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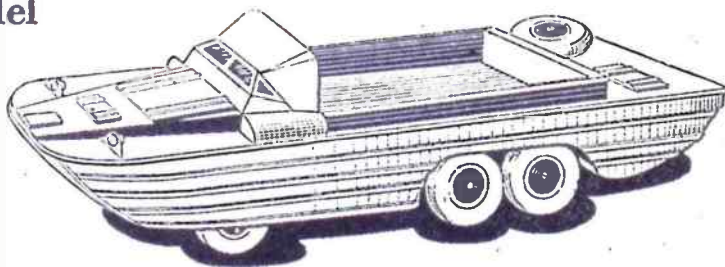
NUMBER 2972

A Design for this model

* FREE INSIDE *

A MODEL of the amphibious craft which played such a large part in the Normandy landings and other war-time operations should be welcome, especially, perhaps, to those who actually rode in them.

The model is accurately scaled at 4 mm. to the foot, so that it might well form a part of an OO railway layout. At the same time, it would look equally well as a straightforward showpiece for the 'den'.



sure that the floor of the cargo space (see Fig. 2) is perfectly flat.

Next glue pieces (3), (4), and (5) into with the bonnet piece (6), which is cut from $\frac{1}{4}$ in. wood and chamfered to the section shown on the design sheet. On piece (6) are glued three pieces of thin post card (7, 8 and 9) and on pieces (7) and (8) four strips of the same material are added according to the dotted lines on the design sheet.

Driver's Cab

Pieces (10), (11), (12) and (13) together form the front of the driver's cab. Pieces (10) and (11) are of wood, (12) and (13) of card. Cut out pieces (10) and (11) to the pattern, and shape them according to the sections shown. Piece (11) is glued on top of piece (10). Piece (12), the main windscreen frame, is cut from card and scored along the dotted lines as shown. The tabs thus formed are glued first round piece (11), and then the top tabs are glued round the inside of the main hood piece (13), which is also from card. The fitting of these card pieces depends to a certain extent on the shaping of pieces (10) and (11), so that the worker may have to experiment a little to get them to fit properly. A piece of transparent material

Here's how to make a perfect

MODEL D.U.K.W.

Incidentally, those mechanically minded might want to add power to drive the model. In this case, it is recommended that the plans are scaled up twice the size, as in its present size it would be difficult to accommodate a suitable motor and battery.

Trace the Patterns

To commence making the model, carefully trace the patterns to the desired thicknesses of wood, and cut the various pieces. Glue pieces (1) together as in Fig. 1 and then add pieces (2), one on either side of the two pieces (1). The whole assembly so far should then be cleaned up before adding the actual side pieces (5). Make

position, completing the main chassis portion (Fig. 3).

To add the superstructure, begin

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THE MAGAZINE FOR MODELLERS,
HANDY MEN AND HOME CRAFTSMEN

can be added behind the windscreen frame to complete the cab assembly.

Pieces (14) are the two headlamps situated on the bonnet. The glass disc portions are cut from card, and small pieces of waste wood are shaped to represent the main body of the lamps. Glue them in position as shown on the plan.

Two pieces (15), cut from card, are glued along the edges of the cargo sides (see side view of plan), and piece (16), of wood, forms the back of this section.

The cover plate (17) is cut from card with two thin strips added, as with piece 8, and is glued in position where shown.

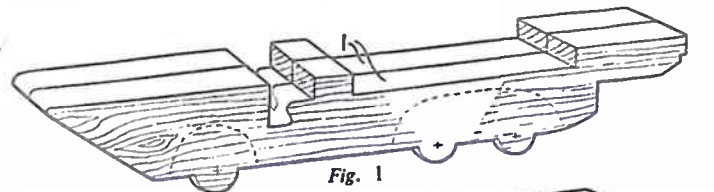


Fig. 1

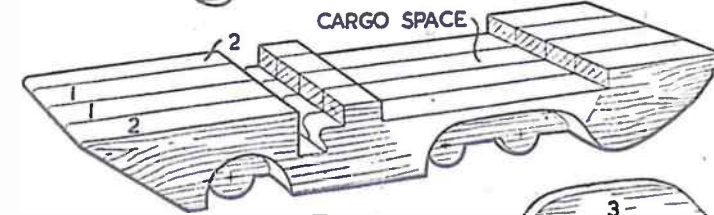


Fig. 2

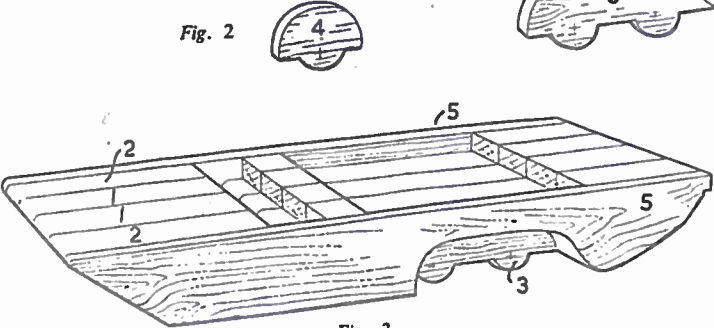


Fig. 3

The Wheels

Seven wheels (18) are prepared from 1/4 in. wood, but should not be added until painting is complete. The propeller can be cut from either card or tin and the steering wheel is cut from card, while an ordinary household pin forms the steering column. None of these parts is fixed until after painting.

To complete the body properly, strips of thin card have to be cut and glued along the sides and underneath (from stem to stern) in the positions shown in the drawings on the design sheet. To cut the strips, use a metal rule and a razor blade. The use of scissors will cause the card to curl and make gluing difficult.

Painting

The model is now complete except for painting, and the addition of the wheels, steering gear, and propeller. When in use during the war, these vehicles were camouflaged in the usual variety of brown and green colours, and often additional camouflage was added

YOURS FOR 4/3
For making this model, you can obtain a complete kit of wood, window material, and screws, from any Hobbies Branch, or post free from Hobbies Ltd., Dereham, Norfolk, price 4/3, including tax.

by the use of nets and parts of trees, etc. For peace time use they are most likely to be coloured an over-all matt grey.

Use roundhead screws to fix the four rear wheels and spare, and 1/4 in. fret pins for the front wheels, as, in the case of these wheels, there is not sufficient space between the wheel hub and cowling for a screw.

A Simple Electric Motor

(Continued from page 35)

by means of tin or brass straps, as in Fig. 5. If a single metal strap is used, then cut out the centre so that the fixing screws for the insulated block (J), carrying the spring (C) do not contact the metal strap and so cause a short circuit. Fig. 5 shows how the switch spring is mounted on top of the slide block with a small strip of insulating material beneath. Make this spring 1 1/2 ins. long and cut from springy brass, such as the terminal or an old dry battery.

The main shaft and crank assembly is shown in Fig. 6. This is bent from a length of 16 S.W.G. wire. The connecting rod is bent from 18 S.W.G. wire, with the ends made off into loops which are closed around the slide and

crank respectively. Make sure that the connecting rod is assembled with the minimum of play, but also quite free from binding. The flywheel should be of about 2 1/2 ins. diameter and of reasonable weight. A circular disc of wood will do, but may have to be loaded for proper flywheel effect. This is readily done by tacking a length of strip solder around the rim. The small pulley (F) can be of wood or metal.

