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WATCH PLANTS GROW IN THIS PRACTICAL MODEL



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

4½^D
2

THE MINIATURE GREENHOUSE

THIS design for a miniature greenhouse (illustrated on the front page) will give lasting interest to young and old alike. Based on the real thing, it will thrill every youngster to have a greenhouse 'just like Daddy's', while at the same time it is a really practical job and can be put to good use by the enthusiast.

It provides an admirable and authentic setting for small plants such as cacti, miniature trees and seedlings, and can act as a propagating frame for pots of seeds in the early spring.

For those who live in flats or otherwise have no garden, this model will offer an appealing compromise, while a lucky child with such a greenhouse all his or her own will find it provides absorbing interest and educational value.

desired and possibly a tiered effect incorporated.

The setting for such an appealing and interesting subject is obviously indoors, and its size makes it admirably suited for standing on a television set or radio with a flat top, where it could be daily admired and the progress of the plants frequently noted. Incidentally, the gentle heat rising from the TV or radio would of course help in assisting growth.

The model also has the benefit of keeping dust from the plants. One side of the roof is hinged to facilitate watering, etc, and there is enough 'headroom' to accommodate plants up to about 6ins. high in their 2in. pots. A hinged ventilating window is provided on the fixed side of the roof, and a door is incorporated for the same purpose.

Standing approximately 13ins. high, 18ins. long and 12ins. wide, the greenhouse is fixed to a wood base and is

GET A HOBBIES KIT

All the wood, materials, fittings, etc for making the Miniature Greenhouse are in Hobbies Kit No 3300. together with 12 pots and saucers for setting out plants. Kits are obtainable from branches or Hobbies Ltd Dereham Norfolk price 39/6 (post free)

entirely transportable. The 'walled' portion is of $\frac{1}{4}$ in. wood and the frames for the 'glazed' sections are made up of stripwood. Tough clear cellulose acetate sheeting provides the windows, being pinned in place to the stripwood frames. If using a Hobbies kit the walls (3 and 10), staging pieces (32), and door (30) are cut from $\frac{1}{4}$ in. plywood and the wall (14) from $\frac{1}{4}$ in. fretwood.

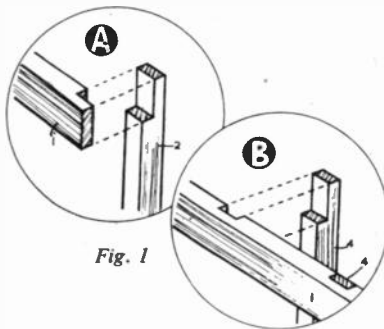


Fig. 1

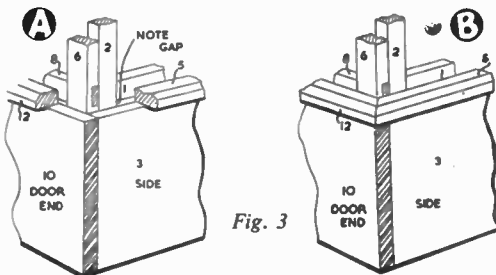


Fig. 3

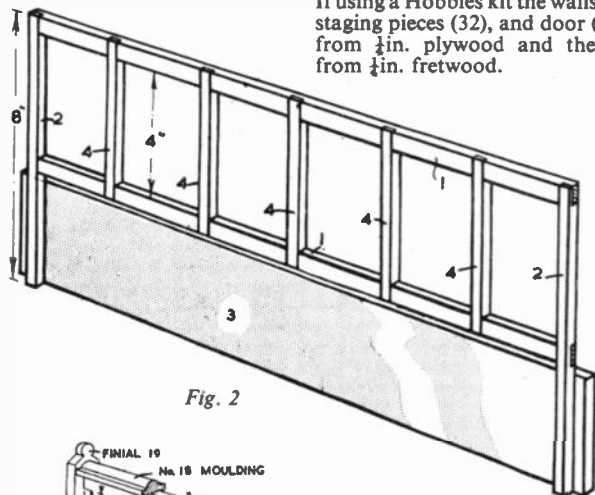


Fig. 2

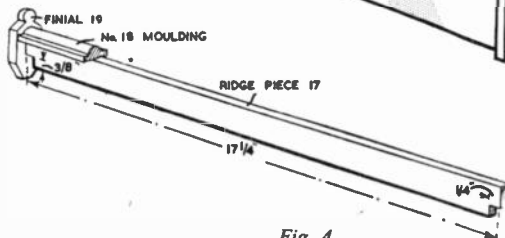


Fig. 4

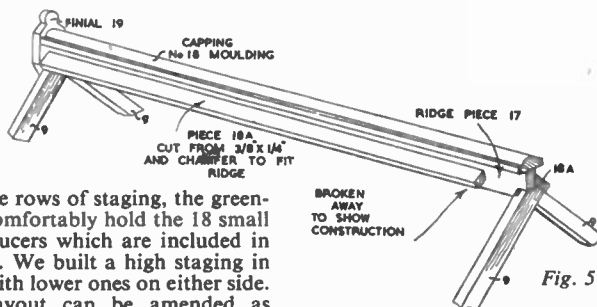


Fig. 5

With three rows of staging, the greenhouse will comfortably hold the 18 small pots and saucers which are included in Hobbies kit. We built a high staging in the centre with lower ones on either side. But this layout can be amended as

A really sound and workmanlike job, the greenhouse can be made by anyone who carefully follows the instructions in conjunction with the details in the design sheet.

The sides, ends and roof pieces are made up individually as separate sections which will later be joined together. It is

not possible to show all the parts full size on the design sheet, but the door end, which is the most difficult to make up, is shown full size and details given of the joints to use. All the necessary measurements are given on the design sheet for the other sections.

Read through these instructions carefully before starting on the greenhouse in order to get a clear picture of what is required in its makeup.

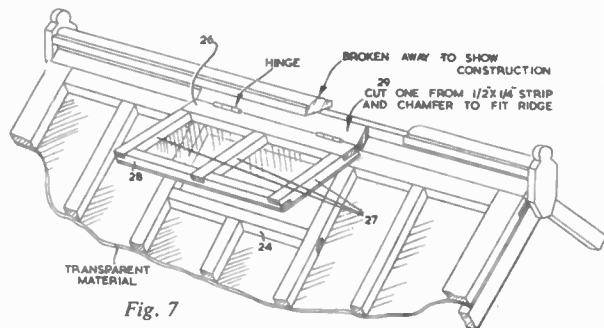


Fig. 7

Make a start with the two sides, which are identical, and for which full measurements are shown on the design sheet. Note that the basis of construction for the stripwood frames is the halving joint, details of which are shown in A and B (Fig. 1). These are quite easy to make, using a small backsaw, fretsaw or modelling knife, or combinations of these tools. For instance, in detail A (Fig. 1) it will be seen that the joints can be made with two sawcuts, but at B a knife is handy for cleaning out the joint in piece 1. The stripwood can, of course, be butted together in making the framing.

Glue and pin

Use strong glue and pin where necessary in assembling these sides which when finished should look as shown in Fig. 2. This also shows the 'wall' (3) glued and pinned to the stripwood framing, which of course goes inside the 'wall'. Do not add the sill (5) at this stage.

When the sides have been prepared, continue with the door end of the greenhouse. This again consists of a stripwood framing with two sections of 'wall'. This end is shown full size on the design sheet so that the stripwood can be laid in position on the plan and marked off for cutting. Note that halving joints are again shown for strength. When assembling the door end, lay a piece of tracing paper over the plan and position the various parts on the sheet, thus ensuring the correct angles. Then glue and pin the pieces together.

The other end of the greenhouse is a similar overall shape to the door end, minus of course, the door, and it can be

similarly marked out and laid on the plan for assembling.

The two roof sections are similar in appearance and size except for the provision of a 'light' in one. Make up the roof sections as detailed separately on the design sheet, but do not at this stage add the crossbars (22). These will be fixed later after painting and the application of window material.

The roof light or ventilator is constructed from stripwood as detailed on the design sheet. The door is shown full size on the design sheet and is cut from 1/4 in. plywood with provision made for two window panes. The door can be traced direct on to the wood for cutting.

All the main sections of the structure have now been completed, and should be cleaned up with glasspaper. Fill in any bad joints with plastic wood.

The sides of the greenhouse are glued and pinned between the two ends. Fig. 3A shows how the overlapping portions of pieces 3 and 10 fit snugly together.

Adding the sills

Before adding the sills on top of the wall section, make sure that the greenhouse stands squarely. The sills are fashioned from 1/4 in. by 1/4 in. stripwood, one edge being chamfered as shown by the section on the design sheet. This can be done with a piece of rough glasspaper on a wood block. The sills consist of two pieces 5, two pieces 12 and piece 15, which are mitred round the tops of the wall portions as shown in Fig. 3B.

