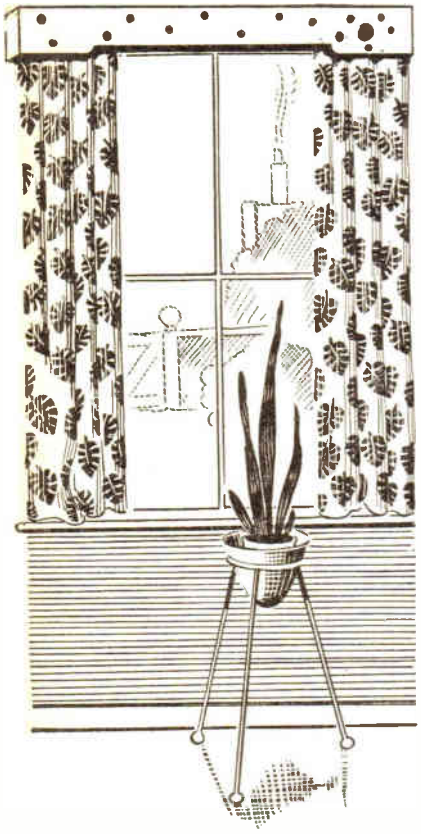
HOBBIES WEEKLY

JANUARY 11th 1956 VOL. 121 NUMBER 3141

IN THIS ISSUE

Hobbies

Add that finishing touch . . .



THE appearance of most rooms is greatly improved by the addition of pelmets fitted to the windows. They can be cut in various shapes and painted almost any shade to match existing furnishings. Decorate them with overlays cut out with a fretsaw or cover them with material glued to the wood. However you make them, they look smart and attractive, and give just that finishing touch to the whole room.

The shaped portion of the pelmet can be cut from ⅜in. wood such as obeche or from ¼in. plywood or hardboard. Choice of material will depend on the shape to be used. A plain pelmet or one with shaping which can be cut with a fretsaw demands the use of hardboard or plywood. Hardboard is particularly suitable because the surface is just right for giving a perfect result with high gloss paint or enamel. Screws can be countersunk and nails punched home

MAKE PELMETS FOR WINDOWS

If you make them yourself they will cost very little either in money or time. They are simple to make, as will be seen from the accompanying diagrams.

Decide on Shape

First of all decide on the shape. The outlines in Fig. 1 will help you. Remember that various shapes can be built up by adding pieces to a plain pelmet, using dowels as shown in Fig. 2, or by cutting the shaped edge with a fretsaw. Incidentally, when planning a shape to be cut with a fretsaw, remember to take into account the length of cut possible.

The heads should be filled with putty woodfiller or plaster.

The ends of the pelmets should be about ½in. thick, obeche being a useful wood to use, because it is soft enough to shape quite easily. The top should be ½in. thick and of similar wood to the ends. Fig. 3 shows the general construction.

Before painting, arrange for the actual fitting of the pelmet to the window. Screw two dresser hooks into the top of the window framing as shown in Fig. 4. If this is not quite right for height, remember that the hooks can be put into any position on the wall,

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

For Modellers, Fretworkers and Home Craftsmen

4D

provided the holes are drilled and Rawlplugged. Note that the front has been removed to show the method of fitting.

Take the completed pelmet and place it over the window, so that it is flat against the wall and rests with its top on the hooks. Mark off the positions of the hooks on the pelmet top, making sure at the same time that it is perfectly square with the window.

Bore holes through the top in the positions just marked, and put the pelmet up over the window again. If your marking has been accurate, the hooks will slip through the holes and will hold the pelmet in place.

The completed pelmet can now be painted inside and out. Three coats should be sufficient and the first two coats may be rubbed down with fine grade glasspaper when dry.

The curtains may be hung with rails fixed to the window, or by the ordinary expanding curtain stretcher. This can be fixed to the pelmet itself as shown in Fig. 5.

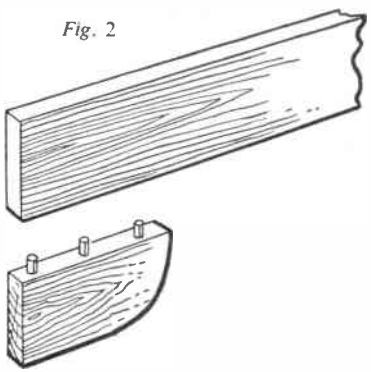


Fig. 2

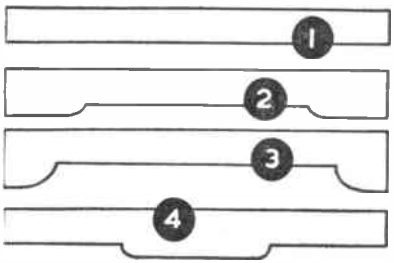


Fig. 1

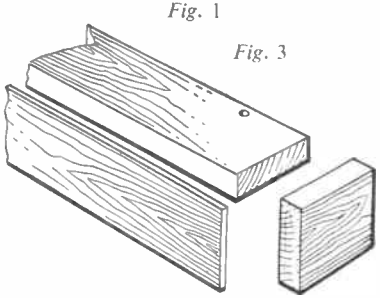


Fig. 3

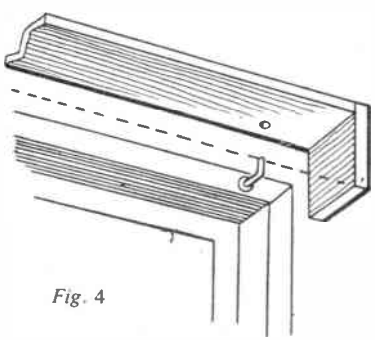


Fig. 4

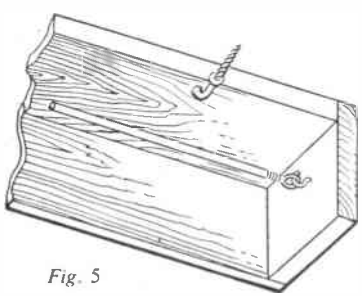


Fig. 5

Decorate with Overlays

Finally, the pelmet can be decorated with cut-out overlays painted in contrasting colours and glued on the front. Fig. 6 shows some suggested shapes which should be cut from ¼in. wood. The picture of the completed pelmet shows how small circles of wood can give the contemporary effect of polka dots. Overlays may conform to a definite pattern or scattered as shown.

Fig. 6

Books to Read

The Aquarium Book

by E. G. Boulenger

EXPERT advice by the author, who was a director of the aquarium at the London Zoo, is given on the nutrition, breeding and general health of aquarium fish. He gives brief descriptions of all the main families suitable for both the sea water and the freshwater aquarium, and there are some beautiful colour photographs of various species.
Published by Gerald Duckworth & Co. Ltd., 3 Henrietta Street, Covent Garden, London, W.C.2—Price 15/-.

The Year's Photography

EXCELLENT photographs receive an appropriate setting in this finely produced book. The edition contains selection of photographs from all the exhibitions held in 1954 under the Society's auspices. There are also reviews of artistic photography, scientific photography and its applications.
Published by The Royal Photographic Society of Great Britain, 16 Princes Gate, Kensington, London, S.W.7—Price 10/6.

A Beginner's Guide to Radio

by F. J. Camm

IN the belief that practical experiments are the best method of teaching theory, the early lessons in this book show how to build and modify a simple receiver with explanations as to the function of each part as successive stages of production proceed. This principle would appear to be very useful to the student who adopts this elementary first course in radio transmission and reception, which is written in simple language, so that even the very beginner will readily understand.
Published by George Newnes Ltd., Tower House, Southampton Street, Strand, W.C.2—Price 7/6.

