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



*Make up this
attractive subject
as acceptable gifts
for Christmas*

PERPETUAL CALENDAR

★ *FREE design and
full instructions
for making inside*

145

FOR ALL HOME CRAFTSMEN
Over 60 years of 'Do-it-Yourself'

World Radio History

4¹/₂^D

Christmas is more exciting with

**HORNBY
DUBLO**
ELECTRIC TRAINS

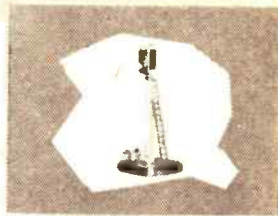
Christmas is really exciting if you're lucky enough to get Hornby-Dublo presents. If you are not already a railway modeller, ask for a Hornby-Dublo electric train set — you'll find plenty of thrills and fun running your own model railway. And if you already have a model railway, there are new and exciting trains and equipment to add to your railway.



**NEW HORNBY-DUBLO
G25 FREIGHT TRAIN**

A magnificent model of the famous L.M.R. 8 F 2-8-0. With a powerful low geared motor that gives it correct express goods speed, this sturdily built, superbly finished train is the most thrilling gift a railway modeller could hope for. Price £7 12 6 (inc. tax)

**NEW COLOUR
LIGHT SIGNAL E56**
This home and distant signal is up-to-the-minute railway practice in miniature. A wonderfully realistic model with spring loaded terminals for quick and easy connections. Price 10/6 (inc. tax).



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Like the United Glass Bottlers Sand Wagon and a host of others. Price 4/9 (inc. tax).



Making the Perpetual Calendar

A PERPETUAL calendar is always an ideal choice to make up as seasonal gifts for friends, and the herald depicted on our design lends himself admirably to this subject.

The make-up of this calendar is quite simple, it being cut from 1/4 in. wood throughout. All parts are shown full size on the design sheet so that you can paste the design down to the wood and cut to the outlines. Experienced workers will, however, prefer to trace the individual pieces and transfer their shapes by means of carbon paper on to the wood. By this method, of course, they save the need for scraping off the paper later on.

Fig. 1 shows how the various pieces are laid out on the panel of wood provided in Hobbies kit, in order to obtain economical cutting. It will be seen that all the necessary pieces are provided for on this one panel.

Cut out with the fretsaw all the shapes indicated, keeping to the lines as closely as possible and maintaining the saw in an upright position. When all the parts have been cut out, clean up thoroughly with glasspaper.

Piece (2) is glued to piece (1) in the position indicated by the dotted lines on the design sheet. When dry, this assembly is glued into the base (piece 5).

To form the slot in which the calendar cards will be placed, pieces (4) are glued on to piece (3) and this assembly is in turn glued to piece (2). The slot for holding the cards is formed by the overlapping pieces (4).

This is a subject which lends itself to careful finish, and on the application of the paint, etc., will depend the final appearance of the calendar. A painting chart to assist workers in their choice of colours is given on the design sheet.

KIT No. 3292

Panels of wood and a calendar set are included in Hobbies Kit No. 3292 for making the Perpetual Calendar. Kits are obtainable, price 4/3, from Branches, etc., or by post from Hobbies Ltd., Dereham, Norfolk (post 9d extra)

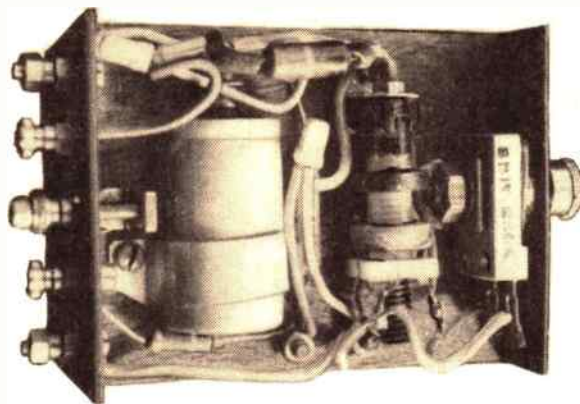


Fig. 1—Showing how the various parts are laid out on the panel of wood

2-TRANSISTOR RECEIVER

COMPONENT LIST

5K and 100K $\frac{1}{2}$ -watt resistors.
 8 μ F 6V. miniature electrolytic.
 White Spot radio-frequency transistor.
 Red Spot transistor.
 Medium wave coil (Osram Radio, 418
 Brighton Road, South Croydon, Surrey)
 500pF pre-set (Coventry Radio,
 189 Dunstable Road, Luton, Beds.)
 14 6 B.A. bolts, nuts, etc. (Coventry Radio)



THIS set is of very small size, being approximately 2 $\frac{1}{2}$ ins. by 3ins. by $\frac{3}{4}$ in. thick, including the battery. It can thus be carried about for use anywhere — camping, on holiday, or for personal listening as required. Two transistors are employed, which means that really loud headphone signals can be had even in circumstances when a crystal set would be useless. Either a single earpiece attached to a length of twin flex, or a complete pair of headphones can be used. The complete headphones will be

By 'Radio Mech'

more convenient for regular listening, though the single earpiece is satisfactory when it is inconvenient to carry anything larger.

The set tunes medium waves only, but this can be modified to include a long wave coil also, dimensions then being slightly increased. In general, long waves are only required in those areas which rely upon the long wave Light Programme transmitter.

Transistors are almost everlasting, if not misused. Damage can arise from wrong battery polarity, but this is

avoided in the present circuit because the single cell battery will only fit in when correctly placed. Another possible cause of damage is heating of the transistor while soldering. This also is avoided by using small nuts and bolts for connections.

Some kind of aerial or earth has to be provided when listening. Ample volume was obtained with an earth only, and no aerial. With the addition of a few feet of thin insulated flex, as aerial, signal strength was much increased. A very short aerial alone only gave rather weak signals, but volume increased to a useful extent when the aerial wire was placed upon the floor in a downstairs room, or near house mains wiring. Water taps and similar objects were found to act as efficient earths in some cases, giving good volume with no aerial. Out-of-doors, a short wire thrown over a low tree branch was found sufficient.

It is thus generally possible to provide some satisfactory aerial or earth, or both.

An earth alone was found more effective than an aerial alone, except when the aerial was fairly long. In most cases, when only an earth was available, volume was improved by taking this to the receiver aerial terminal, instead of to the usual earth terminal. Local circumstances vary, and various arrangements can easily be tried.

Circuit used

The circuit is shown in Fig. 1, and uses a White Spot radio-frequency transistor as detector and amplifier, followed by a Red Spot transistor as audio-amplifier. This arrangement needs very few components. With these transistors, the Collector is indicated by the white or red spot, and goes to 5K resistor and phones. The centre lead is the Base, and is taken to aerial and 100K resistor. The remaining lead with each transistor is for Emitter, and goes to the earth line.

It is important to note that some transistors, such as the Brimar TP1, TP2, etc. are marked in the reverse way to this, red indicating the Emitter lead. If transistors other than the 'White Spot' and 'Red Spot' types are used, reference must thus be made to the maker's connecting data. Other transistors can work equally well, but *must* be wired in correctly.

To save space, a compression type condenser is used for tuning. This can be .0005 μ F for stations fairly high in wavelength or .0003 μ F for those of lower wavelength. The minimum capacity of the .0005 μ F condenser is rather high, so that with some aerials it is impossible to tune in a station which is near the low-wavelength end of the band. If this happens, the dust core of the coil should be screwed further out, or wholly

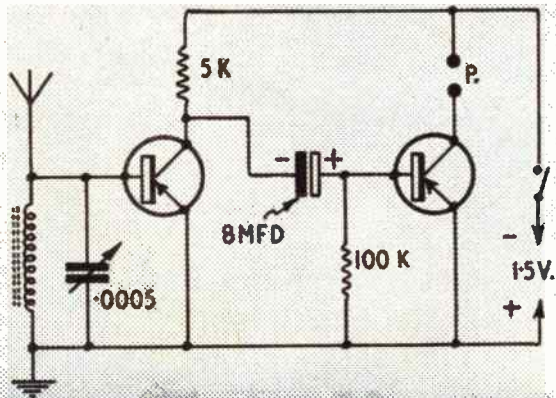


Fig. 1—Receiver Circuit

removed; or some plates may be taken off the condenser.

Base and terminals

The small baseboard is of 3-ply, 2½ins. by 2½ins. This must be dry, and should be varnished both sides to keep out damp. A strip of Paxolin 2½ins. by ½in. is fitted each end by small wood screws. One strip carries the compression condenser, and the other four 6 B.A. terminals, as in Fig. 2.

An ordinary small torch cell is used, a piece being cut out of the 3-ply to accommodate this. Pen torch or deaf-aid cells can be used instead, and will fit without a hole being cut.

