

Hobbies

WEEKLY

MAKE YOUR OWN FISHING ROD
(See page 163)

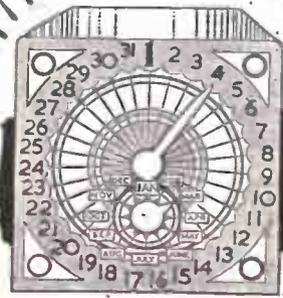
VOL. 115

NUMBER 2980

An Automatic Calendar Money Box



★ See Inside For FREE DESIGN ★



SIDE VIEW

HERE is a perpetual calendar which is, indeed, a novelty. It incorporates a money box—and ensures the owner saving a penny a day, as it is the action of pushing the penny into the slot that turns the pointer round the dial. Better still, on the first of each month, the small pointer moves automatically into position showing the new month.

At first sight it seems that one will save 365 pennies in a year, but, in actual fact, you save 372, as an odd copper or so has to be put in extra to get the pointer past the 31 in those months which have 30 days, and past the 29, 30 and 31 in February (30 and 31 only in Leap years, of course). So that

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

THE MAGAZINE FOR MODELLERS, HANDYMEN AND HOME CRAFTSMEN

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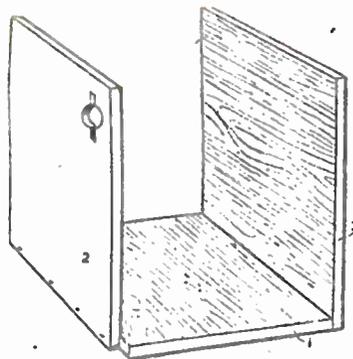


Fig. 1

really, whatever the month, you save 31 pennies—2/7—a total of £1/11/- in a year.

This calendar would make an excellent present for youngsters, teaching them to know the date and also to save their coppers. For the wealthy (if there are any these days!) it is quite easy for the box to be adapted so that half crowns are needed to change the day—and the really hard-up reader need not be deterred, for, if necessary, the plunger operating the pointer can be depressed by inserting a narrow strip of wood or similar in the slot. This procedure is not really recommended, however, as most of us should be able to save a penny a day—even though we find we have to empty the contents at the end of each month to get a packet of cigarettes!

Simplified Version

One other point. There may be, among our readers, a few who, through lack of time or some other reason, do not wish to tackle the automatic mechanism. In this case they can suffice with merely making the pointers and screwing them into the face of the calendar, omitting the mechanism altogether. The pointers can then be turned by hand as required, and the article can still, of course, be used as a

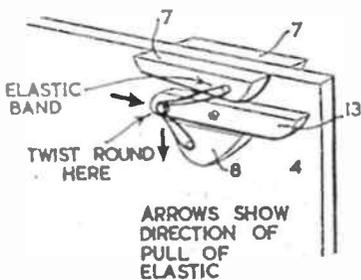


Fig. 4

money box. Needless to say, a lot of the novelty of the box will be missing if the mechanism is not made, and most workers will wish to incorporate it.

Specialty Prepared Face

The face itself will present no difficulty, as a beautifully drawn and varnished print of it is contained in each kit, and has only to be pasted in place on the front of the box. Separate copies can be obtained from Hobbies Ltd., Dereham, Norfolk, price 6d. each, post free. Plenty of wood is provided in the kit.

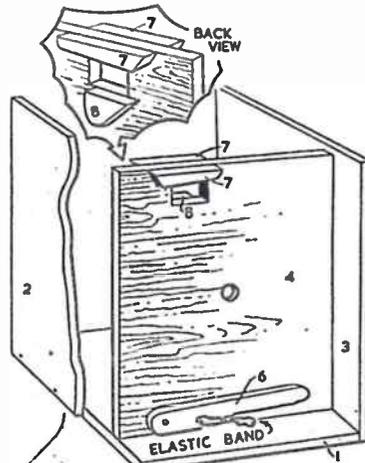


Fig. 2

and the patterns should be carefully traced on to the required thicknesses. Pay particular attention to the arrows indicating the grain of the wood, and make sure that your patterns are placed on the wood in the right way.

As far as possible, all parts are numbered in the order of assembly. The instructions should be read through completely first, and then followed step by step during assembly. In this way, mistakes will be easily avoided.

After tracing off the parts, cut them out carefully and, in case of accidents, number them lightly in pencil to correspond with the numbers on the design sheet.

Beginning Assembly

Start assembly by gluing and pinning piece 1 to piece 3, and screwing piece 2 to piece 1. Piece 2 is the side which will be removed from time to time to allow access to the money, and should, therefore, not be glued. These details are shown in Fig. 1.

Next make up the inside partition. The brake arm (6) is pinned or screwed to the partition piece (4) in the position shown on the design sheet, and the

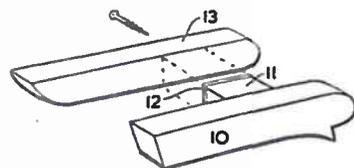


Fig. 3

pieces 7 are glued on either side of the partition (see Fig. 2). Piece 8 is glued at the back of the partition. A pin is driven into the partition, and another into the brake arm, and over this is stretched an elastic band. This may have to be doubled to get the required tension.

The partition can now be glued to pieces 1 and 3, and screwed only to piece 2. All this detail is made clear in Fig. 2.

The Plunger

The plunger is next made up. Piece 11 is glued to piece 10, and to this is glued the piece of card (12). See Fig. 3 for detail. This completed assembly is passed through the hole near the top of the partition and piece 13 is then glued and screwed to the other side of piece 12, making a rigid whole capable of movement within the partition slot.

Fig. 4 shows the positions of three pins which take another elastic band. This view is of the back of the partition. The elastic band must exert a pull in two directions, and is twisted around

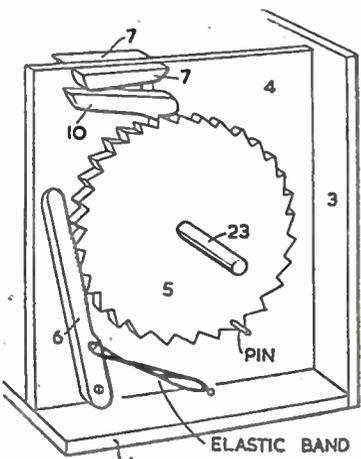


Fig. 5

the pins in such a manner as to achieve this object. The directions of the pull are shown by the arrows in the drawing.

The next step is to fix a pin in the toothed wheel (5) where shown on the design sheet. Cut off the head, leaving about 1/4 in. projecting. Now glue the
(Continued on page 171)

Construct your own Fishing Rod

GOOD fishing rods are very expensive these days and are likely to remain so for a long time to come. However, with care, an eminently satisfactory weapon can be made at home which will compare favourably both in looks and in performance with the professionally-made article. After all, the very best rods are hand made.

The one of which I write is the three-piece, 9ft., trout fly rod shown in Fig. 1. If your particular requirements differ

Whichever you choose to do, it will now be necessary to fix the ferrules and counters (Fig 3). These are sold in matched pairs. For our rod we require two pairs, one size 5 (i.e. 5/16 in. internal diameter), the other size 3 1/2 (i.e. 3 1/2 in. internal diameter). They should be of bronzed brass, and for preference should be reinforced, and have a splint end and tenon (Fig. 3). If a rod breaks in use it is nearly always at the junction of the metal ferrule and the wood where the stress is greatest. The splint end is

eventual contraction of the timber. It is best to ensure, therefore, that the greenheart is fully contracted before fitting the ferrules and counters. The best way of doing this is to lay a metal bar, ready warmed and smeared with cellulose lacquer, on the timber, pressing down steadily with it all round. The lacquer will be drawn into the pores of the timber as it cools. Allow it to harden.

