

HOBBIES WEEKLY

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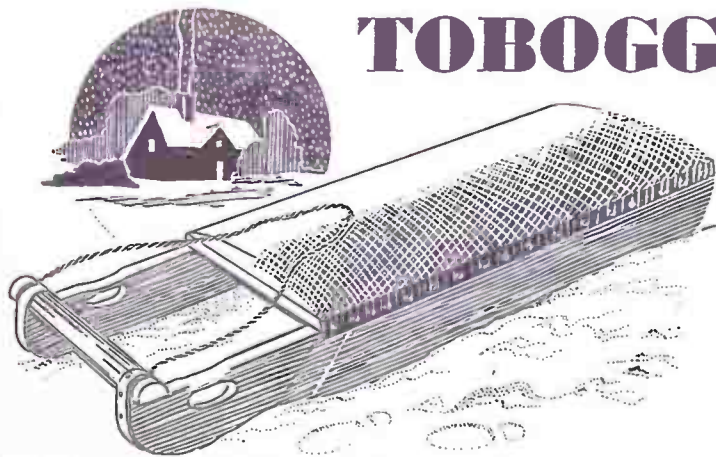
JANUARY 26th 1955

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You will have a comfortable ride on this

TOBOGGAN WITH A PADDED SEAT



YOU forget discomfort in the thrill and exhilaration of a toboggan ride, but a wooden board can be rather hard on the anatomy when bumping over a frozen 'slide'. You will find this padded seat toboggan far more comfortable and less rough on your clothes. The ladies, too, should jump at the chance of a ride when you display your 'new look' toboggan.

No special tools are required in the construction, just a hammer, saw and a fretsaw for cutting the handgrips. Even the padding is quite straightforward and you will have no difficulty in making a

good job of it. The metal runners can be made for only a few shillings. Your local blacksmith or motor engineer could cut and drill the metal ready for fixing.

Construction

Cut the two sides first, making them about 4ft. long and 4ins. deep. They are cut from lin. thick material, preferably a hard wood such as oak. Shape the ends as shown in Fig. 1 and mark out the positions of the handgrips. They should commence about 6ins. from the extreme front and are about 4ins. long.

The ends of the sides can be shaped with a fretsaw using a heavy gauge sawblade.

The handgrips, too, are cut with the fretsaw, first drilling or boring a hole with a gimlet to take the blade. This hole must be in the forward end of the handgrip in order to work the saw from the front. Cut along the top as far as you can go and then draw back the blade and cut the lower edge. Fig. 2 shows the handgrip cut out.

The next step is to shape the handgrip nicely as shown in Fig. 3. Use a rasp, followed by coarse and then fine glasspaper. Get it as smooth as you possibly can, because of the possibility of splinters in your hands.

Having completed the side pieces, you can now proceed to nail the seat in position. Cut the boards from ½in. or ¾in. soft wood and fix them to the sides as shown in Figs. 1 and 4. Five boards

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*For Modellers, Fretworkers
and Home Craftsmen*



15ins. by 6ins. and one 15ins. by 3ins. are required. They can be entirely screwed to the sides or alternatively screwed and nailed. Arrange it so that each board has an equal proportion of

$\frac{1}{2}$ in. wide and $\frac{1}{4}$ in. thick, but you could easily improvise with thinner or thicker material. The diagram in Fig. 5 shows how the strip is bent round and over the top of the crossbar.

and cover right over with a piece of sacking, as shown in Fig. 6. Tease out the padding until it is as smooth as possible, and then tack the sacking all round. Space out the tacks about 2ins. apart. The final covering can be of some

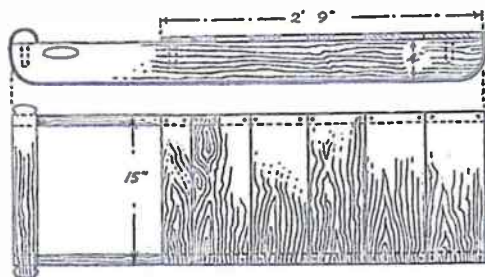


Fig. 1

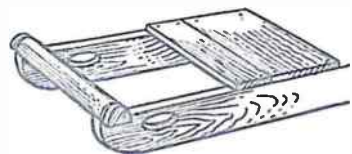


Fig. 4

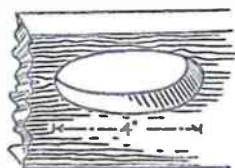


Fig. 2

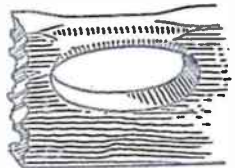


Fig. 3

The runners must be well polished to allow a smooth and swift ride. Rub down the metal with emery cloth in coarse and fine grades until it is as smooth as possible. The metal will quickly rust after being in contact with the snow, so we suggest that you smear it well with grease after use.

The Padding

Almost any soft material will do to form the padding—several pieces of wool cloth, cotton wool, felt or old stuffing from pillows, cushions or mattresses. Lay the padding on the seat

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A Simple Xylophone

as any tightness will cause the tone to be muted.

It will be as well to mark each note A, B, or whatever it is, in ink. If it is desired to varnish the instrument, this should be done to both bearers and notes before the latter are fitted on. A pair of beaters will be needed. These are knobs of wood, say, pieces of $\frac{1}{2}$ in. wood rod or something of a similar nature, fitted with a strip of cane as a handle. The sketch (B) will show how these are to be when made.

Considerable improvement in tone, especially in volume, will result if a resonance box is made for the xylophone to rest upon while being played. Quite a simple thing, it being a frame of

waterproof material. A rubber sheet, old groundsheet, waterproof cape or mac are a few suggestions for a cheap and strong covering.

When the toboggan is stored away for the summer, the seat covering should be removed by lifting the tacks. Leave the sacking in place to hold the padding in position.

Finish

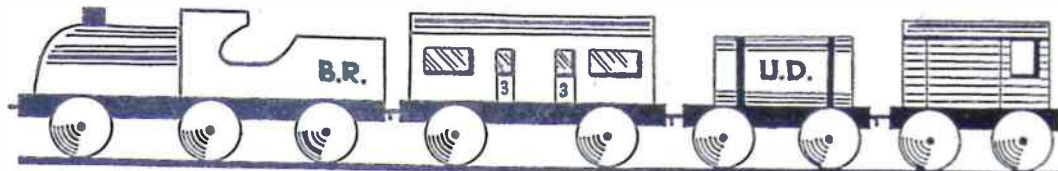
Give the whole of the woodwork two coats of wood preservative and then add a touch of colour by painting the crossbar bright red. A line of red could also be painted along the sides. A suitable preservative to use is Cuprinol. (M.p.)

$\frac{1}{2}$ in. by $1\frac{1}{2}$ in. wood, about the shape formed by the bearers and their end connectors, with a bottom of thin deal, and a top of $\frac{1}{2}$ in. fretwood or pine, if available. The top should be glued on, and weighted down until the glue is set hard.

Adding Semitones

Readers who may desire to add semitones to the instrument will find it less cumbersome if the notes are arranged in two parallel columns as it were, the semitones being situated on the player's left. Semitones should be cut the same length as the notes they belong to, and be slightly sharpened or flattened as already described.

A Pull-Along Toy for the Kiddies



MOVING toys such as this attractive pull-along train have a great fascination for young children. They will spend hours happily 'pulling' along with their load of carriages and milk wagon.

The train is sturdy enough to be used indoors or out, but should not, of course, be left outside in the rain. It will also stand up to considerable hard wear if screws and pins are used throughout, in conjunction with glue.

