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AND  
PRACTICAL WIRELESS

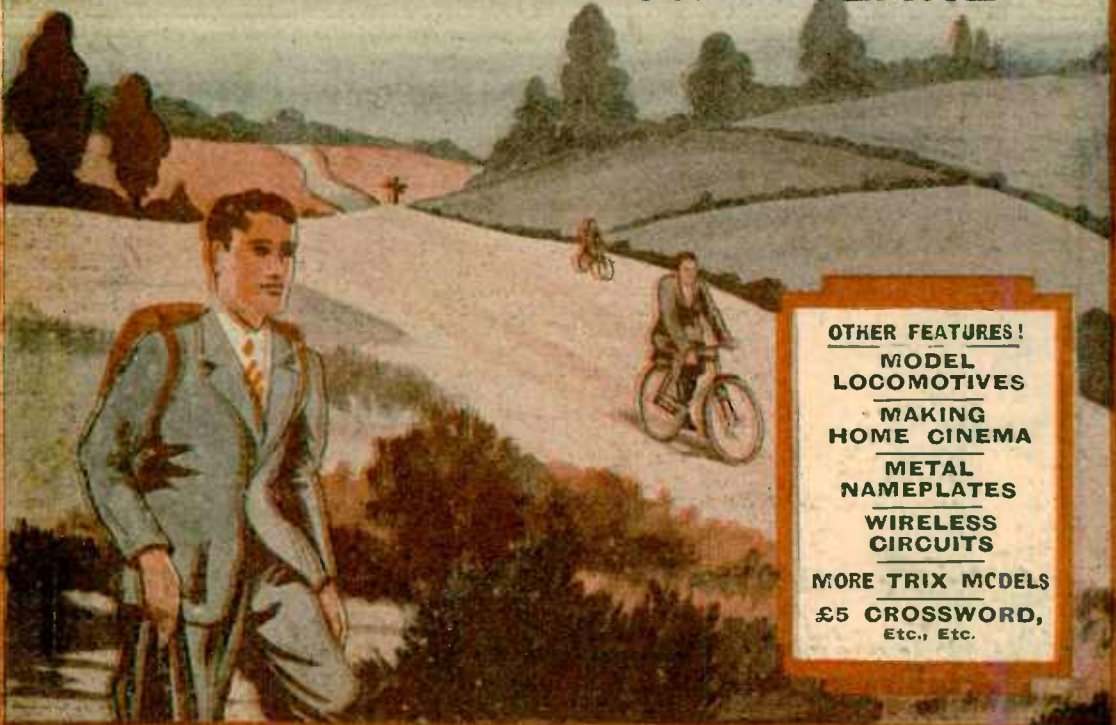
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March 23th,  
1932.  
No. 1901.

Published every  
Wednesday.  
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by  
F.T. BIDLAKE



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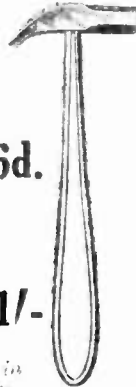
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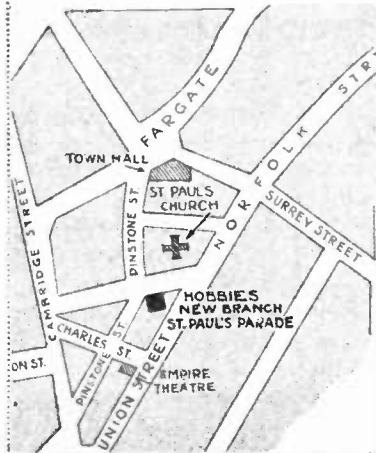
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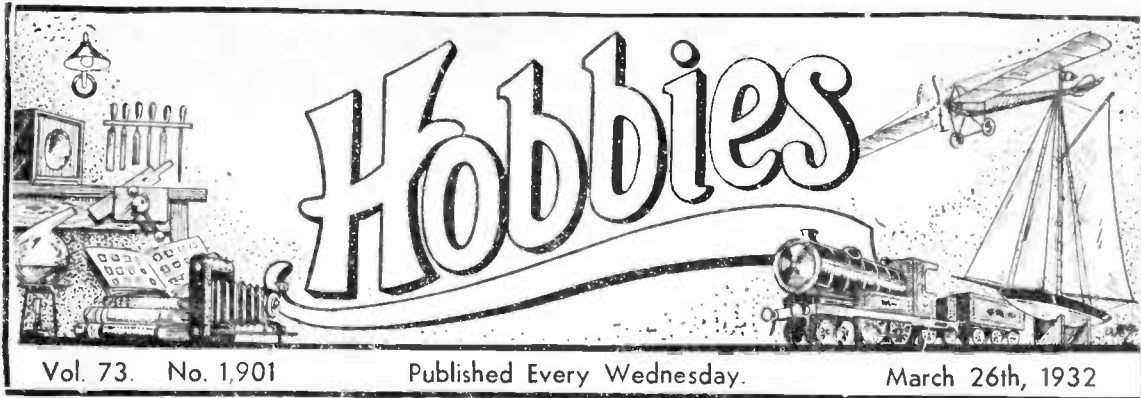
To mark the opening of the new premises of Hobbies Ltd. at Sheffield, a simple competition is being held for readers in the city and district. To the owner of the earliest copy of HOBBIES WEEKLY who brings it to the Branch before March 26th, we will present an A 1 Machine (value 50 -). The owner of the second oldest will receive a Handi-kit Outfit (23 6) and third earliest an A 1 Fretwork Outfit (10 -). Find up the earliest copy of HOBBIES, take it to the address below, and let the manager make a note of the date on the cover. The winners will be announced in HOBBIES as soon as possible after the contest. No entry form is needed—just take your HOBBIES to the new address in Sheffield. It's quite central, and you cannot mistake the shop. Those who have been used to going to West St. will find it much more convenient.

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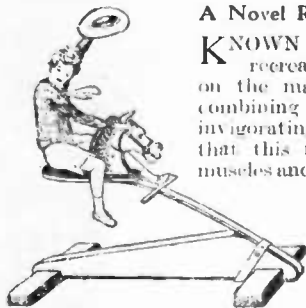
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## THIS WEEK'S CLEVER IDEAS

### A Novel Recreational Toy.



A new recreational novelty.

KNOWN as "Bobbity," a new recreational toy has been placed on the market for the purpose of combining a healthy pastime with invigorating exercise. It is claimed that this novelty can develop the muscles and expand the chest. It may be used indoors or outdoors. The seat is mounted on a strong cantilever steel spring which oscillates in an amusing and exhilarating manner.

### A Silent Electric Clock.

A WELL-KNOWN wireless firm has just marketed a new electric clock which is absolutely silent. It is actuated by a small synchronous motor revolving at only 166.6 revolutions per minute. The mechanism of the clock consists of very little else, apart from this tiny silent motor, the slow speed of which ensures absolute silence. It keeps time to within three-fiftieths of a second a day, and a second-hand is provided as that is the only means of telling whether the clock is actually going. The clock itself merely needs to be connected to the house mains, and the cost of running it cannot amount to more than a few pence per year.

### An Egg-Opener.

THE task of cracking an egg neatly is a matter of luck as well as of knack. Quite often the shell splits from top to bottom, allowing the contents of the egg to leak away into the egg-cup. Up to the present there has been no table tool which could be displayed amongst the breakfast table ironmongery to make the task fool-proof. This deficiency has now been remedied by the introduction of the small device shown in the illustration. It is a sort of trepanning device: it is just slipped over the top of the egg and twisted, thus making a clean cut round the shell. It is marketed at 1s. 3d. (nickel plated), 2s. 6d. (aluminium), and 4s. (silver plated).



An egg-opener.

### A Cut-Off for the Water Supply.

THE new water pipe union shown in the illustration may be fitted behind the ordinary water tap to cut off the supply while the tap is being repaired. Such a device saves the trouble of having to cut the water off at the mains; once it is fitted it can be permanently left in place. It may also be used for insertion in pipe lines and hose pipes for all purposes where liquids are concerned. It is of the non-leaking type and costs 4s. 6d.

### New Wireless Wander Plugs.

LAST week we referred to the new Clix Master Plugs; these are now shown in the illustration at the foot of this page. It will be seen that they are adaptable to any socket irrespective of size, and that they provide a positive connection.



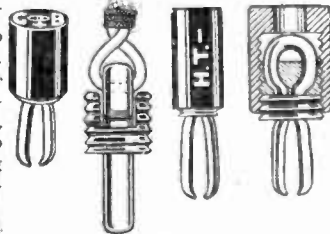
A new water union.

### Self-Charging Wet H.T. Batteries

SELF-CHARGING, silent, and economical H.T. batteries have recently been marketed in the form of component parts. The jars cost 1s. 3d. a dozen, the zincs 10d. a dozen, and the sacs 1s. 2d. a dozen. A dozen sets of parts will yield 18 volts, and complete with the bands and electrolyte cost 4s. 1d., postage 9d.

### New Ink Bottle.

A NEW patent ink bottle may well be described as revolutionary. Square, not round, the bottle is so designed that it is impossible for the nib of the fountain pen to touch the bottom. This obviates damage to the nib and prevents dust and grit, which may get into the ink, from getting into the pen. Its design also makes it impossible for ink to get on the barrel of the pen so that there is no need to wipe the pen after filling and there is no chance of getting ink on the fingers.



New and efficient wireless wander plugs.

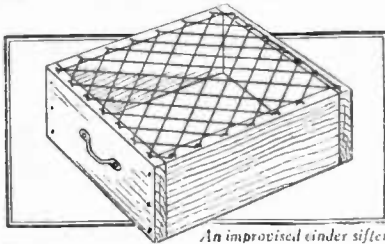
The address of the manufacturers of items mentioned on this page can be obtained on application to the Editor.



# NOTES AND NOTIONS from our READERS

## An Improvised Cinder Sifter.

A USEFUL sifter can be made by nailing together four pieces of 3/4 in. wood to form a frame, as shown in the accompanying sketch. A convenient size for the frame is 12 in. square and about 4 in. deep. Along



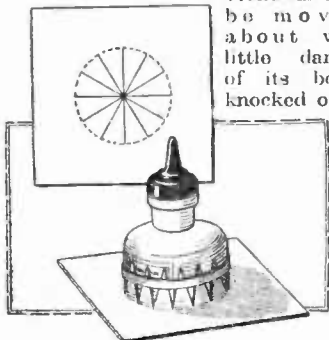
An improvised cinder sifter

the bottom edge of the box hammer in some staples and then thread through these a length of strong iron or copper wire, crossing the wires as indicated. As each length of wire between two of the staples is pulled taut, hammer them down to hold the wire firmly. Handles can be screwed to opposite sides of the frame.

## Stand for Drawing-Ink Bottle.

DRAWING-INK bottles, unless provided with some sort of stand, are liable to be knocked over. A suitable stand can be made of wood, but a much simpler way is to make one of cardboard in the following manner. Take a piece of stiff cardboard about 6 in. square and in the centre mark out a circle slightly larger than the diameter of the ink bottle. With a sharp penknife cut twelve equally spaced radial slits and then bend the points upwards on the dotted line. Press the holder down over the bottle so that it rests flat on the drawing board and then place a rubber band round the cardboard points, as shown in the accompanying sketch.

It will be found that the bottle can now be moved about with little danger of its being knocked over.



A stand for an ink bottle.

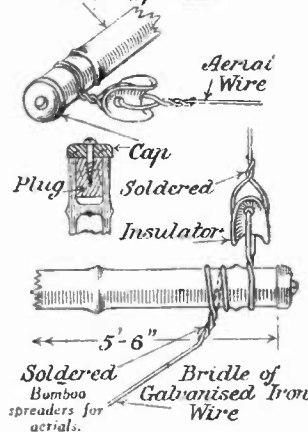
## THAT DODGE OF YOURS?

Why not pass it on to us? We pay Five Shillings for every item published on this page. Mark your envelope "Notes and Notions." Put your name and address on every item. Every notice sent in MUST be original.

## Bamboo Aerial Spreaders.

AMATEURS sometimes make their aerial spreaders from broom handles or from ash rods; although these are of great strength they are much too heavy for a small aerial. Bamboo rods are much lighter than ash, and are quite strong enough for the purpose. The rods should be about 5 ft. 6 in. long, as there is no

### Bamboo Spreader



advantage in using a twin aerial unless the wires are spaced at least 5 ft. apart. The ends of the rods, after being filed to remove any roughness, should be plugged, and a hardwood cap screwed on, as indicated in the accompanying sketch. This not only gives a finish to the spreaders, but also keeps out the water in wet weather.

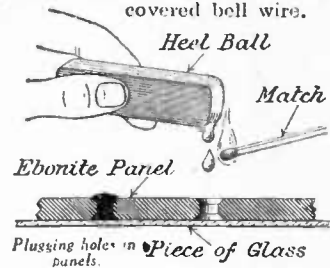
## This Week's Mental Nut—No. 9.

THREE books will be awarded each week for the first three correct solutions opened. Mark envelopes "Mental Nut"—No. 9.

THREE boys were given a bag of nuts to be divided among them in proportion to their ages, which amounted to 17½ years. The bag contained 770 nuts and as often as A took 3, B took 3, and as often as A took 6, C took 7. How many nuts had each, and what were the boys' respective ages?

**Answer to Last Week's Problem.**  
THE number is 1179; which totals 1179 when multiplied by 10 or when added to 10.

The bridle ends are passed through holes drilled in the spreader and then twisted round and soldered. The insulators can be attached by means of twin double-cotton and rubber-covered bell wire.



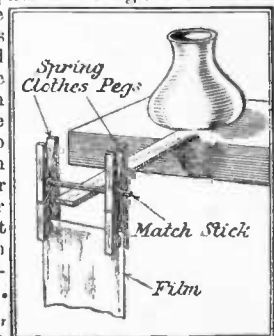
## Plugging Holes in Panels.

OL) ebonite panels with holes drilled through can be made serviceable again, for experimental purposes, by a simple method of plugging the holes.

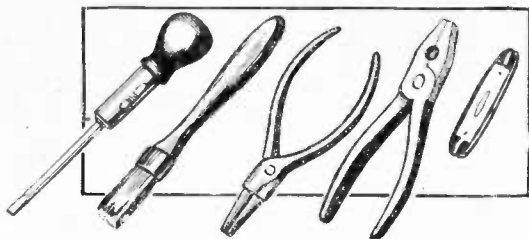
First of all, take the panel to be treated, and with a brace and rose-bit carefully countersink the holes on each side. Obtain a stick of black heel-ball from a leather stores, and having placed the panel on a small piece of glass, apply a lighted match to the end of the heel-ball and allow the drops of melted composition to fall into the hole beneath. The composition is easily melted, but sets quite hard when dry. The glass plate gives a nice smooth finish to the plugging on that side of the panel, and the small blobs on the other side can be removed with a wide carpenter's chisel.

## For Drying Films.

IT is often difficult to know how to hang up camera films to dry after they have been developed. There are special clips obtainable, but if these are not to hand, a good substitute can be contrived with two spring clothes pegs. These are clipped on to one end of the film, and a matchstick is passed through the centres of the springs, as depicted here. The film can thus be hung up to dry on a flat ruler or other support placed on the mantelpiece.



A device for drying films.



The various tools necessary for wiring the set.

A PRACTICAL WIRELESS FEATURE.

# HOW TO WIRE YOUR SET

By "Hobbies" Radio Expert

**N**EATNESS in laying out and wiring up your receiving set will reflect itself in the results you ultimately obtain when using the receiver on the aerial. If the work is slipshod and careless, then you can rest assured that either the set will not work or if it does, poor reception will be the reward. On the other hand, if your lay-out has been undertaken with due care and the run of wiring executed in a workmanlike manner, then your efforts will reap their just reward of excellent reception.

