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THE ORIGINAL
'DO-IT-YOURSELF'
MAGAZINE

HOBBIES *weekly*

FOR ALL
HOME CRAFTSMEN

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COFFEE TABLE



WITH CURVED ENDS



Up-to-the-minute ideas

Practical designs

Pleasing and profitable things to make

5^D



Stamp Collector's Corner



THE last article on the subject of South Africa took us up to the year 1937, with the Coronation issue of five stamps and its many flaws and varieties.

The next year saw the issue of two sets, both of them on 14th December. One had the definite aim of providing money for building a Voortrekker monument. There were four values of ½d., 1d., 1½d., and 3d., but they were sold at double face value, so the monument fund benefited with each stamp sold. The designs of this set were: ½d., A Voortrekker ploughing; 1d., A waggon crossing the Drakensberg mountains; 1½d., The signing of the Dingaan-Retief Treaty; and 3d., a picture of the monu-

ment. Each stamp was printed alternately in English and Afrikaans, so that they should be collected in pairs, and it may be of interest to note that the used stamps are worth more than the unused. But, of course, the condition of the used stamp must be good — a very heavily postmarked pair in which the design of the stamp is hidden by a heavy obliteration would not be worth as much as a mint pair.

More about South Africa Stamps By L. P. V. Veale

As in the Coronation set some of these stamps will show spots and blemishes

On the 17th July 1939 three stamps were issued in aid of the Huguenot Commemoration Fund. The postal value was ½d., 1d., and 1½d., but they were sold at double face value, the extra going towards the fund. The Huguenots were the French Protestants who were persecuted from about 1535. The movement became largely a political one; bitter civil wars broke out, and peace was not established until the Edict of Nantes in 1598. But the accession of Louis XIV marked a renewal of struggles and the Edict of Nantes was revoked in 1685. Many Frenchmen were driven into exile, and in 1689 a great many Huguenots landed in South Africa. This was the landing the stamps commemorate.

The ½d. value gives us a picture of the museum at Paarl, which at one time was the old vicarage; the 1d. is symbolic, a cross above the rising sun; and the 1½d. shows an eighteenth century Huguenot home in the Drakenstein mountain

valley. These commemorate the 250th anniversary of the Huguenots landing in South Africa, and they remained on sale until 14th October 1939.

Remember that the dates of issue and dates when stamps are withdrawn from sale are of more than just interest value; they give the length of time that a stamp is available to the public, and from that you can obtain some indication of the chance of the stamp rising in value. If a stamp is available to defray postage for a long time, then it will not be likely to gain much in value. But if it can only be bought for a short time, then there is a chance that it will go up in value.

Note the phrase 'there is a chance', because sometimes people think that a set of stamps will gain in value, and they buy them. Frequently they do go up, and then the buyers start to sell with the result that the price goes down because there are plenty of these stamps for sale. That is the reason you sometimes see a stamp value going down when you quite expected it to go up. For example, the New Zealand 1931 Health stamp in 1954 was catalogued at £6; now it is £4. 10s.

In 1941 there was an interesting issue to illustrate the South African War effort. These are interesting not only for their designs, but also because a short time later they issued practically the



Voortrekker Monument Fund

ment. Each stamp was printed alternately in English and Afrikaans, so that they should be collected in pairs, and it may be of interest to note that the used stamps are worth more than the unused. But, of course, the condition of the used stamp must be good — a very heavily postmarked pair in which the design of the stamp is hidden by a heavy obliteration would not be worth as much as a mint pair.

Remember always that the condition



The two war issues showing the change in design necessary to allow three stamps to be printed on paper used for two; also showing perforating and rouletting.

