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VOL. 132

NUMBER 3410

THE ORIGINAL
'DO-IT-YOURSELF'
MAGAZINE

HOBBIES *weekly*

FOR ALL
HOME CRAFTSMEN

★ **FREE plan**
inside for making . . .

Also in this issue:

ECONOMICAL 'MANS
TWO' RADIO

COLLECTORS' CLUB

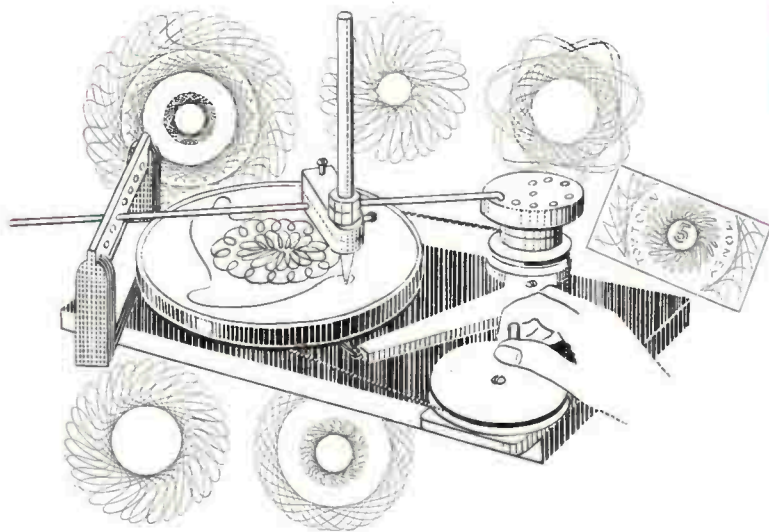
NATURE-CRAFT
WITH CONES

HOME-MAKING
CHEMISTRY FORMULAS

FLASH PHOTOS
IN COLOUR

'AERO' EGG
TIMER MODEL

ETC. ETC.



A DESIGNAGRAPH (AN INGENUOUS PATTERN MACHINE)



Up-to-the-minute ideas

Practical designs

Pleasant and profitable things to make

5^D



THE first stamps proper to North Borneo were issued in 1883 by the British North Borneo (Chartered) Company who remained responsible for the government of the territory until the Japanese invasion of the island in 1942.

NORTH BORNEO NEW ISSUES—1

After liberation in 1945, a British Military Administration was set up, and until late in 1947 the stamps of North Borneo and Sarawak bearing the 'B.M.A.' overprint of the Military Administration were in common use. From then until the 1st July 1950, North Borneo (including Labuan) used the 1939 issue, suitably amended to denote the new joint status of those two territories as a British Colony.

In 1950, a complete definitive issue of pictorials was released bearing the portrait of His Majesty King George VI, but on the accession to the throne of Her Majesty Queen Elizabeth II, the portrait was changed as further supplies of each value were printed. This issue was withdrawn from sale on 31st January.

The new definitive issue has been printed for the Government of North Borneo by Messrs. Waterlow & Sons Ltd by the recess process in two colours on C.A. (block capitals) watermarked paper in size 28mm. by 35 mm. perforation to perforation. The complete issue, which was released on 1st February, comprises the following values: 1, 4, 5, 6, 10, 12, 20, 25, 30, 35, 50, and 75 cents. \$1, \$2, \$5, and \$10 (\$1 = 2s. 4d.).

The cent values are in horizontal format, and the dollar values in vertical format. The designs which are based on original drawings made by Mr Chong Yun Fatt of the Department of Agriculture in Jesselton, include a portrait of Her Majesty the Queen with the St. Edward's Crown.

1 cent. THE PAYAU. Red/brown and blue/green.

The Payau (*Cervus unicolor*) is fairly common in the East. It is a large animal, reaching 4 ft. high at the shoulder, uniformly dark brown in colour, the antlers being three-pointed. In Borneo, it is common in the jungle, which it often leaves at night for more open areas. It sometimes does considerable damage to rubber trees by eating the bark, and frequently ruins isolated patches of rice and maize.

4 cent. THE HONEY BEAR. Orange and bronze green.

The Honey Bear (*Helarctos malayanus*) is the smallest existing bear, but fully-grown ones reach a length of 4 ft. and a weight of 100 lb., and can be powerful and formidable animals. It is



black in colour, with a white V-shaped mark on the chest. Bears are common in the jungle in Borneo; as they do considerable damage to crops and can also be dangerous, they are not protected. The dried gall-bladder is considered to be an efficacious cure for various diseases, including malaria.

5 cent. THE CLOUDED LEOPARD. Bluish violet and sepia.

The ClouDED Leopard (*Felis nebulosa*) is the only large cat in Borneo, reaching a length of over 5 ft. It is beautifully marked; the face and legs are striped and spotted as in most wild cats, but the body is pale brown with large, oval, darker spots. It is largely a tree-dweller but, although it is not often seen, being well camouflaged as it hides in the tree tops, it is probably still common except in cultivated areas. It has the reputation of being less fierce than most large cats.

6 cent. DUSUN WOMAN WITH GONG. Green and black.

The Dusuns are the most numerous of the indigenous races, comprising approximately one quarter of the total population. They inhabit chiefly the West Coast, and the plains of Tambunan and Ranau in the interior. Dusun is mainly a generic name given by others to a collection of various tribes having a common tongue and common customs, and is not ordinarily used by the tribes themselves.

The gong depicted is of beaten brass, and is used to produce a rhythmic music.

10 cent. MAP OF BORNEO. Red and green.

Indicates the position of the Colony of North Borneo in relation to the other countries of the Malayan Archipelago and South-East Asia.

12 cent. WILD CATTLE or TEMBADAU. Bluish green and brown.

The Tembadau (*Bibos sondaicus*) are magnificent beasts, some of the bulls standing 5 ft. at the shoulder. The bulls are dark brown, almost black, with white 'stockings' and white rumps; the cows and calves are lighter, being light brown or fawn in colour, also with white 'stockings' and rumps. Tembadau are found in herds of up to twenty in dense jungle, but they frequently move into more open country at night to graze. In North Borneo they are protected, and are still common in remote areas.

20 cent. BUTTERFLY ORCHID. Ultramarine and deep bluish green.

The Butterfly Orchid (*Phalaenopsis amabilis*) is found in the jungles of Java, Borneo, Celebes, the Moluccas, and the Philippines. It varies somewhat in size

• Continued on page 35

NATURE-CRAFT WITH CONES

MANY of you will be camping or hiking this summer. I suggest, to give added interest to a day's outing, that you should find and collect your own materials for a fascinating



FIG. 1.

hobby. It is a simple and instructive craft, and you can save the making up of your collection for wet afternoons and spare moments.

Nearly all the things you will need can be found on a country walk. Here is a list of the main items; pine cones, moss, rose and hawthorn berries, acorns, small



FIG. 2.

prettily-coloured feathers, pieces of twig of usable structure and dry seed-pods. In addition a small tube of glue, some pipe cleaners and some cardboard will be needed.

Make a start with a simple model first. Have a look at Fig. 1, the Penguin. His body is a pine cone, his head a pine

berry and his eyes are marked in with spots of black and white paint. Beak and feet are small pieces of twig whittled down



FIG. 3.

to the right length and shaped with a penknife. The flippers are the wings of a seed-pod. A few short feathers at the back of the feet complete this realistic bird. Assemble the parts with glue.

For Fig. 2, the Elf, you must pay particular attention to the arms and legs. If you have some thin pieces of twig of the correct length and shape use them, but otherwise I suggest the pipe cleaners. They do not look quite so effective, being thicker, but they are easy to twist into the shape you want and will not snap as twigs are inclined to do. The head and feet are rose berries, the hands are hawthorn berries and the body is a cone. You can make him a little paper hat, and add the face features with white paint. Mount the figure on a piece of cardboard with moss glued on to it.

The Rabbit, shown in Fig. 3, should have the cone placed first on the hind legs to get the desired slant, and the rest built up on it. The legs are twigs or pipe cleaners, and the head is a rose berry. The ears are the wings of a seed-pod halved. Tiny grasses, moss and twigs glued to the cardboard stand will complete the little group.

To give a more lifelike effect to your nature groups, paint the red rose berries brown. Where water is to be suggested, use a small piece of mirror. Tiny white pebbles are the eggs in a nest.

Many more interesting tableaux can be arranged, and you will enjoy thinking out your own ideas, for this is a hobby with endless possibilities. Start collecting your materials now! (E.)

