HOBBIES WEEKLY

IN THIS ISSUE

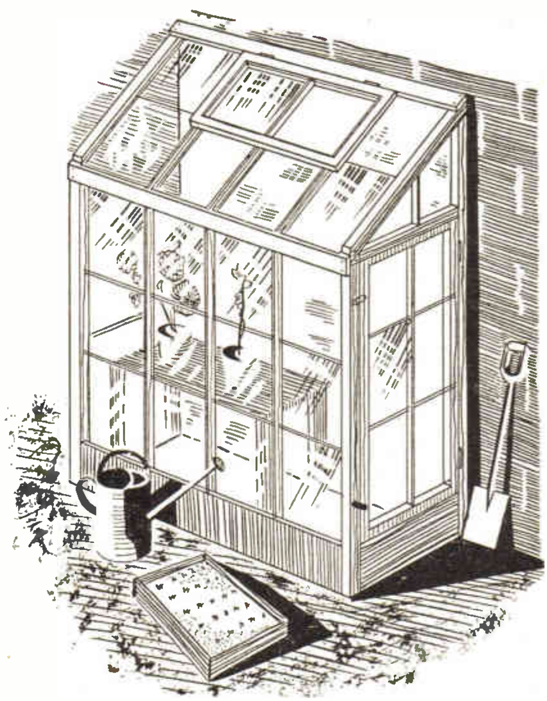
JANUARY 23rd 1957 VOL. 123 NUMBER 3195

HANDYMAN'S PROJECT

Make this

LEAN – TO GREENHOUSE

Just right for the family needs



As an economic proposition, a greenhouse is highly commendable. A full size one may be too expensive, but here is a small one which most people could manage. In a fair season it should produce forty to fifty pounds of tomatoes for the owner.

It has the advantage of saving cost by being built against a wall, thus cutting out the expense of the back involved in a self-contained greenhouse.

WIN A WATCH

See details on page 279

The wall can be that of a house, or a back-yard wall, or the side of a shed or hut. This type of greenhouse will be found very useful for the back-yard owner. It is advantageous for the front to face south to the sun, but any position would produce a crop.

To build the greenhouse, start with the frames of the sides. Any wood will do. Spars of 2in. by 2in. section are recommended, but anything near this will do, provided the necessary slight alterations in some measurements are made.

The front shoulder of the frame is the one needing most care, but Fig. 1, which shows the spars joined, should clarify the idea, in conjunction with Fig. 2 which gives each spar separately. The eaves board (E) in Fig. 1 is not dealt with at this stage, but is put in to complete the idea.

It will be seen that the spars are joined to each other by straightforward halved joints. Note that the slope of the roof is 30°, so make the saw cuts at this angle,

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4½D

For Modellers, Fretworkers and Home Craftsmen

where it applies.

The bottom of the frame is held by the base board (F). This is 1ft. deep and can be of 1in. thick ordinary board 6ins. wide, two being used to make up the foot. Alternatively, asbestos, cement sheet, or plywood of sufficient thickness can be used. The board, or boards, at each end must be fixed to the front and back posts by means of battens. These are seen as (H) in Fig. 3.

The battens can be any section so long as they can take screws or nails without splitting. They should be attached to the boards first, ready for assembly.

Fig. 4 shows the side elevation and gives the measurements of the spars. (The spars at eaves and ridge are omitted). (G) is the short glazing bar which separates the glass panels. The measurements are to the centre of this bar. The trench cut out of the spars (A) and (B) to accommodate this glazing bar must be the width of the wood used (⅞in. or 1in. preferably). The depth of the trench need not be more than ½in.

Fig. 5 illustrates how the glazing bar is engaged into the spars (A) and (B).

Prepare spars for glazing

When all the spars are sawn to shape, they must be prepared so that the glass can sit in them. This is done by nailing strip wood along the spars at the appropriate places. The strip wood should be ⅜in. back from the edge all along. Old trellis laths, or builders' laths, sawn down the middle provide very good inexpensive strip wood for this purpose. Otherwise, bought strip wood ¼in. by ⅜in. will do. Use very thin nails or panels pins to fix.

When the spars are ready, it is advisable to assemble the frame of the side temporarily, to see if everything is true. Bolts, screws or nails can be used to join the spars. If nails or screws are used, then drive these in only partially for this experimental assembly. If everything is true, then try the glass, to see if that fits. It is unwise to assemble the frame permanently and then try the glass only to find it doesn't fit.

The part (P) in Fig. 4 is merely a triangular wedge of wood nailed in to fill up the space, as the two triangular pieces of glass are cut from one piece 18ins. by 12ins. The reader could, of course, avoid this wood block by getting the glass triangles cut exactly to fit the spaces.

While the assembled frame is temporarily fixed up, it is a good idea to make the door, using the frame as a guide for measurement and fitting.

Making the door

The door is made up of fine spars, (four for the frame and one for the glazing bar). The frame is made of 1½ins. by 1½ins. sectioned spar, while the glazing bar is 1½ins. by ⅞in. or 1in.

Fig 6 shows how the glazing bar is fixed into the door frame.

Simple halved joints are sufficient for the door frame. Cut these carefully, or a twisted door will result. Screw up temporarily to test for trueness, and proper fit in the rest of the structure, then nail in the strips that are to seat the glass. Now try the glass for fit, before fixing permanently and adding the hinges.

When all these operations have been accomplished satisfactorily, one can go ahead and make the opposite side exactly in the same way, but in reverse, of course.

When this is done one can consider the fixing of the back posts to the wall, and also the foundation of the greenhouse.

If the structure is to be against a shed or hut of wood, then fixing will be simple, either by screws or bolts through the wall of the hut. Fixing to a wall is more difficult. Long nails driven through the post into the wall where cement separates the bricks might be possible. The best method, however, is to remove cement and insert a bolt (head first) into the cavity and then cement it in. If the bolt head is large it can be heated until red-hot in the fire and hammered to correct flatness. A hole can then be drilled in the back post to allow the bolt to pass through. Two bolts to each back post will be enough.

As to foundations, if the reader has a back-yard, then no preparation is necessary. Those with soil underfoot must have bricks to rest the greenhouse on, or the damp will rot the wood.

The foundation

Best of all is a foundation of rubble and cement. Dig a shallow trench to take this, and level it off as carefully as possible, leaving it an inch or two above the ground. Those who can afford it can cement the whole base of the greenhouse, and give a foundation for the plant pots to stand on, as well.

It is important to fix the posts to the wall the exact distance apart, otherwise the glass of front and top will not fit properly. That is why it is advisable to refrain from fixing the sides to the wall until the front and roof have been made and tested for accuracy.

So make next the ridge or top beam of the roof. Fig. 7 (a) shows how this should be cut. Don't forget to plane off the back edge to produce a chamfer of 60°. The shoulder taken out at each end is ½in. deep. The marks on the beam are to show where the glazing bars of the roof are to be placed, and should be measured carefully.

The beam for the eaves or front edge of the roof can next be sawn. The form and measurements are shown in Fig. 7 (b). The top edge is chamfered so as to continue the slope of the roof (30°). This is necessary, as the glass of the roof rests on this part.