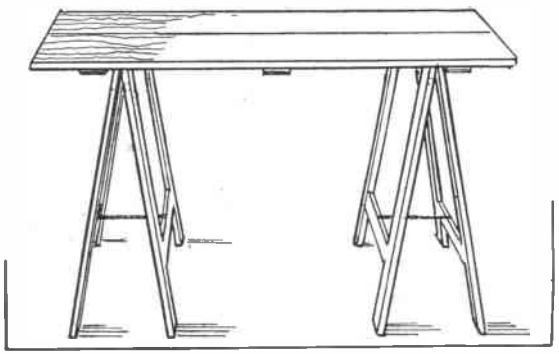
Science Magic

by Kenneth Swezey

THE purpose of this entertaining book is to help you by simple experiments to find the answers to questions such as what makes jet planes fly, and how can scientists squeeze rain from the clouds. In some cases the experiments take the form of amusing tricks which can be used for entertainment at the dinner table, a party or before the science class or club. Many of the experiments were devised by the author in his own kitchen. Mr. Swezey's book ensures many hours' entertainment and no little instruction.
Published by Nicholas Kaye Ltd., 194–200 Bishopsgate, London, E.C.2—Price 15/-.

Board and Trestles for Paperhangers

Be ready for the 'Spring Offensive' says W. J. Ellson



A BOARD for pasting on, and its accompanying trestles, are really necessary when papering a room. A good board and trestles can easily be made by any handyman, and be useful also as a temporary table in emergency.

For the board, planed wood shelving, of ⅝in. thickness, and 11in. width, will be excellent. Quite stout enough for most purposes, it needs only two boards to make the width. A half-length plan of the board is shown in Fig. 1 (underside view), revealing the battens which hold the boards together and prevent warping. The length of the board can be 5ft. or 6ft. or as convenient for space.

CUTTING LIST

Board.	(2). 5ft. by 11ins. by ⅝in.
Battens.	(3). 1ft. 10ins. by 3ins. by ⅝in.
Trestle top bars.	(4). 1ft. 9ins. by 2ins. by ¾in.
Trestle lower bars.	(4). 1ft. 9ins. by 2ins. by ¾in.
Trestle legs.	(8). 2ft. 9ins. by 2ins. by ¾in.

2 pairs 2in. iron backflap hinges. 4 screw-eyes. 1yd. sash cord. Screws.

Plane the meeting edges of the boards, if necessary, to ensure a close fit. The three battens are cut from 3in. wide timber, ⅝in. thick. Place these over the boards and mark with a pencil where the fixing screws are to come. It will be seen from the drawing that these are to be staggered, not bored on one line. Bore the screw-holes in the battens of a size to admit the shanks of the screws. They should be of a fit that enables the screws to be pushed through their holes with the thumb, right up to their heads. Well countersink the holes in the battens, and chamfer the upper edges of the battens a little.

Lay the boards together, face side downwards on a bench or table, place battens in position, and pushing a bradawl through the first and last holes in each, make holes for the threads of the screws in the boards beneath. Make sure when boring these thread holes that both boards are as close together as possible. Drive in the first hole screws. Remove the second board and glue its edge, then replace at once and drive in the last hole screws. Wipe away any surplus glue squeezed out between the joints, and then drive the remaining screws home tightly.

Clean up the boards, especially the upper surface, with medium glasspaper, and glasspaper the sharp corner angles to remove roughness and possible splinters.

A pair of light, but strong trestles will be needed. A view of one is given in Fig. 2, showing one of the two frames required to make each trestle. Timber of ¾in. by 2ins. section will serve for construction. Cut the top horizontal bars to length, and at 3ins. in from each end, mark the grooves to be cut out for the legs. These grooves are cut out to half the thickness of wood employed, and it will be noted at a slope of 5 degrees inwards from the vertical, as at (A) in Fig. 3.

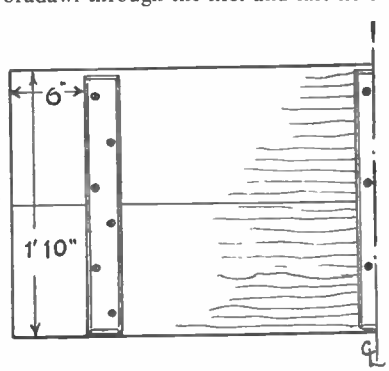


Fig. 1

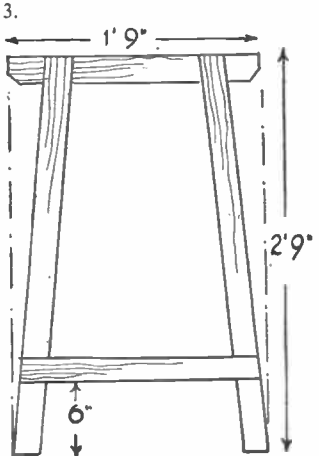


Fig. 2

Now cut the legs and fit them in the grooves, as at (B). Run a pencil along the bar on to the legs to indicate the slope of the shoulder. Reduce the top of each leg to half thickness, down to the shoulder and then fix the legs to the bar with the halved joint described. The length of the lower bars of the frames is best ascertained by laying the bars across the legs at 6ins. up from the bottom. The bars are to be halved into the legs and the necessary slope for the joints in both bars and legs can be pencilled in as done for the top joints. The bottoms of the legs are trimmed off to bed flat on the floor.

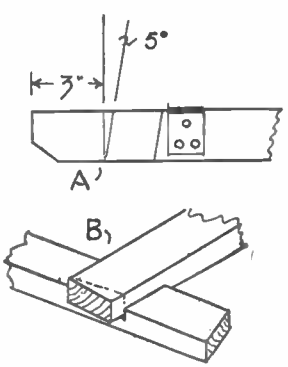


Fig. 3

Glue all the joints, and screw. Hinge each pair of frames together at the top with a pair of 2in. iron backflap hinges. A screw-eye is driven in the top edge of each lower bar, and to these a length of sash cord is tied to prevent the trestles opening too much and possibly collapsing. A distance apart of about 12ins. between the trestle legs will be about the best.

Painting or varnishing board and trestles is entirely optional, but if so treated, the top of the board is best left plain.

CASTING FOR PROFIT

By G. H. Kingsley

CASTING is a very interesting and profitable handicraft. Toys, novelties and ornaments can be made easily and cheaply for re-sale to your friends, or, perhaps, to local shops and other organisations.

No expensive equipment is required to commence plaster casting. For an outlay of a few shillings you can obtain all you need for many hours of profitable work.

The Sculptorcraft Dan Dare outfit

The basic equipment consists of: a mixing vessel, casting powder, moulds, colours, and clear varnish. With complete outfits, of course, all materials (including brushes) are provided, but items can be purchased individually.

The mixing vessel should be of rubber, if possible. If this is unobtainable an ordinary tumbler will do. Casting powders are available from most handicraft dealers, and come in various grades from 'ordinary' for making ornaments, to extra hard wearing powders for the production of toys.

Flexible moulds are available in a wide range of designs, and may be purchased for as little as 1s. 6d. each.

Any good quality water colours, poster paint or cellulose may be used for finishing the casts.

The last item required—clear varnish—is used to give the painted casting a sheen, brightening it and enabling it to be cleaned with a damp cloth.

Casting

Measure out the amount of water required to fill the mould. Add the casting powder gradually and stir until it becomes a thick creamy liquid. Fill the mould and level off. Leave to harden for thirty minutes.

The cast is now ready to be removed from the mould, and in order that the mould should roll back easily it should be moistened with soap and water. Do not be afraid to stretch the material with your fingers, but do it gently; never use force.

The cast may require trimming with a penknife, after which it should be left to dry for twenty-four hours.

After this drying period the figure can be coloured either by dipping, brushing, or spraying. Never try to paint a wet cast, as the colours will run and much time will be wasted in correcting this.

All that remains to be done is to coat the cast with clear varnish. This will give your product a rich and sparkling glossy finish, which will increase its sales appeal.

