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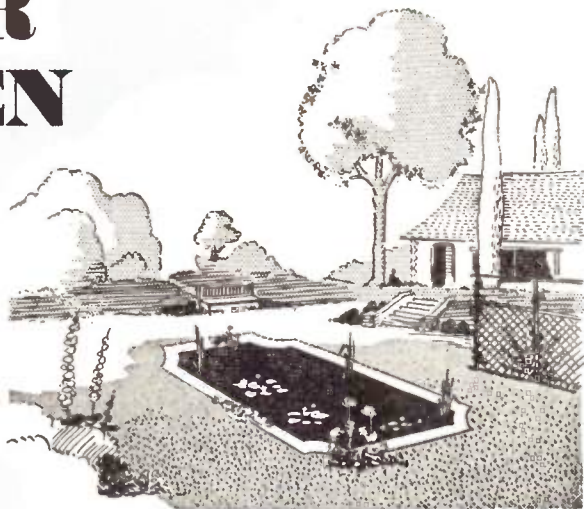
A POOL FOR THE GARDEN

FEW features are so pleasing as a garden pool well stocked with aquatic plants and fish. Merely to sit by the edge of a formal pool of clear water is an attraction to the garden.

The charm of water cannot be truly appreciated unless it reflects the sunlight so the site should be away from overhanging trees. Apart from this the leaves would be troublesome during the autumn months, necessitating frequent cleaning of the pool.

There are unlimited shapes of pool to choose from and in Fig. 1 are shown a few suggestions for the formal layout. The size may be 3 or 4ft. long for the small garden or up to 15 ft. for the larger garden. If your garden possesses a stream or spring, you should make the pool of irregular shape, preferably with the stream forming a cascade at one end. With the informal pool there is a greater scope for lavish planting along the edges and surrounds.

After choosing the site, the shape must be marked out and excavated to the required depth. Allow for a wall and floor thickness of about 4ins. on a 6ft. long pool, increasing this for a larger pool.



For fish fry and aquatic plants, leave a shallow ledge round the top as shown in Fig. 2. About 4 to 6ins. will be sufficient. The floor of the pool should slope from about 2ft 6ins. to 1ft. 3ins. at the shallow end.

The floor is completed first and the mix should be one of cement, two o sand and three of shingle. The depth can be ensured by driving in pegs at intervals. They should protrude about 4ins. and

are removed as cementing proceeds. Allow an hour or two for the cement to harden and then roughen the edges where the walls will come. This will help to key the walls when they are commenced. The floor will harden in about five days, during which time preparation is made for the walls.

In formal pools the walls should be 'poured' with cement, and framing must be provided as indicated in Fig. 3. Get

everything ready — framing — tools, cement, sand, etc., and try to enlist help so that all walls can be completed in one day. This will ensure that there are no bonds to make between different cement mixes.

To ensure a watertight bond between floor and walls, paint the roughened edges, where the walls will come, with a mixture of sand and cement watered down to a paint-like consistency. Use equal parts of cement and sand for this mix.

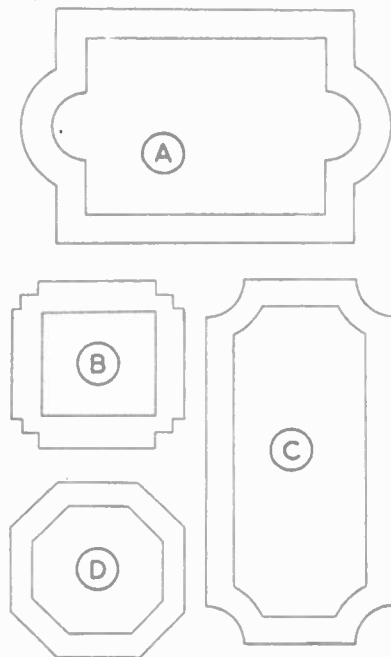


Fig. 1

After the framework is in position, the cement is mixed to a consistency which will pour from a bucket. Start at one corner and work round and round the pool, consolidating by ramming with a piece of timber of suitable size. Cover with damp sacks to allow the concrete to dry slowly and carefully remove the framework after about a week.

The shallow ledge is now finished off and after a few days the pool is almost filled with water to prevent the concrete drying out too quickly. The edges of the pool are covered with slabs of concrete as shown in Fig. 4. These slabs are cast in frames made from odd pieces of timber and when dry are laid in position. They should overhang the edge as shown.

Before plants or fish are put into the water the effects of the cement must be neutralized. Proprietary preparations can be bought for this purpose, but it is wise to wait as long as possible before planting and stocking.

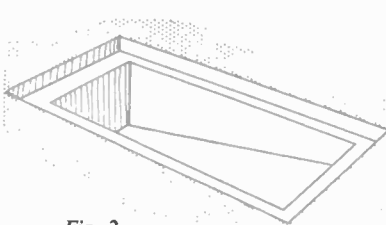


Fig. 2

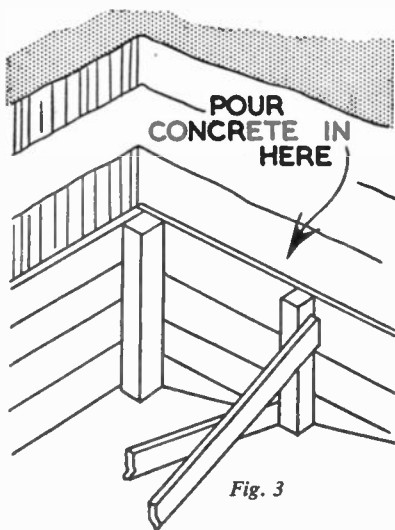


Fig. 3

The informal pool does not conform to a set pattern. It does not require framework, the cement being spread on to the sides of an excavated hole with a trowel to a depth of about 3 or 4 ins. As work progresses the cement is covered with newspapers and wet sacks to prevent drying out too quickly.

The excavation should be saucer shaped and irregular around the sides. Two or three deeper holes may be provided for the fish and water lilies. Allow the water to seep over the edges of the

SLAB OVERHANGING

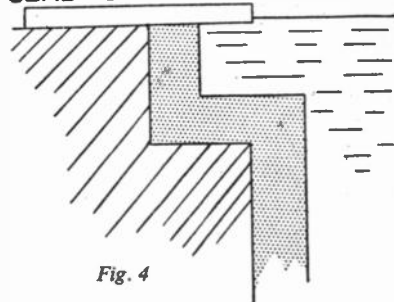


Fig. 4

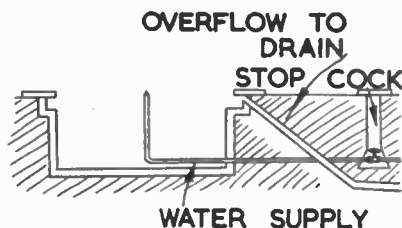


Fig. 5

informal pool so that there is a margin of moist soil for planting bog plants. Suggestions for suitable plants and methods of planting will be given in a future edition of *Hobbies Weekly*.

Details are given in Fig. 5 for a water supply if a fountain is required. The pipe should be laid before the floor is cemented and should be provided with a stop cock. An overflow pipe may be led away from the top to an existing drain or a soak-away.

Pools may be emptied for cleaning by means of an ordinary garden hose. Put the whole of the hose into the water, allowing it to fill. Place the thumb on one end so that the water does not run out and then place this end in the nearest drain. With the other end remaining in the pool the water will now siphon away. (M.h.)

Continued from page 307

Adding Power to Lenses

measure accurately, stop down the lens and see that the focusing is properly adjusted.

You will be surprised how near you can approach and the difference in your pictures, so you are recommended to buy one only at first, probably the 1 diopter for close-up portraits, acquiring the others later when you have learned the correct technique.

The following measurements give the distances in inches at which the subject will be sharp with the normal camera

lens set to the focusing distances indicated when the different strengths are used.

Focusing distances with positive supplementary lenses

	Distance in focus with camera lens					
	6 ft.	8 ft.	10 ft.	15 ft.	25 ft.	Infinity
1 Diopter	25½"	28"	29½"	32½"	34½"	39½"
2 Diopter	15½"	16½"	17"	17½"	18½"	19½"
3 Diopter	11"	11½"	11½"	12½"	12½"	13"

ADDING POWER TO LENSES

ALTHOUGH a number of modern cameras are exceptionally versatile and can be successfully used for many types of pictures, few provide the means for taking close-up or ultra close-up shots. It should be remembered that the instruments are designed to cater for the average user who takes mainly pictorial scenes or full length snapshots, the nearest approach being about five feet. When we wish to photograph the subject from about one foot we must seek the aid of supplementary lenses.

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*By S. H. Longbottom*  
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The use of these supplementary lenses introduces new fields of photography and not only can we take pictures of flowers, butterflies, collections and similar small objects, but we can also copy other photographs, pictures, drawings, music and what you will. These lenses cost only a few shillings and their prices have been reduced by the recent decrease in purchase tax. They are made in a variety of strengths and in various sizes to fit all cameras. The makers provide a chart with each lens giving details of focusing and the strengths, although termed 1, 2 and 3, actually refer to the power of the lens expressed in diopters. With the camera focused on infinity a 1 diopter lens allows the camera to approach the subject from 39 inches; with a 2 diopter lens and the same focusing the distance is reduced to 19ins., while with the 3 diopter lens we can approach our subject from 13ins. In each case, an alteration of the focusing will allow even nearer approach to the subject and the accompanying scale gives some indication.