● Continued from page 34

NORTH BORNEO'S NEW ISSUES

and shape, and the Borneo form is probably one of the finest. It is common in the jungles on the West Coast of the Colony, generally at a height of 1,000 ft. or 2,000 ft. Although they flower throughout the year, flowering reaches a peak in the dry months of January and February, when cultivated plants are conspicuous in towns and villages.

25 cent. **THE ASIATIC TWO-HORNED RHINOCEROS.** Carmine red and grey.

The Asiatic Two-horned Rhinoceros (*Rhinoceros sumatrensis*) occurs from Burma to Borneo, but it is rapidly becoming scarce. It is the smallest of living Rhinoceros, the height at the shoulder rarely exceeding 4 ft.; nevertheless a full-grown male can weigh a ton. It is more agile than most Rhinoceros, and it occurs in mountainous country rather than in the swamps. It is generally solitary, but sometimes moves in family parties of three.

The horns of this Rhinoceros are con-

sidered valuable as an aphrodisiac, and although it is legally fully-protected, its numbers in Borneo are rapidly decreasing.

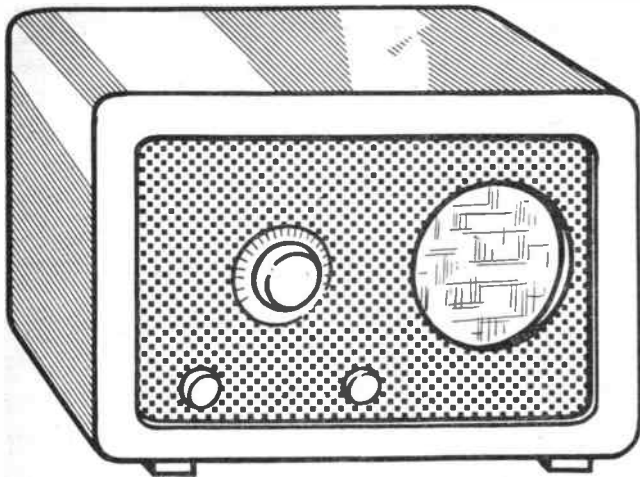
30 cent. **MURUT WITH BLOW-PIPE.** Olive green and sepia.

The Muruts, unfortunately a declining race, mostly inhabit the upper reaches of the Padas river and the mountainous inaccessible country near the Indonesian and Sarawak borders. They were the last to abandon the practice of head-hunting, but they have not yet adopted a system of settled agriculture. They are great hunters, using spears and blowpipes with poison darts. The blowpipe is made from a special wood, and is from 5 ft. to 5½ ft. in length. The dart is tipped with a quick-acting poison obtained from the sap of a local tree. A spear blade is bound to the end of the blowpipe and is used to finish off the prey, and to cut away the rapidly spreading black poison area from the remaining flesh.

Simple and economical

SINGLE BAND 'MAINS TWO'

By
'Radio
Mech'



make connections clear, but in the actual coil all the leads should pass down inside the tube. Solder a length of insulated wire to the loop 2. Leave all the leads long enough to reach the various connecting points.

The coil is mounted by means of two small brackets, as in Fig. 3, and all the leads pass down through a $\frac{1}{2}$ in. diameter hole.

Metal Chassis

A metal chassis is most suitable, and this can be approximately 9 in. \times 6 in., with 2 in. runners. This will result in quite a compact receiver, and will allow

THIS circuit will give good loud-speaker volume, and runs from 200/250V. AC mains. It has two valves, and the use of a cathode bias type of detector provides sharper tuning than is usual with this type of receiver. H.T. is obtained from a metal rectifier, while a small mains transformer gives current for the valve heaters. This is a simple and economical arrangement.

The circuit is shown in Fig. 1. None of the component values or components are very critical. The .0005mfd condenser in series with the aerial should, however, be a high quality 750V. or similar item, as its purpose is to make sure that mains voltages cannot reach the aerial.

In the interests of simplicity, the set tunes medium waves only, but a dual-wave coil and wavechange switch could

easily be added. It is also in order to use any ready-made coil with reaction winding, instead of the home-wound coil.

Tuning coil

This is wound on a $1\frac{1}{2}$ in. diameter paxolin tube, as shown in Fig. 2. Beginning at point 1, sixty turns of 32 s.w.g. enamelled wire are wound on, side by side, and a loop is formed for point 2. A further twenty turns are then wound on. The winding from 1 to 3 thus has eighty turns in all.

A space of about $\frac{1}{4}$ in. is then left, and fifty turns of 36 s.w.g. enamelled wire are wound on, side by side. This winding begins at point 4, and ends at point 5.

All turns throughout both windings must be in the same direction, as shown. In Fig. 2, leads are outside the tube, to

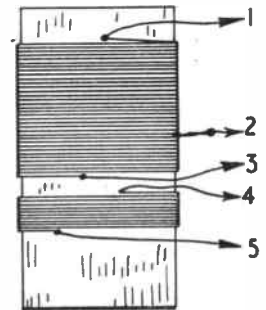


Fig. 2—Details of the coil connections.

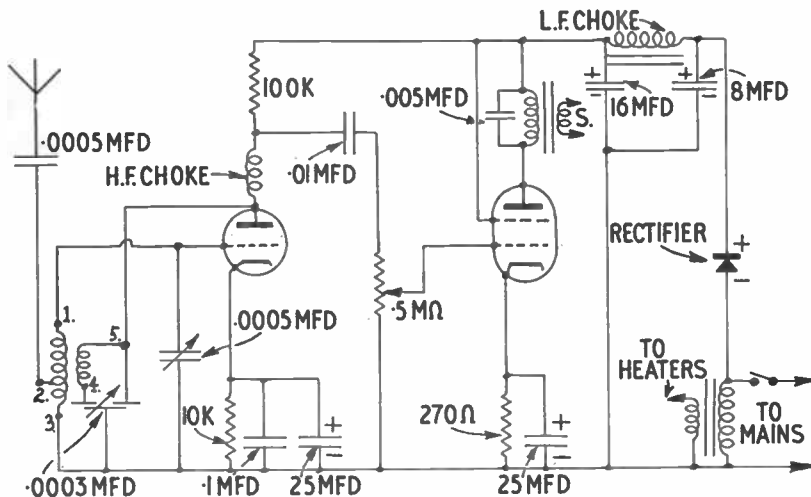


Fig. 1—The 2-valve mains set circuit.

a 5 in. overall diameter speaker to be fitted. If a larger speaker is to hand, and is to be used, chassis and panel can be increased in size.

All holes should be drilled before mounting any parts. Mark drilling positions from the actual components. Large holes for the valveholders can be made with a metal cutting fretsaw, or by drilling a ring of small holes. Special cutters to make such holes are also available.

If the tuning condenser is bolted to the chassis, as in Fig. 3, bore a $\frac{1}{2}$ in. clearance hole in the panel, to take the spindle. If the condenser is of the type which is attached to the panel, take a lead from the moving plates tag, to chassis.

The panel is secured to the chassis by the volume control and reaction condenser fixing nuts. After cutting the panel, and checking that it will fit correctly, it should be removed, glass-papered, and varnished. When the

varnish is dry, glue a piece of silk or similar material over the back of the speaker aperture. It will be most convenient to leave the panel off until underneath wiring has been finished.

The positions of the large parts will be seen from Fig. 3. Note that the valveholder key-ways face to the right. The metal rectifier must be mounted with its fins vertical, so two brackets are cut from scrap metal, to do this. The positive rectifier tag should be at the front.

Underneath wiring

Fig. 4 shows all connections underneath the receiver. The leads marked X are soldered to tags bolted to the chassis. Keep all connections short and direct, and place insulated sleeving on all leads, including those from the coil.

An aerial socket, insulated from the chassis, is bolted to the back runner. Take coil lead 2 to the .0005mfd aerial condenser. Lead 1 goes to socket 5 of the valveholder. Lead 3 is connected to the moving plates tag of the reaction condenser, which is earthed to the chassis at X. Lead 4 goes to one set of fixed plates on the reaction condenser, while lead 5 is taken to the other set of fixed plates, which are also connected to socket 3 of the holder. A connection from socket 5 of the holder passes through hole F, to the fixed plates of the tuning condenser.