The on-off switch consists of a 6 B.A. bolt, with terminal head, screwing into a threaded bracket. Rotation brings the point into contact with the zinc case of the cell, switching on. This switch takes

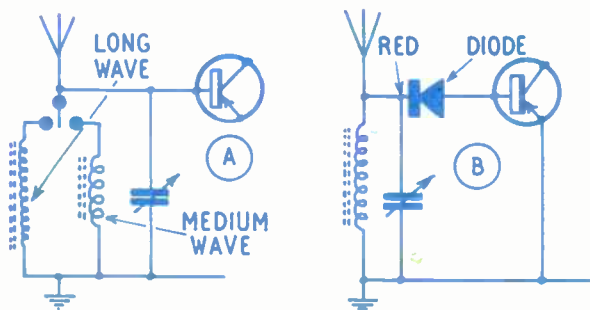


Fig. 3—For dual-wave or diode detector

up very little space, and cannot be turned on by accident. The threaded bracket can be replaced by an ordinary small angle bracket to which a sprenut is soldered. The bracket is bolted in place, and connected to one phone terminal, as shown in Fig. 2.

A curved metal clip is made to hold the cell in position. It is necessary to remove the bolt holding this clip, to change the cell, but this is no great disadvantage, as the battery has a very long life.

A second small bracket is bolted in position so that the brass cap of the cell presses against it. It is wise to fit the battery first, to locate this bracket, then to remove the battery, so that transistor leads will not come into contact with it when wiring up.

Transistor connections

These have been mentioned, and are shown in Fig. 2. Thin insulated sleeving should be placed on the transistor leads, to avoid possible short circuits. Pieces of the rubber covering stripped from thin flex will be suitable. The leads are left full length, and should not be bent near the transistor body.

The battery must not be inserted with transistor leads wrongly connected, or touching other parts or leads, or the transistors may be damaged. Reversed Emitter or Collector leads are most likely to cause damage, so these should be carefully checked.

Coil, etc

The coil listed has a small clip which can be bolted to a bracket, for mounting. In the present circuit, the smaller aerial coupling winding is ignored, leads going to the larger winding tags, as in Fig. 2. If a long aerial is ever used, it can be taken to one coupling winding tag, the other tag being wired to earth. This will give more selective tuning, but is not required with short aeriels.

Note that the outer casing of the small 8µF condenser is negative, and must be taken to the 5K resistor. As space is limited, the White Spot transistor will be above this condenser. Both transistors are supported by their leads.

If Long Waves are also required, a similar L.W. coil can be added, and brought into circuit by means of a 2-way switch, as shown at (A) in Fig. 3. The switch can be made by pivoting a small

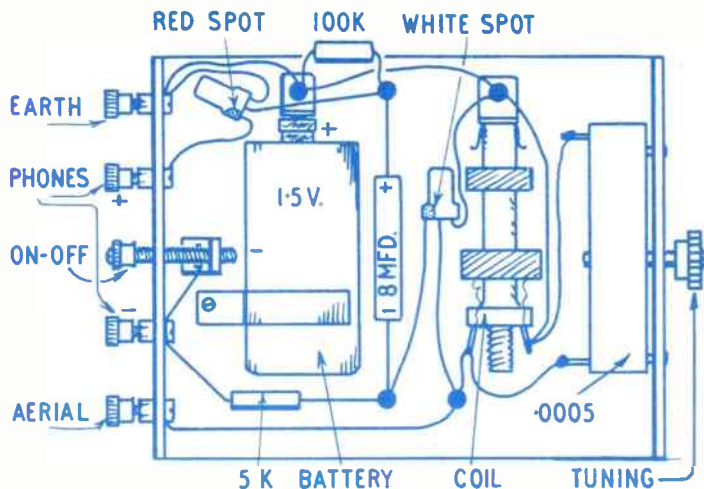


Fig. 2—Wiring plan

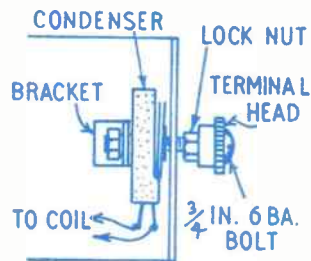


Fig. 4—Fitting a bracket-mounting condenser

strip of brass, so that it can be moved to rest upon the heads of either of two small screws. All other connections are unchanged.

Compression condensers of the type used are made for screwdriver adjustment. A terminal head can be soldered to the adjusting screw, or a longer bolt, with the same thread, can be inserted, and have a terminal head locked upon it, exactly as with the on-off control. Tuning can then be adjusted with the fingers. The thin slips of insulating material between the plates must not be displaced or the set cannot operate.

Using the set

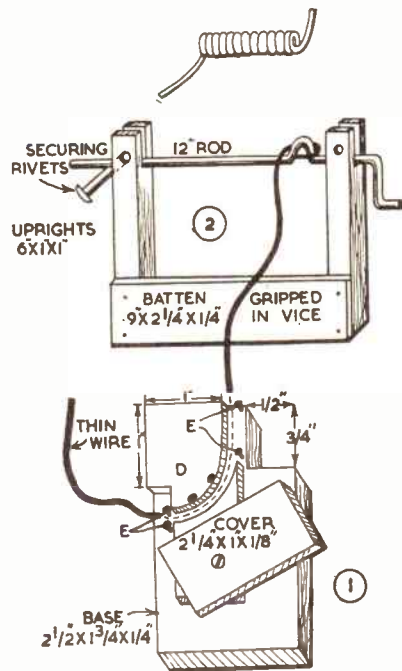
If a Red Spot or other audio-frequency amplifier type transistor is to hand, instead of the White Spot, similar results will be obtained if a crystal diode is added for detection, as shown at (B) in Fig. 3. Negative on the diode goes to the transistor Base, and positive to aerial. All other connections remain unchanged. The addition of a diode does not improve results if the first transistor is of radiofrequency type.

● Continued on page 149

MAKING WIRE SPRINGS . . .

THIS fascinating hand-made tool will enable you to make your own springs and wire coils of different lengths, for various uses in the workshop.

Thin, round, pliable wire, which your shopkeeper usually throws away is the wire you want. Ask him to save you



several strands next time he opens a case or box bound with this.

Make the main jig first (Fig. 1). This consists of two $\frac{1}{4}$ in. plywood shapes assembled on to a $\frac{1}{4}$ in. base. A tunnel between the two being just wide enough for the wire to pass through. The cover is screwed into position so that when swivelled, it completely covers the tunnel. The four escutcheon pins (E) serve a special purpose and must be embedded at points shown.

On its journey, the wire would normally wear into the wooden tunnel. This is prevented by fixing the two nails (D) as near the edge as possible.

Construct the coiling jig next (Fig. 2). A fairly tough steel rod of $\frac{1}{4}$ in. dia. will be necessary. Smooth this down with emery paper until it shines. Bend it one end as shown making a crank and a handle. The grooves in the uprights are $\frac{1}{2}$ in. deep. Above these drill a hole for rivets, which will hold the rod secure,

then nail the uprights and the flat batten together.

Operating instructions

Grip the flat batten of jig (Fig. 2) in the vice. Place the coiling rod in the grooves provided and push in the securing rivets. Place the wire in the tunnel of jig (1) and close the cover. With about 2 ins.

of wire spare at the top end, hold the jig up to the steel rod and attach the wire round the crank, pinch it tight. By holding the jig firmly up against the rod and gently turning the handle, the wire will neatly coil itself round the rod, making perfect coils of wire or springs of required lengths.

(S.F.)

. . . AND HOLES IN SPRINGS

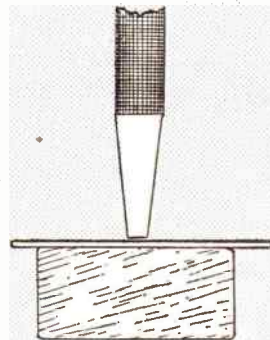
CONSIDERABLE difficulty is often experienced in making a hole in a piece of clock spring, sheet steel or other very hard metal. When the sheet is not too tough it is possible to use a drill on it, but with a hard metal, this is not possible.

When tackled in the correct manner, however, it is quite a simple matter to punch a hole in the material. In most cases the resulting hole is cleanly cut and requires little after treatment in the way of finishing.

Place the work on a flat block of lead, and with the punch, carefully held where the hole is required, give it a smart tap with a fairly heavy hammer. To get a clean cut hole the punch should have a perfectly flat end with a sharp edge, and it should be held exactly upright. One sharp blow with the hammer should do the job, and the piece of metal will be removed and become embedded in the lead.

If only a small hole is wanted, then a pointed centre punch can be used, but this will not remove any metal. It will, however, make a depression in the steel, which must be ground off with an emery wheel.