Some of the measurements are shown in the diagrams, the rest being easily deduced from these. Start off by making the engine and tender, using $\frac{1}{2}$ in. wood. The boiler part of the engine is shaped from a square section block of stripwood or cut from round rod $1\frac{1}{2}$ ins. diameter. The funnel is a short length of $\frac{1}{2}$ in. diameter round rod about $\frac{1}{2}$ in. long.

The axles are cut from $\frac{1}{2}$ in. square stripwood and are 2ins. long. They are the same size for the engine, carriage,

milk wagon and guards van. The wheels, too, are all the same, $1\frac{1}{2}$ ins. diameter and $\frac{1}{2}$ in. or $\frac{3}{4}$ in. thick. They are all drilled to take thin $\frac{1}{2}$ in. round-head screws, which fix direct into the axles.

Continue with the carriage, making it 6ins. long and $3\frac{1}{2}$ ins. high. Figs. 1 and 2 show the measurements and construction. The milk wagon consists of a flat truck with a piece of $1\frac{1}{2}$ ins. diameter round rod screwed on top. Remember to flatten the underside of the round rod before assembling.

The guard's van is made in the same way as the carriage, but has two windows cut away as shown in Figs. 1 and 2. Note that the roofs in both cases have been rounded at the sides.

Give each part a thorough sanding before painting and then give two or three coats of plastic enamel paint. Allow each coat to dry thoroughly and lightly rub with fine glasspaper before applying the next coat. Particular

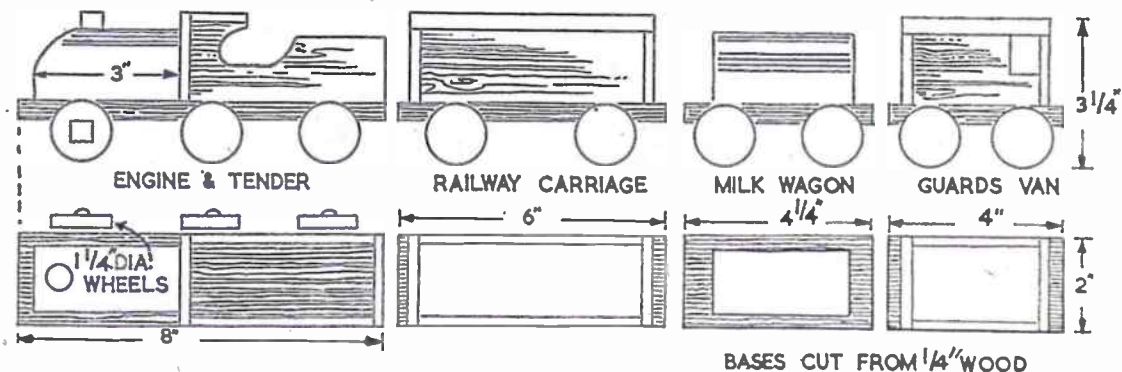
attention must be paid to the end grain which will quickly soak up the paint. It will be easy to stop the grain slightly by brushing over a few coats of brush polish before applying the paint.

The colours are, naturally, a matter of personal choice, but we would suggest that they are kept as bright as possible. Make the bases red in all cases and paint the axles black. The engine boiler would look well silver, and the cab green.

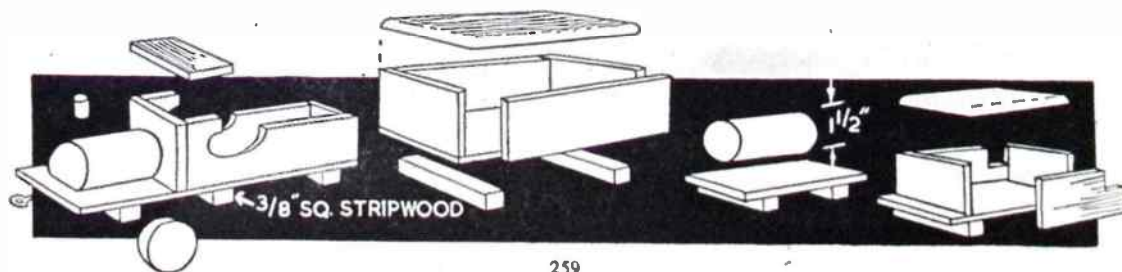
The carriage could be blue, the milk wagon yellow and the guard's van orange. The markings on the carriage, wagon and van are painted on after the main colours are dry.

The train is connected up by means of small screw-eyes inserted at each end of the various pieces. One screw-eye in each is then opened up to form a hook. Tie a piece of string to the front hook and the train is complete.

(M.p.)

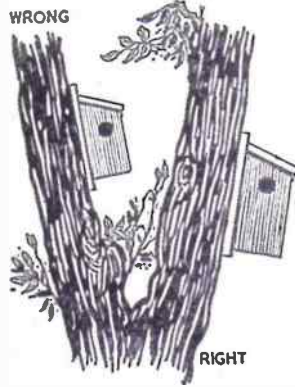
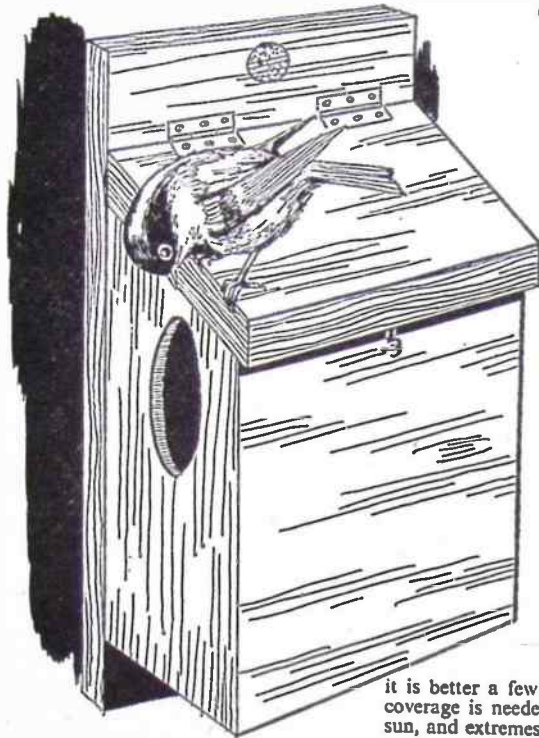


BASES CUT FROM $\frac{1}{4}$ " WOOD



Instructions for Building a Bird Box

By J. MacIntyre



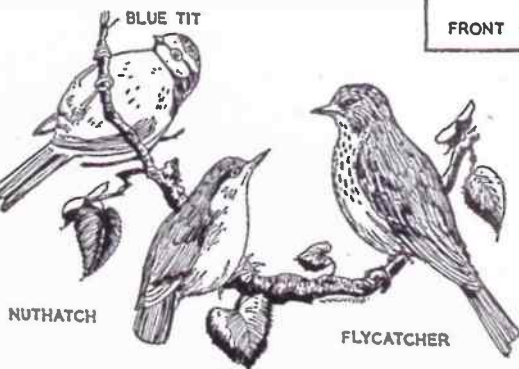
preserve the life of the box. Another sensible idea is to treat the box with a good wood preservative.

The position of the box is most important. Foliage need not necessarily be near the box—as a matter of fact it is better a few feet away. But some coverage is needed from the wind and sun, and extremes of light and darkness

A NEST box is an attractive addition to any garden, and many profitable hours, even years, of nature lore can be enjoyed by the person who erects one. Even quite a small garden is suitable for the purpose, provided there is a certain amount of cover and shade.