For the mains leads, use a length of good quality twin flex. The flex passes through a rubber grommet placed in a

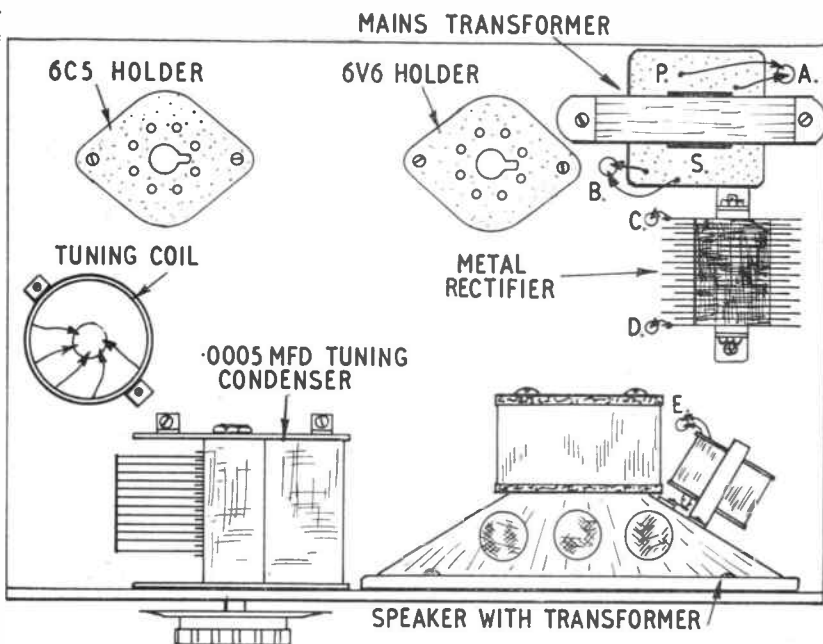


Fig. 3—Parts on top of the chassis.

hole in the back runner. A tag strip with two insulated tags is fixed near this corner of the chassis. Take the black lead of the flex to the 'N' (Neutral) pin of the 3-pin mains plug. At the receiver, this

lead is connected to the chassis at the fixing bolt holding the tag strip. The red lead in the flex is taken from one insulated tag, to the 'L' pin of the mains plug.

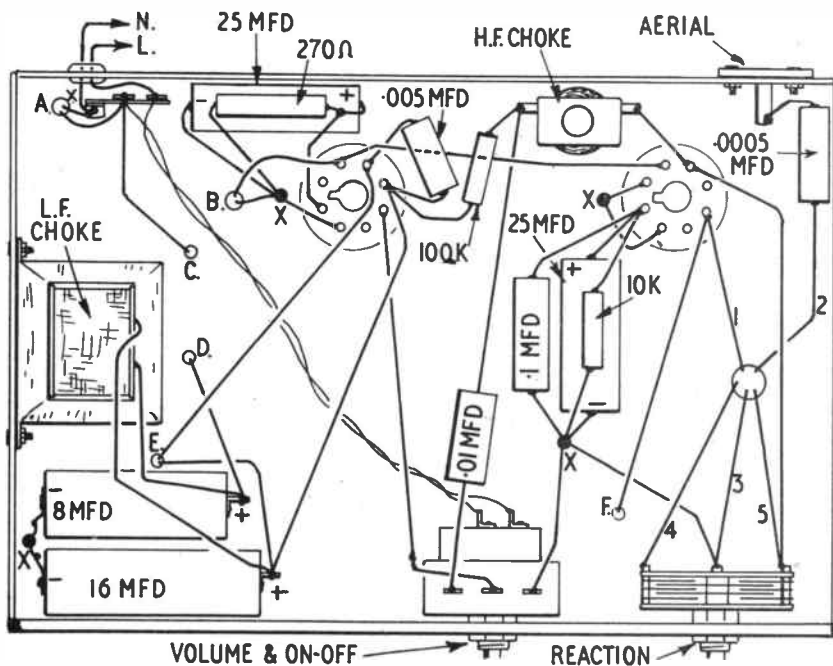


Fig. 4—Underneath wiring plan.

Run a piece of twin flex close against the chassis, to the two back contacts on the volume control and on-off switch.

The primary leads of the mains transformer pass down through hole A. One lead goes to the chassis, and the other to the insulated tag, as in Fig. 4.

The secondary leads from the mains transformer go through hole B. One lead is joined to the chassis at X. The other lead goes to socket 2 of the valveholder.

The negative connection from the rectifier passes through hole C, to the insulated tag. The positive lead goes through hole D to the positive tag of the 8mfd. condenser.

When the speaker is fitted, two insulated leads pass up through hole E, and are connected to the primary of the speaker transformer. The secondary of this transformer is wired to the speaker unit speech coil tags. (This will already be so, if the transformer is fitted to the speaker itself.)

The four large fixed condensers have positive and negative markings. With these condensers, the negative end goes to chassis. All other small parts can be connected either way round.

The loudspeaker is attached to the panel by wood screws, which must be fairly short, so that their points do not come through at the front. Carefully check all connections against Fig. 4.

Controls and Cabinet

With mains receivers of this type the finished set should be enclosed in a wooden cabinet, so arranged that no metal parts can be touched. A cabinet with inside dimensions slightly greater than the receiver will be convenient. The front of the cabinet should have an aperture large enough to clear the controls and speaker opening on the receiver panel. The set can then be pushed in from the back, and a few screws driven through the panel, into the inside of the cabinet front.

The knobs fitted to the controls should cover the spindles and fixing bushes. The cabinet should also have a back, with a few rows of ventilation holes.

The receiver is in no way more dangerous than any ordinary type of AC/DC or similar set. But it is worth

COMPONENTS LIST

All components are given in this list. Suppliers' addresses are also included. This is merely for the convenience of constructors wishing to obtain components by post, and similar parts from other sources would be equally satisfactory.

6C5 and 6V6 valves (Bentley Acoustic Corp. Ltd, 38 Chalcot Road, London, N.W.1.)
 60mA A.F. choke. 250V. 60mA half-wave metal rectifier. 6.3V. 1½ amp filament transformer.
 Permanent magnet moving coil speaker, and output transformer to match 6V6. Radio Supply Co. (Leeds) Ltd, 29-31 Moorfield Road, Leeds, 12.
 0.0005mfd 750V. fixed condenser. 0.01mfd mica condenser. 0.005mfd and 0.1mfd 250V. paper condensers. Two 25mfd 25V. electrolytic condensers 8 and 16mfd 350V. smoothing condensers. Two octal valveholders. 0.0003mfd differential reaction condenser. ¼ megohm volume control with single pole switch. Two 1 in. knobs. 0.0005mfd tuning condenser with dial. Long and Medium wave H.F. choke. 10K (10,000 ohms), 100K (100,000 ohms) ½-watt resistors. 270 ohm 1-watt resistor. Chassis. Home Radio (Mitcham) Ltd, 187 London Road, Mitcham, Surrey.
 Price lists etc, should be obtained from the sources mentioned.

noting that high voltages exist at various points, and that shocks may arise if these are touched. In addition, the chassis has to be common to one mains lead. This, again, is quite usual. But it does mean that the chassis, and everything connected to it, may be alive, especially if the black and red connections to the mains plug are reversed, or if the set is run from a reversible plug or 2-pin adaptor. For these reasons, the receiver should be enclosed as mentioned, and the same precautions taken as would be

observed with a commercial set.

The valves, or similar types, are inserted in the positions shown in Fig. 3. The volume control and on-off switch works in the usual way. Reaction is used to build up the volume of weak signals, and adjustment is fairly critical, except with local stations. Adjustment of the reaction knob will also allow tuning to be made sharper, when necessary. Reception should be clear, free from any distortion or hum, and ample for most listening purposes.

Interesting Locos—No. 33

The Ramsbottom 'Newton' Class

MR John Ramsbottom's first design of a coupled express engine for the L. & N.W.R. was the 2-4-0 'Newton' class. The first engine, No. 1480 'Newton' appeared from Crewe in April 1866, followed by a

these rods. In order to somewhat reduce weight, the main frames were slotted out at the firebox sides. Stephenson link motion was employed, the frames and all bearings being inside in accordance with the usual L. & N.W.R. practice.

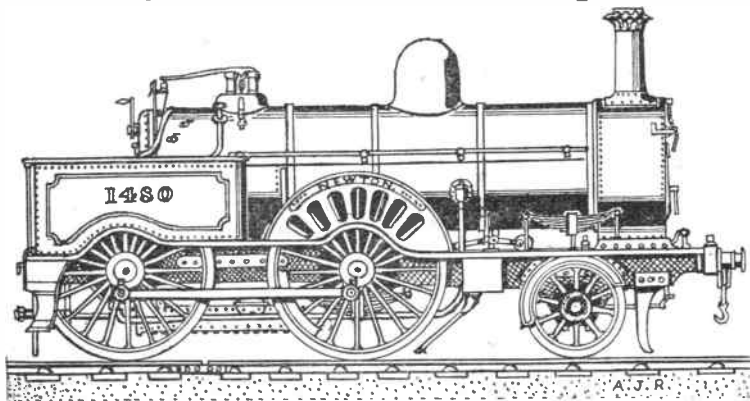
which was 1,013 sq. ft., the total heating surface being 1,102 sq. ft. Grate area was 14.95 sq. ft. and working pressure 120 lb. p.s.i. In working order the engine weight was 28 tons 13 cwt.