Now cap the structure with the ridge (piece 17) cut from 1 in. by 1/4 in. stripwood to the dimensions shown in Fig. 4. Note the 1/4 in. by 1/4 in. notches made for fitting

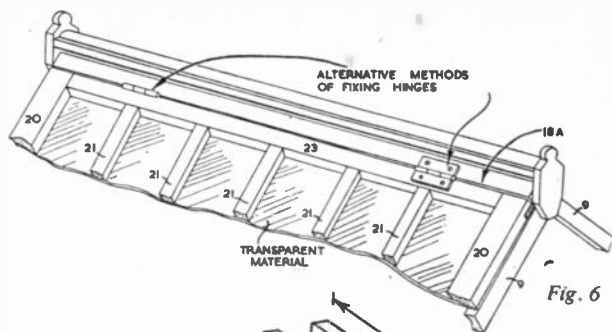


Fig. 6

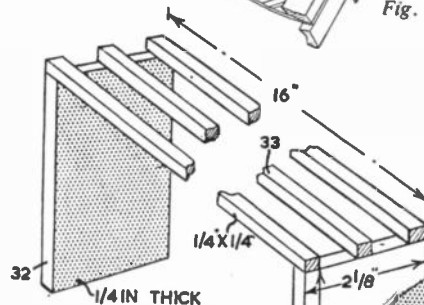


Fig. 8

over the flat tops of the end pieces. Now glue and pin on the finials (pieces 19) which are cut from 1/4 in. wood (Fig. 5). The capping piece consists of a length of Hobbies No. 18 moulding 17 1/2 ins. long, which goes between the finials (Fig. 5). Two additional pieces (18A) of 1/4 in. by 1/4 in. stripwood are chamfered to fit the ridge (piece 17) and are glued and pinned to the ridge and pieces 9.

At this stage the greenhouse should be painted inside and outside except for the outside wall, which will be covered with brickpaper. Give one flat undercoat and one of high gloss white. The sill can be painted green for contrast.

When the paint is dry, the window material can be added. This is easily cut with scissors and should be cut large enough to cover each section. For instance, allowing 1/4 in. overlap for pinning to the stripwood, you will need a piece 16 1/2 ins. long by 4 1/2 ins. wide for each side. Similarly, for each roof section you will need one piece 16 1/2 ins. by 7 1/2 ins. Since the material is supplied in sheets 18 ins. by 12 ins. it is necessary to cut one side portion and one roof from the same sheet of material in order to prevent wastage.

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To fit the pocket

'TRAVELLING' DRAUGHTS SET

THIS set has several advantages over the usual type of travelling draughts set, in that it is not necessary to have a lid to the box, and it is not essential to finish a game in one session because the 'men' will not drop out of the board.

The board is made of a piece of cork $4\frac{1}{2}$ ins. by $3\frac{1}{2}$ ins. by $\frac{3}{4}$ in., which is divided into 64 squares, as shown in the diagram. As pencil does not show up very well on cork, the best means of drawing the lines is by ball-point pen. The squares are painted alternately black and white, as with a standard draughts board, using ordinary household paint, and the painting of the border is, of course, optional. To give a neater appearance, the lines should be drawn over with Indian ink.

Both 'men' and 'kings' are map tacks, which can be bought from any good stationer, and you will need 12 black and 12 white for the men, and about six of each of two other colours to represent

'kings'. The latter should contrast in colour to the 'men', so that they will not be confused, two good colours being

green for the black and orange for the white.

You may find a box of the right size (the size of the board can, in any case, be adjusted to suit anything handy), but it

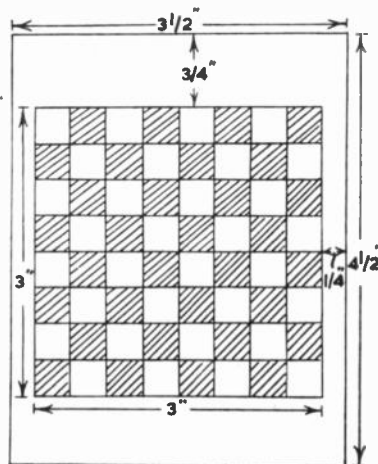
By C. E. Eyre

is very easy to make one out of card or other similar material. Sheet aluminium would make quite a strong, light container. A lid is optional, as mentioned previously.

For playing, the pieces need not be stuck right into the board, but it is advisable to push them right home when you put the set into your pocket.

The captured pieces can be stuck in the wide border at each end of the board, as can the 'kings' waiting to be used.

This travelling set is extremely easy to make, and will provide many hours of entertainment.



A Toy Windmill for the Kiddies

FOR the short time required to make this paper windmill it will give a great deal of enjoyment to a young child. The toy is made from a 6 in. square of fairly stiff paper.

Begin by making four cuts two-thirds of the way towards the centre, from the corners (A), (B), (C) and (D) (Fig. 1). Then make five pin holes in the positions shown in the diagram.

By A. E. Ward

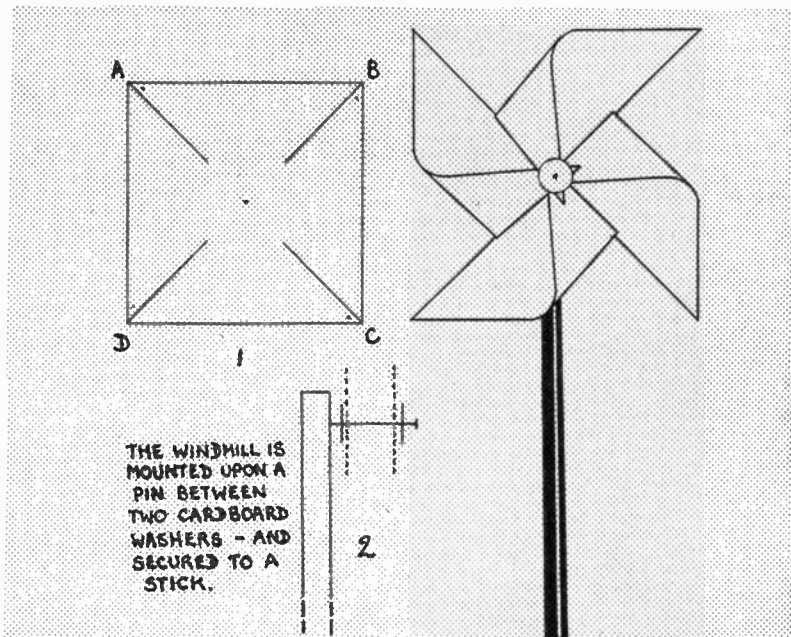
Prepare a long pin to serve as a spindle by pushing on to it a small cardboard disc, which will later hold the front of the toy in place.

Assemble the windmill by bending over the four holed corners towards the centre so that they overlap slightly. Carefully secure them in place by pushing the pin through all of the five holes. Place a second cardboard disc on to the pin and fix the windmill on the end of a wooden stick about 20 ins. in length (Fig. 2).

If the toy is held up in a wind, or waved about, the paper sails will whirl around with a pleasant rustling sound. You might like to make several windmills of various sizes and bright colours.

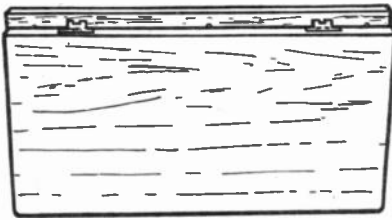
Such a collection will make a gay arrangement if fixed to a wooden cross which can be carried or set in the ground. Perhaps you will prefer to mount a

paper windmill like a propeller on the front of a bicycle or organize a novelty windmill race at your next children's sports meeting.



Takes up no room

A 'FOLDAWAY' FLAP TABLE



A FLAP table which folds away against the wall when out of use, will be found invaluable in the kitchen or workshop, and by using the very latest fittings you will find it quite easy to make a really satisfactory job.

A piece of helpful equipment we should mention is a tungsten carbide masonry bit for drilling holes in the wall, used in conjunction with a breast drill at slow speed, and if you have not yet enjoyed the benefit of one of these drills, you will find one a good investment.

By H. Mann

Another improvement for the amateur handyman is the flush hinge, entirely eliminating the necessity for making rebates in the edge of the material, as will be seen by our illustration. Finally, we have a new type of spring folding stay which not only locks in position when the table is erected, but also neatly folds back against the wall when the flap is lowered.

The material for the table top may be 1in. shelving or ½in. plywood, but the ultimate use of the table must be the deciding factor. The heavier duties demanded require stouter material, and while the width may vary according to the space available, it is better to keep this to 12ins. or 14ins. for practical purposes.

The preparation of the flap itself is quite straightforward, but it is advisable to round off the two front corners and smooth the edges.

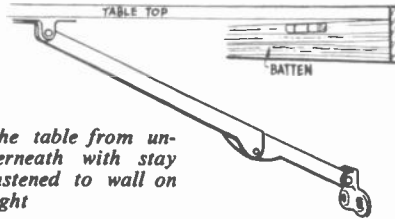
The normal height of such a table is 30ins., and you must first mark a line on the wall at this distance from the floor for attaching a 2in. by 1in. batten, equal in length to the flap table.

Drill a hole in the centre of the batten and two others about 2ins. from the ends. Countersink the holes, inserting 2in. screws. The batten is now laid against the wall in correct position, and the screw heads gently tapped with a

hammer, so as to mark the exact positions for drilling the wall. The wall should be drilled to a depth of at least 1in. and plugs inserted. It is then an easy matter to screw the batten to the wall.

Now fix the hinges to the edge of the table top, arranging them so that they are equidistant from each end, and so as not to coincide with the position of the screws fastening the batten to the wall.