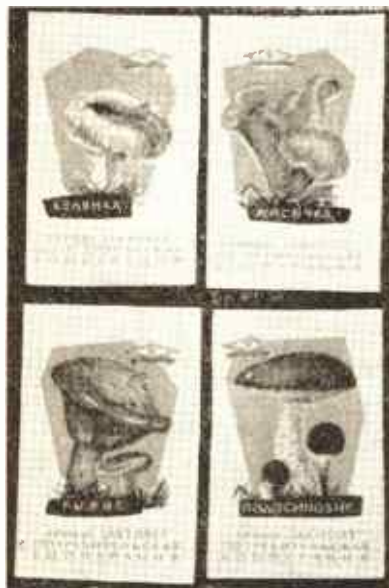
same designs, but each stamp was smaller, the idea being to save paper. If you look at two stamps of the same value, say, the 1d., the large stamp has the nurse with the place name at the side; the smaller stamp also has the nurse but the name is on the top, and the ambulance which is shown on the large



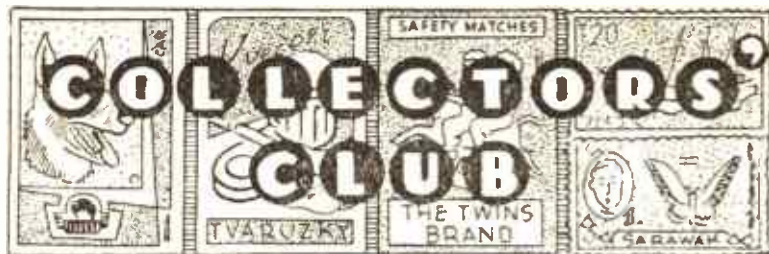
Royal Visit—Cylinder 39

New issues:

RUSSIAN MATCH LABELS



Mushrooms are featured in this new issue of Russian match labels.



On a 'Road Safety' theme—issued February 1962

● Continued from page 210

SOUTH AFRICA STAMPS

stamp has been left out from the smaller.

With the large stamps the 2d. and the 1s. 0d. values are bilingual, whereas this applies in the smaller set to the 4d. and the 1s. 0d. Another interesting point about the smaller stamps is that all round a unit there is perforation, but between each individual stamp there is rouletting. Perforation is when actual pieces of paper are cut out, just as in the present issue of our own stamps. Rouletting is when slits are cut in the paper and nothing is removed. The illustration should make this clear. So you see you can quite easily have a stamp with perforation on the top and bottom, and rouletting at the sides.

After the two war sets, South Africa issued in 1945 three pairs of stamps of 1d., 2d., and 3d. value to commemorate victory. The 1d. design is symbolical of victory; the 2d. of Peace; and the 3d. of Hope.

Two years later there was the Royal Visit to South Africa, and there was an issue of three stamps. The 1d. bore the portrait of H.M. King George VI in naval uniform; the 2d. had King George VI and Queen Elizabeth; and

the 3d. Queen Elizabeth II as Princess and Princess Margaret. You should look carefully for varieties on the 2d. stamps. There were two cylinders used in the preparation of this value, numbered 39 and 6912. If you look at the left-hand end of the scroll there is a small loop; that printed from cylinder 39 has a small break in it, but no such break occurs on the other printing — the Afrikaans stamp. Again, if you look at the centre of the flower on the left side of all the stamps from cylinder 39, you will find eight dots, while those printed from cylinder 6912 have nine dots. Finally, the scroll having the words South Africa and Suid Afrika printed from cylinder 39 is solid, but those printed from 6912 stand out on a narrow band of the scroll.

We have already mentioned the very small stamp with the gold mine design issued in 1948, and in the same year we had the Silver Jubilee stamps printed in blue and silver. So South Africa is one of the very few stamp issuing countries that has had stamps printed in gold and silver.

A RUSSIAN COLLECTOR

'I am a radio-reporter of Kazah Republic of U.S.S.R. My hobbies include stamps, match labels, autographs, postcards and photos', writes VLADIMIR DROZDOV, Tzelinograd, Virgin Soil Territory, Kazahstan, U.S.S.R.



Vladimir Drozdov

Test your co-ordination

AN EXCITING MAZE GAME

THE maze game shown here is a fascinating toy which will give hours of fun. By operating two knobs, the player has to steer a ball on its course over the board, round obstacles and avoiding holes through which the ball may be 'lost'.

The principle on which the game works is that when one knob is turned, the board tilts to one side or another, while turning the second knob tilts the board from front to back. By co-ordinating the movement of the knobs, the ball can be made to travel in the direction required — after some practice!

