

Hobbies

WEEKLY



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Just right for the Summer— A PORTABLE GARDEN TABLE

You'll enjoy making this sturdy article — but you'll enjoy using it more! And once made, it will be ready for service for many years to come.

HOW refreshing it is to sit in the shade on a hot summer's day, with a book and some cooling drink beside you. You can entertain friends, too, if you have a table erected in a shady corner. It is for just this purpose that we have designed the garden table illustrated on this page.

Novel Features

The features are a top composed of slats to prevent warping when exposed to the weather, and a novel method of construction to allow for packing flat and storing during the winter. The two bottom rails are notched together and a metal rod drops into a slot on the top

rail. This is sufficient to keep the legs upright until the top is laid in place. Its construction holds the legs rigidly in place.

Making the Legs

The legs are joined together in pairs;

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but the top rail of one pair is omitted as shown in Fig. 2. Cut four pieces for the legs from $\frac{3}{4}$ in. or lin. thick timber. They should be approximately 2ft. 3ins. by 3ins. The cross rails, three of which are required, are 4ft. 1 $\frac{1}{2}$ ins. by 2 $\frac{1}{2}$ ins. or 2ins., and the same thickness as the legs. The bottom rails are about 6ins. from the ground.

Cut halving joints as shown in Figs. 1 and 2. An enlarged view of the particular joint is shown in the inset Fig. 1. Use countersunk brass screws for preference, because these will not rust. Failing these, use ordinary wire nails and paint the heads later.

The position of the iron rod is shown dotted in Fig. 1. A visit to a local breakers yard would probably produce a suitable rod. Otherwise try the blacksmith, builders' merchant or ironmonger. The length should be 4ft. 3ins. to allow for bending the ends. Two large staples are driven into the legs, but holes for these must be started with a drill to prevent the wood from splitting. Since the rod is fixed to the sides of the legs the slot in the top rail must be off centre.

The Table Top

If you study Fig. 3 you will see that the top is made up of a number of slats $\frac{1}{2}$ in. apart, fixed to three battens. Both

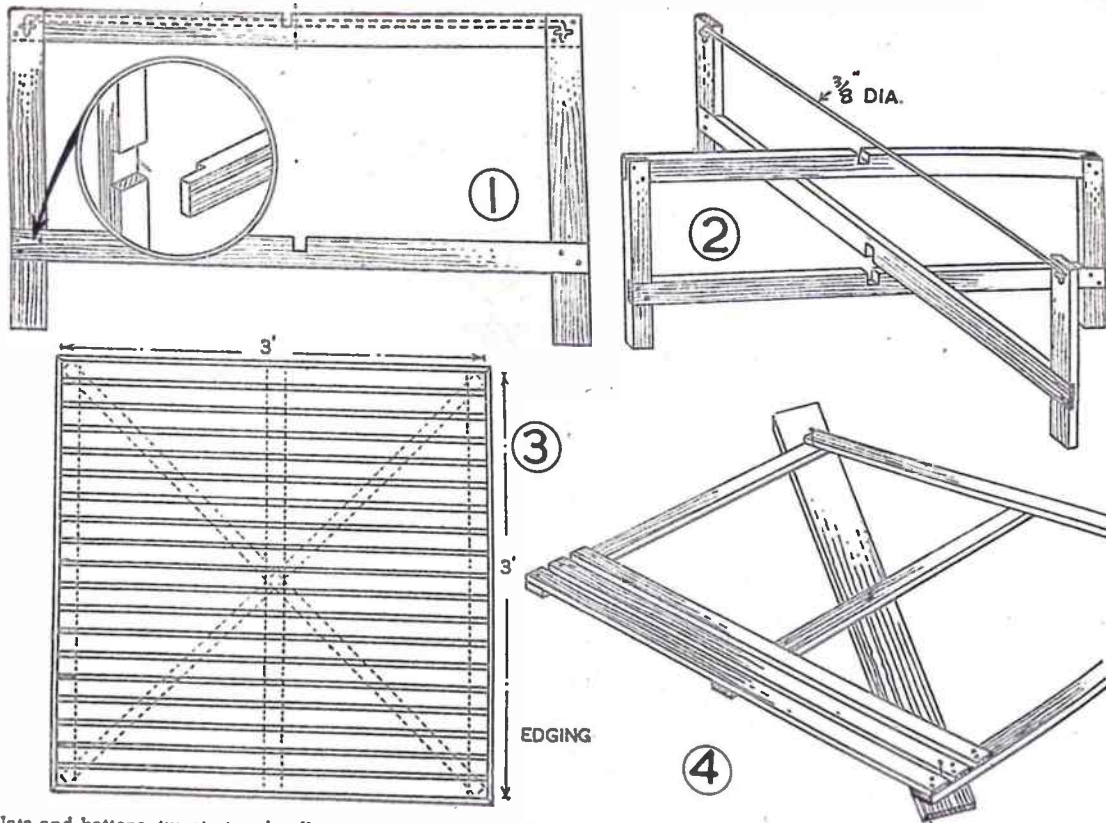
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THE MAGAZINE FOR MODELLERS,
HANDYMEN AND HOME CRAFTSMEN

World Radio History

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slats and battens, twenty-two in all, are 3ft. by 1½ins. by ½in. Holes should be drilled for 1in. long countersunk screws, two to each end of the slats. It is permissible to use wider battens, but the finished table would lose something of its attractiveness.

To complete the top an edging of 2in. by ½in. wood should be mitred round the outside as shown in Fig. 3. Four pieces 3ft. 1in. long are required.

The diagram in Fig. 4 shows how the frame is held square while fixing the slats. A piece of wood is held, temporarily, by two long nails and an odd piece of the same thickness is placed immediately under the slat being screwed.

Garden furniture looks well if painted white, but in this case it is necessary to use a good quality paint. A cheap paint is likely to deteriorate quickly and will

rub off on to the clothes.

The alternative method is to paint with a suitable variety of Solignum or Cuprinol which can be obtained in several colours. These will not only colour attractively, but are an excellent preservative as well.

When winter comes, the table can be dismantled and stored flat in the tool shed until it is required again. (414)

KITE WITH A DIFFERENCE

(Continued from page 149)

front inner disc at the same points, the two lower lines being equal in length, whilst the top line is adjustable for length. It is best to trim the bridle length by trial and error as the angle required will depend upon both the weight and overall length of the kite. Start with an angle of about 30 degrees and lengthen or shorten the top line, as required, for stable flight.

An assistant will be required to launch the kite. He pays the kite out, disc by disc, until the whole length of the kite is airborne. This may need a

little practice, but is not difficult. Any unbalance will soon show up when the kite is fully supported by the wind.

If the kite twists and tends to wriggle or fall to one side, check the balance of each of the individual discs. One side must not be heavier than the other. Unequal bottom bridle lines will also cause this trouble. Minor instability may well be caused by one or more discs being out of line with the others.

Another possible fault is that the whole kite may tend to turn right over, rather than stay out straight on the end

of the line. If this cannot be cured by correcting obvious rigging faults, re-rig the kite entirely, this time taking the single line along the bottom of the kite and the two 'side' lines along the top. You cannot do this by simply inverting the bridle attachments as this will bring the balance arms down to the bottom half of each body disc. The balance arms must all lie above the centre line of the kite.

There is no reason why you should not go on adding more body discs to the kite and double its length. Each disc is self-supporting when properly rigged and so the effect of extra weight is negligible. A very long dragon kite, however, is apt to undulate violently and may even get tangled up with itself.

You can make these Two Useful Household Items

HERE are two gadgets that would be very useful to women of the house and are so simply made that no kitchen should be without them. The one is an egg rack and the other a cake-cooling stand. The rack is designed to hold nine eggs, but the size could be adjusted to meet any requirements, more or less holes being used as necessary. The two items are to match.