As will be seen in Fig. 3, the tenon on each counter must be provided with a

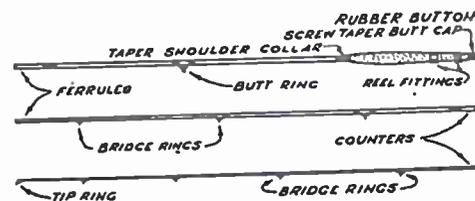


FIG. 1

from this, do not worry, for all rods are constructed on the same principle.

Tools

The tools required are—a hammer, a fine flat file, a sharp pen knife or razor blade, a hand drill, a small water colour brush, a brush for stain and a small smoothing plane. You will also need some sheets of fine glasspaper.

First of all obtain three lengths of seasoned greenheart, 3ft. by 1/4 in. by 1/4 in., 3ft. by 1/4 in. by 1/4 in. and 3ft. by 1/4 in. by 1/4 in. respectively. Make sure that the grain of the timber is straight. A cast to one side cannot be rectified and will spoil the rod. Make sure your plane is very sharp and accurately set. Plane the timber down, rotating it by hand until it is perfectly round in section and tapered almost to the dimensions shown in Fig. 2.

I say 'almost', because the timber will have to be reduced a little further during the final smoothing with glasspaper, and although it is easy to take some more off it is impossible to put more on.

If you would rather not plane down your own greenheart from the square, it can be obtained ready rounded and tapered from firms who specialise in supplying rod-making materials. I have always found that Messrs. J. B. Walker, 4b Prospect Road, Hythe, Kent, have been very satisfactory in supplying all materials necessary.

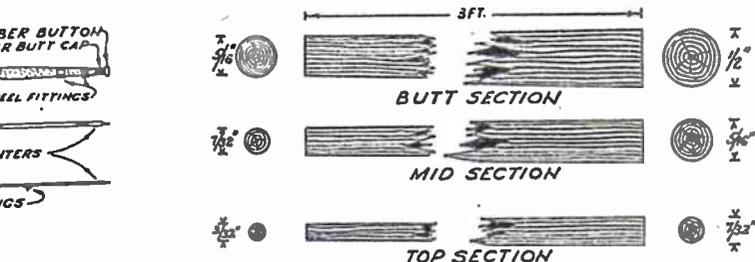


FIG. 2

meant to spread this stress evenly over about half-an-inch of timber instead of having it concentrated at a point. This it does excellently, and with splint ends you should have no breakages. The tenon's object is, likewise, the distribution of stress over a greater area.

While the three lengths of timber are still a little thicker than the ferrules and counters into which they are to be fitted, finish off the last three inches at each end with a file and glasspaper so that the respective ferrules and counters will be a drive fit on to them. Make sure that the circumferences of the finished ends are true, so that when the ferrules and counters are driven on they will be exactly in line with the rest of the rod.

The fit of ferrule and counter to wood must be very exact. Even so, on some rods they work loose in time, through

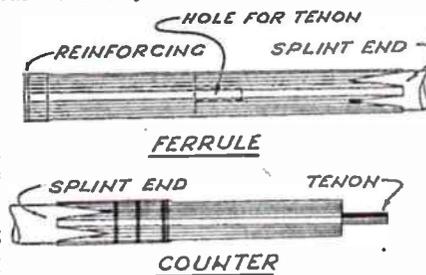


FIG. 3

corresponding hole in which to seat. Use the hand drill for this, and bore the hole to the required diameter and length to suit each tenon. The tenon must seat snugly in the hole. Before making these holes whip the timber tightly for about an inch at the end to avoid any tendency to split while being bored.

Mark off on each ferrule how far its counter enters it when they are fitted tightly together. Then mark off how far the ferrules have to go over the greenheart so that everything butts together when assembled.

Remove the whipping. Smear waterproof or casein-type glue over the 3ins. of prepared timber. Heat the ferrule in water to expand it. Drive it up to the mark while it is still hot, holding a piece of hard wood between it and the hammer to avoid damage to the ferrule. When the ferrule has cooled it will grip the timber very tightly. Drive on the counters in the same way.

Pins Unnecessary

On numerous greenheart rods the ferrules are pegged in position with a pin of thin-gauge brass wire. This weakens the timber, and is quite unnecessary if the ferrules have splint ends and have been accurately fitted. If a ferrule does ever work loose, it is far better to take it right off and refix it properly than to
(Continued on page 164)

A Simple Bed Heater

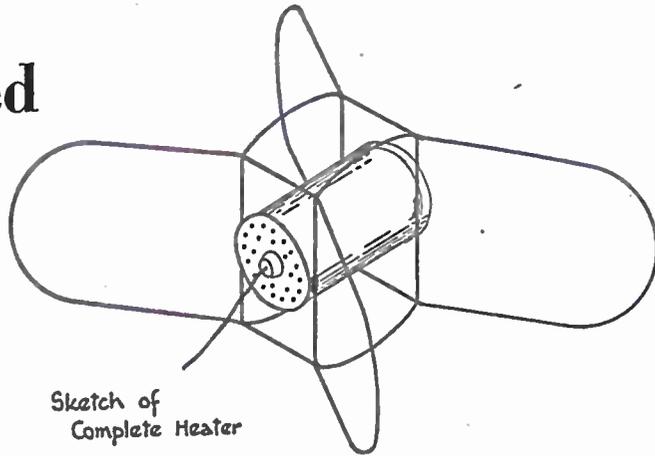
SOME time ago, when helping my wife to prepare hot water bottles for the children's beds I realised what a comparatively useless thing is a hot water bottle as it warms such a small area.

An electric blanket will, of course, warm the whole bed, but we were not prepared to go to the expense of buying one.

Cheap to Make

I decided to try to design something cheaper than an electric blanket and more effective than a hot water bottle, and finally made a simple but most useful heater.

The operating principle is that air is heated by a 60 watt lamp in the confined space of a metal cylinder and then circulates through air holes in the



Sketch of Complete Heater

First a 1 1/2 ins. diameter hole was cut in the centre of the bottom of the tin and the lampholder—bakelite covered—was fitted in this hole. The tin was quite thin and the hole was cut with nail scissors.

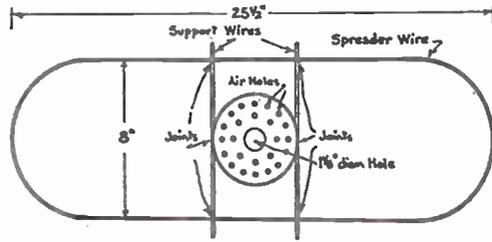
Holes about 1/16 in. diameter were then drilled in the lid and in the bottom of

the tin to allow the warmed air to circulate.

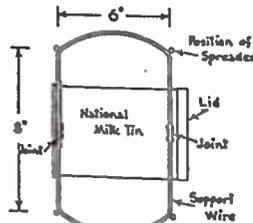
Next the wire was cut into four lengths, two being each 5ft. long and two being 2ft. 6ins. long. The shorter wires were bent to the size and shape shown in the sketch to form supports and welded to the sides of the tin. The longer wires were then bent as shown and welded to the support wires to form spreaders for the bed-clothes. The looped ends of the spreaders were then bent outwards at an angle of about 30 degrees.

These wires support the bedding and allow a large area to be warmed by the circulating warmed air.

The flex was then connected to the plug and lampholder and the heater was given a coat of heat-resisting black enamel to improve its appearance.



End View (Spreader Wire fixed)



Side View (Support Wire fixed)

cylinder into a space formed by a supporting framework in the bed.

In less than an hour this heater will warm the whole of a child's cot or an area of about 4ft. square in a bed, and it will run seventeen hours for one unit of electricity.

Old Milk Tin

To make the heater I used a National milk tin, 15ft. of No. 8 S.W.G. fencing wire, a lamp socket, flex and plug, and a 60 watt lamp.

How to Use

In use, the heater should be put into the bed with the bedding stretched tightly over the framework so as to have as large an air space as possible. The bigger this air space the greater the area of bed which will be warmed.

The heater is perfectly safe and cannot scorch or burn the bedding even if left on for many hours.

Ours has been in use for over 4 years and several have been made for friends.

(S.R.)