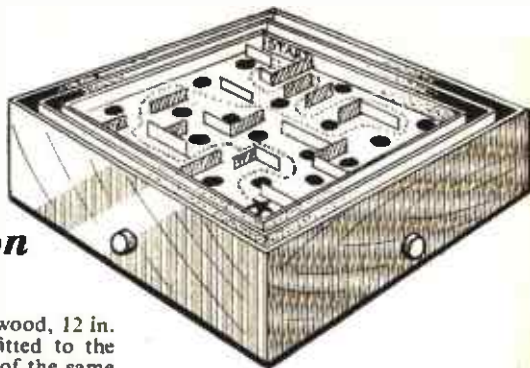
In the following method of assembly the sizes given may be altered if desired. First, a 12 in. square of plywood is marked out in a maze pattern, using short lengths of half-round moulding or $\frac{1}{2}$ in. square wood strip. An example of a possible pattern is shown in Fig. 1. The path to be followed by the ball is shown by a dotted line, and $\frac{3}{4}$ in. diameter holes are drilled at intervals near the path of the ball to serve as traps through which it can fall. The start S, and the finish F, should be at diagonally opposite corners.

By A. Liston

A frame of 1 in. by $\frac{1}{4}$ in. wood, 12 in. square on the outside, is fitted to the board, and a second frame of the same wood, 13 in. square on the outside, is also made. The outer casing is a box of $\frac{1}{2}$ in. thick wood, 6 in. high and 13 $\frac{1}{2}$ in. square on the inside.

The way in which the sections pivot is shown in Fig. 2. The board A and the middle frame B are connected in the middle of each of two sides by two bolts. The gap between the two frames must be filled with washers or distance pieces. The middle frame B and the outer casing C are also connected in the same way with two bolts, but this time at front and back. The bolts should be just tight enough for the sections to pivot on them, but there should be no play or loose movement between the pivoting sections.

The tilting mechanism is shown in Fig. 3. A metal spindle runs from front

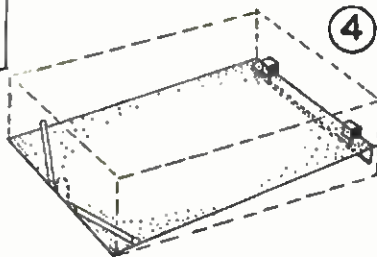
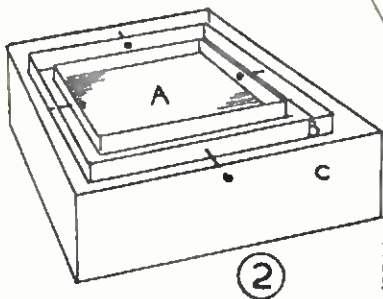
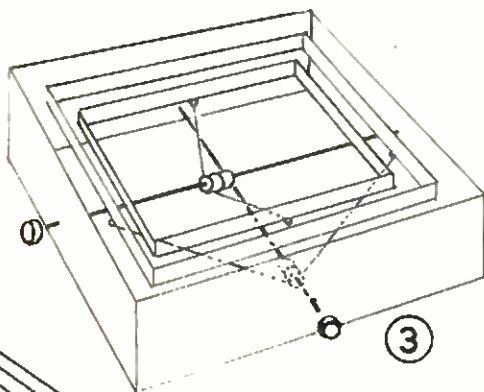
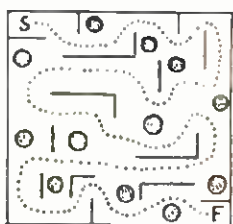


to back of the outer casing, through holes 1 $\frac{1}{2}$ in. from the lower edge, in the centre of each side. A wooden bobbin, such as an empty cotton reel, is fixed in the middle of the spindle, and a strong thread runs from an eye at one side of the board, round the bobbin and up to an eye in the opposite side of the board. A knob is fitted to the projecting end of the spindle at the front, while a washer is soldered to the other end to hold the spindle in position. The action of turning the knob tilts the board from side to side. If the cord slips, several turns should be taken round the bobbin, and as an added precaution, the cord can be stapled to the bobbin in its middle winding.

A second spindle, running at right angles to the first, is fitted at a height of 1 $\frac{1}{2}$ in. from the bottom of the casing. The bobbin on this should be as near the centre of the spindle as possible without fouling the first bobbin. In Fig. 3 the bobbins are shown well apart for the sake of clarity. The cord from the second bobbin is taken to eyes on each side of the middle frame.