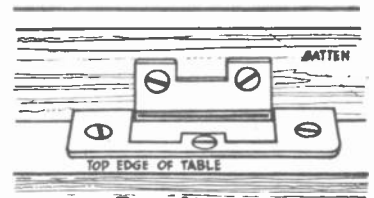
As mentioned, this new type of stay folds back to the wall, a knuckle joint



being at a point about one-third of the length, and the stays are obtainable in 7in. and 10in. sizes. Fixing of these stays is done according to requirements, and the folded stay should be first placed with the shorter portion against the wall with the knuckle joint just clear of the batten and about 2ins. or 3ins. from the end of it. Some discretion must

be used according to the size of the table, but the aim is to give as balanced support as possible. Points are marked on the wall for drilling, and after plugging the holes, the stay can be screwed home. A similar operation should follow for the other stay, so that they are vertical, with the knuckle joint again just free of the batten. In some cases only one stay may be required, when it should be fixed centrally underneath the flap.

The table top itself may now be hinged to the batten and the stays are



Type of hinge

fastened to the underside of the flap after careful adjustment. Open out the stay to full extension, marking the position for fitting when the flap is at 90° to the wall. To close the table, the stays are pushed upwards by hand from the front underside, and the flap will drop into position against the wall.

● Continued from page 275

The Miniature Greenhouse

The cut material is laid on inside the frames of the greenhouse (ends and sides) and pinned with ½in. fret pins in suitable places.

Make sure the roof sections are square and true and fit nicely. Then pin the transparent material to the undersides and pin in position the crossbars (22) which serve not only to hold the material in position but act as roof strengtheners. Note that when the roof sections are finally fixed in place, the end bars will go between pieces 9 of the ends. The roof ventilator and door are similarly 'glazed' from the inside.

Stand the house squarely on the base and mark round. Remove the house and drill holes in the base to take the ½in. fixing screws supplied in the kit and countersink from the underside. Paint the base grey and when dry screw the greenhouse in position from underneath the base.

Fig. 6 shows how the hinged roof section is attached to piece 18A and also

gives alternative methods of fixing the hinges. The fixed roof section is now glued and pinned in place, and the ventilator fixing is shown in Fig. 7. Note that piece 29, which is 5½ins. long, is chamfered to fit the ridge before fixing. The ventilator is hinged to piece 29, and it may be found easier to do this first before gluing piece 29 to the ridge. It will be found that if the hinges are painted the ventilator will remain open in any position desired without the use of a stay. Now add the door by hinges, fixing the knob on the outside.

As mentioned previously, staging can be introduced as desired. Our prototype model had three lengths of staging for which there is sufficient material in the kit. It is constructed as shown in Fig. 8, the centre stage being 4ins. high and the two outside ones 2½ins. high. The staging can be painted white as for the rest of the greenhouse.

Finally cut the brickpaper to size and paste in position to give a 'wall' effect.

CHEMISTRY IN THE HOME

SPOT TESTS

Part 1

WHAT are spot tests? They comprise a method of micro-analysis in which a single drop of a solution of a substance is enough for a test. By adding drops of chosen reagents a substance may be identified, usually by colour changes, but often, too, by the appearance of white precipitates.

Naturally, the reactions have to be very sensitive, and a whole range of new reagents has been developed. To equip yourself with these would demand a considerable outlay. Since, however, many long known reactions are also employed, the home chemist can give

This is an exceedingly delicate reaction.

Put a drop of potassium ferrocyanide solution on to a slip of filter paper. Spot the centre of the ferrocyanide drop with a drop of ferric chloride solution. An intense blue fleck appears. Now repeat the test, but first dilute some of your potassium ferrocyanide solution until it is colourless and some of the ferric chloride solution until it is only perceptibly yellowish. The spot test still gives a strong blue colouration.

Obviously, this test can be used to test for either a soluble ferrocyanide or a soluble ferric salt. This two-way principle can, of course, be used with other reactions.

Another delicate test can be used to test either for copper salts or for soluble ferrocyanides. Put a drop of potassium ferrocyanide solution on filter paper and add a drop of copper sulphate solution. A red-brown spot appears. This test, too, will work in high dilutions.

brown ring appears around the ferrous sulphate crystal.

Nitrites also give a brown ring under these conditions. A modification, however, distinguishes the two. Repeat the test with ferrous sulphate and a nitrate solution, but use glacial acetic acid instead of sulphuric acid. No brown ring appears. Now use a nitrite solution, ferrous sulphate and acetic acid. The nitrite gives a brown ring.

Permanganates may be detected by several substances. Put a drop of potassium permanganate solution in a small evaporating basin, add a drop of dilute sulphuric acid. The spot has an intense purple colour. Now add a drop of a sulphite solution, such as sodium sulphite. The spot is decolourised.

Stannous salts and hydrogen peroxide may also be used in place of sulphites.

The smell of hydrogen sulphide is usually enough to herald its presence, as any home chemist (and his family!) will

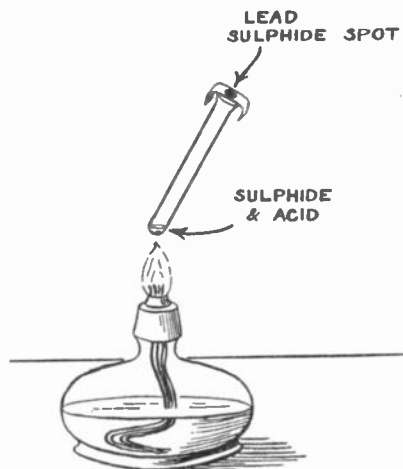


Fig. 1—A gas spot test

himself a most interesting introduction to the subject. All of the common chemicals needed for the following tests will be available in almost every home laboratory.

The apparatus needed could not be simpler. A few circles of filter paper, a glass rod, a narrow test tube and a small evaporating basin are ample.

The neatness of spot test technique and the delicacy of the reactions cannot fail to attract. You may even be stimulated to try to adapt to spot testing a test already known and used on the macro scale. By all means do so.

A good introduction to spot tests is the well known reaction given by a mixed solution of ferric chloride and potassium ferrocyanide, namely, the production thereby of Prussian blue.

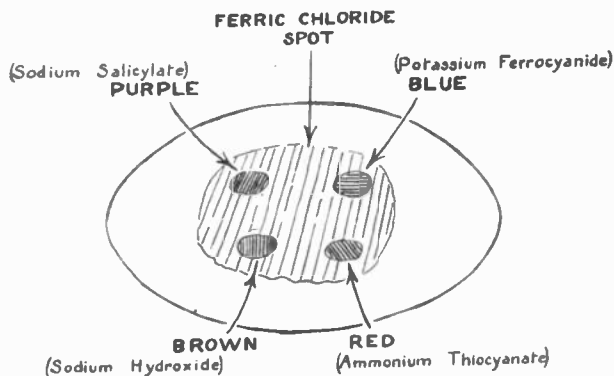


Fig. 2—A fourfold spot test

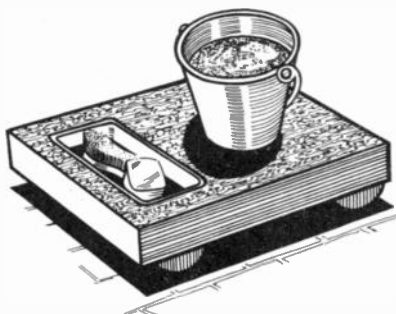
The well known brown ring test for nitrates adapts itself well as a spot test. The normal procedure is to mix solutions of the nitrate and ferrous sulphate in a test tube and then carefully to run in strong sulphuric acid, so that it forms a layer above the mixed solution. At the junction of the two layers a brown ring appears in presence of a nitrate.

Let us see this as a spot test. Put a pin-head sized crystal of ferrous sulphate in a small evaporating basin, cover it with a drop of potassium or sodium nitrate solution and then let a drop of strong sulphuric acid run in at the side. A

agree. Yet even our sensitive noses may fail with very minute amounts. Not so lead acetate. Put a speck of ferrous sulphide in a short narrow test tube, such as an ignition tube, add a drop of dilute hydrochloric acid and immediately cover the mouth of the tube with a slip of filter paper in the centre of which has been put a drop of lead acetate solution (Fig. 1). Warm the tube over a small flame. A distinct yellow to yellow-brown fleck appears on the paper owing to formation of lead sulphide.

● Continued on page 279

MAKE THIS PAIL TROLLEY



FLOOR washing is a thankless task at the best of times and carrying a heavy pail of water about does not add to the pleasure. In most cases the job is done on hands and knees and quite often the pail cannot be moved without standing up, with a consequent loss of time and energy.

By *A. F. Taylor*

By placing the pail on this handy little trolley it can be wheeled about comparatively easily and without having to get up each time to do it. Besides carrying the pail there is room for a tray to hold scrubbing brush, soap and flannel.

In the garden, too, it can be very useful — wheeled down the path it will make weeding easier and the tray will hold the tools necessary for the job. Wash day also will give it a job to do by holding a pail of washing and pegs, while it is wheeled along the path for the articles to be pegged out or taken in.

The wheels have been placed inside the framework which keeps them from getting splashed and makes the trolley more compact besides being easier to manipulate.