The Egg Stand

To make the egg rack, first obtain a piece of ½in. plywood and from it cut a square 9ins. by 9ins. Upon this draw the rectangle as shown in the lower sketch of Fig. 1. Mark the mid-points of the sides and join these up. This gives the positions of the eggs, and at each place indicated a hole is cut of 1½ins. diameter. The holes can be readily taken out with a sharp gouge after marking in the circles with a pencil or scribing compass.

To raise the rack from the shelf, two cross-pieces are attached underneath,

dowel are shaped as shown in the inset, so as to hold in the uprights without further fastening. In tune with most kitchen and pantry items, the rack is left in plain wood but must be given a thorough smoothing with glasspaper.

For Cakes

To make the cake-cooling stand, two side pieces are required, 9ins. long by 1in. broad and 1½ins. deep, also six lengths of ½in. dowelling each about 8½ins. long as Fig. 3. The side pieces are then marked out as shown in the left-hand top sketch with ½in. diameter circles 1½ins. apart, the two extreme ones being ½in. in from the ends.

The circles are then bored with a brace and bit to about ½in. deep and the dowels are fitted in as indicated after each has been given a touch of glue. The rack must be kept flat while assembling and this is best done by pressing down between two boards as the sections are tapped into position.

The dimensions are worked out to

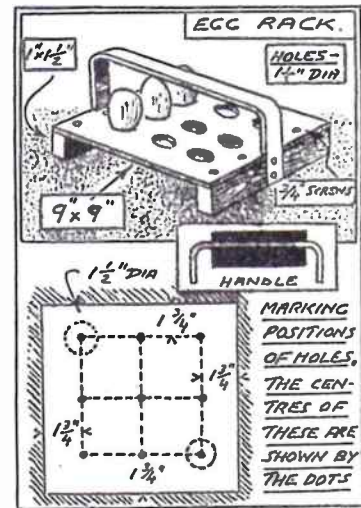


Fig. 1—Details of the egg rack, which is designed to hold nine eggs

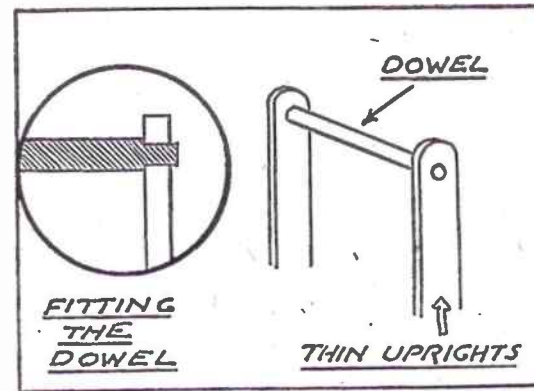


Fig. 2—Making a dowel handle

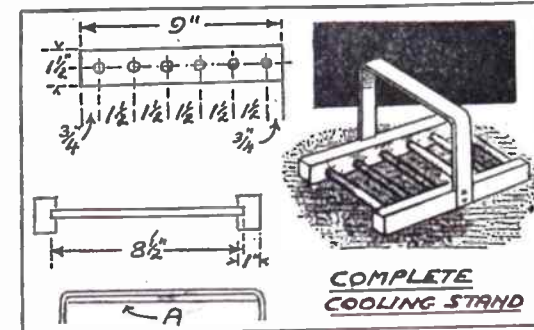


Fig. 3—The cake cooling stand

each 1½ins. high, 1in. broad and 9ins. long. These pieces are secured in position by four ½in. screws, boring first to avoid the danger of splitting and countersinking the heads.

A low handle is finally fitted. This is a length of 'basket wood' 2ins. or 2½ins. wide, and it is carefully bent over as seen in the sketch. It is held at either side by two screws through to the side-piece, into which it is also sunk to give extra strength. If basket wood cannot be obtained, then this item can be made up of three pieces, that is two thin uprights and a simple dowel crossbar, as Fig. 2. The ends of the

HACKSAW THICKNESS

For cutting a slot in steel or metal where the thickness of one blade is not enough, fit two or three blades in the hacksaw frame at once, to suit the width of the slot required.

BRIGHTENING COPPER

When oxidised copper finger plates and door handles get dingy, rub them first with a cloth dipped in turpentine, then rub with a cloth dipped in olive oil.

allow of the rack being used for cakes up to 8ins. diameter, which is about the largest standard cake tin in use.

After assembling, the article is supplied with the same type of handle as fitted to the egg rack, that is either basket wood or dowel. In this case, however, the crossbar must stand a little higher—a clearance (underneath) of about 5ins. or 6ins. being given. Again the uprights are sunk into the side-piece. Cakes are heavier than eggs, so if the handle does not seem strong enough it can be reinforced with a strip screwed on the underside as (A). Give a good glasspaper finish. (386)

You can make this KITE WITH A DIFFERENCE

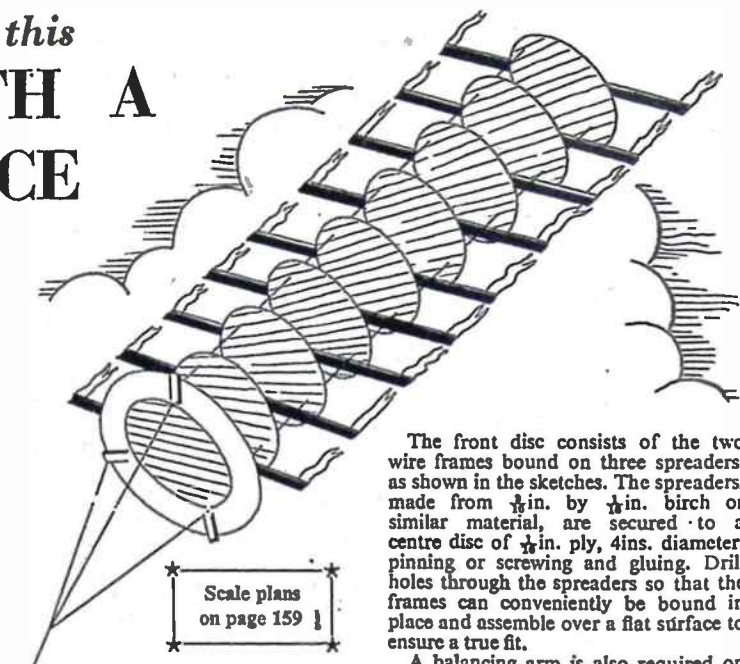
IMAGINE making a kite which is nearly 10ft. long, capable of soaring to hundreds of feet and looking for all the world like a giant caterpillar in the sky, undulating in the breeze. All this, too, for the cost of a shilling or so and an evening's work. The dragon kite, so called because early versions were decorated with ferocious 'faces' or heads and multi-coloured body discs, is sufficient of a novelty to attract anyone with an interest in kites. In spite of its size, too, it folds up into a very convenient flat package for transport—no bigger, in fact, than the diameter of the first disc or 'head'.

Circular Frames

All the main frames are circular in shape and a variety of materials can be used. Bamboo, birch, and similar woods which can readily be bent by steaming satisfactorily, but for simplicity aluminium wire about $\frac{1}{4}$ in. diameter is suggested. Frames required then consist of ten rings of 12ins. diameter bent from this wire and one larger ring of 18ins. diameter.

A convenient way of bending the frames is to draw a circle equal to the inside diameter of the frame on a flat piece of wood and then drive a 'fence' of nails around the perimeter, as indicated in the sketches. The wire forming the frame is then bent around this simple jig, the two ends lapped together and bound with thread and cemented. A 40in. length of wire will make a 12in. diameter ring with just sufficient overlap. Make ten frames like this and one larger one of 18ins. diameter.