After the mechanism has been adjusted to function smoothly, a small wooden block is glued inside the centre of each side of the casing, about 1 in. below the pivoting sections. These blocks act as stops to prevent the pivoting sections from tilting too far in any one direction.

The bottom is then added. This is a piece of hardboard or plywood, which fits inside the outer casing. It is fitted at an angle as shown in Fig. 4, so that returned balls roll to one end, where two guiding strips of wood lead them to a $\frac{3}{4}$ in. wide opening cut in one side. A $\frac{1}{2}$ in. diameter steel bearing, or a marble, makes a suitable ball. The raised end of the bottom is held in place 1 in. above the base of the box by sliding it in between a length of quadrant moulding on the underside and two wooden blocks on the upper side. The bottom is held in place by two screws at the other end.



● Continued on page 213

NOVELTY 'STEREO' PICTURES

A NOVEL method of making stereoscopic pictures can be obtained from a cut-out portrait which has been given a picturesque background. Requirements are merely a portrait, a background and a box of suitable proportions.

The size is not really important for it is possible to modify all measurements to your own particular requirements although these will most probably depend on the size of the portrait and the background available. For example, it is possible to use a picture postcard for a background or a much larger picture cut from a magazine. Consequently, you may use a large or a small cut-out figure. The photographer may make his own backgrounds and for the example shown I made a 10 in. by 8 in. enlargement for the landscape background, a cloud study also being used similarly to good effect.

It will be realized that the background can be changed to advantage as desired or new portraits fitted as required. At the same time it is possible to combine a background scene making an interesting project for fretworkers. In this instance we would suggest a house at one

By

S. H. L.



side, or perhaps a tree and the resulting novelty will be almost like a miniature stage setting.

The size of the box is governed by the size of the background picture. The latter is fitted into the frame so that it curves, eliminating obvious joints at the sides. In order to achieve such a curve make the box a little narrower than the picture. For my 10 in. wide background I made the box 9 in. wide and when fitted into position the resultant curve is self-adjusting. The required measurement can easily be determined by test. Hold the selected picture before you by the sides with a ruler in front. Move the sides inwards, to produce a suitable curve noting the measurement on the ruler. This same test will also determine how deep the box should be.

Fig. 1 shows a simple box made from $\frac{1}{4}$ in. material $2\frac{1}{2}$ in. wide. The height of the box is the same as that of the picture since we do not have to provide for the curve. The four sides can be assembled with glue and pins and a frame made from $\frac{1}{4}$ in. plywood as shown in Fig. 2. Before fastening the frame to the box glue a small strip of thin plywood on the inside. This provides a slot to hold the cut-out in position. Although it has been shown fixed in the centre of the frame in Fig. 2 it may be attached at any point suitable for your own arrangement.

The picture for the portrait cut-out is now mounted on to a piece of cardboard or thin plywood. Use a good adhesive and leave under pressure until dry. Scissors or a sharp knife may be used for cutting round the outline and should there be any tendency towards curling on completion this can be countered by gluing another strip of cardboard on the back.

When making this cut-out allow an additional $\frac{1}{4}$ in. at the bottom to permit fitting into the slot at the back of the base of the frame. It is also advisable to tint the raw edges of the cut-out with black water colour.

The background should be similarly mounted on to thin cardboard to reinforce. Use a thin, well mixed adhesive for this purpose ensuring that it is evenly spread and without lumps which would ultimately show up like pimples.

You will find that the curve of the background adjusts itself quite readily if the sides of the picture are fitted into the corners of the box. A piece of clear sheet acetate can be added inside the front of the frame.

This project will be found very suitable for making holiday souvenirs. You may use a picture postcard of the resort you visited for the background and a snapshot for the cut-out.

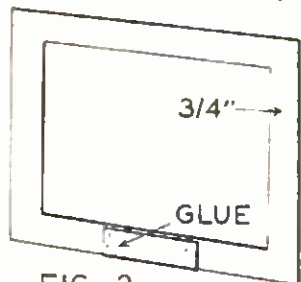
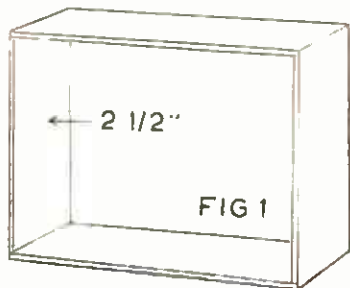
● Continued from page 212

THE MAZE GAME

This method gives easy access to the mechanism, should this need adjusting at any time.