Construct your own Fishing Rod

(Continued from page 163)

rely on a peg holding it on in a loose condition.

If, by mistake, you have taken off too much wood for the ferrule to grip really tightly, you will require to build up its seat by smearing the timber with water-

proof glue and roughly whipping it with thread. When the glue is dry smear on a second coat. While this coat is still wet, drive on the ferrule. The amount of such packing will, of course, depend on the degree of tolerance between ferrule and

timber. The same remedy can be applied to the counter if necessary.

When this is accomplished most of the spade work will have been completed, and the work will become really interesting, with a lot to show for time spent. In the next article I hope to describe how to add the final touches to the cork timber, and how to construct the cork handle. (W.G.C.M.)

Facts About Christmas Trees

LOGICALLY, Christmas trees are dirty inflammable things. Yet what home would be without one on Christmas morning! However, the best Christmas tree is not, necessarily, the one you buy or have delivered just before the holiday starts, and then hastily string with coloured lights and other suitable ornaments.

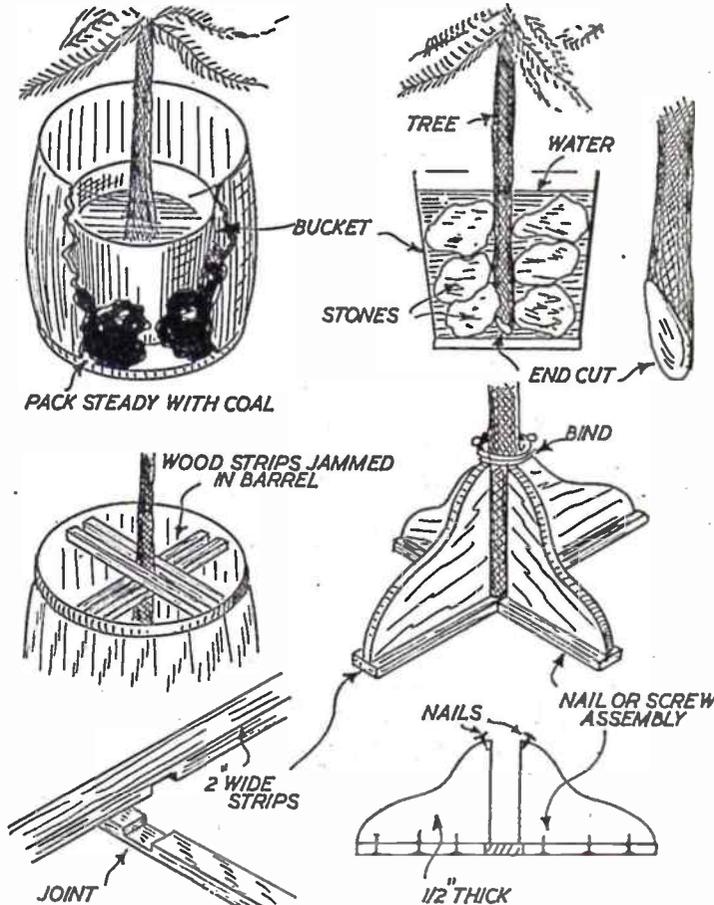
For a start, make sure that you buy the right sort of tree. Select it for its shape rather than its size. A small well formed and symmetrical tree looks far better than a large straggly one. Select your tree to conform, as near as possible, to the traditional Christmas card shape.

If you want to be really technical about it, then the Douglas fir is the best type of tree. This has long flat needles which are quite soft, usually grows in a nice symmetrical shape and has a true 'triangular' appearance. Certain other trees sold at around this time have a more ragged shape and hard needles which quickly drop off. You can generally check the condition of a tree by breaking one of the needles in the fingers. If it is brittle and snaps easily, then that is the kind of tree which will shed its needles rapidly and probably make an awful mess on the floor by the end of the Christmas week. The tree with soft pliable needles is not likely to 'drop'.

After you have bought your tree and got it home, you can take further precautions to prevent the needles dropping. For one thing you should always keep the tree moist. Not only will this reduce the fire risk, it will also help to keep the tree looking fresh. Stand in a bucket of water or a bucket of moist sand, until ready to set up. Then arrange for a similar water supply when you set it up in the house. It will help, too, if you cut off the bottom of the tree at an angle to expose a greater area to absorb water.

Ordinary tap water is quite good enough to keep a cut tree looking fresh for a period of two or three weeks. However, some authorities recommend the addition of 1lb. to 1 1/2 lbs. of ammonium sulphate to each quart of water as a 'tonic' food.

If you want to make your tree as fireproof as possible, then you can make up a solution which, applied either by spraying on or dipping the tree in the liquid, will dry out to give a protective coating. These 'fireproofing formulas' are quite simple. One of the best is to dissolve a soapless detergent in warm water in the proportion of one tablespoonful of detergent to



one gallon of water and then stir in water-glass until dissolved. A pint tin of water-glass will treat up to two gallons of water.

This coating needs to be applied fairly thickly for maximum fire protection. When it dries out it will give the tree a semi-gloss appearance. Even a naked flame held against a branch will not ignite it, if the coating has been prepared properly.

How to mount the tree is always something of a problem, and the larger the tree the bigger the problem! For a really large tree a bucket and a fruit barrel, such as can be purchased for a shilling or so, are probably the best accessories. The tree is stood in the bucket and supported, as far as possible,

by large stones. The whole lot is then stood in the barrel and additional bracing provided by nailing or jamming strips of wood across the top of the barrel to 'ring' the main stem of the tree. Brightly coloured crepe paper then covers, and disguises, the barrel.

If you have a smaller tree and decide to mount it 'dry' then, perhaps, the handyman of the house can be prevailed upon to make a special stand, as shown in the sketch. This is a simple enough project for the amateur carpenter and can be finished by painting in some bright colour. The necessary materials can, generally, be salvaged from an old wooden box.

(Continued on page 166)



REPLIES OF INTEREST

Too Expensive

I HAVE an A.C. radio which takes 115 volts, and I am anxious to know if it is possible to work it off a battery. (W.F.—Roscommon).

MAINS type receivers cannot normally be operated from batteries because the current consumption is too great. In addition, in your case, an A.C. supply is required, and batteries only supply direct current. It is possible to operate such a receiver from a rotary generator, driving the latter from a 6 or 12 volt accumulator. However, the current consumption of such a generator is fairly heavy, and this method is only feasible for general use when the accumulator is receiving a regular charge from time to time, as when used in a vehicle. You will therefore see that any attempt to use the set with batteries will prove quite expensive, and recharging would also prove costly if an accumulator were used. Dry batteries would be unsatisfactory.

Toy Merry-go-round

I INTEND making a merry-go-round for my small daughter, and am at a loss to know what to use for wheels to ensure smooth running. The merry-go-round is in the nature of what we commonly call a 'Noah's Ark' or 'Over the Sticks'. The track is undulating and forms a circle

normally and the wheels are attached to moving platform. Can you also suggest what sort of drive to use, and can I buy a small clockwork motor for this particular scale model? (N.S.—Palmer's Green).

A GOOD sample of free running wheel is that particular design adopted for model railways. Each pair is supplied on an axle, and though flanged, would probably suit as well on a track. The axles should not be fitted square across, but at an angle with the inner ends pointing direct to the centre of the track circle. This will lessen the inevitable braking effect caused by the absence of bogies on a curved track. For power, you could employ a clockwork motor, but it would need gearing down. Motor, gear, and wheels could be purchased from any Meccano agents. You could, of course, dispense with motor power and fix a handle only for the child to turn.

Treating Film

IS it possible to remove photographs from an ordinary film, say 120, and treat it for use again, thus using the same film twice? If not, how could I make my own films? (F.T.—Bradford).