It is necessary to mark each frame with three equidistant points on its circumference, so it is a good plan to



mark these points on the forming jig when these can be scribed on the formed wire. This will save a lot of fussing about later when it comes to rigging the kite. At the same time, too, the position of the balance arm can also be marked.

Balance Arms

Each frame has a balance arm bound across it, equal in length to three times the diameter of the frame. That is, each balance arm is 3ft. long and a suitable material would be bamboo, about $\frac{1}{4}$ in. square. The balance arm should come 2ins. above the centre of the frame, i.e. one-third of the full depth of the frame. Bind securely to the wire with thread and add a coating of cement.

Nine of the frames can now be tissue covered, lapping the tissue around the edges of the frame and gluing down. Pull the tissue as tight as possible. For best effect, use different coloured tissue for each frame, or a standard colour throughout, with further decorative pieces pasted on top. Any sort of 'body' pattern can be built up in this way. The tenth frame is combined with the single 18in. diameter frame to form the head or front disc of the kite.

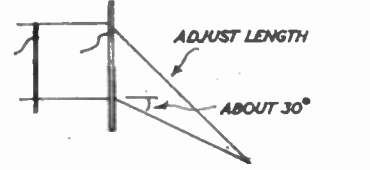
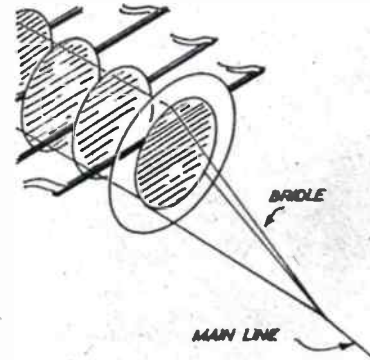
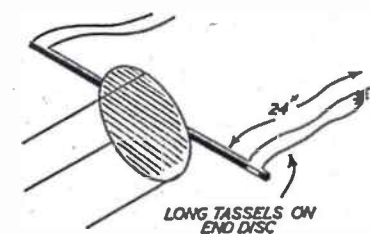
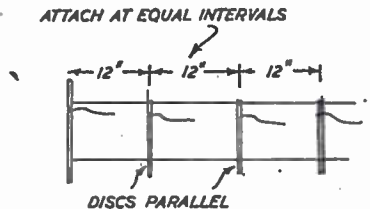
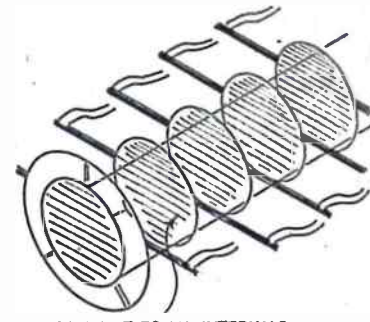
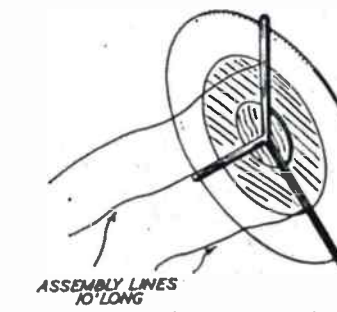
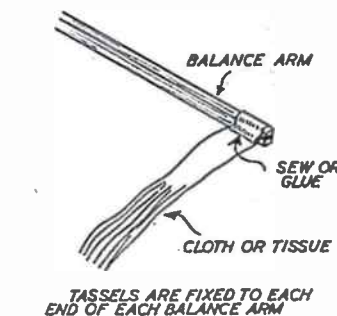
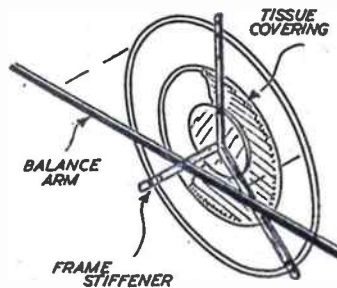
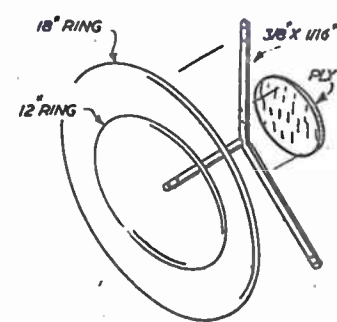
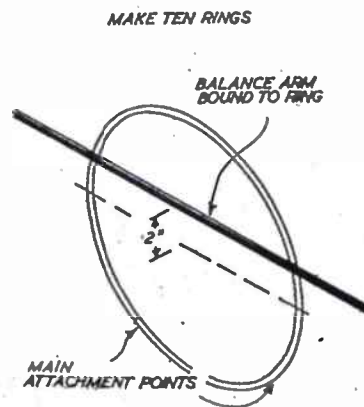
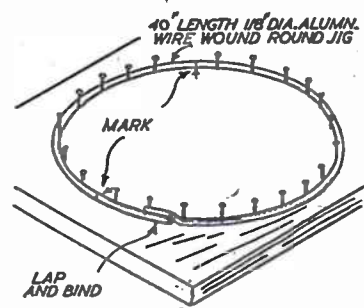
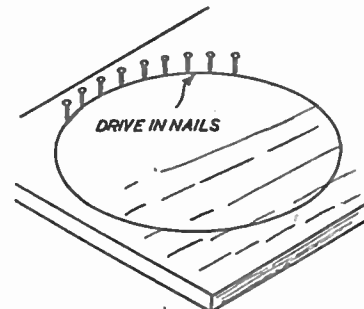
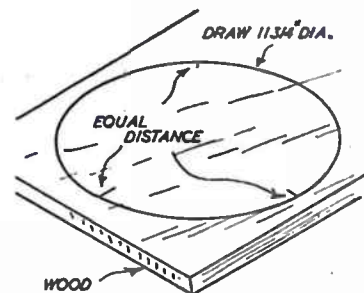
The front disc consists of the two wire frames bound on three spreaders, as shown in the sketches. The spreaders, made from $\frac{1}{4}$ in. by $\frac{1}{4}$ in. birch or similar material, are secured to a centre disc of $\frac{1}{4}$ in. ply, 4ins. diameter, pinning or screwing and gluing. Drill holes through the spreaders so that the frames can conveniently be bound in place and assemble over a flat surface to ensure a true fit.

A balancing arm is also required on the front disc, although this can be shorter than the others, if desired. 30ins. will be a satisfactory length. Bind in place and then cover the centre disc only of the assembly with tissue. If this is to be a true 'head' of a dragon kite, then suitable features are added, such as eyes, mouth, nose, etc., cut out of tissue of contrasting colours and cemented in place. Model aeroplane dope is an excellent medium for attaching tissue to tissue. All the tissue covered panels will, in fact, benefit from a coat of dope, making them stronger and more resistant to handling.

Tassels should now be attached to the ends of each balance arm. Strips of gaily coloured tissue or light cloth, about 8ins. long, are best. Secure in place by glue, or sew. The last disc of the kite should have longer tassels for balance—up to 24ins. long, in fact, attached in a similar manner.

Assembly

To assemble the kite, start with the front disc and tie three separate lines, each 10ft. in length, to the equidistant attachment points marked on the centre ring. Actually these correspond to the points where the spreaders cross this ring. Then, taking each disc in turn, tie in place in the three lines so that each



These drawings should make construction simple

disc is spaced one diameter (12ins.) from its neighbours, and each disc is truly parallel to all the others. This will

take time and patience, but must be done properly, otherwise the kite may be unstable in flight.

Bridle lines are then attached to the

(Continued on page 146)

The first of two articles on making A CAMERA FOR A SHILLING

TOTAL cost of this simple camera should not work out at much more than one shilling. It is quite easy to make and is capable of giving excellent results, although it is not suitable for 'snapshots' like an ordinary camera.

dispenses with the lens and uses instead a pinhole.