Popular Figures

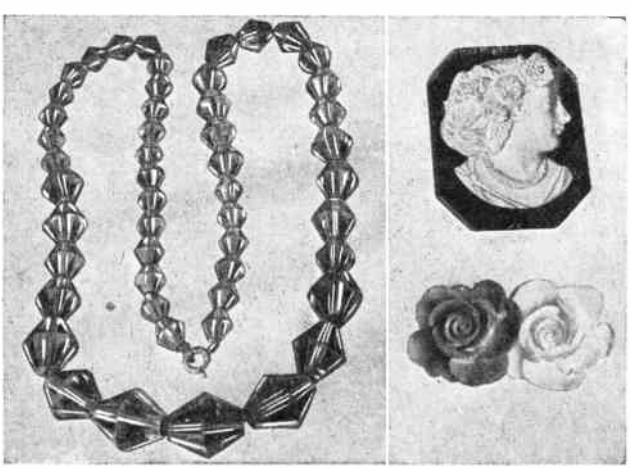
Among those who use Sculptorcraft model-making outfits by Seamer Products of Hull are the School for Blind Children in Southern Rhodesia and the Children's Corner on board the P. & O. liners, S.S. *Arcadia* and S.S. *Strathnaver*.

Complete outfits in the Enid Blyton (Noddy), Walt Disney (Snow White), Girl and Eagle (Dan Dare) range are available, in addition to over 200 individual moulds, all of which can make as many castings as is required, and many of which have been specially created to give a local appeal in various parts of the Commonwealth. For instance in India a mould is available for the casting of Mahatma Gandhi and in Australia a koala bear, kangaroo and merino sheep.

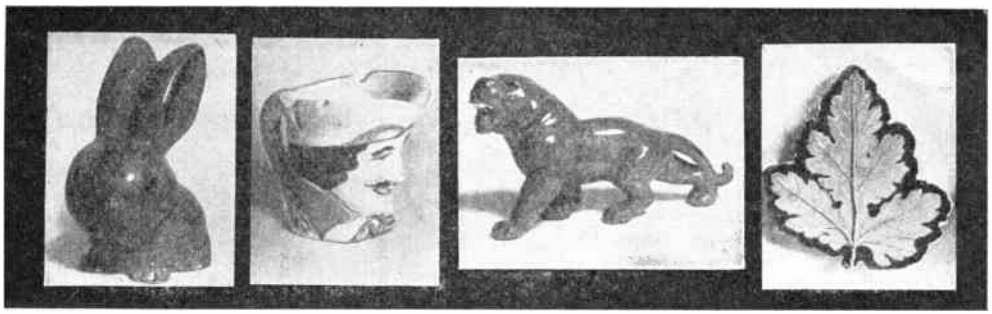
Among the new moulds brought out in the Sculptorcraft range are a historical set of Henry VIII and his six wives, while nursery rhyme characters (Humpty Dumpty, Miss Muffett, etc.) are appealing and colourful subjects.

Quality Plastics of Brentwood, Essex, specialise in liquid plastics as a medium, and they, too, have a great variety of moulds to interest the handicraft worker. Those for wall plaques produce particularly striking examples of this work. Materials can also be supplied for workers to make up their own moulds and thereby reproduce their own designs.

The instruction manual gives details for making up novel jewellery (such as rings) incorporating a photograph .There



Jewellery cast from Quality Plastics



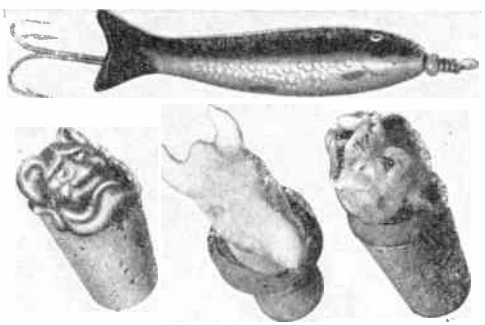
Typical moulds produced by Fleximould

are also attractive designs for cameos. Incidentally, the colours for plastics may be added before pouring, or the casting may be hand painted, dipped or sprayed.

Own Masters

Fleximould is another medium with which to form masters from which plaster casts of any number can be made in the home. Full instructions are given for reproducing your own originals modelled in clay, plaster, etc., or the many delightful subjects which can be picked up in antique or art shops. 'Whitecast', recommended as the casting powder, takes about 20 minutes to set, and water colours, oil paints or enamels all give a satisfying finish. The manufacturers are Dohm Ltd., 167 Victoria St., London, S.W.1.

Sankeys Pyruma Plastic Cement can be easily manipulated with the hands and simple tools to make such interesting projects as model railway buildings and accessories, ship models, etc. When firm the subjects will harden to a stone-like state, or this process can be accelerated by heat. Colouring is the same as for plaster casts. Pyruma Cement can also be used for making moulds for running metals.



Other subjects for casting in plastics

Toymakers' casting moulds can be obtained from G. F. Rhead, Bacton, Stowmarket, Suffolk. With one of these and some scrap lead such as is to be obtained from batteries and piping, it is quite easy to make your own soldiers, animals, cars and other novelties. An easy-to-follow booklet, priced at 2/6, tells you all you want to know about casting in this medium.

F. W. Nuthall, 69 St. Mark's Rd., Hanwell, London, W.7, also caters widely for modellers in the metal medium, besides the rubber mould and plaster processes already mentioned. The variety of moulds that can be supplied runs into several hundreds. This firm's metal moulds have been used for many years, for casting soldiers, etc.

HERE'S MAGIC FOR YOU!

Mystic Sand of Cairo

THE performer brings forward a canister containing sand, which he empties on a saucer and passes for inspection. It is seen to be just what the magician says it is—ordinary sand. The audience, however, are informed that this sand came from the mystic East and that it has been bewitched by an Arab mystic. Therefore, it has very extraordinary properties.

Now a glass basin or jug, half-filled with water, is shown and the performer pours the sand from the saucer into the water. It, naturally, sinks to the bottom. But when the performer plunges his hand into the water and brings out the sand a handful at a time, which he returns to the saucer, it is seen to be perfectly dry!

This trick has puzzled many, but the secret is simple. First procure a quantity of ordinary sand from the beach. If you do not live near the coast, obtain your sand from a pet-shop, as sold to bird fanciers. Now wash the sand thoroughly, changing the water several times. Next, spread it on paper and dry it in an oven. Finally place the sand in a frying-pan with a piece of lard and work it about, adding more lard if necessary, until the sand is thoroughly saturated. Allow it to cool, then rub it through the hands a few times. It will appear quite normal—but it will now be waterproof. Hence the 'dryness' when taken from the water!

By R. W. Wood

Useful for constructors

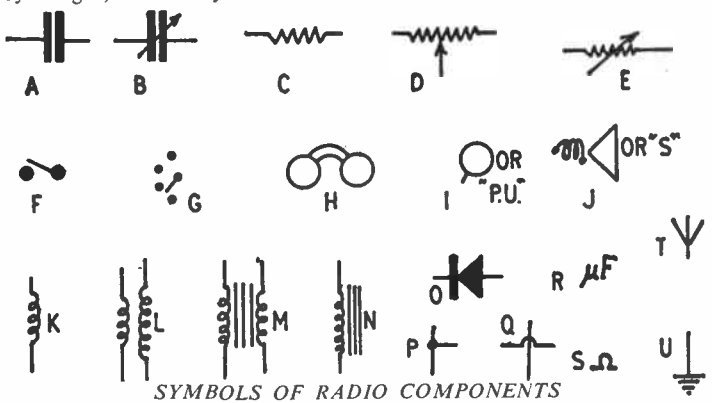
SYMBOLS USED IN RADIO

By F. G. Rayer

THE beginner to radio construction may be puzzled by the special signs used, but these are actually quite easy to understand. Each symbol represents some particular component, and all the components are joined in the appropriate manner by lines which show connections. A theoretical circuit is thus a complete representation of a circuit, and only a little practice is required before such circuits can be followed easily.

It helps to remember that most symbols are a simplified representation of the actual part, and almost no demand is made upon the memory, for this reason, once the signs are understood.

Fig. 1 shows the most generally employed signs, which may combine to



SYMBOLS OF RADIO COMPONENTS

form any circuit from the very simplest to a large radio or TV receiver. (A) is a fixed condenser — two metal plates separated by an insulator. The value will be marked on the circuit. (B) is exactly the same, but with an arrow. Such an arrow always means that the component is variable, so that (B) is the symbol for a variable condenser, normally employed for tuning and reaction. In some circuits condensers may have the polarity marked by the usual 'plus' and 'minus' signs, for positive and negative. If so, the condenser is of a kind to which a voltage should only be applied in the proper polarity, as shown by the markings.