Electrical Circuit

The electrical circuit is shown in Fig. 7. The two coils are connected in series to one terminal. The other side of the coils is then connected to the spring switch. Circuit is completed when this switch is 'earthed' by contact with the

armature, the return 'earth' circuit being taken from the metal strap holding the slide bushings to the second terminal. To get the motor working properly, first check that the circuit is complete. The coils should be energised as long as the armature is in contact with the spring switch. Continuous operation then depends on correct 'timing', or adjusting the point where the spring switch breaks contact with the armature on the forward stroke. If this is too close to the coils, re-making of contact on the back stroke will produce a powerful braking action which may not be overcome by the flywheel. For smooth, fast operation it is advisable to make the switch 'break' as early as possible, consistent with enough initial attraction. In any case, the motor will seldom start on its own. The flywheel will have to be spun by hand. (R.H.W.)

You can make this Simple Electric Motor

WHILE not as powerful as a conventional electric motor, this little model is both interesting and instructive to make. It does not take a lot of time to finish, yet demands just that little bit of adjustment to make it work properly, which will appeal to the mechanically minded hobbyist.

The Layout

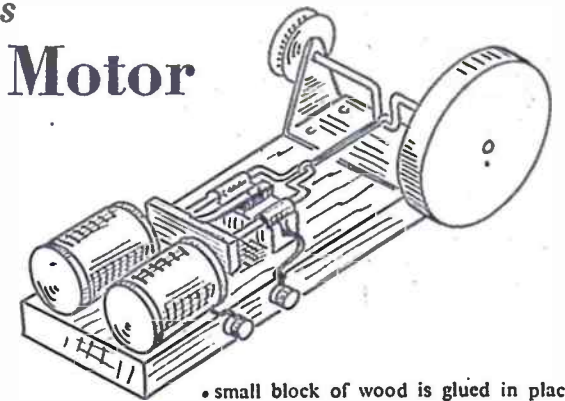
Layout of the complete motor is detailed in Fig. 1. Two electro-magnetic coils (A and A) attract an armature of soft iron (B) when energised with current. This armature is mounted on a slide assembly (H) permitting it to move horizontally. This slide is linked by a connecting rod (D) to a crank on the drive shaft of the motor, this shaft being mounted in a suitable trunnion

is in contact with the armature. As soon as the armature moves off this wiper, i.e. as it approaches close to the coils, the circuit is broken. Motion is then maintained by the inertia of the fly-wheel which, acting through the link

small block of wood is glued in place exactly 2 1/2 ins. from one end, as shown in Fig. 2, to carry the slide assembly and a brass trunnion to carry the main shaft screwed to the other end.

The Coils

The two coils should each be 1 in. in



You'll get a lot of pleasure out of making and using this robust model.

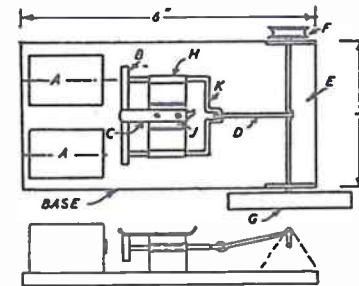


Fig. 1

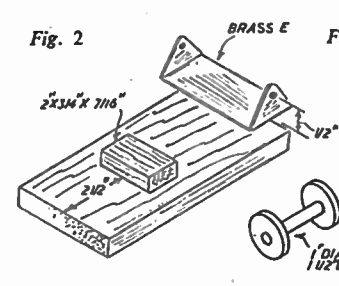


Fig. 2

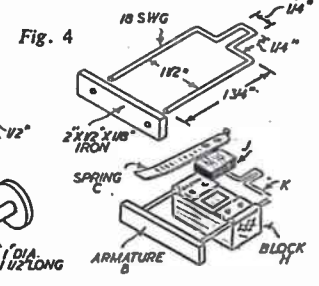


Fig. 4

Fig. 3

Fig. 5

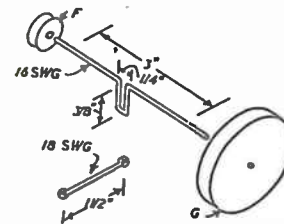


Fig. 6

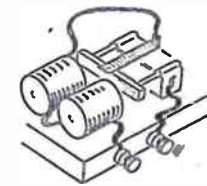


Fig. 7

(E) and carrying a small driving pulley (F) at one end and a flywheel (G) at the other.

The actual operation of the motor is as follows. Supposing the armature is distant from the coils (A) when the current is switched on. The armature is immediately attracted towards the coils, pulling on the connecting rod (D) and thus rotating the main shaft. The electrical circuit is so connected, however, that current through the coils is only maintained as long as a wiper (C)

mechanism, draws the armature back on the return part of its stroke, to complete the coil circuit once more and repeat the cycle of operations over and over again. As will be understood, successful operation depends on correct positioning of the wiper spring (C) which must break contact at an appropriate point on the forward stroke and re-make the circuit on the back stroke. In practice this means cutting the spring to a slightly oversize length and then bending, as necessary, for correct 'timing'.

Base of this model is a rectangular piece of hardwood, 6 ins. by 3 ins. A

diameter and 1 1/2 ins. long. Coils removed from an old electric bell will be satisfactory, if of approximately this size. Otherwise these will have to be wound. Mount two cards or wooden discs 1 in. diameter on an iron nail, as in Fig. 3 and wind to capacity with 30 or 32 S.W.G. bell wire for each coil. Then fasten the coils down to the base, allowing a distance of 1/2 in. between the faces of the coils and the small block previously fitted.

Armature

The armature assembly is shown in Fig. 4. The wire part is bent from 18 S.W.G. steel wire to the dimensions shown. The armature is a piece of soft iron or steel, drilled out to take the ends of the wire and then soldered in place. Short lengths (1/2 in.) or brass tube should be slid over each arm of the wire before fitting to the armature. These are then clamped to the top of the slide block (H)

(Continued on page 34)

How to Make Your 'Ground Floods'

LIGHTING your model theatre can be fun—more so because it is so simple. Very little money needs to be spent and the result is a greater reality in general effect and more specifically a heightened sense of reality in your actual plays.

Appropriate Lighting

For example, if in one of your plays you have a Witch, then she and her hideout can be lighted with green and a touch of red.

To give a blue sky two ground floods (in blue) lighting a curved white cyclorama will do the trick.

The instructions will show you how to make ground floods which can be lighted from an ordinary torch battery. If you approach your local cinema or theatre they may give you some old gelatine colours. These are stiff and glue easily with balsa cement.

The Lamp-box

Using stout drawing paper, draw and cut out the plan shown in Fig. 1. Cut the slot, and pierce the hole in the base before gluing.

Glue with balsa cement and, when dry, fit the lamp-holder.

This should be one of those simple screw holders suitable for a torch-bulb,

and encased in bakelite.

Remove the unwanted bakelite holder, then dismantle the metal bulb-holder. It can then be reassembled as shown in Fig. 4, with the card taking the place of the bakelite holder.

The Balsa Framework

This framework is fitted to prevent the colour filters from falling inwards on to the lamp. To make it, cut two pieces of balsa wood $\frac{1}{4}$ in. by $\frac{1}{4}$ in. by 1 in. and two pieces $\frac{1}{4}$ in. by $\frac{1}{4}$ in. by $\frac{1}{2}$ in. Glue the pieces together as in Fig. 2; then, when dry, fit framework flush with the inside edges of the lamp-box.

