. along this line from (G) to (K). At this point describe another arc, shown dotted, with a diameter of 16ins. This gives the final shape to the shade which is shown tinted with red.

Holes may be punched along the two edges (HI), (JF) and laced with plastic thonging. If parchment is used the joint could be made with an impact glue.

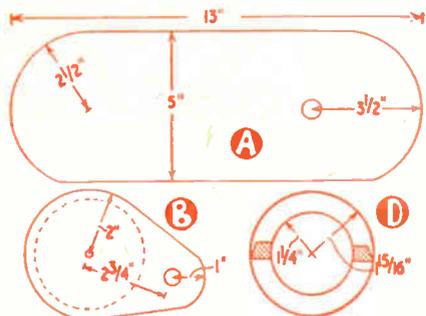


Fig. 2

If you wish to make up a galleon to suit the lamp, we suggest Hobbies kits for The Warwick (No. 3164) The Regent (No. 3064) or the King's Ship (No. 3108). Prices are approximately 8/- to 10/-. Details will be sent on application.

The diagrams in Fig. 4 give enough information for a simple galleon if you wish to make one from odds and ends. No definite measurements have been given, but a scale is provided so that you can enlarge the drawings as required.

Build the hull by the bread and butter principle, shaping the two halves of the hull before gluing them to the keel. The masts and spars are shaped from 1/4 in. round rod and the sails are cut from parchment. There is no need to put much rigging on the model, it will be sufficient to add shrouds and a few running lines to give a realistic effect. Details of the colours are shown in Fig. 4. (M.h.)

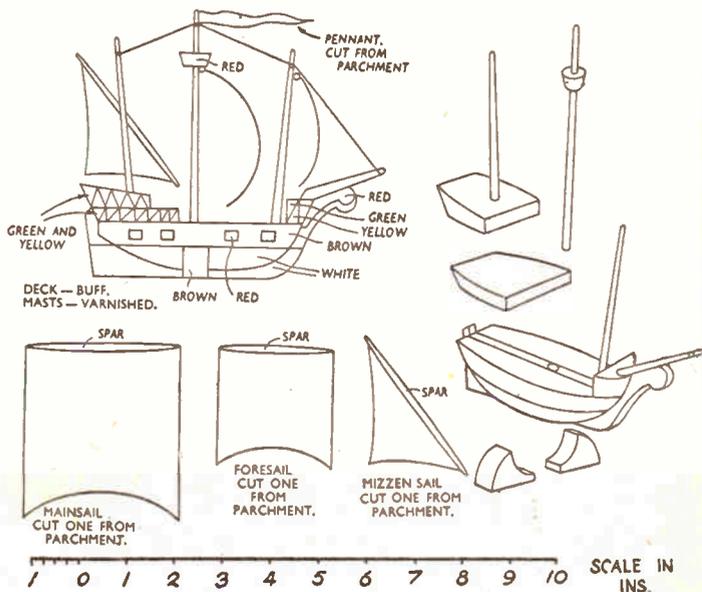


Fig. 4

Useful edge-to-edge joint

THE diagram shows a novel method of joining two boards together, edge to edge, with or without glue.

In the edge of one board insert two or more screws, depending on the length to be joined, with their heads projecting about 1/4 in.

In the other board, at corresponding distances but about 1/2 in. offset, drill holes large enough to take the heads of the screws, and slightly deeper than their length. Cut keyhole slots as shown

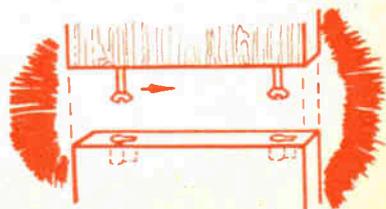
wide enough to take the screw shanks.

Position the screws in the holes and, with a mallet, drive the board with the screws in the direction of the arrow. The sharp edges of the screwheads will cut into the wood at the sides of the slots and their tapered shape will force the two boards tightly together, making a very secure joint. If glue is used, the joint will be permanently immovable, otherwise the joint can be knocked undone at any time.

The ends of the boards will, of course,

have to be trimmed off and allowance for this should be made when marking out.

(G.F.T.)



CHEMISTRY IN THE HOME

MAKING ARTIFICIAL SILKS

CURIOSITY may have killed a cat. Chemists, too, are curious people, but they generally produce a happier result! Curiosity leads chemists to spend much of their time examining the properties of naturally occurring substances or laboratory discovered substances. Digestion of these facts and a happy inspiration may produce something of great use to the man in the street. Such has been the case with the artificial silks.

Starting from a knowledge of cellulose there have been added to man's aids not only silk garments, but dopes and lacquers, plastics and explosives.

Silk was always dear and cotton

that this mixture when squirted into a dilute acid forms a silky thread. This is known as cuprammonium silk and its preparation in the home laboratory illustrates an important and typical method of artificial fibre formation.

First make a strong solution of copper sulphate in water. Stir into this a little at a time sodium hydroxide solution until a drop of the mixture turns red litmus paper blue. Blue copper hydroxide is precipitated. Filter this off using a filter pump and wash well with water. Dissolve as much of this as possible in 20 c.c. of strong ammonium hydroxide. The resulting blue solution is cuprammonium hydroxide.

Shred some filter paper, drop it into the solution and stir thoroughly for some time. Let the mixture stand overnight. The paper dissolves.

donnet silk these days. The reason will be plain at a later stage of our experiments. First let us make some.

In a small beaker put 10 c.c. of strong nitric acid, stand the beaker in cold water and slowly stir in 20 c.c. of strong sulphuric acid. Any acid coming in contact with the skin should be dealt with by flushing off with water and dabbing on of sodium bicarbonate paste.

Put 0.5 gram of cotton wool into the acid mixture and work it about with a glass rod for five minutes, so that it is evenly wetted. Transfer the cotton to a beaker of water, wash it with several changes of water, squeeze it nearly dry and then spread it out to dry completely. Stir 0.25 gram of this with 10 c.c. of a mixture of equal volumes of ether and methylated spirit. Separate any un-

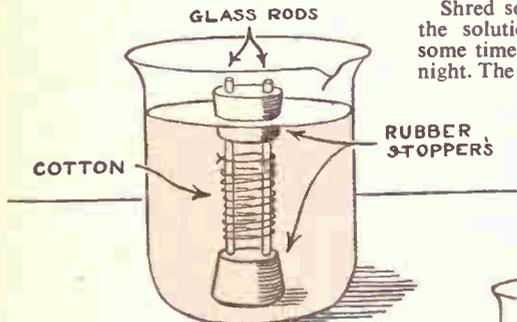


Fig. 1 Mercerising silk

cheap. Chemists asked themselves if there were not some means of improving the appearance of cotton. There is. Dissolve 25 grams of sodium hydroxide in 100 c.c. of cold water. Drop in a 12ins. length of ordinary white cotton thread. It writhes about in a lively manner (this is an amusing 'chemical snake' to show your friends). Remove the thread after a minute and wash it well in water, dry it and measure it. It will have shrunk by about a quarter of its original length and also now be considerably thicker.