Hardboard is suitable

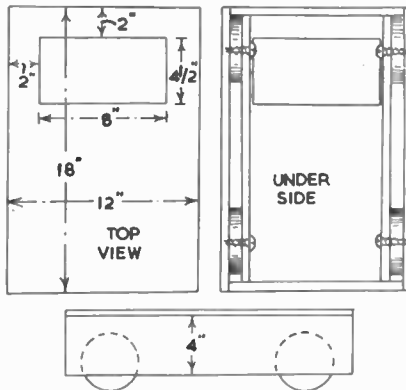
The top of the trolley is made of plywood, but this could be ordinary boards or even hardboard is quite suitable. The remainder, comprising sides and ends, is of $\frac{1}{2}$ in. wood and this can be of any kind you may have available.

Each side consists of two pieces of wood, leaving a gap between just wide enough for the wheels to rotate freely. This makes a more rigid job and also enables the wheels to be fixed easier.

Cut out the top first from a piece of board 18ins. long and 12ins. wide. About $\frac{1}{4}$ in. to $\frac{1}{2}$ in. ply should be quite strong enough, or, if you are using hard-

board, then $\frac{1}{4}$ in. will be sufficient. A slot must be cut in this board for the tray to drop in to and the size will depend on the tray you have available. The measurements given are those of an ordinary oblong cake tin but any other type will do provided the sizes do not vary too much.

Now the remainder of the trolley can be built up around this top board — two outer side pieces 18ins. long and 4ins. wide and two end pieces 11ins. long and



4ins. wide. Glue and nail these in position with panel pins, then the two inner side pieces can be cut and fixed in a similar manner. These will be an inch shorter than the other sides — that is 17ins. long and 4ins. wide and when fixing them allow just room for the wheels.

Wheel types

In the original model solid wooden wheels 4ins. diameter and $\frac{1}{2}$ in. thick were used, but other types are quite suitable and it must be left to your discretion to fix whatever type suits your needs. Long screws inserted from the inside or bolts from the outside with nuts on the inside will both do the job very well and if wooden wheels are employed then dowel rods are quite satisfactory.

Put the wheels as near to each end as possible so that there is no fear of the trolley toppling over if a pail of water is stood near the edge.

The trolley is sure to get splashed quite a lot while in use therefore it should receive at least two coats of good oil paint. The ideal finish of course would be to cover it with one of the many plastic materials now available. Don't forget that the underside would also be improved by a coat of paint.

● Continued from page 278

Chemistry — Spot Tests

The many coloured precipitates given by metallic solutions lend themselves to spot tests, too. They can be carried out on filter paper, but in dealing with minute traces a glass slip is better, especially with pale precipitates, for a turbidity will show on glass which would be invisible on paper.

An example of this is seen with manganese. Put a drop of dilute manganese sulphate solution on a glass slip and spot it with dilute ammonium sulphide solution. A flesh-coloured turbidity is visible. Repeat the test on filter paper. You will have difficulty in seeing the colouration.

An interesting double test for silver can be done as follows. Put a drop of silver nitrate solution on filter paper and let it spread well. Wet a glass rod with potassium chromate solution and another with sodium or potassium hydroxide solution. Wipe the rods across the silver nitrate spot in separate places. The potassium chromate charged rod leaves a red streak and the other a brown.

This neat double test method can be adapted to many other tests and even extended to more than two. A good example is a fourfold test for soluble ferric salts. Put a drop of ferric chloride on filter paper and let the drop spread. In four separate places touch the paper with rods wetted with solutions of potassium ferrocyanide, ammonium thiocyanate, sodium hydroxide and sodium salicylate (Fig. 2). Four different colours appear. Potassium ferrocyanide leaves a blue spot, ammonium thiocyanate a red, sodium hydroxide a foxy brown and sodium salicylate a purple. The neatness and compactness of spot tests is surely illustrated by this experiment. Normally you would have four test tubes to wash after this, and you would use a lot more of the reagents and a great deal more time.

The foregoing experiments on acid and metallic radicals show how much can be done with common reagents. Even more fascinating are the spot tests given by organic compounds. A selection of these will be given in another article.

MAKING COIL PACKS

FACTORY made coil packs for radios are very expensive items, costing in the region of £2 each. Yet they are easily made by the handyman for a fraction of the cost.

Coil packs are a great help to the experimenter in radio, because they are simple to fit, only 5 leads needing to be connected to the set and the complete tuning section is ready. Then again the pack can be removed from an existing set in a few seconds and re-fitted into a new set that one has just built and wants to try out quickly. The ease with which it can be transferred is a great boon to the radio hobbyist.

Another recommendation is its small, neat and compact form. The pack here described is 3ins. by 2-3ins. by 1½-3ins. in size and is obviously very handy for any set. It is dual wave, covering two wavebands, medium and short being chosen, as these give the maximum entertainment value. The reader, however, may choose whatever wavebands he prefers. A three-waveband pack could also be set up, but this would mean increasing the size of the coil pack somewhat to accommodate the extra coils and trimmer condensers.

Either ready-made bought coils can be used, or the constructor can make his own. Instructions for this are given later. The bought coils would cost 16/- for the four normally, but from T.R.S. (address given in parts list) they are a little cheaper, actually 14/- for four. Using new Alladin coil formers (with slugs) the cost would be 2/10 for four

The pack is for superhet circuits, but can easily be adapted for 'straight'

PARTS LIST

Switch (4 pole 2 way) (a).
Osmor coils Superhet:—Short QA7, QO7.
Medium QA8, QO8, Long QA9, QO9.
T.R.F.:—Short QA7, QHF.7. Medium QA8, QHF8. Long QA9, QHF9. (a).
Trimming condensers C1, C2, C3, C4 — 50 pfd.
Padding condensers. C5 (-0025), C6 (470 pfd.). (Midget types).
Alladin coil formers (½in.). (a) and (b).
Note: 3 wave-band coil-pack would need a 4-pole 3-way switch, and 150 pfd. pad for long wave oscillator coil.
(a) T.R.S., 70 Brigstock Rd., Thornton Heath, Surrey.
(b) J. E. Annakin, 25 Ashfield Place, Otley, Yorks.

By A. Fraser

home-made coils, the wire costing only a few pence. With second-hand formers usually available from Annakin's (address given elsewhere) for 4d., the cost would be 1/4.

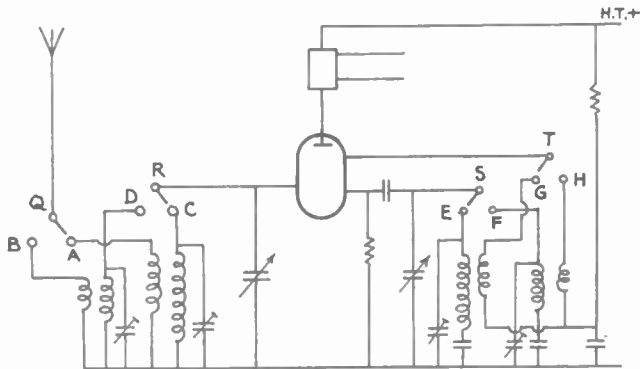
Despite this disparity in cost, the home-made coils are capable of putting up a very good performance which, in view of their cost, will leave the constructor well satisfied.

The total cost of the coil pack, using home-made coils should be about 9/- (this includes switch and condensers).

T.R.F. circuits using R.F. amplification. This is dealt with in due course.

To make the coil pack, first get some aluminium sheeting and saw out a rectangle 3ins. by 2 ins. The gauge can be anything from 18 to 24.

In the centre of this, bore a hole ½in. in diameter. This is to hold the switch (shown in dotted line in Fig. 1(a)).



A superhet circuit

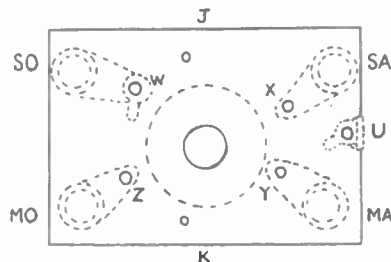


Fig. 1(a)

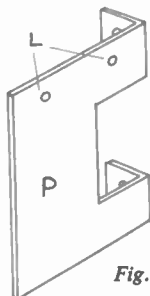


Fig. 1(b)

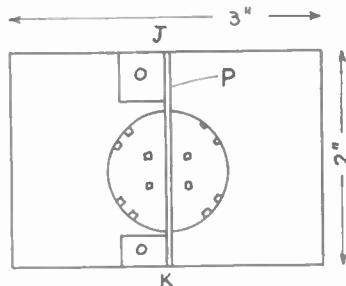


Fig. 1(c)

Then drill holes (6 B.A.) in the positions shown (W, X, Y, Z). The exact positions of these must be found by trying coil formers in the positions they are to occupy and marking the holes from these. (The switch must be fixed in for this process.) Incidentally, one foot of each coil former should be sawn off neatly so that it does not project over the corner of the aluminium base (see Fig. 2). The relative positions of the coils are seen in Fig. 1(a) in dotted line.