They were intended primarily for express duties between Crewe and Holyhead. When Mr Webb succeeded Ramsbottom in 1871 he built a further twenty of the class, naming the first one No. 1211 'John Ramsbottom' in honour of his former chief. At the same time, Mr Webb provided this engine with a cab, and this was the first engine to be so provided on the L. & N.W.R. None of Mr Ramsbottom's engines had cabs, only a small weatherboard with spectacles of 8½ in. dia. being fitted.

All the class of ninety-six engines were afterwards replaced by Mr Webb's 2-4-0 'Precedents', but the number and name plates were used for the new engines, the name plates being marked 'Rebuilt'.

On 21st June 1866, H.R.H. Prince Alfred, the Duke of Edinburgh, the second of Queen Victoria's sons paid a visit to Crewe Works, where he christened an engine of the 'Newton' class — No. 1481, which had been named 'The Duke of Edinburgh' in his honour, and this was probably the first locomotive-naming ceremony for a main line engine.

(A.J.R.)



John Ramsbottom's first 6 ft. 6 in. Coupled Express Locomotive No. 1480 'Newton' L. & N.W.R. 1866.

further twenty-nine sisters in the same year, although before he retired in 1871 seventy-six of these excellent engines had been completed.

They had steel crank axles, the new solid eye coupling rod, and a running plate curved upwards in order to clear

The cylinders were 17 in. dia. and 24 in. stroke, but a few of the first engines had 16 in. dia. cylinders. Wheels dia. — leading, 3 ft. 7½ in.; coupled 6 ft. 7½ in. Wheelbase, 7 ft. 5 in. plus 8 ft. 3 in., total 15 ft. 8 in. The boiler contained 192 1½ in. tubes, the heating surface of

MAKING A DESIGNAGRAPH

THIS designagraph is an ingenious instrument which, if made up for amusement only, will give many hours of pleasure to children. In a more serious vein, its variety of patterns will provide many ideas for numerous projects in the field of design work. The instrument traces intricate patterns on paper, and there is unlimited scope by altering different settings.

The designs are formed by a reciprocating pen on a revolving platform. Movement is obtained by turning a handle which acts on a wheel, which in

turn moves a rod which operates the pen.

Examples of the designs obtainable can be seen in Fig. 1, and on the illustration of the finished instrument. It will be seen at once that here is scope for designing articles such as toy money for children when playing shops, etc. Those with an artistic taste will also realize that the designs produced from this machine can form the basis of much work in handicrafts where decoration is needed, and after a trial run its further possibilities will be fully appreciated.

All the parts are shown full size on the

design sheet. They should be traced and transferred to their appropriate thicknesses of wood, and cut out with a fret-saw. Note that the edges of pieces 5, 9, and 13 are grooved to the section shown.

Hobbies Kit No. 3410 for making the Designagraph contains panels of appropriate wood, round rod, strip-wood, cord, wire, screws, etc. Kits price 8/9 from branches or by post from **Hobbies Ltd, Dereham, Norfolk** (post 1/6 extra).

These are to take the cord by which the movement is transferred to the pen.

Glue pieces 2, 3, and 4 to the base (piece 1), as shown in Fig. 2. Their exact

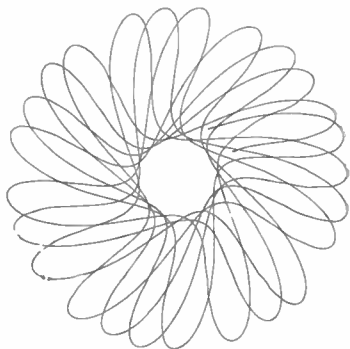


Fig. 1

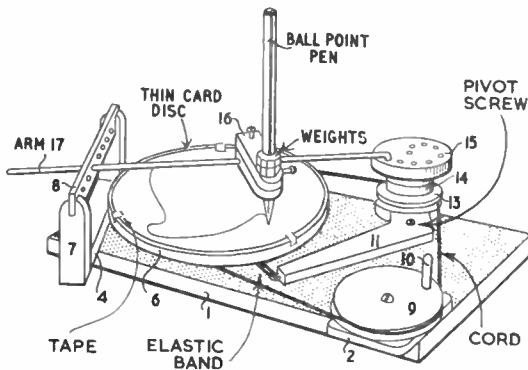
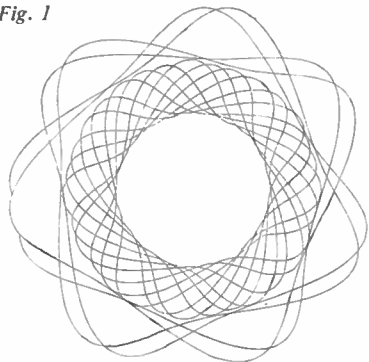
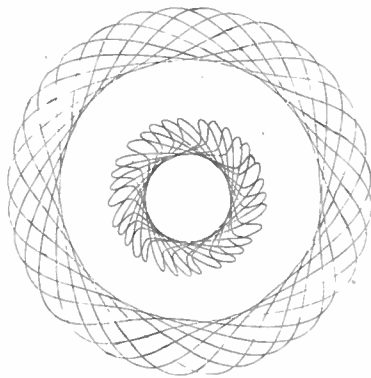


Fig. 5

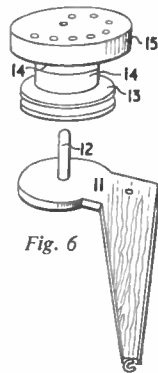


Fig. 6

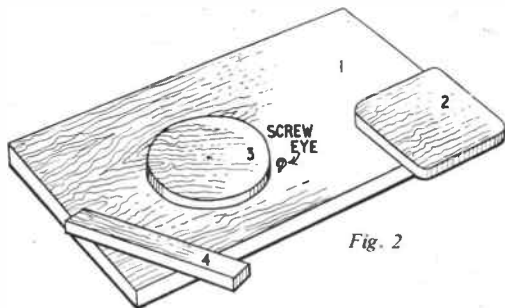


Fig. 2

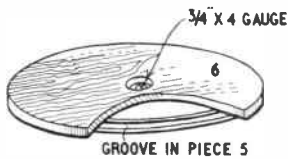


Fig. 3

positions are indicated on the design sheet. Note that a small screw-eye is opened up slightly, and placed in the position shown on the base.

Fig. 3 shows how the platform of the instrument is made up by gluing the grooved wheel (5) under the $\frac{1}{4}$ in. thick wheel (6). The large hole in the centre of piece 6 is to allow the screw-head to go below the surface of the platform. Next complete the assembly, as seen in Fig. 4, by adding pieces 7 and 8.

Glue the handle (10) into the grooved

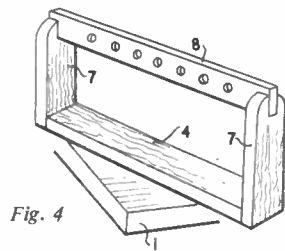


Fig. 4

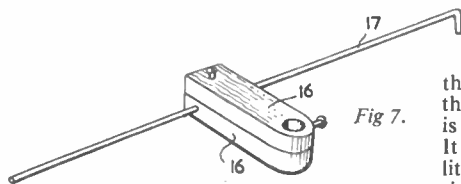
wheel (9), and pivot this wheel to piece 2 with a roundhead screw, as shown in Fig. 5. Next make up the tensioning arm as shown in Fig. 6, noting that there is another opened screw eye at the end of piece 11. The assembly comprising pieces 13, 14, and 15 should revolve freely on the spindle (12).

The pen holder is made from two pieces 16 glued together as seen in Fig. 7. It should slide loosely on the wire arm (17). A roundhead screw gives sufficient control to prevent the holder slipping along the wire arm, at the same time allowing an up and down movement for the pen. The pen, which is a free-flowing ball point type, is located by a roundhead screw inserted from the side of the holder and gently tightened. The angled end of the stout wire arm fits in the various holes in piece 15, and the other end is a loose fit in the various holes in piece 8.

Now pivot the tensioning arm (11) on to the base, and put a tight elastic band over the two screw eyes, so as to hold the arm close in to piece 3 (Fig. 5). A piece

of light cord is now tied around the three grooved wheels (Fig. 5). The cord should be stretched before tying, so that it does not become loose in operation. Get some help in pulling back the tensioning arm, tie the cord, then release the arm and the cord should be reasonably tight.