The task is quite a simple one if tackled in the proper way, and these few notes will put you on the right road. First of all a word as to component arrangement. If there is a baseboard plan given then the work is merely one of copying, but if a pictorial diagram is featured then you must place all the components on the board and, noting their individual function, i.e., aerial coil, aerial condenser, grid leak, transformer, etc., dispose them so that the resulting connecting wires take the shortest runs possible. If you make a haphazard lay-out, the wiring business becomes so complicated that you are likely to make mistakes and, furthermore, the set is sure to exhibit some peculiar fault and be unreliable in working.

**How to Commence.**

Begin on the left hand side of the baseboard (facing panel) and treating this as the aerial side work across to the right and, where possible, arrange similar components in line, for the wiring can then be made parallel to the baseboard edges and this always looks neat. Provided you keep one or two simple rules uppermost in your mind you cannot go wrong.

- (1) All "grid" connections should be as short as possible.
- (2) When you have two tuned circuits in your set, separate as widely as possible and place the coils at right angles (this assumes an absence of screens).
- (3) Keep the filament wiring distinct from the H.T. wiring.
- (4) Take advantage of any earth points on your set in order to save long leads, i.e., do not join every "earth" wire to the earth terminal, but to the nearest point on the one wire which ultimately passes to the earth terminal.
- (5) Keep H.F. wiring well away from L.F. wiring.

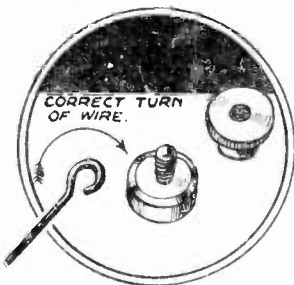
By following these simple general principles you cannot go wrong, the problem of component positioning being, of course, linked with the question of wiring runs. Often a compromise has to be struck in situations where there appears to be a little difficulty in fulfilling all the rules just enunciated.

**The Right Gauge of Wire.**

Now a word as to the actual wire. Do not choose a wire of too fine a gauge or it will tend to sag and the lightest gauge recommended is No. 18. It does not matter whether you use square or round section, just satisfy your own individual taste. Where wires run very

near one another or cross rather close and are likely to touch and cause a short circuit, it is advisable to slip lengths of insulating sleeving over them or if preferred use the Glazite wire, which carries its own coloured insulation.

Since nearly all the components now used in reception are supplied with terminals, it is possible to wire a set without a single soldered joint. One or two tools are necessary when wiring up a set and the most important are a penknife, round nosed pliers, flat nosed pliers with cutting edge, screwdriver and brush. When wiring two points together, measure off the length of wire required and then loop each end with the aid of a pair of round nosed pliers. Bear in mind that when placing each wire over the particular terminal shank it should be arranged that the screwing down of the terminal tends to close the loop and not open it.



Screw the terminal down in a clockwise direction and it will then grip the wire and close it tighter round the thread.

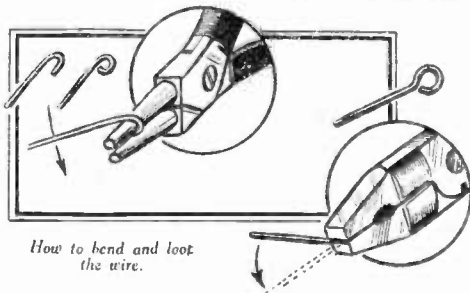
Screwing the terminal down in a clockwise direction will then grip the wire and tend to close it tighter round the screw thread. This point should be noted particularly when holding flex wire under terminal heads, otherwise the strands of wire are liable to work loose.

**Keep the Wire Insulated.**

If you use the Glazite wire, cut round the insulation with a sharp knife about 1/16" from the end and then pare off the covering before looping.

A small cleaning brush (a 6d, one-inch brush from Woolworths is quite suitable) enables you to clear away any dust or dirt that has accumulated while you are working and is always handy to keep by you.

The problems arising when you prefer to solder all your joints are really only small ones, but there is one point you are liable to overlook. To avoid softening carbonite or moulded components while joining, the soldering iron should only be held on the joints for the shortest possible time. If the parts are clean and well "tinned" the solder will "run" almost as soon as the hot iron is applied, but if not, clean and tin the parts again rather than hold the iron on and overheat to no purpose except to soften the material as previously mentioned.





## WIRELESS CIRCUITS FOR ALL

**FIG. 1.**—Selectivity is the principal consideration with a crystal set, but this must not be obtained at the expense of signal strength, and for this to be carried out satisfactorily for each listener's individual conditions some sort of adjustable receiver is necessary. Such a crystal set is shown on the right, and the adjustments provided will enable anyone to arrange for maximum results for any sort of conditions. The components required are: 1 ebonite panel 7in. by 10in., 1 baseboard 10in. by 7in., 1 variable condenser .0005 with dial (Formo mid-log line), 1 on-off switch, 1 crystal detector (permanent type for preference), 5 Clix sockets, 2 Clix plugs, 4 terminals, 1 base mounting coil holder, 1 coil former, 3in. diameter by 3½in. long (ebonite, pertoid, or cardboard),

2oz. of No. 24 D.C.C. wire, 1 No. 150 coil, and wire screws, etc. The coil is made by boring three holes in the former and anchoring the wire, leaving 3in. for subsequent connection. Now wind on the wire, adjacent turns touching, for five turns. At the fifth turn twist the wire into a 3in. loop and continue five more turns, making another loop as before. Continue for another fifteen turns, making a further loop, another fifteen turns and a loop, fifteen more turns and a loop, and finally five turns, after which the wire is anchored as before. You will now have a coil of sixty turns of wire with tapping loops at the 5th, 10th, 25th, 40th and 55th turns. It may now be mounted on the baseboard, together with the other components.

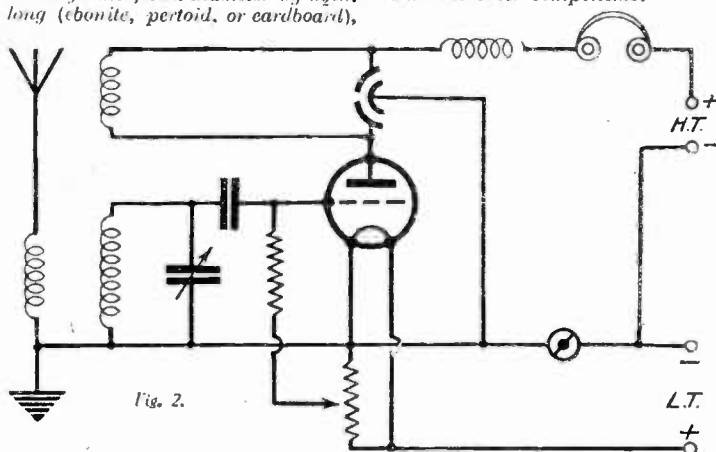


Fig. 2.

**FIG. 2.**—The sketch above shows a simple type of one-valver, with differential reaction control. It is so designed that it may be used for reception on all wavelengths from 20 metres up to 2,000. The components necessary are: 1 panel 12in. by 7in., 1 baseboard 13in. by 9in., 1 .0005 variable condenser with dials, 1 .0002 differential reaction condenser, 1 .0003 fixed condenser, 1 2-megohm grid leak and holder, 1 on-off switch, 1 valve-holder, 3 coil-holders, 1 400 ohms potentiometer, 1 H.F. choke, 4 terminals, 1 4-way battery cord. In order that you may use the set on all wavelengths you will require a complete set of coils Nos. 35, 50, 60, 75, 100, 150 and 250. For the long-wave stations the central coil is a No. 250, and the left and right hand respectively 100 and 150. For the short waves the coils are Nos. 2, 4, 6, 8 and 10, which will cover the band from about 20 to 100 metres, whilst Nos. 15 to 20, in conjunction with the smaller sizes of the broadcast band, will enable you to cover the gap from 100 metres up to the broadcast band.

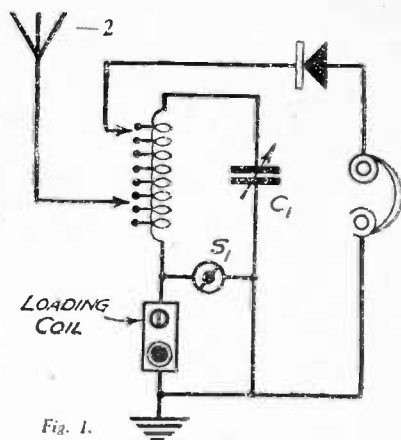


Fig. 1.

**FIG. 3.**—The sketch below is a one-valve circuit employing home-made coils. The construction of the coil is similar to that of Fig. 2, shown on page 598 of March 12th issue, with an additional winding of No. 30 D.C.C. wire wound on about ¼in. below the carthel end of the primary and secondary coils; the end nearest this junction is also carthel. In other respects the arrangement is similar to Fig. 3, shown on page 598 of the March 12th issue. The list of components necessary are .0005 mfd. variable condenser (C1), .0003 mfd. variable condenser (C2), .0002 mfd. fixed condenser (C3), 1 H.F. choke, 1 2-megohm grid leak and holder (R1), valve-holder, on-and-off switch (S1), coil, as mentioned in above notes, terminals, connecting wire, and screws.

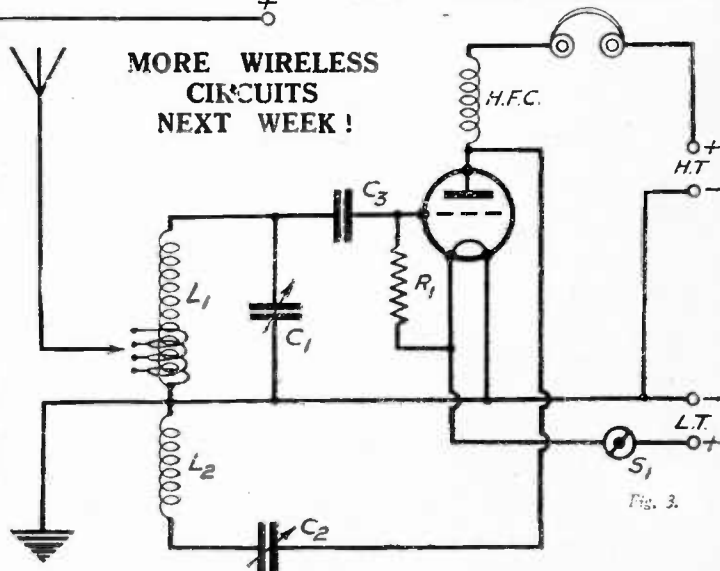


Fig. 3.

### MORE WIRELESS CIRCUITS NEXT WEEK!

**ANOTHER FREE GIFT SHORTLY! SOMETHING ENTIRELY NEW!!**

# A WIRELESS CONTROL CLOCK

By W. J. Ellson

Let your clock switch your wireless set on and off.

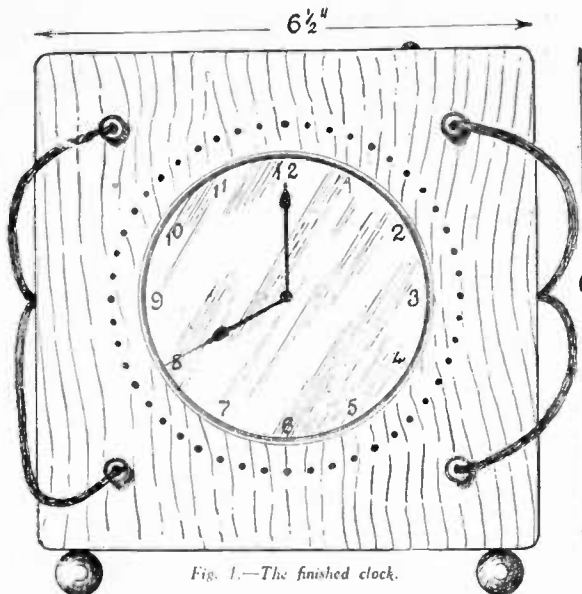


Fig. 1.—The finished clock.

**S**UPPOSE you desire to listen in to a variety concert from 8.15 to 9.30; you will notice round the dial a number of holes, spaced at intervals of quarter hours. Put a plug into the hole opposite 8.15 and another at 9.30. Without further attention on your part the receiver will start and stop at the times desired. The remaining two plugs can be inserted to give you another portion of the programme. Four plugs are shown, but you can instal six or eight if you like, and so arrange a full programme which will function automatically without further attention.

On the top of the clock is a switch lever; this enables you to start or stop the wireless independently of the clock at any time. It also acts as an ordinary timepiece, so it can be installed on the mantelpiece in place of the existing clock if so desired.

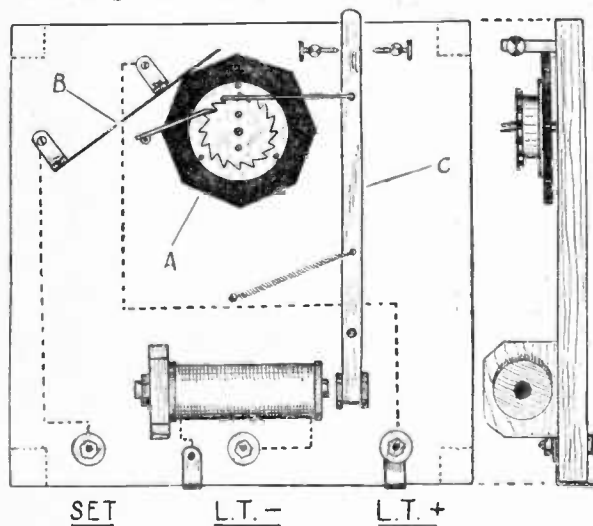
## The Clock Case.

To commence, choose some 1/4 in. mahogany and make up the case to the dimensions shown at Figs 1 and 2. The sides top, and bottom are glued and nailed with fretwork nails, the corners are filed round; this will remove the nail heads. The back is of 3/4 in. wood, and is screwed at each corner to small wooden blocks, glued inside. A piece of wood 1/4 in. thick is cut to fit inside the case, and is hinged 1/4 in. from the front edges; this is to hold the clock case. Four 1/2 in. feet are glued underneath and on each side of the case, a 1/4 in. hole is bored central.

To fix the clock remove the works, glass and inside rim, and replace the works only. With a sharp-pointed instrument mark the inside of the case against the dial. Cut off this narrow ring, thus leaving the edge of the case and surface of the dial level. At the top and bottom of the case make two cuts 1/4 in. apart and 1/4 in. deep, and bend back to form a pair of flanges. Bore a hole through these to take a small screw.

## Details of the Hands.

The hands of the clock are removed and a spring contact soldered to the hour hand. The detail sketch, Fig. 6, shows this (see next week's issue). It may be a 2 in. length of fine, springy brass or steel wire, but it must be flexible, and should be straightened so as to be in line with the direction of the hand. Take out the piece of wood hinged inside, mark the centre by diagonal lines, and describe a circle the size of the clock case. Cut this out to be a tight fit. Put in the clock and secure with screws through the flanges, then replace the dial and hands (diagrams next week). Cut a 6 in. square of stiff white paper, centre it, and mark a circle 1/4 in. less diameter than the dial. Cut out the circle and glue the remainder to the wood and edges of the dial. The whole can now be re-hinged in place and a small knob glued to one corner to facilitate opening for winding the clock.



Figs. 3 and 4.—Details of the mechanism.

(To be continued.)