Pinhole cameras are by no means new. Yet few people realise that really excellent photographs can be taken with them with the minimum of trouble. The

views and static objects, indoors or outdoors, it will prove very satisfactory, if properly handled.

The pinhole camera detailed in the drawings is designed to cover most average needs for outdoor work —

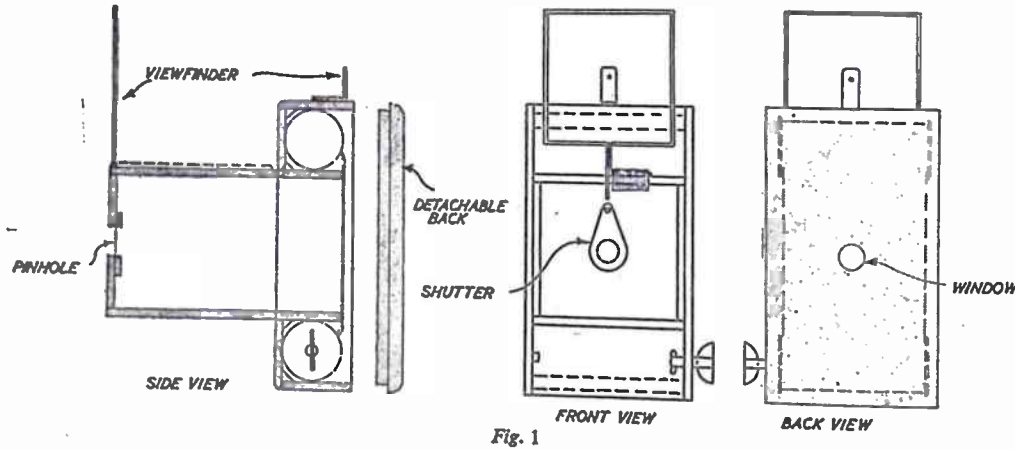


Fig. 1

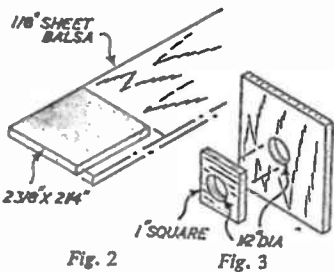


Fig. 2

Fig. 3

pinhole camera, too, has a number of points in its favour. For one thing, the image received on the film is always in focus, whether the object is close to or far away from the camera. All that altering the distance between the pinhole 'lens' and the film does is to increase or decrease the field of view actually reproduced on the film. Since the pinhole 'lens' too, has such a tiny aperture exposure time is far from critical. It just has to be 'near enough' and you will get good results. This combination of non-critical exposure and extreme depth of focus is just the sort of thing required for a simple, general-purpose camera.

We do not recommend a pinhole camera for portrait work, although this can be done by using a 'fast' film and good lighting. But for photographing

photographing scenes, buildings, and so on. It can also be used indoors for 'still' photographs, provided the exposure time is adjusted accordingly. Dimensions are adjusted so that the field of view received on the film is about the same as that of an average lens-type camera and the film itself is standard size — 120 or 620 roll stock. Twelve exposures, each approximately 2 1/2 ins. square, can be taken on a single roll, when they are developed and printed in the usual manner.

Now for the construction of the camera itself. Three views of the completed article are shown in Fig. 1 — side, front and back. Material used throughout is balsa wood which is extremely easy to cut and is readily joined with balsa cement, making for quick, accurate construction. One 3 ft. sheet of 3 in. by 1/2 in. balsa, obtainable from your local model aeroplane shop, will provide enough wood for all the camera.

For cutting this wood we strongly recommend that you use a modelling

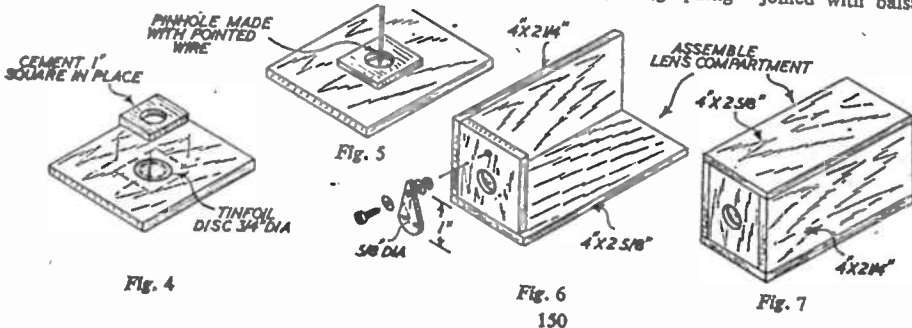


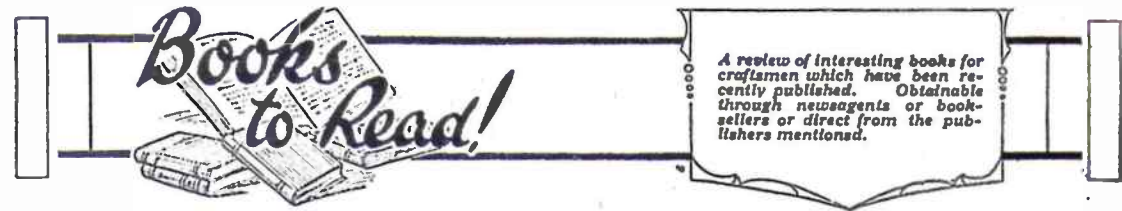
Fig. 4

Fig. 5

Fig. 6
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Fig. 7

(Continued on page 151)



Colour Cine Photography
by A. Cornwell-Clyne, M.B.E., F.R.P.S.,
Director, Dufay-Chromex Ltd.

THE third edition of this excellent work has now been published. Revised and enlarged, it contains 796 pages with 321 illustrations. It is the first edition to be issued since the war and will be welcomed by all photographers and workers in the film industry to whom the author is well known for his work on the colour film. Published by Chapman & Hall, 37 Essex Street, London, W.C.2—Price 84/-.

Caravan Construction
by W. A. G. Bradman

THIS is another of Foyles Handbooks, and is by a well known woodworker. It is written for the amateur worker and gives hints on constructional methods from the viewpoint of the man in the back yard as distinct from the professional. Cut and dried designs are not given, these being left to the worker's choice. Materials, however, are dealt with at length and details of their properties, use and working methods are clearly explained. Published by W. & G. Foyle Ltd., 119-125 Charing Cross Road, London, W.C.2—Price 2/6.

A Frederick Muller Venture
THE publishing house of Frederick Muller Ltd., by special arrangement with W. & G. Foyle Ltd., is publishing cloth bound editions of the Foyles Handbook Series. The first three of these to be brought to the notice of the reviewer are *Aquariums*, by Anthony Evans, *Decorating Craftwork*, by Mary Abbott, and *Papercraft*, by Edward Kitson. All these titles have been reviewed earlier in these pages, and nothing more need be said about their contents. For those who can afford the extra to get these books in well bound stiff covers, they are worth while, for in the home library they will have an indefinite shelf life.

Published by Frederick Muller Ltd., 29 Great James Street, London, W.C.1—Price 6/- each.

Painting for Amateurs
by J. H. Owsbey

YET another of the Foyles Handbook series, this book will be welcomed by those who find it difficult to get a professional looking finish to their work. Most of us have done some painting at one time or another, but quite often the results do not compare

with a professionally finished article. We usually come to believe that the excellent finishes seen on motor car bodies and similar, are the results of expensive equipment, but while this is so in many cases, there is still a lot of good work produced by nothing more spectacular than hard work and the application of 'know how'. It is the purpose of this book to give the reader this 'know how' in as simple a manner as possible. Published by W. & G. Foyle Ltd., 119-125 Charing Cross Road, London, W.C.2—Price 2/6.