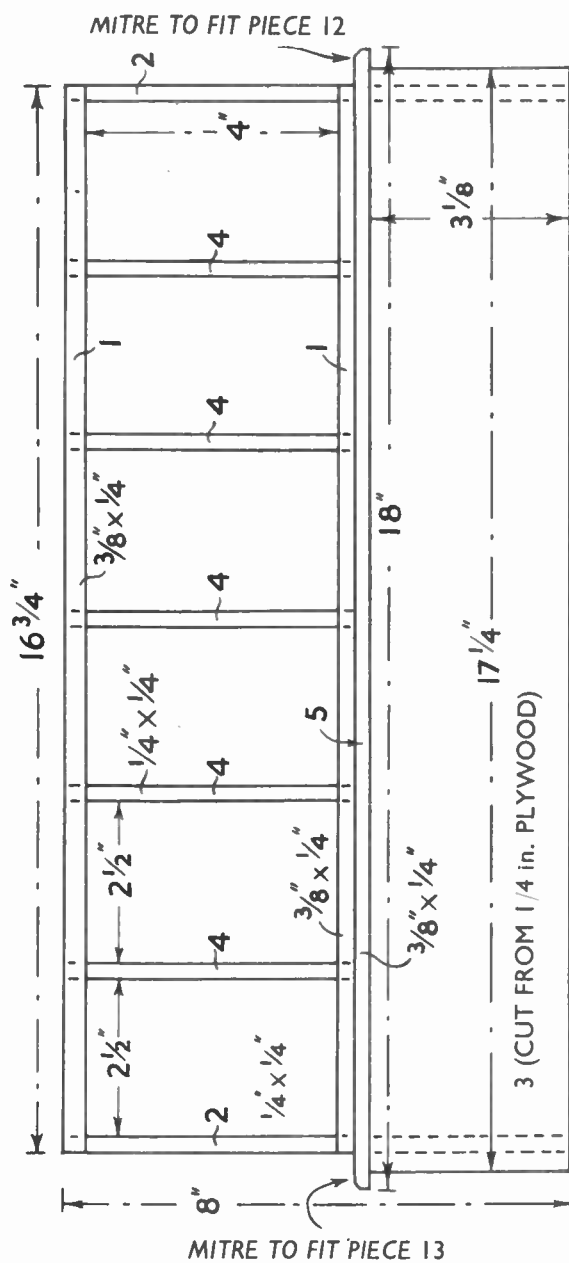
Another hole is drilled at position (U) in Fig. 1(a). At this point a single tag board is later fixed as a tie-post for the aerial to be attached.

Two more holes are drilled at (J) and (K), through which to attach the trimmer support (P). This is shown in Fig. 1(b). It is sawn out of aluminium, size 2ins. by 2ins. It lies across the

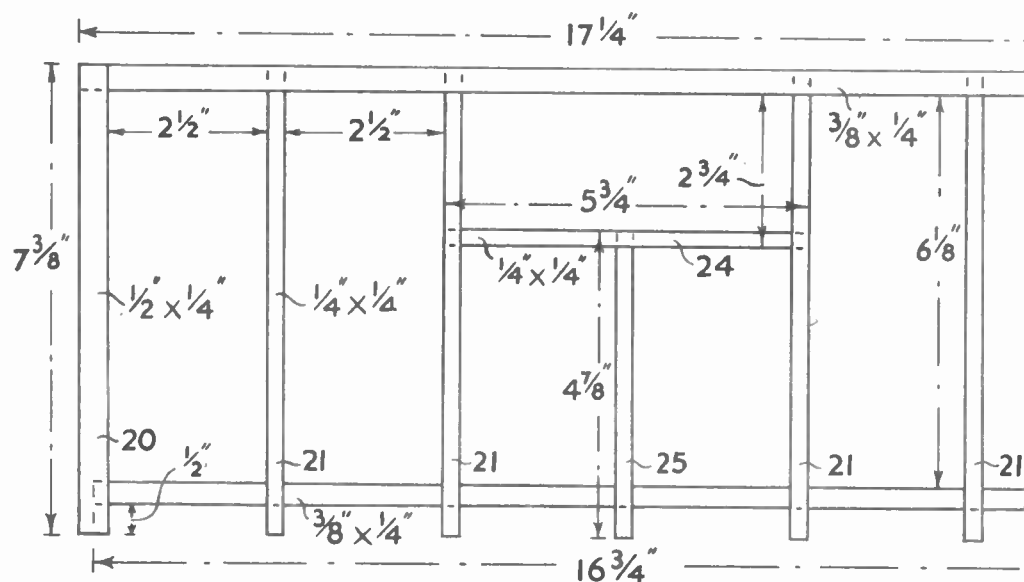


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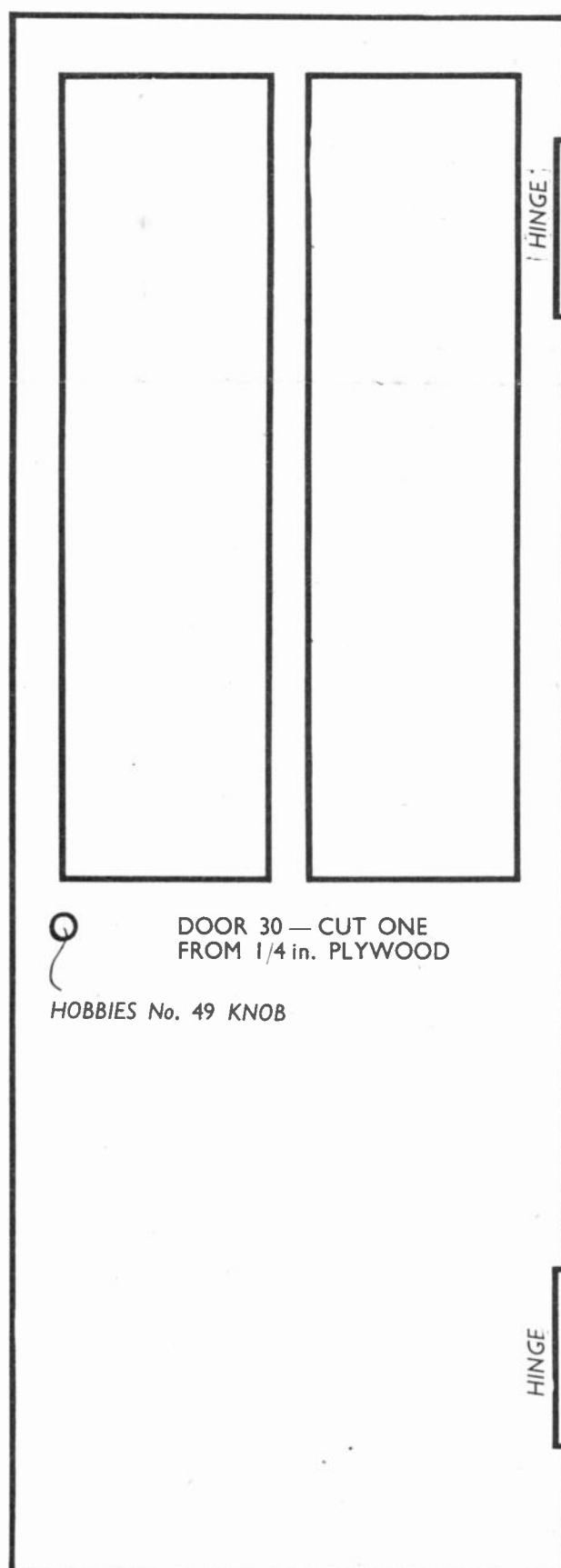


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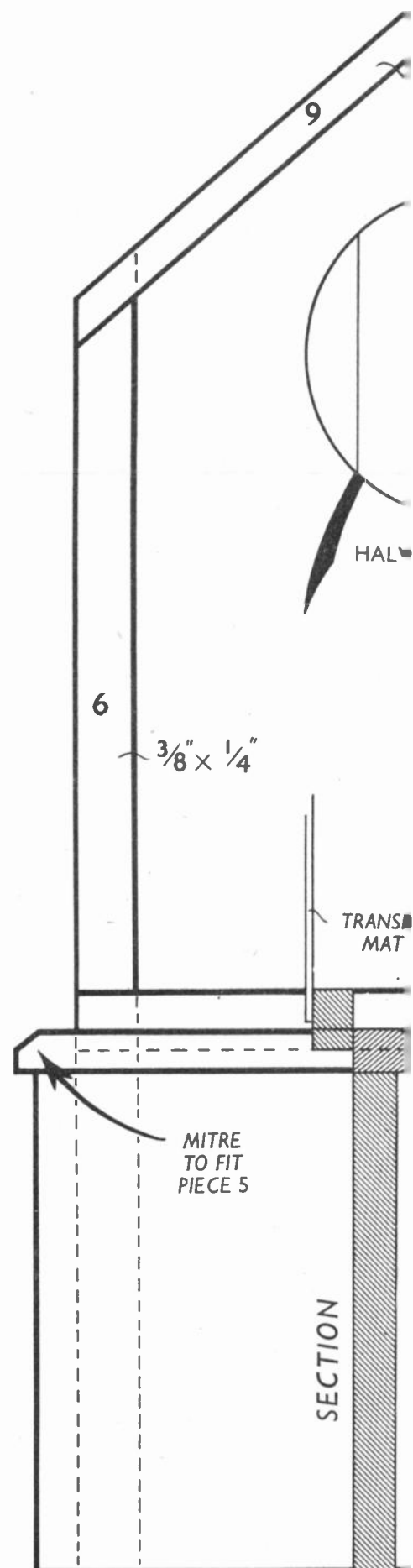
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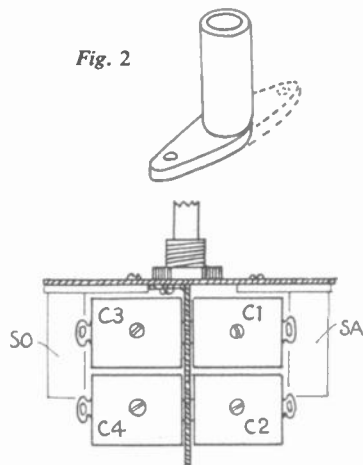
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middle of the switch between the centre tags. (Naturally, no part of it should touch any tag on the switch.) Where the tags are close together and there is danger of contact, then insulate the section passing between the tags with insulating tape. Make the cut-out so that its edge is well clear of the tags. Fig. 1(c) shows how the support (P) lies across the switch.