Repeat the experiment with the cotton under tension, using the apparatus shown in Fig. 1. Wash and dry the cotton still under tension. It will now have a lustre. This is mercerised cotton, and though still not as pleasant as silk to look at or handle, it is an improvement.

Regenerated cellulose was another method of improving cotton. It was found that cellulose will dissolve in a solution of copper hydroxide in ammonia (cuprammonium hydroxide) and

Draw out a glass tube to a fine jet, put in some of the paper solution and attach the connector of a bicycle pump to the tube by means of a rubber tube (Fig. 2). The plunger of the pump should be drawn out *before* connecting up. Hold the jet over a beaker containing dilute hydrochloric acid, and press down the pump plunger. As the stream of paper solution enters the acid, a thread of cuprammonium silk will be precipitated. Wash this well with water and dry it.

The thread so obtained is solid, of course. In practice, very fine jets called spinnerets are used and the cuprammonium silk forms as a fine fibre which is spun into thread. With variations, this spinneret process enters into all the methods of making artificial fibres.

We do not hear much about Char-

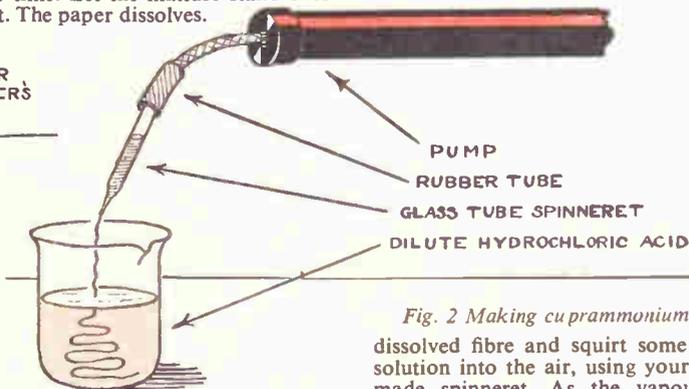


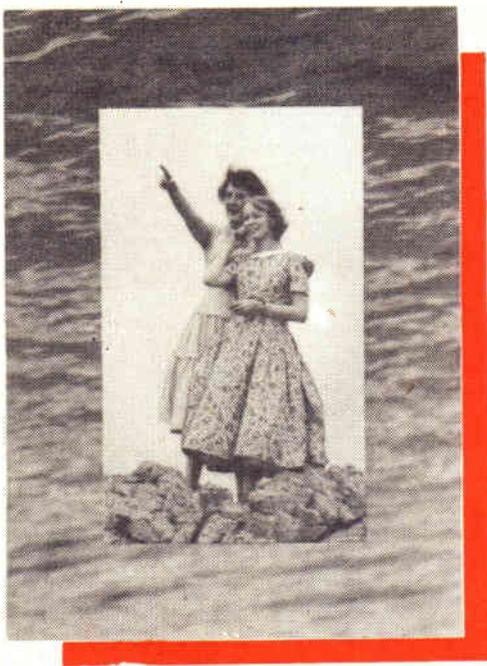
Fig. 2 Making cuprammonium silk

dissolved fibre and squirt some of the solution into the air, using your homemade spinneret. As the vapours are inflammable, this should be done in absence of flames; better in the open air. As the ether-meths evaporates a thread of silk remains.

This was a very early process for making artificial silk and was named after the Frenchman de Chardonnet, who first made the method practicable. Hold a little of this Chardonnet silk in tweezers and apply a light. The thread burns with a flash. This is why we hear little of this silk now. It is far too inflammable and consequently dangerous for clothing.

Yet the idea was not thrown overboard. Medicine makes use of it in the form of collodion. Spread some of the ether-meths solution on a finger. A film will be left behind. This is used in corn cures and for protecting wounds. The

Continued on page 282



NOVELTY PICTURE BORDERS

*Described by
S.H.L.*

Use thin opaque card for the masks, cutting out with a really sharp knife to produce clean lines and using a set square for perfectly accurate corners. The central opening is for the picture area and may be used for horizontal or vertical pictures. Sizes given are those used for the actual illustrations where there is a 1-in. border, but you may modify to suit your own convenience.

HERE is a method of giving a new look to your pictures, only requiring the making of simple masks and some care in processing. It gives the effect of two pictures, one on the other, yet actually printed on one piece of paper.

You will observe from the illustrations that a new border has been prepared for a central picture and that each border bears a distinct relation to the picture it surrounds. A shingled border has been provided for the youthful fishermen, sea for the two young ladies admiring the view from a rocky standpoint, and growing oats combine with the peaceful countryside scene.

It will be appreciated that two negatives are required for each set of these composite pictures. For example, pictures were taken of shingle on the beach, the sea and the growing oats. There is nothing difficult about this, but all these negatives may be used whenever you wish for making appropriate borders for any selected pictures. And, of course, there are many other border pictures you could take specially and which would extend the idea even further.

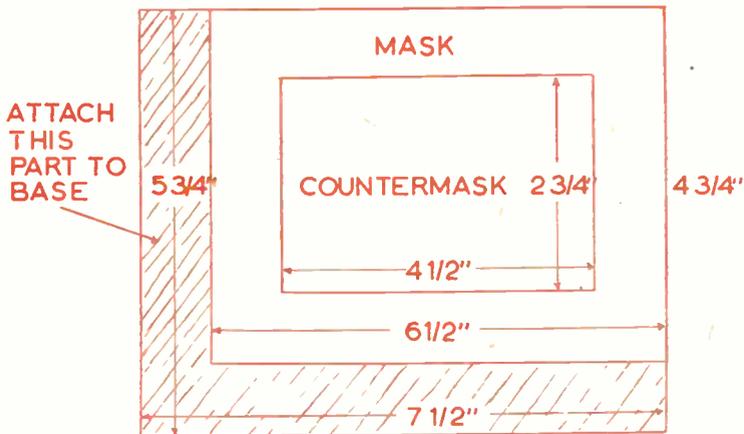
A mask is made as shown in the diagram, providing the means of shielding the border while the central picture is printed, then masking the latter while the border is printed, with the L-shaped portion keeping paper and masks in perfect register during the operations. Note that all three parts are required for the process.

vertical pictures. Sizes given are those used for the actual illustrations where there is a 1-in. border, but you may modify to suit your own convenience.

ceed to make the composite pictures. First of all, fasten the L-shaped piece of mask to a baseboard by pushpins — hardboard or plywood will serve this purpose — placing the border mask in position. Focus your picture on to the central opening where a piece of plain paper has been placed temporarily, and we are almost ready for the printing.

