HOBBIES WEEKLY

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AUGUST 22nd 1956 VOL. 122 NUMBER 3173

Yes!—It's SOOTY

Giving his own ideas on

BOOK-ENDS WITH A DIFFERENCE

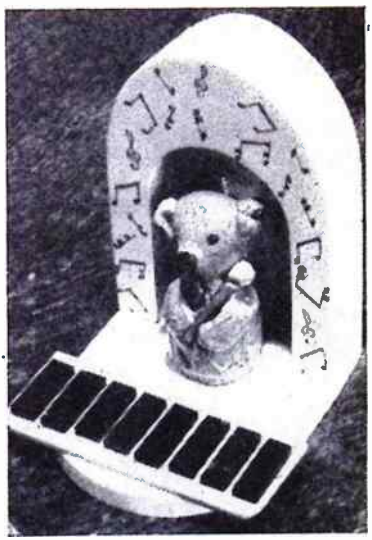
HAVE you ever considered how the fascinating craft of plaster casting, using the varied range of rubber moulds obtainable nowadays, can be embodied as a means of decoration in attractive items for use in the home?

The photograph illustrating this article is a typical example of how a plaster casting, that of Sooty the T.V. bear, suitably finished and painted, plus a little bit of imagination, can lend novelty and enhance the appearance of an otherwise quite ordinary pair of book-ends. And there are dozens of other commercial moulds of all types to choose from, any of which will suggest ideas for different projects.

Although it is possible to buy moulds which can turn out ready-made objects (including book-ends) which merely require painting, it is felt that to use plaster work as a *supplementary* medium results in a more attractive and lasting piece of handicraft.

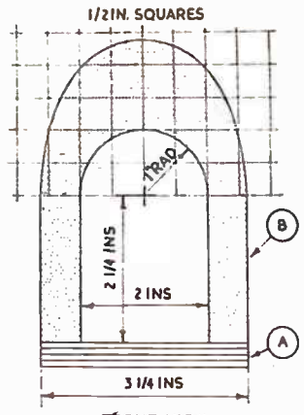
By Gordon Allen

For those who are attracted by the illustrated book-ends let us see just how easily they can be made. First the plaster cast. A commercial rubber mould of a well-known make was

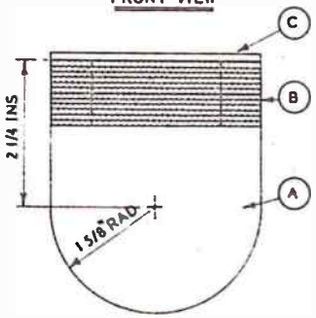


IN PLASTER AND WOOD

bought together with *a package of special casting powder*. It must be emphasized that to produce a successful casting of this nature, which is comparatively tall and slender, it is useless to employ ordinary Plaster of Paris or worse still, decorator's plaster, which will not set quickly at the bottom of the mould and remains 'crumbly'. Ultra fine white plaster



FRONT VIEW



PLAN VIEW

similar to that used by dentists is essential.

Half-fill the mould with clean cold water and then empty it into a cup. Support the mould in an inverted position by putting it through a hole in a piece of stiff card, and then rest the card and mould over the open neck of a jam jar. Mix sufficient powder with the water in the cup to produce a thin cream. Do this by sprinkling a little at a time on the surface of the water, stirring thoroughly at intervals.

Remove air bubbles

Partly fill the mould with the mixture and then squeeze the sides towards the head to make sure that the plaster enters the tiny crevices of the mould. This also removes air bubbles. 'Top up' the mould with plaster, and leave in a warm place to set hard.

When set, remove the mould from its support, thoroughly wet the outside of it and gently 'peel off' the mould from the cast by degrees. Always keep the outside surface of the rubber wet.

Give the surfaces of the cast two even coats of thinned cellulose cement. Celluloid dissolved in acetone is also an ideal medium with which to prepare plaster for final painting. Plastic enamel paint (Starlon), sold in tubes, is excellent for finishing the cast. Use a small artists' brush. The colours will not run. If desired, a final coat of clear varnish can be applied.

Plywood ¼in. and ⅛in. thick, a small piece of beaver board or hardboard ⅛in. thick, some offcuts of Perspex and a little enamel paint are required to complete the book-ends.

Plywood upright

The upright (item B) is fretted from 1in. thick ply, comprising two ¼in. pieces laminated together. Use melted glue for the laminating and keep the ply under heavy pressure until thoroughly set. When the shape has been cut, file and glasspaper all edges and faces dead smooth. Do the same with the base (item A) using ¼in. ply and then glue (A) to (B) making sure that they are at right angles. Remove all surplus glue.

Glue in place the board backing (item C) with the rough surface outermost. Trim neatly to the shape of item (B) and glasspaper flush.

Perspex dulcimer

The base of the dulcimer measuring 3½ins. by 1½ins. and the 'keys' 1in. by ⅝in. are made from Perspex; black for the keys, white for the base. The front corners of the base are rounded off, and the keys are fixed with Perspex cement.

Before mounting both the cast and the 'instrument' in place the book-ends are painted. In the original the ply was given an initial coat of aluminium paint and sanded when dry. It was followed with two coats of dove grey Valspar enamel. The musical notes were added in red enamel using a mapping pen.

Mount the cast and the dulcimer in place with Evostik rubber-based adhesive in the positions indicated in the photograph.

Try this on your friends

Anticipating a Word

HERE is a trick you can pull off on your friends without any apparatus but an ordinary pencil and paper.

First of all you tell your audience that you can foretell a word which will be chosen from a book before it is actually found. To prove this feat, write down the word on the paper, fold carefully into four and place in an envelope, which is then sealed. The sealed envelope is then given to a member of the audience to hold.

Now ask another in the audience to give a number, with three different digits, which must be above one hundred —421, 543 or 372, for instance. Whoever gives the number is asked to write it down on a piece of paper, reverse the number, and subtract from the one he was first given. For example:—

Number given	342
Reversed	243
Difference	099

Now ask him to reverse the answer and add the two together, like this:—

Difference	099
Reversed	990
Total	1089

This example has been deliberately selected to show you how to deal with a difference which falls below 100. You will note that the nought has been placed in front of the other two digits, thus making it into 990 when reversed. This is most important to remember.

We have arrived at the answer 1089, so a handy book like a dictionary is selected and the member of the audience asked to turn to page 108 (the first three digits in our answer) and to read out the 9th word down on the left hand side. The nine, of course, being the last digit in 1089. The member of the audience turns up the page, counts down to the ninth word and reads it out. You then call to the person holding the envelope to unseal it and read out the word written on the paper. To everyone's astonishment the words are the same. How is it done?