It will be realised that a 1 diopter lens is most useful for taking close-up portraits, and for this reason is sometimes called a portrait lens, while the stronger powers are more suitable for smaller objects, or for copying.

There are one or two important points to observe when using these supplementary lenses, and these will now be mentioned. It is highly important that the distance from the subject to the supplementary lens is accurate and the only way to achieve this is by measuring, just as they do in a cinema studio. A steel spring tape will be found eminently suitable and should be carried in the pocket for all outdoor work, but we

must emphasise that the distance is from the object to the supplementary lens itself. You must also see that the focusing is properly adjusted.

As we get nearer to our subjects we find that the 'depth of field' diminishes, that is, the range in which all subjects

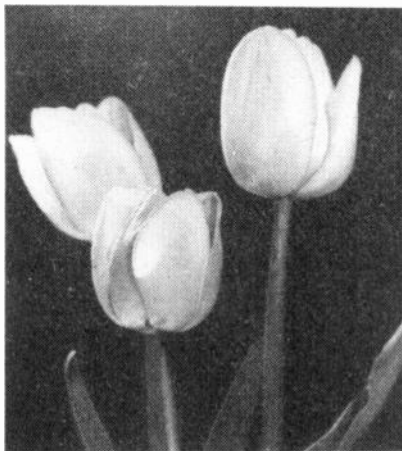


Fig. 1—A 2 diopter lens was used for taking these tulips

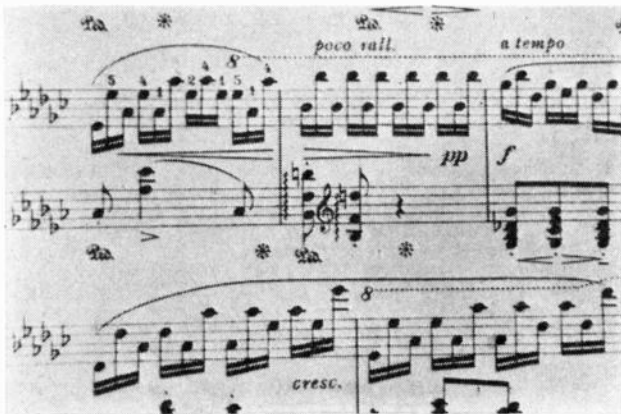
remain in sharp definition. When copying a picture or similar object it will be realised that there is no depth of field to

perhaps $f/16$, or $f/22$, increasing the exposure accordingly. In any event, it is unwise to use a stop larger than $f/8$ with a supplementary lens or there may be some failure of definition at the edges of the picture.

This difficulty arises mainly with the higher powered supplementary lenses and is not quite so noticeable when using the 1 diopter lens. In such cases you will find it advisable to take your measurement from the tip of the nose to the lens, and it is not much use trying to guess the distance if you want perfect pictures.

Another factor which we cannot ignore is the question of parallax. When taking close-up pictures it becomes impossible to use the viewfinder in the normal manner since this must, of necessity, accept the scene in an entirely different position from the lens. The viewfinder may be either to one side of the lens or a little higher, and although the distance may not appear great it is a factor requiring consideration. Probably the best way is to use your own good judgment, adjusting the position of the camera so that the lens is pointing directly at your subject. You can also test with short rods, or the tape, held near the lens and parallel with the camera body, but the following will give some idea of the area covered with the three different powers.

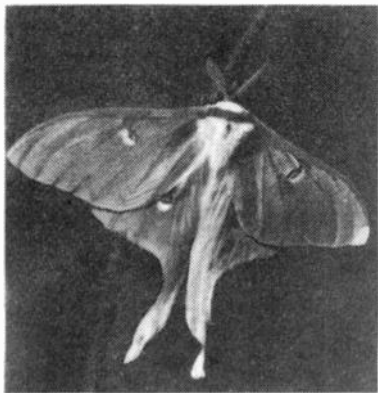
Fig. 2—This fragment of music was copied with the aid of a 3 diopter supplementary lens.



consider and our problem is confined to simple measurement. Where a flower study is the object the various blooms may be in slightly different planes and here you should endeavour to arrange them so that the field is as shallow as possible. We can, however, eliminate this difficulty to some extent by stopping down the lens to a small aperture,

With the focusing mount set at infinity the 1 diopter lens being 39 $\frac{1}{2}$ ins. from the subject the field covered measures 16 $\frac{1}{2}$ ins. by 24 $\frac{1}{2}$ ins.; with the 2 diopter lens the field covered is 8 $\frac{1}{2}$ ins. by 12 $\frac{1}{2}$ ins.; and with the 3 diopter lens the area is 4 $\frac{1}{2}$ ins. by 6 $\frac{1}{2}$ ins. All you have to remember when using these lenses is to

● Continued on page 306



The Moon Moth

THE question of whether to leave your moth cocoons *in situ* until the moths emerge, or whether to remove them to other quarters, must depend on the circumstances. If the cage is required for other caterpillars then clearly the cocoons must be removed. The method of doing this depends on the species being bred, for each has its own method of anchoring to cage wall or food plant.

Do not forget, however, that after your caterpillars have made their cocoons at least a fortnight must be allowed to pass in order to give the caterpillar time to change into a pupa inside the cocoon and to harden up its pupal skin which is very soft when first formed.

Those cocoons that are attached to the cage should be grasped firmly at one end, taking care not to pinch the pupa inside, and pulled gently. In the majority of cases they will come free quite easily. Some, the Brazilian Bullseye for instance, will be found so firmly fixed that it is impossible to pull them free without tearing the cocoon open. Pupae taken out of their cocoons rarely produce moths so it is best to leave these cocoons in the cage until the moths have emerged. In general you will find that these difficult cocoons are out of the way in the corners of the cage which may still be used for other caterpillars until such time as the first start to produce moths.

In common with many other species, however, the Brazilian Bullseye mostly makes its cocoons amongst the leaves of the food plant and for these it is only necessary to cut away the dead stems and brush off debris to get the cocoons free.

The Atlas moth and its allies make a cocoon which is suspended on a silken stalk. These are simply cut off with scissors keeping as long a length of the stalk as possible.

Species that pupate in the soil are best

Moth rearing

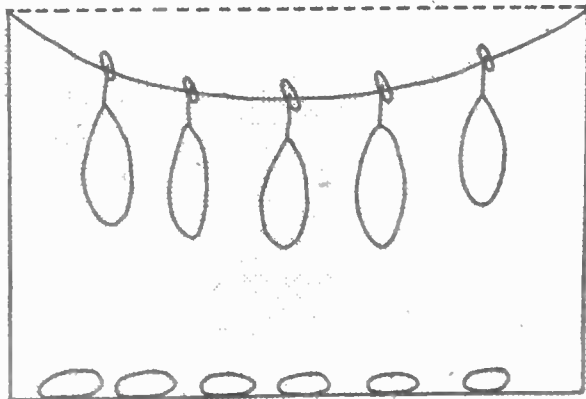
LOOKING AFTER THE COCOONS

left. They make such a flimsy cocoon that it is impossible to dig them up without breaking it. Again, it will not hurt to breed another lot of caterpillars in the cage until the moths start to emerge. Should it be necessary to disturb them, they should be picked up carefully (a teaspoon is useful for this) and put into a box on a layer of slightly damp peat. A further layer of about $\frac{1}{2}$ in. of damp peat is then placed on top. Regular attention must be given to ensure that they remain slightly damp by sprinkling with water from time to time.

for the proper emergence of the moths. Lying on the bottom of a box is not suitable for them and so the best treatment is to clip them onto a piece of string with paper clips. The string can then be suspended across the inside of the cocoon box so that the cocoons hang free in the middle.

Some silk moths produce only one generation a year; others two or more. Most pass the winter as cocoons; a few as eggs. The Eri silk moth is continuously brooded and since it feeds on an evergreen, privet, can be bred throughout

A
cocoon
box



The peat should be only slightly damp as if you allow it to become soggy by adding too much water growths of mould will occur which will kill your pupae.

In the absence of a spare cage the best storage receptacle for your cocoons is a cardboard or wooden box. This should be of such a size that the cocoons are not too crowded in it and the depth should be sufficient to allow plenty of room for the emerging moths to crawl up and expand their wings. There is no need to have separate boxes for different species and all your cocoons may safely be stored for the winter in one box. It is a good plan to cover the top of the box with muslin, which may be tied on with string. This allows light and air to enter as well as making it easier to keep a watchful eye on them.

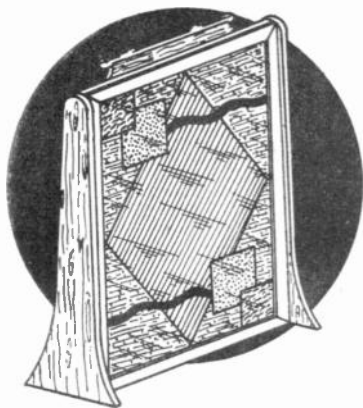
Those species like the Atlas and Tussore moths which hang their cocoons on a silken stalk seem to need this stalk

the year.

To deal with the summer cocoons first. These present no difficulty. Just keep an eye on them in order to catch the moths as they emerge. You should see that they are kept warm but not exposed to sunlight as this will cause them to dry up and die.