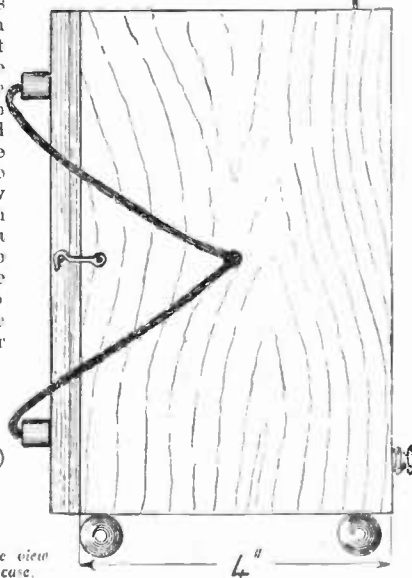


Fig. 2.—A side view of the clock case.



# A RESISTANCE BOX

By W. B. Thompson

Of great use for electrical experiments.

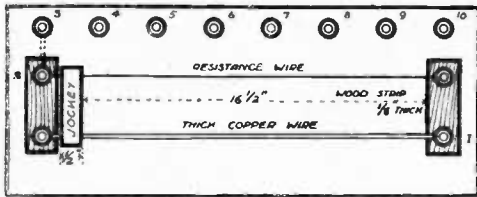


Fig. 1.—A plan view of the box.

**M**ANY experiments in electricity need a resistance which can be adjusted to different values, and below is described a simple, cheap, and efficient instrument for performing this duty. If made carefully, it will give very accurate results. First procure a 2oz. reel of "Eureka" resistance wire, 22 gauge. Such a reel, double silk covered, costs about 1s. 5d. Fig. 1 shows the top of the box, which is 1ft. 8in. by 4in. Mount two terminals with a space of exactly 17in. clear between them, and stretch a piece of the resistance wire lightly between them. This piece of resistance wire must be bared by having the whole of its silk covering stripped off. Now mount a second pair of terminals an inch away from these, and between them stretch a piece of thick copper wire (about 1/4 in. thick). This, too, must be bared.

All terminals must be raised 1/4 in. above the board by placing thin pieces of wood under them, as shown. The two parallel wires should be fastened under the base of each terminal, so leaving the upper part free for temporary connections.

The "jockey" is a piece of brass 1 1/4 in. by 1/2 in. by 1/4 in. File two grooves in it, as shown in Fig. 2, so that it will ride nicely on the parallel wires.

Mount the eight terminals 3, 4, 5—10 at equal distances, and join 2 and 3 by a stout copper wire, underneath the board.

### The Former.

Fig. 3 shows the "former" upon which the resistance is wound. It is a cylinder of wood, cardboard, or one of the many preparations used in wireless coil formers, with a circumference of exactly 11in. The accuracy of the instrument depends upon this being correct. The best way is to make or get one slightly smaller and wind on a sheet of thin paper until the exact size is obtained. Drive in a small brass screw (or bolt and nut), 1/4 in. from the edge A. Start winding the resistance wire from this screw. At the end of three complete turns twist the wire round a second screw, B. After six more

turns twist it round a third screw, C; six more turns, round the fourth screw D; fifteen more turns, round the screw E; thirty more turns, round the screw F; thirty more turns, round the screw G; sixty final turns, round the screw H. This gives a total of 150 turns, spacing them about 1/16 in. apart. The wire must be bared where it is twisted round the screw.

Before driving the screws home, hook about 2in. of thick copper wire under the head of each.

Fix the former into the box and join each of the copper wires to the base of one of the terminals, as shown.

### How to Work the Instrument.

The resistance of one wire is 1 ohm per 33in., so three complete turns on the former give 1 ohm. The resistance of the entire coil at terminal 10 is thus 50 ohms. Suppose one terminal of a battery is connected to terminal 1 (Fig. 1) and the other to a terminal of a piece of apparatus. The other terminal of the piece of apparatus is joined to 10, and the jockey is pushed over to the left in contact with 2.

The current enters at 1, passes along the copper wire and jockey to 2, through the entire resistance to 10, through the apparatus to the battery again. If less resistance is required, join the apparatus to one of the other terminals.

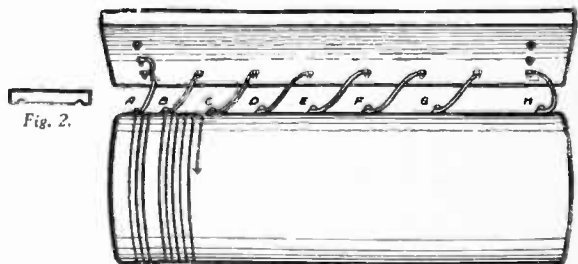
**"HOBBIES" CROSS-WORDS No. 22 RESULT**

Correct solution No. 22—

Seven readers submitted correct coupons, and the Cash Prize of £5 has been divided amongst the following:—

COLE, V. B., 72, Arden Road, Aspects Green, Birmingham; DAKIN, H., 134, Ripon Street, Bradford; FRENCH, F. G., Coleridge "A," Christ's Hospital, Horsham; GARTH, C., 339, Bury Old Road, Heaton Park, Manchester; LYM, L. M., 19, White Hart Lane, Tottenham, N.; ROBINSON, W. R., 17, Tower Street, Emsworth; TAYLOR, W., Busty Bank Farm, Barnsop, Seld.

Payments will be sent in due course.  
Another Easy Puzzle appears on page 666.



Figs. 2 and 3.—(Left) Details of the "jockey," and (Right) the former on which the resistance is wound.

## OUR WIRELESS BLUE PRINT SERVICE

You can now obtain the following blue print wiring diagrams from the Publishers, HOBBIES, George Newnes, Ltd., 8-11, Southampton Street, Strand, W.C.2. Other blue prints are in preparation.

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# HOME-MADE NAME PLATES IN METAL

By A. Plate

An easy and effective method of making name plates from sheet copper.



Figs. 4 and 5.—(Above), the completed name plate and (below) an effective backing for the plate.

round the outline with this tool to form an indented line which must not be too heavily made. The outline of the plate should also be similarly treated, and the work of matting the background now put in hand.

### The Matting Tool.

The idea of the matting tool is to make the texture of the background different from the letters so that the latter may stand up brilliantly. Choose your matting tool and keep the blows as even as possible, and if the plate should bend during this process it will have to be annealed—that is, it must be heated to dull red heat and then allowed to cool gradually: it will then be soft and may be easily flattened by the hand. The outline of the plate should now be cut with shears or a metal-cutting fretsaw, and then screwed down to a backing piece of oak. At Fig. 4, we give an idea of how a name should look when worked up, and at Fig. 5, a very effective form of backing is shown. This consists of

a flat piece of oak  $\frac{1}{2}$  in. or  $\frac{3}{4}$  in. thick, shaped as shown with an overlay of  $\frac{1}{2}$  in. wood screwed to this surface, and to top of this a piece of moulding cut with return ends screwed above. The centre of the wood overlay is cut out to the outline of the metal plate, so that when this is screwed in an admirable effect is produced. A coat of varnish should be given to the wood to preserve it against the weather.

VERY effective name plates may be made out of thin sheet copper, and the following instructions will help those who would like to try their hands at making one. The tools required for this work are few in number and simple to use, and they include a light hammer and a number of patterned punches and a tracing tool. At A, Fig. 1, is shown the tracing tool, and this can easily be made at home by filing down a large French nail to a chisel edge. At B, Fig. 1, is shown also a home-made matting tool, which is again made from a large French nail, the end being filed off square and then slightly tapered if required for a small pattern, but if required for a larger pattern the tapering, of course, need not be done and the nail may have cross file markings made as shown on the right of Fig. 1, B. This, then, will be all the tools required and a start may be made upon the metal.



Fig. 1.—The matting tool.

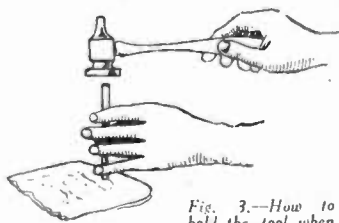


Fig. 3.—How to hold the tool when working.

### Marking Out the Letters.

The simplest type of letter for this kind of work is shown at Fig. 2, and the first thing to do will be to pencil out the letters which compose the name to be worked on to a sheet of paper, making the letters as large as possible in relation to the size of the piece of metal used. Having drawn in the letters and settled upon the outline of the plate it will be necessary next to transfer the outline on to the metal. Lay the paper on the metal which must be cut roughly to the shape required, then fold over the paper on the four sides and gum this to the back of the metal. Previous to sticking down, a piece of carbon paper must be interposed between the metal and the paper. Now trace over the outline with a sharp point, and then remove the paper. The metal should now be tacked down to a piece of wood: ordinary deal will answer as long as it forms a solid backing while the hammering is being carried out. The letters should now be gone over with a scratch tool or steel point, so that they may be permanently outlined on the metal. Taking up the tracing tool next, we hold it in an upright position as shown in Fig. 3, between the finger and thumb, the little finger resting on the metal to form a guide and also to steady the tool whilst the hammer is being used. Go all

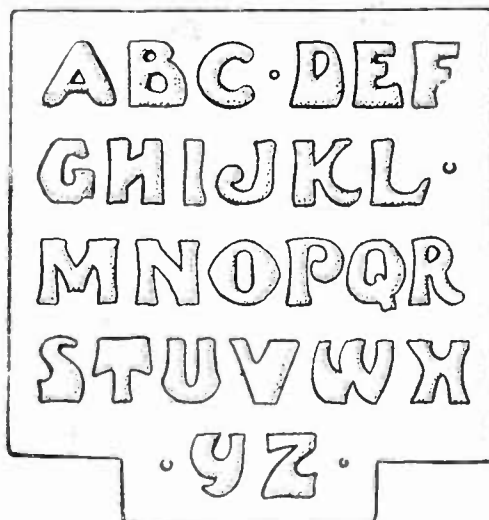
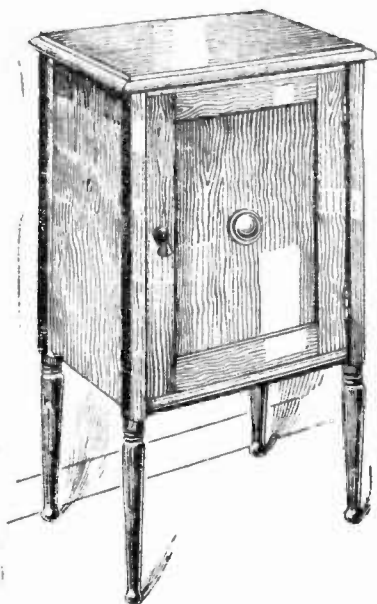


Fig. 2.—How the letters are formed.

**IMPORTANT NOTICE!** All correspondence intended for the Editor or Advertisement Manager MUST be addressed to "Hobbies," Messrs. Geo. Newnes, Ltd., 8-11, Southampton St., Strand, W.C.2.

## A GENERAL CUPBOARD FOR ALL PURPOSES



**T**HE extreme usefulness of the grooved leg when it comes to the assembling of a piece of furniture cannot be over-estimated, and the cabinet described here is a typical example of this. Also the machine-made door may be purchased quite cheaply.

A set of the legs may now be bought for 2s. 9d., and the

number when ordering should be quoted (518). They are in beech 28in. long, two legs each having two edges grooved, and two with one groove only, these latter being for the front legs.

The door, which controls the size of the cabinet, is 16in. high and 14in. wide, and costs only 3s. 3d.

### General Sizes.

The width of the cabinet over the front is 16½in., its depth 13in. and its height 28½in. The moulded top overhangs the legs all round to the extent of ½in., so that the overall width and depth is 17½in. and 14in., respectively. The general arrangement of the rails which forms the framework of the cabinet is shown in Fig. 1, and this figure also shows one side panel being slid into the grooves in the legs. All rails are dowelled to the legs.

In making up the cupboard, each side frame, consisting of a front and back leg and two rails, is made up independently and the front and back rails then fixed to these, the panelling of the back and sides being finally run into the grooves. The four legs should be trued up and all cut to the same length, and the four rails cut off to measure 10½in. long by ½in. square. Mark across the ends of the rails from corner to corner to find the exact centre in which to bore for the dowels. Bore the holes for these with a ½in. drill,

running the holes ½in. deep. Now cut off a length of dowel ½in. long and glue one end in the rail. In fixing the rails to the legs take special care that they come on the inside of these, so as to leave the grooves clear. This is shown in the skeleton diagram (Fig. 2).

When the two side frames are complete and glued up, cut the four connecting rails 14in. long by ½in. square, and prepare these for the dowelling in a similar manner to the other rails. Glue up and knock the whole of the framing together and check the measurements for the door, which should be 16in. high and 14in. wide. The floor consists of a piece of plywood 15½in. by 12in., and is screwed to the underside of the lower rails, as detail Fig. 3 shows. Check out the corners of the floor to fit round the legs and then finish along the front rail with a piece of No. 24 moulding to hide the end grains of the plywood. The panelling of the sides and the back will lap over the plywood floor and so hide the grain at these points.

### Side Panels.

Cut two pieces of ¾in. plywood, 17½in. by 11in., and after brushing glue into the grooves in the legs, slide the panelling in, checking out the extreme lower corners where necessary to clear the rounded finish of the grooving. This is shown in Fig. 2 for the back panel. The back of the cabinet measures 17½in. by 14½in.

A framework of ½in. stuff is formed for this, and consists of two rails 17½in. by 2in. wide, and two rails 14in. by 2in., all mitred and glued together, as detail Fig. 3, the inside angles being strengthened by the waste blocks cut from the mitres. Cover the top of the framing with

a piece of ¾in. plywood measuring 16½in. by 13in. The top, after having the outer edges all rounded off, is secured to the body of the cabinet by means of screws run through the top rails of the framing, as in the enlarged detail in the circle at Fig. 3.

The door should be fitted with a pair of 1½in. hinges.

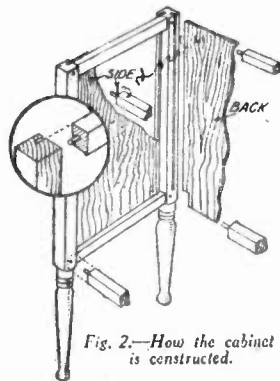


Fig. 2.—How the cabinet is constructed.

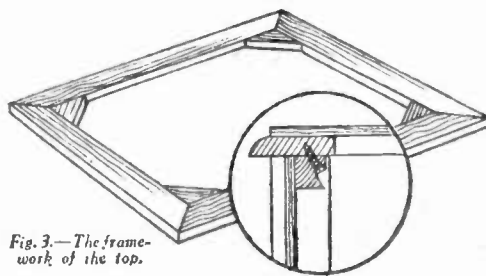


Fig. 3.—The framework of the top.

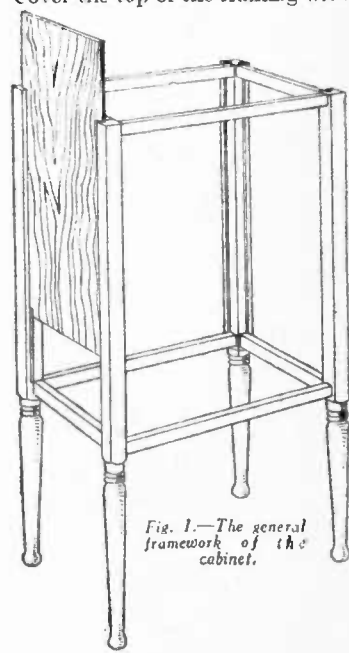
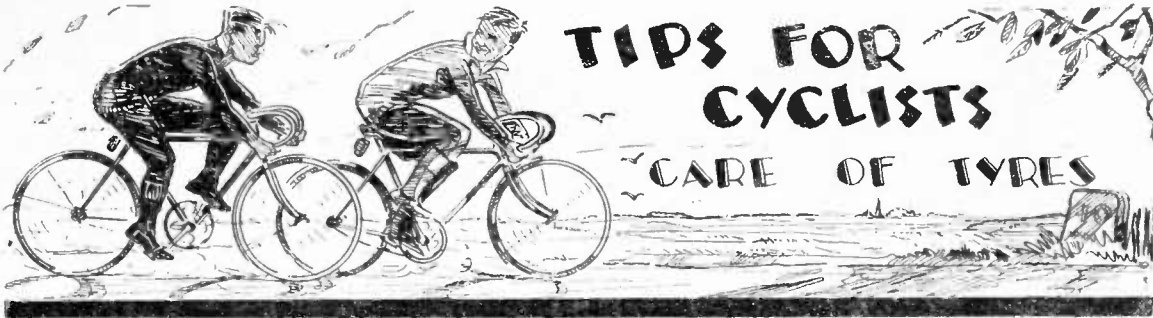


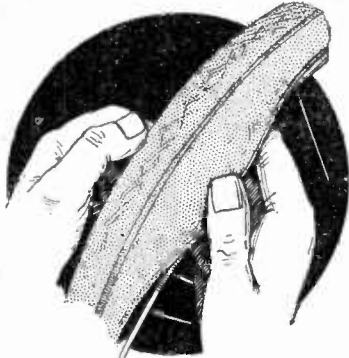
Fig. 1.—The general framework of the cabinet.