Simple Construction

As may be seen from the illustration, the actual construction is simple. The only thing that really matters about the box is that it should be sound and rainproof, and be suspended at the correct angle. $\frac{1}{2}$ in. oak is a good wood for assembling the box, as it will not warp easily and will withstand the weather much better than other timber. It is not a bad idea to stain the wood a dark colour, or to add pieces of bark here and there. Avoid, however, the over-ornamented type which resembles a Swiss chalet. As an extra precaution against the weather, tack small pieces of roofing felt to the lid. This helps to



Some of the birds that may nest in your box

are to be avoided. Most experts are in favour of the box pointing north or north-east, but this position will be affected quite a lot by the amount of shade or foliage in each individual garden. As long as there is shelter from

ferce winds and hot sun, the precise pointing position does not matter very much.

Height is another important factor when placing the box. Between 5ft. and

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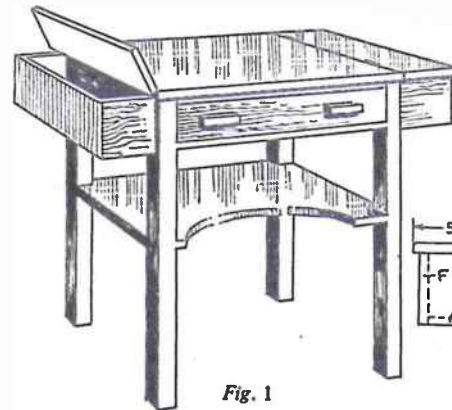
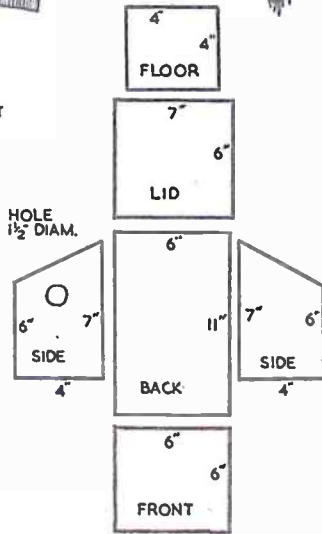


Fig. 1

THE table shown in Fig. 1 is just the thing for the modern hall, and it is, too, somewhat of a novelty in having two small compartments with hinged lids, as well as a useful drawer.

The main measurements of the table are given in Figs. 2 and 3. Fig. 3 is a cross-section and helps to show the general construction. The legs may be plain $1\frac{1}{2}$ ins. square all the way up, or they may be shaped from just under the shelf to floor level by means of chamfering, or rounding off the edges. The legs must be grooved to take the rails (A) and open-mortised at the top to take rails (B). Small mortises are also cut in the inner sides of the legs to receive the front rail (D). To the side rails will be fitted the drawer runners (I), and the guides which go in between the legs. Both these units are shown in the detail Figs. 3 and 4.

The general arrangement of the leg tenons, etc., and guides (H) are given in Figs. 3 and 5. The back rail (C) is grooved to fit the legs, the latter being also sunk slightly to form the joint. Glue and screws form the fixing here.

The End Boxes

The floors of the end boxes are formed as (E) Fig. 6, being let into the fronts and into the back (C). Fronts (G) are dowelled into the legs as shown. The back edges of (E) are glued to the rails (A), angle fillets being put along inside the box to further strengthen the joints. The sides (F) are glued and screwed to (E) and the angle fillet added as seen in Fig. 6.

A useful shelf which will greatly help to stiffen the legs is shown as (J) and the joint adopted to connect it with the legs is shown in the circled diagram in Fig. 3. The front of this shelf may be shaped to add character, or, of course, it may be oblong in shape.

The table top will be in three pieces, each $\frac{1}{2}$ in. thick, the larger middle section

An Unusual Table for the Hall

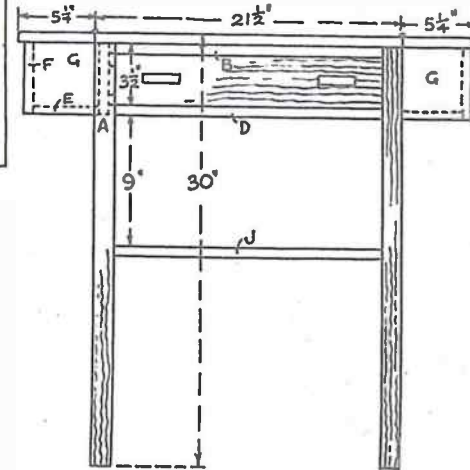


Fig. 2

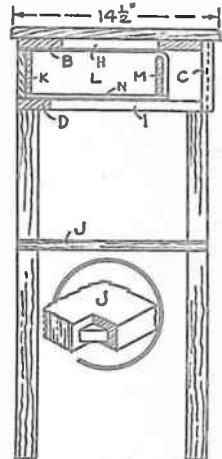


Fig. 3

being 21 ins. long by 14 $\frac{1}{2}$ ins. wide, and the ends forming the lids to the boxes 14 $\frac{1}{2}$ ins. long by 5 $\frac{1}{2}$ ins. wide. Two pairs of brass hinges will be recessed into the edges of the larger piece. Screws will be run up through the rails (B) as fixing.

Careful measurements should be

tenoned through the sides and the whole covered with a $\frac{1}{2}$ in. plywood floor screwed on. Finally, the main front of the drawer $\frac{1}{2}$ in. thick, is screwed on from inside the piece (K). Two block

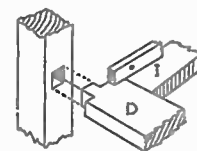


Fig. 4

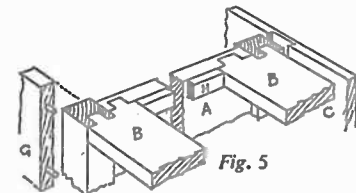


Fig. 5

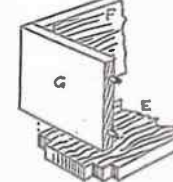


Fig. 6

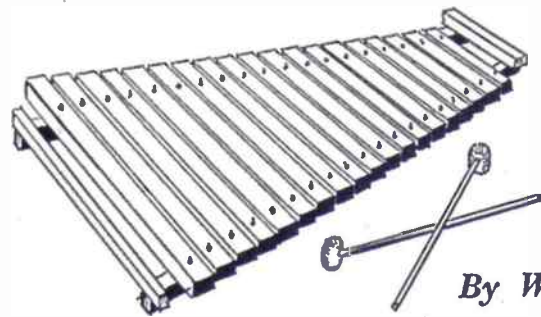
handles should be fitted. The thicknesses of most of the pieces for making up the table are given here. Ends (A), rails (B) and (D) and the back (C) are all $\frac{1}{2}$ in. thick. The shelf (J) is $\frac{1}{2}$ in. thick. Pieces (K), (L) and (M) of the drawers are $\frac{1}{2}$ in. thick, and the filling pieces (H) and (I) are about $\frac{1}{4}$ in. wide. Pieces (E) are $\frac{1}{2}$ in. thick, pieces (F) $\frac{1}{2}$ in. and (G) $\frac{1}{2}$ in. thick. (S.W.C.)

taken of the drawer opening and the wood cut accordingly. The inner front (K) and the two sides (L) may be pin-jointed together or lap-dovetailed if a better job is wanted. The back (M) is

Do not neglect the advertisement pages of 'Hobbies Weekly'. They are always worth your attention.