Scoring can be done by painting numbers along the route of the ball near the holes, beginning with 1 at the start, with the numbers becoming progressively larger as one nears the finish. Each player's final score is that number where the ball leaves the maze and falls down a hole.

Other variations on the design of the board include an obstacle golf course, a maze of city streets, or an ocean, with the holes representing dangerous reefs.



PANELLING A STAIRCASE

IF only because it adds dignity to the hall it is worth while panelling the staircase. But remember, it will also mean an end to all those irritating bits of fluff and dust that collect at the bottom angles of the stair rails.

Hardboard is the best material to use and careful thought must be given as to what sizes to purchase. Some waste is inevitable due to the acute angle formed by the staircase. You should aim at buying sheets that will cut this wastage down to a minimum, remembering that abutting sheets must be joined down the centre line of a stair rail. Also, these joins should be made at uniform intervals; otherwise the finished job will not look so good.

Rarely will the height of the stair rails exceed 2 feet so aim at buying sheets of 2 ft. in width or multiples of 2 ft. Due to the acute angle at which they must be cut, work on a basis that a 6 ft. length of sheet will only panel in around 4 ft. 6 in. of stair rails.

Where most people go wrong is in measuring the height of the rails to be panelled. The height is *not* as shown at 'A' in Fig. 1, by using a rule parallel with the stair rails. It is shown correctly at 'B', which is the distance at right angles from the top of the string board to under the banister rail. If you do not possess a T-square, use anything square to obtain this measurement, such as a tea-tray or a picture frame.

Now cut your sheets to this width. Then to get the angle at which to cut the hardboard, proceed as shown at 'C' by laying the sheet behind the rails and marking down the edge of one rail. The first off-cut off the sheet can be used as a

template for all subsequent cutting of other sheets.

The sheets should, of course, be treated overnight by lightly spraying them with water and laying them out on a flat surface. When cutting, support them on a firm surface or across two saw-horses. Use a panel saw and not a coarse cut and always cut with the smooth side uppermost.

By E. Capper

As stated, sheets must be joined down the centre line of a stair rail. However, if this means a great deal of wastage, additional rails can be fitted. They must, of course, be of the same thickness as the existing rails and the angles at the top and bottom should be cut accurately. They are then held by a wire nail driven in obliquely at each end. The main thing to aim at is uniformity of the lengths of the panels.

A length of timber of the same thickness as the rails must be added to the inside face of the newel post between the string piece and the banister rails. This will serve as a support to which the free end of the hardboard sheet can be tacked. In some cases, where the rails are fitted very close together, it may be possible to dispense with this support.

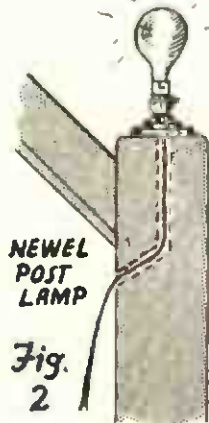
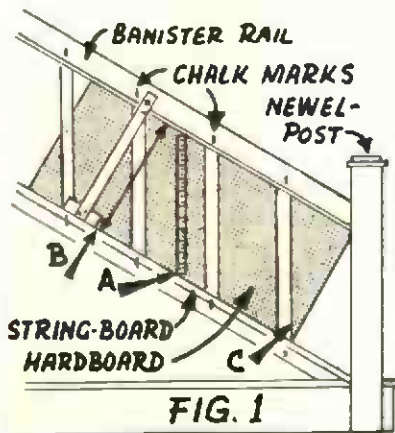
To cover the joins, shallow half-round moulding is used. If by any chance you have cut the width of the sheets irregular or a trifle short, gaps can be covered with small quarter moulding.

Before any fixing is done, the rail positions should be marked with chalk on the banister rail and the string piece, as shown in Fig. 1. Then, when the panels are provisionally tacked in position, guide lines can be used for nailing into the hidden rails. Use rustless $\frac{1}{2}$ in. panel pins and make sure they are knocked in flush.

The finished panelling can be treated by either painting, stain and varnishing or papering. A particularly pleasing effect is to use an imitation wood grain paper. If you decide to paper there will be no need to cover the joins in the sheets with moulding. Instead, fill them in and smooth down.