(C) is a fixed resistor. (D) is a potentiometer—a resistance with a moving contact, shown by the arrow. Such a part is often used as a volume control. (E) is a variable resistor. A circuit will specify the values required, which are expressed in Ohms, the sign for which is shown at (S). Sometimes the circuit values may be marked K-Ohms, which means 'Thousands of Ohms', or Meg-Ohms which indicates 'Millions of Ohms'. This is to save the need for so many noughts. For example, 500,000 ohms, 500K, or ½ megohm will all be the same value.

Switches

(F) shows the simplest type—two contacts joined when the switch is closed. This may be used for On/Off switching, or many other purposes. (G) illustrates another type of switch, in which a rotating arm can contact any one of four contacts. That actually shown would be a single-pole 4-way switch, as it can switch one circuit to any of 4 ways. Such switches are often used for wavechanging, or purposes where many circuits have to be switched. There may be more (or fewer) 'ways' and 2, 3 or more poles. If so, each will be shown by the symbol at (G), with the appropriate number of contacts or ways.

In large circuits switching may be quite complicated, but it can always be broken down into various separate circuits, all controlled by separate switch contacts.

Phones, etc.

(H) is the sign for Headphones, and easy to remember. The polarity may be marked with the usual signs. (I) represents a gramophone pick-up. Quite often the letters 'PU' are used instead.

(J) is the symbol for a moving-coil speaker or cone speaker, but 'S' is often used. This symbol, like the phones and pick-up, does not require actual memorising, because it is a simple representation of a cone with coil by it.

An inductance is a component having a number of turns of wire upon it, and it may be a coil, choke, transformer, etc. These components have symbols showing the turns of wire by a curly line as at (K). (K) itself might be any single winding—a choke or part of a coil. Where there is any doubt about what kind of inductance is required, the circuit will specify it.

(L) shows two windings on a common former, such as a tuning coil with two coupled windings. No straight lines are drawn by (K) or (L), and this shows that the components are wound on insulated formers and are air cored. If the component is wound upon some form of metal core, lines are drawn as at (M) and (N). (M) is thus an iron-cored component with two windings—probably a transformer. Its characteristics will be specified on the circuit. (N) is a single winding with iron core, such as used for a smoothing choke.

Inductance symbols with dotted lines appear, and these show the part has a dust-iron core. This is found in tuning coils, in particular. If an arrow also appears, the position of the core is adjustable. So many different inductances exist that the simple inductance symbol (K), (L), (M) or (N) is usually employed, and details given of the actual part elsewhere.

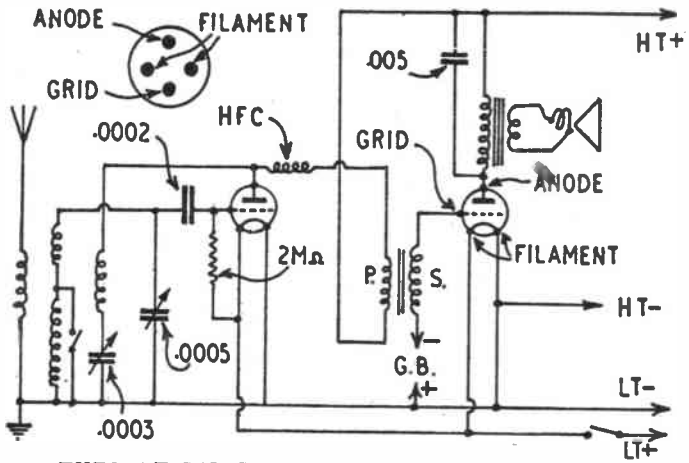
Other Symbols

(O) is a rectifier or crystal detector, which allows current to pass in one direction, but not in the other. When the polarity is important it is usually marked. If not, the V-shaped side of the symbol is negative.

(P) shows wires joined, and many such joints arise in circuits. (Q) shows wires passing over each other without touching. In theoretical circuits joints and cross-overs are made anywhere, giving a tidy, easily-followed diagram. In actual wiring, however, all joints will usually be at the ends of components such as resistors, or at valve pins, etc.

Condenser values are marked in Microfarads, or MFD, or with the sign at (R). With very small values the term 'pF' may be found. 100pF equal ·0001μF. This term saves decimal places with very small values. For example, 15pF is ·000015μF. It is seldom used for values larger than ·001μF, which would be 1000pF.

(S) is the 'Ohms' sign, already mentioned. (T) shows the Aerial symbol, while (U) is the Earth symbol. In large sets built on a metal chassis, small earth symbols may be dotted about to show any point which is to be wired to the metal chassis, which is regarded as earth for the circuit.



THEORETICAL CIRCUIT OF A BATTERY 2-VALVER

Fig. 2 shows a useful 2-valver, which it should now be possible to follow without much difficulty. Only the valve symbols have not so far been encountered. These are always relatively easy to understand, grids being shown by dotted lines, and anodes by a flat 'plate', all within the circle representing the glass bulb.

Proceeding through the circuit, a winding is seen connected from aerial to earth. This will be the tuning coil aerial coupling winding. Next follows an inductance with part controlled by a switch—the Medium and Long Wave tuning coil, the Long Wave section being shorted out by the switch when Medium Wave reception is wanted. The final winding is for reaction. With the actual tuning coil, the ends of the windings will be identified by numbers or other means, so difficulty does not arise in connecting up.

The ·0005μF variable condenser will be recognised, for tuning. The ·0003μF is for reaction. A 2-megohm grid leak and ·0002 condenser are wired to the valve grid, and a High Frequency Choke to its anode.

The transformer symbol (M) will now be seen, with Primary indicated by (P) and Secondary by (S). For this position it should have a step-up ratio of between 1:3 and 1:5.

A further transformer will be seen wired from the second valve anode. This will require to have a ratio of about 45:1 step-down. It is an output transformer, necessary for the proper operation of the loudspeaker. The condenser in parallel with the primary mellows reproduction.

As is usual, H.T. indicates High Tension, L.T. Low Tension, and G.B. Grid Bias. The valves required would be Detector and Output. Fig. 2, therefore, really conveys all that needs to be known, and almost any radio constructor could build up the set at once from this circuit, if the symbols in Fig. 1 are known.

Make This Handy Shopping Basket from Cardboard

Says F. Gilson

Fig. 1

THE materials required to make this useful shopping basket are cardboard milk bottle tops, a bundle of raffia, a reel of cream cotton, and a piece of brown material (about 5ins. square).

First completely cover each cardboard circle with the raffia, by passing the needle through the central hole.

To make the front (Fig. 1) place ten of the prepared circles in a straight line on a table. Join them at the sides by sewing with the cream cotton. Under these put nine more, and sew them also at the sides, and join them to the top line as indicated.

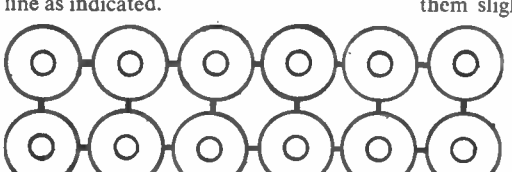


Fig. 2—The sides. Use 10 circles (two rows of 5) for the base

Proceed with the others in the same way, until the front portion is completed. Then make a similar piece for the back.

Next prepare the two sides. Each will require twelve cardboard circles. Cover them with raffia as before, and join them as shown in Fig. 2. Be careful to sew them slightly bent inwards, so that the basket may close easily.

The bottom part consists of ten of the circles, and should also be sewn to bend inwards. Then stitch on the two sides and the bottom.

The plaited handle is made of raffia. Use pieces long enough to allow the handle to be 6ins. above the top of the basket. The handle is attached to each side by pushing the raffia through the holes in the cardboard circles, and fastening underneath the base. (A stronger handle can be made with thin pliable cane.)