Much of the success of this operation centres round the method of using the hammer. It is the quick sharp blow which is most satisfactory, and it is advisable to practise on some odd



pieces of spring before attempting to do anything of importance. A good thick block of lead, too, is necessary, and see that it has a nice flat surface to punch on to. By using a thin sheet of lead or a piece with an uneven top, you will most likely split the steel spring instead of making a clean cut hole.

(A.F.T.)

● Continued from page 148

2-Transistor Pocket Radio

Headphones or a single earpiece suitable for a crystal set will be satisfactory. Low-resistance phones are unsatisfactory and only give poor volume. Single earpieces can be fitted with two or three feet of thin twin flex.

The local station should easily be heard on rotating the tuning knob. If this knob is fully unscrewed, without the station coming up to maximum volume, the coil core should be withdrawn by turning it anti-clockwise. Once the core is suitably positioned, it

can be left, but any change to aerial or earth will make adjustment of the tuning knob on the condenser necessary.

If countersunk bolts are used for the various wiring points, the receiver will slip easily into a small case, which can be made from any insulated material, including wood, but must not be metal.

Fig. 4 shows a type of compression condenser which can be mounted on a small bracket bolted to the baseboard, and with both tags at one end.

Combined Hut and Greenhouse

At this juncture it is a good idea to check the rectangularity of the frame. This is important if the glass sheets are to fit in properly. A T-square can be used, but a large set-square is better. Set this in the inside angle formed by (C) and (A), (B) and (C), (F) and (A) at each corner of the framing. If the members are not set at 90° exactly, then loosen the bolts slightly, and a few taps with a hammer at chosen places will correct the fault. Test with the set-square, then tighten up the bolts again.

One can now attach the (L) sections on the hut side, nailing the lower end to

A. Fraser here concludes instructions for building the Hut/Greenhouse, the first part of which was contained in last week's issue.

grooved is used, take care to attach them so that the tongue is pointing upwards and the groove pointing to the ground.

First board up the far side of the hut (opposite end to the door), taking the boards right across to cover uprights (E) and (G). On the door side, boards are only taken over to cover (G) and (J), and the triangle above the door space.

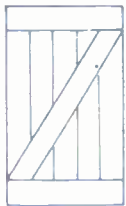


Fig. 11

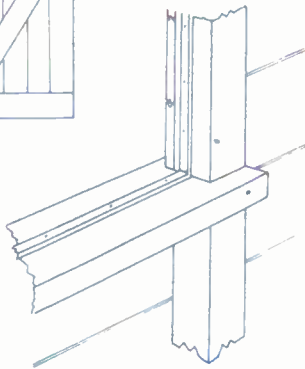


Fig. 10

(G) upright and the upper end to (R). Note that (L) is only 1in. by 2ins. Towards the lower end it is also nailed to (J) (the post for the door). The opposite end of the roof has no (J) post attachment, there being no door here.

The glazing bars can be fixed in next. (The method of attachment has been shown.) Deal with those of the front and sides first, then those of the roof. Before nailing finally, test that they are positioned correctly apart to take the glass, by trying in actual sheets of glass. If satisfactory, nail into position.

Choice of boarding

One can proceed with the boarding up of the hut section now. Ordinary overlap boarding can be used, or tongued and grooved. The writer prefers the latter, as being structurally better, and certainly it is necessary for the roof boards. Boards ½ in. by 6ins. would do, or what is available. If tongued and

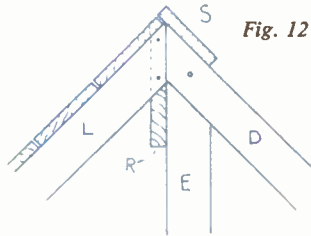


Fig. 12

The front of the hut (window side) can be dealt with next. First, fix the first few boards from the bottom upward. Then nail on the battens on either side of the window. If the glass is to be two sheets 18ins. wide, then the distance apart of the battens must be 36 ⅝ ins. — this allows for the width of the glazing bar.

Window or roof light

Continue the boarding on the left-hand side of the window, and then on the right; then complete, by taking one board right across over the window opening, from (G) to (G).

Incidentally, instead of a window in this position, one could have a light in the roof, but this would be slightly more difficult.

Complete the window opening by attaching a window sill and nailing on strips for the glass to rest in. See Fig. 10 (view from inside).

The roof is finished next. This is straightforward. Remember to overlap the boards beyond the sides and front by a couple of inches or so to shed the rain. An additional drip board can also be added to the sides, as shown. Do not add the roofing felt yet.

There are various ways of making doors for the hut and inside partition. The outside one can easily be made up of

boards as shown in Fig. 11. So also can the inside door, but this could be made alternatively of one piece of asbestos sheeting or thick hardboard on a light frame. Hanging the doors on their hinges should be straightforward.

The glazing should be done next. In the design shown, 12in. by 18in. sheets are used. These are obtainable cheaply at Woolworths, otherwise use horticultural (unpolished) glass, which is also cheaper than first class window glass.

Glazing the roof

Do the roof first, starting from the eaves (B) and working up one section at a time. Bed the glass on putty and lap each sheet over the one below by about ½ in. Use small nails, pins or tacks to secure the glass. No further puttying should be needed if the glass has been well bedded first.

A ventilator in the roof is recommended, and this can easily be made from some spar formed into a frame and hinged to some batten fixed across the glazing bars.

When the glazing is done, complete the roof by attaching a board (S) over the greenhouse side of the ridge (Fig. 12).

Complete the roof by applying roofing felt. Lap it over the ridge of the roof and nail it to the lower edge of the (S) board. It should also overlap the sides of the roof.

Some may wish to paint the woodwork, but a generous doping with creosote is as good as anything.

This completes the building. The weight of the structure is sufficient to hold it down, but where the area is subject to very strong gales, it would be advisable to anchor the hut-greenhouse by means of bolts or iron bars fixed to the base members and embedded in the concrete foundation.



Next week we shall publish more interesting articles on things to make as gifts and in preparation for the coming festive season.

MAKE SURE OF YOUR COPY



ILLUMINATING YOUR MODELS

IT should be realised that to use bulbs, batteries and switches for lighting doll's houses, garages, forts, OO-gauge railway buildings, etc., a simple formula should always be followed. *Bulbs should be connected in parallel and heavy duty batteries used where possible.* If this is kept in mind it is simple to arrange various layouts suiting the number of bulbs and switches to the rooms, etc., that require lighting.

A simple wiring diagram is shown in Fig. 1. The bulbs, which should be 3.5 volt, are connected in parallel and the switch inserted between battery and bulbs (on either side of the battery). To

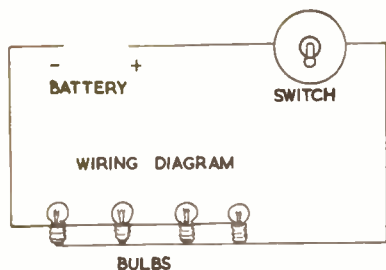
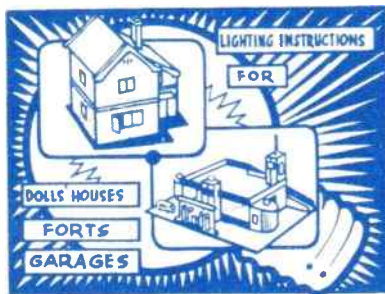


Fig. 1

connect the bulbs in parallel, one wire goes to the base of each bulb and one to the barrel of each. It makes no difference if the plus or minus from the battery goes to the base of the bulb.

Where two or more switches are to be employed, the diagram in Fig. 2 should be followed. Any number of separate circuits may be used but it must be remembered that extra bulbs will decrease the life of the batteries.



The cheapest method of connecting bulbs is to solder the wires in place but this must be carefully done to avoid

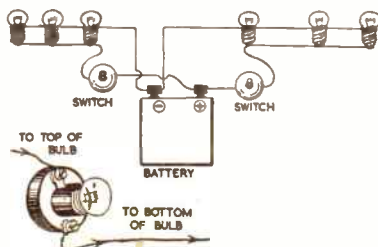


Fig. 2

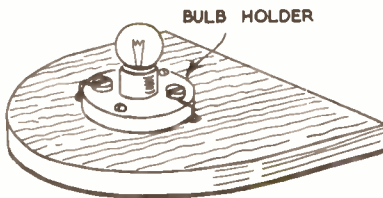


Fig. 3

damage to the bulbs. Alternatively, bulb-holders, as illustrated in Fig. 2, may be used.

If you examine the bulb-holders you will see that the terminals are arranged so that one goes to the top of the bulb and the other to the bottom. Simply unscrew the terminals slightly, place the bared ends of the wire round, and tighten the terminals.

In the case of doll's houses the bulbs can be used as lights only, or may be inserted in fireplaces with suitable coloured paper placed over to imitate the fire. A piece of transparent red toffee paper will do. Paint the 'coals' on with black poster paint.

In garages and service stations the bulbs may illuminate the exterior as well as the interior. Fig. 3 shows how bulbs and holders may be substituted for the ornamental balls on the top of the 'wings'. By using coloured cellophane floodlighting could easily be arranged.