Don't be tempted to use fluted hardboard for this job. Otherwise you will find you have even more dust-collecting corners — at the bottom of each flute.

Whilst you are panelling the staircase you may care to fit the attractive newel post lamp shown in Fig. 2. If there is a knob at the top of the post, this must first be sawn off flat. Then a $\frac{1}{2}$ in. hole is drilled vertically down the post and another, obliquely, from the side of the post, so that they meet. A batten holder is fitted over the top hole as shown and the connected flex taken down through the hole and behind the panelling, to emerge at a near-bottom position for connection to the nearest socket point.



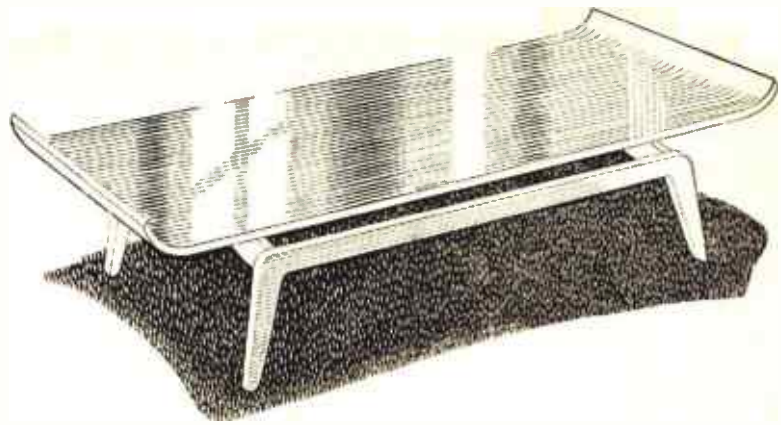
MORE HUMBROL COLOURS

Modellers who are familiar with the present range of popular colours in the small Humbrol One-hour Plastic Enamel tins, will be interested to hear that another 10 shades are now available in the 2 oz. size, priced 1s. 6d. each. All gloss Humbrol colours are non-poisonous and light fast. They dry in the hour.

'TOPPS' FURNITURE SPRAY

'Topps' Furniture Spray manufactured by E. R. Howard Ltd, of Ipswich adopts the very latest technique in the acrosol field. The makers claim an unsurpassed 'piano finish' without rubbing or buffing, indeed, 'you spray and dust for instant shine'. The product is recommended for all glossy surfaces such as paintwork, plastics, metals, porcelains and mirrors. It costs 6s. 0d. for a generous-sized container.

A long and low elegant COFFEE TABLE WITH CURVED ENDS



THIS long low coffee table makes an elegant piece of furniture for the modern home. Standing 12 in. high it is 48 in. long and 15 in. wide. The top consists of a $\frac{3}{4}$ in. plywood panel curved at the ends and veneered on the top side with oak, sapele or walnut. This is fixed on to a hardwood stand

which can be stained to suit the top, giving the modern appearance as shown in the illustration.

The side and end views in the construction are shown on the design sheet and give the overall dimensions and