How to Build Your Own Caravan
by Fred. S. Whitfield, A.M.I., Mech.E., M.I.E.C.

HERE is a book which describes step by step the making of a 16ft. 4-berth caravan 'Private Enterprise'. It is complete with working drawings to scale and full instructions for the purchase of material for the caravan. In fact, it is just the book for those who have been contemplating building a trailer caravan. Published by Crosby Lockwood & Son Ltd., 39 Thurloe Street, London, S.W.7—Price 6/-.

A CAMERA FOR A SHILLING

(Continued from page 150)

knife and a metal set-square. The latter will be particularly useful in making accurate cuts at right angles to the edge of the sheet and thus ensure that all the various parts are cut true. The rest of the material required can be found from scrap, although a single length of 1/2 in. square balsa strip would also be useful.

Start as in Fig. 2 by cutting the front, which also forms the holder for the 'lens' (in this case the pinhole) and also acts as a guide in assembling the rest of the lens compartment or 'bellows'. Hence this piece must be cut truly square and exactly to the dimensions given.

Through the centre of this piece cut a hole exactly 1/2 in. in diameter. Cut a similar hole in a 1 in. square piece of 1/2 in. sheet balsa — or thinner sheet balsa or even card, as shown in Fig. 3. Now smooth out a piece of tin foil over a flat surface — a piece of glass is best — and cut out a 1/2 in. diameter disc with a pair

of scissors. Cement this tin foil disc in place over the circular hole in the 2 1/2 ins. by 2 1/2 ins. sheet and over the top cement the 1 in. square in place to hold the tin foil securely — Fig. 4. When this assembly is set the pinhole can be pierced in the tin foil.

Now for best results this pinhole must be perfectly circular and of the correct diameter. A ragged hole, or a hole which is too large, will give poor pictures. The hole diameter required is about 1/2 in., which is very tiny, and the best way to form it is to prick it with a needle of that diameter, or a piece of sharpened wire of appropriate size. A scrap length of 30 standard wire gauge steel wire will be just the right diameter. If the end is sharpened it can be used like a needle to pierce the required pinhole right in the centre of the tin foil disc — Fig. 5. Pierce the hole from both sides so that any burr is eliminated.

The final stages in the assembly of the lens compartment are then shown in Figs. 6 and 7. The pinhole 'lens' needs a cover, both to protect the tin foil against damage and to close the 'lens' when a picture is not actually being exposed. The shutter for this can be cut from thin ply, or even card, attached to the front with a tiny nut and bolt. The shutter should be 1 in. long, teardrop shape, with the bottom part semi-circular and 1/2 in. in diameter. Mount the shutter in place at this stage and make sure that it is a good fit, yet can easily be slid to one side to open the pinhole.

Four more pieces of 1/2 in. balsa must now be cut for the sides of the lens compartment. Two of these are exactly 2 1/2 ins. wide by 4 ins. long and the other two are 2 1/2 ins. wide by 4 ins. long. Cement the end to one of the wider pieces, erect the sides, and then cement on the top piece. The front will act as a guide in making this assembly true and square.

(To be concluded)

THE ART OF STENCILLING

OUR final article on this fascinating art will be chiefly devoted to a word or two about stencilling on fabrics for interior house decoration, and also how greeting cards can be made.

Where textiles are concerned, only oil colours can be used. The material should be stretched out fairly tightly and pinned over a piece of blotting paper with several sheets of ordinary newspaper underneath to form a pad. All wrinkles on the material must be

bottom, all carried out in a mass repeat design in two or three colours.

As this fabric work may be considered rather advanced, we do not propose to deal further with it, but if the home worker desires to take up fabric stencilling seriously, we suggest he purchases a reliable book specializing in this class of work. Before we leave the subject, however, here is a simple border design that the worker can carry out on fabric as a trial. It is shown in Fig. 2 and can be done in one or two

effective card is to be made. Anything from a simple one-figure motif to a two- or even three-colour design of fairly large proportions may be carried out, remembering at all times to produce a well-cut stencil plate of stout oiled paper with 'ties' broad enough to withstand the wear and tear of making, perhaps, from thirty to fifty greetings cards.

An effective pictorial scene, such as given in Fig. 3, would make an excellent card. The word 'Greetings' could,

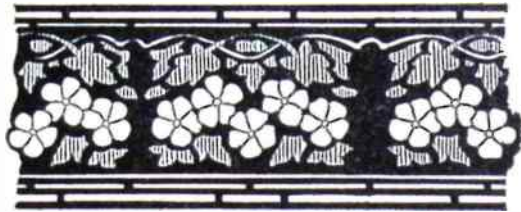


Fig. 1



Fig. 2

smoothed out. These remarks apply to such articles as table runners, table cloths, scarves, curtains, etc., and oil paint having been used to colour them, they can be washed in the usual manner without disturbing the colour.

It will be found that heavy woollen material with a close and fluffy surface, canvas, linen and all varieties of cotton goods and silk can all be successfully treated with stencil ornamentation. Success in treatment, however, needs some knowledge of the method of working on the different materials. Oil colour cannot be used on velours and velvet, and dyes must be used instead. For materials having a rough or fluffy surface the oil paint must be broken down to the consistency of thin cream by adding turpentine.

The heavier and fluffier the fabric, the more paint it will take. The thinner the material the more difficult it will be to work the colour, although such material allows of really elaborate designs. Small brushes are best for work on thin material, and always use a good pad of blotting paper for the work.

In Fig. 1 we show a stencil plate decoration suitable for a heavy serge bay-window or portiere curtain. The floral work may be from 8ins. to 10ins. wide with a simple lining border top and



Fig. 3

colours as suggested.

Greetings Cards

There are, doubtless, many readers who already make their own greetings cards, both birthday and Christmas, and who have not thought of the idea of using stencil plates for the purpose.

Detail of rather finer cutting is necessary for such cards, and patience and practice are necessary if a really

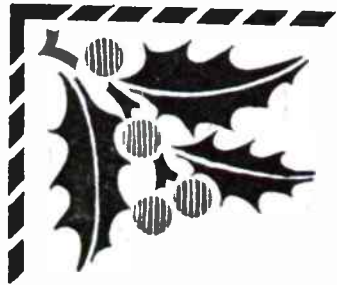


Fig. 4

perhaps, be carried out in some contrasting colour.

Instead of a whole card being covered with a picture, just a corner piece might be stencilled as suggested in Fig. 4.

Limitless Possibilities

There is hardly any limit to the use to which the process of stencilling can be put. Whether the walls in your house are papered, painted or distempered, it is possible to improve them by a well-thought out method of stencilling. The colours may be put direct on to the walls or on paper which can be neatly pasted to the walls. Beautiful wall panels can be made, or artistic borders designed.

Stencilling is just as effective when applied to wood and leather. You may stencil cushion squares, lamp shades, tea-cosies, bags, fans, table-mat holders in plywood, screens of all sorts and sizes and a host of other things. (413)

Here is an easily made RACK FOR NEWSPAPERS & BOOKS

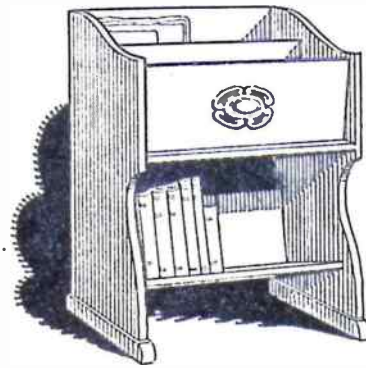


Fig. 1

A LIGHT piece of furniture of the kind shown here is always useful, for what home these days could not use a newspaper and magazine rack and book stand combined?

The rack shown in Fig. 1 is of a convenient size, being some 25ins. high and 18ins. wide. It will be noted from the picture of the completed article that the book shelf is tilted backward, making for convenience in reading the titles of the books.