Alternatively, the framework can be built up inside the lamp-box.

For the flanges, cut four pieces of balsa wood: $\frac{1}{4}$ in. by $\frac{1}{4}$ in. by 1 in., and glue them together in the manner indicated in Fig. 3. When dry, fix with glue to the sides of the lamp-box (see Fig. 4), allowing approximately $\frac{1}{8}$ in. gap from the balsa framework. These flanges hold the colour filters in place.

The Colour Filters

To make these, cut four pieces of balsa wood $\frac{1}{4}$ in. wide, 1 in. long and as thick (approximately) as your gap (X) in Fig. 4.

Mitre the edges to fit together at (a),

(b), (c), (d), thus forming a 1 in. square framework, and glue this on to the coloured celluloid. When dry cut away rough celluloid edges close to 1, 2, 3 and 4 (see Fig. 5).

Do not worry if your colour filters do not slide easily into gap (X), as they can be glasspapered with a very fine grade paper. This will also give it a smooth finish.

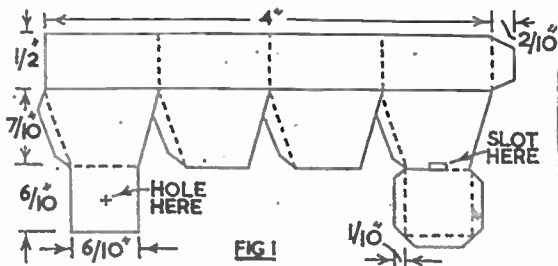
Paint all the outside of the finished lamp with lamp-black and the inside with white. Also paint the balsa edges of the filters with black.

To screw in a bulb use a short length of rubber tubing like that used to connect a bunsen burner.

Wiring

Wire as in Fig. 6. The rheostat is optional but it helps to dim the lights for certain effects. (J.B.B.)

'Floods' such as the one described here might well be used with a model theatre built to accommodate puppets like the one described last week. More articles on puppetry are in course of preparation.



SCORE AND FOLD ALONG DOTTED LINES.

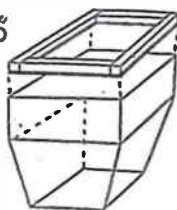


FIG 2

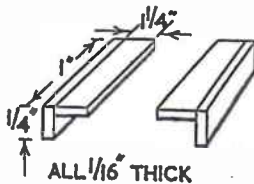


FIG 3

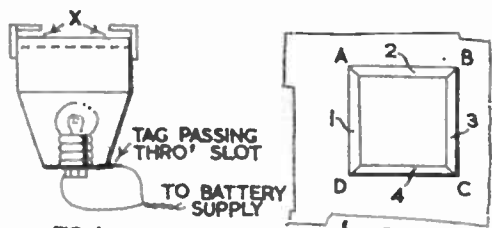


FIG 4

FIG 5

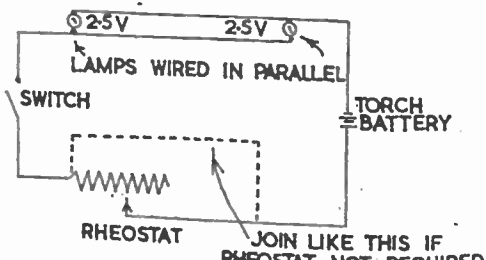
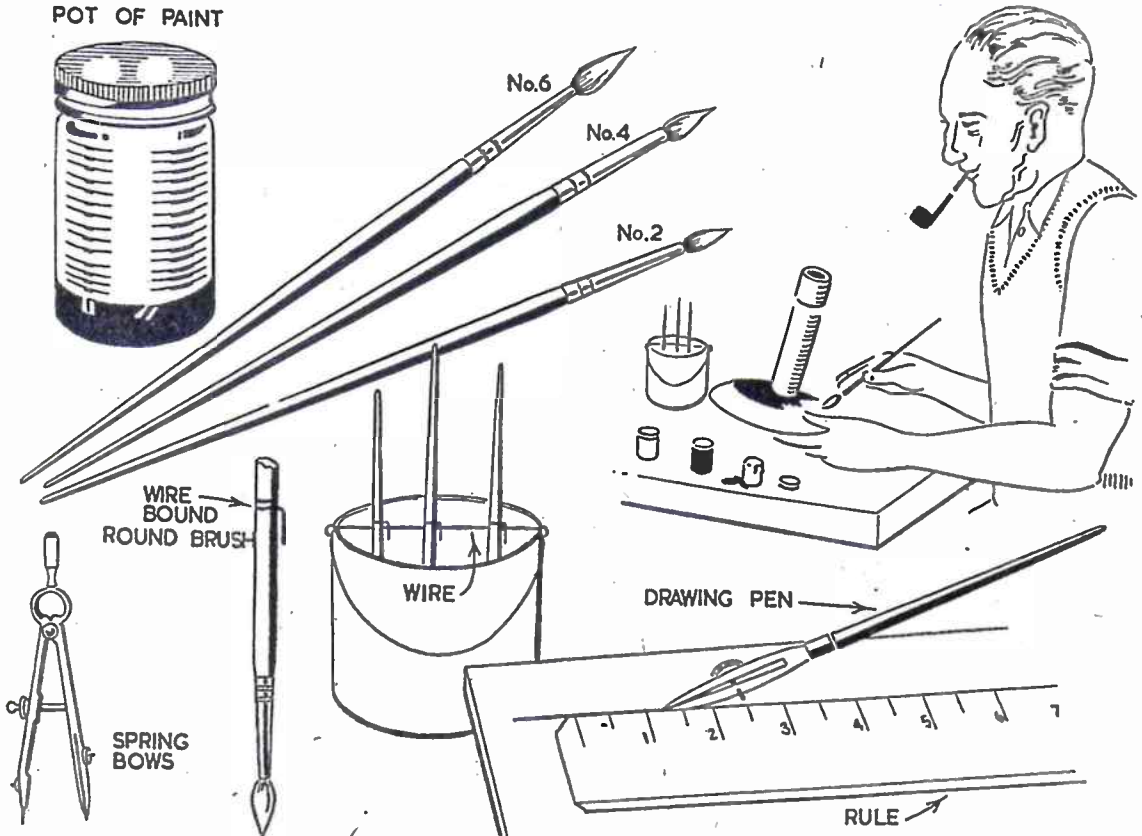


FIG 6

The various stages in making a complete lamp, and details of the wiring

Tips You've Asked For

PAINTING MODELS AND TOYS



SO much depends upon the actual finish of models and toys that it pays to go about it in the right way. These few tips may help you to make some improvement in your painting.

We assume first of all that the article has been glasspapered and all cracks and holes filled up with plastic wood, wood filler or putty.

What You Need

Now for the painting. You need a small quantity of paint—models take exceptionally small amounts—a few brushes and a little turps substitute for thinning. Brushes and small pots of paint can be obtained from Hobbies Ltd., Dereham, Norfolk, price 6d. per pot, 7½d. per pot for gold and silver. Brushes are supplied in five sizes. No. 2, 8d.; No. 3, 9d.; No. 4, 10d.;

No. 5, 11d.; No. 6, 1½ each. Complete outfits containing six colours and two brushes can be obtained for 5/9 post free.

Secret of Success

Stir the paint well before using and apply a thin coat with a No. 6 brush. For toys it may be more convenient to use a ½ in. flat brush. Note that the secret of a good finish is to apply several thin coats rather than one or two thick coats.