NOT DIFFICULT TO MAKE

A SIMPLE XYLOPHONE



By W. J. Ellison

QUITE a good instrument can be made, using wood for its musical quality, on which tunes can be played after a little practice. A simple xylophone this, without semitones, but these can be added if thought desirable afterwards. It is recommended as a solo instrument, as if a piano accompaniment were considered, tuning to piano pitch would be necessary.

For the wood notes, pine or beech would serve, but the wood must be well seasoned and dry. Other woods, such as walnut or even common hardwood,

perpendicular to the sloping line across the top. These nineteen lines give the approximate lengths of the notes required for the instrument.

Cut Strips Longer

As it is imperative to get each note in tune, cut the strips to about $\frac{1}{2}$ in. longer than the lengths given, and saw narrow strips off the ends to sharpen the notes as necessary to tune. Before commencing, prepare two strips of wood of $\frac{1}{2}$ in. square section and 2ft. long, and lay these on a bench a few inches apart. The notes are then laid across these strips and struck with a stick or the handle of a tool, to test for tone. Shift the strips or bearers, as we may call them, until the best note is obtained, the distance apart making quite a lot of difference.

Start with the middle C, and tune it first, then tune the notes left or right,

each note being separated from its neighbours by $\frac{1}{2}$ in. Test for sound with a beater, shifting the bearers nearer to, or further away, from each other until the best results are obtained. When satisfied, make a pencil mark at the ends of the first and last notes, just over the bearers, as indications where the holes are to come, and also the pins on which the notes will be dropped. Lay a straight-edge across the notes touching the marks made, and mark the places on the intermediate notes for their holes and pins also.

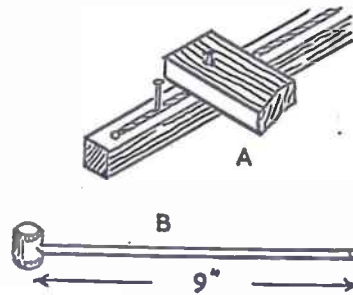


Fig. 1

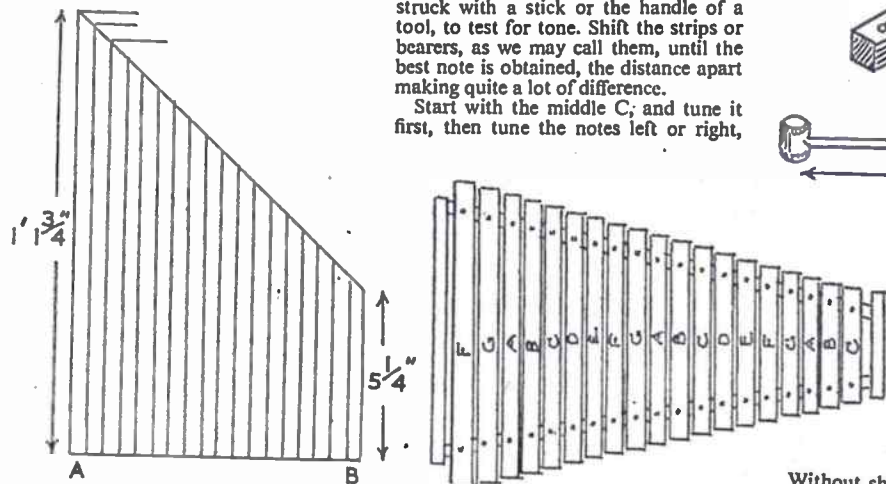


Fig. 2

until you get a reasonably true octave. The ear should be good enough for this, as we are not describing the construction of a concert instrument. One octave completed to satisfaction, the remainder of the notes can be proceeded with to finish. Should it happen that a note is shortened too much, it can be flattened by making a saw kerf across it underneath, not a deep one, or the note will be weakened; one about $\frac{1}{2}$ in. deep will probably be enough.

Lay the notes on the bearers in their correct order, as in plan view, Fig. 2,

Without shifting the notes or bearers out of their respective positions, nail strips of wood across the bearers at their ends to fix them permanently apart, as in Fig. 2. Remove the notes and bore the pin holes in them on the pencilled marks. Holes $\frac{1}{2}$ in. will do here. On each bearer lay a length of thick string, exactly along the centre. Now replace the notes, one at a time, and using $\frac{1}{2}$ in. wire nails, drive these through the pin holes into the bearers beneath. The pins should enter through the string, as in detail (A) in Fig. 3. Each note should be moderately loose on its pins,

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USEFUL FOR CAT OR DOG OWNERS

A Small Swing Door for the Shed

By A. F. Taylor

VERY often your cat is turned out of the house at night and, perhaps, a bed is made for it in a shed or outhouse of some kind. This means either leaving the door ajar or making an opening for it to get in and out easily.

On a cold or very windy night this makes it very uncomfortable for your pet and it certainly deserves better care than that. It is quite a simple matter to fit a small swing door that can be opened easily by a cat or even a small kitten and thus provide comfortable sleeping quarters that will, I am sure, be much appreciated.

Not too Small

The size of the door will depend upon the size of the cat, or it may possibly be for a dog of quite large proportions. It is really surprising how small an opening an animal can squeeze through, and although it is best to keep the dimensions reasonably low, do not for the sake of an inch or two make it too tight a fit. The animal will be more likely to use it if it can get in and out without any trouble.

There are several ways of fixing a trap-door, but the easiest to make is hinged at the top as shown in Fig. 1, and this is also probably the easiest for the animal to get used to. The position of the opening will depend to a certain extent on the type of door fitted to the shed or outhouse.

A door made of tongued and grooved boards can have the trap door cut right at the bottom, or it may be a little way up from the base. With a panelled door, however, it will certainly have to be up a few inches and cut in one of the bottom panels.

The exact size of the trap-door can be worked out by first cutting an opening in a piece of stiff paper or cardboard and getting the animal to go through it. This can then be marked out on the shed door and cut out with a keyhole saw, afterwards well glasspapering the edges so that there are no rough edges.

The opening can be made rectangular with square or rounded corners, or it may take the form of a circle or oval.

Quite light plywood should be used for the door, but do not go to the extreme and use material too thin which would blow about rather a lot on a windy night. Anything between $\frac{1}{2}$ in. and $\frac{3}{4}$ in. thick would be very suitable.

Cut the wood to fit the opening neatly and leave a margin of about $\frac{1}{2}$ in. round the sides and bottom with, perhaps, a trifle more at the top to leave room for fixing the hinges.

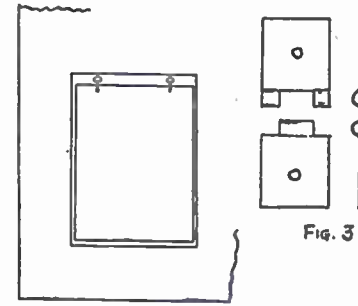


Fig. 1

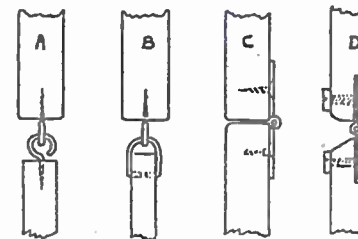


Fig. 2

There are many different ways of hinging the trap-door to the main door and a selection of these is shown in Fig. 2. All of them are quite easy to fit and are equally efficient. In (A) two small screw eyes are fixed in the top of

the door opening and two screw hooks into the flap, and these should be nipped up to form a ring after the flap is hooked in position.