IT is practically impossible to satisfactorily and completely remove all traces of the photographic image from a film once it has been developed and fixed; even when the old emulsion has been

removed, the celluloid base will still be found to have 'ghost' traces of the image, apparently the result of the chemical actions that brought out the image. The making of a film is a most exacting and complicated series of processes. First, the preparation of the celluloid base demands highly skilful and mechanical handling, and owing to its very inflammable nature this must be considered dangerous. Secondly, only a person with a very sound chemical knowledge could produce an emulsion in any way equal to present-day films. Expensive apparatus, special darkrooms, and expert operators are just a few of the factors which the makers must have to enable them to give us such efficient material of such consistency. Thirdly, the cost to produce a small quantity would be very considerable and out of proportion to that charged for any spool of a reliable brand, probably anything up to a hundred times.

Hollow Lead Soldiers

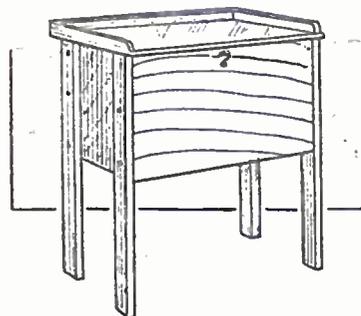
CAN you give me details how to make hollow lead moulds for toy soldiers? I have tried various methods and they still turn out solid which makes them very heavy and also uses a lot of metal. (J.M.—Newtongrange).

HOLLOW lead soldiers or other cast objects can be made by simply pouring the molten metal into the mould then pouring out the surplus. The metal chills on the parts in contact with the mould much faster than the central mass—hence the 'pouring out'. We fear the present restrictions on metal usage will hamper or prevent a continuance of your hobby, but if obtainable legally, a mixture of 65 per cent lead, 25 per cent antimony and 8 per cent tin and 2 per cent bismuth, would make a good casting alloy.

a white tree—made by dipping an ordinary tree in whitewash? Or a silver tree—made by spraying or tipping the leaves with silver paint? With a little ingenuity it is surprising how attractive you can make your tree look even before you start to add a single ornament.

Finally, just a tip for when it is all over and you start to clear away the 'remains'. Instead of dragging the tree right through the house and shedding dried-out needles all over the place, cut it up where it stands, using garden secateurs to remove the branches, stow them all in the barrel or a sack and carry the whole lot out in one 'clean' bundle. And the best thing to do with your old tree is to burn it in the garden. It is very unlikely that it will 'take' if planted, but only wither and die.

(R.H.W.)



MOST kiddies like a table of their own, on which they can play with their toys, and not have to clear them away every time the domestic table is needed for meals. The box-table illustrated, provides for this, and also for some accommodation for the toys, when not in use. The underside of the lid is blackened, and can be used as a blackboard for drawing upon, so adding considerably to the utility of the article.

Simple Construction

The construction is very simple, involving no complicated joints, and can be carried out in deal or other cheap wood. Construction begins with the work of making the toy box itself. This is shown in Fig. 1, and wood of 1/2 in. thickness is suggested as being quite strong enough without being heavy. The latter point is rather important, as the article may be carted about the house or garden according to the whim of the child.

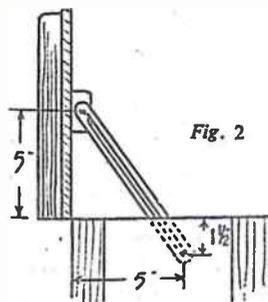


Fig. 2

It may be possible to obtain a strong grocer's box for the toy box, which could be cut down to the dimensions given. If so, take it apart carefully, to avoid splitting the wood, glasspaper off any roughness and splinters, inside and out, saw away the surplus and rejoin together. If the 1/2 in. wood suggested is employed, glue and nail together, and screw a bottom on of 1/2 in. plywood. In both cases punch the nails down a little, and stop the holes up level. When the glue is hard, trim the ends and edges of

KEEP THE LIVING-ROOM TIDY

Make a Box-Table for the Kiddies' Toys

the bottom quite level with the box sides with a smoothing or small finely set metal plane.

At (A) is given the length of the four legs. Cut these from 1/2 in. by 1 1/2 ins. wood, or thereabouts (no need to be too particular about these), and screw them securely to the ends to hide the cut edges of the long sides of the box. Fix them accurately to ensure the table standing level. This finishes the box portion of the job.

For the lid, cut a piece of the wood, 9 ins. wide and long enough to extend 1/2 in. over the ends of the box. Three strips of wood, 1 in. wide, are now to be prepared. These are nailed and glued to

distance of 1/2 in. from each end, bore 1/2 in. holes. Extend the bottom hole to make a long slot reaching to within 1/2 in. of the top hole, as in the diagram. In the ends of the box, at the distance down of 1 1/2 ins. and 5 ins. from the rear (as shown in Fig. 2), drill a 1/2 in. hole through, and insert bolts provided with a washer and flynut.

For the top fitting of the stays, cut blocks of wood 2 ins. long and 1/2 in. wide. The stays are pivoted to these with flat-headed screws, the holes being countersunk to sink the screw heads. Fix the blocks with screws to the inside of the lid, where shown at Fig. 2, slip the lower ends of the stays over the bolts in the ends of the box as at Fig. 3 (C), then, if correctly positioned, the lid should close down fully. If not, extend the slot a trifle, which should make all right. When the lid is opened, tighten up the nuts to keep the stays from slipping down. Fit a hook and eye fastener to the box front and lid to complete the work of construction.

Suitable Finish

The article should receive some finish, after a thorough glasspapering all over. Two coats of combined stain and varnish would suit very well, but the first coat should be allowed to dry and be lightly glasspapered before the second is put on. The underside of the lid should not be so treated, but given a coat of dead black paint instead.

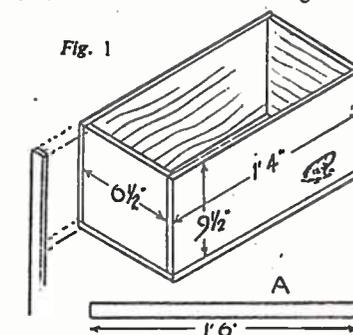


Fig. 1

the lid at ends and back, to form a rim, a protection against toys being accidentally knocked off to the floor. The front ends of this rim are neatly rounded off, then the lid is hinged to the box with 1 1/2 ins. iron butts, the hinges being fully recessed in the top edges of the box.

Lid Stays

As the lid is to be used, as required, as a blackboard, a pair of stays should be fitted to keep it in a vertical position for that purpose. Of course, a pair of metal stays can be purchased at most hardware shops, but if expense is a consideration, and metal stays are not so cheap nowadays as they used to be, a quite good article can be made oneself with a small bit of tough fretwood or 1/2 in. plywood. The positions of the stays, when holding the box lid up, are shown in Fig. 2, and length of the stays in Fig. 3 (B).

Cut them to the length given from 1/2 in. wide strips of the fretwood. Round the ends to a semi-circle, and at a

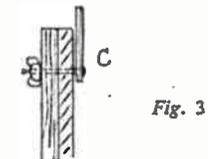
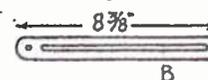


Fig. 3

A special paint for this purpose, called blackboard paint can be bought, and any surplus need not be wasted, as it can be employed for finishing either wood or metal as ordinary paint. Those wishing to make up the small quantity required themselves should work up a little drop of black to a paste with turpentine, and thin to working consistency with varnish and turpentine in equal quantities. (W.J.E.)

Facts About Christmas Trees

(Continued from page 165)

About those decorations for the tree. Check that string of lights a few days before all the shops shut. Then if a bulb is faulty you can buy a replacement while there is still time. It is a very good plan to have a spare bulb or two on hand, just in case one develops a fault. The way Christmas tree lights are connected, if one bulb goes all the lights go out. With a spare bulb you must then try replacing all the bulbs in turn with it until all light up once more.