Rub lightly with fine grade glasspaper before the next coat is applied and make sure the previous coat is quite hard before applying the next. It may take as many as five or six thin coats to obtain a metal-like finish on a model.

The most difficult part is the lining. Where fine lines are required it is often impossible for the amateur. For this purpose we advocate the use of drawing

pen, compasses or spring bows. These are normally used for ink, but poster paint or even oil paint can be made to flow in them.

If you buy any of these instruments at an art shop, ask them to show you how to fill and use them with ink. You will then see how to use them with poster paint.

Preparing for Lining

To prepare the surface rub lightly with glasspaper until the surface is dull. Fill the pen with diluted poster paint, and holding the pen upright, run it along the line required. A ruler or straight-edge is useful to use as a guide. Compasses are used in the same way for circles, and spring bows for tiny circles.

(Continued on page 38)

Adjustable Lamp for Desk or Bench

THIS simply-constructed lamp will allow you to direct its light exactly where you need it on your work.

It is made from scrap pieces of plywood, preferably $\frac{1}{8}$ in. thick, and four $1\frac{1}{2}$ in. cubes of soft wood. The movable joints are controlled by bolts with wing-nuts.

The base can be a single piece of plywood, 9 ins. by 7 ins., or of double thickness. The feet may be blocks of soft wood placed at each corner of the base, but small squares of plywood, of double thickness again, will look more effective in the finished article. When the feet are fixed, the corners of the base should be rounded-off, as shown in the sketch.

Mark the centres of both faces of the base by drawing the diagonals.

The bottom arm is fixed securely to the base. Two pieces of plywood, 8 ins. by $1\frac{1}{2}$ ins., are glued at the ends to two cubes of wood, as shown in Fig. 1. One end of this arm must remain square for gluing over the centre of the base,

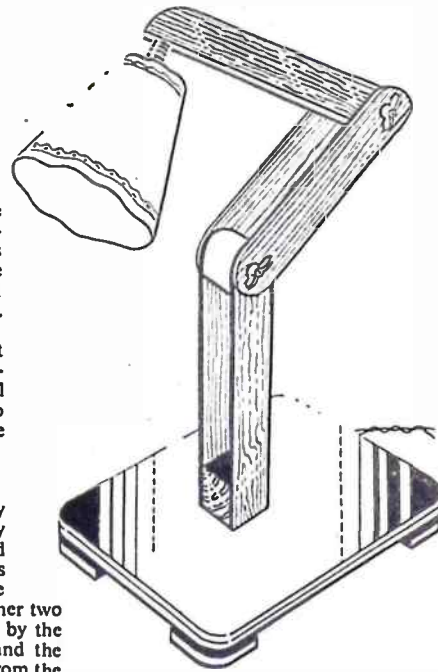
while the other end should be semi-circular. Mark this semi-circle with the aid of compasses or dividers, and, through the centre, drill the hole which will eventually take one of the bolts. See Fig. 2.

The top arm is similar, except that while one end is again semi-circular, the other, which will hold the lamp at right angles to the arm, will only have one corner rounded-off.

Middle Arm

The middle arm consists merely of two pieces of plywood, 8 ins. by $1\frac{1}{2}$ ins. as before, rounded and drilled at each end. No blocks are necessary here, as these pieces fit over the ends of the other two arms and are held against them by the bolts and wingnuts. The nuts and the bolt-heads should be separated from the wood by washers.

The hole to take the flex is drilled up through the bottom of the base, and will



allow the flex to pass loosely behind the joints.

The block which is to take the lamp-holder must be drilled at right angles to the arm, with a hole large enough to grip securely the screw attachment for the holder. See Fig. 3.

Before assembly the wood should be thoroughly rubbed down with fine glass-paper, and then stained or finished to taste. See that any varnish finish is completely dry before the joints are brought together, or the wood surfaces will tend to stick.

When the lamp is pulled out or down towards your work, it will overbalance unless the base is well weighted. At least 1 lb. of lead sheeting, folded and hammered as necessary, should be screwed under the base, preferably towards the rear. If the lamp is to be a fixture, it will be more convenient to use a single large screw behind the fixed arm to keep the lamp stable and still allow it lateral movement.

Small plastic shades are easily and cheaply obtainable now, and one will ensure that your useful lamp will look most attractive. (R.L.T.)

turpentine, they should be hung in water or turps as shown. Just wrap a piece of wire round the handle and leave a small piece projecting. This will hook over a piece of string or wire on a suitable tin. The bristles should not touch the bottom of the tin. (M.)

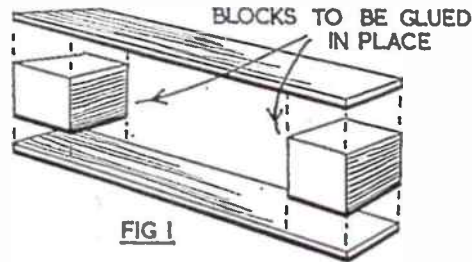


FIG 1

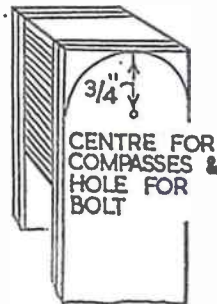


FIG 2

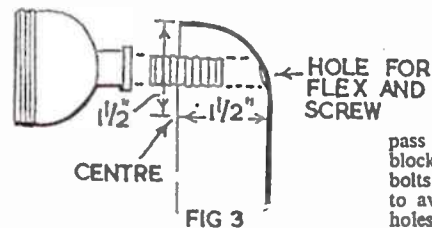


FIG 3

pass through the first block. Since the blocks at the two moving joints have bolts through them, care must be taken to avoid these bolts when drilling the holes to take the flex. It may be safer to

Painting Models and Toys

(Continued from page 37)

Decorations other than lines are put in by hand, using the smallest brush. Only a small amount of paint should be on the brush, which should be wiped to

a point. A touch of clear varnish will restore the gloss to the parts that have been dulled for lining.

When brushes have been cleaned in

Photograph Copying by Contact

SEVERAL years ago the author tried copying some old post-card views by contact, a sheet of P.O.P. being placed behind the picture and the printing frame exposed to direct sunlight. A good clear negative image soon

matter being copied, and becomes reflected with, more or less, intensity according to the tone pattern of the original. Thus in copying, say, a black circle printed on white paper, the light reaching the circle is mainly absorbed, but that received by the surrounding white surface is nearly all reflected back to the sensitive paper in contact. Development will produce a light grey circle on a dark ground; a clear white circle being unobtainable on account of some inevitable fogging caused by the initial passage of direct light.

'Hard' grade for the direct stage, very gratifying results are possible.

To ensure sharp copies, close contact during exposure is essential in either stage of the process, the paper backing so diffusing the light rays that any



An original snap—about thirteen years old—taken by the author

Dull and Flat

For this reason a reflex negative generally looks somewhat dull and flat, especially one taken from a photograph which has closely related tones of grey. As already stated, however, direct printing on gaslight paper greatly strengthens the contrast, so that by using this method for the positive stage, the final copy can have practically the same depth and brilliance as the original.