**T**HE young cyclist will be well advised to look after the tyres of his machine. Too often we find cyclists riding with slack tyres. Never neglect to inflate tyres and to keep them so hard that the rims do not bump on a bad road. Before you set out on a run feel your tyres and, if necessary, use the inflater to put a bit more pressure in them.

Examine your tyres for cuts and for tiny flints. The former should be stopped up with one of the fillings now on the market. "Chemico" filling is good. Follow the simple directions, and you will find no difficulty in stopping up a small gash or cut in the tyre. Search periodically for tiny pieces of flint embedded in the cover, and work these out with the aid of the point of your pocket-knife; if left, they may work into the tyre and cause a puncture.

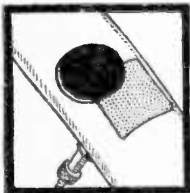


*When you suspect a puncture, carefully go over the cover first, when you may be able to locate the cause.*

**A Leaky Tyre.**

When you find yourself with a leaky tyre, or with a flat one first test your valve in order to see if the trouble lies there; sometimes the nut that holds the main parts of the valve together works loose, causing a leak. Frequently, it is the rubber valve tubing that is perished; if so, replace with a piece of new. It is advisable to buy a length of valve tubing and carry it in the repair outfit. If the cap that covers the valve gets lost, replace with another as soon as possible; the duty of this cap is to keep grit and dirt out of the valve.

To test whether it is the valve that is leaking, turn the wheel until the valve is at the top, then take a small egg-cup or spoon filled with water and immerse the valve in it; if there is a leak you will see air-bubbles rise; but if you happen to be on the road and no water is available, smear saliva on mouth of valve and watch for bubble.



*Never apply two patches so that one overlaps the other.*

**A Puncture.**

When you suspect a puncture, carefully go over the tyre first, when you may be able to locate the cause—a nail or a thorn. Then

mark the place with a lead pencil, before you pull the tube out. Be sure and withdraw anything that has caused the puncture, and run your fingers round the inside of the cover to ascertain if there are any other intruders.

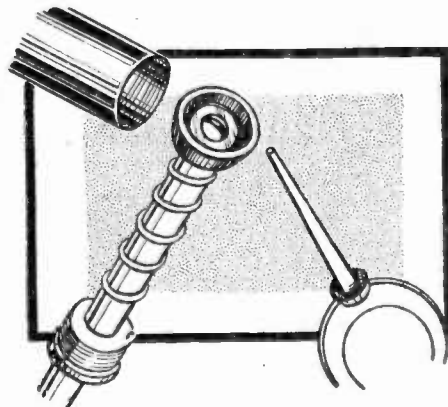
Now clean the puncture by rubbing with glasspaper or with the brimstone end of a match—moistened. Then smear with good rubber solution round the puncture, and also treat the patch similarly. Let them stand until the solution is "tacky," and then place patch in position, holding it firmly with thumb and finger until it has got well hold. Cover over with a sprinkling of french chalk to prevent the patch sticking to the outer cover; partially inflate the tube and replace. Be careful not to pinch the inner tube by the rim of cover when replacing. When you have a difficulty in ascertaining the spot where the puncture is, take out the tube, and run it through a pail of water a few inches at a time; when the puncture is denoted by rising air-bubbles, mark the spot with a pencil.



*A simple test to find whether the valve is leaking. If there is a leak, air bubbles will rise.*

**Patches.**

Never apply two patches so that one overlaps the other. Use tyre levers to get your cover off the rim; but when replacing try and work the cover on again without having to use the lever. When a tyre shows prominent signs of wear and tear, do not dally, but replace it with a new one; likewise with the tube, do not waste time and money in repairs when it gets into a bad state. Never ride on a flat tyre, or you will ruin both cover and tube.



*If your pump fails to work, smear the leather plunger with oil.*



# HIKING AND CYCLING

By F. T. BIDLAKE

**H**IKING and cycling certainly have many points of resemblance, as well as the essential difference that the man on foot only needs good shoes for his only contacts with Mother

Earth, whereas the man on a cycle, with threefold contacts with his mount, wants a comfortable seat, a comfortable handlebar, as well as suitable soles underfoot.

But the cyclist is essentially a mounted pedestrian, rather than a motorist minus an engine. Hikers and cyclists have the vital principle in common, that they rely on their personal efforts only for getting along, their travel is their own doing, as active agents; not as passive parcels owing their movement to purchased power.

That being so, both classes naturally aim at travelling light. There are extremists in both vogues who burden themselves marvellously, and carry tremendous packages. Some of the sturdier stuff on foot and on wheels load themselves and, I suppose, enjoy themselves, as carriers of colossal bundles. But the freedom of movement on path or road is infinitely freer when one has cut the bundle, and shed the burden, and seeks not to carry one's house and household equipment on one's back, or frame, but escapes the snail's handicap and soars to something livelier than the snail's speed. And even more as a hiker than a cyclist is the ideal travelling unburdened travelling, for all luggage is on the hiker's back, but a cyclist, though he has to propel it, need not attach it to his person. So cut the superfluous tackle and carry only the barest essentials, which, of course, will depend on the length of the excursion.

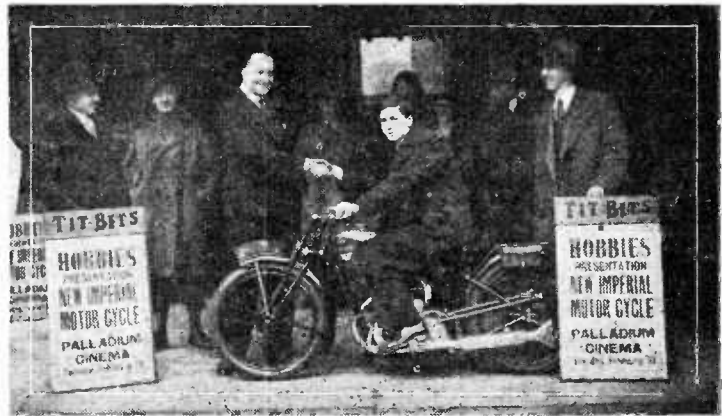
The continuous holiday, on road or path, on wheel or foot, needs a little thought as to wayside accommodation. Here the hikers can be congratulated on the new great endeavour to provide the very simplest possible food and shelter, at an absolute minimum of expense. For just as hiking is a less costly way of wandering even than cycling, so it is appropriate, though not essential, that there should be established shelters for those who do not want expensive accommodation. But, all the same, let us avoid the fallacy of imagining that all ramblers on foot are moneyless tramps. Motorists often pity cyclists as travellers who long to be motorists, only they cannot afford it. Such a conclusion is far too general. Crowds of men ride because they love it, and have no more desire to be in motor-cars than in railway carriages. They enjoy the self-propulsion. So, too, the walker does not always walk because he cannot buy a bicycle. It may be

that in the main the three classes are stratified on a financial scale, but that that is not vital, or essential, and the pity of a motorist for a pusher or a plodder is not required, thank you, and it may well be that we who exercise ourselves pleasantly, and pleasurably, might, if we thought it worth while, dole out a little pity to the rather less athletic type, with rather more limited enjoyment, who sit in cars and get false appetites and hardly do anything to deserve their dinners. But though it is vital there should be every grade of accommodation available, and places of call where walkers' whims and cyclists' terrifying hunger for simple fare are recognised, there is no need to think that either the cyclist or the rambler must go to places he would ordinarily ignore. It ought to be nothing to any caterer to worry about, whether his guests come by car, by plane, by rail, on foot or bicycle. But there are some publicans who expect you to come to them on hands and knees unless you are carted to their door by a chauffeur. So let us hike and cycle to places where we know the welcome will be warm, and that is why hostels and official quarters on a C.T.C. list are good to study when one goes afield; for they supplement the list of places one personally knows, with those which are commended by fellow travellers.

Now as cycling need not all be on the main roads, but let us wander into lanes, by-ways and even by-paths, so even more emphatically hiking must lead us still more completely off the arterial highways. Go where the going's green should be the first law of all in the code of the walker. Not for him the footpath adjacent to the road, but the footpath that is a field-path, or lovelier still, a cliff-path or a coastguard's track, or a hill-top journey on the ancient grass-grown thoroughfares which were the original dominating routes for travellers in this country years ago, when visibility was important, when ambushment was a thing to dread, when lowlands were marshy rivers mostly unbridged and hill men were the top-dogs.

So, to-day, for recreative prowlings afoot, go where the going's green; go where the wheelfolk cannot travel, cut the packing to the lowest.

## ANOTHER "HOBBIES" MOTOR-CYCLE PRIZEWINNER.



This photograph shows Mr. N. R. Kay, winner of the "New Imperial" motor-cycle, awarded as first prize in our Model New Imperial Competition, being presented with his prize at the Palladium Cinema, Stockport. The presentation was made on the evening of February 23rd.



# HOW TO MAKE A HOME CINEMA FOR 16 mm. FILMS

By S. J. Garratt

(Continued from page 620, March 19th issue.)

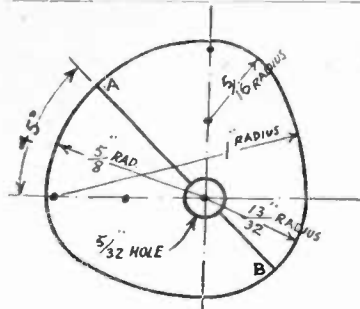


Fig. 7.—Details of the large cam.

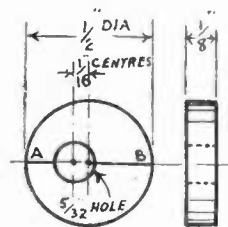


Fig. 8.—  
The small cam.

THE shutter is to be cut out of sheet brass, about 22 gauge, to the shape shown on the left of Fig. 6, and soldered on to the side of one of the brass collars. The large cam is shown fully dimensioned in Fig. 7. This should be marked out as accurately as possible and very carefully filed to shape from a piece of flat brass  $\frac{1}{16}$  in. thick, making a scratched line—marked A B in Fig. 7—in the position shown. The object of this will be seen presently. Care in making this cam will be well repaid, as quiet and smooth running of the instrument depend largely on this item. The larger cam gives the claw its up and down movement, while the smaller one moves the claw to and from the film.

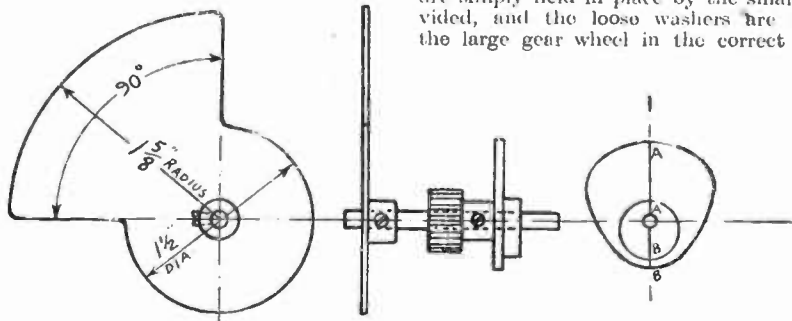


Fig. 6.—The shutter, pinion and cams assembled on the motion shaft.

The small cam is illustrated in Fig. 8. It is quite circular in shape but is mounted eccentrically on its shaft; this also should be provided with a scratched line in the position shown by the letters A B. This may be made by cutting a slice  $\frac{1}{16}$  in. thick from a bar of  $\frac{1}{8}$  in. diameter brass, or it can be filed to shape from flat material  $\frac{1}{16}$  in. thick; it is not essential that it should be turned to shape in a lathe. Now assemble the pinion wheel, the large cam and the small cam as shown in Fig. 6 and solder the three pieces together; the parts may be threaded on to the shaft to keep them in line, but do not allow them to become soldered to the shaft. This can be avoided by blackening the shaft in the flame of a candle and taking care to keep it free from flux. The scratched lines on the cam should coincide as shown on the right-hand side of Fig. 6; this is important.

The motion shaft may be now fitted into position in its bearings; it is not necessary to unscrew the bearings to do this; just push the bare shaft through its exposed bearing, then thread the cams and shutter on between the bearings. Put a thin loose washer between the shutter and the adjacent bearing so as to provide a working clearance, then tighten up the grub screws, allowing just enough end play so that the shaft turns freely.

### The Handle Shaft.

Next make the handle shaft as shown in Fig. 9. This is bent to the dimensions given from a piece of 5/32 in. round mild steel about 5 1/4 in. long. The handle itself may be made to suit your fancy, and is secured by a small tight-fitting washer which may either be soldered on or secured by riveting the end of the shaft over it. The small collar and the large gear wheel (referred to earlier) are simply held in place by the small grub screws provided, and the loose washers are required to bring the large gear wheel in the correct sideways position

opposite the middle of the middle of the pinion teeth. The grooved pulley of the gear wheel with wood screws. You will of course soon turn up a suitable pulley if you have a lathe, but if not a slice cut off of a cotton reel will do just as well, the groove being cut with a penknife; the pulley seen in Fig. 4 was made like this. The mesh of the two gear wheels must be adjusted by careful positioning of the bearings for the handle shaft; allow the teeth to engage as deeply as possible consistent with free running. The 3/4 in. hole in the wooden upright will allow ample room for adjustment of the centre distance.

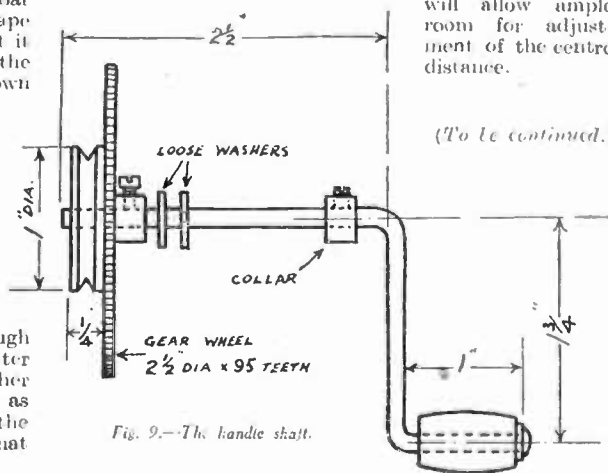
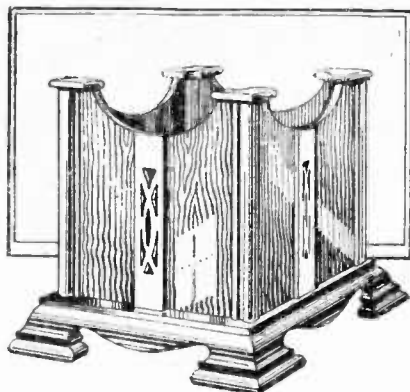


Fig. 9.—The handle shaft.