Assemble the instrument for a test



working. Cut a circle of thin card and fix it to the platform with a dab or two of glue. The circles of paper which will be used for the designs are held on the platform by small pieces of transparent adhesive tape, seen in Fig. 5. With the pen fixed in the holder, it may be necessary to weight it down to keep it in

close contact with the paper on the platform when the machine is in operation. This extra weight can be obtained by the addition of nuts or washers, and experiments will indicate the correct amount to use for efficient working.

Now turn the handle, and note the design which is obtained on the paper. Try out different alterations of settings, and note the various patterns obtained by dropping the wire arm (17) into any of the holes in piece 15. Other design variations will be obtained by putting the other end of the wire arm into any of the holes in piece 8. Another alternative is to reverse the cord round the wheel 13. It will thus be seen that there are literally hundreds of different permutations of settings, thereby giving a great variety of designs. The position of the pen on the paper can also, of course, be varied up and down the wire arm.

When the machine is proved to be working satisfactorily, it can be taken apart, cleaned up, and finished by painting, before reassembling for permanent use.

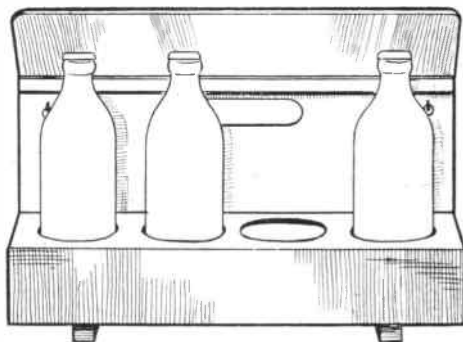
HYGIENIC MILK BOTTLE HOLDER

THIS handy milk bottle holder prevents bottles getting accidentally knocked over, and defeats garden birds who peck holes in the bottle tops to steal the cream.

Made to the standard size detailed in the diagrams, the holder is designed to carry up to four one-pint bottles. Where

By

T. S. Richmond



the householder orders less than four pints, one of the holes could be fitted with a round container for milk tokens or coins. The article can also be put into service when a mineral-water delivery is made to the door each week.

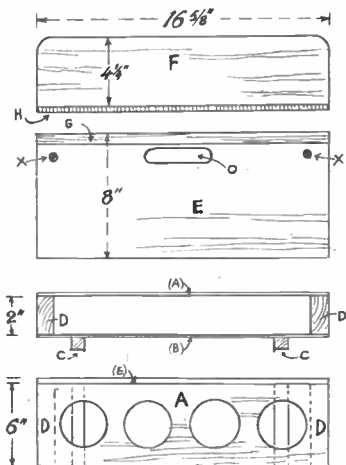
The rack for holding the bottles is made up of pieces A and B of $\frac{3}{8}$ in. plywood, with end members D of hardwood, $\frac{1}{2}$ in. or $\frac{3}{4}$ in. thick. Four holes, about 3 in. diameter (check size of bottles for these) are cut out with even spacing in piece A (see plan). Piece B has two strips of hardwood C to provide feet to the underside.

The back panel E may be of $\frac{1}{2}$ in. thick plywood, or of two pieces of thinner wood or hardboard, glued and tacked together. A slot is cut for a carrying handle O, and two holes X may be drilled for hanging the holder on a wall. Glue and nail a strip of wood G about 1 in. thick along the top edge to

which the flap will be hinged. Secure the prepared panel to the rack with glue and nails or screws into pieces D.

Piece F is of $\frac{1}{4}$ in. plywood (or $\frac{3}{8}$ in., with strengthener strip added along edge at H). Round off the two corners as shown. A length of old leather strap or belt is needed for a hinge. Tack half of its width along edge at H, then hinge the flap to the top of piece E, so the flap may be lifted up and down. The front of the rack may be filled in (between A and B) with a piece of plywood to complete the assembly.

Apply a priming coat of paint, followed by two coats of hard gloss cream or white, allowing each to dry before applying the next. The flap is raised as the bottles are inserted. It then rests over the bottle caps, giving protection from the elements, and preventing the blue tits from pecking off the tops.



INDOOR WORK IN COLOUR

WE have now indicated the many ways of using flashguns to advantage and it will be realized that we have new opportunities for 'shooting' our families and friends in homely surroundings. There are many subjects and effects to experiment with and you will quickly see how to obtain improved results. Don't be afraid of modifying your apparatus by using simple cardboard reflectors or testing the effect on subjects in the shade out of doors.

It will be reasonable to assume that the nearest subjects to you are your own family and friends whether at home or at your club. You will have to play the part of a film producer and director, watching out for odd incidents or happy interesting shots. And a record of these activities will be a real delight in the years ahead.

What goes on in your home? Perhaps mother does the cooking, washing, ironing, sewing and so on. You may have brothers and sisters in childhood or in their teens. There may be father with his

By
S.H.L.

hobbies or you may have a dog or cat as a pet, not forgetting the goldfish and the budgerigar. Friends visit you, there are parties and so on. We have subjects galore. Where shall we start?

It would be very nice to catch father helping your sister with her homework some evening after he has finished reading the newspaper. No doubt you will have seen this situation many times but now you come to examine the scene critically for the purpose of a picture

record. See whether it is arranged to the best advantage and whether you could make an improvement. You want sufficient distance for one thing and you don't want an untidy, fussy background. Try to think in terms of the finished picture and then arrange things accordingly. There may be a bit of fuss by the family but they'll be pleased when they see the finished picture.

You should also think in similar terms when proposing to take a picture of mother removing the joint from the oven, doing some ironing, or sewing. And there's always father taking an after-dinner nap with the dog at his feet — all subjects worth recording for the future.

Children always make good camera subjects for they are not quite so shy as adults and they do not assume unnatural poses. You have to catch them in their happy, laughing attitudes such as in the bath after playing around in the water. And you can get some really easy shots while they are asleep.

On occasion you will be able to take family groups and a quick snapshot of uncles, aunts, grandma and grandad will always be welcome. I am not saying that these subjects should be posed in the style of the old family groups for you will find that the ready made settings are the best. For example, you will find a nicely prepared group assembled round the table for a meal and that will provide a more homely shot.

What about your friends? They may have some hobbies, be Scouts or members of a youth club, playing games of



*An example of a fireside scene as described in the text.
Photograph on Ilford film.*



A lovely shot for the family album. Photograph on Ilford film.

● Continued on page 44

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some description. How about a shot of a friend throwing a good dart, boxing, or doing some woodwork? If you have a pen friend such photographs will be far better than a lengthy pen picture.

We would, however, point out that it is not always what you take but how you take it and novel effects can often be achieved by slight modification of the lighting arrangement. For example, it is possible to buy a longer extension lead which enables you to place the gun in whatever position you desire. This can introduce new experiments such as fire-light effects.

The flashgun will have to be placed as near as possible to the fireplace. If there is no fire you may place it right in the grate with your friends gathered round and so arranged that they will obscure the direct flash when fired. If you have ever sat in the firelight you will know that it gives a soft effect to the shadows so once again we would recommend the fitting of a cardboard reflector or perhaps a diffuser. You need not worry

about the dark shadows in this case, for this is the effect we seek. At the same time you may use ordinary room lighting if not too powerful for the contrast will be almost correct and a standard lamp may be left alight if the bulb is shielded.

This type of scene makes an effective picture of warmth and cosiness. The same idea may be used to produce camp fire effects and the only additional accessory you will require is a long enough extension lead permitting the gun to be fired in a suitable position.

Flashlight is a remarkable aid to colour photography and when taking indoor photographs is almost the only way — apart from long time exposures. And this is impossible if you wish to catch glimpses of family life. We should also mention that frontal lighting from the direct flash is quite good with colour film since modelling and contrast is effected by the colours. Moreover, it becomes exceptionally useful out of doors, even in bright sunlight, to lighten the shadows, producing a much more

natural effect.

The normal colour films we use for daylight work would produce results giving excessive yellowness if used in normal artificial light because this contains light which bears red rays. These remarks also apply to clear flashbulbs so to achieve the desired effect we resort to blue flashbulbs. These bulbs are treated with a blue, transparent lacquer which counteracts the red rays and gives a light similar to that of daylight. It is not quite so intense in light value as the light given by clear bulbs but the usual guide numbers are quoted on the packets.

Rapid progress has been made in flash photography during the last few years and the amateur photographer now has an accessory at his command to take pictures like the press photographer. When we remind you that flash photography will help for both indoor and outdoor work, colour and monochrome as well as being the means of producing wonderful effects we think you will find it a real boon to your hobby.