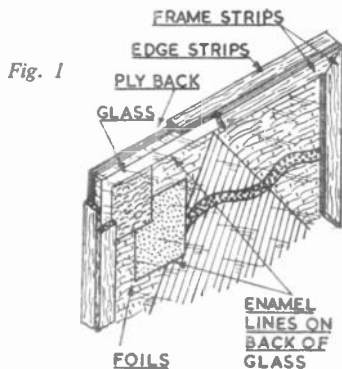
The overwintering cocoons need a certain amount of special care. The first essential is to remember that the majority need to be kept free of frost. They must not, however, be kept so warm that the moths start to emerge too early in the year before their food plants are in leaf. A cellar is ideal, but failing this, the larder floor or an understairs cupboard (provided it is against an outside wall and is not heated) will be suitable. If you have to keep them outside in a shed or greenhouse, then the box of cocoons should be covered with several layers of sacking when frost is expected. This will

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THE appeal of tin foil work in a geometric pattern is high-lighted in this easy-to-make screen.

A piece of window glass measuring approximately 28ins. by 20ins. is required to provide a working surface for the foils. On one side of the glass the pattern desired is neatly outlined with black enamel lines about $\frac{1}{4}$ in. wide. It is not



important, of course, that the design illustrated is copied exactly for here there is plenty of scope for original work.

For satisfactory results it is best to draw the pattern, initially, on a sheet of brown paper the same size as the glass. This is then fixed temporarily to the glass with spring pegs or large spring paper clips and acts as a guide when you draw the enamel lines. To ensure that these lines are straight and free from wavy edges fix two strips of masking tape, which is similar to sticking plaster and is obtainable from craft and photographic stores, on the face of the glass $\frac{1}{4}$ in. apart in the appropriate places. With this method you can apply the enamel quite freely, removing the tape only when the enamel is almost set.

At this stage the foils are introduced. As these are likely to be required in

In glistening tin foil

A COLOURFUL FIRESCREEN

rather large areas it is suggested that a small selection of foil sheets is purchased from a good craft stores. Both the rough-finished variety and the smooth types are obtainable in various colours and patterns at about sixpence per sheet measuring 18ins. square.

Cut pieces to cover *roughly* the areas required and, dealing with one piece at a time, press them gently and smoothly into place over the 'tacky' enamel lines, *with the pattern facing the lines*. Then trim each area neatly with a razor blade to the outside edges of the black lines,

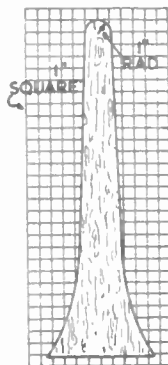


Fig. 2

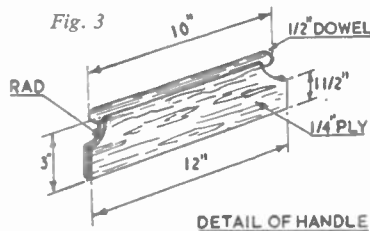
As you progress it may be necessary, particularly towards the end of the work, to fix the final foils with clear paste applied to the back of the foils already in place as most of the enamel lines will

be already covered. Finally glue a piece of thick card over the back of the foils.

Framing of the glass is made clear in Fig. 1. The glass and card are backed by a piece of $\frac{1}{4}$ in. ply or other flat, hard timber. This is held in place by the frame which consists of $\frac{1}{4}$ in. ply 'frame' and 'edge' strips cut neatly to size and chamfered. These strips are glued together and the resulting mitred angles are glued and panel pinned to the ply backing.

Cut the legs of the screen, Fig. 2, from $\frac{1}{4}$ in. deal or ply and glue and screw them to the edges of the screen. Fill all screw holes with plastic wood and sand smooth.

Make the handle as shown in Fig. 3.



The $\frac{1}{4}$ in. dowel is rounded at both ends and is glued into a chiselled groove in the $\frac{1}{4}$ in. ply plate. Glue and screw the assembly to the screen back.

Finish off either by enamelling the surrounding woodwork in colours to match the foils or by staining and polishing. (G.A.)

●Continued from page 308

Looking after Cocoons

protect them from all but severe and prolonged frost and when this occurs you will be wise to bring them inside, but not into warmth, until the weather turns milder again.

In early spring it is a good plan to sprinkle your cocoons with a little water. Many tropical moths are induced to emerge, not by a rise in temperature as are English moths, but by the humid conditions produced by the monsoon rains. There is also the fact that by being kept away from the effects of weather they tend to get rather dry and this makes it difficult for the moth to force its way out.

Species that overwinter as eggs are easy to deal with. These mostly come from Japan where they are normally subjected to frost in winter and the eggs

of such species should simply be kept outside in a pillbox with a piece of muslin held on with a rubber band in place of the lid. Frost seems to be required by these species to ensure the normal hatching in spring, but you should take care not to leave them exposed to the sun as this will cause them to become over-heated and dry them up.

Finally, wherever you may decide to keep your cocoons for the winter, take a regular look at them. Mice are rather fond of nice moth cocoons and out of a batch of several dozen or more there are always the odd few moths that emerge out of season in the middle of winter. These can be kept and mounted for display. (B.G.)

SYMBOLS IN CIRCUITS

BEGINNERS are often puzzled by the symbols which are used in circuits, but in actual fact these are easily understood. Many are a simplified representation of the actual components, and are at once clear. If a little time is spent comparing a theoretical circuit with an actual wiring plan of the same receiver, skill in reading such circuits will soon be gained.

Various switches are used, and their symbols appear in Fig. 1. The simple 'on-off' switch is used to complete any one circuit, as for filament switching. The 3-way switch has a moving contact, represented by the arrow, which can be turned to touch any one of the three fixed contacts. Such switches may have 2, 3, 4, 5, or more positions, and a 5-way switch is also shown. They are often used for wavechange switching. For ex-

Ohms by the symbol shown (250 Ohms). With complicated circuits, resistors may be numbered R1, R2, R3, etc., and values listed elsewhere, to save space. High values may be marked 'K', which means 'Thousands of Ohms', so that

By F. G. Rayer

50K would be 50,000 Ohms. Very high values are marked in Megohms, usually by 'M' and the Ohms symbol, as shown. The value of 1 Megohm would be 1,000K, or 1,000,000 Ohms.

Variable resistors have an arrow drawn as shown. The potentiometer is a form of variable resistor in which a moving contact, represented by the

arrow, travels along the resistance element. It will thus have 3 tags — one for the slider, and two for the resistance element. Such components are often used as volume controls. An on-off switch is often incorporated, snapping into the off position when the control knob is turned to zero volume.

Condensers

These appear in Fig. 2. Fixed condensers usually have the value marked on them, e.g., .0001uF, or .0001mfd, this being a contraction for .0001 microfarads. Very small values may be marked 'pF' and 100pF equals .0001uF.

Variable condensers, such as are used for tuning and reaction, have an arrow, as shown. The differential condenser is sometimes used for reaction, and has two sets of fixed plates, and 3 tags or terminals, instead of 2.

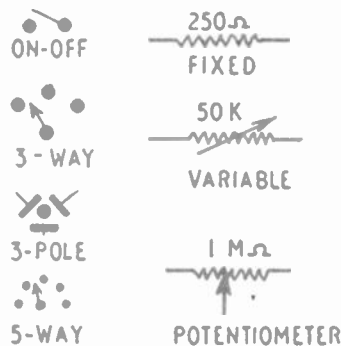


Fig. 1 Switches and resistances

ample, a 3-way switch would allow short wave, medium wave, and long wave coils to be selected at will.

The 3-pole switch is an on-off switch in which three contacts are simultaneously brought together. It is used when two circuits have to be disconnected. For example, L.T. and H.T. batteries.

Ganged switches are used in large receivers, when many coils or other circuits have to be changed. These ganged switches consist of two or more 2, 3, 4, 5 or more way units, all worked by a common spindle. The number of separate switch units is termed the number of 'poles'. For example, a 2-pole 3-way switch would be exactly the same as two single 3-way switches on one spindle, as regards its operation.

Resistances

Fixed resistances are shown by a wavy line, the value being marked in

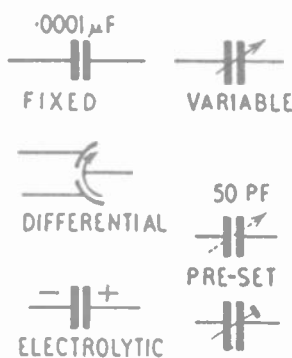


Fig. 2 Condensers

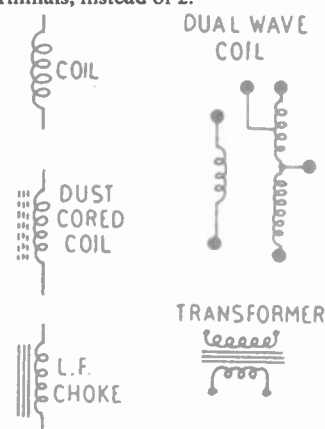


Fig. 3 Coils, chokes and transformers

Pre-set condensers, or trimmers, employ a dotted arrow, or the other symbol shown. Their value is usually small. For example, 50pF, or .00005uF.

Electrolytic condensers are of large value (usually 4uF upwards) and must be wired in the correct polarity. Accordingly, negative and positive symbols are given, the cross being positive.

Coils and chokes

A simple coil with one winding is represented by the symbol shown. Details about the waveband the coil must tune, etc., will be provided elsewhere. As a high frequency choke also consists of a coil of wire, the same symbol is used for it. In cases of doubt, the letters 'H.F.C.' may be added, to show that a H.F. choke is required.