Careful measurement is necessary when fitting all the different types of hinge in order that the flap will hang correctly and be free to swing easily.

A loop of wire is fixed to the flap of (B) instead of a screw hook as in the previous one. Both (A) and (B) allow the flap to swing freely both ways, so that the animal can get either in or out at will.

Less Draughty

The hinge illustrated at (C) allows the door to open one way only and is more suitable for a slightly heavier flap. It is not necessary to leave any gap at the top, thus making it less draughty.

A very good type of hinge can be made quite easily for fixing to the door as shown at (D), which allows the door to swing either way and is more substantial than (A) or (B). Two pieces of sheet brass or tinplate are bent round a knitting needle and then cut with a metal fretsaw to fit into each other as in Fig. 3. The actual size will depend on the size of the door, but two pieces of metal $\frac{3}{16}$ in. long and $\frac{1}{2}$ in. wide will make a very serviceable hinge. A wire nail can be used to join them together, and a hole is drilled or punched in each end to bolt them in position.

To finish off the job give the trap-door and also the edges of the opening in the shed door a coat or two of paint to match the colour already on, or a contrasting colour could be used.

Continued from page 260

Building a Bird Box

15ft. is the usual distance. When the box is finally erected, clip off any branches which might give a cat a vantage point from which it could scramble to the box. Very few cats will climb a tree trunk which offers no footholds or branches.

One thing which is of supreme importance is the angle at which the box hangs. It should always tilt slightly towards the ground as pictured in the illustration.

When birds have nested in your box for a season it is recommended that it should be cleaned out. Little can be

gained from leaving the remains of old nesting material, as it probably encourages many insects and other small life which would be better kept away. Examine carefully the old nest for unhatched eggs, as they have been frequently discovered after the birds have left.

Tell your friends about the interesting articles in 'Hobbies Weekly'.

A Six-Inch Reflecting Telescope

THE tube for the telescope can be made square, also of wood. This is much easier for the amateur than the more conventional round metal tube, and just as satisfactory. First make a box of $\frac{1}{2}$ in. wood, with interior dimensions of 9 ins. and the same in depth as at Fig. 5. Nail and glue strongly together, and as the box is subsequently to be sawn into three parts, each 3 ins. deep, position the nails accordingly. In the corners, at top and bottom, glue small angle blocks to ensure squareness.

The top and bottom covers, shown in the drawing, can be cut from $\frac{1}{2}$ in. to

one will have to be removed temporarily to allow the middle part to be dropped over later on, don't drive all the screws home yet.

Taking this middle part in hand, pencil lines across the exact centre of the front and back, as a guide to fitting the prism and eyepiece of the telescope, seen in the vertical section, Fig. 1. The prism should be a total reflecting one, $\frac{1}{2}$ in. each way. For its holder, cut a piece of $\frac{1}{2}$ in. square wood to match, about 2 ins. long, not more. Cut the front end to an accurate angle of 45 degrees, and in the rear end saw out

strength of the adhesive. Now push the strip (D) through its slot, as shown. Adjustment will be needed later. In the centre of the front part of the frame, bore a hole for the tube of the eyepiece to fit in, and accuracy must be observed, as the eyepiece must come exactly opposite the prism.

Cell for Mirror

The mirror can now be fitted in its position at the base of the telescope tube. For this a cell must be made, shown in Fig. 7. It consists of a $\frac{1}{2}$ in. thick disc of wood, just a shade larger than the mirror, with a metal rim nailed round it to stand above the disc by an amount a little less than the thickness of the mirror. Tinplate would serve for the rim, if nothing better is to hand. Exactly in the centre of the disc, a hole is bored to admit an iron bolt. The head of this is recessed in the disc—it must not stand above the surface, as in inset, and should be long enough to pass through the bottom of the telescope tube with about $\frac{1}{2}$ in. to spare for a wing nut. Widen the hole in the bottom of the tube just a shade to permit a trifle of movement of the mirror should it prove necessary to pack it one side to make it level. If care is taken, however, in the making of the tube, this should not be needed.

Fit the mirror in its cell, with a layer of baize beneath as a bed. It must not be too tight a fit, but close enough not to tilt in any way when the telescope is swung up and down. A strip of paper round the edge should pack it safely, if the fit is not close enough. Push the bolt through the bottom hole of the telescope and tighten the cell in its position with a wing nut. Make a cover for the mirror on similar lines to the cell.

Buy an Eyepiece

An eyepiece should be purchased, as it is no easy matter to make a really satisfactory one oneself, and the cheapness of construction warrants the expense. The holder for this can easily be made; it is shown in Fig. 9 and consists of a $\frac{1}{2}$ in. square plate of brass, with a central hole cut out for a short length of tube, which is soldered in. A thinner and longer tube slides in this, and should be of the right diameter to take a standard eyepiece. The tubing mentioned should be ordered from the firm supplying the eyepiece. Screw-holes are drilled in the plate for fixing it to the front of the frame holding the prism.

For the trunnions, on which the telescope swings, an iron bolt is fitted each side. These are pushed through

holes, bored centrally through $\frac{1}{2}$ in. by 3 ins. wood bars, screwed to the telescope sides at about 2 ft. up from the bottom. Rebate the bars (as in detail sketch, Fig. 10) at their ends and screw firmly across. Needless to add, perhaps, they must be in true alignment, and recesses should be cut for the squared portion of the bolts, below the heads, to sink in, and prevent the bolts turning as they are tightened up. Strips of $\frac{1}{2}$ in. thick wood, 3 ins. wide, are nailed across the open sides in line with the trunnion bars to stiffen the whole at this part.

The inside portions of the instrument should be treated to a coating of dead black stain, the outside varnished or painted as preferred. There is really no need to cover up the openings in the sides of the tubes, but it can be done with plywood if preferred. A small bag or cover of some kind should be made to protect the prism when the telescope is not in use. It will be necessary, by the way, if the telescope is covered in, to provide hinged doors near both mirror and prism in case they need attention, and to fit their respective covers on. Plywood doors will suffice.

The instrument can now be tested. First fix the frame, carrying prism and eyepiece, at such position that the prism is about 4 ins. less than the focal length above the mirror, for example, 44 ins. if focal length is 48 ins. The prism must now be adjusted laterally until it is central with the eyepiece. The best test is to remove the eyepiece and in its place substitute a disc of thin card with a central hole of $\frac{1}{2}$ in. for the eye to look through. This being made correct, fix the wood strip carrying the prism in that position with small wood blocks, one each side.

Now cover the mirror, then move prism backwards or forwards until a

reflection of the mirror cover appears central in it. Remove cover from mirror, and see that the reflection of mirror and prism appear truly central in the circle of light seen when looking through the focusing tube. All being satisfactory, fix the prism support permanently with blocks, glued to it and side of frame.

Special Note

The three diagrams Figs. 11, 12 and 13 will appear in next week's issue.

A small simple telescope to be used as a star finder, can well be added; it will be of great help to rapid location of any star or heavenly body it is desired to survey. This can, of course, be purchased, but if a pair of lenses are obtained, one can be easily made and expense reduced. The home-made idea is drawn at Fig. 11, and consists of two cardboard postal tubes, one sliding within the other, with an object glass at (E) mounted between wood rings, and eye lens at (F) similarly mounted. At (G) is a disc of tin or thin card, with a hole in the middle to act as a diaphragm. The object glass can be a cheap one, preferably of 10 ins. to 12 ins. focus, eye lens of $\frac{1}{2}$ in. focus. Fix diaphragm from eye lens at a distance equal to the focus of the lens, and make hole about half the diameter of the lens. Main tube 2 ins. shorter than focal length of the object glass.