Hardwood Recommended

Any hard wood, such as oak or beech, is recommended, stuff 1/2in. in thickness being suggested for the sides and shelves, with 1/4in. wood for the front of the rack and 1/2in. for the partition and back. The feet rails should be 1/2in. thick, with small pieces of 1/4in. stuff for the feet. These latter are optional and need be used only if it seems necessary to give the article added height.

In Fig. 2 all the measurements are given for setting out the sides, the shaping being done with a coarse fretsaw, and the cut edges being cleaned off afterwards with coarse and fine glasspaper.

There are two mortises or housings to be cut in the lower end each side, and to get these accurately set out on the wood, the outline template shown in Fig. 3 should be made. This should be cut from stout card or even thick paper. First cut the general shape of one side and clean it up, then use this for marking out the second side. Set out the measurements of the template, noting the angle of line (x). This line will lie flush with the bottom edge of the side—after the 4in. long tenon has been set out and cut, of course.

The position of the template can be seen dotted on the side in Fig. 2, and it will be understood from this that both mortises or housings can be drawn in accurately by the use of the template.

If housings are decided upon, and not the cut-through mortises, then these will be 1/4in. deep and cut in with a 1/4in. chisel. A third mortise or housing will be cut in each side to take the ends of the top shelf or floor of the upper box. Before cutting in these mortises, however, it will be best to prepare the shelf and its tenons. In Fig. 4 a scale outline of the shelf is given, and careful note should be made of the measurements shown. It will be seen from Fig. 2 that the shelf does not lie flush with the back edges of the sides, but stands in 1/2in., so that the backing board can be fixed to the back edge of the shelf.

In the diagram of the shelf (Fig. 4) dotted lines show the position of the cross partition of the box and the front of the box. Mark these in pencil and glue strips of quarter round beading or other suitable fillets to each of the partition lines. To the rear line of the front pair of dotted lines glue a strip to which the front may afterwards be fixed. These strips, with the partition and front fitted in place, are seen in Fig. 2.

The Book Rack

The book rack is formed from two pieces cut to the sizes given in Fig. 5. Check the lengths of the tenons with the mortises already cut in the ends, and see that an accurate fit is made. Glue all the parts together and then make the feet rails according to Fig. 6. Form the tenons on the lower ends of the sides as

(Continued on page 154)

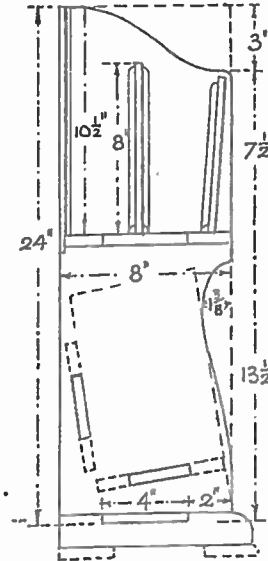


Fig. 2

Fig. 3

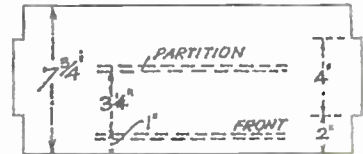
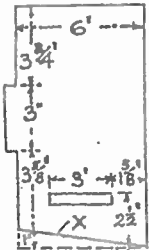


Fig. 4



Fig. 5

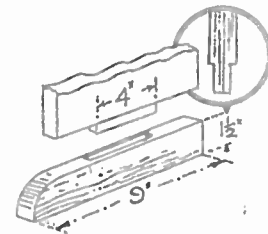
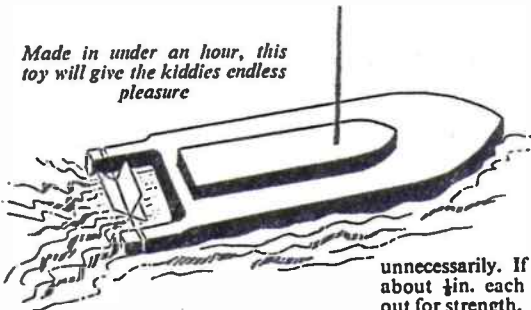


Fig. 6

CUTTING LIST	
Sides (2)	—24ins. by 8ins. by 1/2in.
Rack (2)	—18ins. by 6ins. by 1/2in.
Floor (1)	—18ins. by 7 1/2ins. by 1/2in.
Back (1)	—17ins. by 11 1/2ins. by 1/2in.
Partition (1)	—17ins. by 8ins. by 1/2in.
Front (1)	—17ins. by 7 1/2ins. by 1/2in.
Foot Rail (2)	—9ins. by 1 1/2ins. by 1in.
Floor Fillet	—Three pieces 17ins. long.
Upright Fillet	—Six pieces 7ins. long.
Upright Fillet, Back	—Two pieces 10ins. long.

The youngsters will want this WORKING TOY SPEED-BOAT

Made in under an hour, this toy will give the kiddies endless pleasure



unnecessarily. If the centre part is left about $\frac{1}{4}$ in. each way it will not be far off for strength.

Putting on a superstructure adds to the appearance of the boat and it is only necessary to cut a piece of wood about 3 ins. long, 1 in. wide and $\frac{1}{4}$ in. thick. The illustrations show the approximate positions for this and a few inches of dowel rod can also be fitted as a mast if desired.

THERE is always a lot of fun to be had from model boats, and more especially when they are capable of working. Many types of self-propelled models have been designed from time to time, and there is a great satisfaction in trying out something different.

The model depicted on this page is very simple to make and it is capable of giving plenty of amusement. Although it will not travel a great distance it gives a good spurt and so upholds its title of speed boat.

It is propelled through the water by a small paddle wheel in the stern and the motive power for this consists of several strands of thin elastic.

The Hull

Cut the hull from a piece of wood 6 ins. long, 2 ins. wide and about $\frac{1}{4}$ in. thick. The kind of wood is not important nor is the shape, but it will travel through the water better if it is somewhat streamlined. It will also travel best if it does not float too low, and for this reason a fairly light weight wood would be more suitable than some of the heavier hardwoods.

From the stern cut out a piece $1\frac{1}{2}$ ins. wide and 1 in. deep as shown in Fig. 1, and this can be called the engine room. Thin down the top of the lugs which are left after cutting out this piece of wood. Make them about $\frac{1}{4}$ in. square.

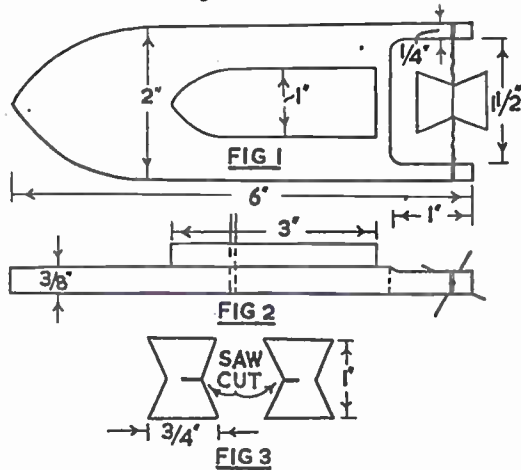
About $\frac{1}{4}$ in. from the end of the lugs make a deep groove on all four sides, which is to hold the elastic used as the motive power of the boat. Cut the groove about $\frac{1}{8}$ in. wide and quite as deep, but do not cut too much away so as to weaken the part

By cutting out the V shape pieces it enables the motive power to be considerably longer with the result that the boat will sail for a longer period. The cutting out can be done with a pair of shears or with a fretsaw. Also make a cut halfway along each piece as shown in the drawing and solder them together at right angles to each other.

Give the whole a coat of paint to preserve it from the action of the water.