By S. Longbottom

This trick, like so many of these 'mental' tricks, is simple when you know how. To begin with, the answer always comes to 1089, whatever number is chosen, and a little careful preparation is required beforehand. Before showing the trick, select a book which is in the room, look on page 108 and count down to the ninth word. This word is memorised until ready for the trick.

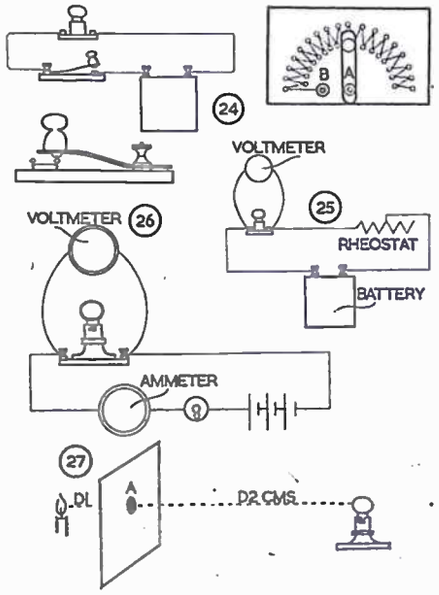
You will appreciate that it is better to elaborate if possible. For instance, if there is a popular journal handy, you can use page 10, the eighth line down and the ninth word on that line, or with a poetry book, you can quote a verse and a line. There are many modifications once you know the secret of the trick. Reference books with many pages are useful for the trick, but newspapers rarely have ten pages, while the words in a column rarely number nine. Avoid newspapers and select a book or magazine with long lines of print, and remember, as the combination is always 1089, you cannot repeat the trick to the same audience.

Simple science experiments

LIGHTING IN THE HOME

Simple Electric Lighting Circuit and a Model Rheostat

FOR this first experiment you require a 3·5 volt electric lamp, a miniature lamp holder, a simple switch, three short lengths of insulated wire and a battery. Connect these up as shown in Fig. 24. Remove the simple switch and replace it with a model dimmer or rheostat, made by fixing fine iron wire round the heads of small brass round-headed nails in a piece of wood as shown. One end of the wire is joined to the terminal (B). (A) is a strip of brass or tin plate with the top of a clothes peg for a handle.



By rotating the arm (A) you can bring varying lengths of the high resistance iron wire into the circuit, and this varying resistance varies the amount of electrical energy which is available from the battery for the lamp and causes a variation in the intensity of illumination.

The Effect of Using Electric Lamps of the Wrong Voltage

Using the same apparatus as was described for the last experiment, try using an electric measuring instrument called a voltmeter to measure the varying pressure of the electricity supply to the lamp terminals. Using a 4·5 volt battery and maximum resistance in the rheostat, note how much light is given by the lamp and note also the corresponding voltage across the lamp terminals as the resistance in the circuit is reduced and the pressure of the electric energy, in volts, is gradually increased (Fig. 25). You will see how much you can vary the amount of light given by an electric lamp by varying the voltage supplied to it.

If you want an electric lamp to give a very bright light you may overload it, but this, of course, shortens its life. On the other hand if you underload it, it will give a dimmer light, but it will last much longer.

It is important to know the voltage of the mains in your house, so that you can ask for lamps of the correct voltage. If your mains are 230 volts and you use 240 volt lamps, as many people do, you will not be aware of any marked diminution in the intensity of illumination and the lamps will certainly last longer.

Power Consumed by Electric Lamps

If you examine a mains electric lamp you will find the following information printed on the glass bulb or on the brass cap:—230 V 100 W. The numbers may vary, of course, according to the size and type of lamps and according to the district in which you live, but you will always find the letters 'V' and 'W' there.

230 V means that the lamp should be supplied with 230 volts if it is to give the light and have the burning life the manufacturers intended it to have when they made it.

The purpose of this experiment is to show you what is meant by 100 W. The 'W' stands for 'watts', which is the power consumed by an electric lamp. If you use 100 watts for ten hours, you will consume 1,000 watt-hours, which is 1 kilowatt-hour or 1 unit of electricity.

You can check the power consumed by an electric lamp by fixing up the circuit shown in Fig. 26, using a 6 volt lamp and holder, a voltmeter, an ammeter, a switch and an old 6 volt car battery.

The ammeter can be placed anywhere on the circuit since the current is the same throughout all parts. The voltmeter is placed across the lamp terminals and it then shows the fall in pressure in volts in that part of the circuit.

The product of the reading of the ammeter and voltmeter gives the power consumed by the lamp in watts:—

Amperes × Volts = Watts.

Candle Power of Electric Lamps

To determine the candle power of an electric lamp an instrument called a Photometer is required. Take a small sheet of fairly stout drawing paper, light a candle and allow one large drop of molten paraffin wax to drop on to the centre of the drawing paper. Hold it quite still until the wax on the drawing paper has set, and you then have a simple Bunsen grease-spot photometer. If you hold it to the light you will see how more light passes through the grease spot than through the surrounding paper.

For an accurate determination of candle power you really require a standard candle, but for the purposes of this experiment an ordinary candle will suffice.

In Fig. 27 A is the grease spot photometer fixed upright on a table in a darkened room. The candle is placed on one side of the grease spot, on a level with it and fairly near to it, and the electric lamp of which you want to determine the candle power is placed on the other side. It is moved backwards and forwards until the grease spot appears equally lit on both sides. Each side is then uniformly illuminated and the distances of the lamp and candle from the paper should be measured. Repeat for various positions of lamp and candle, enter up your results thus and find a mean value for the candle power of the electric lamp. (T.A.T.)

Distance of candle from screen = d_1 cms.	Distance of lamp from screen = d_2 cms.	Illuminating power of lamp = $\frac{d_2^2}{d_1^2}$
3 cms.	12 cms.	$\frac{12^2}{3^2} = \frac{144}{9} = 16$ candle power

Make it for 3 gns.

A 5-VALVE MAINS RADIO

By A. Fraser

THE design of this five-valve mains set, which can be built for £3. 3s., is quite orthodox, and its remarkable cheapness is achieved partly by some economy in design and partly as the result of a thorough search for sources of the cheapest goods available, which are given in the components list.

A T.R.F. (i.e., a tuned radio frequency) circuit is used. This is cheap and easy to build, and it has been specially designed so that it can be converted to a superhet later on, if required. (A further article will deal with this.)

If a superhet version is not contemplated, the chassis can be reduced in size to 9ins. long or less, by omitting the spaces left for the superhet I.F.T.'s, and bringing valves one and two alongside valve three.