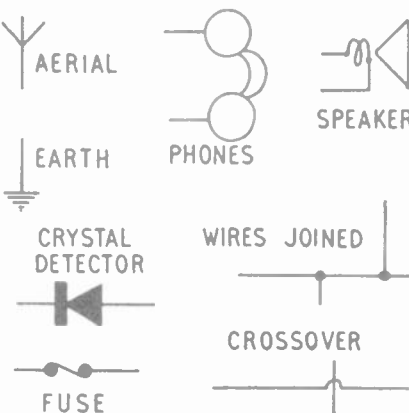


Fig. 4 Other symbols

Coils may have more than one winding, and the dual wave coil shown has a tapped medium wave section, a long wave section, and a reaction winding. Very many different coils exist, so the connections will be numbered, or otherwise marked, to show correct wiring to this component. There is no standard method of arranging tags or terminals on a coil. The coil-maker's data leaflet should thus be followed. Or the coil should be connected up as explained, when home wound.

Modern coils sometimes have dust iron cores, and dotted lines show this. When the core is adjustable, an arrow is added.

Low Frequency Chokes have solid cores, and the lines representing the core are drawn as shown. Such chokes are used for H.T. smoothing in mains receivers, tone-correction, etc. Many different chokes exist, and details about the correct type will be given in the component list or text.

Transformers

These may have two windings, on a bobbin fitted with an iron core, and are shown as in Fig. 3. 'P' may be added to indicate the primary, and 'S' for secondary. The transformer may step-up the signal voltage. This arises with the

type of transformer used between valves in a receiver or amplifier. Or it may have a stepdown ratio, to match a high impedance to a lower impedance, as when using a moving coil speaker.

The ratio of the transformer is usually given elsewhere. A coupling transformer for use between valves would have a step-up ratio of about 1 to 3 or 1 to 5, and this would be given as 1:3 or 1:5. A speaker matching transformer might have a step-down ratio of 45:1 or so, according to the valve and speaker. As transformers vary so much, it is important to keep fairly closely to that specified for the receiver.

Mains transformers are used to step-down the mains voltage to 4 V., 5 V. or 6.3 V., for valve heaters. They may have more than one secondary, so that they can also provide high tension, at 250 V. or 350 V. Connecting instructions are usually given in a leaflet, or stamped on such transformers, so that the various tags can be identified.

Other symbols

The aerial and earth symbols are easily remembered. The earth symbol is sometimes used for connections which are to be wired to the metal chassis, in large receivers, as this simplifies the diagram.

The crystal detector symbol also covers crystal diodes, and any half-wave rectifier. When the rectifier has to fill some particular function, details of it will be given. The H.T. metal rectifier used to obtain high tension current in some mains receivers is an example of this.

Fuses are shown by two dots, with one or two lines between them. The fuse rating is normally given, and the correct fuse should be fitted. Fuses of larger current rating than that given may not blow readily enough to protect the equipment. On the other hand, fuses of lower current rating may blow at once, even when no fault has arisen.

Headphones are sometimes shown by the symbol in Fig. 4, and sometimes by the abbreviation 'Ph.' or 'Phones'. In the same way, 'S' is sometimes used to denote the loudspeaker connections. The speaker symbol given is for a moving-coil speaker, representing a small coil by the cone.

In circuits, joined wires are indicated by a dot, and this is easily understood. When wires cross over without being connected together, this is drawn as shown, in theoretical circuits. In practical wiring plans, it is usual to interrupt one of the leads, instead of using the crossover symbol.

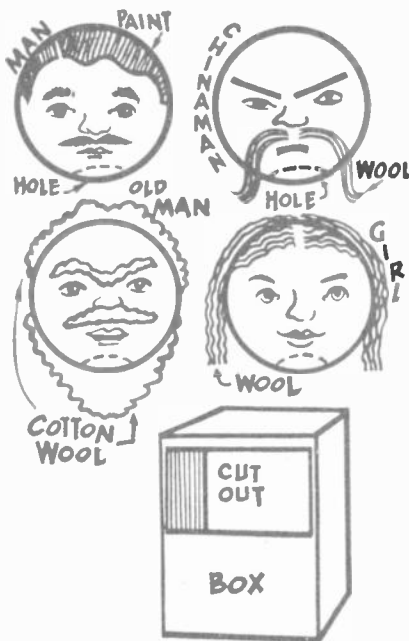
Finger Puppets and Stage

THROUGH the medium of television glove puppetry has recently returned to attain a popularity even wider in its appeal than it enjoyed when first practised in the days before modern sophistication eventually outmoded it. However, glove puppets are not made in a few minutes, and every household cannot expect to produce a 'Sooty', but here is something father can do for the children at a moment's notice. Indeed, it is the solution to the problem of a wet day — meet the glove puppet's younger brother, the finger puppet.

All that is needed for the creation of these delightful small people is a few ping pong balls, some paint and Indian ink, a few strands of wool and some cotton wool.

Slice a hole big enough to admit a finger in the bottom of each ball. Use a sharp knife for this, or, better still, an old razor blade.

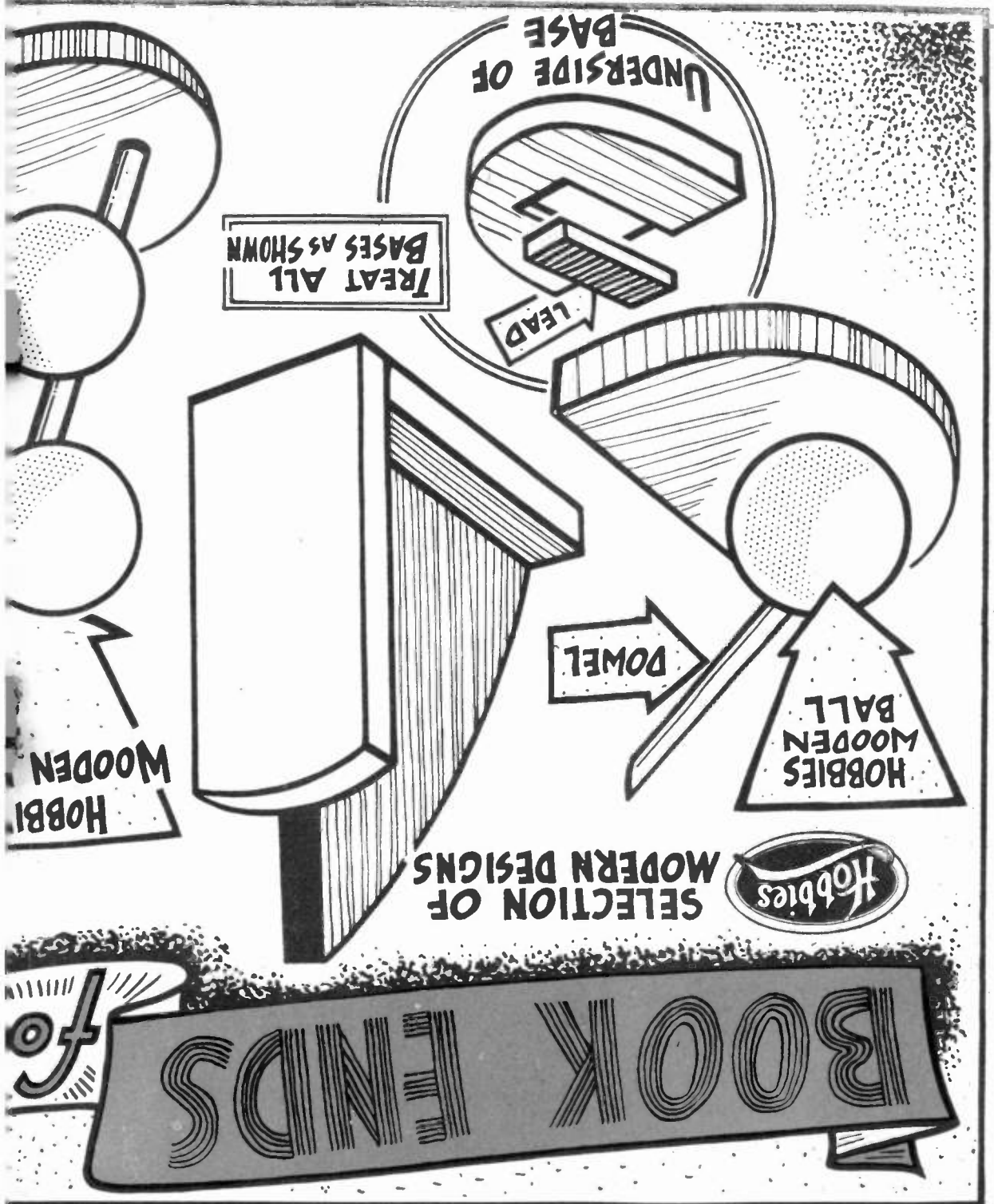
Paint on the ball the type of face required, using whatever is to hand — enamel, poster paint, or even ordinary water colours. Make the feature outlines (eyes, nose, mouth, etc.) with Indian ink if this is available, although ordinary ink or even pencil, albeit not so durable, will suffice for a rush operation when a sudden storm prevents outside activities and the children demand action.



Once the faces of the little folk have taken shape the imagination of even the least artistic producer will suggest embellishments such as darning wool wigs or side locks, cotton wool beards and fierce moustaches. It will be found that each adornment will give rise to an idea for the next until the building up of the little finger puppets will prove as fascinating as their ultimate performance. And don't forget to let your audience share in this. They, too, will find it great fun to watch and, maybe, help.

Use a coloured handkerchief for the body of the puppet, but, here again, by this time you will, in all probability, have thought of something better and a trifle more ambitious with which to cover the hand and give personality to your creation, such as an old sock.