For lighting model railway buildings such as signal boxes, railway station and model houses the same arrangements may be used and it may be convenient to run these from the mains using a suitable transformer tapped at 3.5 volts D.C. On no account must bulbs and switches be connected direct to the mains.

For model railways the miniature 'pea' bulbs are most suitable. These are considerably smaller than ordinary bulbs and the holder is threaded as shown in Fig. 4. This diagram also shows how the connections are made. Each wire is bared at the end before connecting. If you are handy with the soldering iron the wires may be soldered in position.

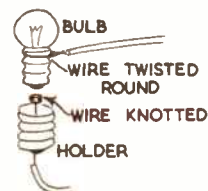
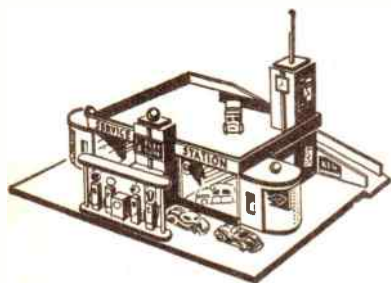
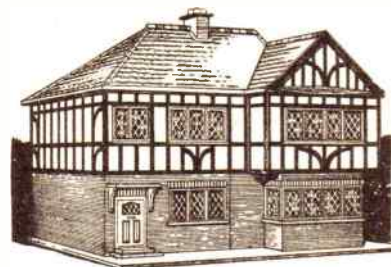


Fig. 4

Electric lighting sets may be obtained from Hobbies Ltd, Dereham, Norfolk. Each set comprises six bulb-holders, two switches, six yards of insulated wire and full instructions, price 8/1d. (post 9d.). Components and bulbs may be purchased separately. (M.h.)



Model garages such as Hobbies No. 3129 lend themselves admirably to the incorporation of electric light. The clock tower, showrooms and pumps, etc., can all be illuminated as described.



Electric lighting for dolls' houses is likewise a desirable addition. The model illustrated is Hobbies No. 237 Special and the refinement can be incorporated in other modelling subjects.

INDOOR GOLF COURSE

YOU probably spent some happy moments on the miniature putting course during your stay at the seaside last summer. Those jolly times you enjoyed playing crazy golf may be recaptured to a great extent during the long dark winter evenings if you try your hand at constructing the indoor putting course here described.

fore, drawn in relation to a base of 2ft. by 2ft.

This base, or ground area, is really a shallow tray with a ply or hardboard bottom. To construct it, cut a 2ft. square of $\frac{1}{2}$ in. plywood or hardboard, and, with 1 in. by $\frac{1}{2}$ in. stripwood, construct the four sides of the tray. Glue and panel pin the sides to the base, mitreing the corners as shown in Fig. 1. The inside measurements of the tray will be 1ft. 11ins. by 1ft. 11ins., and a square of $\frac{1}{2}$ in. plywood should now be cut to these measurements to fit snugly over the base and

own planning, a study of the diagram will serve as a guide to the disposition of the bunkers and other proposed 'hazards'.

Once the course plan has been finalised the nine holes and the various bunkers and other hazards should be cut out, using a fretsaw. This will give a uniform depth of $\frac{1}{2}$ in. to the bunkers, etc, when the overlay has been fixed to the base. Use glue and panel pins for the fixing.

The 'mounds' behind or flanking the bunkers are made with plastic wood or shaped from wood. They need not be very high — an average of $\frac{1}{2}$ in. will be sufficient — and do not forget to make one or two 'mounds' which will 'channel' the ball into a bunker if a stroke is sliced or hooked.

To prevent a ball lodging against the inside edge of the tray, thus probably rendering it difficult to make the next stroke, a small application of plastic wood should be made at the base of the four sides to round off the angle all the way round the tray (see Fig. 3). This will

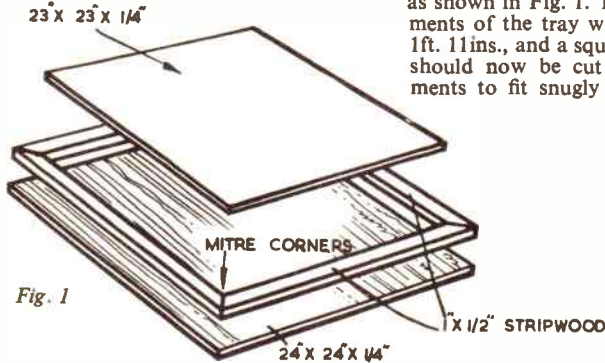
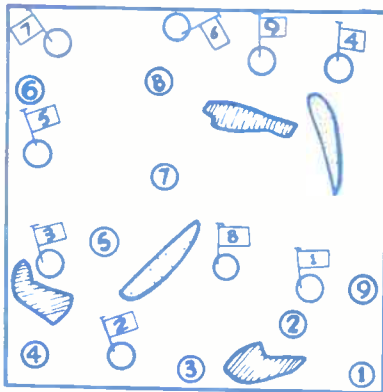


Fig. 1



SUGGESTED LAYOUT FOR THE 23 SQ. FT. COURSE

Fig. 2

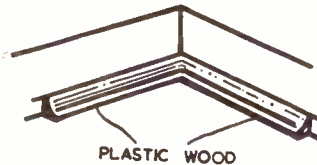


Fig. 3

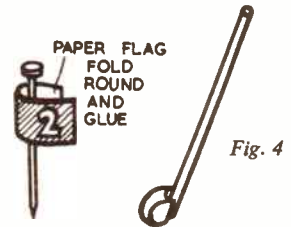


Fig. 4

inside the stripwood sides of the tray. Having cut and test-fitted this plywood overlay, remove it for marking out and preparing the layout of the miniature course.

First mark in pencil on the upper face of the overlay the nine tees and holes it is proposed to make. With the memories of the seaside course to help you don't forget to make the holes of varying length and in various directions. It is quite usual to have the fairway of one hole crossing the fairway of another. As there are 'hazards' to be inserted care must be taken to allow space for these when marking out the course.

A little extra time taken in the preparation of the layout is well spent and space alone will limit the possibilities. Thus, we may merely make a simple yet effective putting game or enlarge the scope to provide a thrilling replica of a nine-hole course. It may be necessary to make several adjustments to the first pencilled plan before a satisfactory course with the requisite bunkers, etc, has been mapped out.

Fig. 2 gives a suggested layout, and, although it is far better to adopt your

naturally cause the ball to roll into play, away from the side of the tray.

Having cleaned up the work with fine glasspaper, the 'course' should be given two coats of matt grass-green paint. The outside of the tray may be painted brown or grey to give contrast.

The inside of each hole can be painted with white hard-gloss paint or enamel to relieve the green uniformity of the course, the inside of the bunkers being given two coats of light stone paint to represent sand.

The nine 'pins' with their flags are now set up. The 'pins' are represented by thin 1 in. nails tapped into the overlay and base from behind each hole. Each flag is cut from a strip of paper twice the length of the flag. Bend the strip in half and fold it around the nail, securing with glue (Fig. 4). The flags should be painted bright red or yellow.

The 'tees', numbered from 1 to 9, are best represented by circular pieces of white card glued to the green base. At

It will require but little skill and only a few simple materials to make, and, by using your imagination, quite an attractive 'sporting' little course can be constructed at negligible cost — a course which will provide most of the thrills and hazards of its big seaside brother.

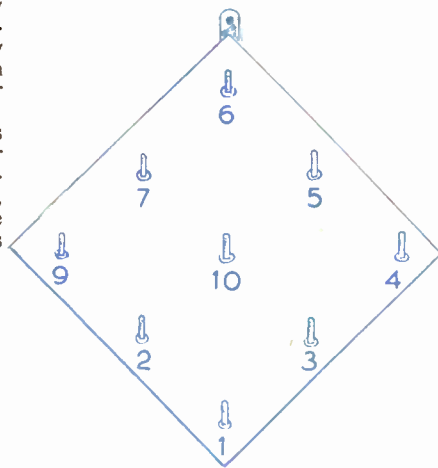
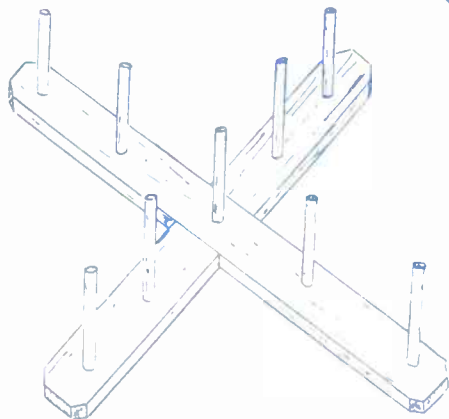
The area of the course is left to individual requirements, but a 4 sq. ft. layout will ensure excellent sport, and the accompanying diagrams are, there-

● Continued on page 153

BOARDS FOR QUILTS

THE game of quilts takes many forms, has been popular throughout the ages, and is still enjoyed by both children and adults. You can make a suitable board for wall, table or floor.