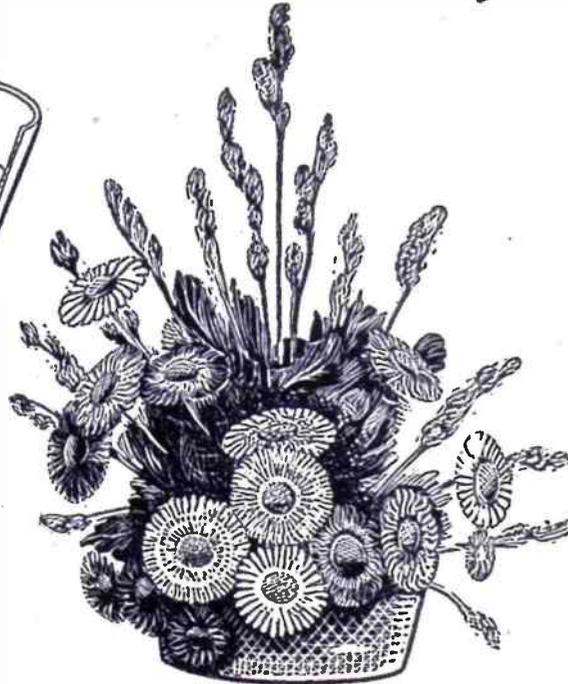
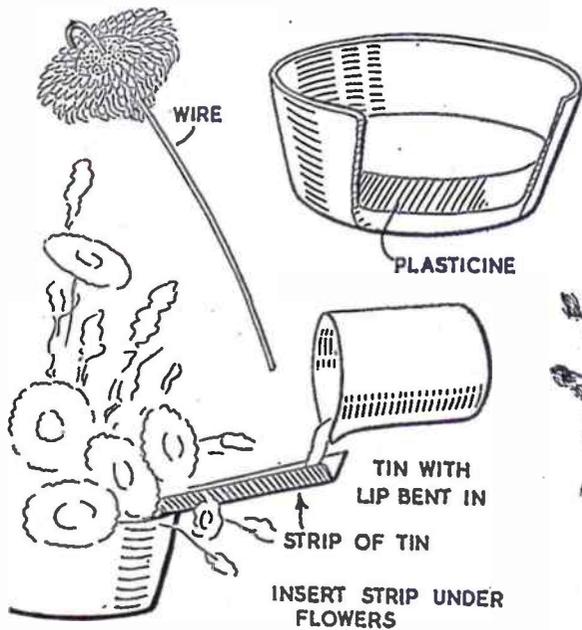
If you are unlucky and the lights go out when there is no hope of getting a replacement bulb, check at each point by removing the bulb, short the two contacts with an insulated screwdriver and work around the string until you find the faulty bulb. This will be the one

which, when removed and its holder contacts shorted out, restores the string of lights. As a temporary 'repair', wrap tinfoil over the base of this faulty bulb and replace in its socket. This will restore contact and enable all the other bulbs to light up again.

Before you mount the lights on the tree you should check all the wiring for possible faults. Any bare spots should be bound round with insulating tape. Avoid twisting the wires tightly around branches of the tree and pay particular attention to the wires where they emerge from each socket. These are the most likely points for breaks in the insulation to develop.

Perhaps you want a novelty tree this year? Have you ever thought of having

Making Posies from EVERLASTING FLOWERS



EVERLASTING flowers are a useful standby in the winter months when flowers are difficult to find. Readers who have grown any of these attractive flowers during the past year will welcome these hints on arrangement for different purposes.

Posies can be made by utilizing small plastic or earthenware bowls, which can be purchased from any multiple stores. The bowl should not be more than about 3ins. diameter and about 1½ins. to 2ins. deep.

First Step

The first step is to put a ½in. layer of plasticine in the bottom of the bowl. Now select your flowers and press the stalks into the plasticine. Arrange them so that you have room for a few dried leaves or evergreen foliage. Dried beech leaves can be coloured by dipping into waterproof drawing ink or ordinary dye solution.

Leaves can be glued to twigs by using the clear quick drying Balsa Cement. The twigs are then stuck into the plasticine and the leaves twisted to form a background to the flowers.

The illustration shows how flowers and leaves can be arranged in an informal way, but some may like to pack the flowers tight together to form a solid mass of colour. If you do this, then you must cut the stems level before commencing your arrangement. Incidentally, this type of posy is more suitable for sending by post, as it is not so easily damaged.

Fixing

Once the flowers have been satisfactorily arranged they must be fixed permanently in position. To do this use plaster of paris.

Prepare an old tin by bending a lip on one side, and from another tin cut a strip as shown. Mix up the plaster into a fairly liquid state and then pour enough into the bowl to form a layer about ½in. thick. The strip of tin is gently pushed under the flowers and the plaster poured in as indicated in the illustration. The plaster will set quickly and hold the flowers firmly in position.

Where the stems are not firm enough to push into the plasticine when first arranging the flowers, we suggest that

the stem be cut right off and a piece of thin wire inserted in its place. Bend the end of the wire over and pull into the centre of the flower out of sight.

Painting the Wire

The wire, where it is seen, should be painted green or brown after it has been fixed in the flower head.

Do not forget that all the everlasting look quite well if arranged in ordinary vases in the usual way. (M.)

An article on growing flowers suitable for these decorative pieces appeared in our issue of February 27th this year.

TELL YOUR
FRIENDS ABOUT
THE GOOD
THINGS IN
'HOBBIES WEEKLY'

RADIO BEGINNER'S FEATURE

About Using Alternative Valves

FROM time to time certain valve types are specified for circuits. This does not mean that other valves may not be used, however, and many equivalent types exist. It is proposed, therefore, to point out the most popular of these, and also to indicate pin connections for some of those which are most frequently used. It is suggested that the radio constructor should keep these details to hand, for reference. It will then frequently be possible to make use of valves which are to hand, either when building a receiver, or when rendering serviceable an existing set.

Octal Valves

Valves with octal (8 pin) bases have replaced many older types. An octal base is shown in the diagram, and the pins are numbered clockwise from the key-way. All valve-pin connections are normally given as correct when viewing the valves from below.

The average 4-valve mains superhet employs a 6K8 as frequencer-changer. The Marconi-Osram X65 is an equivalent. The 6K8 may have the letters G or GT added (6K8G, or 6K8GT). These only indicate the type of bulb, or envelope. The usual 6K8 has a small metal shell. The 6K8G has a glass bulb; the 6K8GT is also glass, but the bulb is smaller. They are all the same electrically.

A valve frequently found in mains receivers is the 6K7. Equivalents are the 6U7, Marconi-Osram KTW63, and W63. The 6Q7 is also frequently used. Equivalent is the Marconi-Osram DH63.

Battery-operated portables with octal valves use five types almost exclusively. These, with their equivalents, are as follows:

	Marconi-Osram	Mullard
1A7G	.. X14	.. DK32
1N5G	.. Z14	.. DF33
1H5G	.. HD14	.. DAC32
1C5G	.. N14	.. DL35
3Q5G	.. N15	.. DL33

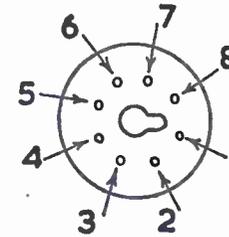
This means that each valve indicated is an equivalent of the others. For example, an N14 could be used to replace a DL35.

Button Bases

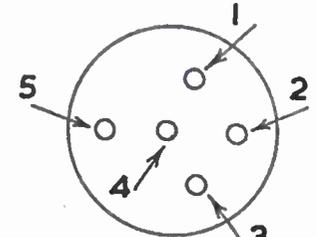
The B7G base is a 7-pin glass one. Again, only four types are usually employed in a wide range of all-dry midget portables using this type of valve. Such valves, with their equivalents, are:

	Marconi-Osram	Mullard
1R5	.. X17	.. DK91
1T4	.. W17	.. DF91
1S5	.. ZD17	.. DAF91
3S4	.. N17	.. DL92

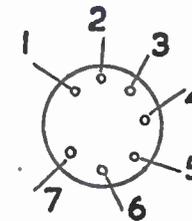
It may be wondered why so many



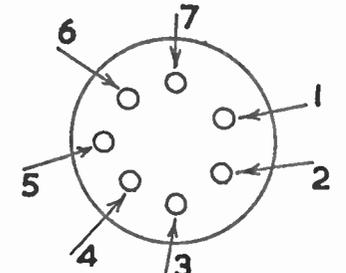
OCTAL



4 AND 5 PIN



B7G



7 PIN

different numbers are given to the same type of valve. This arises because each manufacturer has his own method of numbering. The 1R5 and similar types (1T4, 1S5, etc.) are usually most easy to obtain. Just as an X17, or DK91, if to hand, can be used instead of a 1R5, so can the 1R5 be used in a receiver to replace an X17, or DK91.