Finally, your hastily improvised theatre may be shaped from a cardboard boot box, or indeed from any box of similar dimensions. Stand the box on end and cut a proscenium opening in the bottom which will now face the audience. If time permits, and if the youthful onlookers are not clamouring for your opening act, then all may set to and have further fun with the painting and decoration of the little playhouse. Imitation footlights may spring into existence, a backcloth, and, who knows, when it comes to 'ringing up the curtain', you may have a real curtain to pull! (P.P.)

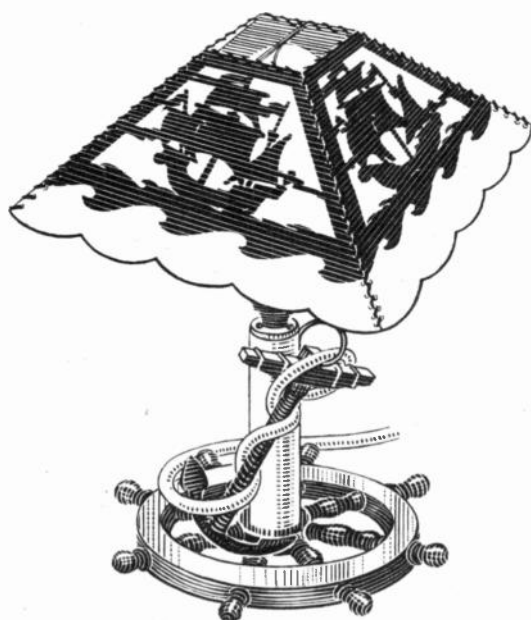




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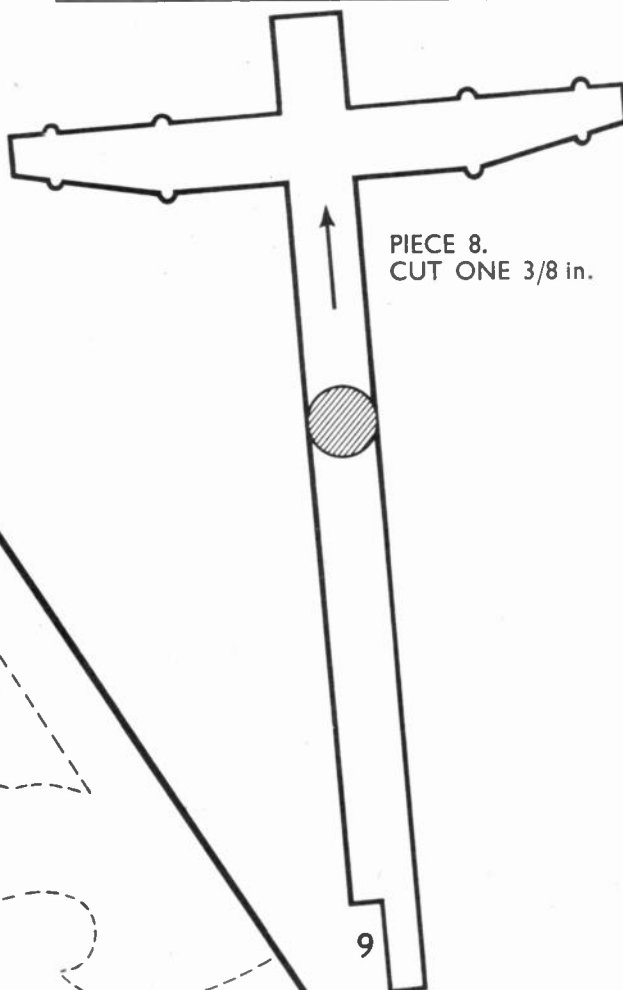
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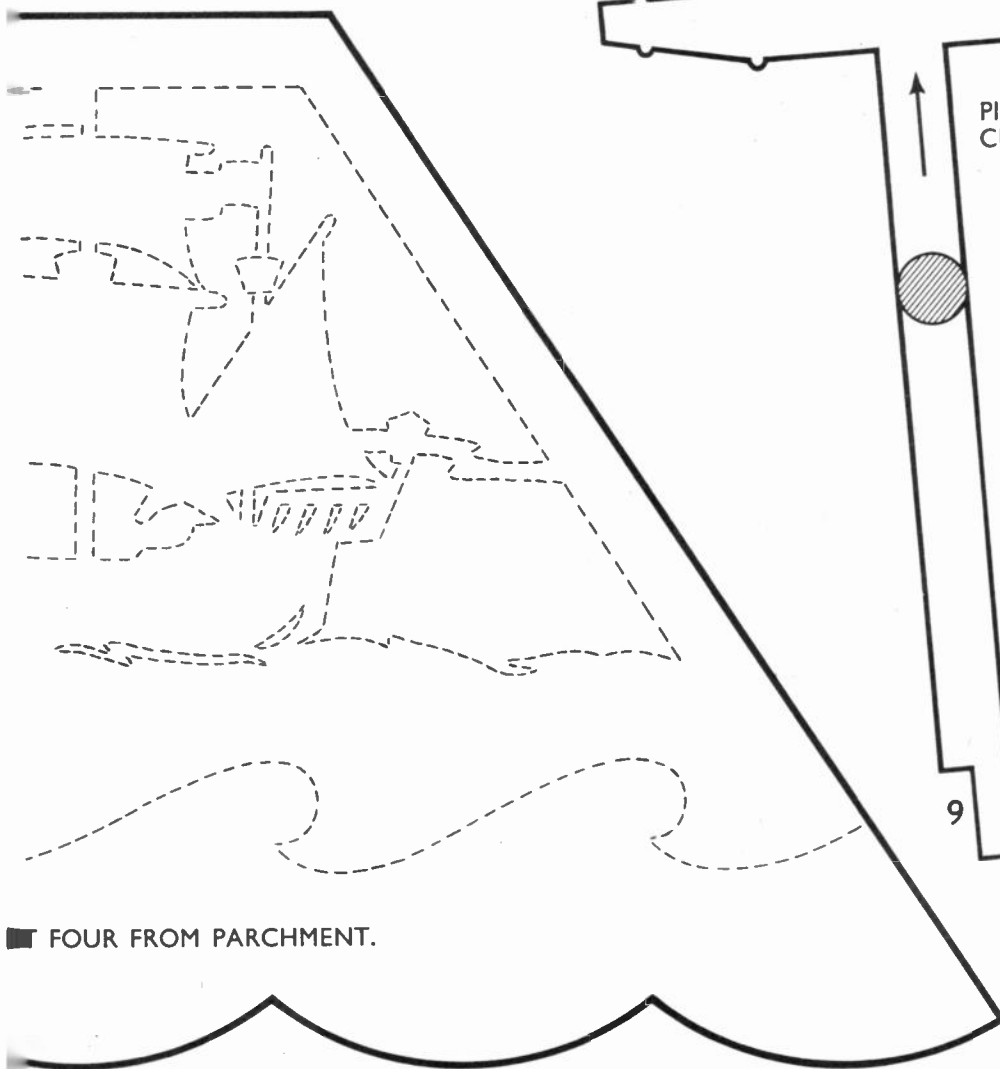
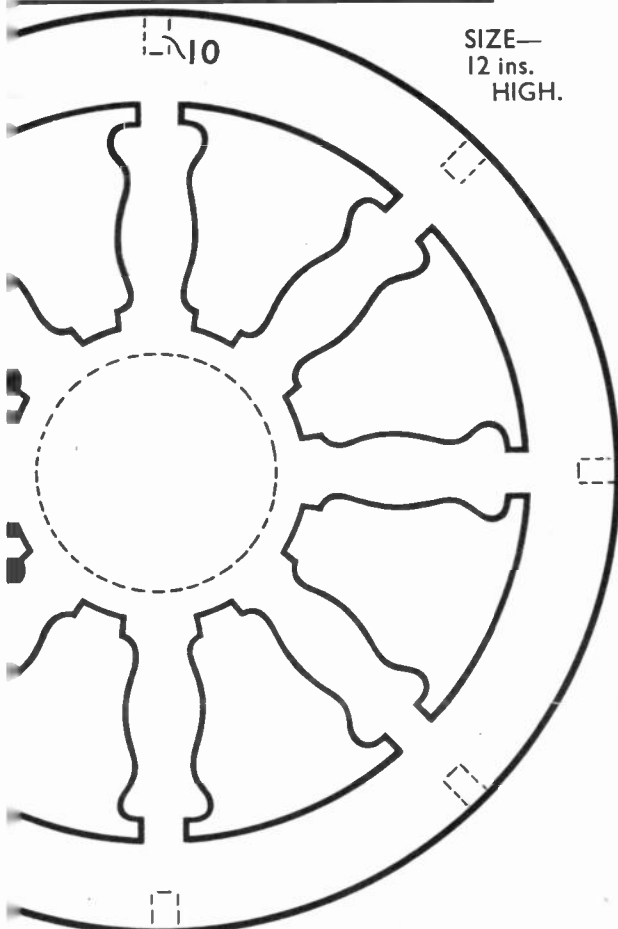
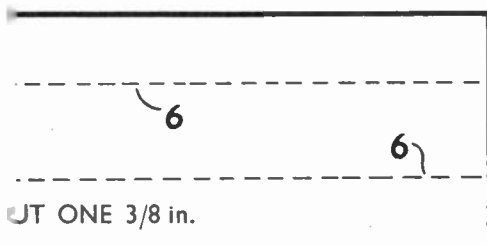
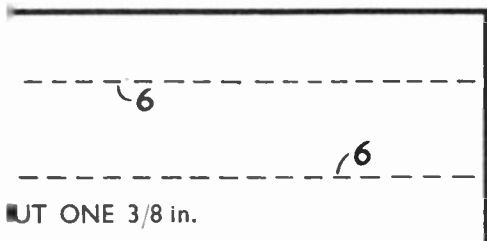
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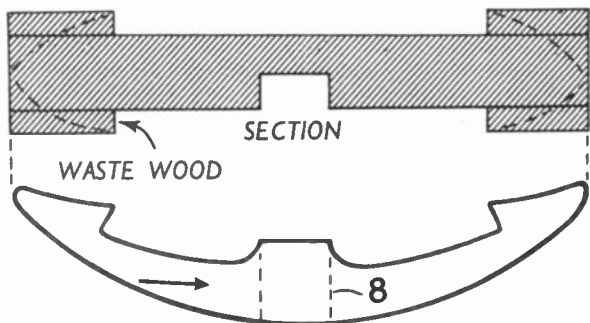
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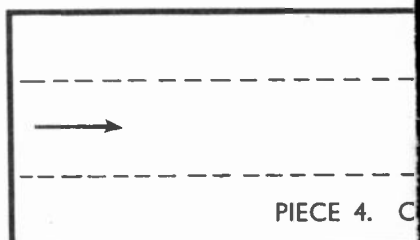