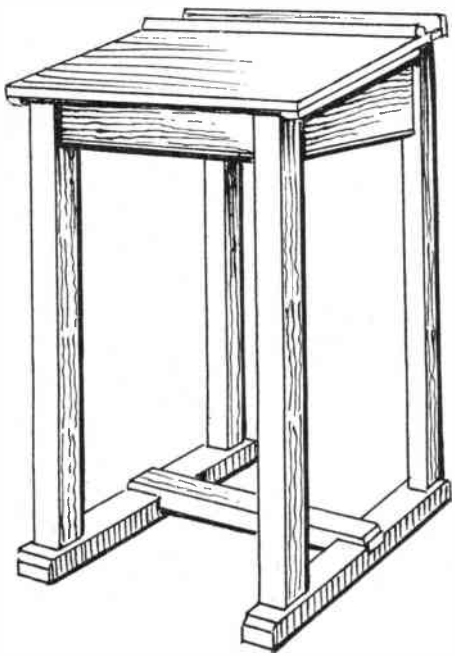
Line with Cretonne

To decorate the basket, take the piece of brown material. On it place a shilling, and cut around. You will need sixteen of these small circles. The shaded portions on Fig. 1 indicate where these brown pieces should be placed and sewn at the back.

Line the basket inside with flowered cretonne sewn around the top rows of the cardboard circles (Fig. 1). Take care to sew above the central openings.

Strong and Practical

DESK FOR A STUDENT



THE desk shown here would be appreciated by the younger members of the family for homework, letter-writing, etc. A useful compartment is covered by a hinged lid. In this books and papers may be kept ready for use.

The overall size of the desk is: height 26ins., width 16ins., and depth from front to back 16ins. These measurements, however, could well be changed to suit individual tastes. The cutting list will assist when marking out the various pieces of wood during construction.

The rear pair of legs are cut square each end, while the top of the front pair will slope according to the slope of the desk top. Figs. 1 and 2 being a section through the desk, and a front view, give all the necessary details for the assembly. The mortise and tenon joint used in connecting the top rails (B), (C) and (D) is shown in Fig. 3, and each will need some little care in setting out to obtain a good fit. The plan in Fig. 4 shows how the ends of the tenons are mitred to fit in the mortises of the legs. The lower ends of the legs will be tenoned into the rails (F), while the cross footrest, rail (E), will be cogged into them. Details of these joints are given in Fig. 5.

When the front rail (B) has been glued into the legs, saw off the tops of the latter to the correct slope of the sides (D). When all the legs and rails are fitted and glued together, proceed to cut the floor (L) from plywood, cutting away the corners as Fig. 5 to fit neatly round the legs. Use glue and screws for fixing the floor to the four rails.

The top of the desk is in two parts, the back rail (G) and the sloping panel (H). Glue and screw (G) to the back rail (C) and to the side rails (D).

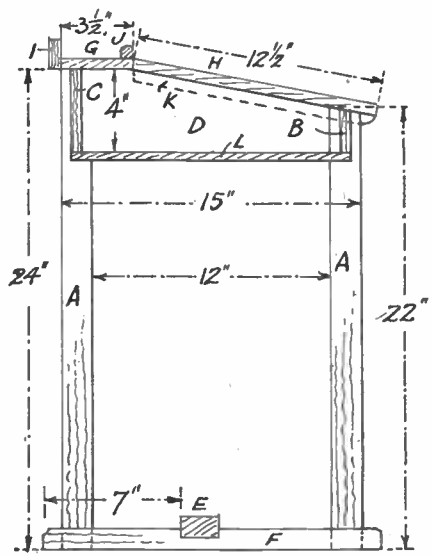


Fig. 1

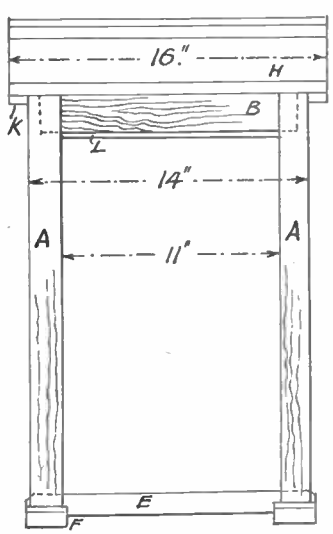


Fig. 2

CUTTING LIST

(A)	(2)	Legs.	24ins. by 1½ins. by 1½ins. and (2) 22ins. by 1½ins. by 1½ins.
(B)	(1)	Rail.	13ins. by 2ins. by ½in.
(C)	(1)	Rail.	13ins. by 4ins. by ½in.
(D)	(2)	Rail.	14ins. by 4ins. by ½in.
(E)	(1)	Rail.	14½ins. by 2ins. by 1in.
(F)	(2)	Rail.	17ins. by 2ins. by 1in.
(G)	(1)	Top.	16ins. by 3½ins. by ½in.
(H)	(1)	Top.	16ins. by 12½ins. by ½in.
(I)	(1)	Rail.	16ins. by 1½ins. by ½in.
(J)	(1)	Bead.	16ins. by ⅜in. by ½in.
(K)	(2)	Bottom.	12ins. by 1in. by ½in.
(L)	(1)	Floor.	14ins. by 13ins. by ¼in. ply.

The desk panel may have to consist of two boards planed up and glued together. Tongued and grooved boards would be best for the purpose. Two stiffening rails (K) should be glued and screwed on underneath the top at the extreme edges. The meeting edges of the two parts (G) and (K) need to be chamfered to butt together as shown.

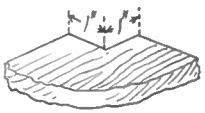


Fig. 3

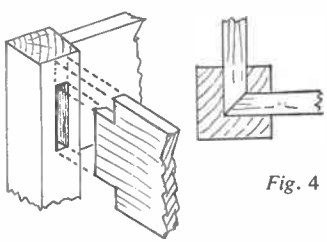


Fig. 4

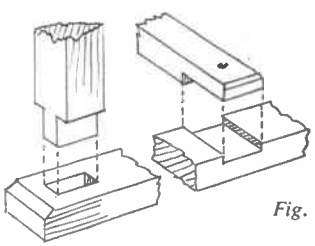


Fig. 5

Hinge both parts together with a pair of 1in. brass hinges.

Finish along the back of (G) with the narrow rail (I) and add a rounded beading in the position shown. Give the work a good glasspapering and round off all sharp edges and corners. After a coating of size to fill the grain of the wood, finish with a coat of clear varnish. It could, as an alternative finish, be painted or enamelled. (S.W.C.)

A NEW FEATURE

Simple Science Experiments

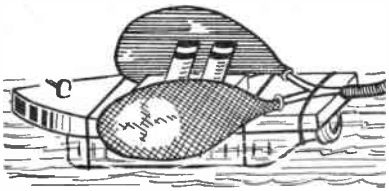


Fig. 1

A Method of Raising a Sunken Ship

Required:—Simple model ship; bottle and cork; two rubber balloons; glass or metal Y-tube; rubber tubing; bicycle pump; football adaptor; string.

MAKE a simple wooden model ship, fasten a flat medicine bottle on the underside of the model with string, and place the cork in the bottle. Float your model ship in water in a bath or large tank. Remove the cork and watch how the ship sinks (Fig. 1).

Fasten two rubber balloons to a Y-tube and fasten this tube to the ship as shown. Connect one end of a length of rubber tubing to the Y-tube and the other end to a football adaptor fixed in a bicycle pump. Pump air gently into the balloons and watch what happens.

Now can you find the answer to this question:—Why does the ship rise to the surface?

* * *

An Automatic Flushing Tank

Required:—Small plant pot; glass tube; two pieces of rubber tubing; cork or rubber bung with one hole; clip.

HEAT the glass tube in a gas flame and bend it into a U-shape as shown in Fig. 2. Push the glass tube through the rubber bung or cork, and fix this in the hole in the bottom of the plant pot. Mount the plant pot on a stand and connect one piece of rubber tubing to the upper part of the U-tube with a piece of string and allow the other end to reach to the bottom of a bucket of water placed above the plant pot after fixing the clip in position on the tube. Another piece of rubber tubing attached to the lower end of the glass tube will conduct the water from the plant pot into a sink or another container.