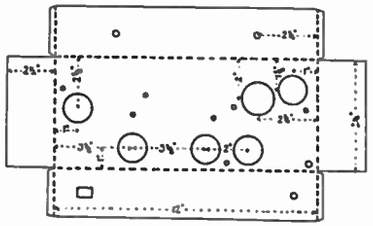


Fig. 1—Chassis cut-out

One can also economise by omitting valve three and associated components, thus making the set a four-valver. The performance will still be good, and the chassis will be only 7ins. long. (Details for this are given at the end of the article.)

The chassis is required first. This can be anything from 18 to 22 gauge aluminium. A piece 18ins. by 12ins. would be ample, while a 12ins. square piece would suffice if the ends of the chassis are left open. Hardware shops will often let a soiled and battered piece go for a few pence. It can easily be cleaned up and the dents levelled out with a hammer.

Chassis dimensions are seen in Fig. 1. These allow plenty of space to work in. A smaller chassis could be contrived, if desired. A narrow (½in.) flange can be turned up along the long sides. Through this holes can be drilled to allow fixing to the bottom of the cabinet. Otherwise, angle-pieces can be used. The thick dotted lines show where the metal sheet should be bent. The sides should be held together with rivets or bolts.

The 1¼in. cut-outs for the valves, and the 1⅜in. cut-outs for the smoothing condenser, can be made with special cutters. Failing this, a fretsaw will do the job adequately.

When the chassis is completely ready, the valveholders are fixed in. Care should be taken to see they are properly placed with the tags in the right orientation. This can be ensured by referring to the underchassis diagram, Fig. 2. It will be seen that V3 and V4 have tag 1 pointing to the front of the chassis. V2 has tag 6 pointing forward, while V1 has tags 3 and 4 in this position. V5 has tags 7 and 8 pointing forward.

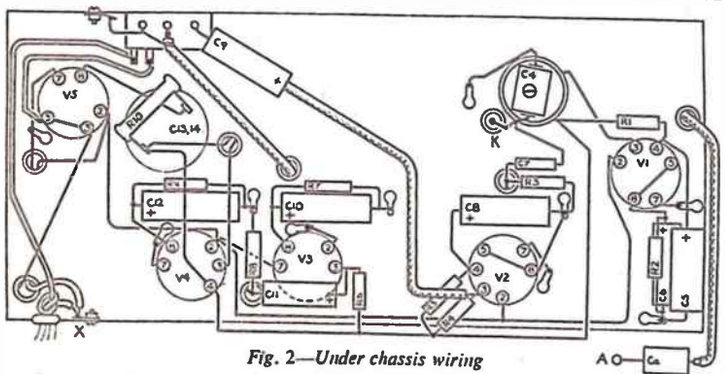


Fig. 2—Under chassis wiring

It is important that the valveholder tags are in the correct position so before wiring, check over their positions, referring to Fig. 2.

After fixing the valveholders, the rubber grommets can be set in position. These can be ¼in. types with the exception of the one at the mains lead in — this should be ⅜in.

LIST FOR T.R.F. 5-VALVE

	£	s	d
Condensers. ·005 mica (Ca) 750 V working			5
2 trimmers C3, C4. 50 pfd.	1	0	
C5, C6, C8, ·1 mfd. 350 V	1	6	
C9, C11, ·01 mfd. 350 V	1	0	
C10, C12, 25 mfd. 25 V working	2	8	
C13, C14. 32–32 mfd. 350 V	4	6	
Heater transformer 6·3 V 1·5 A	5	9	
Volume control S.P. switch. 2 meg.	3	9	
Slow motion drum, spindle, cord, spring	2	6	
Condenser clip for C13, 14			5
I.O. grid clips (4)			2
6 grommets			3
Aerial socket panel			4
(Above obtainable from Radio Supply, 32 The Calls, Leeds, 2).			
Resistors. R1 (47K), R2 (220), R3 (1 meg.), R4 (100K), R5 (470K), R6 (68K), R7 (1000), R8 (·5 meg.), R9 (470). ½ or ⅓ watt	2	3	
R10 (2K) 2 watt			9
Twin gang tuning condenser. ·0005 mfd.	2	6	
(T.R.S., 70 Brigstock Road, Thornton Heath, Surrey).			
I.O. valveholders (5)	1	3	
C7 ·0001 mfd. mica condenser			3
2 knobs			6
(J. E. Annakin, 25 Ashfield Place, Otley, Yorks.).			
6in. loudspeaker and output transformer to match 8000 load	12	6	
(Duke & Co., 621 Romford Rd., Manor Park, London, E.12).			
Valves EF39, EF36, EBC33, EL32	12	6	
(Stan Willetts, 43 Spon Lane, West Bromwich, Staffs.).			
Valve 6X5	5	0	
(A. Padgett, 40 Meadow Lane, Leeds, 11).			
Aluminium sheet	1	6	
Total	£3	3	3

(Note that postage is not included in the above items)

Next, bolt on the soldering tags in the various positions as indicated in Fig. 2. To ensure good earth contact, see that the chassis and tags are clean and bolted tightly down. It is also a good idea to see the valveholder tags are clean. Glasspaper or emery paper is useful in cleaning operations but do not rub off the tinning altogether, and blow off all dust afterwards.

The volume control/switch can now be mounted in the front side of the chassis. The spindle may need shortening if it is the long type.

The smoothing condensers (C13, C14), which are combined in one tub, are next fixed in position, using the condenser fixing clip.

The aerial/earth tag panel is then attached to the back side of the chassis. It must be noted that no earth is used in this set, so the earth tag on the panel should be ignored.

Next, mount the H.F. coil. (Instructions for making this are given later.)

Now turn over the chassis and on the top mount the heater transformer. This is placed at the corner, near the mains lead in, to the inside of the two grommets which take the leads from the transformer. The grommets will be positioned at the outer corners of the transformer base.

The tuning condenser should be mounted after this. But first, solder a lead to the bottom connection of the second stator section. (The one further from the spindle.) This lead should be about 3ins. long, and well insulated. It passes through the grommet in the chassis at point (K) on diagram 2, and it is wise to try the condenser on the chassis first to mark the position of this grommet immediately beneath the second stator connection, before drilling the hole for the grommet.

Again see that the earthing connections of condenser and chassis are clean, and remember to attach solder tags to the foot of the condenser at (T) (Fig. 3) and the opposite diagonal corner.

If feet are not provided on the condenser, these can easily be made from angle pieces shaped out of aluminium scrap. The condensers specified are cheap shop-soiled types and it pays to examine them for damage. Any bent vanes should be carefully and gently corrected. None of the rotor vanes should touch the stator vanes at any point in their traverse.