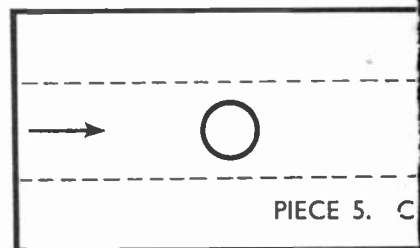
PIECE 9. CUT ONE $\frac{3}{8}$ in.



PIECES 10.
CUT EIGHT
 $\frac{3}{8}$ in.



PIECE 4. C

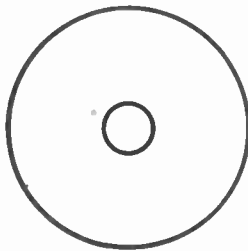


PIECE 5. C

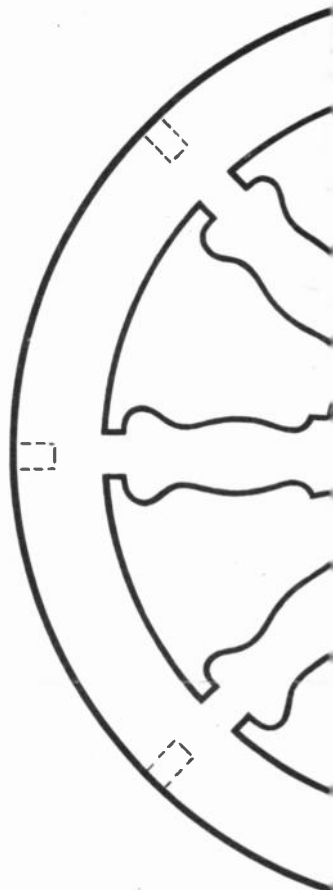


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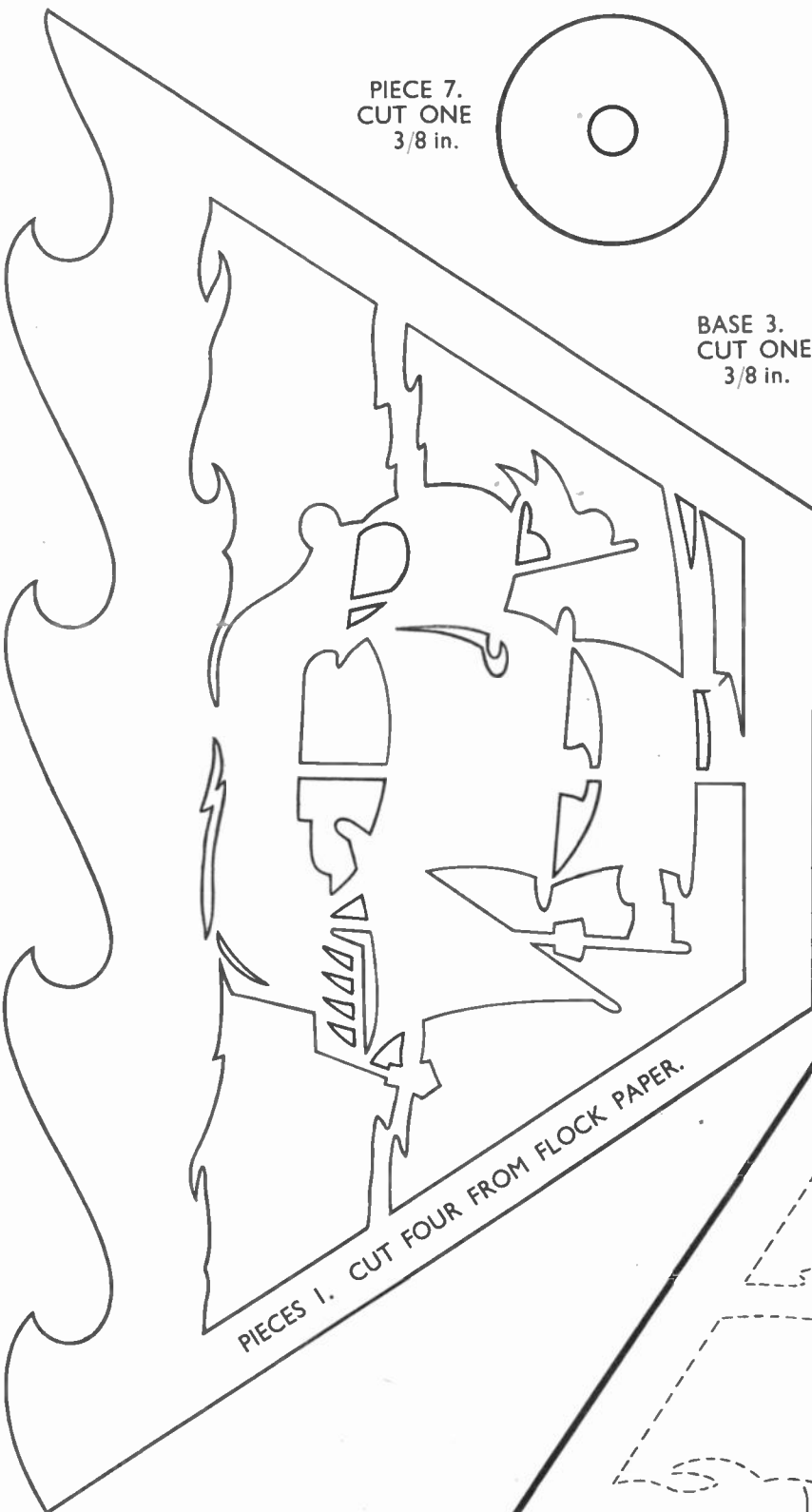
PIECE 7.
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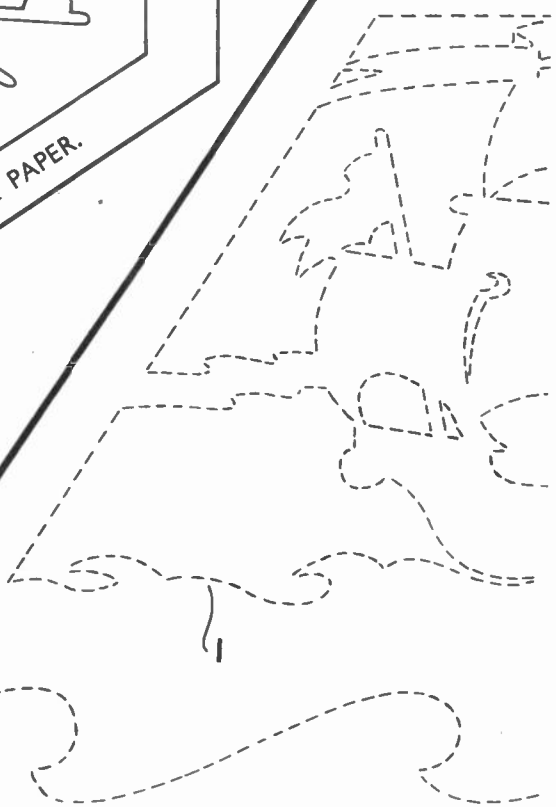
BASE 3.
CUT ONE
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PIECES 1. CUT FOUR FROM FLOCK PAPER.