It will be seen that three trenches are cut across the back of this spar. This is to hold the glazing bars coming from the ridge. Fig. 8 shows how the roof glazing bar is half-lapped with the vertical bar of the front (R. and V.) It is the projection or tongue of the roof glazing bar which engages into the trench.

Details of the roof bar are seen in Fig. 9 (a), while the vertical bar of the front is shown in Fig. 9 (b).

It will be observed that there is about ⅛in. gap between the vertical bar and the back of the eaves beam. This is to allow the glass to come up in between.

The attachment of the roof bar with the ridge is shown in Fig. 10 (a). A piece of plywood ⅛in. thick is interposed between bar and ridge before fixing in order to allow the glass to come up in between.

The attachment of the vertical front bar to the baseboard is seen in Fig. 10 (b).

Note that all these glazing bars must have the stripwood nailed down their centre lines, to hold the glass.

The front baseboard is made in a similar fashion to that of the sides. It will be 4ft. ¾in. long and 1ft. deep.

When all these have been made, the whole structure of the frame should be set up and tested for proper fitting. Next, the glass should be tried for size in each compartment.

When satisfied, the frame can be set up permanently and given a preliminary coat of paint all over.

While this is drying, one can make the ventilator for the roof.

This is easily made from 2ins. by 1in. batten, using plain halved joints at the corner. One glazing bar down the middle is necessary to separate the glasses. Saw a shoulder out of each end of the bar and sit it in a trench cut in the ventilator frame. Use stripwood for the glass to sit on, as used in the rest of the greenhouse. The size of the ventilator frame should be 2ft. 4½ins. by 1ft. 5ins.

It is hinged at the top, and a strip of roofing felt may be tacked along the ridge to reach down and cover the slit between the ridge and the ventilator. This will keep the rain out.

Fixing the ventilator

A screw-hook is screwed into the bottom of the ventilator and a Meccano strip used as a strut to hold the ventilator open or shut as desired. The head of the metal strip should be twisted. The strip is held by a nail or screw (in the side of the nearest glazing bar). This passes through one of the holes in the Meccano strip and so holds the ventilator in the desired position.

The glass used in the greenhouse can be Woolworth's horticultural glass

FINISHING THE GREENHOUSE

which is cheap and excellent. For the roof one will need 6 sheets of 18ins. by 12ins. The ventilator requires 2 sheets of 12ins. by 13ins. The front requires 12 sheets of 18ins. by 12ins. The two sides together will need 4 sheets of 15ins. by 12ins., 8 sheets of 18ins. by 12ins. For above the doors at each end, 2 sheets of 18ins. by 12ins. are needed. These are cut across at 30°, the required distance up, to produce 4 triangles as desired.

When laying in the glass, put dottles of putty every two or three inches along the beds, press in the glass, then secure with tacks or small nails driven lightly into the side of the wood. There is no real need to apply any further putty.

Another couple of coats of good paint will complete the greenhouse. The doors at each end can be secured simply by two catches of wood swivelling on screws driven into the front posts.

If tomatoes are to be the crop held in the greenhouse, then ten 9in. or 10in. plant pots will serve to hold the plants. These should be arrayed in two rows from side to side.

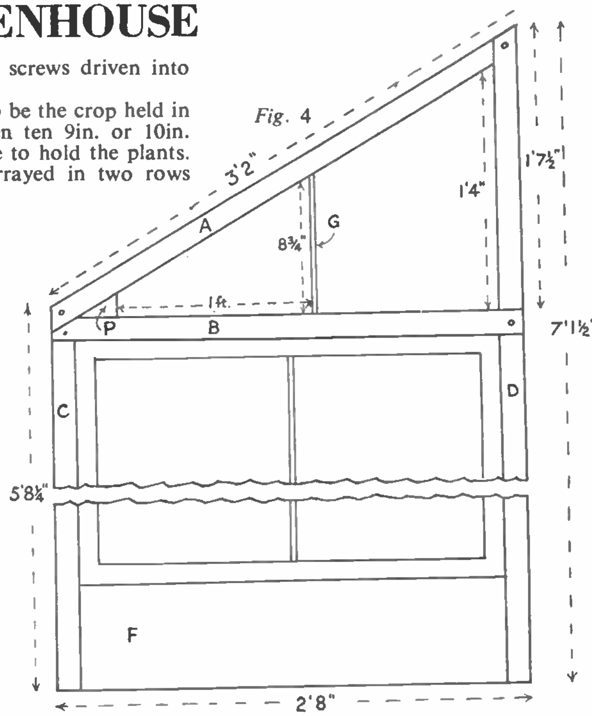


Fig. 7a

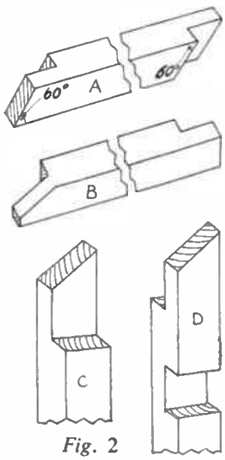


Fig. 2

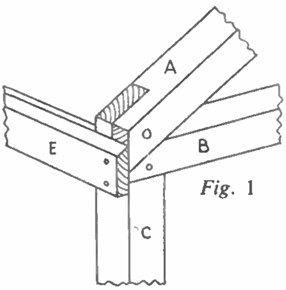


Fig. 1

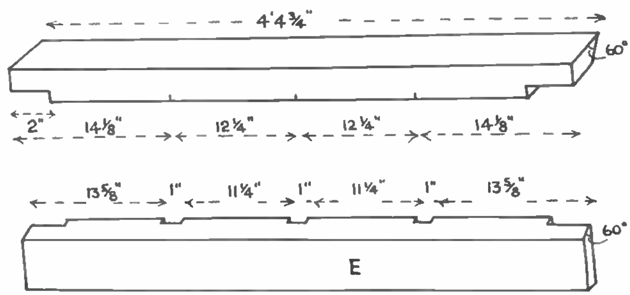


Fig. 7b

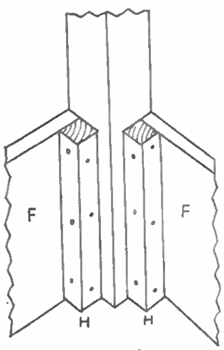


Fig. 3

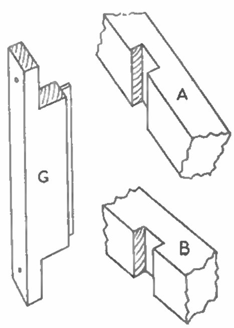


Fig. 5

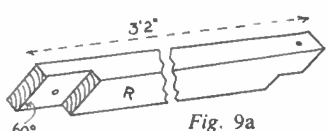


Fig. 9a

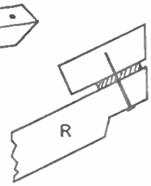
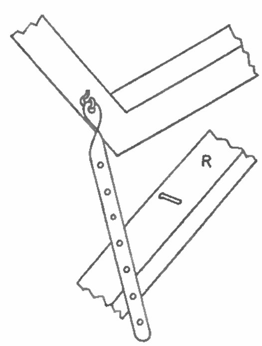