A simple wallboard, as illustrated, is suitable for the indoor game on winter days, being made from a piece of hard-board 1ft. square. Nine large cup hooks, sometimes called dresser hooks, are screwed into the board. A hanger is fixed to the top.



If you propose making a frame for the floor game, e.g., for summer use in the garden, the arms should be 3ft. long, pegs 6ins. long and not less than $\frac{1}{2}$ in. in diameter, for our rings are to be much heavier. The numbers must also be made much larger in order that they may be seen at a distance.

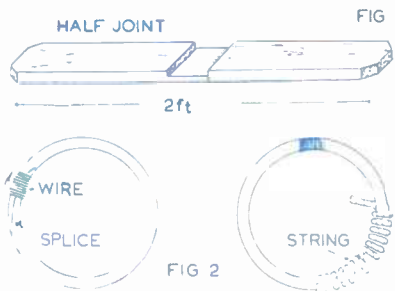
Heavier rings are required out of doors, not only for fighting the throw, but for counteracting any

slight breeze. They may be made from cane as used in basketry work, and should be about 3ins. in diameter. You will require three pieces of cane 10ins. long, tapered to a point at each end for splicing. Make these points about $2\frac{1}{2}$ ins. in length, so that they are gradual, form the cane into a circle, place the ends together, binding with fine wire. Should the cane be too springy, soak in water for a short while, when it will become quite flexible. The cane circle is then bound with thick manilla string or cord, as shown in Fig. 2, or it may be twisted in spiral fashion, finishing off by tucking the end through a few loops on the inside.

The game is simple, and is a matter of throwing the rings on to a board or frame to make the highest score. (S.H.L.)

The board should be painted in a light colour with the numbers in black. If you think you may find the numbering too difficult, cut out some numbers from an old calendar, using that type where the numbers are in squares, then attach to the board with a little glue. There are no particular rules for the numbering of these boards, but it is customary to place the biggest score in the centre. Three rubber rings are required for throwing, and you will find those sold at hardware stores for preserving jars are ideal for the purpose. Alternatively, you may shape some from thin cane as shown in Fig. 2. Mention of these will be made later.

For table games, it is better to make a larger frame in the form of a cross, half jointed in the centre as shown in Fig. 1. Dowel rods 4ins. long are used for the pegs. Use $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. wood battens, each 2ft. long, jointed, and trimmed at the ends. The two pieces may be glued together at the joint for a permanent frame, or you may leave the joints and pegs free for easy dismantling and storage. Use $\frac{3}{4}$ in. or $\frac{1}{2}$ in. dowelling for the pegs with holes drilled as shown, and numbered as with the wallboard.



● Continued from page 152

Indoor Golf Course

the side of each numbered 'tee' make a small indent with the end of a punch—to hold the ball steady before 'driving off'.

If it is desired to elaborate, and provided one possesses the requisite artistic skill, much more can be done in the matter of building up in plastic wood or other materials which may suggest themselves, to simulate gorse, trees, bushes, etc — in fact, there is no limit to the possibilities of this project, if one is prepared to make his course much larger than the suggested 4 sq. ft. layout.

Having completed our course, we shall require a ball and a club or clubs.

A metal ball-bearing will be found to serve excellently for the former, and the latter can be made from $\frac{1}{2}$ in. and $\frac{1}{4}$ in. dowel rods as shown in Fig. 4.

The rules of the game are simple. The ball is placed in the 'tee' depression and tapped forward towards the relative hole. Each tap of the ball counts as a

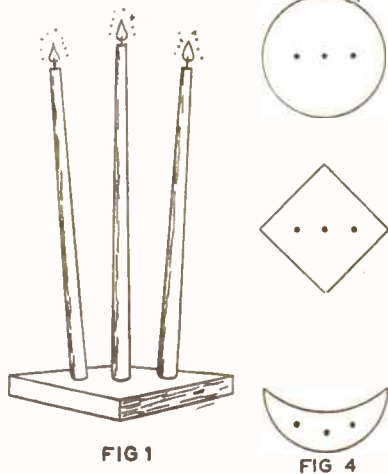
stroke and the player doing the nine holes in the shortest number of strokes is the winner. When a ball drops in a bunker it is taken out by hand and played from the nearest edge, one stroke being added to the player's total. Other 'hazards', such as a small pond or even a stream cutting across the fairway can be made to cause the forfeit of two or more strokes — such refinements of the rules are best left to the individual — in fact, one can go further and have a pocket for 'lost ball' which may carry heavy penalty. The players will toss for turn and each will play all nine holes before the next player on the list.

This, like the real thing, is a game which can be played solo. It may well prove quite excellent sport to set up for one's self a respectable 'bogey' for the little course, leaving every visitor something to 'go at' either on his own or in match play. (P.P.)

PLASTER CANDLE HOLDERS

TALL, slim candles in gay colours form a popular table decoration particularly at parties and at the Christmas season, for, being non-drip, they may be tilted at an angle. They require some kind of holder if they are to stand close together and Fig. 1 shows a simple arrangement using a diamond-shaped plaster cast. Basic instructions for moulding simple table candle holders in plaster of Paris are given below but it should be noted that colour, plus a little decoration, will make all the difference to the finished article.

Fig. 4 shows three other designs, a circle which will hold five candles quite comfortably, a square with the candles arranged diagonally, and a crescent. The two former are most suitable for centre pieces while the latter, like the



diamond shape, is best used at each end of the table when pairs are required.

The first task is to select the shape, marking out on a piece of 1in. shelving. For the diamond shape shown, a piece measuring 2½ins. by 5ins. is used, the position of a central hole marked and others at each side each ½ins. distant. Other shapes should be in similar proportions. In this case the candles are in a straight line down the centre, but some modification is necessary for the crescent as will be seen.

Next comes the preparation of the mould and before cutting out the shape it is advisable to drill the small block of wood for ½in. dowel rods — this is the size of this type of candle. The central candle — and incidentally the dowel rod — must be vertical, but the others should be fitted at an angle of approximately

85°. To overcome drilling difficulties and to ensure equal angles, the best way is to prepare a thin wedge as shown in Fig. 2. This is placed underneath the block so that when the drill is held in the normal position the bore will be at 85°. To achieve correct balance first place the wedge under the block, test the angle by holding a piece of dowel rod in position and then making a pencil guide line on the wedge where it meets the underside of the wood block. Remember that the further the wedge is pushed under the block the greater the angle and vice versa.

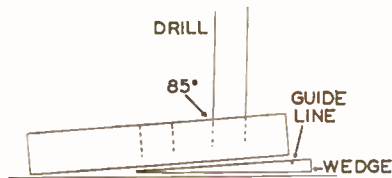


FIG 2

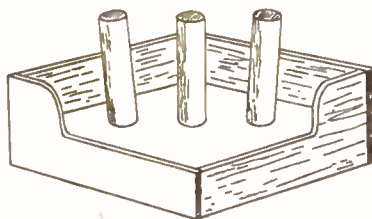


FIG 3

After drilling the first hole the wedge is placed at the other end of the block with the guide line fitted to the edge, when vertical drilling will produce a hole at the same angle as the other. You may then test the three holes by inserting temporary pegs. It should be noted that we do not require the same tight fit as when making a joint for after casting the pegs are removed.

After drilling has been completed you may cut out the block to the required shape, proceeding to the making of the mould.

In Fig. 3 we see a section of the diamond shaped mould ready for casting a candle holder. The three dowel rods are each 3ins. long, standing above the level of the mould for easy extraction, while the outside allows for a depth of ½ins., consisting of stout cardboard or strips

of plywood nailed to the block of wood. You will also find the cardboard suitable for circular or crescent shapes provided it is quite pliable.

The foregoing instructions will produce a plain casting but it is quite easy to modify if you prefer additional decorations. For example, you may like to add a holly leaf here and there, and this can be achieved by cutting out a stencil to match the shape as in Fig. 5, with apertures according to the pattern. You will also have to make holes in the stencil for slotting over the pegs. When the plaster has been placed in the mould the stencil is slipped over the pegs and pressed on to the plaster surface just before this is setting when the leaf shape will appear in relief. Any irregularities in the surface can be removed later by knife or glasspaper.

The prepared mould is first greased on the inside with petroleum jelly and you should see that the dowel rods are also given a thorough application, not only to prevent too rapid moisture absorption but also to ensure easy removal of the casting.