British Bases

The old 4 and 5 pin type of valve is largely used in simple receivers by constructors. A triode such as the Osram HL2 is usual as detector. Equivalents are the Ever Ready K30K, Cossor 210HL, Mullard PM2HL, Mazda HL2 and Brimar HLB1. All these, then, could be used in such a position.

For output, a pentode such as the Cossor 220HPT is frequently used. The Ever Ready K70B is a corresponding type. So are the Osram PT2 and KT2, and Mazda Pen220.

In the H.F. stage, a type such as the 210VPT will almost invariably be found. This is a Cossor valve. Equivalents are: Ever Ready K50M, Mullard VP2, Marconi-Osram VP21 and W21, Mazda VP215 and VP210. The constructor could make use of any of these.

The latter valves are also found with

7-pin bases. Such valves are the same as those with the 4- and 5-pin bases, except that the suppressor grids and metallising are brought out to separate pins, instead of being joined internally to the filament, as with the 4-pin types. Accordingly, 7-pin valves can be used where 4-pin ones are shown, provided the suppressor and metallising sockets are wired to the negative filament tag.

Base Connections

Connections for the 4-pin English types are as follows: 1, filament; 2, grid; 3, filament; 5 anode. This is the same for all battery triodes. With pentodes used for output purposes a fifth, centre pin will be present. This is numbered 4 in the diagram, and is the screen grid connection. With H.F. pentodes, a top, anode cap is present. Accordingly there is no fifth pin, and pin 5 in the diagram becomes the screen grid connection.

With the 7-pin base connections for the H.F. pentode are: 1, filament; 2, filament; 3, not used; 4, screen grid; 5, metallising; 6, grid; 7, suppressor grid. Top cap, anode.

Button Bases

Constructors using the B7G type of

(Continued on page 170)

Effects for your Christmas Play

NO doubt many of you will be putting on a play this Christmas, either in your own homes or in some school or other. If so, the following hints may be very useful in getting professional stage effects in your production.

Snow

For instance, the old fashioned method of using confetti for snow effects has now been improved upon. The best way is to buy some solid methylated spirit. When this is rubbed with a warm iron it breaks up into showers of tiny white flakes very similar to real snow.

Snow on ledges is often simulated by cotton wool. A better method is to mix soap flakes and water into a thick paste and lay this where required.

In nearly all Christmas plays a ghost appears, and eerie effects can be produced by a torch bulb and battery. These are fastened with a band round the waist of the 'ghost' and the light from the torch bulb directed upwards to illuminate the face. In the dark this is very uncanny, and the effect can be enhanced by powdering the ghost's face with flour and darkening the cheeks and hollows of the eyes with soot.

For the white hair of Santa Claus, get some liquid hair-white from the make-up shops. This is more lasting than powdering the hair. A beard, of course,

can be made with crêpe hair or cotton wool fastened on with spirit gum.

Night-Time Scene

After the personal make-up come the stage effects, and a brilliant night-time scene through a window at the rear of the stage can be created by draping a length of black material behind the window. About three-quarters of the way up, cut a small circle out of the material and paste tissue paper over the hole.

The material is punctured with small holes at various spots, so that when a light is placed behind the curtain the effect of moon and stars is achieved. With the addition of artificial snow on the window ledges, the scene is, indeed, magnificent.

An Artificial Fire

To make an artificial fire, get some red crêpe paper and daub black paint on it. When this is fixed into the stage firegrate with a small light behind it, the impression of a red fire with one or two lumps of coal in it, is very realistic.

There is nothing nicer than seeing firelight dancing on the walls, and this is achieved quite easily by directing a soft light on the wall facing the firegrate. In front of this beam of light, and out of sight of the audience, place a small methylated spirit stove, so that as the flame dances, its reflection is thrown on the wall by the ray of light.

It is equally simple to get the effect of a person entering a room after being out in torrential rain. Obtain an old mackintosh and hat, smear them with glycerine or some other form of oil or grease, to make them glisten as if wet. Then put a few drops of water into the brim of the hat and on the mackintosh, so that when the clothes are shaken a very realistic effect is created.

Sound Effects

Sound effects also add to a stage production, and many times familiar sounds can be easily artificially created. For instance, a birdsong can be made by rubbing a wet cork up and down the side of a bottle, whilst a fork rubbed on a plate gives rusty hinge and squeaking door effects.

For the arrival of Santa Claus on his sleigh, halves of coconut shells beaten on a table will give the reindeers' hooves, and the rattle of a child's toy harness bells all combine to make a nice introduction.

A few more sound effects are the beating of a tumbler for tolling church bells, and the uttering of a deep prolonged note into the inside of a tumbler to imitate a ship's siren.

Make-up, stage and sound effects such as these will help your show along tremendously, as well as giving you the thrill and enjoyment which amateur acting and producing alone can give. (A.T.)

Other Valves

It is not proposed to give connections for mains valves, for two reasons. Constructors usually build battery equipment, except when working from published diagrams. Hence, connections for the mains valves will be given in the published circuits. In such circuits equivalent types may be used, as mentioned, if to hand or more easily obtainable. In addition, quite a number of other mains valves exist, and it is not practicable to list them all. This is not so however, with the battery types, which are comparatively few in number.

It is hoped that the constructor will see that it is often possible to use valves which may be to hand. In published circuits particular types are only mentioned, as a rule, to provide a guide to the kind of valve required. Any equivalent can be used, with equal success, even if these are not listed in the component list or mentioned in the constructional and operating details. (F.G.R.)

About Using Alternative Valves

(Continued from page 169)

midget all-dry valve will find connections are as follows:

Type IR5, 1, filament negative; 2, anode; 3, screen grids; 4, control grid; 5, joined internally to 1; 6, control grid 2; 7, filament positive. The 1st control grid (pin 4) is normally used for the oscillator circuit.

The IT4, used in almost all small all-dry sets, has pin connections as follows: 1, filament negative; 2, anode; 3, screen grid; 4, unused; 5, joined to 1; 6, control grid; 7, filament positive.

Connections for the IS5 are: 1, filament negative; 2, unused; 3, diode; 4, screen grid; 5, anode; 6, control grid; 7, filament positive.

Connections for the 3S4, used for output, are: 1, filament negative; 2, anode; 3, control grid; 4, screen grid; 5, filament centre-tap; 6, joined to 2; 7, filament positive. This valve (and its equivalents) may be operated with the

sections of the filament in series, from 3 volts, or in parallel, from 1.5V. The IS4 type is the same, except that its filament is permanently wired, internally, for use with a 1.5V. dry battery only.

Battery Octals

The 1N5, used as detector and for R.F. amplification, has the following pin connections: 2 and 7, filament; 3, anode; 4, screen grid. Top cap, control grid. The other pins are not used.

The 3Q5, usually found in the output stages of all-dry sets of larger size, has the following connections: 2 and 7, filament; 8, filament centre-tap; 3, anode; 4, screen grid; 5, control grid. As with the 3S4, the filament may be used with its sections wired either in series or parallel, for 3 or 1.5V. dry battery.

Automatic Calendar Money Box

wheel on the spindle, which is a piece of 1/16" diameter round rod. Lift the brake lever and drop the wheel in position, the spindle passing through the centre hole of the partition, and then allow the brake lever to rest on the teeth of the wheel (Fig. 5).