Fig. 10a



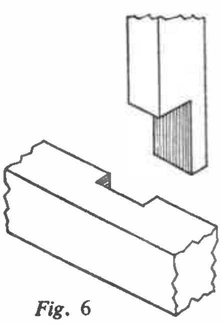


Fig. 6

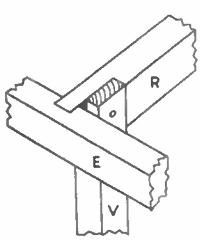


Fig. 8

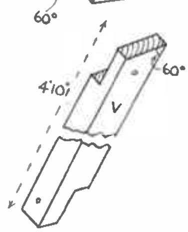


Fig. 9b

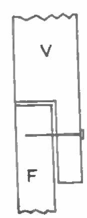
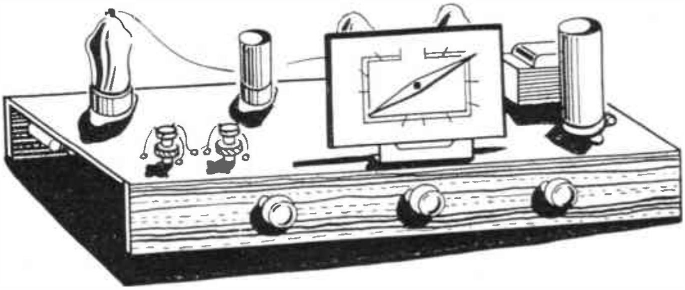


Fig. 10b

Fig. 11

Three-valve Radiogram

ADDING THE POWER PACK



COMPONENTS NEEDED

Mains transformer with secondaries for 5 V 2 A, 6·3 V 2 A and 250/0250 V 60 mA
5&4 rectifier Octal valveholder
60 mA smoothing choke
8μF plus 16μF, 350 V smoothing condenser, or similar separate condensers
Details for completing the radiogram will be given next week

THE simplest method to obtain the required H.T. and heater supplies for the receiver described last week would be to employ a small filament transformer, and metal rectifier, drawing current directly from the mains. However, this method has the disadvantage that the receiver chassis, and everything in contact with it, is alive to the mains, and shocks can be experienced, as a result. Because of this, the power supplies in the present case are obtained from a transformer which completely isolates the receiver from the mains. The chassis, pick-up, etc., will thus be safe to handle.

In view of the very low cost of a suitable transformer, this method is much to be recommended. A valve rectifier is also used as there is plenty of space. This is more efficient than a metal rectifier, requires less smoothing to avoid hum, and is only a trifle more expensive.

The circuit is shown in Fig. 1, and is a good one to operate equipment other than the radiogram receiver. The mains transformer is the most important component, and these are available in several styles. Some stand above chassis, with exposed tags. Others are enclosed, or have tags placed so that they project through an aperture in the chassis. If appropriately wired, any style can be used with equal success.

For the 5Z4 or 5Z4G rectifier, a 5 V 2 amp. heater winding is necessary. High tension is derived from a centre-tapped winding, 'O' going to chassis, and '250' to each rectifier anode.

The valve heaters require 6·3 V and take 1·05 amp. in all. A 2 amp., 6·3 V winding is thus suitable here, and will also enable two dial lamps to be fitted, if desired.

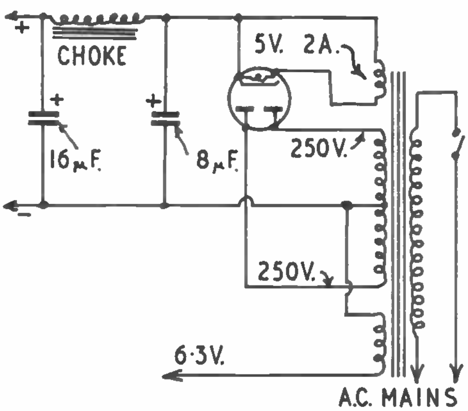


Fig. 1—Power supply

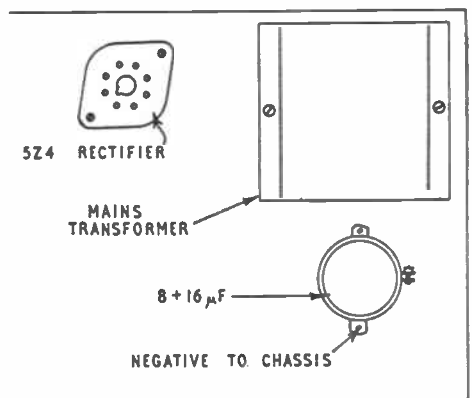


Fig. 2—Top layout

For smoothing, a small 60 mA choke is used. This component is in no way critical. Nor are the smoothing condensers, which may be separate items, or two condensers in one container.

Construction

Transformer, rectifier, and other parts occupy the unused end of the chassis, as shown in Fig. 2. If the transformer requires a large cut-out, this can be made by drilling corner holes, and removing the piece of metal with a fine saw.

The smoothing condenser shown has two condensers in a metal case, one of 8μF and one of 16μF. With this type of component, the metal case is negative, and is in contact with the chassis. If a cardboard condenser is used, a negative tag or lead will be present, and this must be bolted to the chassis.

Wiring is given in Fig. 3, and it will be seen that only a few connections are required. H.T. secondary centre-tap, and one side of the 6·3 V winding, go to chassis. The other 6·3 V tag is taken to the heaters of the valves in the receiver.

The rectifier heater is operated from its own 5 V 2 A winding, as shown. The smoothing choke is present in the H.T. positive line. No H.T. negative connection is required, as this is made by the metal chassis, which also forms the heater return circuit.

The switch contacts on the volume control are wired to transformer and mains, as shown. Good quality insulated flex is necessary for these connections. It is a good plan to bind the mains leads with insulated tape, and clamp them to the chassis with a bracket, so that no strain can arise on the soldered joints.

If the transformer has been chosen to suit the house mains voltage, it is merely necessary to connect to the primary. But if this component has various tags, for 200/250 V, then leads must be taken to the appropriate points, to suit the voltage used.

Dial lamps may readily be added, 6·3 V ·3 amp. bulbs being used. The bulbs are wired to chassis and heater line. With the large type of dial, one bulb each side is best. Smaller dials may be adequately illuminated with a single bulb.

If a dial of such a type that it cannot be illuminated is fitted, then a bulb can be used as an indicator. Small fittings with a coloured glass are available for this purpose, and it can be mounted just above the tuning dial, and it will then show when the equipment is switched on.

Receiver Operation

When all has been connected up as described, the set should work when switched on. An earth is by no means necessary, but is worth adding if feasible. Similarly, though good results can be expected with a few feet of wire as aerial, reception will be much better with a longer aerial, either indoor or outdoor.

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This is the third article in the series on building a 3-valve radiogram. Next week F. G. Rayer will give details for completion, such as adding pick-up, etc.