Thin Elastic Best

Very thin elastic is best for the motive power, and several strands can be wound round the lugs and the four angles of the paddle. Do not stretch the



The Paddle Wheel

The paddle wheel can be made of wood, but it would be much better to cut this from sheet metal. Tinplate or thin sheet brass or copper is very suitable. Aluminium is a very nice light metal but the great difficulty in joining it together precludes this from being used.

Cut two pieces of metal 1 in. wide and $\frac{1}{4}$ in. long to the shape shown in Fig. 3.

elastic tight, it is only necessary to pass it lightly round as the tension is soon taken up when you start to wind it up.

The number of turns that can be obtained will depend upon the thickness of the elastic, and although quite a large number is possible it is not advisable to go too far as it will put a considerable strain on the two supporting lugs. (422)

perhaps, a smaller overlay of thicker wood shaped and rounded off.

The whole article, will look well if stained and waxed polished. (391)

GLASSPAPERING BY MACHINE

To glasspaper the edges of wooden boards, etc., it is a good plan to insert a strip of paper in the clamps of a fret machine. This will do the work quickly, and by tilting the table, chamfering may be done. Gluing the glasspaper to a strip of thin tin will remove the possibility of paper breaking.

RACK FOR NEWSPAPERS

(Continued from page 153)

shown, 4 ins. long by $\frac{1}{2}$ in. wide and $\frac{1}{4}$ in. thick (see circled diagram in Fig. 6).

The backing board for the box will fit in between the sides and will, therefore, be 17 ins. long, 11 ins. wide and $\frac{1}{2}$ in. thick. This piece can be in two widths butted carefully together, if desired. Glue two fillets up the inside of the ends to hold the back in place

after it has been screwed to the back edge of the floor.

The front of the box is 17 ins. long and $7\frac{1}{2}$ ins. wide and is held to the sides with fillets as above, the partition also being similarly treated at the ends.

An ornamental overlay can be cut and glued to the front, as shown, and this should be cut from thin wood, with,

Some worthwhile hints on DISPLAYING MODEL AIRCRAFT

GOING round judging at many exhibitions, I have thought how much more attractive solid model aircraft would look on display if only a little imagination were used. There are still many excellent model makers in this branch, and they should take more prizes than they do. Unfortunately, their models seem to get shown all bunched up—with the attitude 'just a few more solids'—to help fill the hall up.

Simple Background

If you are showing, say, six solid aircraft, then make up the simple background I have shown. No need to make up the full set for the hangars.

No need to have windows in the rear of hangar. Most hangars are painted outside in a cement shade and for this you can use oddments of cement or 'Snowcem', which is used for the exteriors of houses.

Control Tower

The control tower will then set off the centre and for this you can use up a couple of 'square boxes. As I have shown, the style is quite simple and you should have no difficulty in making this. There is mostly a rail round the top and a smaller building as shown. Nearly all control towers I have seen are painted white. Windows and frameworks are in pale green usually. Windows must, of

be about 6 ins. wide for your planes and run at the angles shown in sketch. These can be painted in dull grey flat paint to represent tarmac. Some sections, perhaps, in front of the control tower, may be in concrete and the appropriate shade should be used. The balance of the groundwork can be in deep green flat, dabbled with lighter greens. I use a short stencil brush for this. Streaks of fawn may also be added.

Streaked Runways

In the case of the runways, these can be lightly streaked down with a little darker grey. This will always show on any 'drome runway because planes mostly keep to one particular stretch when running off and in. Do not have

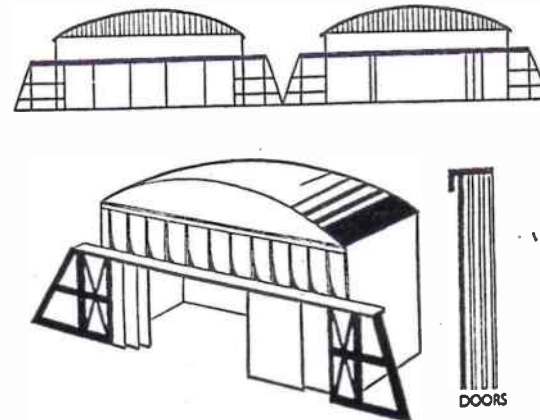


Fig. 2

Fig. 3

Fig. 4

Fig. 1

These are just made with a framework front from oddments of wood and to a depth of, say, 6 ins. Note that the doors come out on each side and are separate sheets of cardboard slid behind the door supports. The supports give a realistic appearance and can be cut from cardboard and strengthened with wood strip. Windows along the top can be deep and fitted with transparent sheeting from the model shop. Stripwood is then used for bearers. The domed roof is popular and this overhangs by about 1 in.

Inside the hangar you can arrange little heaps of wood struts, bomber wheels, and all sorts of oddments in the way of gear, and some odd trestles from strip-wood. Toy tractors of the Dinky type could also be used. Do not forget to add long tow-bars to these when pulling a plane.

Paint the interior slate grey or fawn.

force with strips of wood.

Some aerodromes have beacon towers at certain points, and two of these could be made up and help to set off the background as shown. A large bead will do for a light and these are often red.

Better Groundwork

Groundwork will look much better if painted on thick brown paper. You must get it flat first and I suggest all edges are strengthened with strips of commercial gumstrip folded over on each side. Always roll up the sheet when not in use. Sections in front of the control tower, which would be fairly wide, should be made with panels of thin cardboard.

It is not possible to show a full model airfield, but your model lay-out will look much better if set out on the groundwork as shown. Runways should

the grass verge too definite. This should be shown a little irregular on the edges.

If you want to add other details, then one might suggest the wood blocks under the planes unloading. Designs of the stairways used for passengers to alight are simple to make and would look unusual on your model. Small figures can be made in plasticine, and you can get ideas for these if you can borrow a copy of 'Flight' from somebody.

Add these details and additional interests and you will probably give your friends a shock next time you enter the local model exhibition. (406)

ATTACHING TOY RAILWAY WAGONS

Here is a tip for attaching wooden toy railway wagons together. Get as many hook and eye fasteners as are required. Nail one of the eye fasteners to the back of the wagon and nail one of the hook fasteners to the back of another carriage. The same can be done to the other carriages.

More Microscope Lighting Systems

SEVERAL systems of lighting a microscope have already been dealt with, but all were what is called 'sub-stage' lighting, i.e. the light, either from a lamp or from a mirror, came from below the microscope stage and shone through the object being examined. This is the usual way of examining thin slices of tissue from an animal or vegetable, or for looking at

A lantern as described for use with a substage mirror, and fashioned from a bomb sight, can easily be adapted to give oblique lighting above the stage. Often a microscope is bought with a 'bull's-eye' lens for focusing a distant light on to the object. This is also a form of oblique lighting, but a 'bull's-eye' is much more effective when used along with such a lantern rather than with some distant external light.

Fig. 2 is a sketch of another system of focusing the beam from a lantern on to the object, but both the previous systems are more convenient to use.

The Vertical System

Vertical lighting from above gives yet another system of lighting, and 'ring illuminators' can be purchased to fix above the objective lens. These flood the object with light from two, four or six bulbs, but such an illuminator can easily be constructed from tinplate, mounting a number of flash-lamp bulbs. An illuminator of this type does not throw the object into relief, but lights the hills and valleys equally, from above. A 'ring illuminator' is shown in Fig. 3.

More Advanced

Fig. 4 shows a sketch of a much more

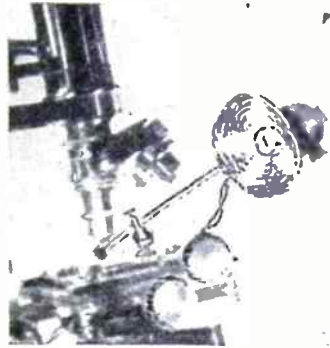


Fig. 1

hairs, textile fibres, insect parts, or crystals, but it is quite useless for examining the surface of a piece of metal or paper, or of any other opaque object. For all such purposes the microscope has to be lighted from above the stage, either by vertical or oblique lighting.