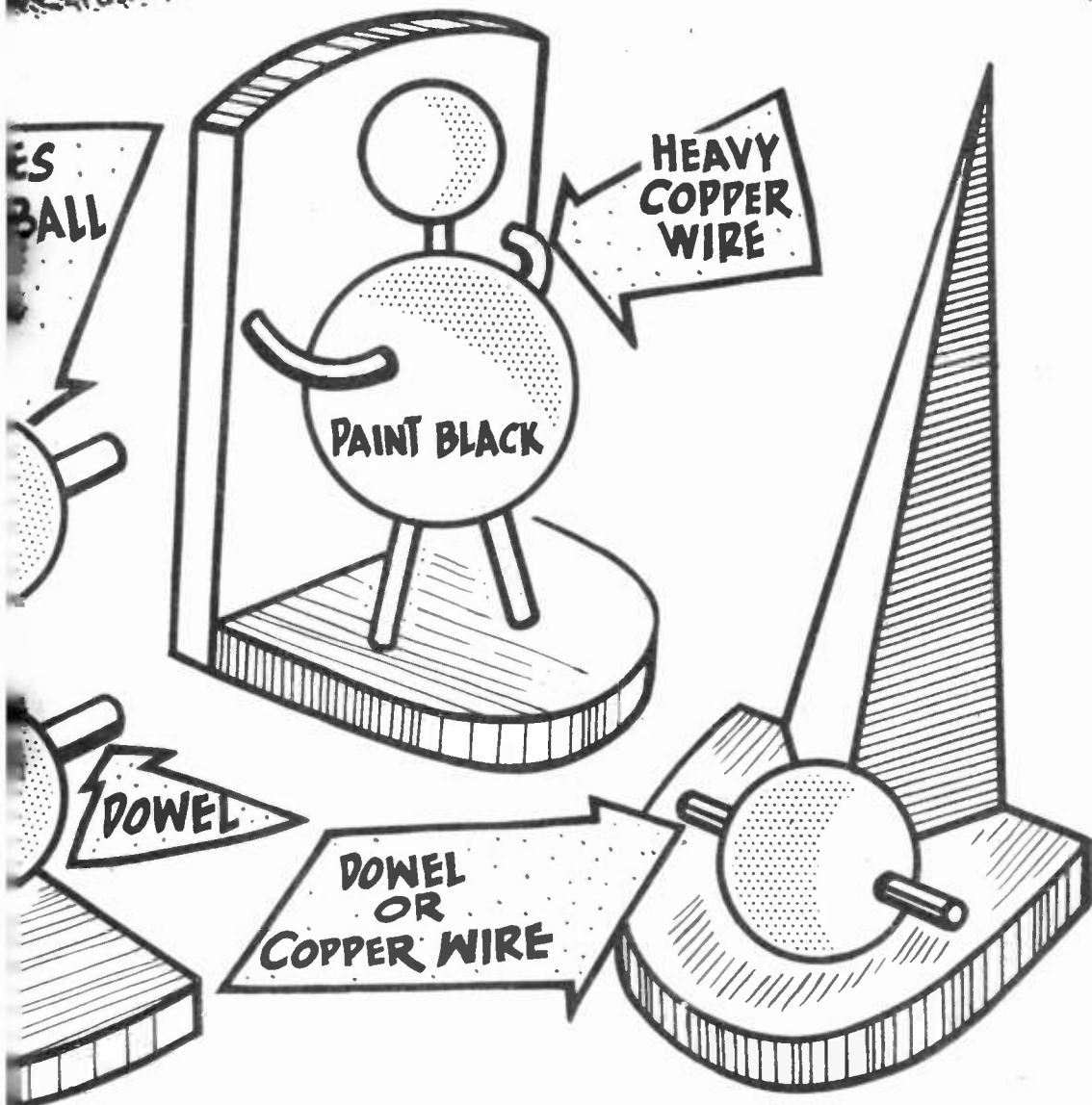


THE ARROWS
INDICATE DIRECTION
OF GRAIN OF WOOD.



PIECES 2. CU

MODERNS



HAPPY CAMPING

CAMPING is an ideal holiday in the summer months. This outdoor pursuit gives one the privilege of wearing easy old clothes, allowing one to dispense with such shackles as starched collars and headgear of any kind. Camping means a romping old time, with jolly open-air meals, fireside yarns when the stars are switching on their silver lamps; refreshing sleep at night and all the pleasures that living for a space under canvas can bestow!

To enjoy a camping holiday your party should not be too large. Four to six pals whose love of the open-air is strong, or a happy family party are the type of folk you want in your carefree existence. If your tent is *overcrowded* there is sure to be a hitch somewhere! Cheerful optimism is the right outlook, and 'keep smiling' a good slogan.

The selection of a suitable tent for a biggish party is of importance. There are many patterns, types, sizes and shapes to choose from; the size of your

temporary home will depend upon the party you have to 'house'. The 'Bell' tent is still a popular pattern, and will comfortably 'house' six or even eight at a pinch. Good second-hand Army Bell tents complete with jointed pole, pegs, and bag can be obtained from the Army and General Stores at their different branches, suitable for campers, Scouts, and others desiring an outdoor holiday. New Bell tents of cotton duck material, with 27in. walls, overhanging eaves, with pegs, mallet, etc. of 42ft. circumference can be had from £6 or £7 with a few shillings extra for socketed pole and valise.

'Cottage' tent

Then there is the 'Cottage' type with walls and eaves in canvas material, or Japanese silk, which is rather expensive. The lightweight tents supplied by camping outfitters are very useful for Scouts or Cyclists; large sizes 6ft. by 5ft. by 4ft., with 1ft. walls in dyed waterproof

canvas are well worth using by small parties of campers.

Every member of a camping party should be willing, and ever ready to take his share of work and chores.

Here are a few hints! For camping places avoid sloping ground and fields frequented by cattle. Avoid low-lying ground that is swampy. Don't camp under a lone tree; it may attract lightning during a thunderstorm. Don't camp out on the banks of a winding stream; it may rise during a bad rainstorm and flood you out. If you can possibly select, never camp directly under a clump or group of trees or a high hedgerow, but take advantage of such, as a wind-break. Do not pitch tent under an old tree in case a sudden wind in the night should bring ancient branches or broken pieces of timber crashing down. Avoid camping too near to hayricks or cornstacks. Don't omit to slacken all taut ropes at night; if staying in one spot for the day roll up the tent walls, tighten the guys, and leave the tent door open to be thoroughly ventilated.

Provided that the tent is erected on a level site the heaviest rain will not find its way in; but be sure you buy or hire a really good tent; it is the best insurance to really enjoyable holidays. Slacken the guy ropes in the evening and tighten again the following morning; then you need not fear wind or rain getting into your tent. It is wise to choose the camp site in the open field, on a slight knoll, where you will get the benefit of any breeze that is blowing. Flies and midges will not be so troublesome in hot weather if you apply anti-midge lotion to the exposed parts of your hands, legs, and face. Insects are a nuisance at times. Ammonia should be applied to bites and stings.

Clothing to take

For campers and cyclists, choice of clothing is most important. The open-necked shirts and popular wind-cheaters or zipped lumber-jackets will be found comfortable and with corduroy or drill shorts will be an advantage over slacks or long trousers, more especially in wet weather. To avoid foot troubles, wear extra pairs of stockings to reduce friction and blisters.

In heavy rainstorms it may be necessary to dig a channel round the tent, under the eaves where the water drains off the tent. If the ground where you desire to pitch your canvas home is soft owing to wet weather use two tent pegs instead of one. This addition will hold the tent more securely if wind gets up suddenly. (A.S.)

A ROCK COLLECTION

IT is surprising how much more interesting your favourite ramble can be made by a study of the local rocks and the collection of specimens for your private museum. Your principle requirement will be a suitable hammer — special geological hammers can be bought at the better toolshops. A cold chisel may sometimes come in useful, while a good book on general geology will add much to the enjoyment of the hobby.

Samples may be taken from quarries, cuttings, and other exposures, but care should be taken not to trespass. The specimens should be taken from as inconspicuous a place as possible. After the specimen has been detached from the parent rock it should be wrapped in brown paper on which should be written the date and place. If the sample is taken from a horizontal layer or strata of rock it will be well to note the types of rock above and below it. This will aid in identification. It is a fundamental principle of geology that the younger rocks will be uppermost unless violent earth movements have at some time altered the order.

It is in these layered or sedimentary rocks that fossils are usually found. These are the remains or imprints of creatures which lived thousands or millions of years ago. Should you find one of these be sure to remove it without damaging it and the cold chisel will often

be useful in this respect. If two different rocks have the same type of fossil they are of the same age although they may be hundreds of miles apart. It is from these fossils that palaeontologists have been able to tell the age of the rocks although the radio-active content is now furnishing another guide in some cases.

Your collection should also include a selection of minerals and mineral ores. These are rather harder to obtain but are often to be found around the entrances or refuse dumps of disused mines. Those who are experienced will often be able to obtain samples from inside the mine itself, particularly if it is a horizontal shaft.

When you get home, the first job is to unwrap your specimens and identify them with the aid of a suitable book. The geological map covering the area will help if you have noted where you found it. These maps can be obtained from bookshops or from the Geological Museum. Local museums are often able to help with the local varieties of the major rock types.

Your collection is best displayed in shallow trays or boxes with separate trays for volcanic rocks, sedimentary rocks, fossils, and minerals. The rocks of one age should be placed together. Many specimens will be added as the result of holidays, and cyclists may find themselves arranging their tours with the aid of a geological map instead of the traditional road map! (D.G.)

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MANY people collect tobacco labels. This hobby is popular in America. Its popularity in England is probably due to the fact that a large collection is easily obtained at little cost.

English tobacconists are justly proud of their labels, which depict unlimited themes. A courteous note for information usually results in a complimentary selection of labels.

Opinions differ as to who was the first man to smoke in England. Ralph Lane, the first Governor of Virginia; Sir Walter Raleigh; Hariot (who visited Virginia in 1584); the men who sailed with Hawkins, Drake and Grenville — all have been credited with the honour at various times. Lane was probably the first man to import tobacco in quantity. Raleigh was chiefly responsible for popularizing the smoking habit. Tobacco itself was introduced into England at some date between 1565, when Hawkins returned from America, and 1586, when Lane finished his term of office in Virginia.

TOBACCO LABELS

— By R.L.C.