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Medium waves will be tuned with the switch in the first position, and long waves with it in the second position, if the L.W. coils have been added. When the switch is in the third position, a pick-up may be used, plugged into the back sockets. It is not necessary to remove the pick-up connections when listening to radio stations.

The receiver design prevents the volume control operating on Gram. However, it is easy to fit a volume control on the motorboard, near the turntable, for Pick-Up only. This will be dealt with in the final instructions, which relate particularly to record playing.

Trimming

Good reception can be expected at once, with this type of circuit. But sensitivity will be at maximum when the two tuned circuits are trimmed, or made to tune exactly to the same wavelength. This is quite easy to accomplish.

If air-cored coils are used, no coil adjustments are necessary. If the tuning condenser has two trimmers fitted to it, as some types have, a station of low wavelength (say, 200 to 250 metres) should be tuned in, and the trimmers adjusted, with an insulated blade, for best volume. Adjustment will be more accurate if a very weak station is chosen.

With this type of coil, no further adjustments will be necessary, as trimming on the L.W. band will also be sufficiently accurate, with coils of reliable make.

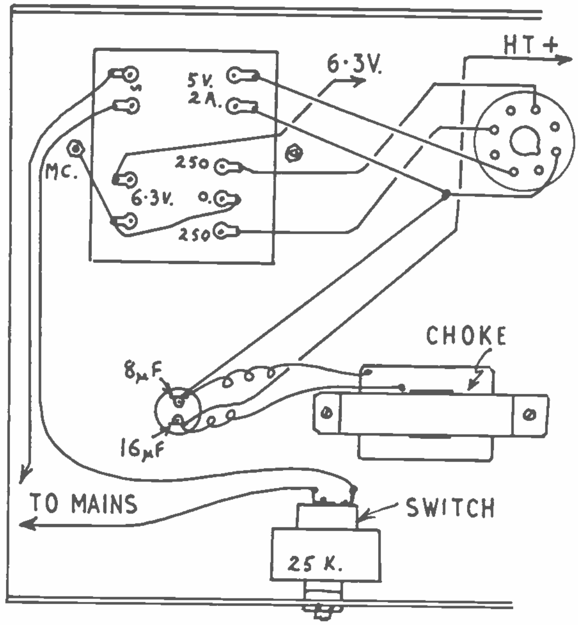


Fig. 3—Power pack wiring

If the tuning condenser has no trimmers, a 50μF trimmer can be wired to each set of fixed plates, and then adjusted as above.

If the coils have adjustable dust cores, these also need setting in the optimum position. First trim as already explained for aircored coils. Then tune to a high-wavelength station (say, 450 to 500 metres) and adjust the M.W. coil cores for maximum volume. An insulated blade *must* be used: *not* a metal screwdriver with insulated handle. Something suitable can easily be made from dowel or ebonite rod.

It will be found that adjusting the trimmers and coil cores will modify the position at which stations tune in. This allows correct matching up with a printed dial. To do this, tune in B.B.C. stations on the dial, and adjust trimmers and cores for maximum volume. The whole procedure is especially easy if it is remembered that the *cores* are adjusted at a high wavelength, and the *trimmers* at a low wavelength.

The very best method of all is to use four 50μF trimmers, one for each coil. The L.W. band can then be trimmed separately. But actual results scarcely justify this, so that trimming may be done on the M.W. band only. In common with all equipment drawing power from a transformer, the set cannot be used with D.C. mains.

SOLID MODEL AUSTER

TRY your hand at making this tiny model of the famous AUSTER. Make it up from the drawings on page 287.

You need a few pieces of balsa wood, some thin card, post card will do, and a few pieces of thin wire. These are shaped from the drawings and glued together with balsa cement. Markings can be painted on with water-colours after the model has been completed.

It will be a good test of patience if this is your first model and will give you valuable experience in model making.

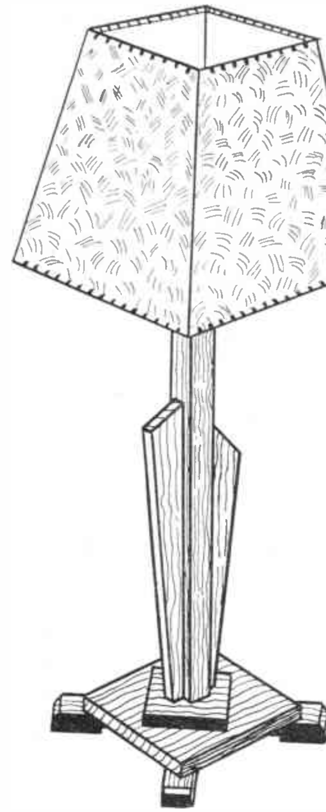
Since the AUSTER is often used with the Army, it could be painted with brown and green camouflage markings. After the fuselage and wings are dry, the aileron and tail fin markings can be put on with pencil.

If you wish to mount your model on a base, use a plain rectangle of ¼in. wood with round toes underneath. Paint the base green and glue the model in place.

(M.p.)

Charming and useful

EASILY-MADE TABLE LAMP



THE table lamp shown here will be welcomed in your own home or as a present. Its appearance is pleasant and the charm and utility it offers will amply repay the small cost in materials and labour expended in its construction.

Stripwood and odd pieces of wood are used and a variety of finishes is possible. Reward stain in one of six shades, followed by Reward French Polish suggest themselves. As an alternative, the lamp may be painted with Starlon plastic enamel in a shade to tone with the decorations of the room or with that of the lampshade to be used.

The Column

A start can be made by cutting two 9in. pieces of ½in. by 1in. stripwood. These will be glued together later to form a 1in. square column. Before doing this, however, a groove ¼in. wide by ⅛in. deep is cut in each of the joining surfaces to form a central bore for the wire. If you are lucky enough to have a grooving plane, the task is simple. Otherwise, two saw cuts ¼in. apart are made carefully to a depth of ⅛in., and the waste taken out with a chisel. When gluing the two pieces together, avoid any excess of glue which might partly stop up the grooves. A couple of cramps applied until the glue sets will ensure a close joint.

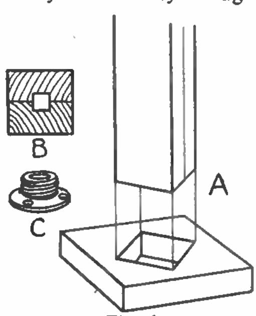


Fig. 1

The Base

The upper piece of the base is made next. A piece of ⅜in. wood, 2ins. square is required. After the edges have been trimmed, a 1in. square hole is cut diamond-wise in the centre to take the column. The lower section is 4ins. square and ½in. thick, with a ¼in. hole bored in the centre to take the wire.

To add to the stability of the lamp, feet are made as shown at Fig. 2. When the two 7¾ins. pieces of ½in. by 1in. stripwood have been cut to size, the ¼in. by ¼in. chamfers are made. Next, the half joints are cut at the centre. Before gluing the joint, however, the small blocks under each end are fixed.