Drill two holes in the top edge of the support (L, L), Fig. 1(b), for fixing the trimmer condensers later. Fix the switch, then bolt on the support (P), checking that the tags are quite free.

Fig. 2



Temporarily bolt on a trimming condenser and fix on the short wave coil (SA), to ascertain if the positioning is right. The coil and trimmer should not foul each other. If satisfactory, fix on the coil permanently, attaching a soldering tag to the bolt holding down the foot of the coil former. This will do as an earthing tag.

Do the same for the coil (SO) at the left-hand corner, not forgetting the soldering tag.

Fix on the lower coils (MA) and (MO) (Fig. 1(a)), then remove the trimmer. All the trimmers should be left off until all the main wiring is done. In fact, it is a good idea to remove the support (P) also.

As far as the wiring is concerned, we will assume first that the reader is to use the Osmor coils mentioned in the list. (Home-made coils will be described separately.) Coils other than the Osmor make can be used, but as the connections may be different, care must be taken to study the leaflet about the connections and alter the wiring to accord with the different system.

With Osmor coils, that at corner SA will be the Osmor aerial coil QA7, at MA it will be QA8, at SO, it will be the oscillator QO7, and at MO, it is QO8.

First, wire SA (QA7), consulting Fig. 3. Join tag (4) on coil to tag (D) on switch. Join tag (2) on coil to tag (B) on switch. Join tags (3) and (1) on coil and take to solder tag on base.

Next, wire MA (QA8). Join tag (2) on coil to tag (A) on switch. Tag (4) to tag (C) on switch. Join together tags (1) and (3) on coil and take to chassis tag. Join centre tag (Q) of switch to the post (U) on edge of chassis. To tag (R) on switch join a green lead about 5ins. long (stranded wire).

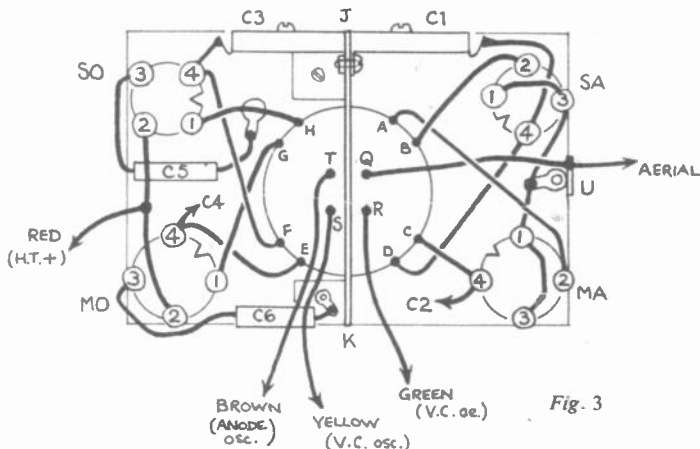


Fig. 4

Now turn to the left hand (oscillator) section. SO, using Osmor coils, is now QO7. MO is QO8.

First earth one end of padder C5 to chassis tag and take other end to tag (3) on coil. Join tag (4) on coil to tag (F) on switch. Join tag (1) on coil to tag (H) on switch. Join tag 2 on coil to tag (2) on coil below (QO8). Join a red lead (stranded wire) to either of these tags, making it 5ins. long.

With the bottom coil (QO8), join padder C6 to tag (3) and take other end

to chassis. Join tag (4) to tag (E) on switch. Take tag (1) to tag (G) on switch.

Join a brown lead to tag (T) on switch. This should be stranded wire, 5ins. long. A similar lead, only this time yellow, is joined to tag (S).

The trimmers C1 and 2, C3 and 4, can now be bolted on to the metal support (P), and this latter bolted in turn to the main chassis of the coil pack. Fig. 4 shows a top view of the coil pack with trimmers identified.

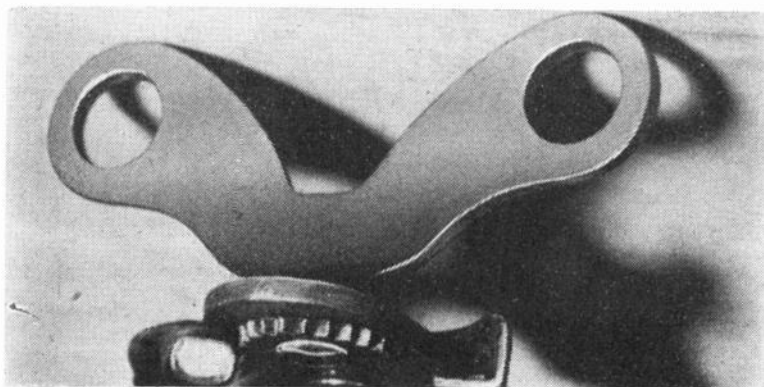
Join the free tag of trimmer (C1)

to tag (4) of SA (QA7). Join free tag of trimmer C2 to tag 4 on MA (QA8).

On the other side, join C3 to tag 4 on SO (QO7), and join C4 to tag 4 on MO (QO8).

This completes the wiring of the coil pack. We may now consider the home-made coils.

Next week A. Fraser will describe the making of home-made coils and how to adapt the coil pack for a T.R.F. set.



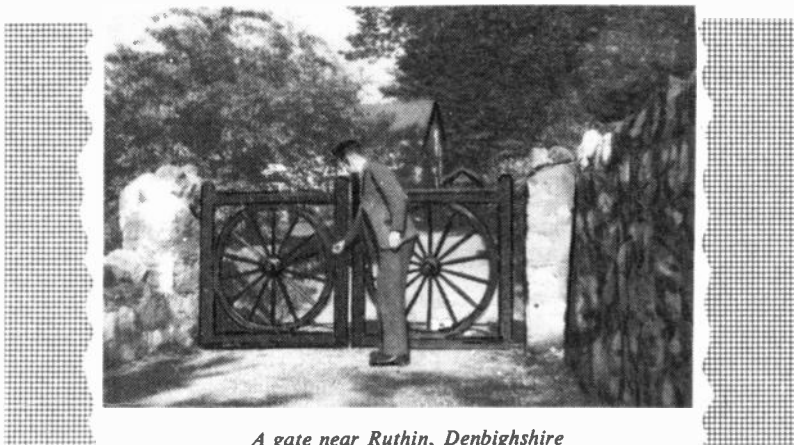
PUZZLEPIC — What is it? See page 284

AN ATTRACTIVE WHEEL GATE

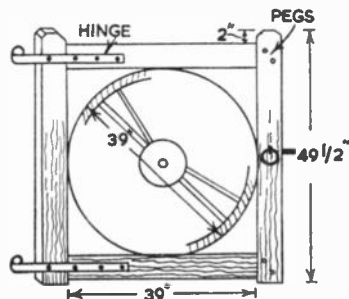
ONE pair of wheels is the basic requirement for this attractive garden-gate, which couples the elegance of the old days with the utility of our own.

Obtaining the wheels may prove to be a problem, but with a little initiative it can be easily overcome. The local grocer or baker may be able to help here. He may still have hidden away beneath the cobwebs, an old delivery cart with which he may be persuaded to part. Failing that, country smithies and farm-houses might be tried. And what became of the milk-float which delivered the milk before the war?

It is advisable to find wheels with a metal rim. Some 'luxury model' conveyances in the old days had wheels fitted with solid rubber tyres, which would not be very suitable for the construction of a gate. So much the better if



A gate near Ruthin, Denbighshire



wheels can be found which have brass bosses, which will gleam when polished.

The diameter of the wheels is, of course, all-important. On it will depend the approximate dimensions of the finished gate. It is easier and cheaper to find the right sized wheels than to move a gate-post! The wheels in the illustration have a diameter of 39ins.

The actual construction should present few difficulties. The wood used throughout is 4ins. by 2½ins. section. The actual lengths, of course, will depend on

the size of the wheels, but the measurements of the gate shown are given, for reference in the diagram. The joints are mortise and tenon, held by wooden pegs, and strengthened with angle-brackets. The wheels are bolted at their four quarters into the frame thus constructed. The job is finished with wrought-iron hinges and a latch.

Painting is a matter of choice. It can either be in one colour only, or in two contrasting colours, say, black and yellow, or black and white. (G.R.)