Sprocket and Pointer

In Fig. 6 is shown the sprocket and pointer assembly for the part of the calendar indicating the month. Piece 14 is cut from the front (21) and glued to the sprocket (15) before being returned to the front. It is placed in position from the rear of the front and must be cleaned up so that it revolves easily. Fig. 7 shows the position of the sprocket from the rear of the front.

On the face of piece 14 glue a stout paper washer the same size as piece 14, and to this screw the pointer (16).

It is now necessary to check the accuracy of the sprocket teeth. Select the tooth you think may be the shortest and put a pencil mark against it (Fig. 7). Then turn the sprocket round to see that this tooth really is shorter than the others. If not, put another mark against

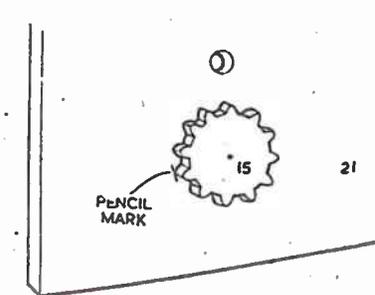


Fig. 7

the tooth found to be shortest. Now turn the sprocket round one tooth at a time, trimming each tooth with a razor blade to exactly the same length—that is, to the required mark.

Now glue the two pieces 22 together and glue them behind the front in the positions shown by the dotted lines on the design sheet. Slip the washer (9) on to the spindle, and then place the front in position and pin and glue to side 3 and the base (1).

Next fix the back (24) in position, remembering that it must be screwed only to piece 2, and similarly fix the top (25). Having already screwed side 2 to the base, the partition and back, there will be no need to insert screws through into the top.

To finish the top, round off the edges.

The bottom edges can also be rounded off if desired. The right-hand edge has pins attaching it to the side, and these must be filed off and the edge nicely rounded. The left-hand edge can just be rounded as, of course, no pins have been used in this case.

After this assembly, there is a narrow

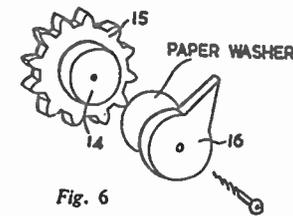


Fig. 6

strip left at the left-hand side of the box, and this is now filled by gluing fillet piece 27 in position to the front.

Adjusting the Mechanism

To adjust the mechanism, remove the side 2. Push a pencil or piece of wood inside the box to hold the sprocket still, and remove the small pointer from the outside face. Now cut out the centre hole in the separate printed face and also the hole for the month spindle. Do this neatly. Glue the face on to the front of the box, taking care to avoid wrinkles, and when dry, screw the small pointer back in position, and proceed with the adjustment.

If the plunger (13) is depressed with the finger, you will see that it turns the toothed wheel a notch at a time. If you continue turning, the pin in the toothed wheel will engage one of the teeth of the small sprocket. The pin should move the sprocket one tooth at every complete revolution. In other words, when the toothed wheel has gone once round completely, the sprocket moves one tooth. If the sprocket is turned more than one tooth, then the pin must be bent slightly outwards from the centre.

Having got the sprocket wheel working accurately, you can now turn your attention to fixing the pointers. The large pointer is made by gluing pieces 17, 18, 19 and 20 together and shaping them as shown on the design sheet.

By depressing the plunger with the finger, turn the toothed wheel a tooth at a time, keeping your eye on the small pointer of the sprocket. As soon as the small pointer moves, stop turning. Hold the sprocket wheel firmly in position with a piece of wood pushed inside, loosen the screw retaining the pointer slightly, and turn the pointer to January. Screw the pointer firmly in position.

Now glue the large pointer on to the centre spindle and pointing to the number 1.

Testing

The calendar should now be tested with a penny. Screw the side 2, temporarily, into place, and push a penny through the slot. The penny should depress the plunger to the fullest extent, and then drop into the box, moving the large pointer one whole space. When this test has been satisfactorily carried out, the calendar is mechanically ready for use. It might be advisable after the test, to stop the whole thing at the 31st December, so that the first penny is required to start the new year.

Finish

The side is now properly secured and the whole job should be cleaned up. Avoid getting glasspaper near the printed front.

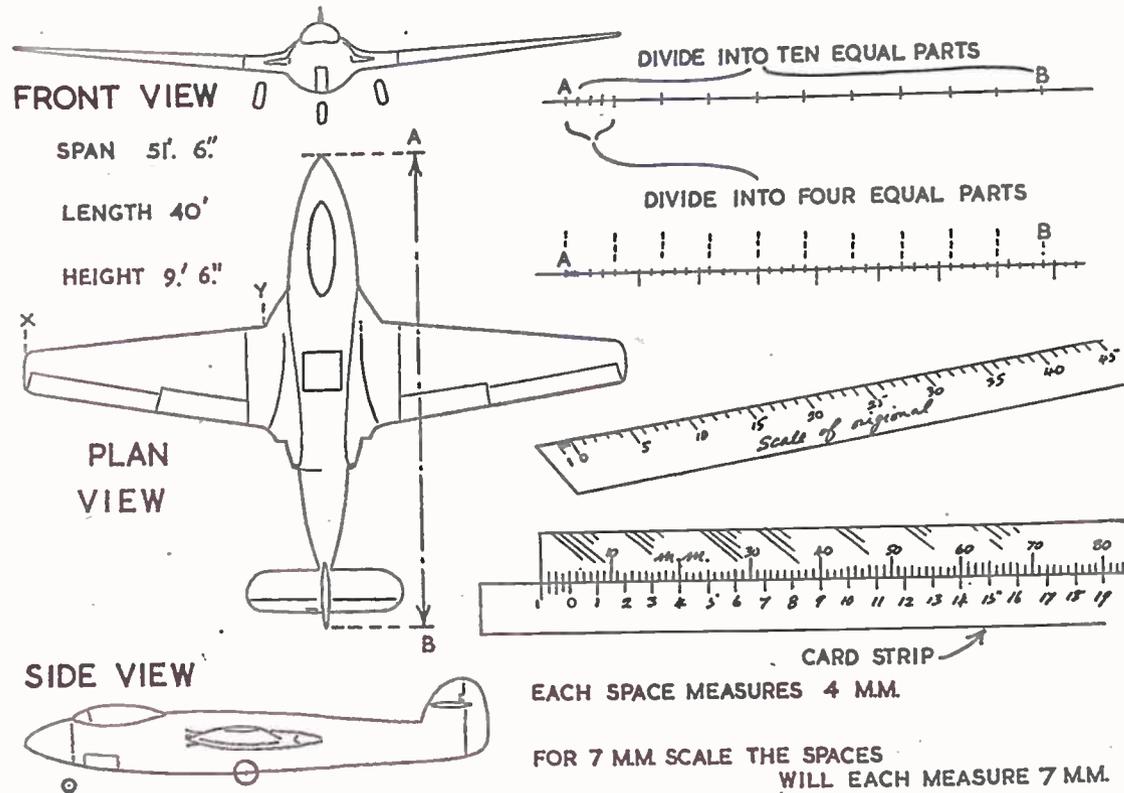
It is suggested that the calendar be painted in good quality enamel rather than stained and polished, and the colour chosen should tone with the colour of the printed face. The overlays can be painted a contrasting colour to the box if desired.

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This calendar money box would make an ideal present, and one which would be appreciated by the recipient. Why not make one up for a friend or relative? You can get a Complete Kit containing all necessary wood, round rod, and a beautifully printed calendar face, from any Hobbies Branch, or post free from Hobbies Ltd., Dereham, Norfolk, price 9/9, including tax.

INSTRUCTIONS YOU'VE ASKED FOR

Enlarging or Reducing to 4mm. Scale



THESE instructions are intended mainly for the railway enthusiast who wishes to make models for his OO gauge railway lay-out. The same principle is applied to other scales, as will be explained later.

Necessary Measurements

Before commencing to draw out a scale it is necessary to know the overall measurements of the model you are copying. In the case of planes in magazines such as *Flight*, these are usually given. A typical example is shown on this page. Let us assume that you wish to enlarge this plane to 4mm. scale.