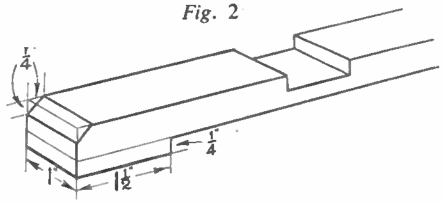
By H. C. King

These are 1½ins. by 1in. by ½in., and are fixed with glue and small nails. After glasspapering, the joint can be glued and a ¼in. hole drilled in the centre to take the flex.

The Fins

The fins are cut from ⅜in. thick wood to the sizes given at Fig. 3. They should be sawn slightly over size, so that the edges can be trimmed with a plane.

Fig. 2



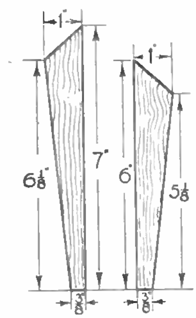


Fig. 3

If a stain and polish finish is chosen it is better to finish off the various parts before assembling them. If, however, enamel is to be used, it can be applied after putting the lamp together.

A start is made by fixing the two base boards together, the jointing surfaces being glued and four small screws driven in from underneath.

Before fixing the column, it should be tried in place to make sure that it stands absolutely upright. Any adjustment can be made by cutting the lower end square. Having corrected any error, the column can be glued in place. A couple of carefully placed fine nails or panel pins driven from the underside of the base will strengthen the joint.

Fitting the feet

Next, the feet are fitted, screws being used from the underside into the base-board. The fins follow. These are glued and panel pinned in position, holes having been drilled first for the pins. The latter are punched in and the holes filled in.

If enamel is being used, it should be applied at this stage, remembering that two thin coats are better than one thick one.

The flange on which the lampholder is screwed is shown at (C) in Fig. 2. This is screwed to the top of the column. The electric flex is pushed up the centre column and connected to the lampholder. To complete the lamp, a plug or bayonet adaptor is fitted to the other end of the flex.

Our competition subject

MILITARY BADGES

MILITARY badges have always been worn for recognition purposes. Nowadays it is to show the regiment of the wearer, but in earlier days it was to show friend from foe on the battlefield.

In those earlier days the badge was usually made of cloth, worked in coloured wool. Then, after an act of outstanding gallantry the soldier would often be awarded, on the field of battle, a badge made of metal. This award incidentally, made of bronze, silver or on occasions gold, was the forerunner of the military medals issued for gallantry today.

Often from friends, relations or antique shops, badges can be obtained for regiments that do not appear on the Army List. This is because the Army is continually changing. Regiments become obsolete and are disbanded, or two or more regiments are amalgamated. After an amalgamation of regiments a new badge is usually designed.

Naturally during the 1939–45 war, quite a number of new regiments were raised. Several of these have since been disbanded and it is possible that several more may soon cease to exist.

On occasions it is found that a regiment has two or more different badges. This arises normally after the death of a Sovereign. For instance, following the accession of King Edward VII the crown used in the design of many badges, was altered in shape. Again, it is usual after the accession of a new Sovereign for badges which include the royal cipher to be changed.

Nearly all military badges include in the design the name of the regiment. Of the remainder it is usually found that the regimental motto forms part of the design. It is the small percentage left that are often so difficult to recognize.

★★★★★★★★★★
★ **ANOTHER PRIZE CONTEST NEXT MONTH** ★
★★★★★★★★★★

JUNIOR AWARD

SENIOR AWARD

Design a Badge and—

WIN A WATCH!

BASED on the subject of Military Badges, the Editor will award wrist watches to the winners of a competition in which there are two sections — one for Seniors (16 and over) and one for Juniors (15 and under). A watch (as illustrated) will be awarded to the winner of each section and ball-point pens will be awarded to the six next best entries in each section.

Ball-point pens for the next best efforts

RULES

1. The competition is to design and fret-cut in wood or hardboard, a new badge for an imagined, and to be named, new regiment for this atomic age. The *maximum* size of entries must be 6ins. square.
2. The judges will take into account the originality of the design as well as the standard of fret-cutting. Therefore, if the name for the new regiment is not included in the design, then print the name on the back of the entry.
3. Entries must be received by the Competition Editor, *Hobbies Weekly*, Dereham, Norfolk, by February 28th 1957, and cannot be returned.
4. Winners will be notified and prizes despatched by March 15th. Details will be published in a subsequent issue of *Hobbies Weekly*.
5. A label bearing the name, address and age of the competitor must be firmly attached to the entry.
6. An entry must be the unaided effort of the competitor. All entries for the Junior Section *must* be accompanied by the certificate below, signed by a parent, otherwise the work cannot be considered.
7. Because of Customs regulations and the necessity to adhere to a definite closing date, entries are confined to those from Great Britain and Northern Ireland.
8. The judges' decision is final and no correspondence can be entered into.

CERTIFICATE (for Juniors)

The entry is the unaided work of

.... aged..........

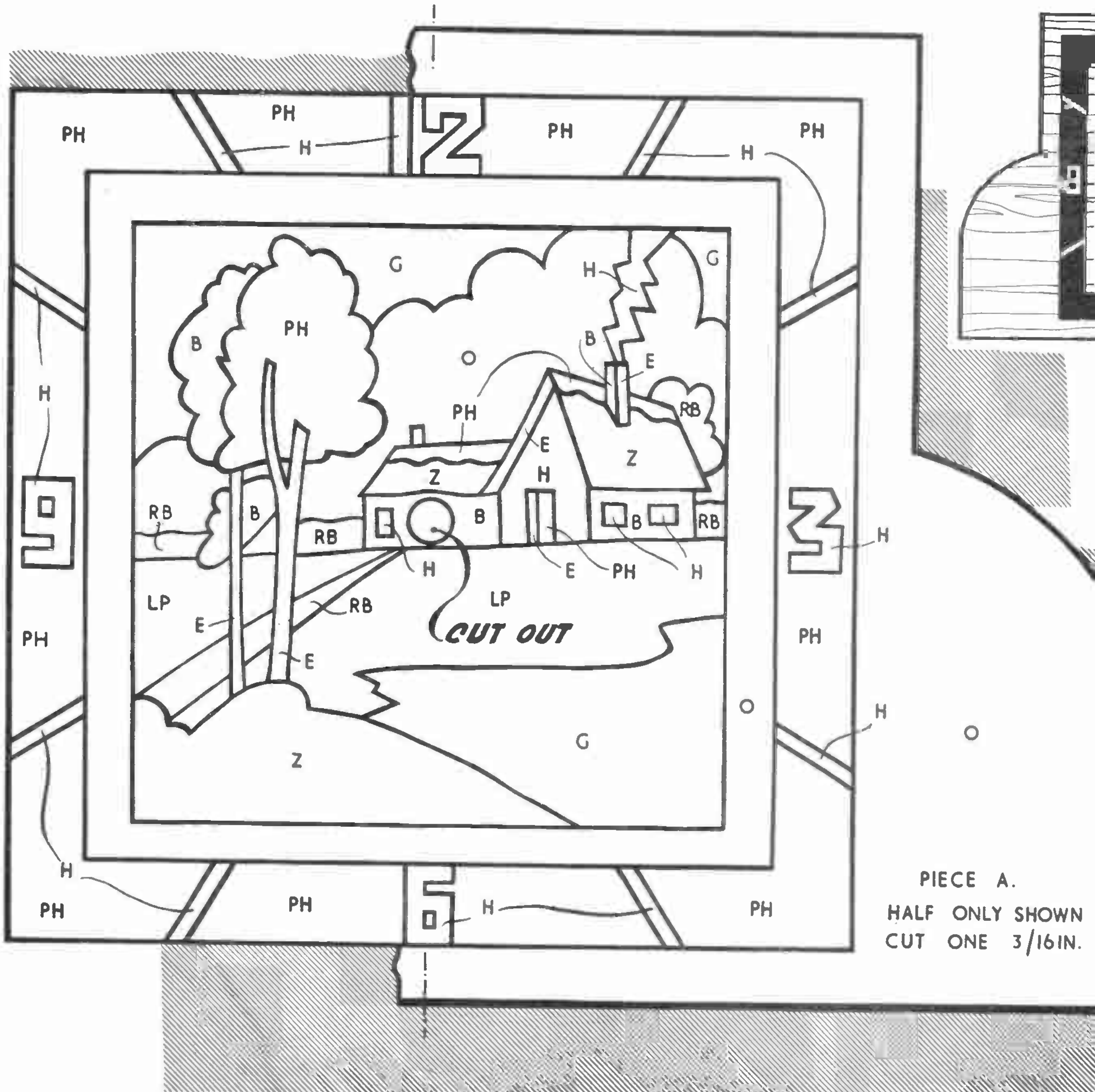
Signed ....