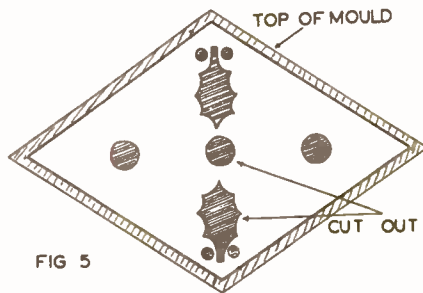


FIG 5

A mixture of water and plaster of Paris as used for the popular craft of casting toys and figurines, is well stirred to remove lumps and poured into the greased mould. Tap the mould gently on the table top to remove air bubbles and lay aside to set. If you decide to add a relief decoration the stencil should be ready greased and laid on top of the mould before the plaster has time to set hard.

Thorough drying does not take long so you should not be in too great a hurry to remove the casting from its mould. First remove the pegs by a gentle screwing action rather than by pulling, placing two fingers on the casting with the peg between. When all the pegs have been removed the mould is held upside down on one hand and tapped on the back.

● Continued on page 156



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Greece is 200 miles long by 165 miles broad, and, including all the islands which belong to it, its area is about 20,000 square miles. The country is almost entirely mountainous, the mountain ranges being a continuation of Mount Pindus in Turkey. Important

peaks (calling them by their old classical names) include Taygetus, Parnassus, Helicon and Hymettus.

The rivers are small, and for the most part have a lively habit of disappearing underground during part of their course, as if ashamed of their insignificance. During summer many of them, in



● Continued from page 154

Plaster Candle Holders

Replacement of the pegs and re-greasing makes the mould ready for another casting.

The plain white cast can now be glasspapered if necessary and it will improve the appearance considerably if the edges are rounded off a little.

Finish the casting in any desired colour and you will find poster colours good for this purpose or the special paints sold for the purpose. If produced for the Christmas festivities, red and green are seasonable, or you may have decided to include the holly leaf complete with berries. Colours for these are decided,

despair, give up existence altogether, and become perfectly dry.

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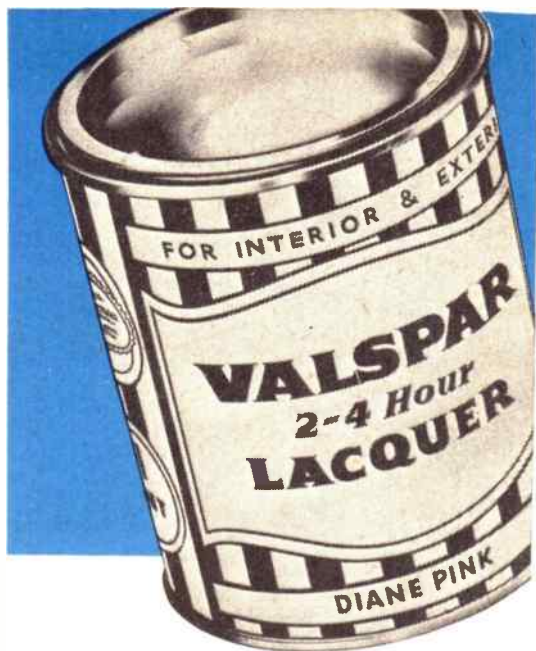
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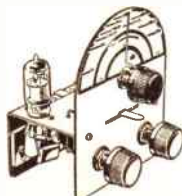
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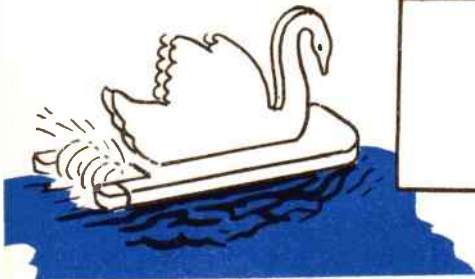
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A toy for the bath-tub

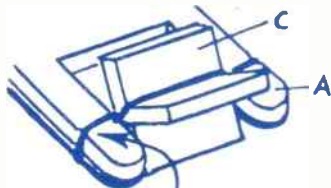
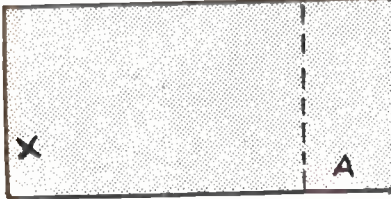
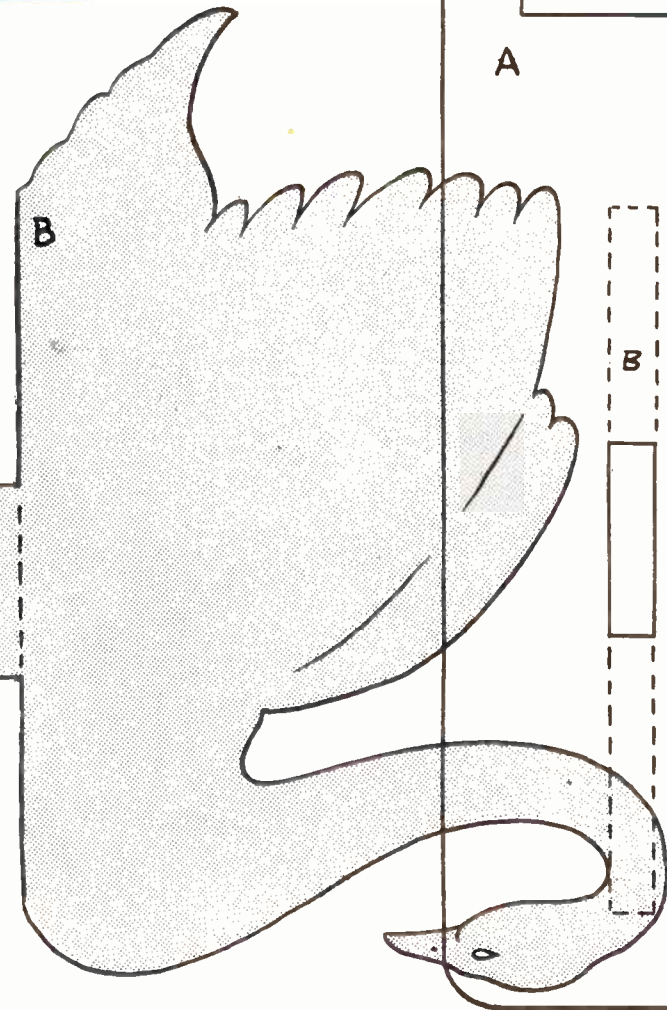
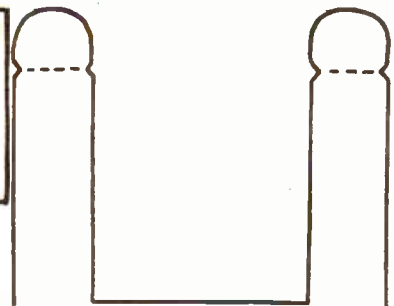
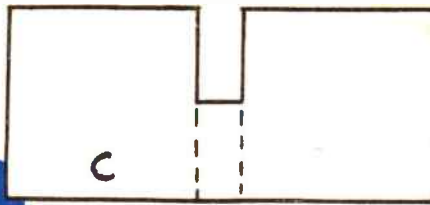
THE SWIMMING SWAN



AS a toy suitable for 'bath night' this working model swan can be made up from odd pieces of fretwood. Piece (A) is $\frac{1}{2}$ in. thick, (B) $\frac{1}{4}$ in. thick and pieces (C) $\frac{1}{8}$ in. Cut one each of (A) and (B) and two of (C). Pieces (C) are slotted together to form the paddle and piece (B), the swan, is pushed into the slot in (A). Add a weight at (X) to make the model more stable; a piece of lead, an old hinge, or even a nut will answer the purpose.

Paint the model with two or three coats of plastic enamel, and then fix the paddle in position with a rubber band as shown in the detail.

Give the paddle a few turns, winding up the elastic band, and release in the water. The impetus given by the paddle will cause the model to glide a considerable distance. (M.p.)