Interesting Locos – No. 16

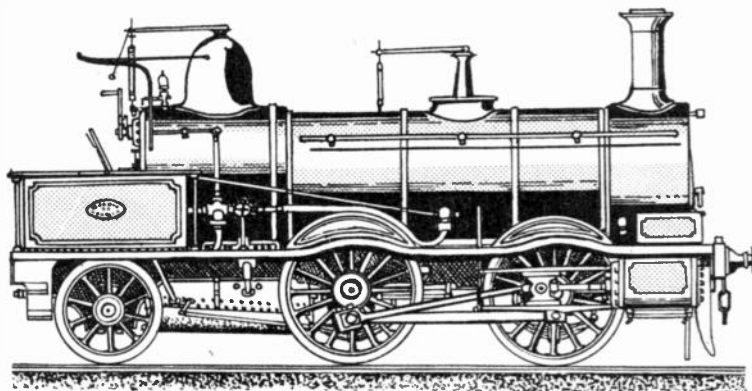
THE 0-4-2 goods and mineral tender locomotive shown in our illustration was one of a batch built by Neilson & Co. of Glasgow in 1866 for the Scottish North Eastern Railway, and later taken over by the Caledonian Railway. The engine was in service for some twenty-two years, being withdrawn in 1888.

These interesting engines carried the following leading features — cylinders, outside 17ins. diameter by 20ins. stroke, wheels coupled, 5ft. 1½ins. diameter, trailing 3ft. 8½ins. diameter. Wheelbase, 6ft. 10ins., plus 7ft. 6ins., total equals 14ft. 4ins. The boiler was of the raised firebox casing pattern. The total heating surface was 969.3 sq. ft., the firebox contributing 79.36 sq. ft. The grate area was 13.8 sq. ft. and the boiler working pressure 120 lbs. per sq. in. The total engine weight was 27 tons 6 cwt. 3 qrs. The tenders provided for these engines were of the four-wheel type carrying

1,400 gallons of water and 3 tons of coal.

The design of these engines was much advanced for the period and they did

excellent work on the goods traffic of the line for many years. Some of the class were provided with the Yarrow patent transverse water division for the boilers.



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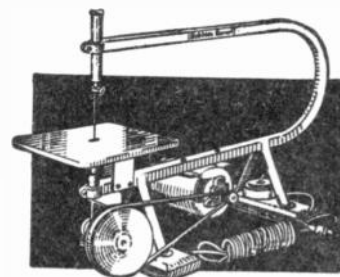
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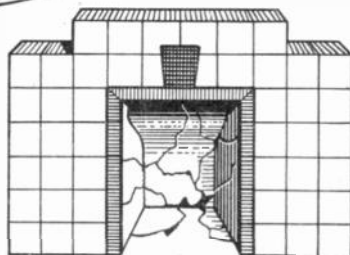
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CEYLON, not quite as large as Ireland, was first occupied by the Portuguese, then by the Dutch, before coming into the Commonwealth.

Colombo, the capital, one of the great harbours of eastern travel, where vessels call on their way to India, China and Australia, is depicted on stamps of 1935. It is a handsome town of white houses. The streets are lively with a strange mixture of Eastern peoples — Indians, Chinese, Jews, Arabs, Parsees, Malays, besides English and Dutch settlers.

Ceylon, with its long avenues of giant bamboos, its groves of waving palms and gardens of pine-apples, has been rightly named 'Paradise Isle'.

Most of the population wear no other clothing than a piece of calico wrapped round the loins. But then, Ceylon is near the equator; its climate is moist and relaxing. There is little difference in the length of the day throughout the year. Even on the coast the weather is always warm.

CEYLON — By R.L.C.

Mr. George Samaranayake of Uduwella, Kandy, Ceylon, is a regular reader of *Hobbies Weekly*. He is in need of English pen-friends and is prepared to exchange stamps and labels, and to answer all letters.

Kandy, the old capital, is a beautiful town built among lakes and gardens, beneath a circle of richly-wooded hills. Brilliant dragon-flies, moths, and beetles flit about in the sunshine, at night the scene is lit up by glittering clusters of fire-flies.

'Stamps 1935. 25 c. blue and brown — Temple of the Tooth, Kandy — 2/- used. 1950, 4c. purple and scarlet — Kandyan Dancer — 2d. used.'



Ceylon is celebrated for its gems. As soon as a vessel anchors it is boarded by sellers of precious stones. Buying and selling is always a long business in the East, where nobody is in a hurry, and no price can be settled without bargaining.

Fine pearls, also, are taken off the coast. These 'gems of the ocean' belong rather to the animal than to the mineral kingdom, being formed by a growth from the bodies of shell-fish, particularly oysters. The pearl-fishing boats set out in large fleets for the banks on which the oysters lie, so deep that they must be brought up by diving. The divers take turns in going down, each man weighted with a stone to bring him quickly to the bottom, where he tries to pick up as many oysters as he can in the half-minute or so he can stay under water. When he can no longer hold his breath, he signals to the men in the boat by tugging at the rope, and they at once draw him up. The chief danger is from sharks. To keep them off, each boat usually carries a shark charmer. Other such conjurers stand on the shore muttering prayers and performing strange antics that are supposed to drive the sharks away. If a shark does attack

one of the divers, the others can hardly be persuaded to enter the water that day, which shows that they only half believe in their conjurers.

'Stamps 1935. 15 c. brown and green — River Scene — 10d. used.'

Coconuts, cinnamon and coffee used to be the chief productions of Ceylon; but of late years coffee growing has fallen off on account of a disease in the plant, and its place is largely taken by tea-planting.

Fine match labels

Peacocks, parrots, magnificent fowls, bears, monkeys, deer and snakes are found in the forests. Elephants are numerous.

'Stamps 1951. 10 c. green and grey — Coconut Trees — 2d. used. 85 c. black and green — Tea Plantation — 1/3 used. 1935. 50 c. black and mauve — Wild Elephants — 4/- used.'

Stamps were first issued in 1857. Pictorials were introduced in 1935. Many fine match labels have appeared. Postcard collectors will find those of Ceylon exciting and inexpensive.

I have just received a letter from another reader: Mr. P. Segar, Poona-galla Group, Poonagalla (S.P.O.) Bondarawala, Ceylon. He collects stamps and labels, and would like English pen-friends.

Next week's issue will contain details for making a 'Junior' work bench, weather-house and toy patterns, etc.

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Solution to Puzzlepic

The 'monster' pictured on page 281 is a can opener photographed from an unusual angle.



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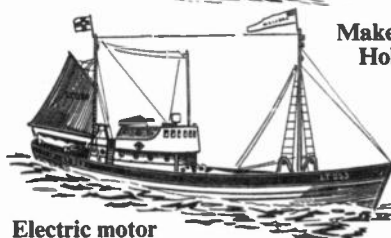
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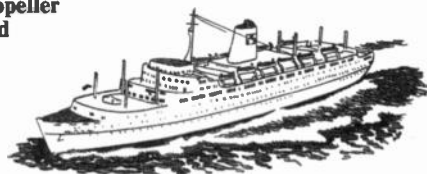
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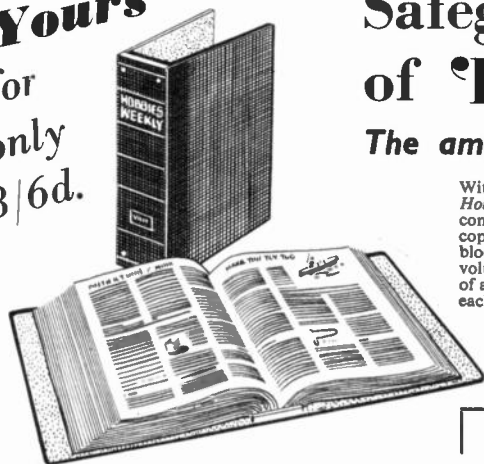
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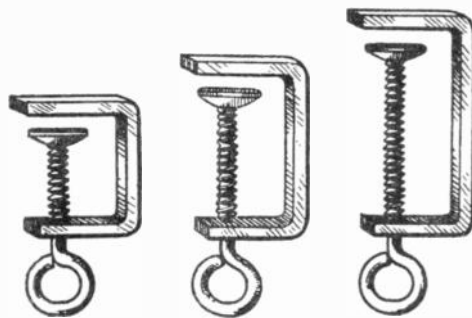
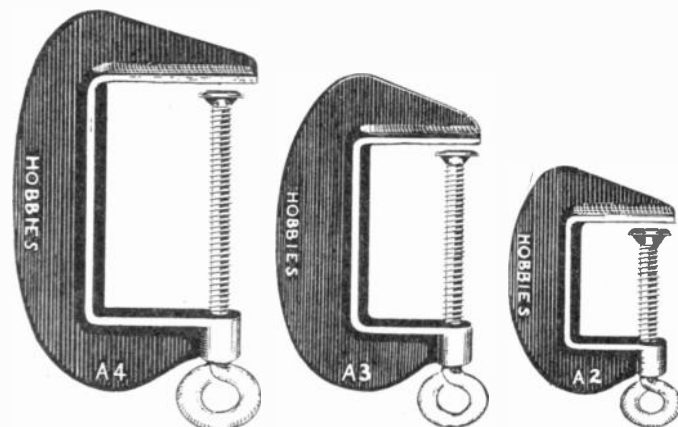
BUYING OR SELLING?