Relationship ....

Address ....

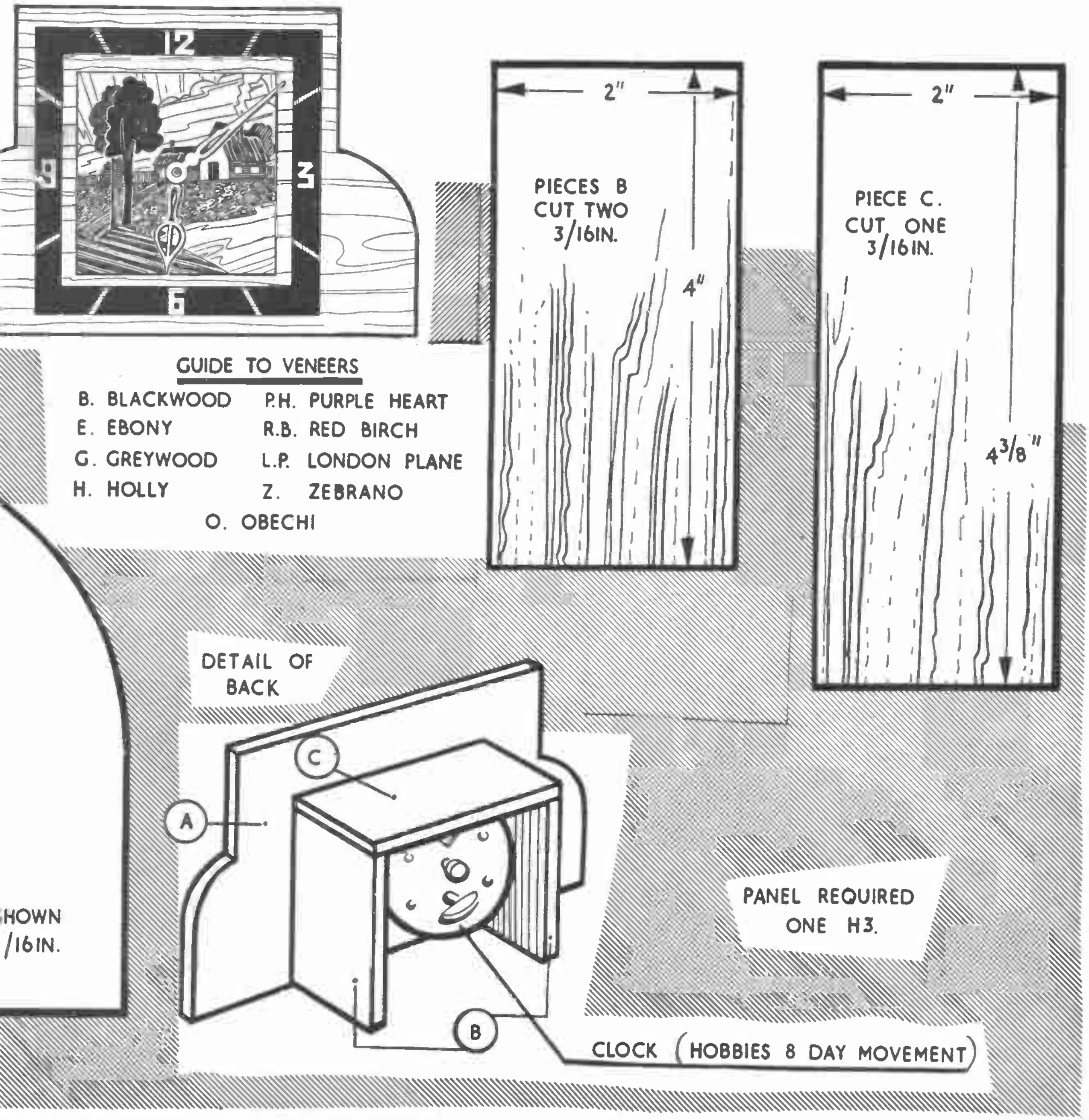
....

Hobbies MARQUETRY DESIGN



PIECE A.
HALF ONLY SHOWN
CUT ONE 3/16 IN.

CLOCK CASE—



12
9
3
6
GUIDE TO VENEERS
B. BLACKWOOD
P.H. PURPLE HEART
E. EBONY
R.B. RED BIRCH
G. GREYWOOD
L.P. LONDON PLANE
H. HOLLY
Z. ZEBRANO
O. OBECHI
2"
4"
PIECES B CUT TWO 3/16IN.
2"
4 3/8"
PIECE C. CUT ONE 3/16IN.
DETAIL OF BACK
A
B
C
HOWN
/16IN.
PANEL REQUIRED ONE H3.
CLOCK (HOBBIES 8 DAY MOVEMENT)

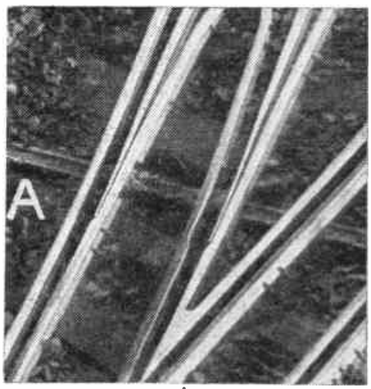
Model Railways

MORE TRACK WISDOM

SOME time ago I recommended a greater use of check rails for accident-free running on model lines. Here are some more suggestions aimed at cutting out derailments and generally making the running aspect of the layout smoother and more positive. They are in addition to the check-rail ideas.