The aerial coil should be mounted beside the condenser, after this is fixed (see Fig. 3).

All the chassis components having now been mounted, one can proceed with the wiring. This is quite simple if one follows the diagram 2 in a methodical manner. The wiring has been drawn in in a schematic manner to clarify the system of connection. The constructor can follow this as it is, but it is advantageous to make all connections as short and direct as possible, but keeping all wires well separated.

Already-insulated (P.V.C.) wire can be used, or tinned copper wire used and sleeving slipped on. Single wire, rather than stranded, is recommended.

Before commencing wiring, it is imperative to ensure that all connections are clean. Collect together all the specified resistors and condensers and clean all the wire ends or tags. Any thick wax or dirt should be scraped off with a knife and the ends thoroughly cleaned with a rag dipped in petrol (or lighter fuel).

Start the wiring from the mains input end. The mains flex should have a knot tied in it about 7ins. from the end. One lead should be passed round V5 valve-holder and soldered to one of the switch tags on the volume control. The other end should be cut off short and soldered to the earthing tag at (X). The piece left over can be used to join this same soldering tag to the heater transformer, passing through the chassis grommet provided.

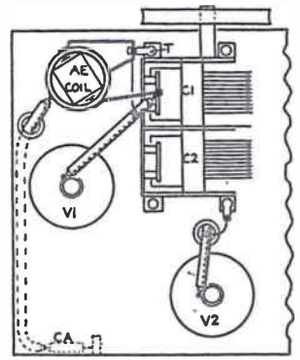


Fig. 3—Top chassis connections

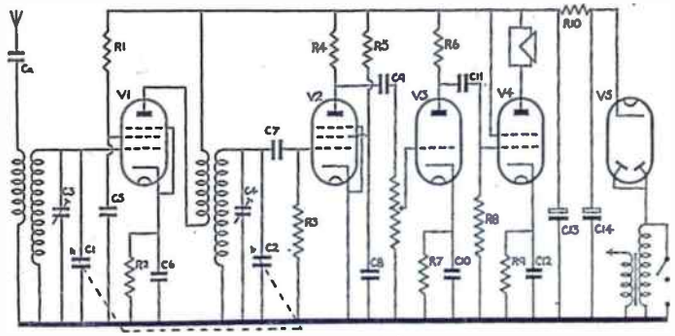


Fig. 4—Theoretical diagram

There are four leads from the heater transformer. Two are very thick enamelled insulated leads and these are the 6·3 volt heater connections, which pass through the other grommet, one going to the soldering tag by the side of V5, acting as earth connection, and the other goes to tag 2 on V5, being the 'hot' lead. The other two connections to the transformer are of comparatively thin wire, usually stranded and plastic covered. It is to these that the mains are joined. As already stated, one lead is connected to the earthing tag (X) near the mains lead in. The other is passed through the same grommet to join with tags 3 and 5 on V5 and thence to the remaining switch tag — thus connecting it to the other mains lead when the switch is on.

The heater chain can now be completed, taking care to keep the insulated wire pressed well down on to the chassis, avoiding the other wiring. Remember that tags 2 and 7 are the heater connections. First join the chassis heater connections, viz., tag 7, V5 to earthing tag; tag 7, V4 to earth tag; tag 2, V3 to earth tag; tag 7, V2 to earth tag; and tag 7, V1 to earth tag. The positive chain is completed by joining tag 2, V5 to tag 2, V4. This latter is then joined to tag 7, V3, and to tag 2, V2; and from there to tag 2, V1. This finishes the heater wiring.

The other wiring is proceeded with in a like manner, constant reference to the diagram, Fig. 2, will ensure correct wiring.

Note that the junction of R8 and C11 between V3 and V4 is joined to a lead coming through the chassis grommet. This lead is a single screened lead (8d. per yard) and is connected to the grid top of valve 4 by means of a clip.

A similar connection is seen where C7 joins R3 — this goes by screened lead through the chassis grommet to the top cap of valve 2.

Screened lead also connects the centre tag of the volume control to the top cap of valve 3, the lead passing through the chassis grommet.

The anode (tag 3) of valve 2 is also joined by screened lead to C9 and thence to the end tag of the volume control.

Screened lead is also used for the aerial connection to the aerial coil from the aerial socket at the chassis back, and also for joining of top cap V1 to the variable condenser section one (see Fig. 3).

With all these screened leads it is necessary to twine thin wire round the outer metal braiding and connect to nearest earthing tag.

Any uncertainty as to wiring connections can be cleared up by reference to the theoretical diagram (Fig. 4).

The leads from C13, C14 and tag 3, V4, which pass through the chassis grommet, are the leads to the loudspeaker output transformer, which will be mounted near the loudspeaker on the left side of the chassis top.

Next week, A. Fraser will describe how to make the coils and finish off the 5-valve T.R.F. set.

A further article will show how to convert this to a superhet.

Model Railways — Part 7

THERE *MUST* BE A PLAN

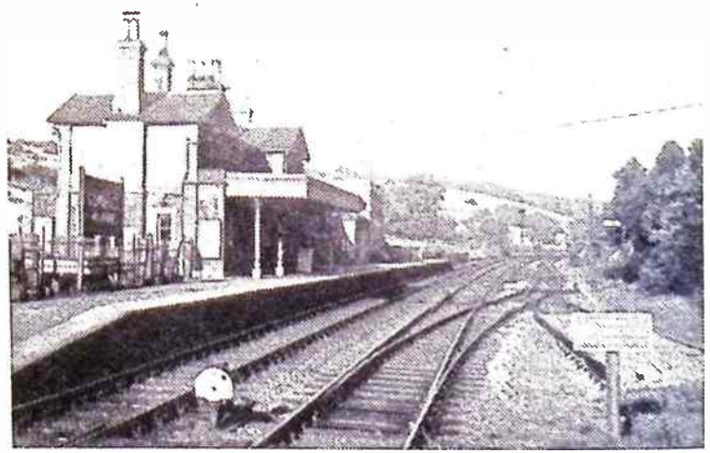
LOOKING back over the past score or so of years, I can call to mind many of my readers who have taken me severely to task for so strongly advocating plenty of planning before starting to lay a model railway. They grudge what they call 'waste of time', which they claim would be better spent doing something more tangible and spectacular.

By E. F. Carter

I offer no excuse for my theory, nor would I alter it one jot. Leaving model railways out of the argument entirely, no project, however large or small, can be well and truly carried through without planning; and this truism applies more emphatically than ever in the realms of engineering — both full-size and model. There *must* be a plan. Just imagine the Forth Bridge, or for that matter, a sewing-machine, being made without a plan. It's just unthinkable.