All the wood, moulding, etc., for making this holder is supplied by Hobbies for 3/6.

NO home is complete without some plant life such as aspidistras, etc., and whatever it may be, the usual drab, dirty-red earthen pot generally forms the home for the roots. A well designed and nicely made jar-liniere or box to contain this unsightly pot makes all the difference, and sets off a plant to the best advantage. The sketch shows a box of convenient size for holding either a 5in. or a 6in. pot. It is simple to make and graceful in appearance. It is built in  $\frac{1}{2}$ in. fretwood. The total height is 9in., and over the moulded base it measures  $8\frac{3}{4}$ in. square.

#### Corner Grooved Moulding.

The construction of the box portion is simplified materially by the adoption of a most useful corner moulding, sold by Hobbies Ltd. at 3d. per foot,

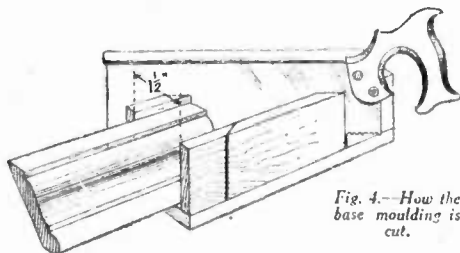


Fig. 4.—How the base moulding is cut.

its number when ordering being 300. It is only necessary to just nail or screw the four sides together and then to glue the corner moulding over the joint (Fig. 1). This shows the box partly constructed, the nearside corner being fitted with the moulding while the corner on the right shows the screws for the fixing of the sides, which are simply butted together.

#### The Sides.

It will first be necessary to draw out on the wood two sides to the measurements shown in Fig. 2, and two similar in length and top detail, but only  $5\frac{1}{2}$ in. wide instead of 6in. These, when put together, will form a box 6in. square, nailed together in the usual manner and strengthened on the inside by angle fillets glued up in the corners. The method of setting out the simple arc for the shaped tops is given and these are carefully cut round with the fretsaw and smoothed up with glasspaper. The heads of the nails must be driven in flush with the surface of the

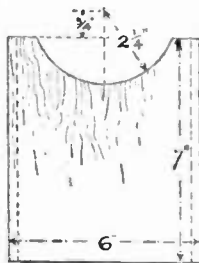


Fig. 2.—The sides.

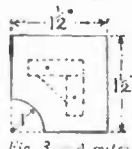


Fig. 3.—A mitre-line box.

## A PLANT BOX

wood, or if screws are used, the heads must be countersunk so the corner moulding lies flat to the surfaces.

A simple floor for the box is cut  $6\frac{3}{4}$ in. square, care being taken in the setting out that all angles are right angles. One or two holes are made in the floor for ventilation and a piece or two of odd wood nailed across on the floor inside to raise the pot slightly. Each corner of the box is topped by shaped pieces (Fig. 3), and these, are cut out with the fretsaw. Two countersunk screws will hold each corner securely to the sides.

Here again a most artistic appearance is gained by the use of Hobbies cornice moulding (No. 43). This

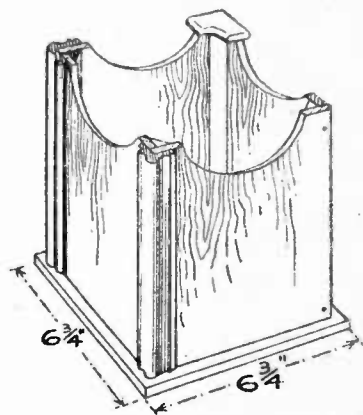


Fig. 1.—A diagram showing construction.

When an angle of 45 degrees is set across the top and cut down with a tenon saw the mitres should all be exact and meet accurately at all corners. The actual length of the four pieces of moulding required before cutting the mitres is 9 $\frac{1}{2}$ in.

#### Shaping the Base.

The four pieces of moulding having had all the mitres cut are prepared for cutting out the shaped portion. A paper pattern is drawn (Fig. 5) with the centre line drawn in. Mark this on the back of the moulding and paste down the paper pattern with the centre line level with the line on the moulding. A little piece of the pattern should be cut away at top and bottom to get alignment when pasting down.

The cutting out with the fretsaw is completed, the moulding lying face downwards on the cutting table. If separate patterns for all four pieces of moulding are not made, it should be a fairly simple matter to lay the cut out one on the other three pieces and mark round the profile in pencil. The four pieces may now be glued together and fixed to the floor of the box, shaped blocking pieces being glued between the floor and back of the moulding (Fig. 6).



Fig. 5.—The paper shape.

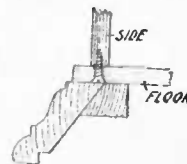


Fig. 6.—A section.



DESIGN No. 1901.

# THE "SKIPPING LAMBS" TOY

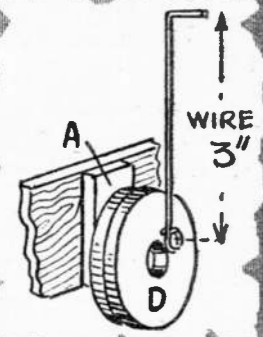
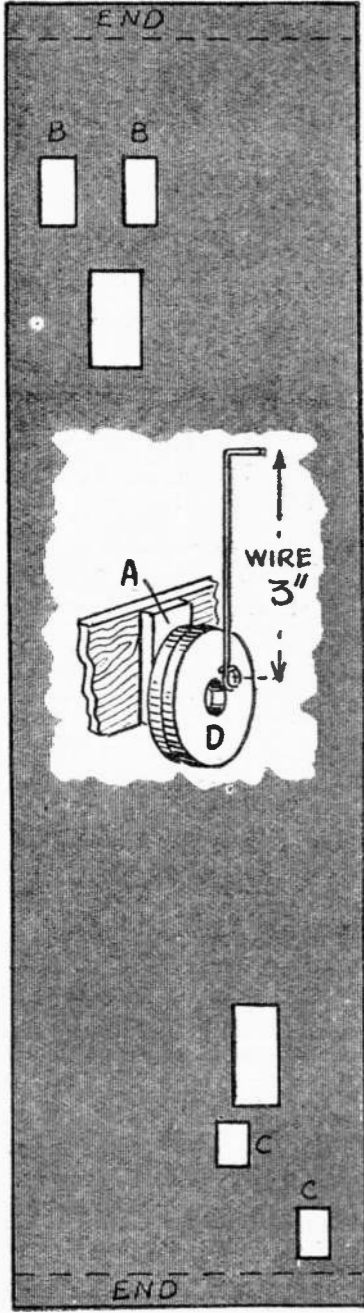
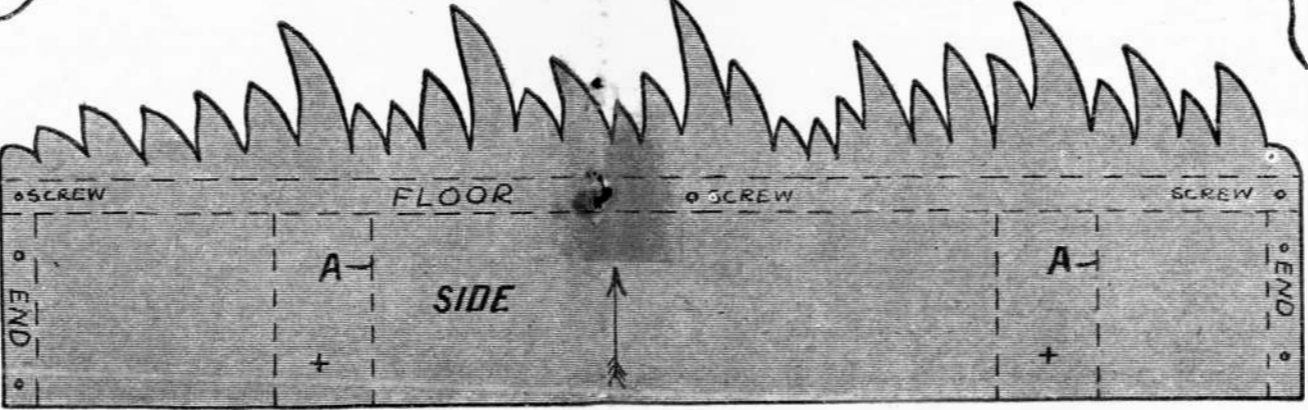
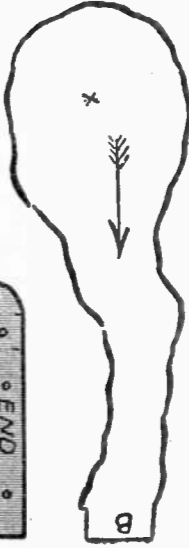
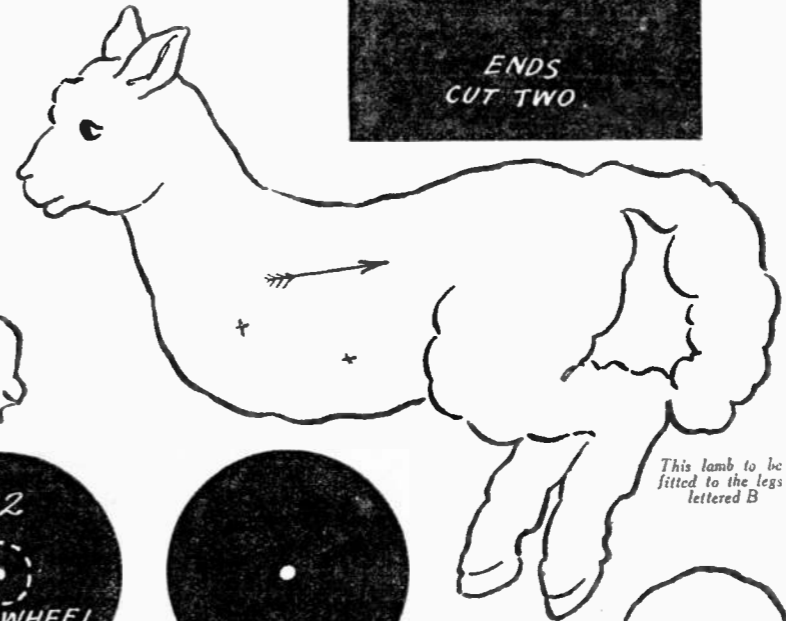
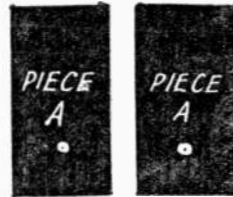
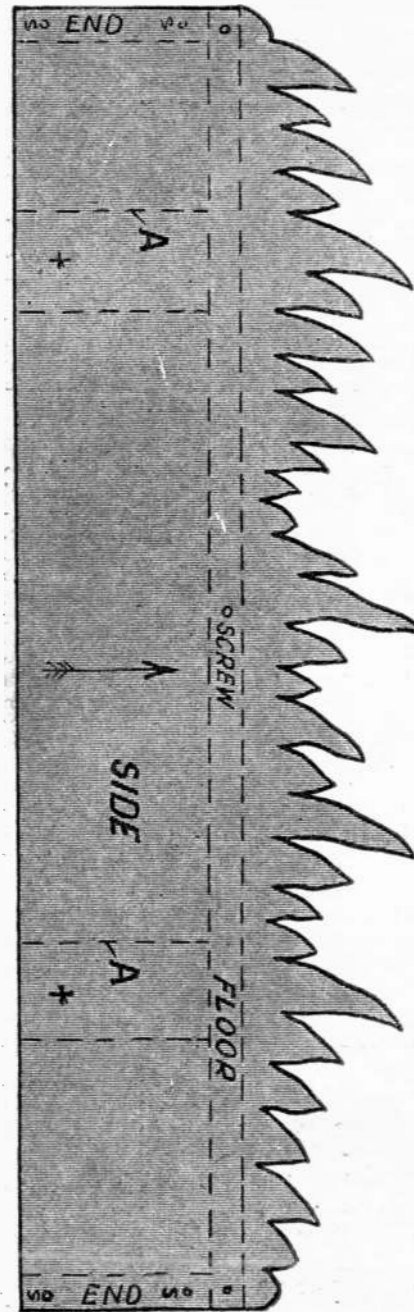
For descriptive article see page 671.

A novel model for a youngster. It is cut out in fretwood and when pulled along on the end of a piece of string the two lambs skip and leap about in quite a realistic manner. All parts are shown full size and are pasted down to a 3/8 in. thick board. Two suitable pieces of wood for the mahogany panels D are obtainable for it from Hobbies Ltd. for 10d. or 1s. 2d., post free.

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THE PRINTED ARROW ON EACH OF THE PARTS SHOWS THE DIRECTION OF GRAIN.



Fit this lamb to the legs lettered C

This lamb to be fitted to the legs lettered B



# A SIMPLE ELECTRIC CLOCK SYSTEM

(Concluded from page 636, March 19th issue.)

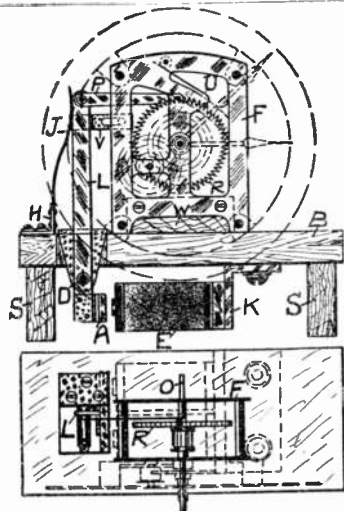


Fig. 6.—The wheels removed from the frames.

It is desirable that the wheel R be driven forward by the tensioned spring S, since the operation is then carried out more smoothly than if the propulsion is directly effected by the attraction of the armature by its electro-magnet E. (Fig. 9.)

To prevent backturning of the ratchet-wheel a back-stop O is introduced. Figures 6 to 12 are intended to illustrate the chief features of a clock built up from inexpensive material, whilst the detail sketches will supply the necessary information for the manufacture of the component parts; naturally the size of the latter may be left to constructor's choice, but the proportions given in the sketches and figures should greatly assist in the evolution of the secondary movement. The movement of a "drum" or other clock will be found ideal.

Having procured a suitable clock movement, remove all wheels between the frames F (Fig. 6) with the exception of the minute or centre-arbor O; the dial-wheels which are outside the front frame will be utilised later. The large wheel on the centre-arbor is replaced by a ratchet-wheel, R, of 60 teeth. The frames are screwed to a block W fitting tightly between the frames, the block in turn being screwed to a base-board B supported on a couple of strips S, between which is housed the electro-magnet E and its armature A. The lever L, fulcrumed at D, carries at its upper end the pawl P for imparting motion to the ratchet-wheel R; the armature A is riveted to the lever L and above the armature a hole is drilled and fitted with a bush T (Fig. 7) for pivoting purposes.

To support the lever L the small bracket D may be knocked up from sheet metal: the foot affords a means of its attachment to the top of the base-board B. A pin Z is riveted to the bracket to suit the bush in the lever L.

For the pawl P a strip of brass is used, the outer end being fitted with a pin Y filed to fit between the teeth of the ratchet-wheel. The inner end of P, however, is

joined to the lever L by a pin Q. Alternatively, a rivet slightly hammered over will suffice.

The back-stop U may be constructed after the manner outlined for the pawl: the former is jointed to the framework so that a pin at the outer end drops into the teeth of the wheel to prevent the latter backturning.

If preferred the back-steps and pawls may be evolved from a piece of brass tube and a length of steel wire, the latter being bent around the tube and soldered thereto. The end of the wire is then bent at right-angles to form a hook for engagement with the teeth of the ratchet-wheel.

Another notion that answers well in practice, and is clearly shown in Fig. 9, consists of soldering a small brass bush or tube to a short length of narrow clock-spring, the free end of which is connected and bent to a suitable shape to engage the teeth of the wheel.