Points and cross-overs are of course No. 1 danger places, though curves need watching.

The 'frog', where the one line crosses the other, can be a source of track-jumping as model wheels can never run, or rails be shaped to the same fine limits as the real thing. A certain cure here to all trouble is to make the frog solid. It is not hard to do this, and if carefully carried out does not spoil the general effect. In tricky places as on the Underground in London, on the high level bridge at Newcastle and in docks,



Showing recessed rails at tips of point blades. These points are check-railed. Note how the check-rails are recessed also; the blade sitting in as at (A).

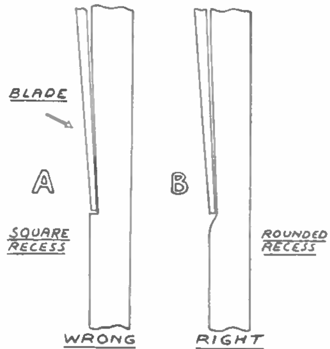
frogs are actually being put down as one unit, not built up as is the case in standard sets of points; so in making them solid one is not departing so very far from actual practice.

To make a model frog into a single piece, first place a flat piece of wood under on the underside, but not touching. Well clean the rails, using spirits of salt if possible, and then fill to between a ¼in. and ½in. either side of the angle with solder flush with the rail-head. Let the heat play well through the whole area.

With the solder gripping the metal tightly, and not just lying between the rails, it is now a matter of careful file work to procure the desired result. Using a file horizontally first get perfectly flush rail-top effect over the whole area. The flange gaps are next taken out with (for gauge O) a ⅛in. wide flat-sided file. Work down slowly and only take the channels as deep as is necessary for your deepest flanged vehicles. Indeed it is good if the flange actually runs along the bottom of the channel.

Some little time should be taken in getting the gaps to exactly the minimum depth and width required for good running. Practical experiments with vehicles must be continually made. The final result in sweetness of running through the switch or cross-over will repay all effort.

Special cases as, say, where tracks tend to lie on slightly different levels



Wrong and right way of recessing the rail at the blade tip.

and the frog is under a strain or where the angle is approached from a sharp curve, respond especially well to this treatment.

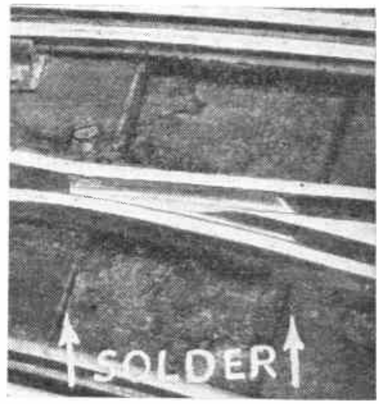
Another location for improvement is the tips of the blades of a set of points, as wheels sometimes catch here because the small recessing necessary has been overlooked. The slight depression in the stock rail so that the extreme end of the blade can settle in is very important for safe running, particularly at the side which is on the outer rail of the curve and where the flange may be expected to be pressing most heavily against the blade. The recess must be taken out as (B) in the diagram, with a rounded approach, not square as (A), which might well cause trains to derail going in the opposite direction.

Derailment is often caused by curves lacking super-elevation. A formula that gives the degree of this required on any curve where there is slow running, and simplified is: 1—(radius in feet × 4). For fast running double the figure obtained. A 4ft. radius curve thus needs anything from a $\frac{1}{16}$in. to ⅛in. raising on the outside.

And speaking about curves, wherever possible bring the rails to the sharpest point by a *steadily* decreasing radius. Don't jump the train from the straight to the maximum curvature. It is just a question of building up the sideways movement slowly, as any other speed is best built up. This slow approach also applies to the super-elevating.

For some reason hardly explained by logic, insetting of rails in terminal stations and around yards and docks seems to give particularly positive and safe running, even though the insetting is not sufficient to give any check-rail effect.

I have used cement and sand as a filler with every success, and also a composition of sand and glue. The cement, of course, looks more realistic for docks, certain goods yards and some terminal stations. The insetting of rails at these places is again in line with standard practice.



A solid 'frog'.

Sleepers and chairs can be economised with this finish, but care must be taken that there is no squashing in of the gauge while filling. A slight tightness of gauge is sometimes a quite unsuspected cause of derailment, and no work of this kind (or any ordinary track-laying) ought to be carried out without continually checking with a gauge key.

Care must also be taken to see that flangeways are always sufficiently deep. It is not easy to take cement lower after setting, but the glue-sand mixture is more workable. In any case, tests with an old vehicle as the filling continues is all that is required. (H.A.R.)

Next Wednesday's 'Hobbies Weekly' will contain a free design for a grand model ranch, complete with corral.

FUN IN TRACKING ANIMALS

TRACKING the wild animals of our countryside is at all seasons fascinating. To be able to read the footprints of at least a few of them makes a walk by field, woodland, and warren more interesting. When the ground is hard and dry it is not so easy to discern their tracks as when the soil is soft and inclined to mud. The best time is after a fall of snow, if the ground is not too deeply covered. Tracking in the snow can be great fun.

The tracks of animals are usually grouped into three types. One group includes cloven-hoofed animals like the deer, wild boar, goats, and others. Then there are those creatures which walk on the flat of the foot, as otters, badgers, hares and rabbits, etc. There is another group known as the 'toe-walkers', which includes the fox and many other wild animals, if we include those of other countries.

Badger and Otter

For our purpose it may be better to deal with the various tracks we are likely to meet in our local countryside, particularly after a light snowfall. We shall start with the badger, thought to be the oldest four-footed inhabitant of Britain. Being a rather bulky and heavy animal a badger leaves good impressions of its footmarks.

In deep snow the otter's tracks are largely obscured by the 'drag' of the animal's low body, which leaves a smudged trail on the surface. Sometimes, too, you may note the drag of its tail, known by otter-hunters as its 'pole'. Frequently you find, on a stream where otters abound, good well-defined markings in the wet soil along the banks, and at places where the animal has crept out of the water to climb the bank. When an otter is walking leisurely the footprints show one behind the other, but when jumping you find that the marks are in pairs, with a space between each pair, the imprints of the hind feet covering those of the forefeet; if going very fast, the hind feet markings appear in front of the forefeet.

Fox

Probably you will be more likely to find the tracks of a fox if you pass through the fields near a fox covert following a sprinkle of snow, when the prints show up pretty clearly. A fox track shows four claw marks distinctly, with a pad rather 'pear-shaped', or nearly resembling the tracks of a dog. A cat's prints in snow are also apt to be confused with those of Reynard. A fox walking leaves a line of single tracks, as his hindfeet cover his forefeet; but when he is travelling at speed his hindfeet are thrown ahead of the forefeet. Travelling slowly, the fox places one pad before the other very consistently. You can trail him as he crosses a field. He always seems to know just where he is making for, and only deviates if something attracts his attention.