From the known measurements we select the one most easily divided into feet, in other words the length of 40ft., which is the distance (A,B). Whatever the distance taken as your standard you must divide it into feet by stepping it out with the dividers. In this instance we

divide the line (A,B) into ten equal parts and then divide one of these into four. Mark these smaller divisions on to paper and transfer them to the other ten divisions. The line (A,B) is now divided into forty equal parts.

The space on the left is divided into four parts to represent 3ins., 6ins., 9ins. and 1ft. Mark off the rest of the scale as shown, i.e., in fives up to about 55ft., which in this case is the longest measurement required. We mark off in fives, because the scale is so small that it is practically impossible to mark each division separately.

This scale, when transferred to card is used for taking measurements from the original drawing. By using it as an ordinary ruler, we can measure any part of our drawing in feet. Now to transfer these measurements to the scale 4mm. to the foot.

The scale is marked on card by using a mm. rule or the diagram on

this page. Since we want our scale in feet, we mark off a number of spaces measuring 4mm. each. The number needed depends upon the longest measurement required, in this case the span, 51½ft., so we shall need about fifty-five spaces. These are numbered individually or in fives as on the original scale. The illustration shows this quite clearly.

In the case of 7mm. scale, each space will be 7mm., and the same principle can be applied to any other scale.

Work From Centre Line

To draw out the plans to scale you are advised to work from a centre line and draw in half only of the drawing where it is symmetrical. The half can be traced and transferred, thus saving extra work.

Take your measurements from the drawing using the original scale, then
(Continued on page 174)

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Making Amusing Acorn Figures

EXCEPT for the older child, and especially the child of over-indulgent parents, the appeal of a toy cannot be measured in terms of expense. The tiny child often derives its greatest pleasure from simple objects and inexpensive toys, often, indeed, ignoring costly presents, to the exasperation of their donors.

Comparison

Many of us, in recalling our childhood days, are struck by the amount of money lavished on the modern child, in comparison with the little we had. This, I think, was not to our disadvantage, for we learnt at an early age the value of money, and as a consequence found ways and means of providing our own toys. Many of these grew on the trees and in the hedgerows and it is a pity that the popularity of these playthings have waned in recent years. I believe they would soon return to favour if parents troubled to re-introduce them to their children on country walks.

The popularity of the horse-chestnut as a provider of 'conkers' is a pleasant exception to the general decline, but there is a real danger that the incursions of the woodman's axe will soon decimate all chestnuts of a seed-bearing age.

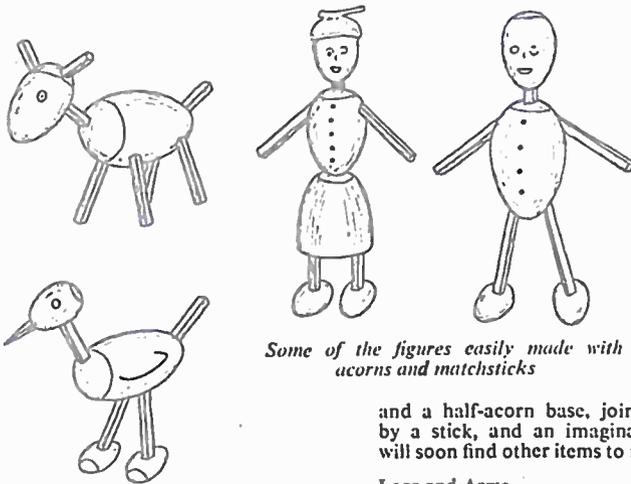
The oak is more prolific, and it provides the acorn, though not until it is some sixty years of age. Acorn time is here, acorns are plentiful and surely within reasonable distance of town and country dwellers alike. And much amusement can be obtained from acorns, especially by tiny children.

With a supply of acorns and plenty of

used matches many amusing figures can be easily and quickly made, and a child will be no less interested in watching them made than in playing with them. Also, after a lesson or two on their construction, the child will be quite capable of making passable figures on its own. Besides acorns and matchsticks all that is required is a nail for making holes, and possibly a pen and ink for marking eyes and buttons.

Infinite Variety

The illustrations show a variety of figures as examples, but by no means exhausts the possibilities. Trees can be made by using for each, one large acorn



Some of the figures easily made with acorns and matchsticks

and a half-acorn base, joined together by a stick, and an imaginative person will soon find other items to make.

Legs and Arms

For legs and arms each matchstick is sharpened at one end, while for joining members such as necks, short pieces are sharpened at both ends. Where the child is too young to use a penknife this sharpening may be dispensed with, especially where the matches have charred ends. Holes in the acorns to take the matches are first made with the nail and the matches inserted at the right angle and pushed firmly in. Two-legged figures will need feet in order to stand upright, and for these half-acorns, split longitudinally, may be used.

Once the figures are made they can easily be assembled and arranged in farmyard scenes and suchlike. (L.J.B.)

parison. Having assessed the height or width, you proceed to make up your scale as already described. (M)

Enlarging or Reducing to 4mm. Scale

(Continued from page 172)

transfer them to your scale drawing using your 4mm. scale. As an example we will say that you are drawing in the wing and want to plot the leading edge (X to Y). Measure it on the original scale and you find it is 20ft. 6ins. approximately. Now pick up your 4mm. scale and measure off 20ft. 6ins. on your drawing. This, of course, is equal to 82mm.

Any drawing can be copied in this way providing you have a definite measurement to start with. Perhaps you are told the length, or perhaps you are

given a definite scale. In this case, suppose the scale of a drawing is stated to be 10ft. equals 1in. You would divide the inch into ten equal parts, each one of which would equal 1ft. You then make your original scale from this and proceed as before.

In the case of a photo where no sizes are given it is often possible to judge the height of, say, a lorry, for example, by comparison with some other object, perhaps a man standing near by. Doors, bicycles, etc., are of standard sizes and can also be used for com-

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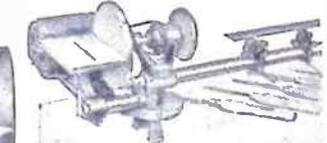
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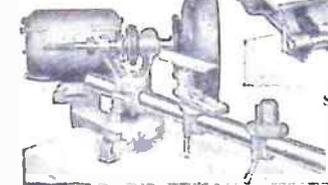
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Showing arrangement for turning between centres and sawing.



Showing Sanding attachment replacing Saw. (left: Super Swivel Platform positioned for turning at any angle (front, rear or end).



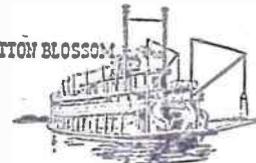
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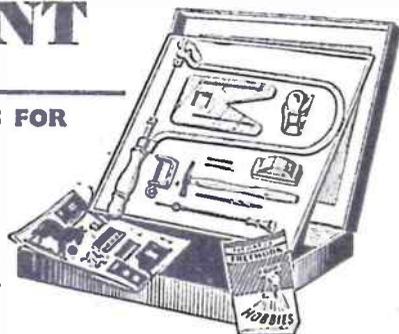
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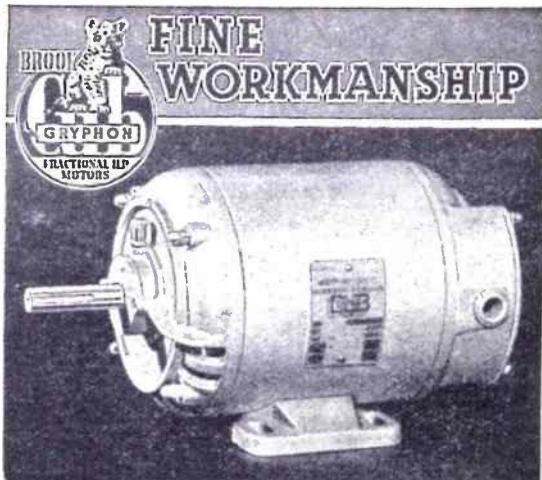
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