Take a piece of printing paper, place the border mask on top and both on the baseboard, fitted accurately to the L shape. Care must be taken to ensure that mask and paper fit perfectly into the angle, holding down if necessary with a weight.

The exposure may now be made for the period shown by the tests. Exchange the negative for the border picture, place the oblong counter mask (cut out for the picture area) in the centre of the framelike border mask. Do not disturb the pieces in any way when handling, holding down with the fingers while the mask protecting the border is removed.



Moreover, it is not essential that the border should be equal all the way round, and for a change you may make a square aperture.

Before making the prints it is essential to make test exposures of both negatives to be used, but once the data is known for the borders, it will be unnecessary to make further tests of these for subsequent prints.

Having made the tests you may pro-

With the safelight over the enlarging lens you may now move the baseboard until the best position is found for the border image, after which an exposure is made for the correct time. Development then proceeds as usual. It will be realised that it is important to move the baseboard as little as possible, so as not to disturb the pieces, but a little practice will show what is required.

The necessity for accurate tests is

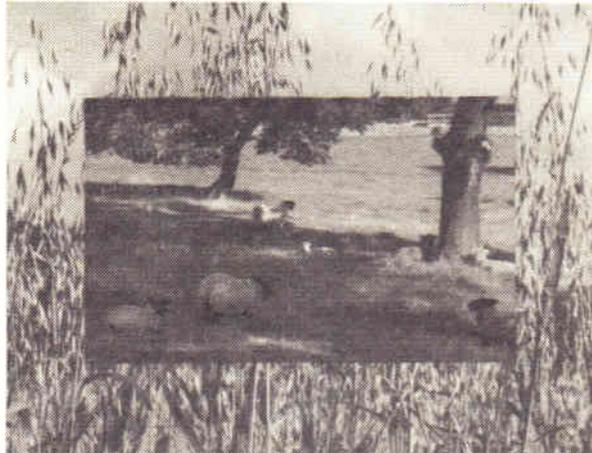
emphasised since exposures are made from two entirely different negatives, probably of different densities, but developed on a single sheet of paper at the same time.

As already mentioned, you may vary

revealed, often to good effect, at the same time, the border should never be allowed to dominate the main picture.

Another variation you may like to try is a circular opening, although a little more difficult to prepare. Here you

successful prints can only be made by keeping masks and paper in exact register throughout the process of printing. After the first exposure hold the border mask firmly while the oblong counter-mask is placed in position, re-



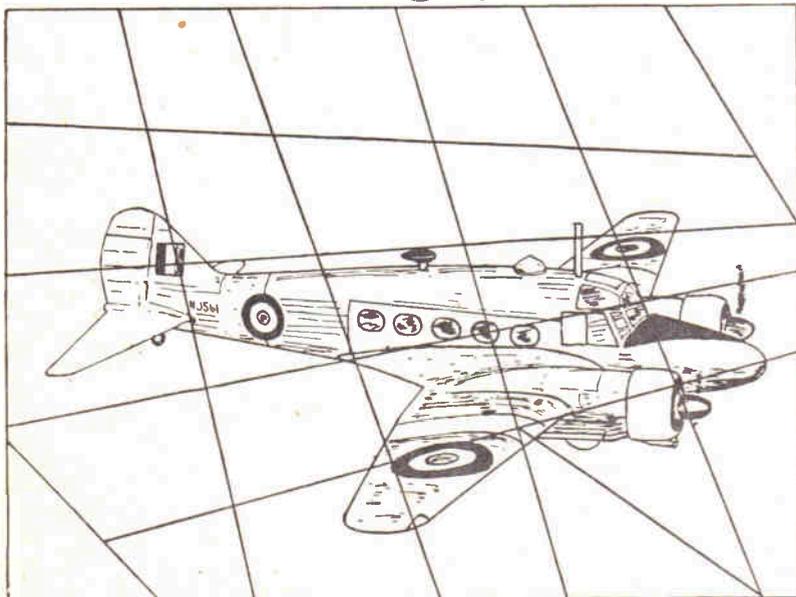
the shape of the opening as you wish. For vertical pictures a square aperture is to be recommended, positioned so that it allows equal borders at the top and sides, but much deeper at the base. In this way more of the border picture is

could use a cup laid out on the masking paper as an aid to cutting out, after ensuring that the rim is equidistant from the top and sides. And here a sharp knife is most essential for clean cuts.

Finally, it should be noted that

moving the border mask without the slightest disturbance. You cannot use pushpins to hold the masks in position, since they would pierce the paper, but it is possible to use small weights to keep the masks and paper in perfect contact.

Solution to Jig-Quiz No. 6



The subject of last week's quiz was the Avro Anson, many of which are still giving faithful service today in many parts of the world. The words spoken at

the ceremony referred to were those of Sir Roy Dobson, Managing Director of A. V. Roe. The '504', also mentioned, was a famous 'ancestor' of the Anson.

★ ★ ★ ★ IRON OR STEEL ? ★ ★ ★ ★



Sometimes the amateur is confronted with the problem of determining whether a piece of metal is iron or steel. Here is a very simple method of solving this question.

Place the piece of metal to be tested over a flame and file it lightly. A gas flame is just the thing, and the file should not be too smooth. If the resultant filings project sparks in the flame and they produce a crackle, then the parent metal is steel. If no crackle is heard then the metal is iron.

There are more elaborate methods, of course. But for the amateur this is a ready test and simple enough for anyone to carry out in the home workshop. (G.H.H.)

A workshop space saver

CONTAINER FOR SMALL PARTS

A WORTH-WHILE addition to your workshop is this space-saving, swing-away unit for storing small parts.

The bins are flat toffee or biscuit tins. Most homes have a few, doing nothing. Or they can be purchased quite cheaply at your local sweetshop.