So be guided by common sense and get a tape measure and a pencil and make a scaled survey plan of the area available upon which you propose building your model railway. Every hour you spend on planning will save future days of wasted effort — days of irritating mistakes and their correction, all due to lack of foresight.

In planning a model railway layout, it is by no means always the best policy to use every square inch of the space-area available. Nothing looks worse — and more amateurish — than a station which is a hotch-potch of unnecessary points and crossings. In any case, such disorderly and unrailwaylike arrays are wasteful both of time and money, for they really do not 'do' anything; neither improving traffic facilities nor making the railway more easy to operate.



A typical small country goods yard and station

Basic simplicity

Consider for a moment the full-sized railway station of average size. If you stand on a footbridge and sketch the layout, you will be surprised at its basic simplicity. Every train and engine movement necessary *at that station* can be carried out easily and with no wasted engine movements, yet there will not be one single point or crossing used that is redundant. Points and Crossings — or 'P and C work', as it is called in real railway parlance — is very expensive, thus minimum expense conversant with maximum traffic movement facility is always the basic factor of full-sized railway track layout planning economy.

Similarly, on a model railway station layout, simplicity is synonymous with cheapness, and complication with expense — cash which can be better spent on rolling-stock or lineside equipment.

These considerations bring us, naturally to the obvious question: 'how simple can a small station track layout be made without detracting too much from either its appearance or workability'. This question is unanswerable until the proportionate relationship in size, between the station and the whole layout has been decided, for obviously, the larger the layout, the more comprehensive can be the track arrangements at each individual station, whilst on smaller models — which are very much in the majority — the reverse is the case. So let us consider the question from the latter angle.

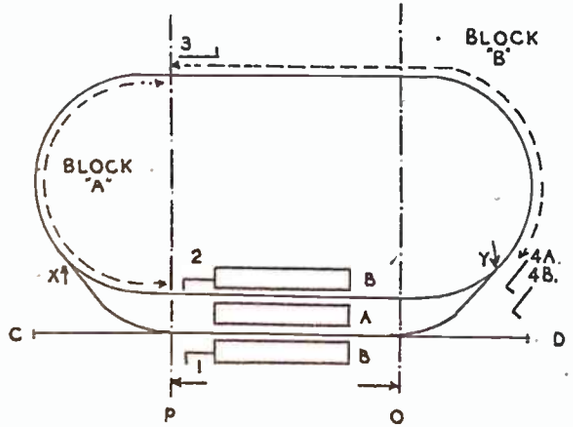


Fig. 1

Single-line station

Basically, a small single-line station or country station has but little passenger or freight traffic for which to cater, so its track layout can, therefore, be of the simplest nature, allowing for two passenger trains from opposite directions to pass at the station, and sufficient siding accommodation to permit the working of the 'daily "'pick-up' goods train'".

Try and imagine that you are laying a real railway in a certain part of the country, with certain jobs to do, and a definite service of trains to be run. One might almost say that your 'country' could consist of a town with various factories, and, maybe, collieries from which coal and goods have to be brought to a country station. This will mean that you will have to arrange for a goods train to run loaded in one direction and empty in the other, and that locomotives will have to be found to haul the trains. A certain amount of shunting operations will also have to be carried out, so that the wagons are sorted (or 'marshalled') into their right order; and this marshalling work has to be done in the station sidings, which again leads to track planning before an inch of track is laid.

They just grew

You will, perhaps, be saying: 'But how am I going to do all this with the small amount of track I already have. The answer to this question is a logical and simple one. Your very first model railway layout must be so arranged that you can add to it as and when you can. It may consist of a simple 'oval' of track — nothing more, but if you lay that 'oval' of track in the *proper place* on the baseboard, you will find that any additions can be made without tearing the whole thing up and starting afresh. In other words, you *must* proceed like the real railways did a hundred years and more ago — they just grew, and your railway must do the same.

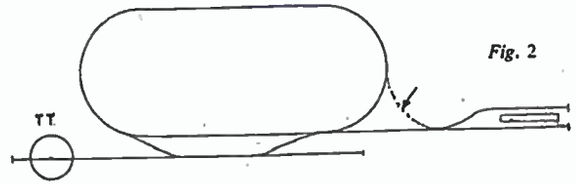


Fig. 2

And now back to the simple single-line country station. As you progress from the simple 'oval' of track, the next thing you will want to do is to arrange for the trains, running in opposite directions, to be able to pass each other in the station. To do this you will need what is termed a 'passing loop', as shown in Fig. 1. A station may be arranged as shown, having an island platform at (A), or two separate platforms at (B-B), whilst to add some siding facilities, you will only need remove the track sections at (C) and (D); the addition of the passing loop itself having already been provided for by the insertion of the points at (X) and (Y).

You will, perhaps, wonder why an 'oval' of track is so much spoken of. Of course, the shape need not necessarily be oval, but this shape best lends itself to the average baseboard and gives the longest straight runs of track. The distance between (P) and (Q) on the diagram may be as long as possible, but if the oval is a small one, the station can be placed at one end of the layout and siding (D) (Fig. 1) increased in length to form a still smaller terminal station, as shown in Fig. 2.

Station to Station

This layout will give a 'station to station' run, but does not provide for the same train to be ever brought back to the terminus unless a turntable for the engine is arranged as shown; whilst should it be desired to run from the terminus back to the terminus, two extra points and an additional piece of track will have to be incorporated, as shown dotted on the diagram. Appropriate signals are shown placed and numbered on Fig. 1.

In our next article several simple plans will be considered from which you should be able to choose one suited to your own special requirements.

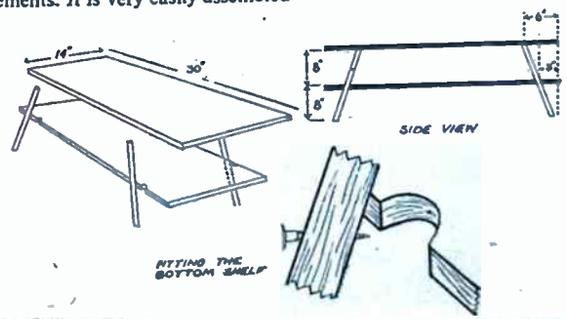
Small Plant Table

An attractive addition for the home

Described by J. MacIntyre

AMONG modern home designers the indoor plant has become a great favourite in the scheme of interior decoration. As well as being good to look at, most of these plants and cacti require very little attention beyond an occasional watering. The plants are available in many shapes and sizes, some grow a few inches and others two or three feet.

The illustration shows a stand specially designed to hold the smaller types of cacti and plants. This can be built either to the specifications given or it may be expanded or reduced to fit individual requirements. It is very easily assembled and may be constructed from plywood and dowelling rods. The legs are made from ¼in. dowelling rods and fitted at an angle. A shelf has been added to hold magazines and newspapers.