A small bolt passes through the bush and is retained in position in the clock frame by a couple of lock-nuts. To return the driving lever L a flat spring J is introduced, one end being riveted to a light bracket H screwed down to the base-board; an elongated hole in the foot of the bracket provides for adjustment. Some form of adjustable stop V will be necessary to limit the play of L, ensuring that it picks up one tooth only of the wheel R.

This item is made from a strip of brass bent at right angles, one of the arms being provided with an elongated hole for adjustment. A bolt passing through the arm secures it to the clock frame. Fig. 10 shows the fitting, the dotted portion to guide the lever L being optional.

The electro-magnet may be built up, or taken from an electric bell, etc.: the pull must, however, be sufficient to withdraw the lever L against the tension of the spring J.

On account of the secondary clocks being connected in "series" the current will therefore pass through all the electro-magnet coils; obviously the resistance of the coils must be kept fairly low and No. 22 S.W.G. wire will be found suitable for the magnet windings.

As more work will be thrown on the pendulum it will seek assistance more frequently from the impulsing electro-magnet. Some readers may prefer to omit the pendulum driven wheelwork described in the issue of August 29th last, and substitute instead an impulse dial of the type forming the subject of this article.

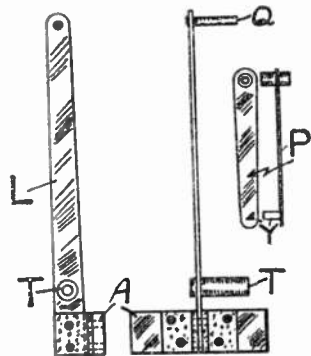
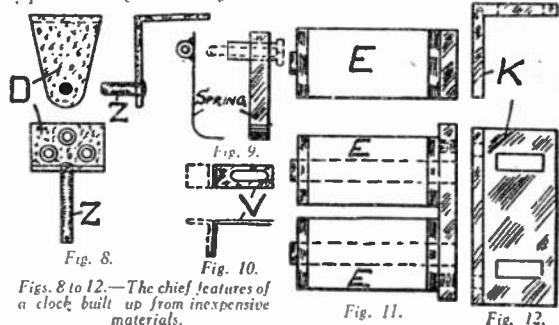


Fig. 7.—Details of the armature.



Figs. 8 to 12.—The chief features of a clock built up from inexpensive materials.



By A. Sharp

"One a penny, buns,  
Two a penny, buns,  
One a penny, two a penny,  
Hot Cross buns."

SUCH was the cry of the baker's apprentice in the days of the Chelsea Bun House, when all the grand folks of London city proceeded to that noted establishment on Good Friday in order to eat these special buns marked with a cross. There are two, at least, of the older Eastertide customs that are still in vogue, one is the Hot Cross bun and the other the distribution of "pace" or pasche eggs.

Rolling "pace" eggs down the grassy slopes of parks and other open spaces was once extensively followed by the youth of England, and the practice may still be seen at Preston. "Pace" eggs are hard-boiled, and mostly coloured with dyes; red used to be the favourite hue. Sometimes, by an ingenious method, the eggs were dyed in different colours, with stripes and other markings on them.

These eggs are still distributed to children on Easter Monday in many places. In North-country villages you may see the matching of one egg against another, similar to the way in which lads play at "conkers" with horse-chestnuts. The hardest shelled egg may smash half-a-dozen others before it is smashed in turn, and the owner of a victorious egg always stipulated for half-yoko and half-white. When an egg smashed another, it was said to be cocker of one; when it had smashed two, cocker of two, and so on.

### "Nip for New."

The custom of wearing something new on Easter Sunday has been an English habit for centuries. Most country folk still endeavour to keep up the custom. Many lads are rigged out in their new Sunday suit on this day. This custom led to a peculiar game, which is still played in many parts. The lad who had a new jacket, a new cap, or a new suit, first worn on Easter Sunday, has to run the gauntlet of "nip for new." It is an old practice for the lad with a "braw new coatie" to be stopped in the village street by other lads and to be "nipped" for new, the lad's arm being pinched vigorously. Sometimes he had the opportunity of retaliating, and on more than one occasion we have seen a lad's new suit, on first time, much the worse for a tussle.

Another custom associated with Eastertide was for the young folks to visit the countryside and gather "palms" from the brookside willows; these emblems of spring-time are often seen in the church decorations at Easter.

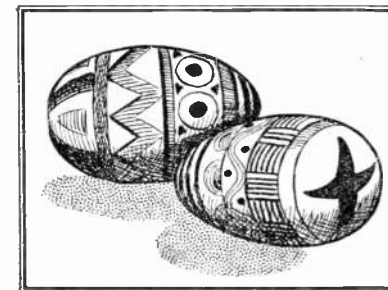
Among quaint and curious customs of old practised at this season was the washing of a certain effigy on a

tomb in the church at Glenthams, Lincolnshire. This figure, popularly referred to as "Molly Grime" was officially washed by seven aged spinsters of the parish with water from Newell Well, and for the due performance of this joint task they received the sum of one shilling each, bequeathed for the purpose by an ancient donor; this custom fell through in 1832.

At Biddenden in Kent, the famous Biddenden cakes are given out to the poor of the parish after Divine service on Easter Sunday. These cakes are stamped with the figure of the Biddenden twins. At one time young people in some parts of the countryside went round to the farmhouses, begging small "pudding-pies" usually the size of a teacup or small saucer. These dainties were washed down by draughts of cherry cider.

### Lifting.

One of the most curious of the older customs was that of "lifting" which was once popular in Lancashire and other northern counties. The lifting was done by two persons crossing hands, and persuading the "victim" to sit thereon, upon which they "lifted" him or her three or four times, as high as possible; on being set down the "victim" handed over a small gratuity. In Chester it was a custom for the young men to carry round a chair decorated with garlands and flowers, and in this chair young maidens were placed and



Coloured eggs are always very popular during Easter.

"lifted," to pay a forfeit on being released. In Lancashire the men "lifted" the women on Easter Monday, and the fair sex retaliated on the following day. In Durham and Yorkshire on Easter Day the women were made to pay for their shoes, gangs of men and youths assembling in the streets and demanding a penny. If no money was forthcoming they took possession of a shoe. On the following day the tables were turned on the men, and when they refused to pay up on demand, hats or scarves were snatched and tossed from one woman to another until the owner of the article was glad enough to



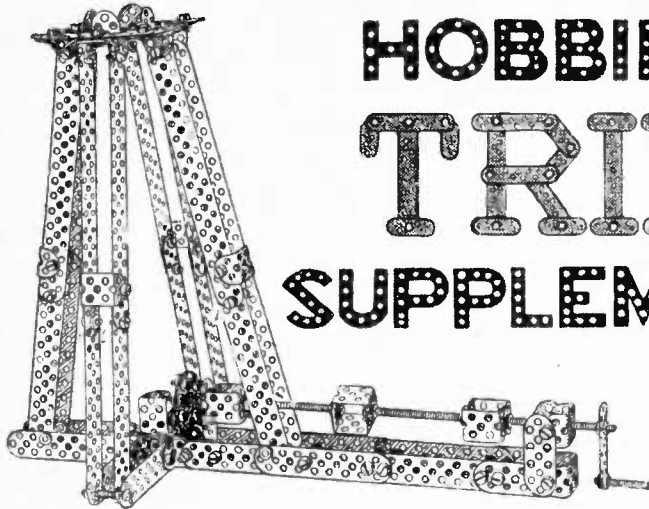
"Nip for New."

plank down his penny or twopence.



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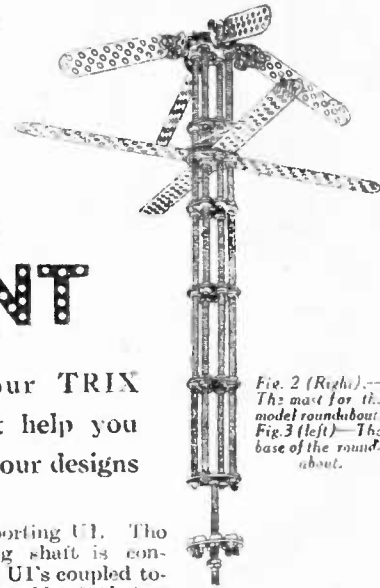


Fig. 2 (Right).—The mast for the model roundabout. Fig. 3 (left).—The base of the roundabout.

**T**HIS week we explain how to make a model of the Roundabout shown below, and a model Diesel engine as shown on the next page. Both of these models are working models, and they are made from a few sixpenny boxes of Trix Nos. 1 and 1a. For the benefit of new readers we would here state that Trix is the new metal construction set with which you can make models of anything and everything. There are no accessories to purchase in connection with Trix, excepting a packet of two dozen nuts and two dozen bolts, which costs 3d. a packet.

The parts required for the Roundabout are:—twenty-eight pieces of A1, 220 pieces of B1, fourteen pieces of F5, forty-three pieces of F9, twenty-two pieces of F13, forty pieces of F17, 380 pieces of N1, seventeen pieces of P29, seven pieces of S25, thirty-one pieces of S55, eighteen pieces of U1, and twenty-eight pieces of U20.

In order to construct this revolving toy, begin with the mast. We need for this twenty-one S55's and one S25, besides nine P29's and a number of N1's and B1's, all of which we screw together as shown in Fig. 2. In making this it is necessary to see that all nuts are tight, so that the whole construction is firm, and, after it has been completed the mast acts as a rigid cylindrical body. We must not forget when building to insert at the parts marked "a" four N1's and one P29 on each side of a cross formation of four F13's. These last should be fixed on through their last hole on each S55.

The single base P29 is studded with B1's and N1's and serves as a toothed wheel to drive the mast. This rests on a foundation which is built of four columns on a cross at the base, as is shown in Fig. 3.

Four A1's screwed on the top part with their feet uppermost, act as a bearing for the mast, while two lock nuts on the under

side bear a supporting U1. The horizontal driving shaft is constructed from six U1's coupled together and connected by S55's (see Fig. 3), and bears on its innermost end on an S25, a P29 also studded with bolts and nuts, which acts as a toothed driving wheel. The following explains the construction of the roof.

On the underside of a P29 we fasten four A1's in the form of a cross, with the legs of the angles pointing downwards. To the latter we fix another four A1's at an angle of 180 degrees (see Fig. 2), and the four roof struts are built on these—two struts from two F9's and

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Fig. 1.—This splendid model roundabout was built with eleven sets of Trix No. 1 and ten sets of No. 1A.

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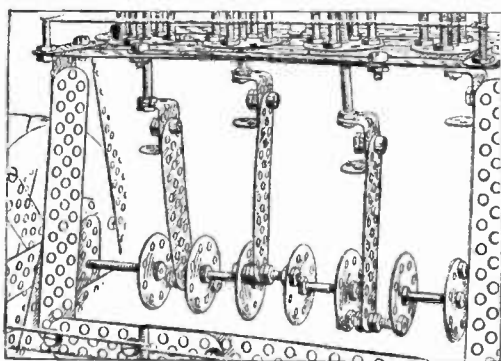


Fig. 6. The crank-shaft and connecting-rod assembly of the model Diesel engine.

an F13 and two from one F17 and one F9. The length of the completed struts of both kinds is twenty-four middle holes.

We have finished by this time the upper and lower outer rings and have used for this purpose eleven pieces of F17 for each circle. These are first joined along their length one after another as straight pieces by bolts and nuts, each strip with two holes overlapped. Then the finished strips are bent to a circle and overlapped so that three middle holes lie over each other and the circle is joined together with two B1's and two N1's.

The inner circle, which is made from eleven F9's, each with one hole overlapping, is joined together with only one N1 and one B1.

We have also prepared eight pieces for floor supports approximately 2½ in. long, made from two U2's (one at each end) and one F9 in the middle. These should be screwed at equal distances between the two base rings, so that the feet of the U2's are pointed downwards. In this way they are screwed flat on the outside of the small ring and also on the outside of the large ring.

The circle, which we use for the roof, is supported chiefly by four A1's screwed on the outside at equal distances, so that the lower horizontal feet of the angles project on the inside. Then at the same places with the same screw we fasten another A1 on the inside of the ring, so that the narrow edges of the A1 are vertical. We do not use the middle, but the lower hole of the angle and therefore it projects above the top of the ring.

On these four A1's we fix the roof struts, while we fasten the cross (mentioned at the beginning) on to the four horizontal feet of the first named A1's, after we have lengthened the F13 with another F13.

Four struts, each made from an F17 and an F13 overlapped to a length of twenty-seven middle holes and joined with two B1's and two N1's, serve as suspensions of the outer base ring and roof ring.

The flooring is made from cardboard. By means of a compass draw a circle 15½ in. approx. in diameter and inside this a second one 9 in. approx. in diameter and cut out the so formed round disc and screw it on the underneath of the floor foundation, having first made the correct holes.

You can decorate the roundabout with coloured cords or bands, etc., according to our own taste, and can fill

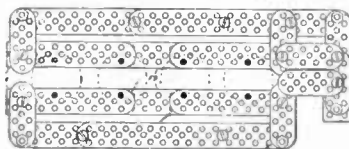


Fig. 5. The upper platform of the model Diesel engine shown in Fig. 4.

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it with dolls, animals and cut-out figures. If you still have some Trix parts left over we can build seats, little cars and aeroplanes, etc. To finish the roof, we use two S55's (as shown in the diagram) which serve as masts for the flags cut out of coloured paper.

#### Four-Cylinder Diesel Engine.

This was built with seven sets No. 1 and eight sets

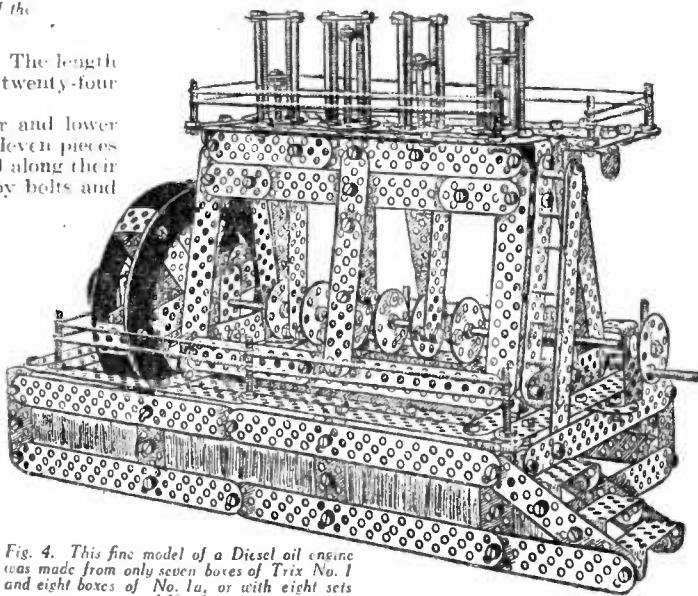


Fig. 4. This fine model of a Diesel oil engine was made from only seven boxes of Trix No. 1 and eight boxes of No. 2, or with eight sets of No. 2.

No. 1a and one packet SM50 nuts and bolts (See Fig. 4). You will require thirty-two pieces of A1, 140 of B1, twenty-eight of F5, twenty-eight of F9, fourteen of F13, thirty-two of F17, 290 of N1, nineteen of P29, thirteen of S25, twenty-nine of S55, eleven of U1, five of U2, two of W10, and fourteen of W16.

The base should be constructed first and the cylinder case, composed of F17's is fixed to it with four A1's. The upper platform is joined to the case with four more A1's and, in the black marked holes (see Fig. 5), the cylinders are fixed with S55's.

The pistons are now fitted to the cylinders and coupled up to the connecting rods.

All joints must be left loose.

The crankshaft (Fig. 6.) overhangs both ends of the case in F5's, on which U2's are fixed, the flywheel at one end and the hand crank at the other.