The author has experimented with most of the leading makes of gaslight or 'Contact' paper, and finds that by using a 'Normal' grade for the reflex, and a



Positive copy obtained by direct printing from reflex negative. Ilford 'hard' contact paper: 25 secs. exposure, 15 ins. from 100-watt 'pearl' bulb



Reflex paper negative obtained exactly as described in this article. Ilford 'normal' contact paper: 10 secs. exposure, 15 ins. from a 100-watt 'pearl' bulb

looseness is bound to result in a blurred image. For this reason, unless the printing frame has a really tight-fitting back, a sheet or two of cardboard should be included as packing.

Sometimes, of course, the usual printing frame is unsuitable, as when copying a book illustration, or section of a large mounted photograph. In this case a sheet of glass and a backing board may be substituted, the material being sandwiched in between and held or tied securely together during exposure.

Exposure

Exposure itself depends on the usual gaslight factors, plus the difference caused by using paper instead of a clear celluloid base, but one or two test strips will soon settle the matter. To minimise fogging, the reflex exposure should be as short as possible, consistent with good results. It must, in any case, be much less than for the direct print, on account of the greater intensity afforded by the

(Continued on page 40)

Helpful tips on

KEEPING ICE SKATES IN ORDER

ENGLAND is now experiencing a great boom in ice-skating. Although it is still a more or less winter pastime, with the appearance of numerous artificial ice rinks all over the country, it is no longer subject to the vagaries of the problematic cold snap, but can be indulged in, when and as, the adherent wishes.

The ability to skate at all times means, of course, that the skates themselves are in more continuous service, and the question of their care and maintenance becomes of paramount importance.

Nowadays most skates are made throughout of steel, the wooden variety becoming practically obsolete. The steels used are usually of the 'rustless' type, but despite this rust has to be guarded against, especially where the surface of the metal has been ground, as, say, for sharpening purposes, and at these places the rust resisting properties are greatly reduced.

Before You Leave the Rink

Before leaving the rink the skates should be wiped over, and, if possible, a little oil smeared on the metal. Upon reaching home, however, the skates should be given a good application of vaseline; it is not sufficient to merely lay the vaseline on the surface, but it must be rubbed well in (as far as this term can be applied to metallic surfaces) and a goodly layer should finally be left on. If there are any nuts and bolts present these need not be taken out, but they ought to be removed at the end of each season and given a good coating of vaseline.

As a further protection each blade should be slipped into a fairly tightly-fitting leather case or cover, which assists in holding the vaseline to the metal, and absolutely precludes moisture reaching the steel, even if the skates have to be put by for some time in a possible damp atmosphere. The covers also reduce to a minimum the danger of

the blades becoming accidentally damaged by knocks, etc.

These little cases can be bought at sports outfitters but are readily made from two rectangles of suitable leather, which can be obtained from any saddlers.

Skating Bag

The safest and most convenient way of conveying your skates from home to the rink, if the small blade-cases are not used, is by means of a special skating bag, which can be obtained at any sports outfitters. Should an official carrier or black covers not be used, care must be taken that the leading serrated edge on one skate does not scratch the leather of the other boot, as considerable damage can easily be done with careless packing in a very short time, by these knife-like points.

Nearly all skates nowadays are of the screw-on variety, being secured by ordinary wood screws to the soles and heels of a pair of boots specially kept for the purpose. Clip and strap-on skates can still be obtained, but they are frowned on by rink proprietors and in some cases we believe prohibited as unsafe.

It is not wise to be continually taking skates from, and fitting them to boots, but once well and securely fastened they should be left on the same pair, the screws being examined from time to time for perfect tightness. Round-headed screws with no countersinking, it has been found, hold tighter than flat screws with countersunk heads. Before putting in any screws they should be blued, to prevent the danger of their rusting in the leather. Although circumstances cause a variation, it is usual to employ about $\frac{3}{16}$ in. screws for the soles and $\frac{1}{4}$ in. for the heels.

In treating strap-on skates, in addition to the vaseline, the straps should be kept well oiled, as a brittle strap, as well as being at some time or the other a nuisance, may become a positive danger.

Buckles and the places where the straps come in contact with the metal and take considerable strain, must receive periodical examination.

The question of keeping skates in good trim as far as sharpness is concerned is generally beyond the average amateur, but it is as well to be able to recognise when your pair need attention. The most important parts of the blade are the outer and inner edges. These, in good skates, are two sharp and independent ridges running down the length of the skate and are maintained as such, by the middle of the blade being ground away to a slight hollow. When either of these ridges wear down so that the idea of a comparatively sharp ridge is lost on either side, then regrinding is necessary.

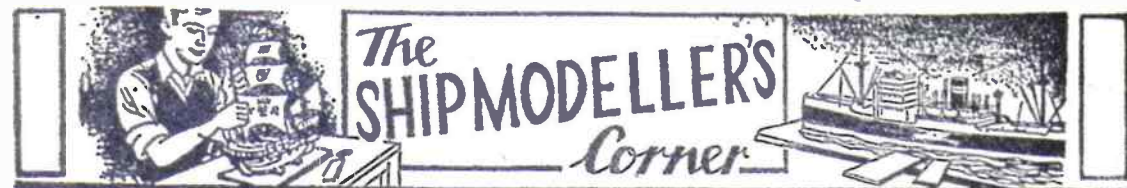
Flat Blades

Not all blades are 'hollow ground', some having a flat surface between the sides of the blade. This type is all right as long as the edges retain true and sharp right angles; but as soon as they begin to lose their squareness and become rounded, the blades will no longer have a perfect grip on the ice and tend to slip sideways. Re-grinding is then necessary. It can be carried out with this type of blade on the side of an ordinary grindstone by anyone who is used to using a stone.

With the hollow grinding a 'jig' is necessary. This is a frame that surrounds the article being ground or cut, and which assures that an absolutely straight edge (or series of edges) will be maintained.

As a final point it is essential that skating boots should receive attention as well as the skates. They are subjected to considerable strain, and seams are liable to give away; such seam-failure should be attended to at once, and as the boots function in a more or less moist atmosphere, keeping them well wiped and polished will greatly prolong their life—and enhance their general appearance. (H.A.R.)

that the reflex negative principle can be applied to practically any type of original. Besides photographs, pictures or designs on wood, metal, cloth, etc., map sections, drawings and a hundred and one other things may be copied far more easily, quickly and cheaply than they could be photographed. Moreover, contact copies are automatically life-size, which is often of advantage in the case of plans and other printed matter. (C.K.)



BUILDING MODERN WARSHIP MODELS

By 'Whipstaff'

Collecting Information

Having determined the 'class' of our model we proceed to collect information, including as many views, sketches or photographs as we can, taken from as many different viewpoints as possible. A photograph taken from the air is most useful in giving deck details.

In the public libraries are many works of use to the model maker; naval histories, biographies of naval officers, etc. These are in many cases well illustrated, usually by photographs, and can be very instructive, especially if examined by means of a magnifying glass.

As an example, let us take *Hobbies* kit 2678 for H.M.S. Vanguard. Naval photographs and illustrations of this famous battleship can be obtained readily and will repay careful study.

We find that she is 850ft. long, beam 108ft. and tonnage 42,500 tons. The guns carried are eight 15in., sixteen 5-25in. high angle guns in her side turrets and some 70 or so Bofors A.A. guns. A distinguishing feature of this vessel are the funnel cowl.

During our history nine warships have borne this famous name, the first a small galleon that saw action against the Armada in the reign of Elizabeth I.