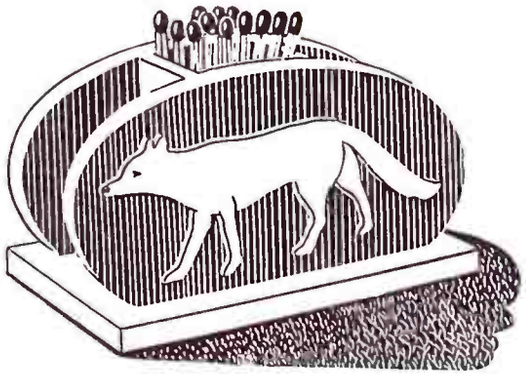


First, the table top and the shelf are cut to size and carefully rubbed down with glasspaper. Next, four semi-circular cut-outs are made (two each side) to fit and hold the legs. (See Fig. 1). The legs are held in position by screw-nails which should be countersunk and filled. After the components have been assembled rub down with glasspaper and either paint or stain and varnish according to personal taste.

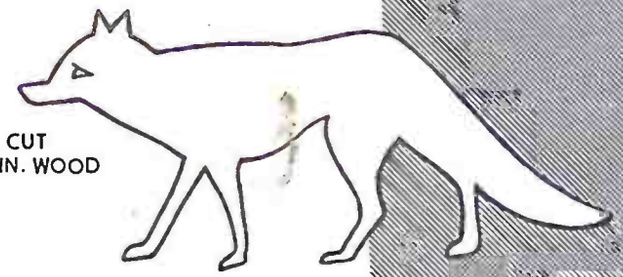
Hobbies

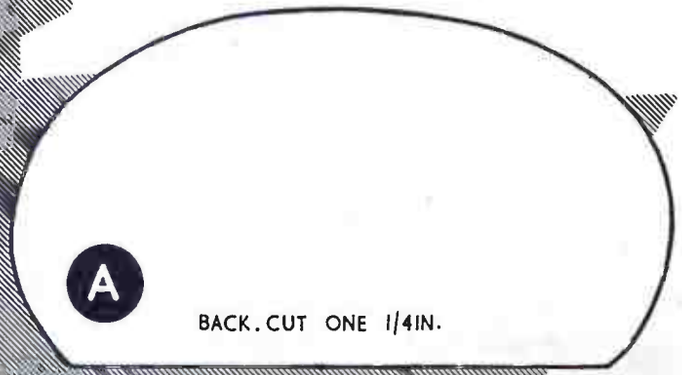
FRETWORK PATTERN

MATCH HOLDER



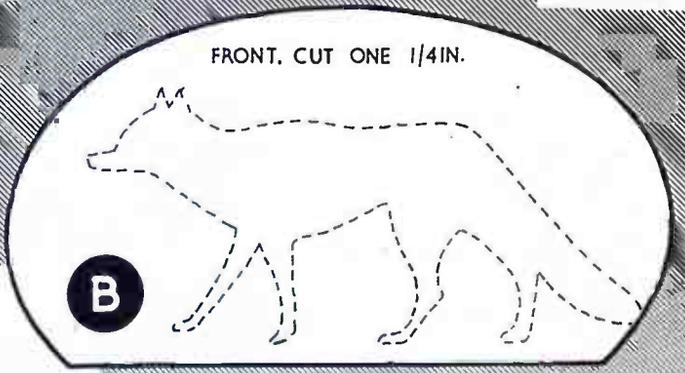
OVERLAY. CUT FROM 1/8IN. WOOD





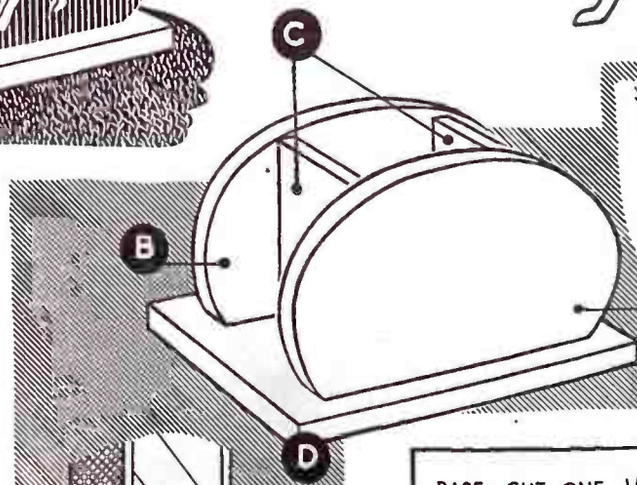
BACK. CUT ONE 1/4IN.

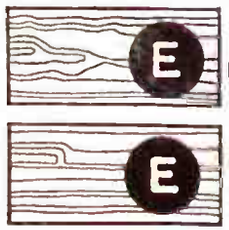
CUT THESE SHAPES WITH A FRETSAW



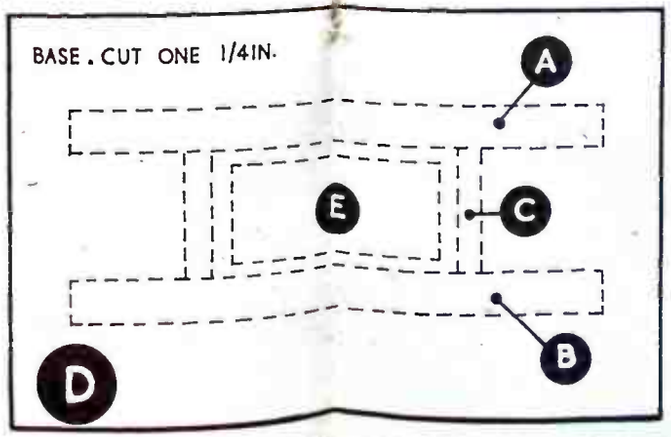
FRONT. CUT ONE 1/4IN.

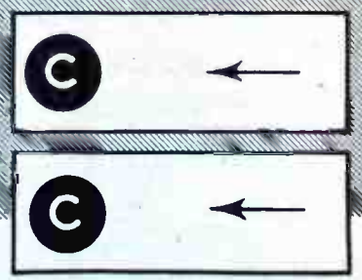
PANELS OF WOOD REQUIRED FOR THIS DESIGN. ONE Q4, ONE G2. PANELS CAN BE OBTAINED FROM HOBBIES LTD., DEREHAM, NORFOLK. PRICE ON APPLICATION.