A mount for the telescope star finder can be made by cutting from $\frac{1}{2}$ in. fretwood two shapes as (H) and joining together at the bottom with a 3 ins. length of wood, this being screwed to the frame of the telescope which carries the prism, etc. The holes in parts (H) are, naturally, cut to suit the main tube of the star finder. Paint interior of tubes

dead black, and it would be a good idea to cover the outside of tubes with American cloth, glued over.

The final part of the telescope outfit to make is a suitable stand, preferably of the portable kind. For the top of this, cut from plywood two shapes, shown drawn over $\frac{1}{2}$ in. squares in Fig. 12. These are firmly screwed to a board of $\frac{1}{2}$ in. by 6 ins. hardwood, 9 ins. long. They should just admit the telescope between. In the centre of the board, shown by detail (J), bore a small hole for a stout round-headed brass screw, $\frac{1}{2}$ in. or $\frac{3}{4}$ ins. long. Get the stoutest screw obtainable.

From the centre hole strike a pencil circle, as shown, and on this, spaced equidistantly round it, drive in three furniture steel domes. This is done on the underside of the board, not the top, and helps to reduce friction as the telescope head is rotated. A tripod stand to support this is made as follows.

Cut from $\frac{1}{2}$ in. hardwood a disc of the diameter given at (K), Fig. 13, and bore a small central hole. For the three legs to be attached to this, cut a 6 in by 1 in. board to 2 ft. 6 ins. long. Across the top glue a strip of $\frac{1}{2}$ in. by 2 ins. wood, as at (L). This piece has its lower edge sharply bevelled off. The top of both is also bevelled, as at (M). Saw the board into three equal strips; these are the legs. Bevel off the bottom ends, as seen at (M), and make the legs a bit more shapely by tapering them from 2 ins. at top to $\frac{1}{2}$ ins. at bottom. Fit these legs to the top (K) with 2 ins. solid brass hinges. The upper part, which the telescope is to be swung between, is then joined to the stand with the stout screw already mentioned. Place a washer under the head of the screw, and don't drive the latter in so tight that it is difficult to rotate the head. (W.J.E.)

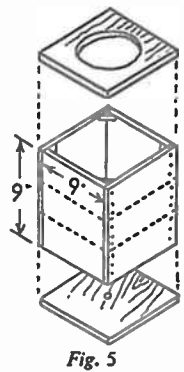


Fig. 5

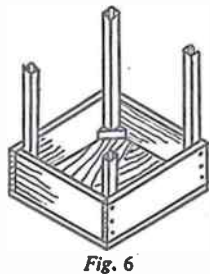


Fig. 6

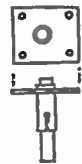


Fig. 9

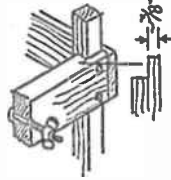


Fig. 10

$\frac{1}{2}$ in. plywood. Centre both accurately, and in the top one strike a 6 ins. circle, and saw it out. In the bottom one bore a $\frac{1}{2}$ in. hole exactly at the centre. Nail and glue both to the box, and when the glue is quite hard, saw the box through into three equal parts. The middle part is laid aside for attention later on. The top and bottom ones are joined together with straight wood bars, as in Fig. 6. The bars are cut to the length given in Fig. 1, unless the focus of the mirror exceeds 48 ins., in which case the length of the bars should be increased proportionately. For strength, the bars should be about $\frac{1}{2}$ ins. square, and they must be straight. Fix them with round-headed screws very firmly. As the top

a slot, $\frac{1}{2}$ in. wide and, say, $\frac{1}{2}$ in. deep, as at (C) in Fig. 8. Cut a $\frac{1}{2}$ in. by $\frac{1}{2}$ in. strip of wood (D) some 7 ins. long, and in the front end of this drill a small hole through $\frac{1}{2}$ in. in, and slightly round off the edges of the strip, as shown. A similar hole is drilled through part (C), and both are joined together with a flat-headed screw, well countersunk. Arrange this so that when the screw is loosened a little, the angle of part (C) can be altered should the prism need it.

Tight Fit

At the exact centre of the back of the middle part of the frame, shown by the pencil lines already drawn, saw out a slot a tight fit for strip (D). Fix the prism to the front ends of (C) either with pitch, or possibly 'Durofix', and see it is firmly secured, as should it drop down on the mirror, some damage would most likely occur. In fact, it might be safer to attach the prism with small metal clips if uncertain about the

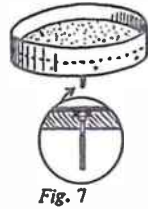


Fig. 7

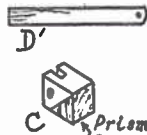
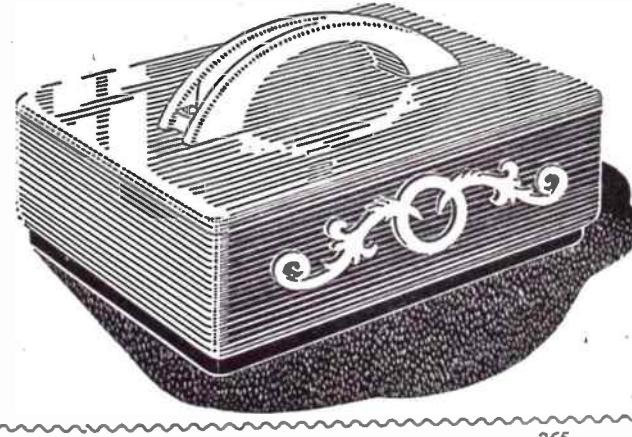


Fig. 8

Have you made this Trinket Box Yet?



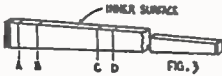
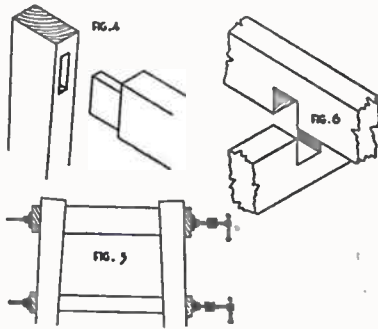
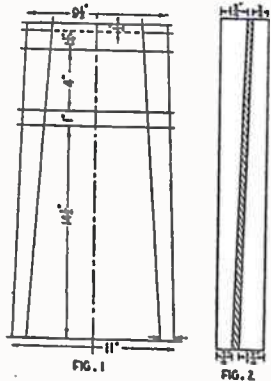
Yes, it's the Trinket Box made from Design No. 3070, presented with the September 1st, 1954 issue, and it's the subject of our Grand Fretwork Competition for which prizes valued at over £100 are being presented. For making the box you can obtain a complete kit of materials (No. 3070) from any Hobbies branch, or post free from Hobbies Ltd., price 4/4.

A USEFUL STOOL

By K. Blackburn

which are 10ins. long, finish to a size of 1in. by 1/2in.

Place two of the legs in position on the drawing, with the marked edges innermost, and with an overlap at each



end of the drawing. Now, holding the wood down firmly, make two marks on the wood against each horizontal line—one where the line disappears underneath the leg, and another where it emerges. Note that there are six horizontal lines to be marked in this way. These six pairs of marks are squared across the edges, and joined across the sides with a steel rule and pencil. Fig. 3 shows the result.