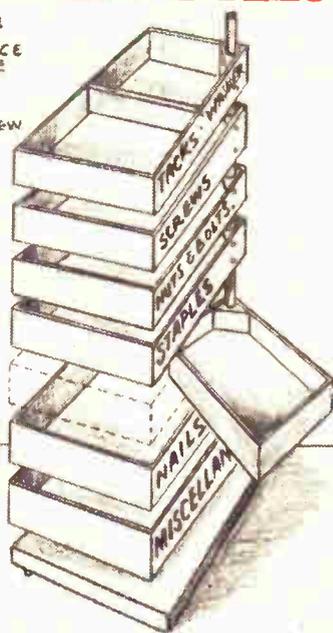
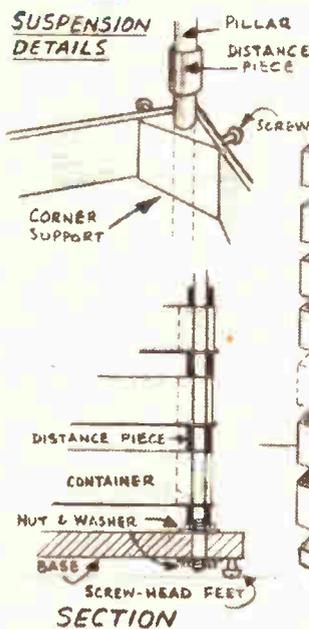
The bins swing around on a pillar, or $\frac{1}{2}$ in. conduit tubing or $\frac{1}{2}$ in. solid bar. The end of the pillar is threaded and passes through a baseboard of lin. thick wood, cut to a size approximately lin. larger all round than the tin dimensions. It is held with washers and nuts on each side of the base-board.

By E. Capper

Four dome-headed wood screws sited on the underside of the base near the corners, give clearance to the nut holding the pillar, and also allows the base to stand firm.

The tins you use need not necessarily be of the same dimension. To avoid top-heaviness, however, mount the larger tins at the bottom of the column.

The tins are held suspended by wooden corner pieces fixed across the right-hand front corner, and held by screws through from the front of the tin. The supports should be large enough to allow holes to be drilled through them



to carry the conduit tube bearing. The tins are kept apart by $\frac{1}{2}$ in. long distance pieces, made of tubing that fits easily over the column diameter.

The column, like the tins, has its fixing near the front right-hand corner of the baseboard. Burr over the thread end on

the column to prevent lock-nut loosening.

To house very small parts, you can if you wish, divide some of the compartments into two as shown. Use a good-fitting divider made of $\frac{1}{2}$ in. plywood fixed through from the tin front and back, with woodscrews.

● Continued from page 278

Making a Camera Lucida

board for the back and top as shown in Fig. 2a, made in one piece, and measuring $3\frac{1}{2}$ ins. by $5\frac{1}{2}$ ins. Score the card along the centre as shown, making a peephole in the centre of the top $\frac{1}{4}$ in. in diameter. Describe a circle with compasses, pierce the card with the leg all the way round the circumference, pushing through the waste material.

The small mirror is glued to the back of the card, which allows $\frac{1}{8}$ in. on both edges for fixing to the plywood end pieces. After fixing the mirror in position, the back can be glued and pinned on to the sidepieces, but before attaching the top, a piece of clean clear glass measuring $3\frac{1}{2}$ ins. by $3\frac{1}{2}$ ins. must be placed on the cardboard strips. The top can now be fixed in position, and the camera will be ready for sliding on the arm after the glue has set. If you also

use fine pins for fixing, take great care, or you may break both the mirror and glass.

The camera should fit quite tightly on the arm, yet you may find it necessary to adjust a little when ready to draw, but this can be accomplished by gently easing.