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ALL-STEEL LIGHT CRAMPS

Every worker will have found the need for cramps such as these. Indeed, no tool kit is complete without them. For holding work together after gluing they are just the thing. Made from strong steel with thread which will not wear under normal usage.

2 in. 1/6 2½ in. 1/7 3½ in. 1/8 4½ in. 1/9



HOBBIES 'A' CRAMPS

These are heavy cast cramps made sturdy and strong so they will not bend under any job. The space between jaws is sufficient to take any work usually undertaken by the handyman.

A2

A3

A4

2 in. 4/9

3 in. 5/6

4 in. 6/3

A5

A6

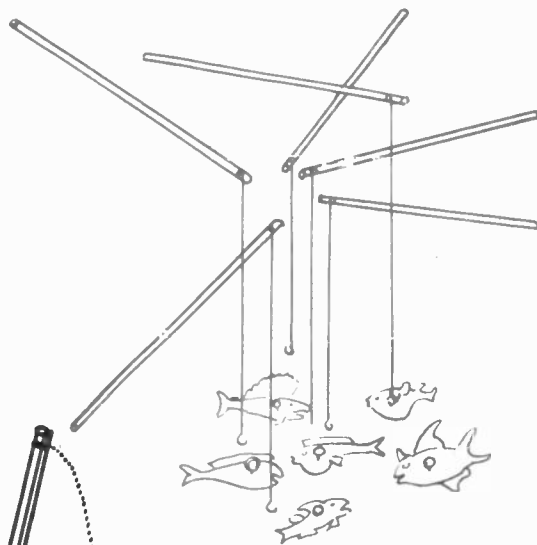
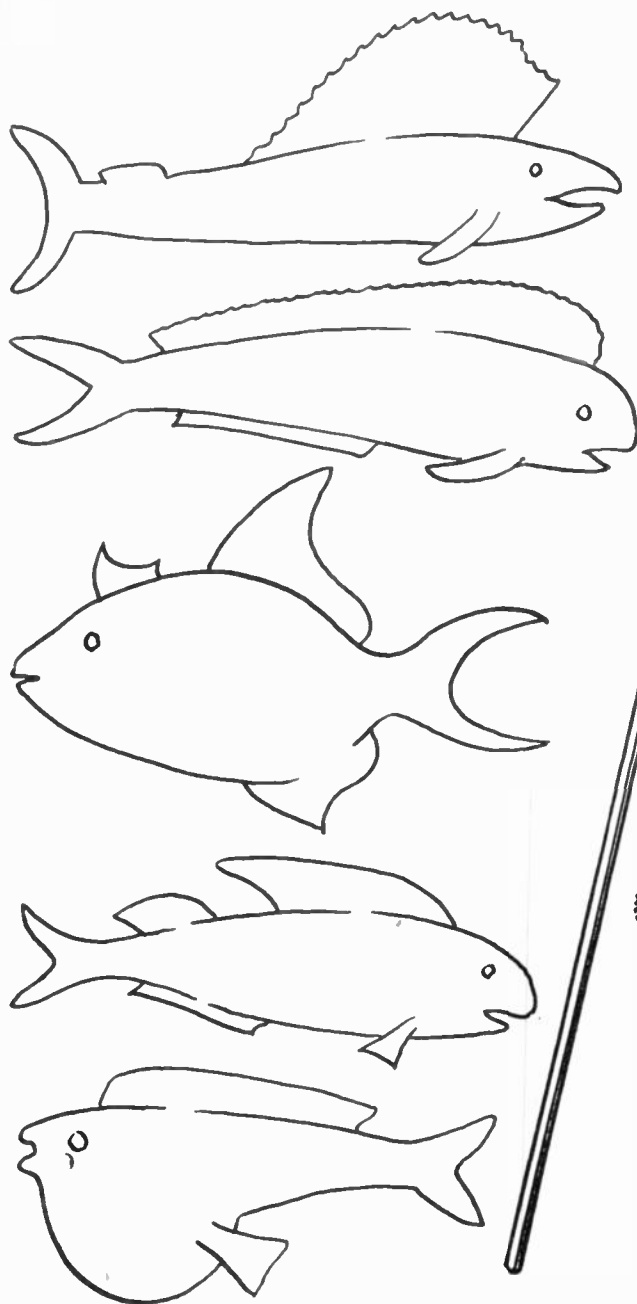
5 in. 7/3

6 in. 8/-

HOBBIES LTD. (Dept. 99), DEREHAM, NORFOLK

Full-size patterns

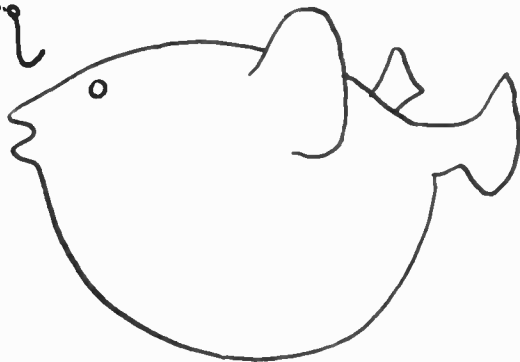
NOVEL 'FISHING' GAME



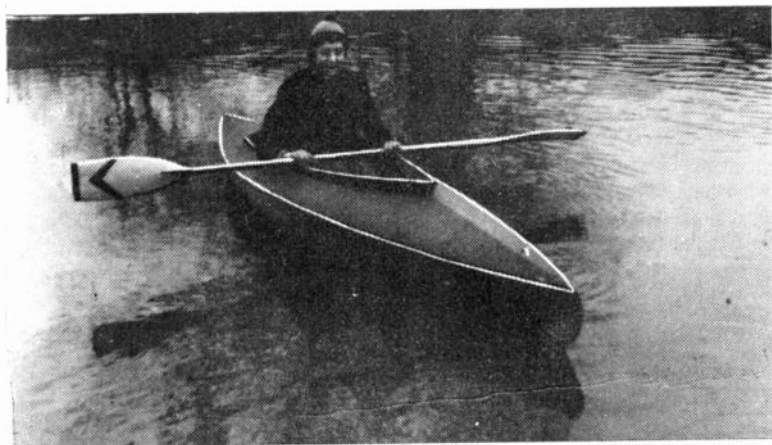
EASY TO MAKE WITH A FRETSAW

THIS fishing game enjoys the real hazards of angling. Numbers, from two to twelve are concealed on the backs of the fish so that the 'anglers' cannot tell the scoring value of the fish they are catching. Numbers can be erased and altered from time to time.

Two of each kind of fish are cut from $\frac{1}{4}$ in. plywood and painted in bright colours. Insert a small screw-eye in each fish. The rods are $\frac{1}{4}$ in. dowelling and the hooks are bent from wire. (M.p.)



Paddle Your Own Canoe



*... and make
it with the
aid of
full-size
plans from*



BUILDING COSTS FROM ABOUT £7

These plans contain all the information needed to build the canoe and its accessories. The main frames and other shaped parts are drawn full size for tracing direct on to the wood. There are plenty of constructional diagrams, with step-by-step instructions, and a detailed material list. Accessory instructions include the making of paddle, spray cover, trolley, rudder, sailing gear, etc.

All of these canoes are of the decked kayak type and are primarily paddling craft, but sail is useful as an auxiliary and can add to the fun of canoeing. If sailing capabilities are particularly required, PBK 20 is the best selection.

A canvas canoe can be built by the novice with limited equipment, and the average handyman can complete the job in about 40 hours. The structure consists of widely-spaced laths on cross frames, covered with a fabric skin. There are no difficult joints or awkward work. Plywood skinned canoes need more skill and a larger tool kit.

Building costs range from about £7 (for the PBK 10). We do not supply materials for building, but addresses of firms who do so are included with the plans.

DETAILS OF PLANS AVAILABLE

RIGID CANVAS-COVERED

PBK 10. Single seat, 11 ft. long, 28 in. beam, normal max. load 300 lb. The shortest satisfactory canoe. Economical in size and building costs. Room for lightweight kit.

Price 11/-

PBK 14. A roomy single for the big man, or a two-seater for an adult and child, or two young people. 14 ft. long, 29 in. beam, normal max. load 500 lb. Popular tourer.

Price 12/6

PBK 15. Single seat, 14 ft. 6 in. long, 26 in. beam, normal max. load 400 lb. The enthusiast's fast touring craft. Safe and stable. Suitable for any waters.

Price 12/6

PBK 20. Two-seat, 15 ft. long, 32 in. beam, normal max. load 600 lb. Stable and seaworthy. Easily paddled and a good performer under sail. Popular with scouts and youth clubs.

Price 12/6

RIGID PLYWOOD-SKINNED

PBK 16. Two-seater. 16 ft. long, 32 in. beam, normal max. load 700 lb. Flat-bottomed. Safe and robust. Popular for local hire on sea and river. May be left afloat. Price 12/6

FOLDING

PBK 24. Single seat, 11 ft. long, 28 in. beam, normal max. load 300 lb. Similar lines to PBK 10 but longer cockpit. Only canoe which packs into one bag small enough to go on bus.

Price 12/6

From branches or direct (post 9d. extra)

HOBBIES LTD

(Dept 99) Dereham, Norfolk