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BLUE NOSE SCHOONER
25/- Length 15½"



B36 CONVAIR BOMBER
4/11. Length 6½"



PB4Y CATALINA
19/11. Length 10¼"

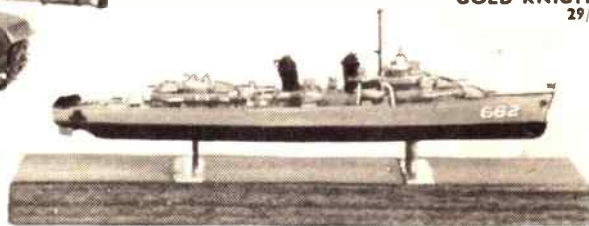


LOCKHEED F104 "STARFIGHTER"
2/6. Length 7"



**"GENERAL PATTON"
TANK 9/11**
Length 5½"

GOLD KNIGHT
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**DESTROYER
U.S.S. BENNION 7/6**
Length 8½"



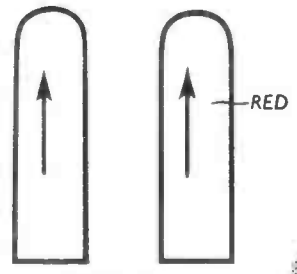
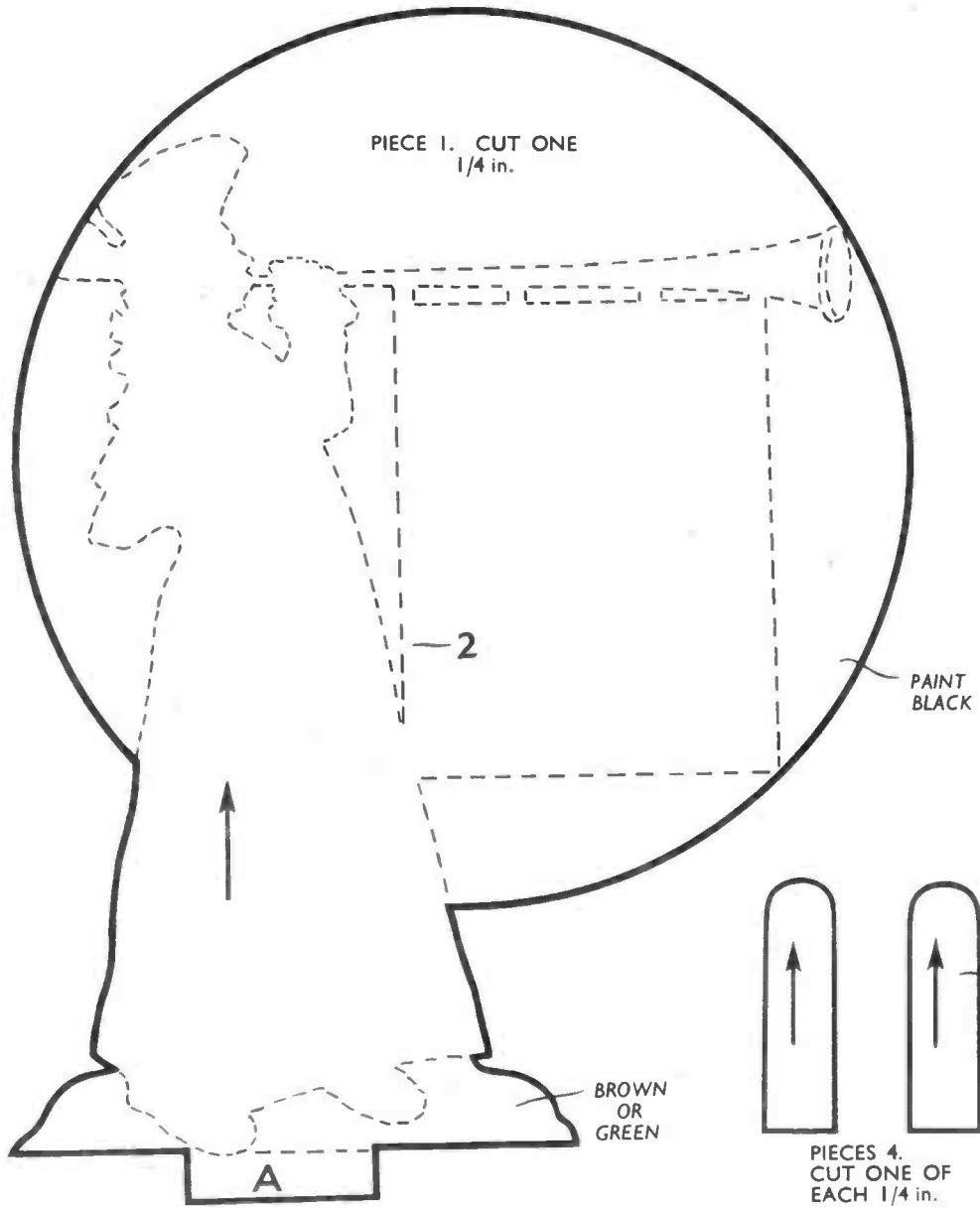
**CHINESE
MANDARIN**
8/11
Height 9"



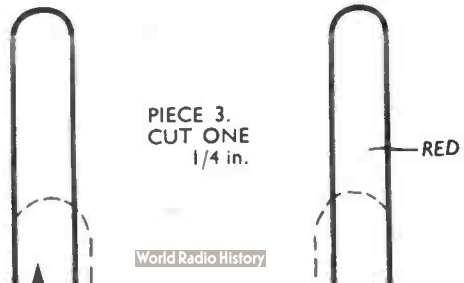
INDIAN CHIEF
8/11. Height 10"



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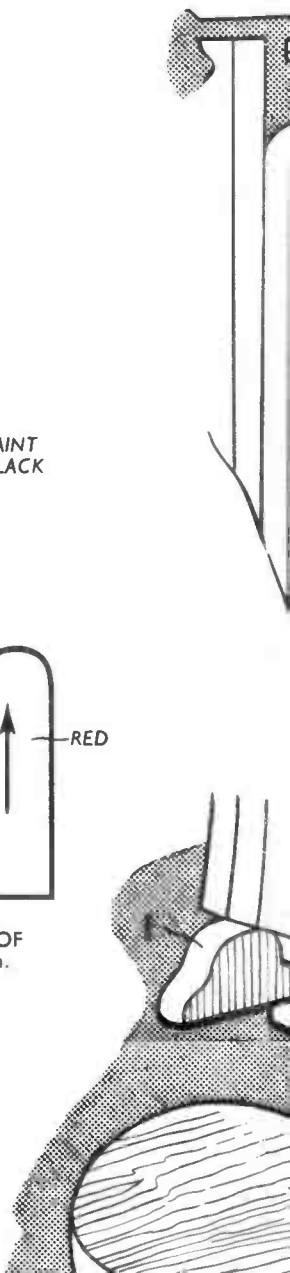


PIECES 4.
CUT ONE OF
EACH 1/4 in.



PIECE 3.
CUT ONE
1/4 in.

SKET
CAL

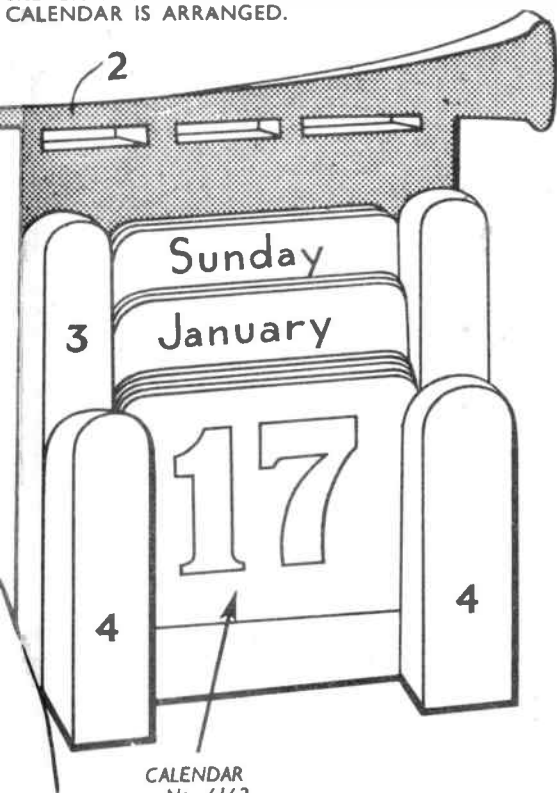




DESIGN

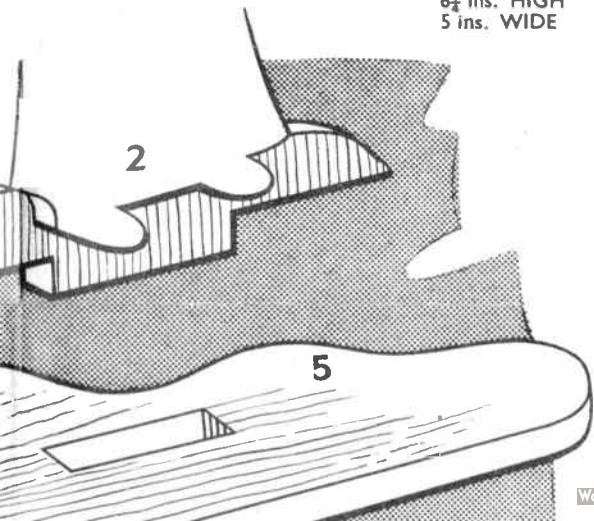
No. 3292

SKETCH SHOWING HOW CALENDAR IS ARRANGED.



CALENDAR No. 6162

SIZE
6 1/4 ins. HIGH
5 ins. WIDE



PERPETUAL CALENDAR



PANELS OF WOOD REQUIRED FOR THIS DESIGN

ONE Q4

A KIT OF MATERIALS FOR MAKING THIS DESIGN IS SUPPLIED BY HOBBIES LIMITED, DEREHAM, NORFOLK. PRICE ON APPLICATION.