Oblique is Useful

Oblique lighting is often the most useful, and the most easy to arrange. It lights up the surface and throws it into relief, lighting up the 'hills' and leaving the valleys full of shadow. The petal of a daisy looks to be very dead when viewed with substage lighting because it is too thick to let the light pass through, but it is an object of real beauty when lighted by a strong oblique light. A human hair is best seen by both lightings in turn, one shining through it and the other shining at it. Only by using both systems can such a hair be considered to have been thoroughly examined, and it presents a very different appearance when thus differently lighted.

Fig. 1 shows a system of oblique lighting, using a 6 volt bulb brilliantly lighted by an 8 volt bell transformer, and focused by the reflector from an electric torch. This whole system is mounted on an arm which is pivoted to a corner of the microscope stage. Any handyman can make this very useful addition to his microscope.

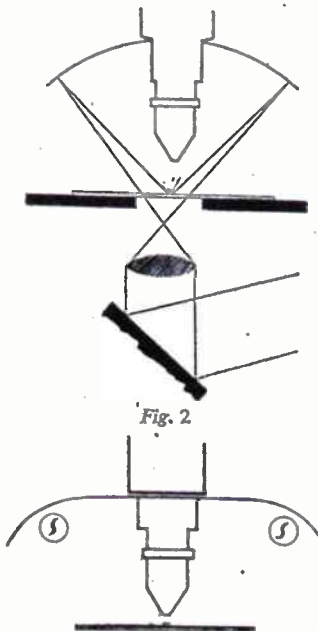


Fig. 3

advanced piece of work, yet a thoroughly recognised system of lighting. It consists of a collar fitted between the objective lens and the body tube of the microscope, and mounting a cover-glass obliquely. A small projection bulb is mounted at rightangles to the normal system of the microscope so that when you look down the microscope you look through this oblique glass, but the light that is coming in at rightangles to the line of vision is also reflected down by the same cover-glass. This means that the light which is illuminating your object is going down exactly the same path as that down which you are looking. Such a system may appear to be somewhat involved, but it works, and when the objective lens is being focused on to an object, the lighting is also being focused on to it through the same lens. There are several makes of this system of lighting on the market, but any amateur who can build one and add it to his microscope is tremendously adding to the scope of that instrument, and the addition need be no disadvantage when the microscope is being used in any of the other ways.

Helping in Detection

In many forensic laboratories, police experts have examined the surfaces of bullets by such systems of illumination. By carefully examining the surface scratchings on two bullets, by means of a microscope, it is possible to say definitely whether or not they have both been fired from the same gun, and this has often been vital evidence in discovering who was responsible for a crime. (411)

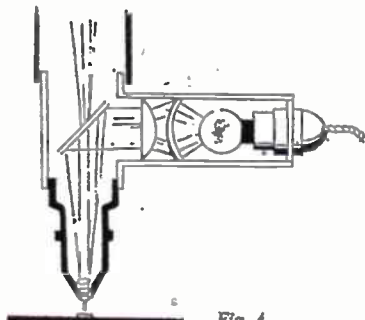


Fig. 4

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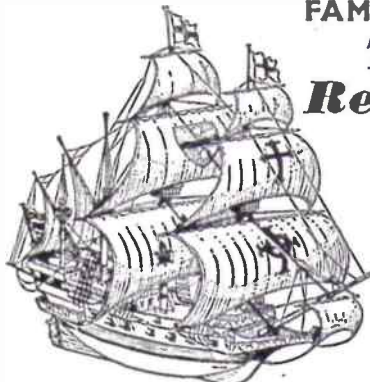
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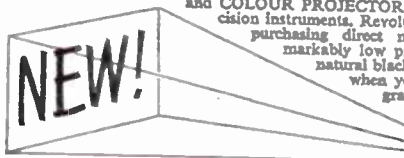
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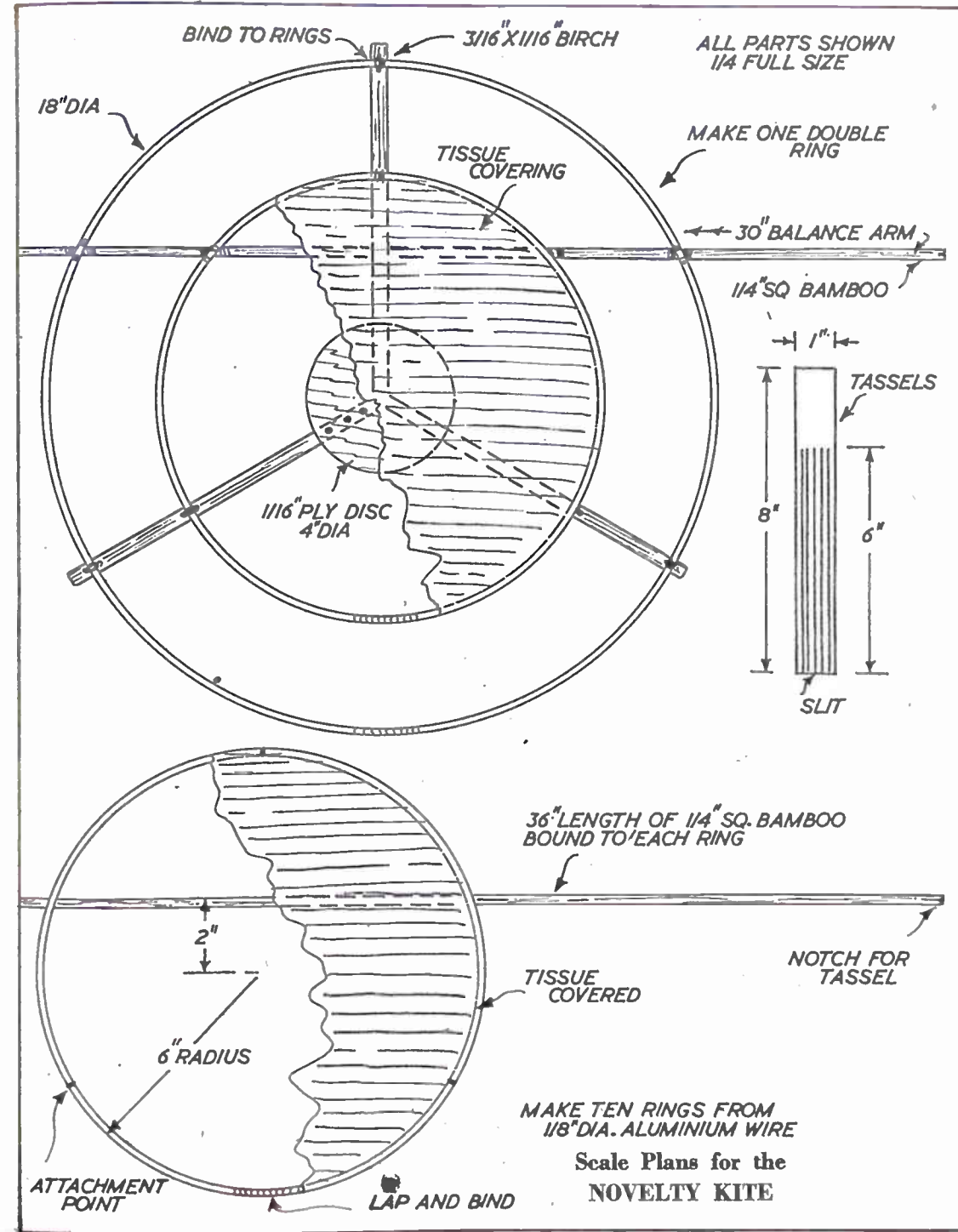
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