Idea

Here is an idea for a model maker prepared to do some personal research work. What a fine collection could be made by modelling each of the vessels the eventful history of our senior service. All modelled to the same scale, of course.

Now to our present day 'Vanguard'. All boats are carried between the funnels, the small dinghys carried 'nested' inside the larger boats. The two outboard boats rest on chocks on the housing between the gun turrets mounting the 5-25in. guns. These boats are hoisted by large radial davits; the rest by two powerful cranes.

As an example of the type of detail we can obtain from drawings and photographs, the attached sketches show some of the main details for the 'Vanguard' taken from illustrations, and which could be added to the model.

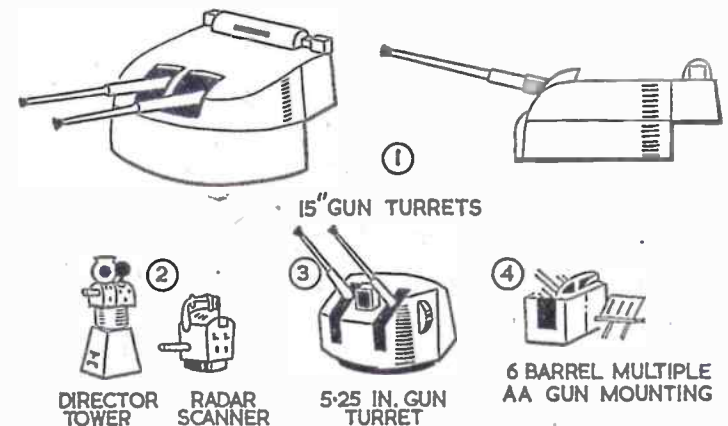


Fig. 1 is of one of the 15in. gun turrets. These are quite large enough in our model to allow us to include the details shown in the drawings; range finder, etc.

The guns are better if turned up in the lathe. By using small files it is quite a simple job to turn them up out of wire of suitable thickness.

Radar Scanner

Fig. 2 gives some idea of the Radar scanner and director tower situated in front of the foremast, the director tower nearest the mast.

These can be carved to shape, drilled to take a piece of suitable gauge wire to form the projections on each side.

Fig. 3 shows the actual design of the 5-25in. gun turrets, of which there are eight.

Fig. 4 is of one of the six-barrel multiple A.A. gun mountings.

By following good photographs we can improve our model in many such details and pins, wire, dowel and bamboo can be utilised very successfully for many of the small details.

Improved Floats

The Carley floats can be improved by making them of rubber insulated wire bent to shape. The hand lines are added in very fine thread, and these in turn are held in place by thin strips of gummed paper wrapped around the body of the raft. The flooring can be of interlaced strips of paper or a piece of thin wood or card painted to represent the grating.

Canvas Covers

If canvas covers are shown on the boats these can best be simulated by the use of ordinary sticking plaster, cut to shape and stuck in position. At this scale the lines securing the canvas cover can be left out, or drawn on in indian ink with a very fine mapping pen.

Cranes can be assembled from wire, with cross struts of thread secured to the wire with Durofix. If the thread is coated with Durofix very thinly they will be stiff and secure.

Attention to the foregoing details will enhance the appearance of your model. There are, of course, many more details that are too small for inclusion, and our aim has to be to include only such detail as will give the model the correct 'scale' appearance and not to try to include detail too small

Photograph Copying by Contact

(Continued from page 39)

combination of direct and reflected light. As a guide, using 'Ilford' paper 15ins. from 100-watt 'pearl' bulb, try 10 seconds exposure for the reflex negative, and 25 to 30 seconds for the final print.

Bromide paper may be used instead of gaslight, though as a rule its higher

speed gives a greater degree of fogging and grain, and it is not, therefore, recommended in the negative stage. If employed for the print, a much weaker light strength is required; 6 to 8 seconds exposure at least 6ft. from the 100-watt light source being generally sufficient.

In conclusion it may be pointed out

REPLIES OF INTEREST

Creaking Floors

CAN you tell me how to stop a floor-board creaking when trodden on, and is there any way of stopping a quite new wooden bedstead creaking? (F.M.—Maidstone).

THERE may be several reasons for a floor-board creaking, but the most likely one is a broken tongue or groove on the edge of the board. A careful examination should reveal this, and if so, the board should be lifted and the broken tongue or groove replaced. Creaking of a wooden bedstead may be caused by the screws holding the mattress frame becoming loose, but the more common cause is poor construction, the ends of the bedstead tending to distortion under the strain of a person getting in or out of bed. The addition of steel furniture brackets in the lower angles of the bed may cure the trouble.

Preserving Leaves

PLEASE tell me of any way to preserve leaves from trees. (R.J.O.—Finsbury Park).

LEAVES can be preserved in various ways. The simplest is to place them as flat as possible between sheets of clean paper, and then put them under steady pressure and leave for some time until the leaves are bone dry. Another plan is to immerse them in hot bone dry sand and leave them for a time until the leaves are bone dry. They will to a large extent then retain their shape, and will not be flat, but in both cases the colour is lost almost entirely. A third plan which often retains much of the natural colour, is to allow the leaves to dry, but not for long enough for much of the colour to be lost, then spray them all over with a very fine spray of clear cellulose lacquer. This latter method is applicable when clusters or groups of leaves on a stem are required, as the treatment preserves the shape. Success depends upon a nice judgment as to

when the leaves are dry enough, but not too dry. Preservation depends on exclusion of air, hence the cellulose coating must be complete and cover every part of all the leaves.

Short Lamp Standards

PLEASE give me some advice of the method used for filling, staining and polishing small turned articles made from oak, also materials used. When making short lamp standards of about 12ins. long, I drill them first and then turn them. I do this because I find difficulty in drilling them accurately; the only way I use is to keep the drill square to the wood by eye. Because I have to drill in both ends, they are not always accurate, thus sometimes spoiling a good piece of wood. Could you tell me a reliable way of drilling them accurately without any special set-up? (K.E.N.—Mildenhall).

ALL processes of polishing can be done in the lathe. Water or spirit stain is applied on a sponge, sparingly soaked in the stain. Any proprietary brands of woodfiller can be used, applied on a clean rag. For polishing, soak a handful of cotton wool with the polish, cover with a soft rag and squeeze with the hands to the shape of the moulding, as applied. Use low speed at first, and increase later, turning the lathe both ways. Johnson's wax can also be similarly applied in place of polish and is quite satisfactory on oak. For drilling long holes accurately, clamp the wood to a baseboard, the latter having a vertical lug underneath to slide along the bed of the lathe. See the direction of hole is in correct alignment to the lathe centre and bore from both ends.

Portable One-Valver

I HAVE made an 'all dry' one-valver and would like to know if the set can be made portable by winding an aerial around the case. If so, what should be the

length and gauge of the wire? (B.E.B.—Taunton).

THE number of turns and length of wire will depend upon the perimeter of the case. If the case is rather large (say, 5ft. to 6ft. perimeter), use about 75ft. of wire; if about 4ft. perimeter, use about 50ft. of wire. For smaller cases down to 35ft. of wire may be suitable. This is for medium waves. Wire of about 26 S.W.G. is most convenient, but this is not critical. If the turns can be spaced by about the diameter of the wire, signal pick-up will be slightly increased. By dividing the perimeter into the lengths mentioned, you will arrive at the approximate number of turns necessary, and the number is not critical. For reaction, use about quarter to one third the number of turns used on the tuned winding, these turns being about 1/4in. from the L.T. negative end of the tuned winding. If you subsequently find that the set does not tune to sufficiently low wave-lengths, remove a turn or two from the tuned winding.