Hares and Rabbits

Hares and rabbits, as you know, have long hind legs, and their way of travelling over the fields is a sort of hop or leap, and the hindfeet are always thrust out beyond the forefeet, so that you can tell in which direction the animal is going. The bigger marks of the hindfeet are in front, the smaller prints of the forefeet are one behind the other. Sometimes the prints of the claws are visible. The hare, of course, is larger than the rabbit, and the leaps it makes are longer. In fine snow the tracks of both these animals can be followed easily, but in deep snow they are likely to be badly smudged; but you can usually tell which animal has left the tell-tale markings by the distance between the prints. A fast-moving hare, for instance, making over a snow-carpeted field, will make jumps of 10ft. and over.

Squirrel

The squirrel spends much of his winter days snugly sleeping in his drey, yet he does not hibernate like the hedgehog or the dormouse, but comes down to earth from time to time to quest for a snack — if he can find the nuts he hid away in autumn! Therefore it is possible on occasions to find his tracks.

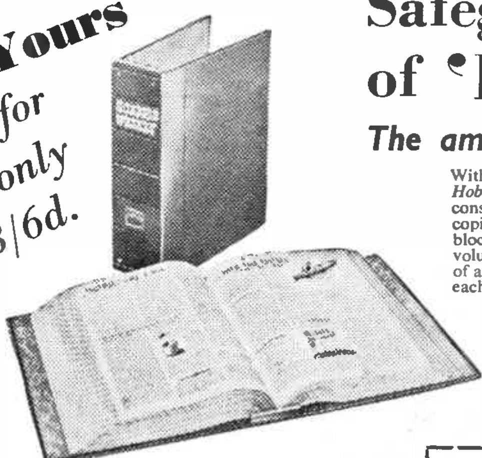
The squirrel moves in a series of jumps, bounding along light as a feather. What a beautiful little creature of the woods is our native red species! When travelling fast, as it so often does, its hindfeet are wide apart, and touch the ground a little in advance of the spot where the forefeet landed. Seldom do you see the mark of its lovely bushy tail, which is usually held fairly erect, and does not touch the snow. Most tracks of squirrels end at the foot of a tree when you succeed in tracing them. There may be a distance of 12ins. or so in a squirrel's prints as he jumps; but in hastening down a bank it will be twice that measurement. In snow the hindfeet show the traces of five toes, but the forefeet toes are not so distinct. The squirrel's track has been described as a 'wide foreshortened rabbit's track', so that you have to be careful when seeking to identify the footprints.

Stoats and Weasels

During the cold months of the year the stoat generally has a more or less permanent residence somewhere in a snug spot shielded from wintry storms, maybe a hollow tree or hole in the trunk a few feet above ground level, perhaps a disused rabbit hole or mole run, or in a wood-stack and in thatch. When snow lies over the countryside, he only ventures forth for food when compelled by hunger; and then you may see his neat footprints by the rabbit warren.

Weasels have similar habits. Both these small animals have long bodies and four short legs, and they mostly jump. They have five toes and claws on each foot, and these are clearly defined in thin snow, but obscured if the fall is deep and soft. The stoat, being the larger of the two, has a much longer jump than its cousin. Weasels walk, leap, and, when in a hurry to escape an enemy, gallop. When galloping the impressions overlap, the hind being in front of the fore feet. (A.S.)

Yours for only 8/6d.



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Patterns for

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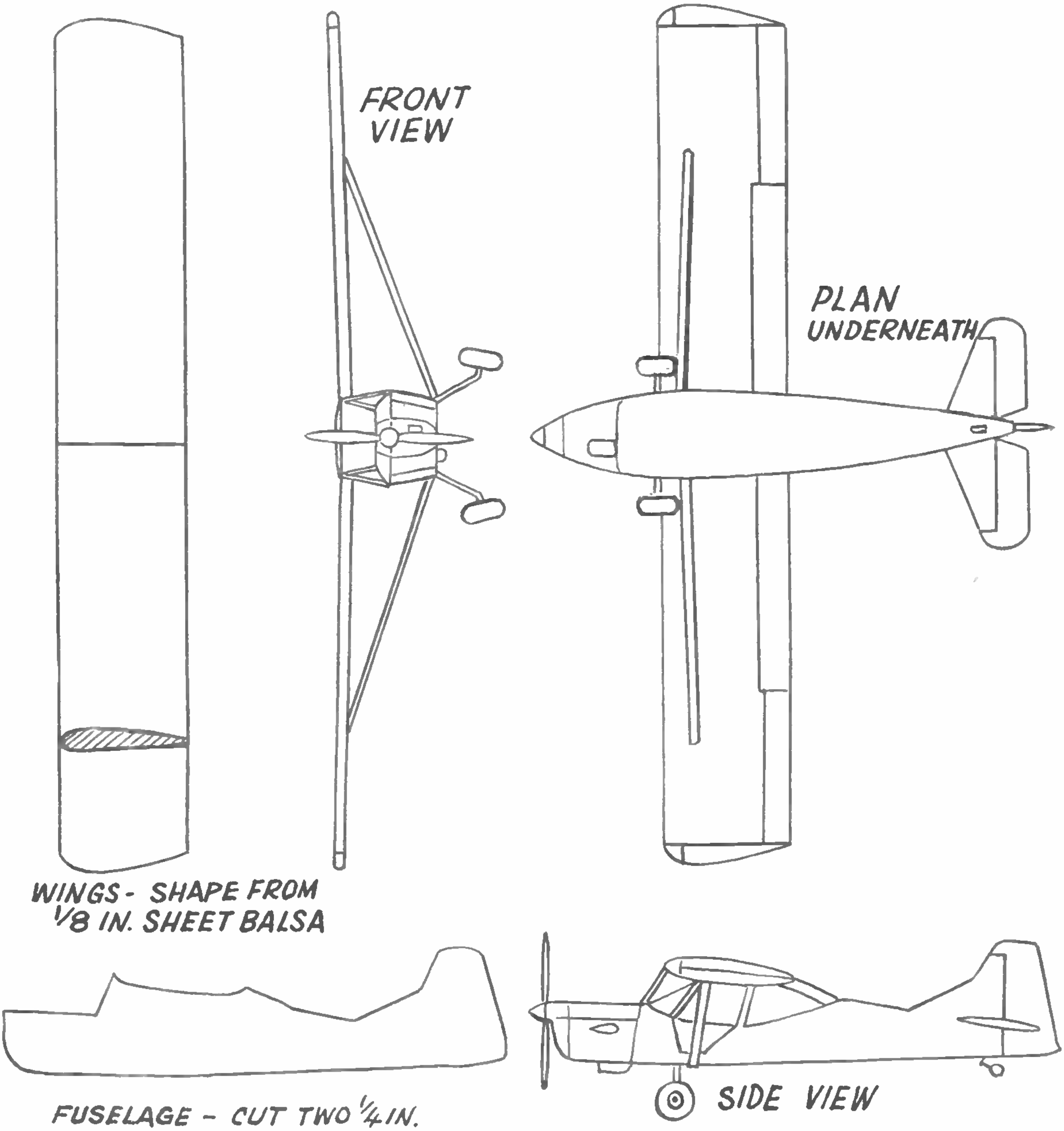
SOLID MODEL AUSTER



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