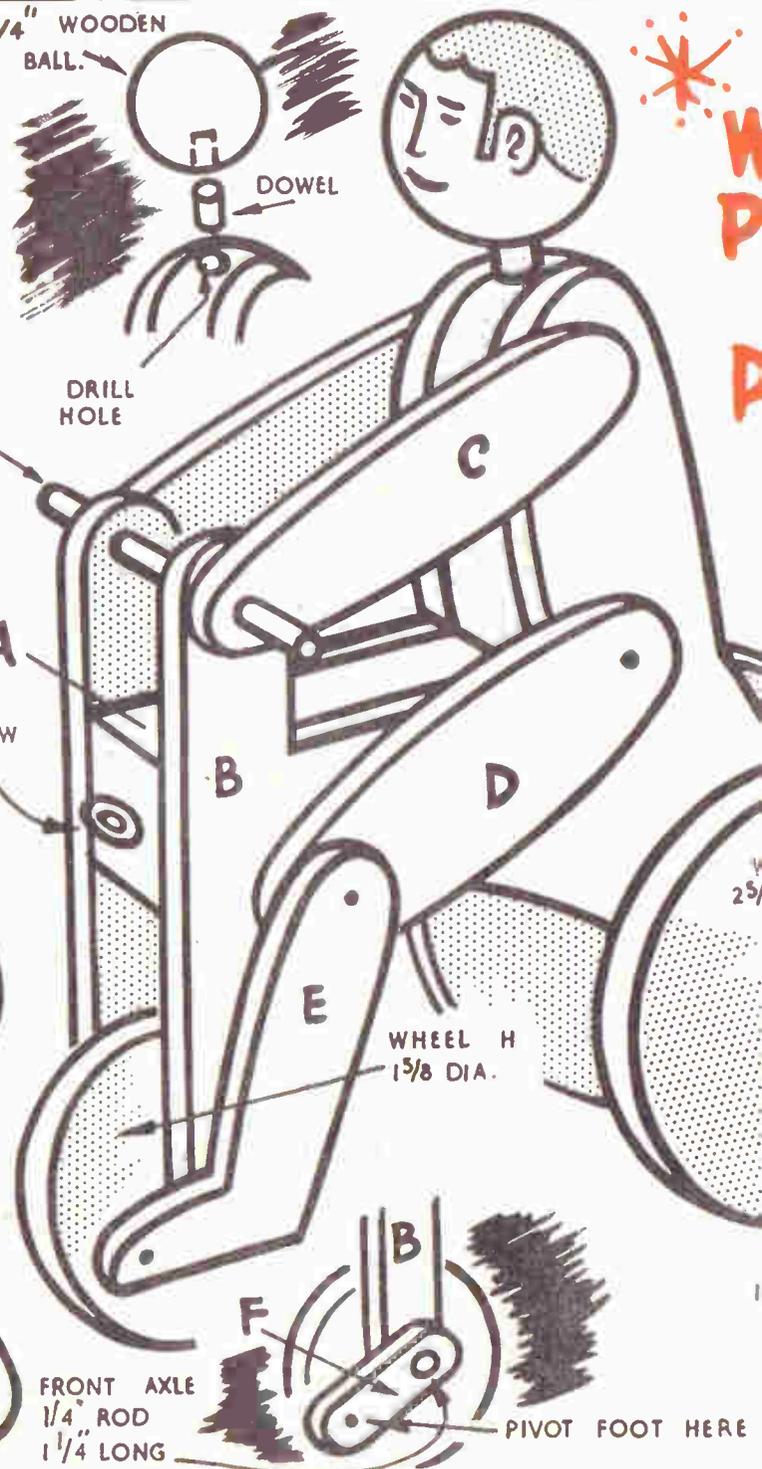
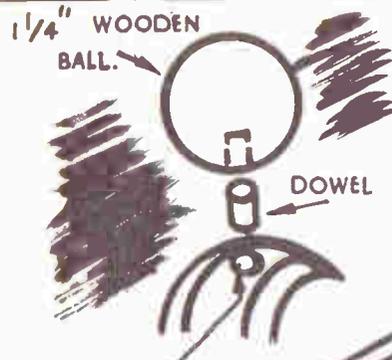
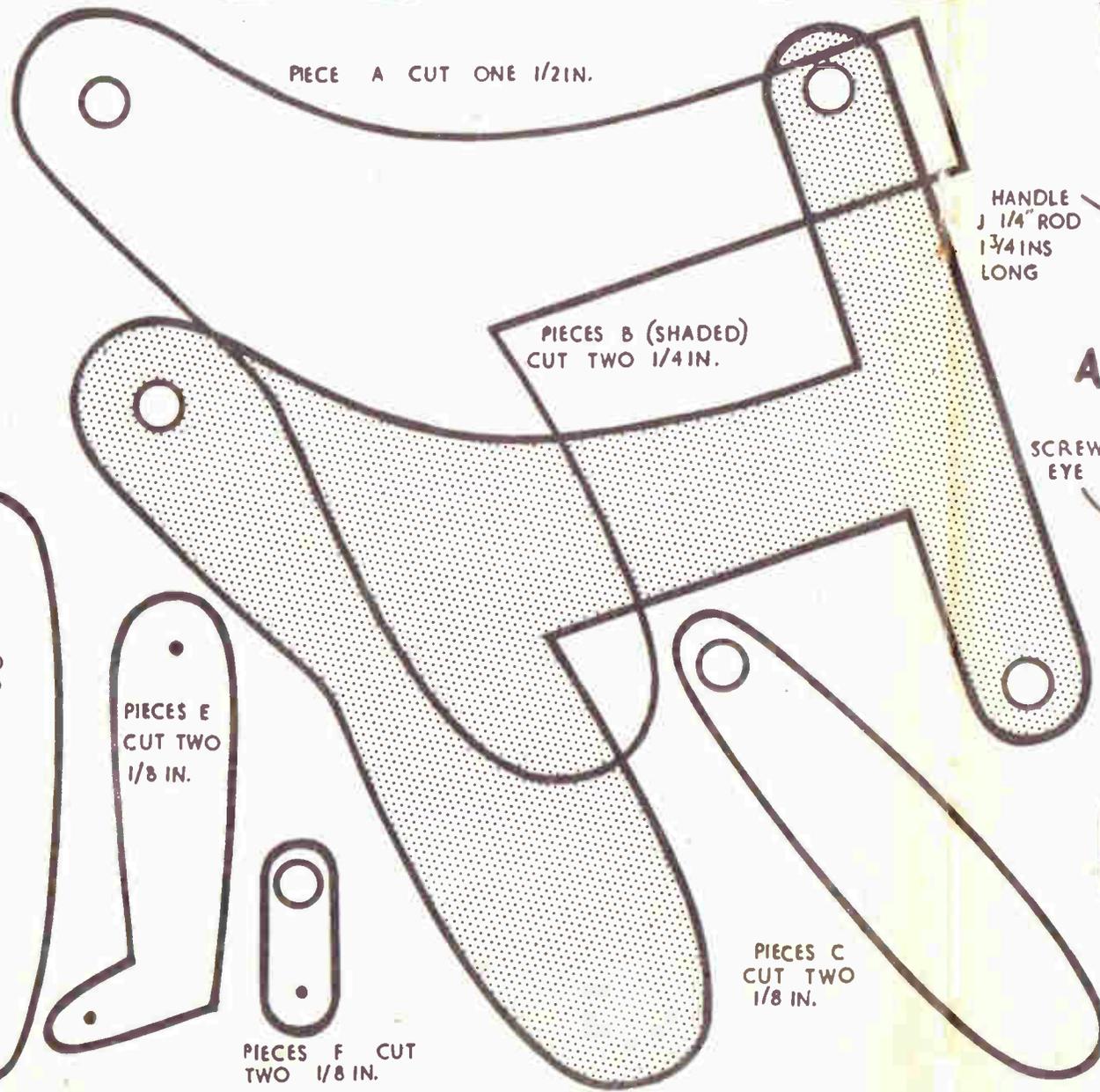
You must not be impatient if the device at first appears to be defective, or no image appears. View any object laid on the table with the left eye held about 3 ins. over the peephole. No hard and fast rule can be given about this distance, and it may be necessary to shift your eye a little either nearer or farther away until the correct position is found, and this will be when the image appears on the paper placed on the baseboard below. You should note that this image on the underlying paper is really an optical

illusion, for it is actually being reflected via the mirror and glass. All the same, the image *appears* to be on the paper. If after repeatedly changing the distance of your viewing eye the picture still does not appear, then you may change the angle of reception by slight adjustment of the camera on the rod, easing it round until it accepts the image, more or less in the same way that you would point an ordinary camera.

Another factor to note is that the lighting may not be helpful, and you may find it better to work with your back to the light. Experiment and practice will soon enable you to adjust the instrument and eye for receiving a clear image on the paper, when it becomes a simple matter to outline with a pencil quite rapidly, and with correct perspective.

You are not restricted to still life subjects in the house, for if the instrument is constructed as mentioned, it may be dismantled for carrying in a box, enabling sketches to be made out of doors.