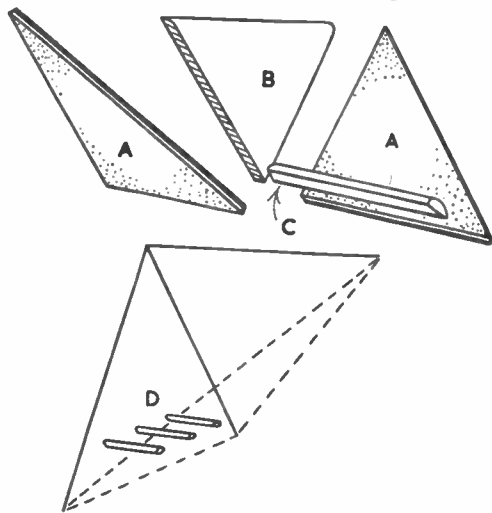
Dart-shaped Wall Shelves are effective

can be made, of course, using a 9 in. square of plywood for the sides, for example.

The back-plate B is made from $\frac{1}{2}$ in. thick wood. As it is the same size and shape as the sides, one of these can be used as a template for cutting it out. After the sides have been held against the back plate to check its size, its upper edge should be rounded off to give the fitting a more elegant look.

The sides are then pinned and glued to the backplate, and an $11\frac{1}{2}$ in. length of quadrant moulding or triangular section wood strip is fitted inside the bottom of the holder along the joint of the two sides C. Its front end should be cut at the same angle as that of the sides — 45 degrees. It is pinned and glued in place, and the joint between the two sides is filled on the outside with plastic wood.

If the fitting is to be used as a plant holder, three 4 in. lengths of $\frac{3}{8}$ in. diameter dowelling are used to form the rack on which the pot stands D. The ends of the dowels are cut at 45 degrees to fit the inward sloping sides, and they are pinned and glued in place.



The fitting is fastened to the wall through two holes drilled in the back-plate, using dome-headed screws and wall plugs.

The finish of the unit depends on individual taste, but it does lend itself to a two-colour scheme, matt black on the outside and glossy white on the inside being particularly effective.

(A.L.)

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BIRD'S EGG CAMOUFLAGE

BIRDS are now occupied with incubating their eggs and rearing their young. Often, when we discover a nest with eggs we marvel to note how closely their colouring resembles that of their immediate surroundings. Then we begin to think of its purpose.

Colour means protection. That is why so many birds which build nests on the ground have thickly mottled eggs. It is just another case of Nature's camouflage.

Birds' nesting sites are of three main types — under the ground, on the ground, and above the ground, sometimes at a great height. On the ground we find nests built on pebbly shores and shingles, on ploughland, on sand, soil, pastures, among stones, rocks, and so on. When we come to the nests above ground we discover them in trees, hedgerows, holes in tree boles and boughs, in barns, belfries, ruins, high up in church steeples, and similar spots.

White eggs underground

Birds nesting underground usually lay white eggs, which often become slightly discoloured, though they are pure white when first laid. Among such birds we find the kingfisher, sand-martin, sheld-duck, puffin, Manx shear-water, stormy petrel, short-eared owl, and a few others. These birds' eggs, hidden well underground, require little protection from their numerous enemies, and are not easily seen by predacious animals or birds.

Puffins and sheld-ducks build nests in rabbit holes. Puffins today mostly nest underground, but this was not always the case, for faint markings still traceable on the eggs seem to indicate that at one time these birds laid them on the ground.

White is a useful design for the eggs of birds that nest in dark tunnels — they show up well, and permit the birds to see their possessions easily against the dark background. But if such eggs were laid on the ground, like those of the plover, woodcock, snipe, curlew, and redshank, etc, every hungry rascal of a predatory bird — such as the carrion crow, magpie, and rook — or the fox, weasel, stoat, and rat would be after them.

Nature in her wisdom has ordained that ground-nesters have well-camouflaged eggs. They are mostly well marked, and mottled with markings harmonizing with the surrounding hues of the place whereon they are laid, sometimes so cleverly that we may gaze right upon them, and yet fail to spot them. Yet that is the case with birds like the grouse,

golden plover, curlew, woodcock, snipe, lark, meadow-pipit, redshank, green-shank, partridge, pheasant, and most game birds and moorland nesters.

On the coast we find the blotched eggs of the gulls bearing a close resemblance to the stones and pebbles among which they are deposited. There is little attempt to build a proper nest. The little ringed plover makes very little pretence of building a nest, preferring to trust its well-camouflaged eggs to the bare earth and shingle along the beach, the eggs for all the world looking like nicely moulded pebbles. The difficulty of finding them among the mass of stones is well known to bird-watchers.

Various colour schemes

The eggs of those birds that nest on light-brown sand and shingle usually are of a pale brown or creamy colour, with brownish spots and blotches. Birds which lay eggs on dark brown and blackish soil, as the curlew and peewit, have darkish brown or olive colour schemes, mottled with darker spots.

When we think of birds that nest in trees, hedgerows, copses, and plantations as well as wayside banks, reeds, sedges, etc, colour is again of importance. Blue or blue-green eggs such

THE CRAFTY CUCKOO

There is one bird that lays variously coloured eggs — the cuckoo. Seemingly, the coloration varies much according to the species of bird selected to be the foster parents of the young cuckoo!

as those of the thrush, missel-thrush, black bird, dunnock or hedge-sparrow, finches, buntings, and others are often well spotted, and marbled with brownish and tinted spottings, being less likely to be discovered by enemies when in nests built in the green foliage.

But in holes in trees, the eggs of birds in the habit of nesting in such sites are white or creamy in colour without spottings or markings. We think of owls, woodpeckers, dipper, house-martin, swift, stock-dove, all laying whitish eggs. But jackdaws lay greeny-brown coloured eggs.

Notably, too, the woodpigeon lays white eggs, plainly discernible to the climbing squirrel or stoat, and this sets us wondering. The explanation is that the woodpigeon once laid its eggs below the ground. The stock-dove, which is a poor nest-builder, still makes use of underground sites. (E.)