Suck the air from the tubing to which the clip is attached, and then control the rate of flow of water from this siphon by adjusting the pressure of the clip. Watch carefully what happens.

HOW DOES IT WORK?

This is the first article in a series on simple science experiments and models, which will describe models and experiments based on everyday things which are seen in the home and outside.

The models work and they have all been designed so that they can be made easily with very few tools, often almost entirely from odds and ends to be found at home or purchased cheaply.

Not only will it be great fun making these things and carrying out these experiments, but you also learn quite a lot of science by doing things yourself, which is the very best way of learning.

The first group of models and experiments were devised in connection with a series of lessons on water in the home.

By T.A.T.

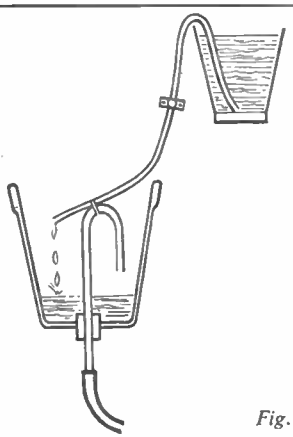


Fig. 2

How can you alter the intervals between the flushes? How would you adapt this to water automatically the plants in the greenhouse with equal quantities of water at certain specified intervals of time?

* * *

An Automatic Siphon

Required:—Short piece of ½in. diameter copper tubing; longer piece of ¼in. diameter copper tubing; two corks.

IN the last experiment you had to suck the air from the rubber tube to start the siphon. This siphon (Fig. 3) starts automatically immediately the

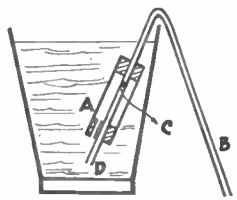


Fig. 3

end (A) is pushed into the water.

A hole (C) should be drilled in the tube (B) about ⅛in. in diameter. Over the end (D) of the tube (B) must be placed a piece of the wider tubing, about 4ins. long. This is fixed in position with two rubber bungs or corks, the lower of which has two holes, one for the tube (B) and the other to allow water to pass through.

* * *

Model Bell-type Flushing Tank

Required:—Plant pot; cork; bottle; wire; Meccano strip; glass tube.

A PLANT pot (A) has a fairly wide piece of glass tubing (B) passing through a cork in the bottom. (C) is a bottle supported on a wire and attached by wire loop to the end of a Meccano strip. (Fig. 4)

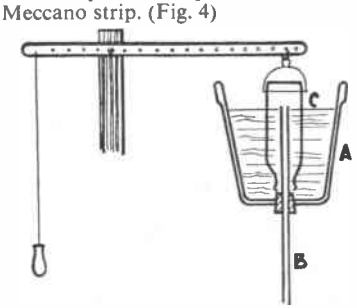
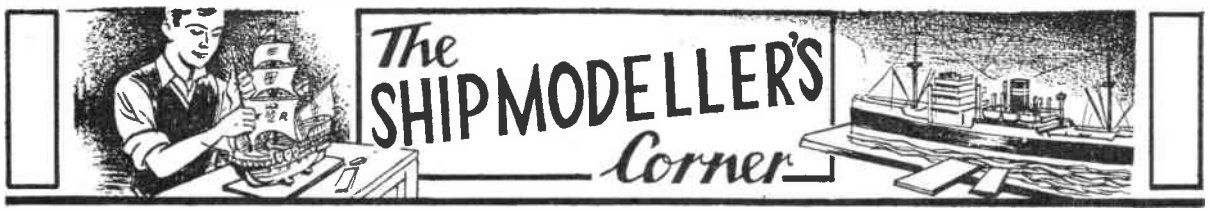


Fig. 4

Water is poured into the plant pot until it is just below the level of the upper end of the glass tube. Pull the handle sharply down and allow it to go back itself. This will cause the water to siphon down the glass tube.

Try this flushing tank with the water at various levels in the plant pot and note what happens.

Equipment and apparatus for carrying out these and other chemistry experiments can be obtained from firms who advertise in this magazine. Future articles will describe other suitable experiments.



MAKING ANCHORS

By 'Whipstaff'

THE construction of anchors provides much interesting work for the shipmodeller. The accurate and life-like detail achieved by a well-made anchor lends authenticity to the finished model.

The first anchors were primitive indeed, merely consisting of suitable large stones. Later a length of tree branch, with pointed stumps of other smaller branches left on, was used. The next development was the addition of a large stone bound to the branch to add weight, as in Fig. 1. A 'Viking' anchor is shown in Fig. 2. This shows the characteristic round wooden stock.

Ships of the fourteenth, fifteenth and sixteenth centuries would carry anchors of the type shown in Fig. 3, while in the seventeenth century that in Fig. 4 was used.

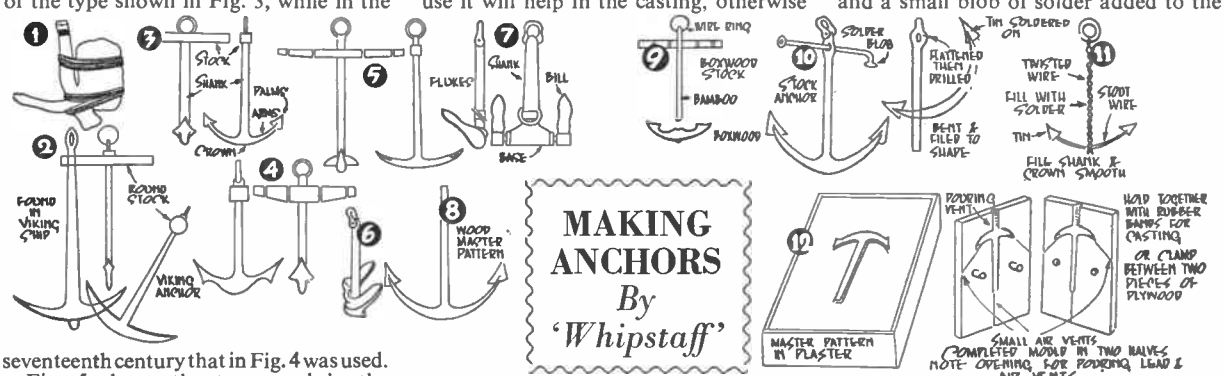


Fig. 5 shows the type used in the eighteenth and early nineteenth centuries, and from this the anchor developed into one with a movable stock, and then into the stockless type of today.

The stockless anchor, which came into use at the close of the nineteenth century, is shown in two types in Figs. 6 and 7.

There were, of course, many variations, especially in early and native types, but the above outline will help to decide the particular type required for your own model.

Now to methods of making model anchors. The most simple is that of casting them in lead, and adding a wooden stock. To make a model anchor in this manner it is necessary to carve a master pattern from wood, as in Fig. 8.

Make two wood trays 2ins. square, one with sides ¼in. high, and the other with sides 1in. high.

Fill the No. 1 tray with soft plaster of paris. Cover the wood master with lubricating oil to act as parting fluid and press it into the plaster until it is half submerged. Cut two pieces of ⅛in. dowel ¼in. long and insert these into the plaster, leaving ¼in. protruding as shown in Fig. 12. These will act as keys to ensure that the two halves of the mould are positioned correctly when casting.

When set hard remove complete from tray 1 and place in tray 2, after painting the plaster, keys and master with oil; fill up with soft plaster. When set hard, remove from the tray and cut a channel from the crown of the anchor to the edge of each half of the mould. This will make an opening through which to pour your molten lead when the mould is assembled. Also cut small grooves from the anchor to the edges to act as air vents. If the mould is heated before use it will help in the casting, otherwise the first one or two casts will not be perfect. The mould gives better casts when hot. If your model is a scale model, meant to be of permanent value, I do not advise using lead for any part, as it deteriorates with the years.

In Fig. 9 a method is shown which is very practicable for small models. The shank in this case is made of a piece of bamboo dowel glasspapered smooth. The crown, arms, and palms are carved in one piece from boxwood or holly. The stock is also carved from the same material, the four bindings being thin strips of paper, painted black, and glued on. A centre hole is drilled in the stock, and the shank pushed through and glued into a hole in the crown. The whole assembly, with the exception of the stock, is painted with black enamel. Plastic can be used for the shank and crown, etc. It is easy to work and makes a stronger assembly in very small work.