EYELIST



BIKELIST

**WATCH HIM
PEDAL AS
HE'S
PULLED
ALONG**

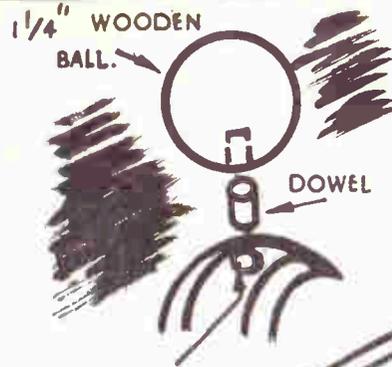
PIECE A CUT ONE 1/2 IN.

PIECES B (SHADED)
CUT TWO 1/4 IN.

PIECES E
CUT TWO
1/8 IN.

PIECES F CUT
TWO 1/8 IN.

PIECES C
CUT TWO
1/8 IN.



DRILL HOLE

HANDLE J 1/4" ROD
1 3/4 IN.
LONG

SCREW EYE

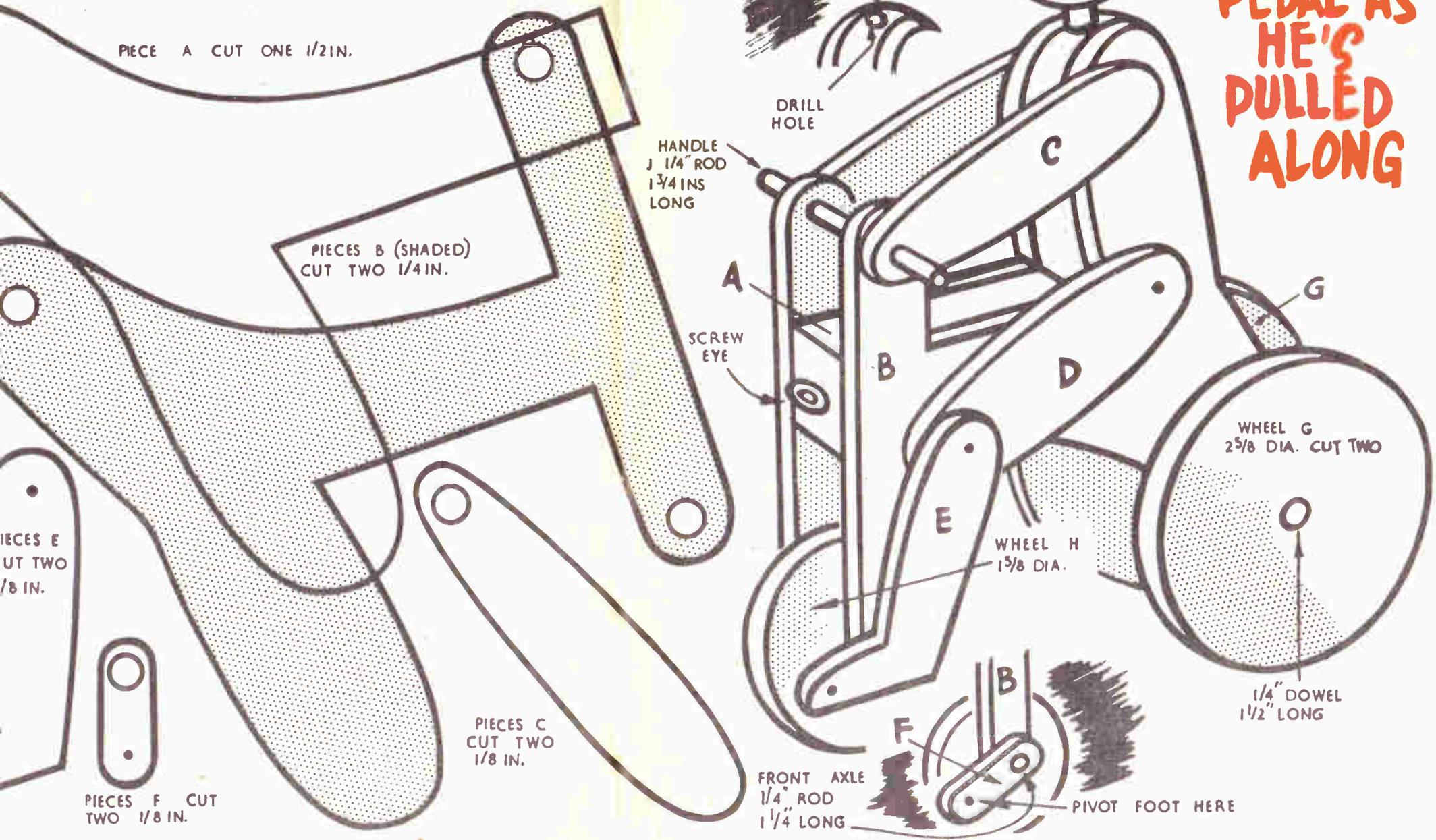
WHEEL H
1 5/8 DIA.

WHEEL G
2 5/8 DIA. CUT TWO

1/4" DOWEL
1 1/2" LONG

FRONT AXLE
1/4" ROD
1 1/4" LONG

PIVOT FOOT HERE



For a good finish

HINTS ON APPLYING VARNISH

IT is surprising the large number of people who do not like varnishing, and look upon varnish as being an 'awkward' substance to work with. This needn't be so, for varnishing can be successfully carried out quite easily if the job is tackled properly, and a few basic rules are obeyed. Here are a few points of advice well worth remembering.

There are many different brands of varnishes. When purchasing your varnish it pays to mention to your dealer the job for which you require the varnish. This will enable him to supply you with the correct type, because varnishes are manufactured for various jobs, e.g., outdoor work, indoor work, metalwork, heat-resisting work, etc. Do ensure, however, that you complete your job using only one type and brand of varnish. The mixing of different varnishes will reduce the final quality of your work.

★ Readers who are working on ★
★ projects which call for the ap- ★
★ plication of transfers are direct- ★
★ ed to the special trial offer by ★
★ Decorettes on page 285 ★

A clean soft brush is essential for varnishing. If you intend using an old paint brush, then do make sure that it is thoroughly cleaned in turpentine, and that all traces of the old paint are removed, including around the metal neck and handle. Before using a new brush, flick it several times through your fingers to get rid of any loose hairs and dust particles. After this, wash out in turpentine and rinse with clean luke-warm water. Make sure that the brush is of a suitable size for the job you have to do. Don't expect a 1in. wide brush to cover a large door. Likewise, don't expect a 2½in. wide brush to get into small mouldings and corners.