Model Village

WHILST on holiday I saw a model village comprising a church and small houses made of cement. I would like to try and make a village myself but to use sawdust in small blocks so I could paint them and take them indoors during winter. Could you inform me what to use as a suitable inexpensive binder? (W.H.—Skelmersdale).

YOU can bind your sawdust into hard blocks by means of the magnesium oxychloride method. Magnesium chloride should be dissolved in cold water until a thin syrup results; add an equal bulk of water and then stir in magnesium oxide (which has first been heated in a tin in the fire and cooled) until a creamy, thin paste is obtained. The wetted sawdust is then stirred in. A little more water may be added if it is wished to save money by incorporating more sawdust. The mass should then be pressed into the moulds and left to set overnight. An alternative method is to mix the sawdust with a plastic cement which has been thinned with acetone or amyl acetate. A third, to use a meths/shellac solution. Both these with greased moulds.

clear on the photograph it can with safety be added to the model and will look right.

All of the foregoing is meant only to show the lines on which the modeller can work to improve his model, and is not intended to be detailed instructions for the building of the 'Vanguard'. (A.)

PART II OF A SERIES

More Woodworking Joints

THE angle joints illustrated in the first article of this series some time ago, were of the elementary type. The more elaborate joints, which are variations of those already described, will be useful if the worker contemplates making small pieces of furniture.

Remember, however, that joints of this nature will entail extra care and patience, and that some cannot easily be made without using carpenter's tools. The illustrations shown here are all full size.

The Lap Joint

The diagram (A) shows a type of joint frequently used in light carpentry. The lap joint consists of a rebate or 'rabbet' as it is sometimes called, in one piece of wood only. The other piece butts into this as shown. It is secured by gluing and pinning or screwing.

Cutting the Rebate

The lines of the rebate are marked on

the wood after it has been planed to the required thickness. It is presumed that the wood is cut square, in which case the marking gauge can be used.

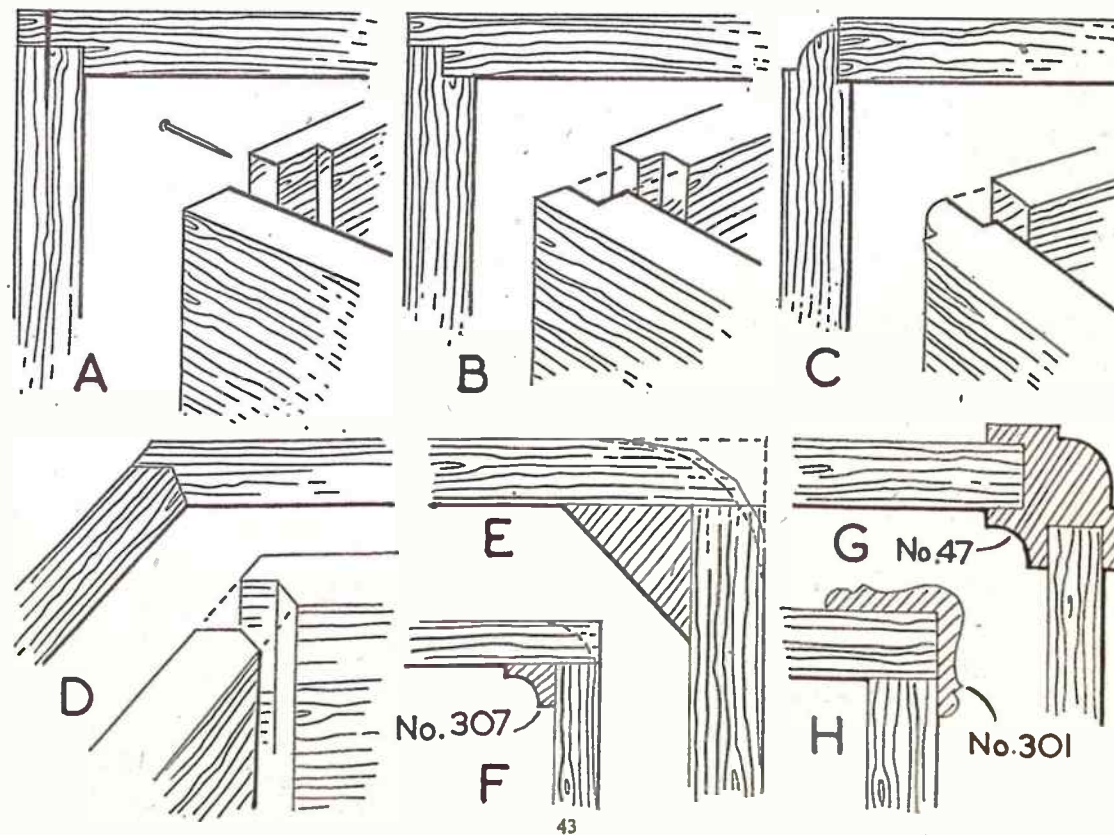
Lay the wood flat and cut down the depth of the rebate with a tenon saw. Make your sawcut on the outside of the line. Take away as much wood as you can with a chisel and finish off with a rebate plane. Other planes such as a plough, router or grooving plane can be set to do the same job. Failing these tools the rebate must be pared away carefully with the chisel.

The double-lap joint, as its name implies, consists of a rebate or shoulder in each piece of wood. Diagram (B)

shows a section and perspective of this joint. The rebate is made in exactly the same manner as just described.

The sketch at (C) shows a variation of the lap joint at (A). This time the

(Continued on page 46)



Shipmodeller's Corner

(Continued from page 41)

to be identified. Including too much detail results in an overcrowded appearance instead of the clear cut and business-like appearance of a modern naval fighting unit.

A great art in miniature modelling of all kinds is to know what detail to leave out, and there is no better guide than a good photograph, if possible the same size as the model. If a detail is

Duke at Exhibition

THE organisers of the Model Engineer Exhibition, which is to be held from October 20th to October 29th this year, have announced that His Royal Highness, the Duke of Edinburgh has consented to open the Exhibition. The presence of the Duke on this occasion emphasises the growing importance of model engineering in this country, particularly in the production of prototypes for scientific and industrial purposes.

Each year there is an increasing number of foreign visitors to this Exhibition, and this would seem to add support to the oft-heard statement that British model engineers are accepted as being without superiors.

For Railway Fans

ANOTHER exhibition, this time designed specifically to interest model railway enthusiasts, is being staged by the Leeds Model Railway Society on Thursday, Friday, Saturday—November 6th, 7th and 8th.

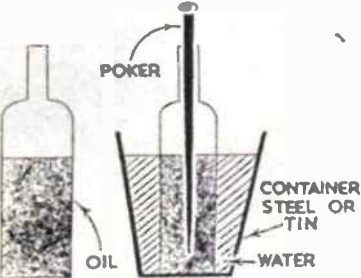
This is the first exhibition of its kind to be held in Leeds, and should prove highly popular. The venue is the Corn Exchange.

Youthful Modelmaker

THE young fellow pictured in our photograph on this page is Master John Robertson, of Mile End Road, Norwich. When the picture was taken he was 6½ years old and had just completed the model Jeep seen on the table.