Smaller anchors of this type can be made from wire by soldering the shank to the crown, and adding palms cut from thin tin. The stock is again made from boxwood.

An anchor with a movable stock is easiest to make in metal. The shank is made first from a piece of stout wire, or in larger scale models from mild steel rod. Flatten the wire near the top with a nail punch as in Fig. 10, and drill through the flat part to make a hole for the stock. The arms and crown can be filed from a single piece of steel rod, the arms being flattened on the top surfaces to take the palms. These are cut from tin and soldered on. The shank is then soldered to the crown. The stock is made from wire of a gauge to fit the hole drilled in the shank. In some cases a long panel pin can be bent to shape, and a small blob of solder added to the point to form the round knob which prevents the stock from slipping out when in use. If the scale is large enough, a small chain can be fitted from the shackle to the stock.

The stockless modern anchor can be modelled from boxwood, holly or plastic in the following manner.

Shape the shank and base first as in Fig. 7. Carve the flukes and bills from the same material and glue in position; then add the ring which is made from wire.

If you are showing the anchor in the hawse hole, the ring and shackle can be omitted, but in this case note that the flukes must be glued to the arms at an angle that will allow the shank to be fitted into the hawse hole and pipe, leaving only the flukes and base visible.

Another way I have found useful for making small anchors is shown in Fig. 11. The shank is of twisted wire soldered to the crown. Hot solder is then run on to the wire to fill the twists up. The whole is then filed smoothly to shape.

Replies to Readers
Is this YOUR Problem?

Car Anti-Freeze

CAN you please give me a recipe for an anti-freeze as used in cars? (T.M.—Perth.)

A SIMPLE anti-freeze can be made from one volume technical grade glycerine and three volumes water, thoroughly mixed. It is used neat, will stand 22 degrees of frost and is non-corrosive to metal. Also commonly used is a neat mixture of equal volumes of ethylene glycol and water. Provided you use technical grade glycerine, the first recipe will prove the cheaper. If you cannot obtain it from a local pharmacist or laboratory furnisher, you should contact a soapmaker, such as J. Crosfield Ltd., Warrington, Lancs., or Thom Ltd., Pendleton, Manchester.

* * *

Insulating Walls

I WOULD like to insulate the walls of a wood bungalow before I paper it. Would sisal craft paper be the best for this? The floor of the house is raised from the ground; could I guard against frost by placing Willesden paper under the lino? (W.S.—Preston).

WE doubt whether you would find sisal craft paper so good an insulator as to give much satisfaction. Much better results would ensue if between the outer and inner walls a packing of slag wool, or even granulated cork were packed. You can, of course, give the sisal paper a trial first, as being much less expensive. For the floor, Willesden paper would resist damp and also frost to a certain extent, but a lining between paper and floor covering of underfelt would prove more effective. The paper should be obtainable from ironmongers and builders' merchants, and underfelt from a furnishing shop.

* * *

Oilskin Renovation

I HAVE a black oilskin weatherproof which has been treated, when made, by some black substance resembling pitch. There are several spots on the garment which need touching up, and I should be grateful if you could furnish me with suitable information for making a small quantity of this substance. (W.T.—Worcester).

RETOUCHING an oilskin is an unsatisfactory business. Industrially, the proofed fabric has to be passed through ageing tunnels at carefully controlled temperatures, so as to produce a non-tacky surface. It is the lack of this facility which often results in a tacky surface in home-treated oilskins. If you can arrange for the oilskin to hang for several weeks in a warm dry place in your home, you have a chance of success. Warm 5 fluid ounces of raw linseed oil in a double boiler. Dissolve in the hot oil ¾ ounce of rosin and add ¼ ounce of a paint drier (preferab y a naphthenate drier). Lastly, stir in enough lampblack to colour. Use it warm for retouching and hang as above until as non-tacky as possible.

* * *

Ivory Adhesive

TO make a cement in order to repair ivory, melt together at the lowest possible temperature, equal weights of gutta percha and coal pitch (not coal tar). Use the cement warm on the previously heated ivory. Allow to cool and set.

Cement Floor Stain

WE have a cement floor painted with liquid lino floor paint in Dutch blue, but find it is now wearing off in places. The problem is, we cannot obtain a blue stain polish in the shops. Is such a polish procurable or can you suggest a formula for making up a blue polish after the style of the Cardinal we use on a red floor? (E.J.—King's Lynn).

WE know of no proprietary polish in Dutch blue. One can be easily made, however, by melting 3½ ounces of paraffin wax (candles will do) in a double boiler. Remove the flame and stir in 6 fluid ounces of white spirit (turpentine substitute) and leave to warm up until a clear solution is obtained. Remove the vessel from the double boiler and let the solution cool but not set. Stir in 1 ounce of ultramarine powder and keep on stirring until the mixture thickens to a paste. It is then ready for use and should be kept in well-closed tins to prevent evaporation of the white spirit.

You simply pour out these

NOVELTIES

with NEW LIQUID PLASTIC

Here's the hobby to make your spare time pay dividends. You simply choose your mould and pour out beautiful castings. We supply everything, including instructions. Wonderful results achieved – wonderfully quickly! Start right away – no training needed. Send 2½d. stamp for exciting book and market details. No obligation.

QUALITY PLASTICS LTD.

DEPT. H.20, BRENTWOOD, ESSEX

APPARATUS & CHEMICALS

For your experiments. Let us help you equip a

HOME LABORATORY

Beakers, Crucibles, Flasks, Funnels, Gas Jars, Test Tubes, etc.

Booklets:

'Experiments'	10½d.
'Formulas'	10½d.
'Home Chemistry'	2/3d.

Send 2½d. stamp for latest PRICE LIST

BECK (Dept. B)

60 Stoke Newington High Street, London, N.16

---

the perfect adhesive for the Handyman

BRITFIX CEMENT—a fine all-purpose adhesive. Transparent, water and heat proof. Combines rapid drying with utmost tenacity . . . No wonder it's the handyman's favourite throughout the world! Available in ½ oz. tube, 6d., 1 oz., 10d. and 2½ ozs., 1s. 6d.

HUMBROL

ART OIL ENAMEL

Ideal for handicrafts of all kinds — extremely durable—4 hr. drying

Products of

HUMBER OIL CO. LTD., MARFLEET, HULL

ACCESSORIES

Telephone Handset Mouldings—P.O. Type—12/6 per set

Single Pin—2-way plugs—4/6 each.

Set of Transmitter Parts—10/6 each.

Set of Receiver Parts—10/6 each.

Twin Tinsel Flex—tagged each end, approx. 6ft. lengths—1/- each.

Oak Switches—10/6 each. Kelog Keys—S.H.—10/6 each.

Other accessories—Price on application with stamped addressed envelope.

'ONILY' COMPONENTS LTD

Llanerch-y-Mor, Holywell, Flintshire

No Dep. Cash price £4 19 6

PURE PLATINUM PLATED FILM STAR WATCH SIMULATION DIAMOND SET

Setting closely resembles fine White Diamonds. Set on the four quarters is a choice of sapphire, ruby or emerald coloured stones. Accurate pin-lever jewelled movement. Comp. guar. £4.19.6 on cordette, 21/- extra for dainty bracelet. Luminous dial 6/6 extra. Send 2/6 for pack. & reg. Test 7 days. If satis. 18 fortnightly payts. 6/3. First time in England.

PURE PLATINUM PLATED GENTS CALENDAR WATCH

NO DEPOSIT

CASH PRICE £4 19 6

For the first time you can own this wrist watch, genuinely plated with pure unadulterated Platinum. With calendar dial that keeps you informed of date. Automatic action changes date every 24 hours. Real pin-lever movement, shock and dust resist. Neat flat case. Guar. £4.19.6 on strap, or 21/- ex. for bracelet. Luminous 6/6 ext. Send 2/6 for pack & reg. Test 7 days. If satis. 18 fortnightly payts 6/3. LISTS. TERMS. Open Sat. 1 p.m. Wed.