BLOCK UNDER MATCHBOX. CUT ONE OF EACH 1/4IN. & GLUE TOGETHER

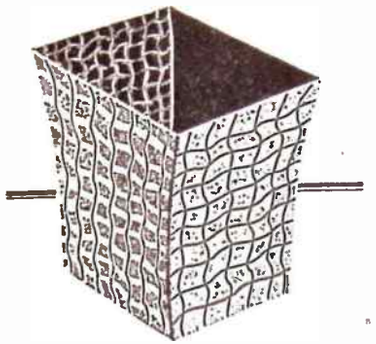




MIDDLE PARTITIONS. CUT ONE OF EACH 1/8IN.

Focus on tidiness

Make a Wastepaper Basket



Described by
S. H. Longbottom

WITH the focus on tidiness in many of the larger towns, it would be a good idea to help the anti-litter campaign in our own homes by the provision of baskets made from cardboard and wallpaper. They are easily made and a carton from your grocer will provide the cardboard. If you have no surplus wallpaper, an odd roll can be bought quite cheaply. Although almost any type of patterned wallpaper will make a colourful basket, care should be taken in the selection, because a large patterned one may prove difficult at the corners where it cannot be properly matched. There is not the same difficulty with semi-plain types, and flowers cut out from other papers and stuck on as an overlay, will prove most decorative.

A base 6ins. square and four pieces for the sides measuring 9ins. by 11ins., as shown in Fig. 1, are required. The curved sides make all the difference to this basket and no difficulty will be met if you follow the instructions carefully. Reference to Fig. 2 reveals the method to adopt. Mark out a spare piece of card as shown to fit the measurements already given. Now take a piece of string and fasten at point (A) with a drawing pin. The string is then pulled quite taut and fastened at the base, point (B), with another drawing pin. With a pencil trace the curve by pushing the string inwards as far as it will stretch and continue to the bottom of the shape. If the pencil penetrates the shape too deeply, the string has not been pulled tight enough; on the other hand, if the curve is too shallow, the string is too taut. A slight adjustment will quickly produce the desired tension for a nice curve. Once this line has been made you may cut out and smooth off with a piece of fine glasspaper, for it forms the template for all sides. You may then mark out one sidepiece, lay on the template and mark out the curved side. The template is reversed to produce the line for the other edge of the side. Having marked out this one sidepiece correctly, cut out and you have a complete pattern for the other three sides. When marking out the other sides from the first one, use a sharp knife in preference to a pencil. The four sides may then be placed together and any irregularities smoothed away with glasspaper.

The next step is to fasten the pieces together. Take a piece of strong paper gumstrip, attaching the sides to the base piece. Stick the gumstrip on both sides. At this stage you may lay the sides on to the wallpaper and cut out sufficient to line the insides and lay aside for the moment. Next prepare sufficient paper for the outsides, in each case making allowance for the outside to overlap the base and corners and the inside pieces to overlap at the top and bottom.

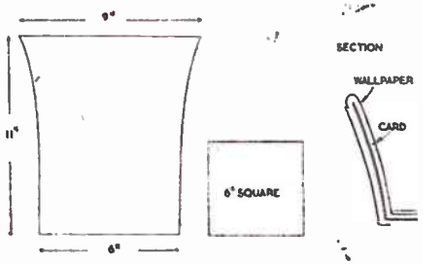


Fig. 1

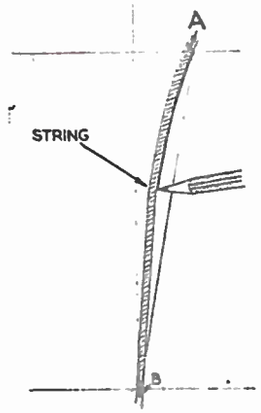


Fig. 2

Cardboard is very absorbent, and it is a wise precaution to apply a coat of decorator's glue-size on both sides. This will help the application of the wallpaper and adhesive quality of the paste.

Following the sizing, which must dry out, the insides may be papered. Take the paper over the top to the outside, overlapping by about ¼in. Similarly at the bottom, completing the sides and then attaching a square piece at the inside base. The sides are now folded up into position and rubber bands slipped over to keep in place while gumstrip is attached to each outside corner. If any difficulty is found in attaching the strip on the curve, it will be helpful to clip a little with scissors at a few points.

The outsides may now be lined with the wallpaper, treating alternate sides. The first paper should overlap at each corner and at the bottom. This applies to the opposite side as well, but the remaining sides should be trimmed quite squarely, overlapping at the bottom only. A good quality of paste should be used and a clean duster to press home the paper. Should any paste find its way on to the surface of the paper, take a damp sponge, removing very lightly. Sponge off rather than wipe, or you may remove the pattern.

While still damp with paste, the basket may be squeezed into a misshape if badly handled. It should be turned upside down with a weight applied at the top. The bonding of the paper and cardboard makes a very substantial job, while gay patterns give charming touches of colour to the home.

Ideas with Paper

CUT discarded newspapers into 12in. squares and use them for clearing refuse from plates and dishes when washing-up. This prevents messy hands and water and there is less chance of a blocked sink or drain pipe.

Newspaper is an excellent medium for cleaning glass. Use the squares as dusters for polishing windows.

When storing blankets, lay newspaper between the folds; this keeps away moths.

Old periodicals make useful stair pads; use them as an undercovering for the stair carpet. (R.L.C.)

Know your Camera — Part 2

THE WORK OF THE LENS

THE eye of any camera is the lens. Lenses vary from single optical mounts to compound cell and multi-lens construction, according to the type and value of the camera.

A good lens is a very costly component, but this is not to say that the more simple lenses fitted to most box-cameras and the cheaper kind of folding cameras are not capable of producing good results. The chief difference is that they work at a smaller opening or aperture than the more costly lens, and in consequence are considerably slower in action.

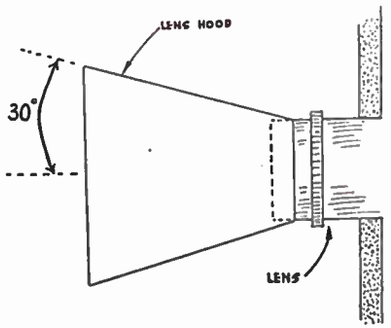
The cheaper lenses are known as single achromatic meniscus lens. These are, unfortunately, not optically correct, as they tend to give a slight curvature to the extreme sides of the photograph which is, however, not normally very noticeable. This defect can be largely mitigated by using a comparatively small aperture or stop number, or by using a fairly long focus lens in relation to the film area; or, perhaps, by a combination of both.

By E. Brown.