Tobacco was fast becoming an important commodity, but it was not without its opponents. James I of England raised the import duty from 2d. to 6/10d. per



lb. and published his famous *Counterblaste to Tobacco* in an effort to stop smoking. Louis XIII prohibited the sale of tobacco in France except on a doctor's order. Some Eastern nations went so far as to punish smoking with torture and death; but the custom could not be stamped out and its devotees smoked in secret.

A possible reason for the continuance of the habit in the face of such opposition was the reputed power of tobacco to combat the outbreaks of plague which periodically attacked Europe at that time. In 1614, and again in 1665 when the Great Plague broke out in London with such terrible results, tobacco was recommended by doctors as a defence against the disease. It is said that during

the epidemic of 1665 the boys of Eton were required to smoke in school every morning and were whipped if they failed to do so.

By the mid-seventeenth century the custom of buying tobacco from a chemist had died out. Now there were shops which sold nothing but tobacco.

All tobacco-sellers were now required to hold a licence — a formality which had been instituted by James I towards the end of his reign in the hope that if he could not stamp out the trade he could at least control it.

HORSE BRASSES

HORSE Brasses may be divided into three or four classes. There is the amulet based on the crescent moon, the origin of which is no doubt connected with the star of white so often found on a horse's forehead.

Practically every horse in Turkey wears its amulet of boar tusk, made in the shape of a crescent, and the custom has thence spread to the horses of other nations.

The crescent amulet is found in several guises, from the simple crescent form to the crescent enclosing a star from five to fifteen points, and the amulet composed of three or more crescents set back to back.

There is the horse amulet which boasts for decoration the world-old Swastika symbol in one or other of its many modifications; and the one with a heart for its central motif. These are fairly common. Scarcer items are sometimes found decorated with an archaic lion, the lotus, and other Buddhist emblems.

A collection of ornamental brasses may be displayed within a glass-topped table, or hung in serried rows at the back of a cupboard.

Country places are the best hunting grounds for horse amulets. Many old forges have their own collections, while farmers often retain for sentimental reasons the ornaments worn by their horses.





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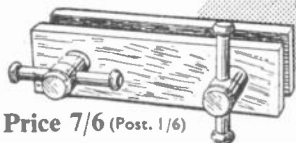
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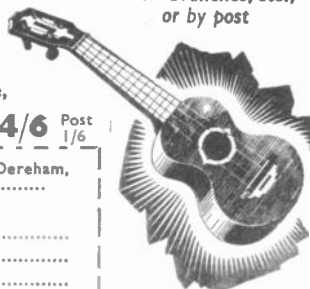
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Described by E. Capper



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Get a cocoa tin; you do not need the lid. Cut out a circular hole about half-way down its side. Into it force to a tight fit a 12-in. length of rubber hose.

Now, insert a metal or a glass funnel into its free end. Again, make it a tight fit; it is essential no air escapes.

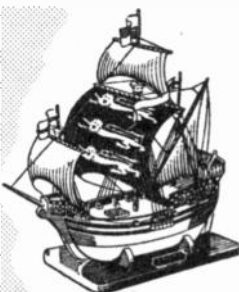
Over the open mouth of the tin stick with tube glue an ordinary, parchment jam seal, such as mother uses. See that it is stretched as tight as a drum and air-proof. Finally, on to the surface sprinkle a few grains of silver sand.

The 'Voice Recorder' is now ready. Place the funnel to your lips and sound one, full note. The sand will jump about and come to rest in a symmetrical pattern. That is the shape of your voice.

Do not stop your sound immediately or the sand pattern will tend to scatter. Instead, continue the note as you draw your lips away from the funnel.

Before the next person records his voice give the tin a shake to scatter the existing pattern. A good game can be played by marking a pattern on the surface of the jam seal before fixing and taking it in turns to see who can throw his voice nearest to the pattern.

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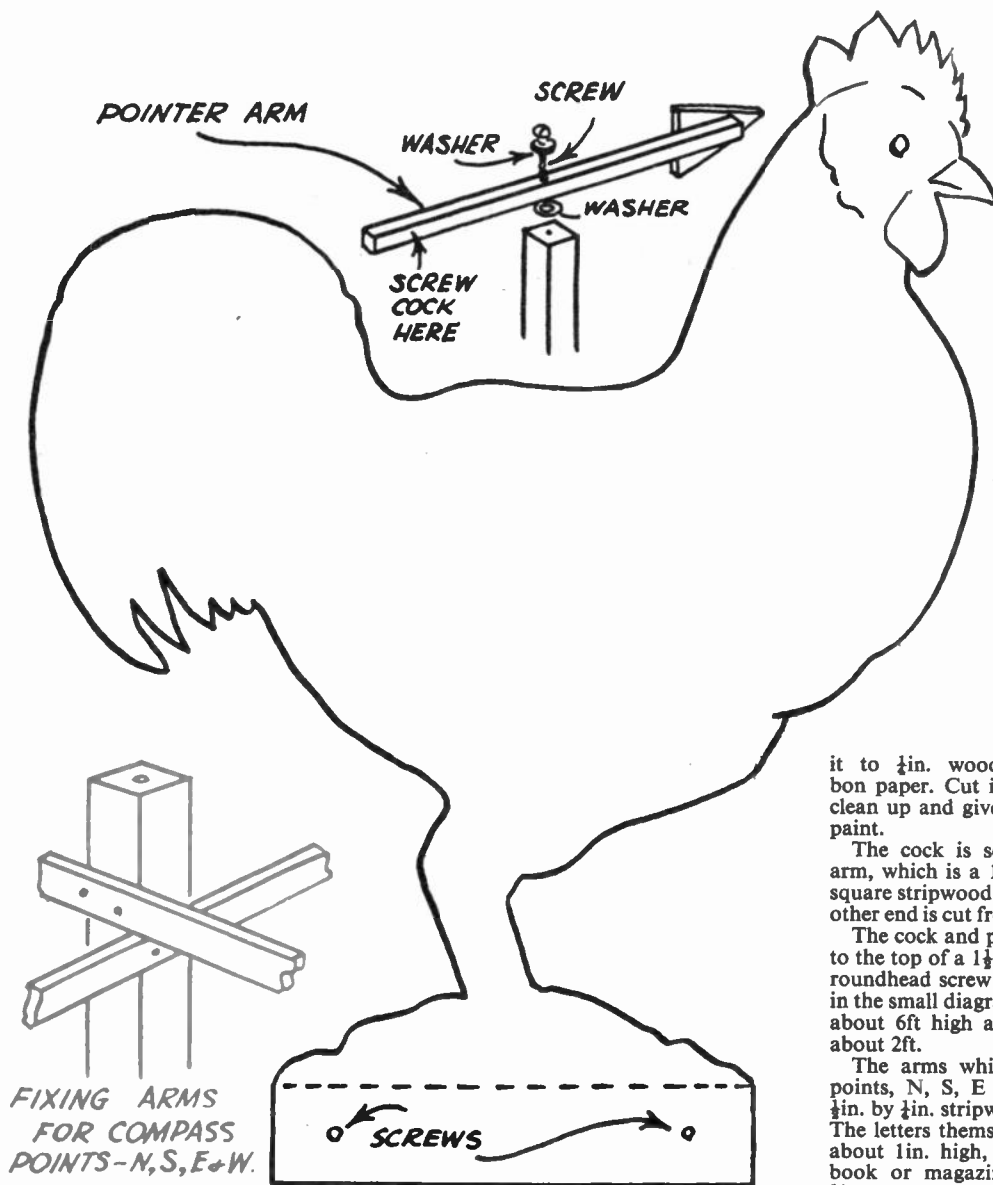
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MINIATURE WEATHERCOCK



THIS miniature weathercock will be interesting to make with your fretsaw. Trace the cock and transfer

it to $\frac{1}{4}$ in. wood by means of carbon paper. Cut it out with the fretsaw, clean up and give two or three coats of paint.

The cock is screwed to the pointer arm, which is a 12 in. long piece of $\frac{1}{4}$ in. square stripwood. The arrow head at the other end is cut from $\frac{1}{4}$ in. wood.

The cock and pointer arm are pivoted to the top of a $1\frac{1}{4}$ in. square post, using a roundhead screw and washers as shown in the small diagram. The post should be about 6 ft high and let into the ground about 2 ft.

The arms which carry the compass points, N, S, E and W, are pieces of $\frac{1}{4}$ in. by $\frac{1}{4}$ in. stripwood about 12 ins. long. The letters themselves, which should be about 1 in. high, can be traced from a book or magazine and transferred to $\frac{1}{4}$ in. wood. They are then cut out and screwed to the arms. Both cock and letters may be cut from sheet aluminium if desired.

Coat the post with creosote before putting in the ground and give all the other parts two or three coats of paint.

(M.p.)

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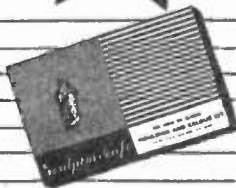
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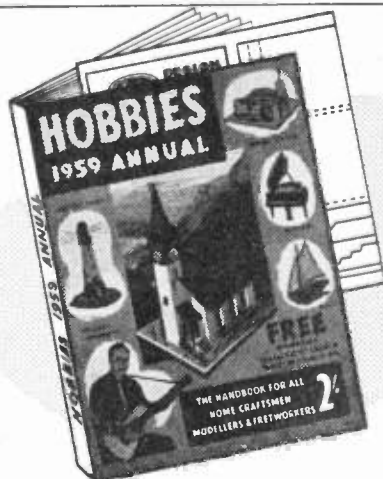
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