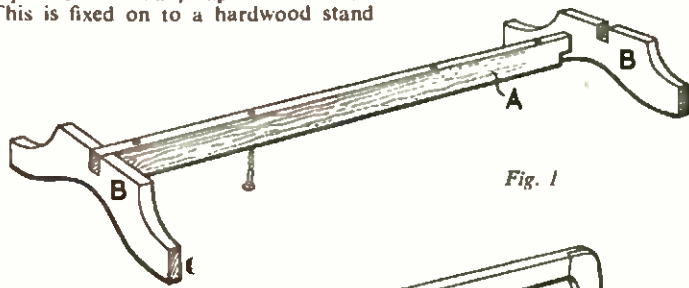


Fig. 1

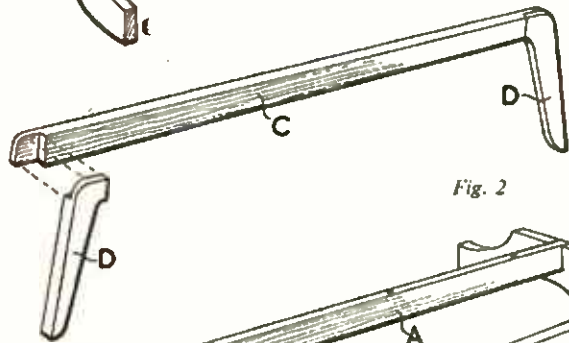


Fig. 2

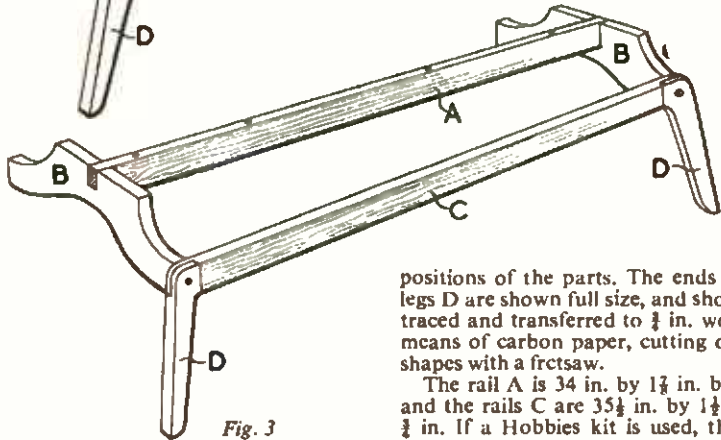


Fig. 3

positions of the parts. The ends B and legs D are shown full size, and should be traced and transferred to $\frac{3}{4}$ in. wood by means of carbon paper, cutting out the shapes with a fretsaw.

The rail A is 34 in. by $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. and the rails C are $35\frac{1}{2}$ in. by $1\frac{1}{2}$ in. by $\frac{3}{4}$ in. If a Hobbies kit is used, the dia-

★
★ **COMPLETE KIT FOR** ★
★ **75s. 9d.** ★
★
★ **A veneered panel with curved ends,** ★
★ **wood, screws, working design, etc,** ★
★ **are contained in Hobbies Kit No.** ★
★ **3473, price 75s. 9d. from branches** ★
★ **or direct from Hobbies Ltd,** ★
★ **Dereham, Norfolk (carriage free).** ★
★

gram on the design sheet shows how the parts are laid out and cut from a standard Hobbies furniture panel (36 in. by 10 in. by $\frac{3}{4}$ in.).

After cutting out, clean up all parts and commence construction by making up the centre rail and ends as shown in Fig. 1. These three pieces are notched together, glued and further secured with panel pins.

Make up two leg assemblies as shown in Fig. 2. The legs and rails being halved together and glued under pressure. Note that the ends are nicely curved as shown in the diagram.

Now glue and screw the leg assemblies to the ends of pieces B as shown in Fig. 3.

The top is attached by means of four countersunk screws ($2\frac{1}{2}$ in.) through the rail A, as shown in Fig. 1. To avoid the screw penetrating through the top of the table, be careful not to countersink too deeply. Screw points can be filed off if they are likely to protrude through the veneer and thus spoil the table surface. Glue will be added to the tops of rail A and the ends B, and the screws will give added strength.

All woodwork will be filled and stained as required. Give three coats of varnish, rubbing down in between coats with wet silicon carbon paper. A good finish can also be obtained with polishes available from Hobbies Ltd.

NEW Thoughts on

RAILWAY MODELLING



I WANT to give you a few ideas on how to make up a host of small items that I am sure you will find very useful on your railway. I cannot stress too strongly that most railway layouts seem to be bare with regard to lineside fittings, and it is amazing the difference a few little 'bits and pieces' can make.

If you take a journey by train, and are observant, you will see things lying along the track such as spare sleepers, fire or other buckets, shovels, barrows, and all kinds of things. On stations you will see racks of fire buckets, fire hose boxes, weighing machines, porters' trolleys, and countless other little items, that make it look like a railway station. Most of these can be made at little or no cost.

With a fogman's hut you will usually find a brazier. Get a length of dowel (for OO gauge models this should be $\frac{1}{8}$ in.

diameter). You will want a piece about 6 in. long if you are going to make several fires. From thin paper cut strips about 2 in. wide. Rub the end of the dowel for about 2 in. with a candle. Don't put too much on. The idea is that the glue that we are going to put on the paper should not stick to the dowel. On one end of the paper strip put some quick drying glue or paste. Next, roll

with the knife on the mark you will be able to get nice level cuts.