It is usual for cameras employing the single meniscus lens to have a maximum aperture of *f*11 with stops of *f*16 and *f*22. This relatively small *f* aperture will require twice as much exposure as the *f*8 aperture fitted on most medium priced cameras, and on the more expensive type employing, say, an *f*4 aperture, the time of exposure will be eight times as long. By these figures, it can be readily understood the limits on speed.

The anastigmat lens

On many cameras costing slightly more than those described, two lenses are symmetrically arranged a small distance from each other, with the stop and shutter diaphragm interposed between. Such a disposition of lenses corrects the curvature fault of the single meniscus lens and permits a larger aperture to be successfully used; this usually being around *f*8. This lens is quite satisfactory for all normal work, but suffers from a defect known as astigmatism which is in effect a very slight lack of definition at the margins of the photograph. It is for this reason that the anastigmat lens is employed on most of the better cameras. With this it is optically correct to ensure an even distribution of definition and sharpness over the entire negative at the maximum *f* aperture of which the lens is capable.



This is known as flatness of field. Due to this flatness of field, very large aperture openings can be used, thus ensuring the utmost speed in exposures.

Many modern lenses are today coated or 'bloomed' with a chemical process, which considerably increases the speed of the lens and also the brilliancy of the photograph. There are many firms who specialize in lens blooming, and if the amateur photographer is the fortunate possessor of an anastigmat lens, he would be well advised to have it coated.

Cleaning

It is very important to always keep the lens clean and free from dust. Dust specks cause a light scatter and spoil the sharpness and definition of the photograph. The lens should be cleaned with one of the special lens tissues that are sold for the purpose, or with a very soft non-fluffy linen cloth. Silk should not be used for this purpose, as the friction of cleaning induces a slight potential of static electricity upon the lens surface, which only attracts a further deposit of dust.

Very often difficulty is experienced in unscrewing the lens mounting, and these should not, in any way, be forced. The easiest and safest way is to wrap several layers of electrician's insulating tape around the projecting lens casing, and loop the end-piece around a fairly long pencil. The pencil is then held in the hand and the lower portion rested against the insulating tape around the lens casing. A gentle pull upon the upper end of the pencil exerts a considerable twisting motion and will successfully unscrew the most obstinate mount.

Quite a valuable adjunct is a lens shade. Its advantages are that it cuts out unwanted sidelight from the lens, thus reducing reflection and 'flare' and making an altogether clearer and crisp picture. Another point is that many photographs of the finest pictorial quality are taken nearly against the light.

A lens shield suitable for one's camera can be purchased from most photographic dealers for a few shillings, or can be easily made as follows. A small cone of thin brass is made with the size of the apex just sufficient to allow a tight press fit to be made over the lens casing. In the case of box cameras with an internal lens the apex should be a tight push-in fit in the lens aperture, but care should be taken to see that the shutter is not obstructed in any way.

The overall length of the cone should be around 2ins., and its incidence of angle should be approximately 30 degrees. This angle is only given as an approximation, as it depends, of course, upon the angle of field of one's camera, but for all normal requirements it can be taken as correct.

The exterior and particularly the interior of the cone is then carefully painted with photographer's dead flat black paint which can be made by mixing ½ ounce of ivory black or lampblack with ½ ounce of goldsize and 2 ounces of turpentine and thoroughly stirred until miscible.

I have advised amateur photographers for many years to avoid taking exposures with the sun at one's back and falling fair and square on the subject. This method only results in flat lifeless studies with a 'soot and whitewash' effect. By arranging the illuminant or sun to fall on the subject over one's shoulder, that is at a slight angle, will render delicate moulding and shading, and will give a photograph of true pictorial quality.

True Book About Films

THIS book takes you into all the many details of film production from the time a screen story forms in the mind of the author, to the time when you queue for your seats in the local cinema. It is said that almost anything can be turned into an interesting film given the time, money, apparatus, imagination and ability to prepare a script. And this book details how it can be done from an amateur angle.

Published by Fredk. Muller Ltd., Ludgate House, 110 Fleet Street, London, E.C.4— Price 6/6.

PULL-ALONG ANIMALS

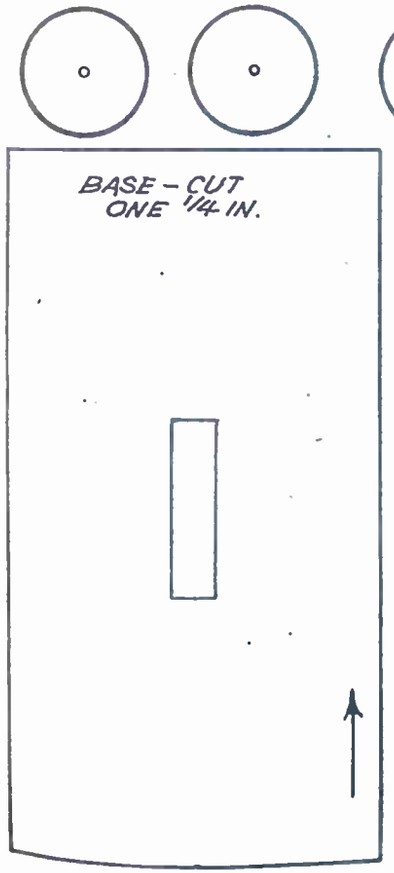
To please all youngsters

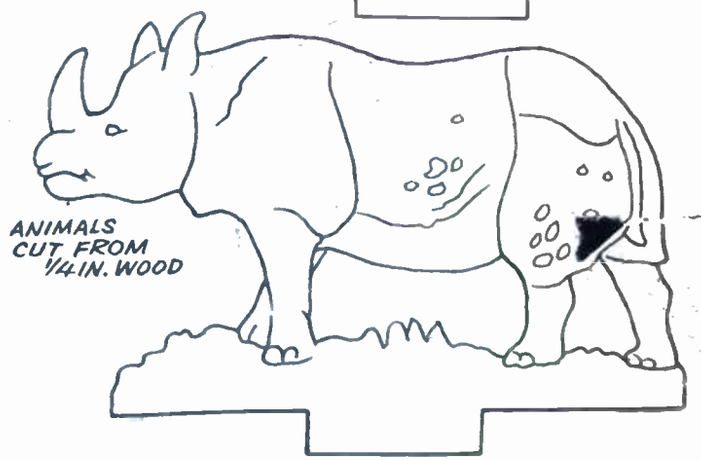
THESE little toys can be made up by young boys and make useful gifts for sisters or brothers.

For each animal cut a base from ¼in. wood and glue the animal in position. The tenon on the animal fits into the mortise in the base.

Add four wheels which can be screwed or pinned in place. Paint the whole toy after assembly and attach a screw eye and cord at the front for pulling along.

M.p.





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