The same method is used for marking the shoulder-lines on the two sets of rails.

Set a mortise gauge to the width of a mortise chisel (1/2in. to 3/4in.) and gauge the mortises, on the inner surfaces of the legs only, between the lines (A) and (B) and also between lines (C) and (D) (see Fig. 3).

The tenons are also gauged on the ends of the rails. These are sawn, and the lengths of the tenons on the top rails are cut to 1 1/2ins. Those on the lower rails are cut to a length of 1in.

The width of the tenons on the top rails must be reduced to 1 1/2ins., so that they will fit into the mortises. This is done by sawing 1/2in. from the upper edge of the tenon.

The ends of the mortises are not cut square with the edge of the wood: the

correct angle at which to hold the chisel may be found by referring to the pencil lines down the side of the leg.

The joints are now put together with sash cramps to see that everything is in order. To avoid bruising the wood, tapered pieces of scrapwood are inserted between the leg and the shoe of the cramp (see Fig. 5). If the waste-wood is sawn from the tops of the legs whilst the cramps are in position, a steel plane may be used to finish them perfectly flush with the rails. The

finished joint between leg and upper rail is shown in Fig. 4.

The next job is to cross-halve the two pairs of rails. The joint is shown in Fig. 6. It is, of course, placed centrally: the centre is found not by measuring between the ends of the tenons, but between the shoulder-lines.

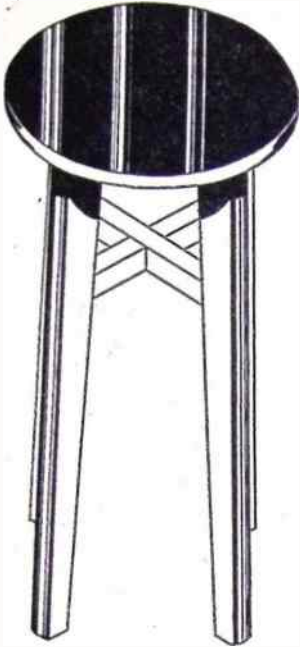
The upper and lower rails are cleaned up and glued, and they are checked for square immediately the joint has been assembled.

The Top

A circle of 11ins. diameter is cut from a piece of wood 1/2in. thick to make the top. If wood of this width is not available, it may be made up by gluing together two pieces. The edge of the top is rounded off, and it is secured to the upper rails with four 2in. screws, well countersunk to give a projection of 1/2in. or so.

After cleaning up the legs, they are glued and cramped into position. When dry, the surplus glue is removed and a final rubbing-down with glasspaper is given.

A stain may be used to match the stool with the other furniture. When this is dry, glasspaper lightly and follow with several coats of french polish.



THE stool illustrated is designed to overcome the problem of seating accommodation, which often arises when a number of guests are being entertained. A pair of them do not take up a great deal of space, and they are quite unobtrusive if kept under the table when not in use.

Full-size Drawing

The construction will be found much easier if a full-size drawing is made on a sheet of plywood or hardboard, although stout brown paper will do if these are not available. Start by drawing the centre line, and space the drawing equally about it. Make sure that the horizontal lines in the drawing are at right angles to the centre line, and continue them beyond the outer edges of the legs, as shown in Fig. 1.

For the four legs, you will need two pieces of wood, each 22ins. by 3 1/2ins. by 1in. Plane one side flat on each piece, and plane both edges straight and square with the face side. The thickness is gauged and planed to 1/2in.

These two pieces are then marked out as shown in Fig. 2. Saw between the lines, and finish off with a plane. These edges, which must be perfectly square with the face sides, are to be the inner edges of the legs, and some distinguishing mark should be put on them to indicate this.

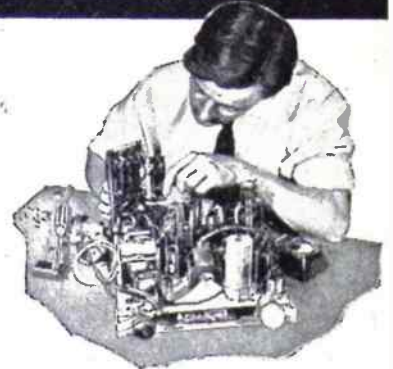
The two top rails are cut to a length of 9 1/2ins. and are planed to finish 1 1/2ins. wide and 1/2in. thick. The lower rails,

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Outdoor Aerial

CAN you supply me with details regarding an outdoor aerial of the rod type (attached by brackets to window frame?). The constructional details do not worry me, but I would be glad to know if there is any specific height the tip of the rod should be from the ground, also is there any specific length for the rod itself? (G.W.—Wollaton).

A PARTICULAR length of aerial rod is only required if you wish to use the aerial for television reception. For ordinary use it may be any length. The greater its length, and the farther it is from walls or other earthed objects, the greater will signal pick-up be. The signal pick-up will be the same as a piece of aerial wire of the same length. Whatever form of aerial is adopted, it should be well insulated. Rods are used in the case of television aerials in order that they may be self-supporting, and so that a wider bandwidth of resonance may be obtained. Signal pick-up is not increased by using rods, and this is worth keeping in mind if ordinary long, medium and short-wave reception is in view. Here, the distance between the aerial and walls, etc., is more important than the actual type of aerials used.

Lets in the Snow

THE roof of our house was not felted before being tiled, and as a consequence, whilst quite waterproof, allows the cold air to enter, and in winter snow has drifted in. Your suggestions of methods we can carry out ourselves would be much appreciated, also precise material needed, to rectify these two drawbacks. (P.W.—Sheldon).

THERE may be many reasons for the trouble complained of; for instance—insufficient overlap of the tiles, broken tiles, parting of roof timbers through contraction, etc. If you are sure the roof is watertight, it seems possible that the last cause may be responsible, leaving gaps at the angles and sides. Only an examination on the spot can definitely determine this, and we suggest you make one at a time when a high wind is blowing, and ascertain where and at what points winds can penetrate. These can then be stopped, preferably from the outside, with wood or cement.

Covering with felt on the inside would stop winds possibly, but drifting snow would be trapped and subsequently melt and damage the roof timbers. You might, perhaps, stop up small cracks and apertures with the felt, but if you do, on no account use nails, as the shock of driving them would possibly loosen the tiles. Use small screws, over wood laths.

Making French Polish

PLEASE let me know the correct ingredients for making french polish, and the right way of mixing them; also the method of applying it to furniture. (J.M.—Girvan).

A GOOD quality french polish is made by dissolving 4ozs. shellac in one pint of methylated spirit. It takes a few days to dissolve, but time can be

saved by warming it up. Keep it away from a naked light, as the spirit is highly inflammable. French polishing, however, requires some practice before good results are obtainable, and as you are unskilled as yet at the work, why not try a more simple method? It would cost less than making the polish yourself, at least for a small job. We suggest you try 'Speed and Eez' polishing outfit, 2/- or 6/- size, as desired, postage extra—and use according to instructions.