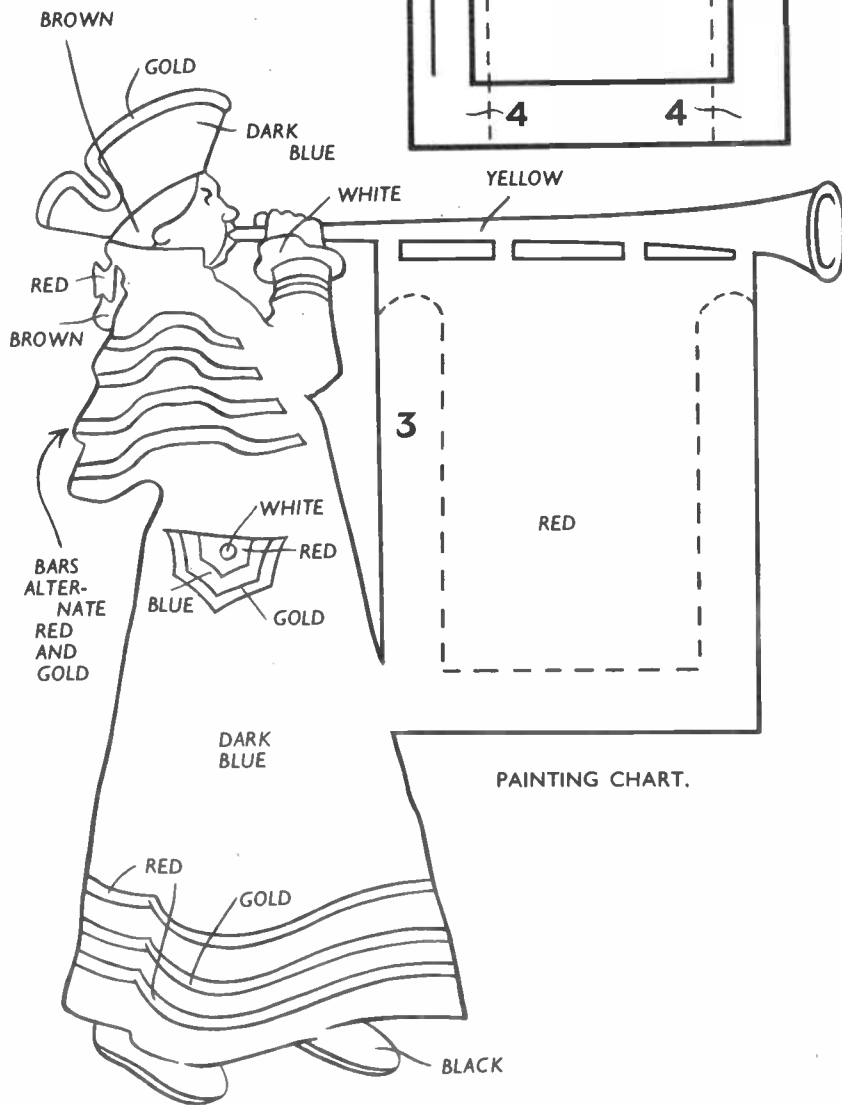
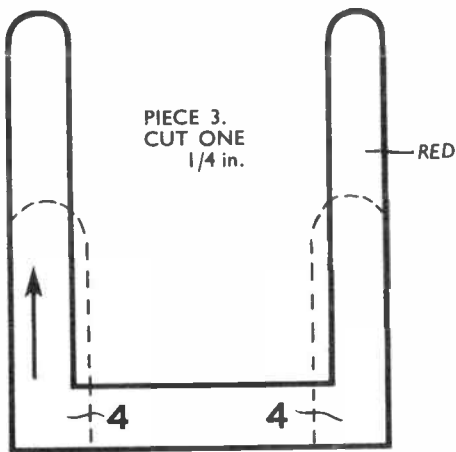
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PIECES 4.
CUT ONE OF
EACH 1/4 in.



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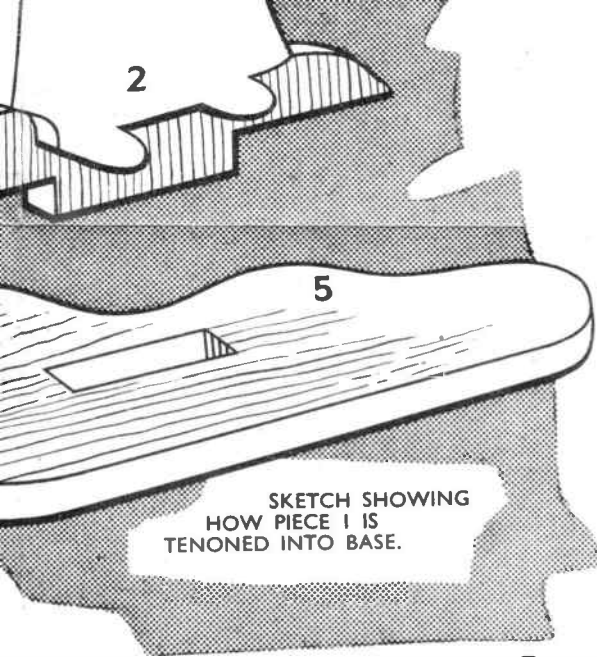


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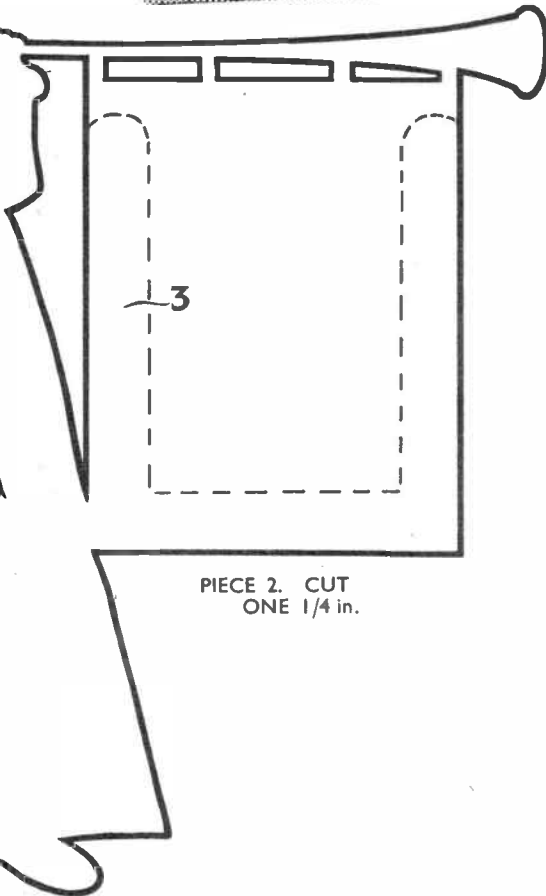
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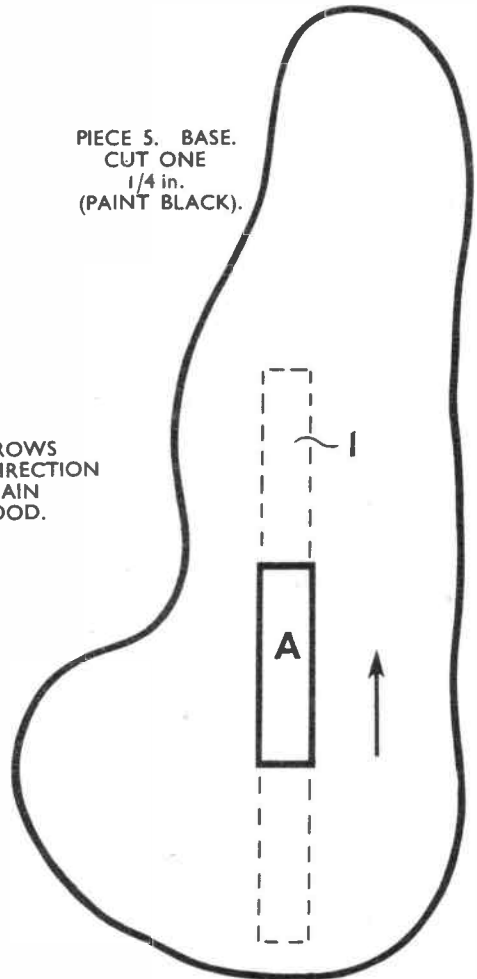
SKETCH SHOWING
HOW PIECE 1 IS
TENONED INTO BASE.



PIECE 2. CUT
ONE 1/4 in.

PIECE 5. BASE.
CUT ONE
1/4 in.
(PAINT BLACK).

THE ARROWS
INDICATE DIRECTION
OF GRAIN
OF WOOD.



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