Preparing the surface

Never rush ahead and start applying the varnish before preparing the various surfaces carefully. The whole area to be varnished should be thoroughly washed down with sugar soap and warm water to get rid of any dirt, grease and dust. When dry, rub over the surfaces very lightly with some fine glasspaper to remove any irregularities.

When varnishing indoors, shut all doors and windows to prevent draughts and the possibility of having dust flying about. Any dust falling on a newly varnished surface will ruin it completely.

Keep the room at a moderate temperature, because varnish will not flow freely in a cold atmosphere.

Outdoor varnishing requires a warm, calm day to ensure the best results.

~~~~~  
*By Finlay Kerr*  
~~~~~

The application of the varnish should be done mainly with the tip of your brush. Try not to overload your brush, otherwise you will get thick patches on your work, and this will result in unsightly wrinkles appearing. Never varnish in a humid atmosphere or on top of a damp surface, as this causes your work to become streaky.

When using varnish, pour a little into your varnish pot and let it stand for a few minutes to allow the air bubbles to subside. Unlike paint, varnish should not be stirred. Furthermore, never attempt to add turpentine or thinners to your varnish, otherwise you will ruin the drying qualities, and reduce the final lustre of your work. Try not to lift your brush off the surfaces any more than is

really necessary. Use gentle strokes in the direction of the grain, and 'feather out' any brush marks as you proceed. Don't daub your brush into corners or mouldings, because this will only cause the varnish to froth.

Never varnish on a blistered or cracked surface. If the surface is painted and is in a bad condition, then the old paint must be removed. Varnishing over a bad surface will not hide the defects.

Tackiness

Sometimes a varnish may refuse to set in a reasonable time, but simply remain 'tacky' for quite a long time after being applied. When this happens it can either mean that a cheap brand of varnish was used, or else it was applied on a greasy surface.

Finally, after completing your varnishing, the brush should be thoroughly cleaned and stored in a mixture of equal parts of linseed oil and turpentine. However, when the brush is required to be used again, remember to wash it with hard soap and warm water to get rid of all traces of oil which would be harmful to the varnish.

◆Continued from page 275

Making Artificial Silks

product is also used for cellulose dopes, enamels, nail varnish and adhesives. Celluloid, the oldest artificial plastic, consists of a mixture of it with camphor. By more intensive treatment with the acid mixture gun cotton results, which is used either alone or mixed with other substances for all manner of smokeless explosives.

The disadvantage of inflammability led chemists to attempt the production of a safer material, not only for use as a fibre, but also for making less inflammable dopes and cinematograph films. Cellulose acetate, or acetate silk, came into being. This was a real winner for lustre and 'handle'.

It is easy to make in the home laboratory. Immerse 1 gram of cotton wool in a mixture of 20 c.c. of glacial acetic acid and four or five drops of one cent strength sulphuric acid. Work the cotton about with a glass rod, so that it is thoroughly wetted and stays below the acid; then leave it for three hours. Add 25 c.c. of acetic anhydride. The mixture now needs to be stirred thoroughly for about an hour, so unless you are very energetic the advantage of

a mechanical stirrer is obvious!

After the stirring let the mixture stand overnight, when the cotton should all have dissolved. If it has not, surround the vessel with warm water and stir until it all goes into solution. Pour this into about 300 c.c. of water. White cellulose acetate is precipitated. Filter it off, wash it thoroughly, squeeze well and let it dry.

This may look an unlikely product for making silk, but by using the spinneret method the difficulty is solved. Dissolve some of the cellulose acetate in acetone and squirt it from your homemade spinneret into the air. A white thread of acetate silk is left as the acetone evaporates. Acetone also is inflammable, and so no flames should be allowed anywhere near.

Try setting fire to a little of this thread. It is far less inflammable than Chardonnnet silk and quite as pleasant to look at and wear as real silk, when produced by spinning fine fibres into a thread. From the great difference in cost, chemists had made it possible for a mill girl to dress as attractively as a marchion-ess (L.A.F.)

NEW!

THE PRACTICAL WAY

of learning **RADIO · TELEVISION · ELECTRONICS**
AMATEUR S.W. RADIO · MECHANICS
PHOTOGRAPHY · CARPENTRY, etc., etc.

COMPLETE EXPERIMENTAL COURSES IN SCIENCE AND TECHNOLOGY

NEW—Completely up-to-date method of giving instruction in a wide range of technical subjects specially designed and arranged for self study at home under the skilled guidance of our teachers.