Needless to say, the model was made on the A1 fretmachine at which he is seated, and it is of interest to note that this particular fretmachine was won in a *Hobbies* competition in 1924—by John's mother! She tells us that he did all the cutting out of the Jeep himself, though he had a little help from his father with putting it together.

Well done, John. You are, obviously, well on the way to becoming a first-class model maker, and it is a hobby which will give you a great deal of interest throughout your life.

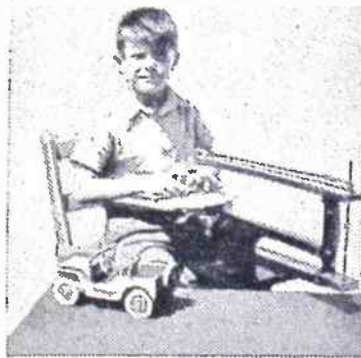


The scheme for cutting tops off bottles



Unusual Competitions

AN UNUSUAL feature of a Toy Making Competition which is being held at this year's Mothercraft Exhibition (October 30th—November 12th, Central



John Robertson with his model jeep

Hall, Westminster) is that the final judging will be carried out by a panel of children aged from 5 to 10 years!

Leslie Hardern, the organiser of the Television Inventors' Club, considers that many modern toys are expensive rubbish and that there are throughout the country, fathers, brothers and uncles capable of designing better and more durable toys. How right he is, as we well know from correspondence with our own readers.

Currently with the Mothercraft Exhibition, a National Handicraft Exhibition is being held and, incidentally, the one entry fee of 1/- covers both exhibitions.

In the Handicraft Exhibition there are competitions for weaving, woodwork, lampshade making, jewellery, basketry, metalwork, pottery, needlework, knitting and miscellaneous handicrafts. In addition to over £150 in cash, prizes include television sets, vacuum cleaners, washing machines, bronze and silver medals, etc.

Cutting Tops Off Bottles

SOME months ago we had occasion to answer a query in the Replies of Interest section for a reader who wished to cut the top from a bottle, cleanly and smoothly. Following the publication of our reply, we had one or two letters, mostly from ex-soldiers, detailing a method much used by 'Desert Rats' to provide troops with drinking glasses.

One of these letters was from a reader who signed himself C.V.G., of West Houghton, and this is the method he gives. Fill a bottle with oil up to the mark where the sever is wanted. Machine oil is best—avoid paraffin or any other inflammable oil. Get a tin or container, place the bottle in it, then fill the container with water exactly to the level of the oil in the bottle. This mark must be absolutely exact or the bottle will splinter. Next, heat a rod of steel or a poker to bright red heat, plunge it into the bottle and hold it in the oil, being careful not to disturb the bottle, as it is important that it should be level.

A definite crack will be heard as the poker is held in the bottle. After a few seconds, remove the poker and also the severed top of the bottle. Let the oil cool and remove for further use so that there is no waste. The cut will be very clean and sharp, and the lip should, therefore, be ground to make it smooth. Incidentally, the job should not be done in the house, as burning oil sends off a vapour and smells.

The drawing on this page should make these details quite clear.

Miniature Plane

WE recently had sent us a small plane which has been added to the Multicraft tool range. In design the plane is an almost exact replica of a full-size smoothing plane, but measures only 3½ ins. long and has a blade only 1 in. wide. The workmanship in the wooden section of the plane is of a quite reasonable standard, but the blade itself, we thought, left a little to be desired.

The plane is to retail at 4/6, and we understand that deliveries have been made to retailers.

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More Woodworking Joints

(Continued from page 43)

rebate is not so deep and a moulded corner is planed on the rebated end. The result is a decorative finish to an otherwise plain lap joint. The moulded corner can be cut by any universal plane. These planes, which are rather expensive, combine rebating, moulding and many other types in one. It is often possible for the handyman to borrow one for an evening or two.

A further use of the lap joint is shown at (D). In this case the angle is greater than a right-angle and will, obviously, be more difficult. Measurements and marking must be exact if the corresponding angles are to match up.

Mouldings and Fillets

We have seen how a fancy corner can be made by using the rebated and moulded joint, but what of the worker who has no access to a plane to complete the work? For simplicity and ease of construction the answer is moulding or angle fillets.

By using a plain tri-angular fillet glued on the inside of a butt joint we can chisel or plane away much of the corner to give a rounded effect. The section at (E) shows the corner pared away ready for finishing with a plane.

In the diagram you will see that if too much is pared away some end grain will be revealed.

If the grain can conveniently run along the joint instead of across, the join will be almost invisible and quite a wide curve can be planed away.

When the joint is likely to be exposed to view, and especially when only 1/4 in. wood is required, Hobbies No. 307 moulding can be used as an ornamental fillet. The corner can be rounded off on the outside. A similar effect is obtained by using 1/4 round beading.

No. 307 fillet moulding is 1/4 in. by 1/4 in. and costs 2 1/2d. per foot. The 1/4 round beading costs 2 1/2d. per foot for 1/4 in., 3d. for 1/2 in., 4d. for 3/4 in., and 6d. for 1 in.

Grooved Corner Moulding

Another method of constructing an ornamental corner is to use grooved corner moulding, illustrated at (G). This moulding is made in three sizes to take 1/4 in., 1/2 in. and 3/4 in. wood. All you need do is to glue the sides into the moulding as shown.

Prices are as follows: No. 45, 1/2 in. groove, 5d. per foot; No. 46, 1/4 in. groove, 6d. per foot; No. 47, 3/4 in. groove, 9d. per foot.

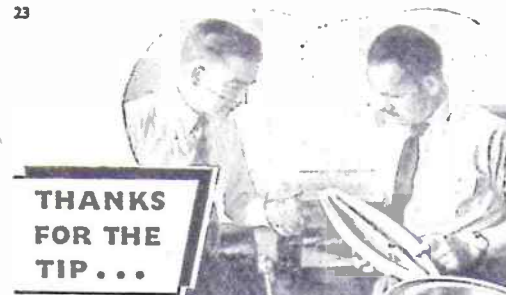
Yet another type of corner moulding is shown at (H). In this case the moulding fits round any type of 90 degree angle joint. Prices for this moulding are: No. 300, 1/4 in. sides, 4d. per foot; No. 301, 1/2 in. sides, 6d. per foot; No. 302, 3/4 in. sides, 9d. per foot. All the mouldings mentioned are made from wood suitable for staining and can be obtained from Hobbies. Orders of less than 6ft. are not accepted. When ordering, keep lengths as short as possible in order to avoid breakage in transit. All prices quoted are post free in the United Kingdom. (M.p.)

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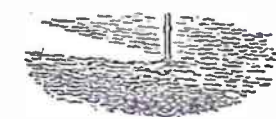


Showing arrangement for turning between centres and sawing.



Showing Sanding attachment replacing Saw. Left: Super Swivel Platform positioned for turning at any angle (front, rear or end).

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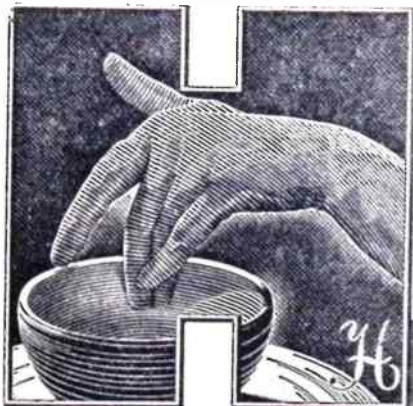


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