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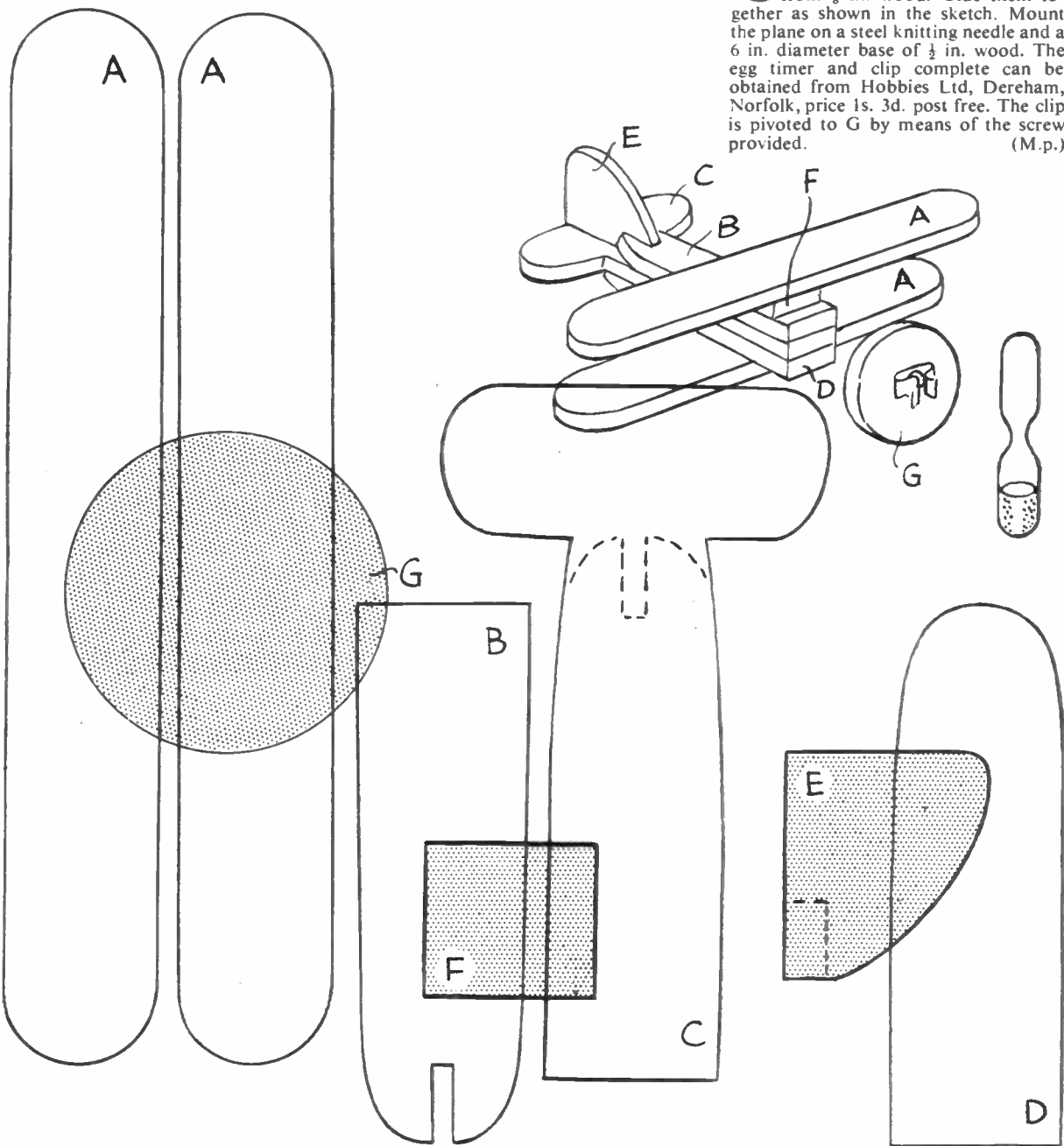
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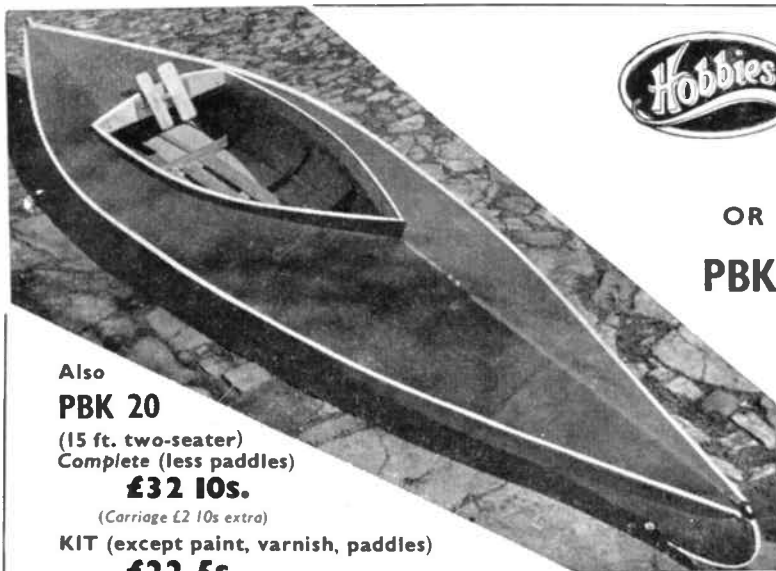
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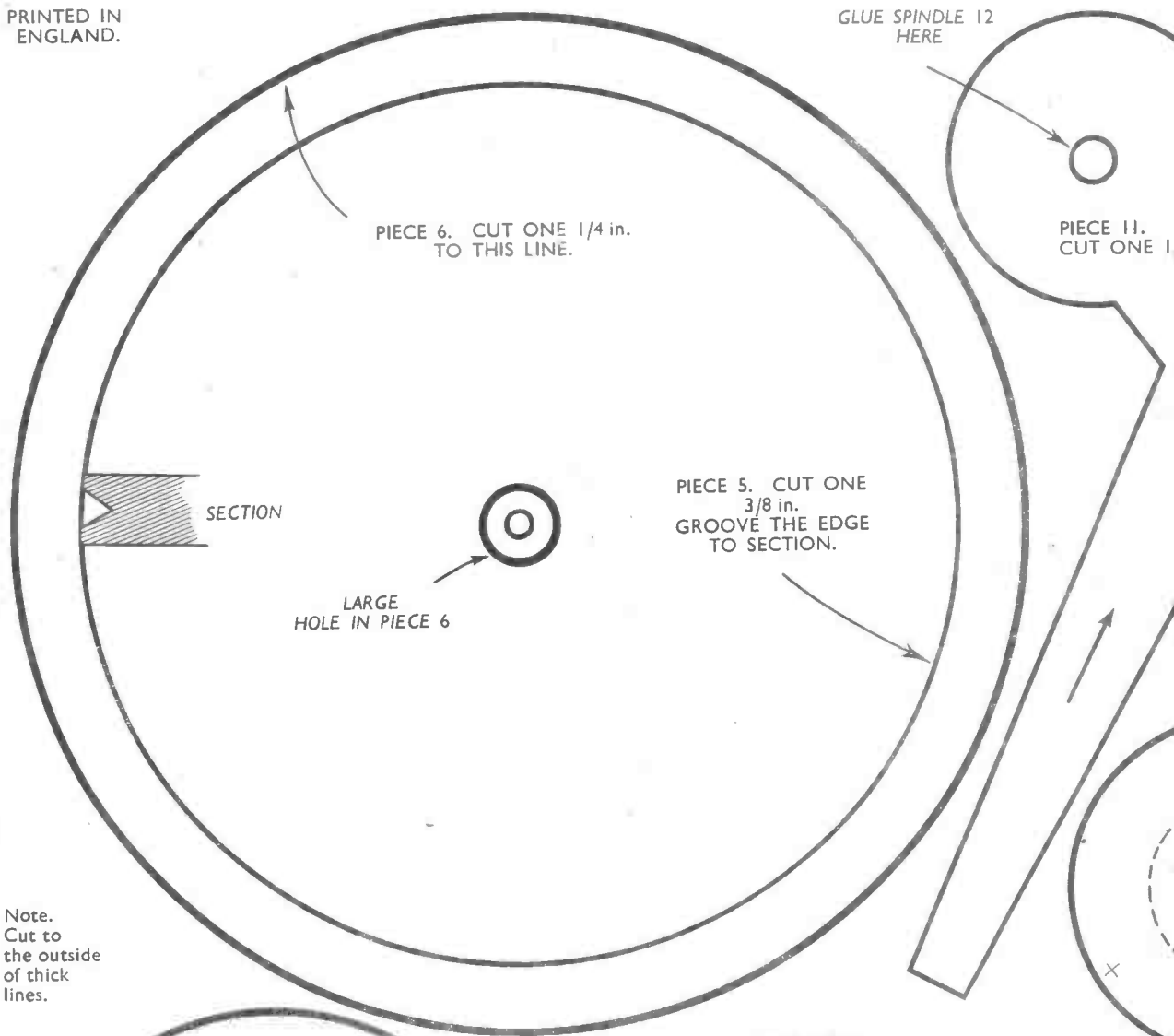
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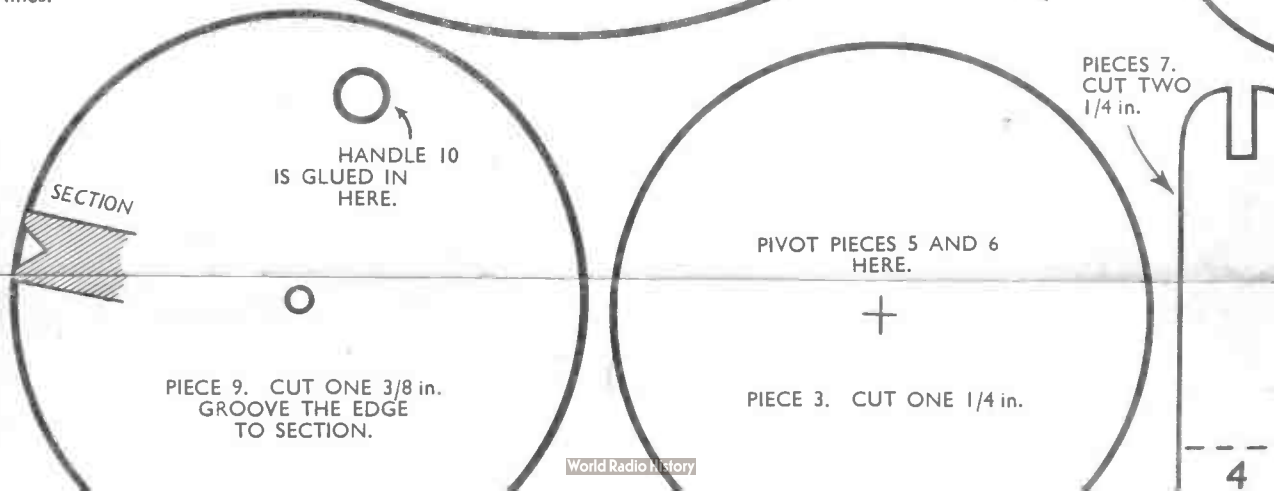
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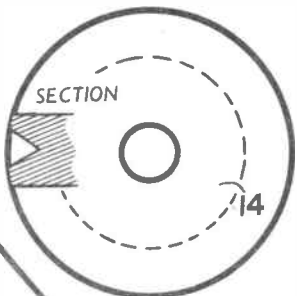


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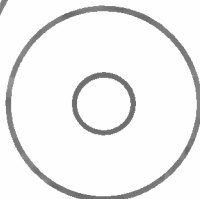
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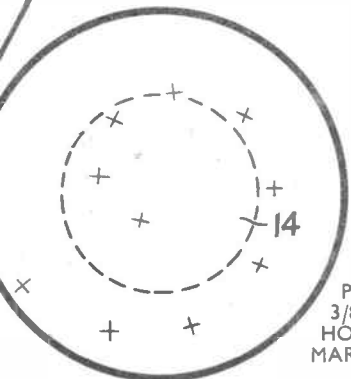
E 11. CUT ONE 1/4 in.