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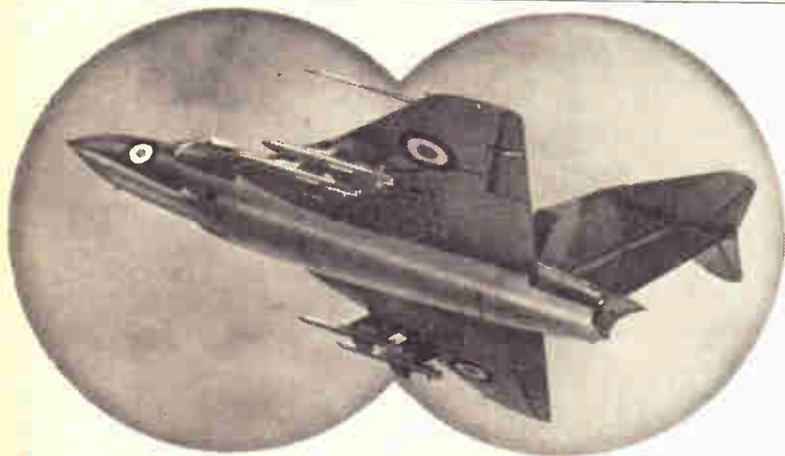
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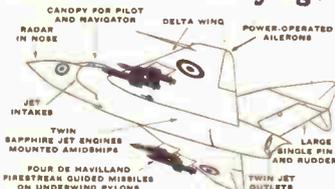
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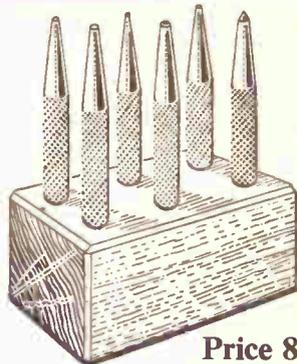
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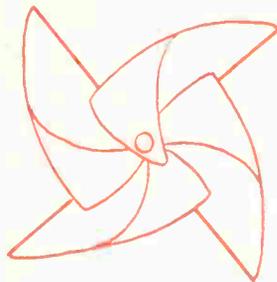
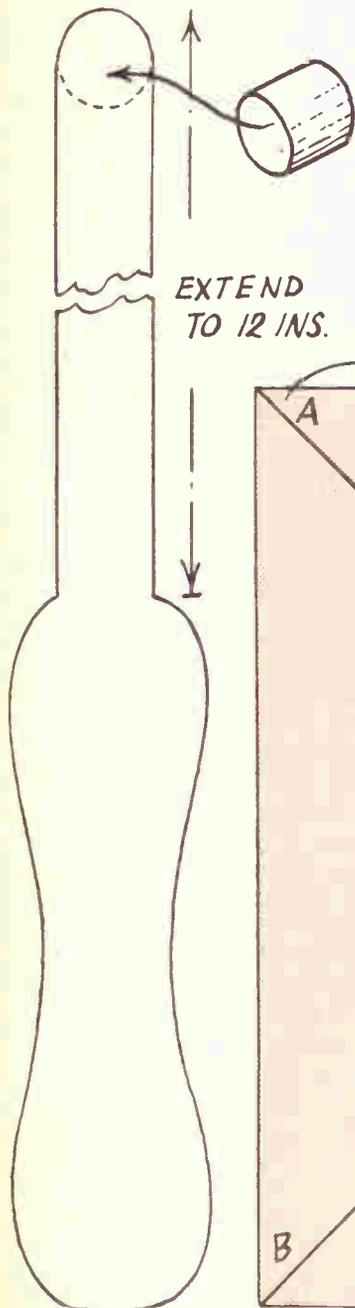
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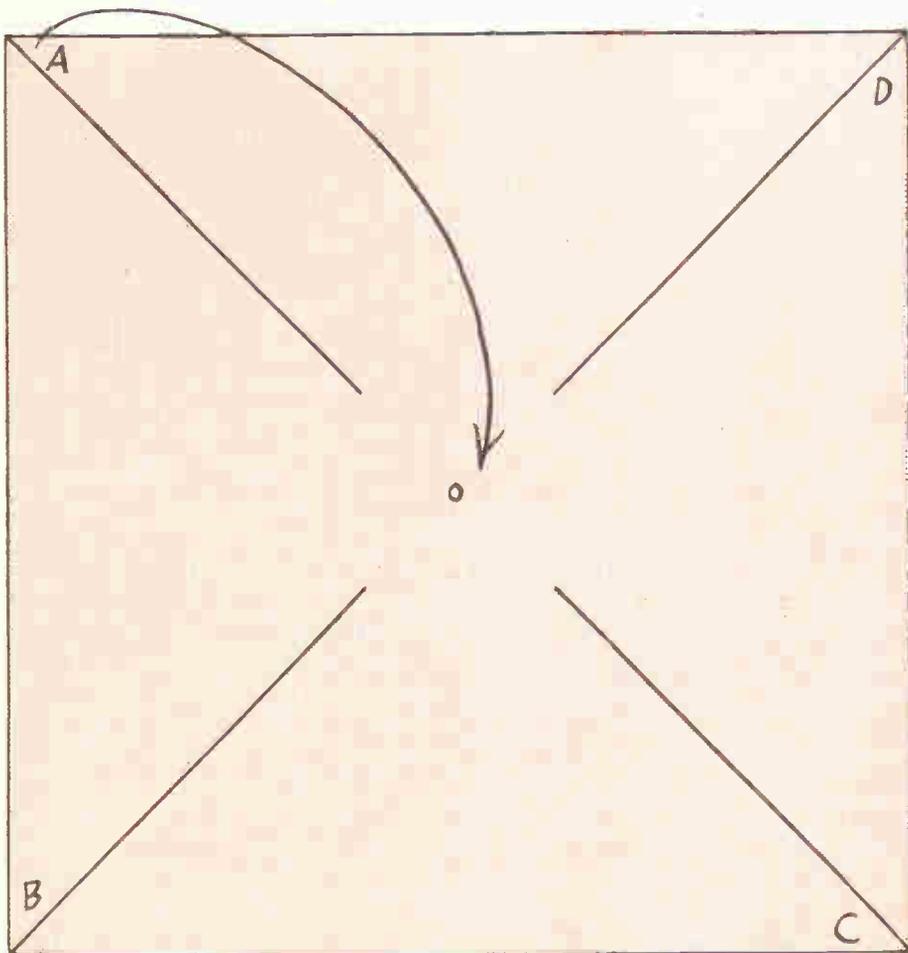
A popular plaything

PROPELLER FOR BABY

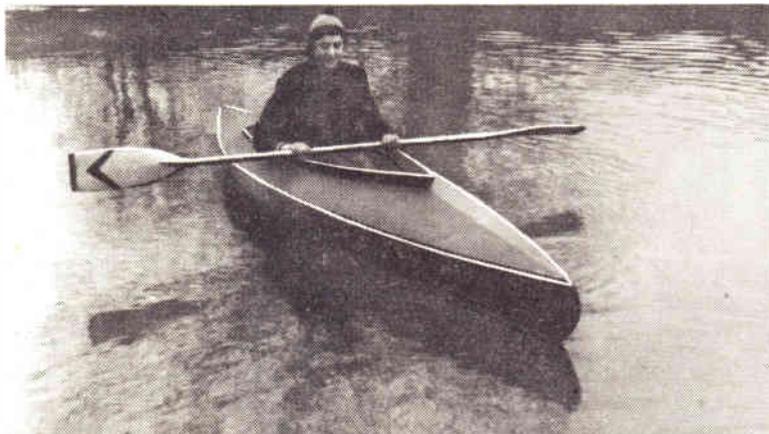


THE young fretworker can make this little toy for his small sister or brother in less than one hour.

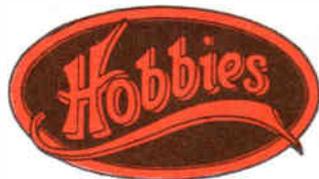
The handle is cut from $\frac{3}{4}$ in. wood with a fretsaw and the propeller made from coloured paper. Glue a small round block of wood to the top of the handle as shown in the detail. The paper must be fairly stiff and should be cut to the size shown. Bend over the corners (A), (B), (C) and (D), pinning through the centre and then into the block. The small diagram shows how to bend the corners. (M.p.)



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