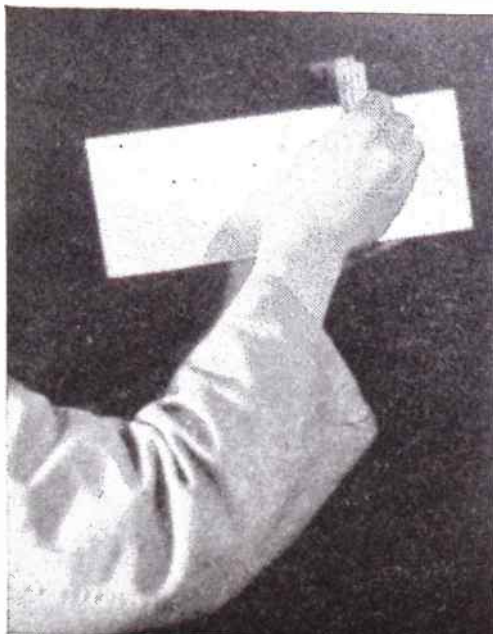
Damp Walls

IS there anything I could put on my walls before papering, as dampness shows through the paper? (P.R.—Wombwell).

YOU might paper the wall with Willesden paper first—the one-ply variety—then the wallpaper over that. This should prove an effective treatment. It may not be necessary to paper all over; only the damp patches. If the wall is in a very bad condition of dampness all over, we should think an application of Macstet would be better, but this could be rather expensive if a large area has to be treated.

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Testing with a Try-Square



AFTER the face side of a piece of wood has been planed perfectly flat, the face edge is planed straight and square with the first side. This angle is tested with a try-square as shown.

Hold the wood up to the light so that any slope will show under the blade of the try-square. Move the try-square along and test the wood at various places along its length.

There are two important points to remember. First, it is the angle between the face side and face edge that is being tested, so the handle of the try-square must press against the face side. Second, the handle must be pressed tightly against the face side. The most obvious slope can be made to look right if the try-square is tilted! (K.B.)

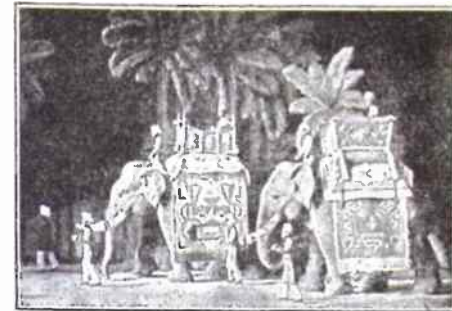
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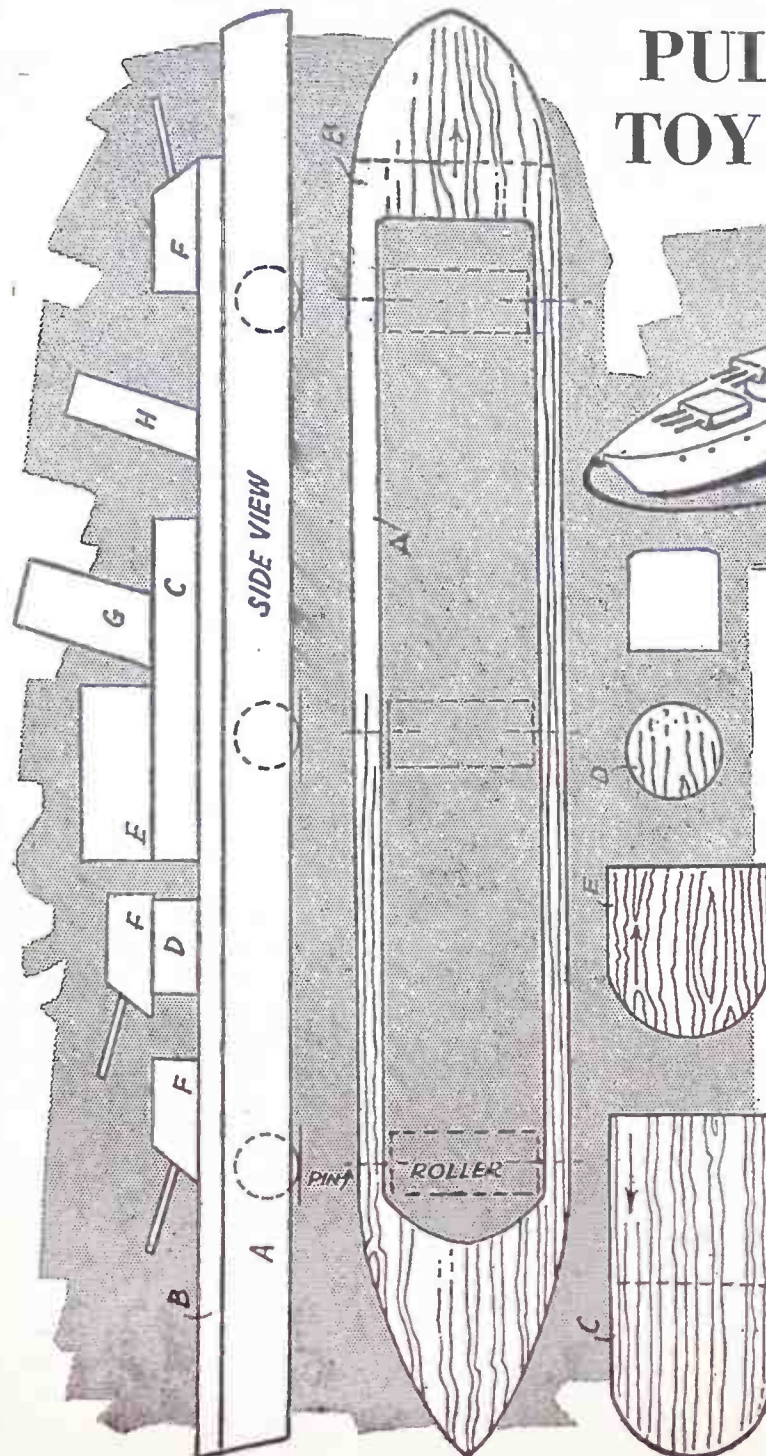
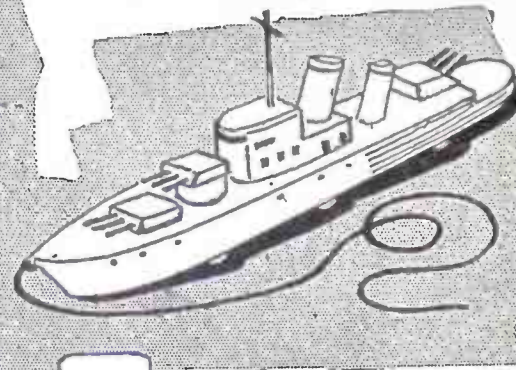
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The three-gun turrets (F) are cut and shaped from ¼ in. Pieces (G) and (H) are made from round rod to the lengths shown on the side view. (G) is ½ in. diameter and (H) ¼ in. The guns are made from short lengths of wire.

The rollers are three lengths of ¼ in. diameter round rod and are held in position by means of ¼ in. freepins driven in from the sides. The holes should be enlarged slightly to allow them to revolve freely.

Place the rollers in position and then glue the parts together. Clean up with glasspaper and give two coats of grey enamel. Add a mast of wire and a screw eye and cord at the front and the ship is complete.

(M.p.)

The patterns on this page are full-size



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The February issue of B.O.P. is once again crammed with good things. There are features on coin-collecting, bird-watching and cycling, while two exciting articles discuss different methods of criminal investigations, and killer-animals of the Arctic. An interview with TV and radio star Bob Monkhouse, features on memory, running an harmonica band, Brighton F.C., and other fascinating subjects complete the non-fiction. Then there are adventure stories by C. T. Stoneham, H. B. Cave and Colin Robertson, and the fifth episode of Arthur Catherall's thrilling serial. Readers' letters, a cash-prize competition, cartoons and all the usual popular features make up a really first-rate issue of the best boy's magazine in the world.

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