The flywheel is made of six F13's and six U1's with cardboard discs for the sides, and the platforms are finished off with string to represent the handrails.

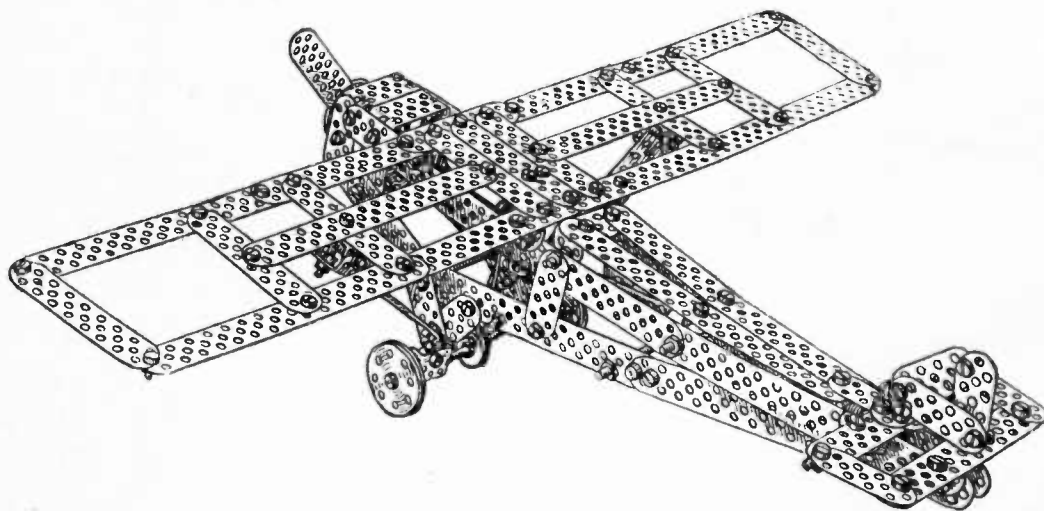
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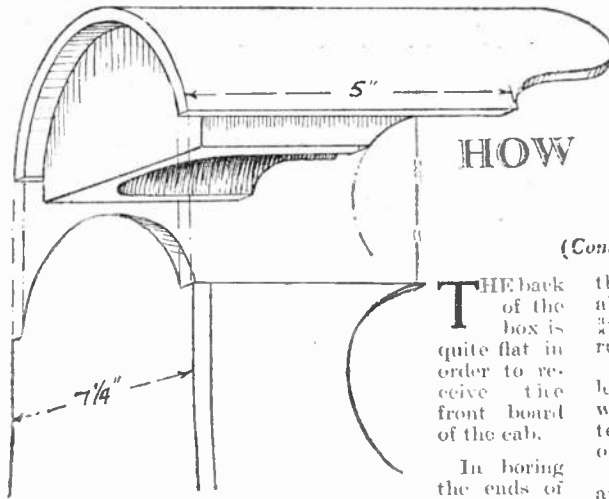


Fig. 19.—The construction of the cab roof.

one will naturally drill the holes exactly in the recesses left by the lathe centres, therefore the dowel hole in the front of the firebox must be very carefully marked out before drilling, because when the barrel and firebox are joined up the two must be flush at the top and make a perfectly straight line.

#### The Smokebox.

Fig. 18 is a perspective view of A, the smokebox. The sketch of this portion of the model includes B, which would, in the real engine, be a part of the framing above the footplating, the flap-plate over the cylinder covers, and the cylinder casing between the frames. This last item is represented by the lowest member, C, in the drawing, and will actually form a distance piece between the wooden frames in the model. The whole unit had, of course, better be made up of three pieces of wood, unless the uppermost piece, A, the smokebox proper, is in itself built up, as suggested in the last article. The horizontal joints, between A, B, and C, will be glued and screwed together.

The making of the cab is perhaps the most difficult bit of woodwork in the whole engine, and I see no other way of producing the roof than by carving it from one piece of hardwood. Of course, a better-looking job would result if the whole cab were made entirely of sheet metal, using angle brass and rivets to join the plates together. Ordinary tin-plate with soldered joints would be of no use whatever; it would very soon be bent and battered out of shape. The cabs of model engines, even in very much smaller toys than this, have to stand a good deal of knocking about, and if the reader desires to make a metal cab, he should use steel-plate of not less in thickness than No. 16 gauge,  $\frac{1}{8}$  in. by  $\frac{1}{4}$  in. brass angle, and  $\frac{3}{32}$  in. diameter copper rivets. Those who have a metal-working shop will be able to do this, but the woodworker will doubtless be content with a wooden cab.

#### The Shape of the Roof.

The perspective view, Fig. 19, when compared with the longitudinal section Fig. 15, conveys, I think, a correct idea of the shape of the roof. On the two sides and front it is to be rebated out to receive the side and front boards, the depth of the rebates depending upon the material used for the boards. I recommend that

## REALISTIC MODEL LOCOMOTIVES AND

### HOW TO MAKE THEM—9

By E. W. Twining

(Continued from page 633, March 19th issue.)

these be cut from plywood 9 millimetres thick, or failing ability to buy a sufficiently small quantity of this, use  $\frac{1}{2}$  in. hardwood, arranging the boards with the grain running vertically.

The inside of the roof is hollowed out with gouges, leaving the rear overhanging edge  $\frac{1}{8}$  in. thick. This whole arrangement of the cab should give ample strength to withstand handling by its juvenile driver, overturning of the engine, or other miniature railway accidents.

The only remaining items are the outside footplates and the six splashers or wheel covers. The former are two simple straight strips of hardwood  $\frac{1}{8}$  in. thick, having openings cut in them of such size as will just clear the wheels. These can be glued and pinned through the wooden engine frames in the positions shown in Figs. 14 and 15 (see Hobbies No. 1899).

The splashers are to be made, as regards their vertical faces, of  $\frac{1}{8}$  in. thick pieces of ply or other board, glued to and pinned up through the footplating; but the curved tops may be of either tinplate or thin wood. If they are made of tin, they will have to be drilled along one edge and pinned to the wooden faces, and should be cut long enough to allow of a flange at each end being bent out straight and flat for pinning down to the footplate.

If they are made of wood, such wood must be thin, say  $\frac{1}{8}$  in. thick. Each cover must be cut across the grain—i.e. at right angles to the splashers—steamed (at the spout of a kettle of boiling water), and bent to the required curvature; then glued and pinned on the tops of the splashers faces.

#### The Colour Scheme.

This will complete the whole of the parts for the model, but before assembling them do all the painting, leaving

each side of the piece C on the smokebox, the recesses AA on the firebox, the corresponding positions on the frames, and, of course, the back of the firebox where the cab-front is to be glued.

(To be continued.)

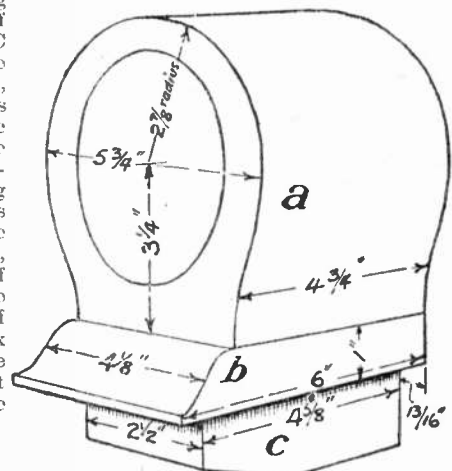


Fig. 18.—A view of the L.M.S. smokebox





A design for a cigarette box.

in relief. The word "gesso" is from the Italian, meaning chalk or plaster. It is a good plan to start experimenting on flat surfaces. Mirror frames, boxes, picture frames, mouldings, and smaller articles such as book-ends and calendar-boards, are suitable to begin with.

Gesso itself is a raising preparation made from whitening and glue. Though gesso powder can be bought, it is much less expensive when made up from the following recipe:—

**A Recipe for Gesso.**

Take equal parts of whitening and glue. Use gilders' whitening, as it is ground finer than the ordinary makes. A large lump can be bought for two-pence.

First allow the whitening to soak up enough water to moisten it all through. Next the glue is melted just enough to jolly when cold.

Two or three drops of linseed oil can be stirred in. This must be used warm (to melt the jelly) and not touched after it is cool. Mix together and leave overnight.

Secotine is sometimes used instead of glue, but it is more expensive and is inclined to get sticky in a damp atmosphere.

**Tools and Materials.**

When the article to be decorated has been decided on only a few simple materials are required. They are size, fine glass-paper, for rubbing down the wood, and about four different brushes.

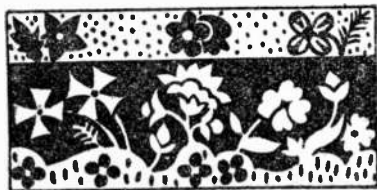
If gilding is attempted, gold-leaf and a dog-toothed agate burnisher (the same as used for taking a print from a lino-block) will be needed.

Designs should not be too elaborate at first. Geometric patterns are quite adaptable.

There are many well-made whitewood and pulp-ware articles on the market, so there need not be any difficulty in the choice of a subject.

**Preparing the Surface.**

To remove any suggestion of roughness



Decoration for the sides of a cigarette box.

# GESSO DECORATION

By M. Bywater, A.R.C.A. (Lond.)

A picturesque method of decoration worked in relief.

**G**ESSO is an old and attractive form of decoration which was much used in mediæval Italy. To-day it is still a favourite method of raising, or working

rub the article with fine glass-paper, following the grain of the wood.

It is advisable to size the surface before applying the gesso, as the wood is slightly absorbent.

To make size, put two teaspoonfuls into a large cup and add a little cold water.

Leave for a quarter of an hour, then fill the cup with hot water. Stir until the size dissolves, then brush it evenly over the surface while it is still warm.

If any roughness remains, repeat this treatment until smoothness is obtained.

The design can now be drawn or traced on to the wood.

**Applying the Gesso.**

Gesso should not be too liquid or too solid, otherwise it will either overflow the edges of the design or will not lie smoothly on the wood.

A full brush promotes free flowing. Start working outwards from the centre of the design, as the gesso tends to spread. Apply thinly at first.

Leave until almost dry before giving a second application. Various parts of the design will probably need building up to the relief aimed at. The relief should not be too high, or the effect will be rather heavy.

Any small cracks or holes from air bubbles can be filled up. Use a fine brush for this. If dots are to be used, allow the preparation to drip from the brush. When gesso is dry set it can be scraped if necessary. A clean, sharp, small-bladed penknife is often a useful tool to work with. Careful rubbing with glass-paper will sometimes remove any unevenness.

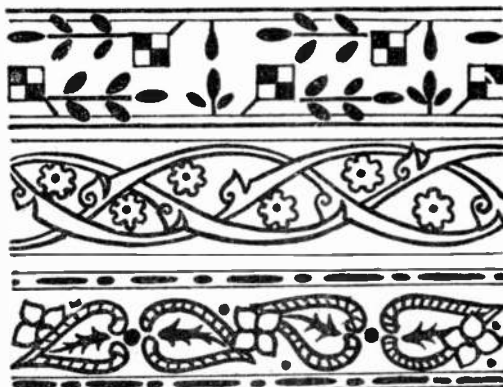


A box-lid design based on Celtic interlacing.

**Painting and Gilding.**

Many students prefer it in its natural creamy colour, with a slightly polished surface.

If colour is added, either opaque or transparent water-colour may be used, though oil colour is preferable



Three ideas for serviette rings.

to all who prefer a matte finish rather than the highly-glazed appearance of varnished water-colour.

Water-colour should not be too dry, or it will look dragged and streaky, especially after a coat of varnish.

Oil colour, on the other hand, tends to stiffen and should be thinned down with turpentine.

When gilding, neither gold-paint nor any other substitute should be used for gold-leaf, which is actually gold beaten out into very thin layers and therefore non-tarnishable.

It can be bought in book form. Owing to its excessive thinness utmost care must be taken when handling it.

It may be picked up on a brush or cut into the required sizes with the tissue to which it adheres. The slightest puff of air will cause gold leaf to cockle up and render it useless.

The parts of the design to be gilded must first be sized with a preparation of gelatine.

The size is made by soaking a sheet of gelatine in a cupful of water and, when it has swelled and softened, pouring off the cold and adding hot.

When it is cool, apply a coat or (if necessary) two, to whichever parts are to be gilded.

Do not commence gilding before the size is thoroughly dry. Large pieces of gold leaf are not so easy to handle as small ones.

The sized gesso is moistened by breathing on it. If

desired, a blow-pipe can be made out of a scrap of paper.

Lay the gold face down over the moistened surface and rub the back of the tissue paper with an agate burnisher or the smooth handle of a penknife, pressing well down round the sides and into any hollows.

A soft camel-hair brush or eraser will remove any surplus gold. Leave the gold for a week or a fortnight before attempting to burnish it.

Burnishing is done with an agate burnisher, using a light circular movement. Turn the burnisher on to its point when working on tiny crevices.

**Final Polishing**

Apply a coating of boiled linseed oil or beeswax dissolved in oil of turpentine. Care should be taken to keep this preparation from any parts which may have been gilded. A hot iron held at a little distance from the design will drive the oil or wax into the gesso. Another quite satisfactory polish is a mixture of white shellac and methylated spirit, which can be lightly polished with a silk rag.

Any grease marks can be removed before polishing, either with glass-paper or a linen rag dipped in benzine.

To make french polish dissolve two and a half ounces of flake shellac in half a pint of methylated spirit.

If white shellac is used it will not darken the surface in any way.



Designs for the back and front of a round pin-cushion.

**HOBBIES CROSSWORDS £5 CASH FOR CORRECT OR NEAREST CORRECT SOLUTION**



**CLUES.**

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Across.</b></p> <ol style="list-style-type: none"> <li>1. A male cat.</li> <li>3. A chicken.</li> <li>7. An immense bird.</li> <li>9. Law Agent (abbr.).</li> <li>10. To rub out.</li> <li>11. Gone by.</li> <li>13. Useful in a boat.</li> <li>14. To suit.</li> <li>16. A shell.</li> <li>18. Odd Fellow (abbr.).</li> <li>20. A public uprising.</li> <li>22. For dirty shoes.</li> <li>24. Land of the Arabs.</li> <li>27. To feel compassion.</li> <li>28. A drab colour.</li> <li>29. Plural of "sch."</li> </ol> | <p><b>Down.</b></p> <ol style="list-style-type: none"> <li>1. Rumour.</li> <li>2. Myself.</li> <li>3. Mangled dogs.</li> <li>4. Warmth.</li> <li>5. Knout-Out (abbr.).</li> <li>6. Closer.</li> <li>8. Put in an appearance.</li> <li>11. A friend.</li> <li>12. April (abbr.).</li> <li>14. Iron, steel and copper arc (three).</li> <li>15. A roof.</li> <li>17. Blood.</li> <li>19. A tooth.</li> <li>21. Moose-like animals.</li> <li>23. A sailor.</li> <li>25. Honey-making insect.</li> <li>26. A tavern.</li> </ol> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



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Post your entries to reach us not later than Friday, April 8th, 1932, addressed "Hobbies," "Crosswords," No. 25, Competition Dept., 39, King Street, Covent Garden, W.C.2.

**RULES.**

1. Attempts must be on coupons from this or next week's "Hobbies."

2. Postage stamp value 1½d. must be pinned to each coupon. 3. In the event of ties the prize will be equally divided. 4. Employees (or members of their families)

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## HINTS AND TIPS ON SELLING FRETWORK

**A**MONG the many questions which we are asked is the one—How can I sell my work? Now that is always a difficult matter for an outsider, and before advice can be offered another

matter must be satisfactorily settled. That is the *quality* of the work. It is obviously no use attempting to sell the first thing you turn out. It has to be good; it has to be worth buying. Ask yourself if *you* would be prepared to buy it. Criticize it and see where it is badly cut or badly put together. Each piece must be finished as nearly perfect as you are able, and be really worth the money you are asking for it.