HEADQUARTER & GENERAL SUPPLIES LTD.

(HOBW/88), 196-200 Coldharbour Lane, Loughborough Junc., London, S.E.5.

£3 A WEEK easily made at home—without tedious, monotonous work—by becoming sole local agent for the Enfield 'Rent-a-Rack' Scheme.

Roof racks for luggage are a virtual necessity for motorists' holidays. Yet they are only wanted for one or two weeks each year, so most motorists would rather rent than buy.

You at your own address can become the sole stockist and renting agent in your locality for the Enfield Roof-rack (fits *all* Saloon cars).

Write for full description of how to launch your *own* spare-time 'Rent-a-Rack' business at your *own* address, with your own organisation and with *no* interference from anyone.

Sole agents are now being appointed. Write without delay for full details to

ENFIELD TYRE COMPANY

Dept. H.W.

123-5 Baker Street, Enfield, Middlx. (Enfield 2982)

KUKLOS ANNUAL. Indispensable cyclist's handbook. Tours, resthouses, money-saving hints, 2/10, post free. — Burrow, Publishers, 2 Imperial House, Cheltenham.

DO-IT-YOURSELF BOOKS. List free. — S.P. Ltd., 28(H) Dean Road, London, N.W.2.

TOY CASTING MOULDS. Soldiers, sailors, airmen, etc. 1,000 varieties from 3/- each. Rubber moulding compound for flexible moulds, granulated ready for use, 8/6 per lb. Aluminium moulds for plaster work. S.A.E. for list. Catalogue 9d.—F. W. Nuthall, 69 St. Mark's Road, Hanwell, London, W.7.

'PAINTSPRAYING' HANDBOOK (1954 Ed.). Covers Car, Industrial & Flock Spraying. 3/6, post free, including catalogue of our Cellulose and Synthetic Paints and all Allied Sundries and Plant Hire.—Leonard Brooks Ltd., 81 Oak Road, Harold Wood, Essex.

STAMPS FREE — Empire Packet including Pictorials and Victorians with approvals.—Robert J. Peck, 7A Kemp Road, Bournemouth.

SWISS MUSICAL Mechanism for cigarette boxes, etc., 16/6 post free. S.A.E. for illustration and list of tunes available.—Dept. HW., Metwood Accessories, Church St., Wolverton, Bucks. (Trade supplied.)

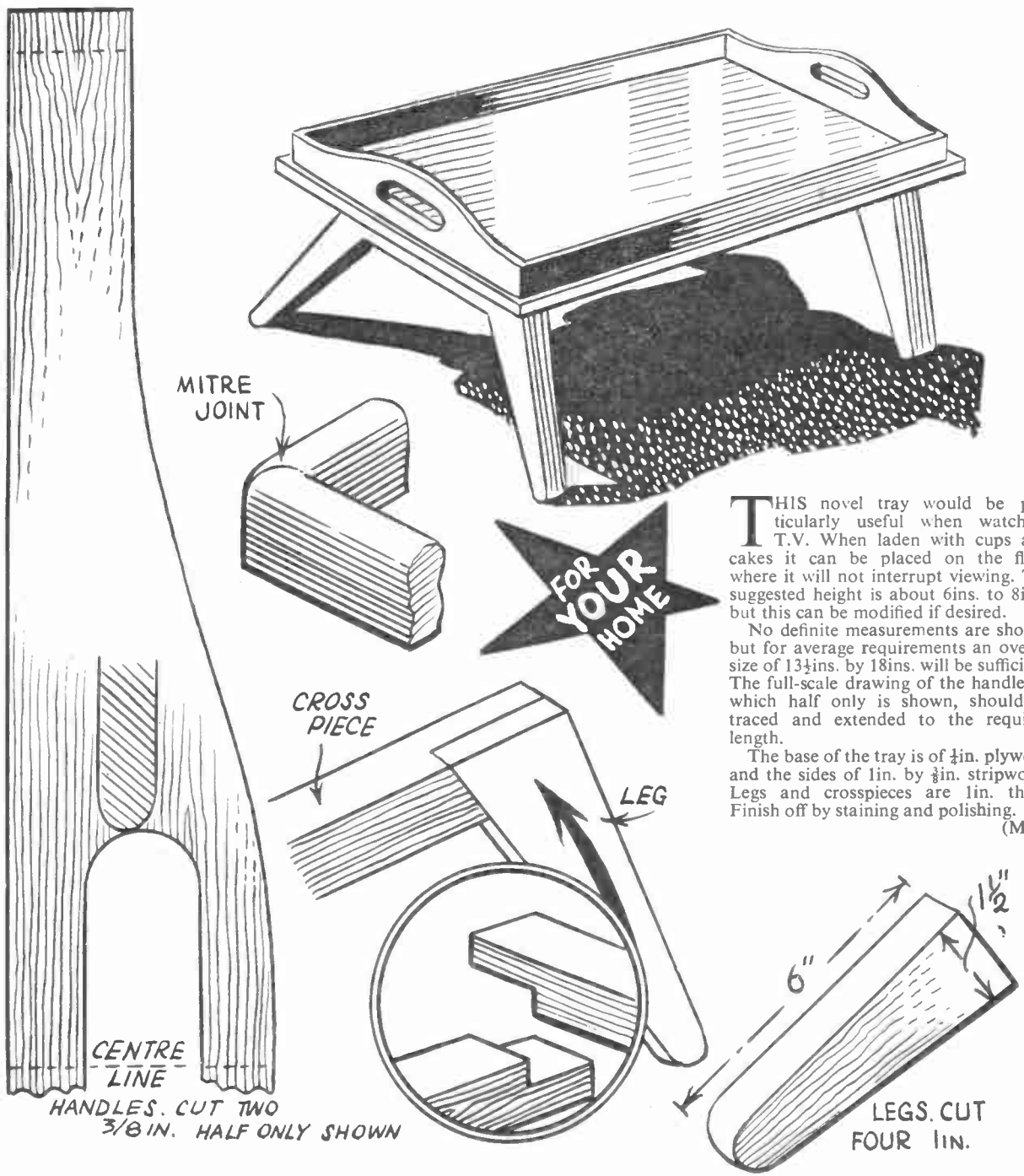
GENUINE Swiss Musical Movements. The best and largest selection of tunes in the country, lowest prices 16/3 each. Genuine Thorens Movements, 21/- each. All guaranteed. P. & P. 9d. extra on all orders. — Richardson & Forder, 5 Chapel Place, White Hart Lane, London, N.17.

ACID-SHARPENED FILES. One dozen assorted specially sharpened files, all types and cuts; ideal for modelmakers, etc. 12/6 post free.—Phoenix File Co., 22 East Union St., Manchester.

LEARN it as you do it—we provide practical equipment combined with instruction in Radio, Television, Electricity, Mechanics, Chemistry, Photography, etc.—Write for full details to E.M.I. Institutes, Dept. HW. 47, London, W.4.

Always handy in the home

A TEA TRAY ON LEGS



THIS novel tray would be particularly useful when watching T.V. When laden with cups and cakes it can be placed on the floor where it will not interrupt viewing. The suggested height is about 6ins. to 8ins., but this can be modified if desired.

No definite measurements are shown, but for average requirements an overall size of 13½ins. by 18ins. will be sufficient. The full-scale drawing of the handle, of which half only is shown, should be traced and extended to the required length.

The base of the tray is of ¼in. plywood and the sides of 1in. by ⅜in. stripwood. Legs and crosspieces are 1in. thick. Finish off by staining and polishing.

(M.p.)

Printed by BALDING & MANSELL, LTD., London and Wisbech, and Published for the Proprietors, HOBBIES LTD., by HORACE MARSHALL & SON, LTD., Temple House, Tallis Street, E.C.4. Sole Agents for Australia and New Zealand: Gordon & Gotch (A'sia) Ltd. For South Africa: Central News Agency Ltd. Registered for transmission by Canadian Magazine Post.