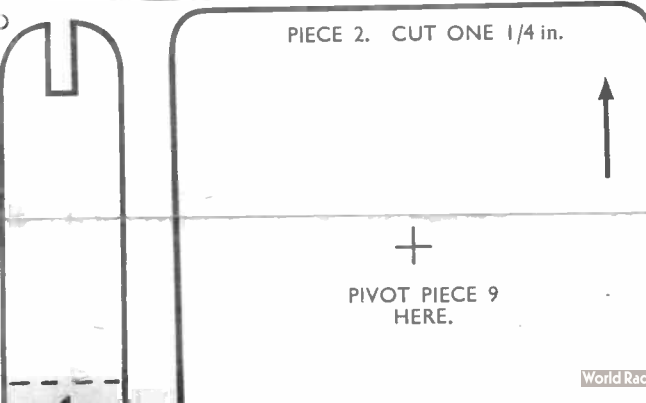
PIECE 13. CUT ONE 3/8 in. GROOVE THE EDGE TO SECTION.



PIECES 14. CUT TWO 3/8 in.

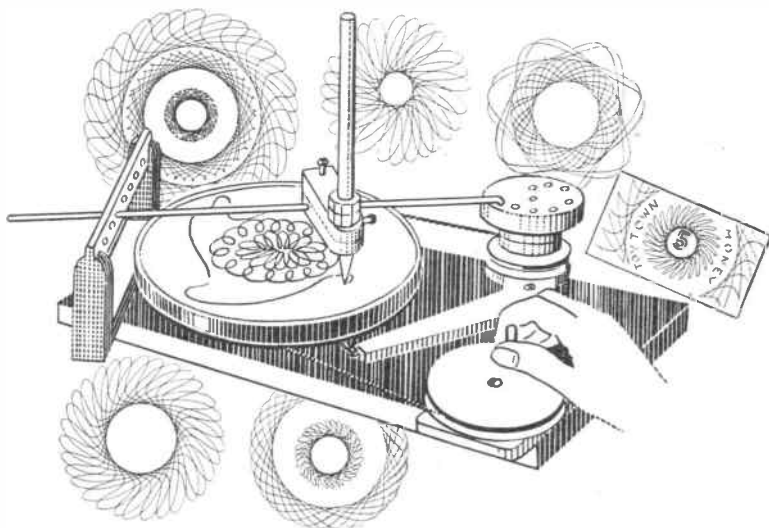


PIECE 15. CUT ONE 3/8 in. DRILL 1/8 in. HOLES AT POSITIONS MARKED +



PIECE 2. CUT ONE 1/4 in.

PIVOT PIECE 9 HERE.



SIZE 12 in. LONG BY 8 in. WIDE.

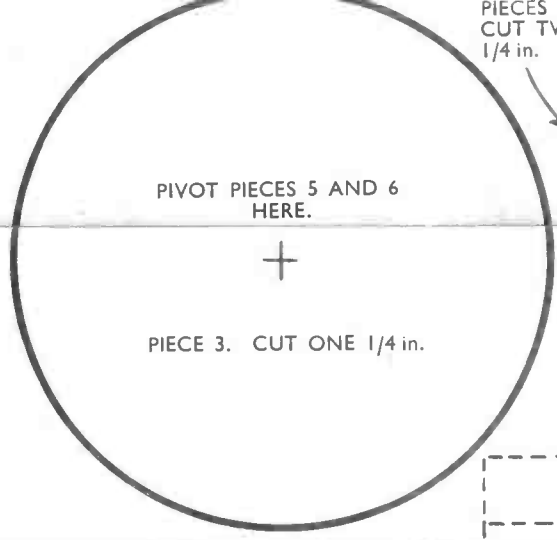
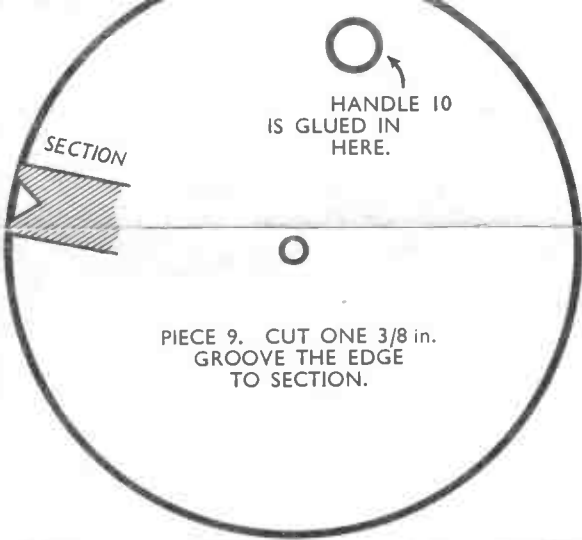
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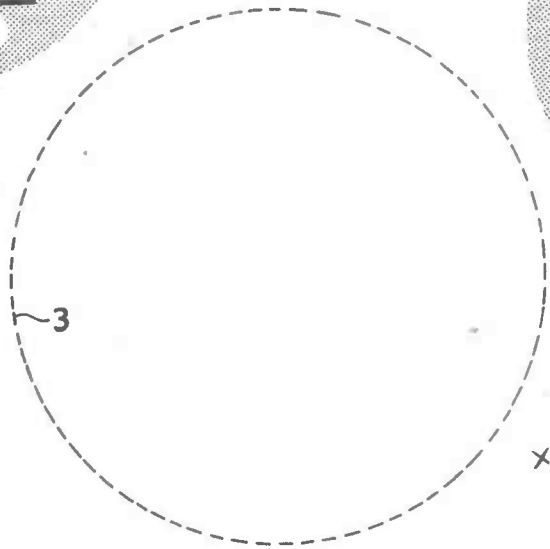
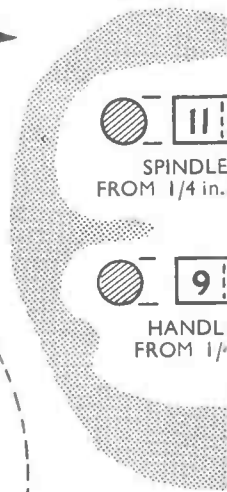
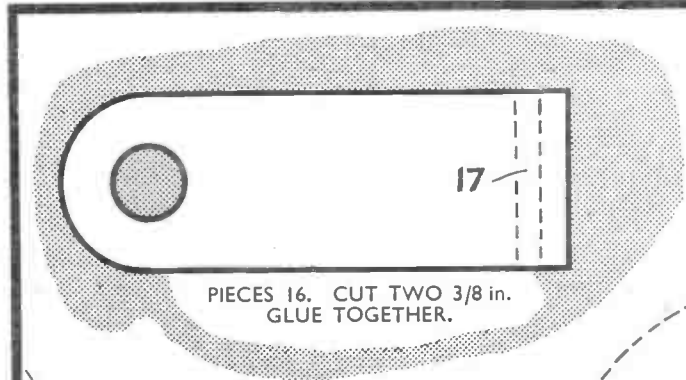


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16

16

ARM 17. CUT ONE FROM STOUT WIRE.

PIVOT PIECE 11
HERE



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FROM 1/4 in. DIA. ROUND ROD.

HANDLE 10. CUT ONE
FROM 1/4 in. DIA. ROUND
ROD.

2

PIECE 8.
CUT ONE FROM
1/8 in. BY 1/2 in. STRIP.

7



PIECE 4.
CUT ONE
1/4 in.



7