### Popular Prices.

These are not the times, moreover, when you can expect often to sell frequently large pieces of work. Little toys, clocks, footstools, and a number of boxes for handkerchiefs or cigarettes can be made at a price which most people are prepared to pay. Remember, too, that a novelty will always sell more readily than an ordinary article. Those novel cigarette boxes which deliver cigarettes one at a time are always popular. Working toys, little trump indicators, novel games boxes, are the sort of things which appeal.

### Selling Occasions.

Having, then, learned to make a really good and well-finished article, the next thing is to sell it. We know of a very large number of readers, and are constantly receiving letters from those who regularly dispose of their work. It is really surprising how soon news gets round of the ability of a good workman, and the class of goods he can undertake. The most obvious way, of course, is to tell your friends that you can make presents for them to give—for birthdays, weddings, and various other occasions.

If you are going to do the thing thoroughly you can have a display card in your window, "Fretwork Done Here," and put it against an example of what you can do. Another plan is to have some exhibited at a Sale of Work or Bazaar. Or, if you are a Scout, at an exhibition

of work such as is often held by troops. Get the stall-holder to give your name to callers, or, better still, have some small cards printed with your name and address, and state that fretwork or small household woodwork is undertaken at reasonable prices. Another plan is to approach a local stationer or stores, show them some small novelties and get them either to give you an order, or to offer to display the goods and take orders for you.

The question of a suitable price is always an awkward one to settle, but there are general definite principles which can be followed. There is, for instance, the cost of the material—the wood, design, fittings, etc. Work these out before you commence in order to see they do not mount too high. It is easier to sell three articles at 2s. than it is to sell one at 6s. To the cost of the materials you must add something for "depreciation." That is, your tools are gradually being worn out, and it will cost you a certain amount to replace them. So to provide for that, you must add a small sum to the work to make up for the use of the tools concerned. In this of course, is included the amount of sandpaper, glue, sawblades, etc., which are always being replaced.

### A Suitable Price.

This, of course, covers the actual cost of the work you have put in hand, and if you can get it back in the selling price you will not be making a loss. But it is natural that you expect a profit, and just how much largely depends on what you value your time and ability at. You must take into account the length of time

Written to help you to make money from your spare time. Full of practical hints written by a fellow who knows.



This is the striking window display at the new Sheffield shop of Hobbies Ltd. Crowds always congregate round it at Pinstone Street.

taken in the making, and add a proportionate sum accordingly. If a thing has cost you 1s. to make, for instance, and has only taken an hour, then 1s. 6d. should be a fair price to expect. On the other hand, a large piece of work, such as a handsome clock, which cost, say, 7s. 6d., should be worth 10s. of anybody's money if it is well made.

Remember, too, that it is better to get a market first at a small profit, so you can extend and increase it as your work becomes known. Do not frighten people first by putting your price too high. Make a popular article at a popular price and those who purchase your goods will be the more likely to recommend you to their friends. If, of course, you undertake larger

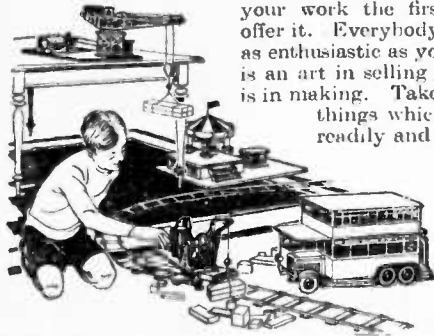


pieces of furniture—coal cabinets, wireless speakers, and the like—the work and results are always in competition with similar articles in furniture shops. Accordingly, those to whom you offer the goods will be liable to compare them for style, finish, and price. Yours must be favourable on all counts, and you will be wise to take a note of these things before you start. There is, however, always the knowledge that friends will be pleased to buy what you have made largely because you made it, and a well finished home-made article is always worth more than a similar one made by mass production methods.

**Save Where You Can.**

In making you must, of course, go the cheapest way to work. Do not force the price up by wasting good wood, or put in, say, a backboard of walnut when a plywood back would serve as well. Put the best you can into the important parts and always use the best material for the best work. Buy carefully and see you are not wasting material in your work.

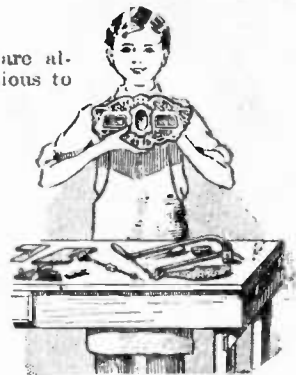
Finally, do not be disappointed if you cannot sell your work the first time you offer it. Everybody may not be as enthusiastic as you, and there is an art in selling just as there is in making. Take note of the things which sell most readily and the class of people to whom you can sell them. Study your work, and your market, and gradually



you should be able to keep your spare time filled with the demand for the work which you can so enjoy undertaking.

**Care and Patience.**

Beginners in fretwork are always quite naturally anxious to become experts in five minutes. It is just as impossible in this as in anything else. The best advice which can be offered is to make haste slowly. We cannot be too emphatic on this point, for the more care and pains which are taken in the early stages, the quicker one will master the first rules and become more expert. By begin-



ning on small things and advancing gradually, you are less apt to spoil good work. If you are tempted to undertake a big article first do not yield to it. You will very likely "come a cropper," and so a large design, and possibly much labour, will be wasted. If the same accident happens to a small article—well, you have not spent much time or money over it so it does not seem too bad, after all.

**When Using a Drill.**

A common fault, too, is the holding of the drill. It must be held quite upright and firmly. Press it to the work with the palm of the left hand, but do not press it down too hard. The speed of the loose nut turning the point will drive it through the work; if you press hard the bit cannot turn, and it breaks off. Just the same with turning in screws. Let them cut their own way in—do not force them into the wood by a weighty pressure on the driver.

**THE "SKIPPING LAMBS" TOY**

For full-size patterns see the centre pages

**S**IMPLE little toys which can be made with the fretsaw always prove popular, either as a gift or to sell, and the patterns in the centre pages this week provide for the making of a novelty sure to appeal. The illustration shows the model; the lambs are connected to the wheels beneath the floor so that as the toy is pulled along they skip and leap in a realistic fashion.

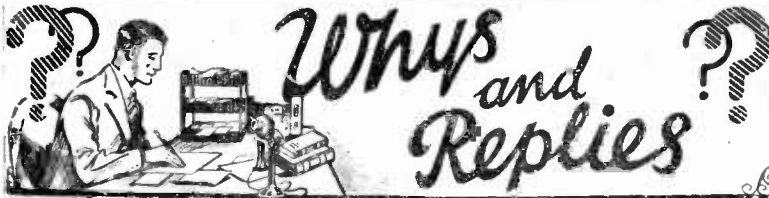
All the patterns required are shown, and they can be cut out from a piece of  $\frac{3}{16}$  in. whitewood, or from two panels of mahogany (D), which cost but 5d. each. Notice the grain of the wood in cutting, and as the parts are all going to be painted over, the paper can be left on the wood if desired. Glue two pieces A to each side so that the floor rests on the top of them when that part and the two ends are glued between the sides.



Fit the two pair of legs in the mortise and tenons shown at B and C, allowing enough room for the body of the animal to work between them. A pin is put through at the point indicated by the cross. Put a piece of wire into the back of the lamb at the other cross, and carry down through the aperture in front of the legs.

Two of the wheels are double, and the construction of this double one is shown on the detail on the sheet. This also shows the way the other end of the wire is fixed to a screw on the wheel D. The other wheels, of course, are fitted by means of a screw to the upright parts A on the side.

When complete the whole thing should be painted with poster paints, or water colour if it is put on thick enough.



Let Your Editor Help You. Address your letters and queries to The Editor, "Hobbies," Geo. Newnes, Ltd., 8-11, Southampton Street, Strand, London, W.C.2, enclosing a stamped addressed envelope. All letters and queries must bear the full name and address of the sender.

### The End of the Volume.

THIS issue completes Volume 73, and we shall shortly have ready the index, title page and binding case for it. Binding cases cost 2s. 9d. from newsagents, or by post from us 3s., inclusive of title page and index. Those readers who do not have their copies bound may have the index and title page for 4d. post free. If you wish to complete your current volume, back issues may be obtained for 3d. each from the Back Number Dept., Exeter Street, Strand, W.C.2.

### Mental Nut No. 7—Result.

THE first three correct solutions to Mental Nut No. 7 were received from F. G. Horley, 74, Seymour Road, Luton, Beds; E. Johnson, 13, King's Road, Ashern, Doneaster; and R. C. Norwood, 2, Wyndham Place, Plymouth, Devon, to whom books have been sent.

### Another Free Gift Shortly.

A FREE gift of an entirely new character will shortly be given with every issue of this paper. It will be something different from anything we have done before; something in which every reader will be interested; something definitely useful, and something you will keep. Also it is something more valuable than we have ever given before. Look out for further details on this page!

### An Attractive Four-Valve Set.

I MADE reference last week to our Midget One-Valver, the designs for which will shortly be published in these pages. Going to the other extreme, we have now designed a magnificent four-valve set which may be either mains or battery operated, housed in a cabinet of the Console type. It has cabriole legs and is worked from a frame aerial inconspicuously incorporated inside it. This is a piece of real furniture, which you can make for quite a nominal outlay; similar sets are sold on the market for £20 or more.

If your taste is for a world-ranging wireless set for a well-furnished drawing-room by next week's issue! All of our recent wireless issues have been sold out, so if you are interested in this particular set you had better place that—quite so!

### The Model Railway Exhibition.

IF you did not read my note in last week's issue regarding the annual exhibition of the Model Railway Club

**NEXT WEEK.**

**FREE DESIGN SHEET  
FOR JARDINIERE  
AND STAND**

**THE "BLUE PRINCE"  
FOUR VALVER**

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**A GARDEN POND**

Stamps Wireless, Locomotives,  
Electric, etc., etc.

at the Central Hall, Westminster, may I remind you that it opens on March 29th and remains open until April 2nd. Tickets of admission cost 1s. 3d., and children under twelve, 7d.

### "25 Tested Wireless Circuits."

THIS handy little volume, of which thousands of copies have already been sold, and which costs 1s. or 1s. 2d. by post from the address printed at the top of this page, contains full instructions on a number of sets ranging from Crystal sets to a Seven-Valve Super-heterodyne. It also includes information on accu-

lators and batteries, a home-made Televisor, identifying foreign stations, aeriads and earth, remote controls, and a gramophone amplifier. It is a book worth far more than its nominal price.

### QUERIES AND REPLIES.

#### Instrument for Measuring Compressibility of Liquids.

The instrument for measuring the compressibility of liquids, O. H. (Sevenoaks), is known as the Piezometer. The first piezometer was invented by Oersted, in 1822, and consisted of a thick glass tube closed at each end by a brass cap, one of which was fitted with another tube containing a piston or screw plug, for applying pressure to the liquid in the first tube. This latter tube was fitted with a flask, the neck of which was drawn out into a thin tube and graduated. Pressure on the liquid is communicated to the liquid in the flask by means of a system of valves, and the amount of compression read off on the graduated tube.

#### The Monument.

The fluted column in London, known as the Monument, K. G. (Stockport), is of the Doric order, and was completed in 1677, from the design of Sir Christopher Wren, to commemorate the Great Fire of London, in 1666. It stands in Fish Street Hill, a little more than 100ft. from the site of the house in Pudding Lane where the fire is said to have originated, and is 202ft. in height. The column contains a spiral stairway of 345 steps of black marble and is surrounded by a metal urn, 42ft. high. Edward Pierce was the sculptor of the dragons at the four angles of the base, Gains Gabriel Gibber executed the relief on the pediment, and Dr. Thomas Gale composed the Latin inscriptions. The Monument cost about £14,000 to build.

#### Amateur Cine Film Club.

The Mayross Motion Picture Productions, Hammersmith, is the name of a club which is being formed to promote interest in the making of Amateur Cine Films (working on 9.5 mm. stock). It is open to all whether they own apparatus or not. Producers, cameramen, scenario writers, etc., are required. Ordinary members will be entitled to attend all Club shows, meetings, etc. Since the membership will be limited, it is important that persons interested should send their names and addresses to the organiser at an early date. Prospective members will be advised by post as soon as a suitable meeting place is found and the date of the first meeting arranged. The club, it is expected, will open during April (1932), and the annual subscription will be six shillings. Applications for membership should be addressed to: S. G. Finch, 27, Shaftesbury Road, Ravenscourt Park, London, W.6.

#### French Correspondent Required.

Mr. F. F. Stephens, 48, Vincent Road, Worcester, wishes to get into touch with French readers of HOBBIES. His age is fifteen years.

#### Drawings from Photographs.

The photograph, K. N. H. (Delgelly), should be outlined in Indian ink of the waterproof kind and then bleached out in a solution made by mixing together 13 minims of iodine solution, 5 minims of potassium of cyanide, and 1oz. of water.

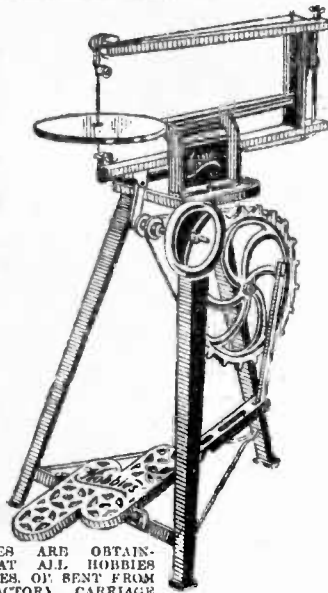
#### First Tourist Race

The First Tourist Trophy Race was held in 1907 in the Isle of Man, over a distance of 158 miles 220 yards. It was won by C. R. Collier on a 3½ h.p. Matchless.

#### Crystal Palace Query.

The nave of the Crystal Palace, G. S. (Little Chart), is 1,600ft. long and 110ft. high, and the Imperial War Museum was housed from 1920 to 1924.





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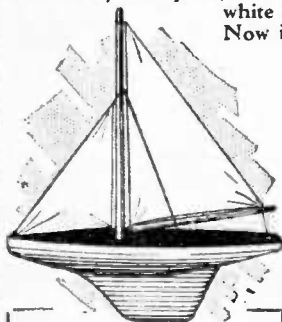
*These two bargains are but a few of Hobbies Sale Opportunities. Call at any Branch—London, Glasgow, Manchester, Birmingham, Sheffield, Leeds, Brighton, or Southampton. Or write for sale folder of bargains to HOBBIES LTD., DEREHAM, NORFOLK.*

# CHEAP SAILING BOATS

We are offering a special line in sailing boats during the Hobbies Sale. They are being sold at a ridiculously low price, but are as advertised. Each is a well-cut, balanced and finished boat, with clean white sails, two colour hull, and real running lines. Now is the big chance to get a boat for the summer at greatly reduced prices.

**Get one now for Easter**

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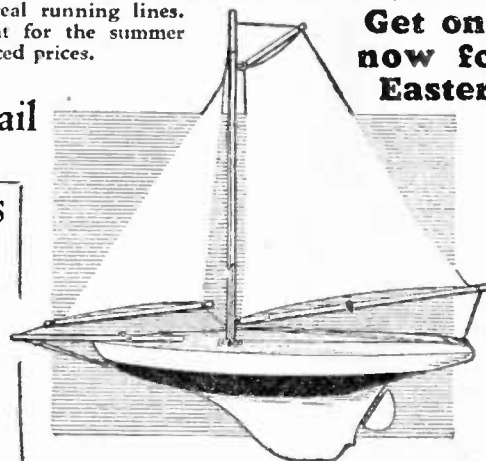
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