Punch a series of holes all over the sides of the small tube sections, and add a disc of cardboard for the bottom. For legs use thin strips of card. Cut them not more than $\frac{1}{8}$ in. wide, and glue three to each brazier. Paint matt black, and fill the brazier with red metallic paper rolled into small balls. If you put your fogman's hut on a base about 10 ft. long by 5 ft. wide (scale feet, of course), and glue your brazier in front you will see what I mean by effect. To make it even more realistic, under the brazier lightly glue some coke dust to give the idea of ashes.

I would not suggest that all fogmen's huts should be so treated. On some of them you could put your brazier without the fire, or lay the brazier on its side. Sometimes you even see the hut itself lying down beside the track, so you have plenty of choice.

Using the same paper tube idea we can make oil drums in several sizes. The method is the same in the main, but here one will have to add embellishments. Select a dowel rod of a suitable size for the drum we have in mind, say, $\frac{1}{8}$ in. or $\frac{3}{16}$ in. or even $\frac{1}{4}$ in. Proceed as before with making up tubes, and mark them off to length. On each side of the ends of each barrel glue on a narrow strip of paper to represent the bands. Cut the drums off to length, and then cut some lengths of the dowel that you have used for the core. The length of these pieces of dowel should be $\frac{1}{8}$ in. less than the length of each drum tube. Glue these pieces of dowel into the tubes, making sure that you have an equal amount of the tube showing at each end. You will then have the sunken top and bottom. Paint the oil drums in gay combinations of colours, and scatter them near plate-layers huts, on goods shed platforms, in goods wagons, etc.

You can make up a small frame of thin wood, and place several drums on their sides on this.

Packing cases are simply blocks of wood, of varying sizes, scored to show the planking, and with strips of wood glued round. One of the finest things for making these strips round cases are the plain wooden tapers from tobacconists. You could, of course, use veneer that is sold primarily for marquetry work. If

MODELLING SMALL ACCESSORIES FOR STATION & TRACK

By F. A. Barrett

the paper round the dowel, and make a tube of about three thicknesses of the paper. With your scale rule mark off from top to bottom of the tube a ring every 1 ft., i.e. in our case 4 mm., and with a sharp knife cut the tube into sections. If you roll the tube on a bench



BRAZIER



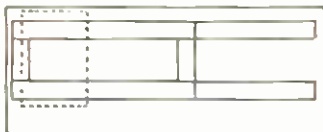
OIL DRUMS



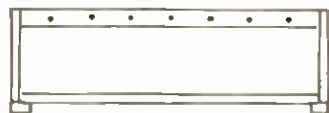
SIDE VIEW



PACKING CASE



PLAN
OIL DRUM RACK



FIRE BUCKET RACK



WALL TYPE

BUCKET



FIRE HOSE BOX



SCALE OF FEET

Experimenting with Pendulums

TIE a heavy nut to a long thread and let your improvised pendulum swing whilst suspended from your hand. It will vibrate slowly back and forth and you will be able to observe that the time intervals between its complete swings are regular, in spite of the fact that the distance the heavy 'bob' moves through is continually growing less as the force of gravity brings it to rest. A complete swing may be defined as a movement from extreme left to extreme right and then back to the left again. These observations will explain why a pendulum of fixed length will be used to regulate the machinery of some clocks.

The period of swing of a pendulum having a fixed length is always the same and this, within reasonable limits, is

that the period of a pendulum 39½ in. long will be two seconds, which means that it will take exactly one second to describe one beat (from extreme left to extreme right). You may employ such a pendulum to time operations of fairly brief duration. For really accurate timing the length of the pendulum must be measured from the centre of the bob to the point of suspension of the thread.

By A. E. Ward

Count thirty seconds with a homemade pendulum while a friend feels his pulse and counts the heart beats. Multiply by two, to obtain the proper pulse rate (normal is about 72). Ask your friend to run up a flight of stairs and hurry down again. Let him take his pulse a second time and verify that greater physical exertion will result in an increased pulse rate. Galileo discovered that the period of a pendulum will be regular when, as a young man, he used his pulse beat to time the swinging of a lamp during a service in Pisa cathedral.

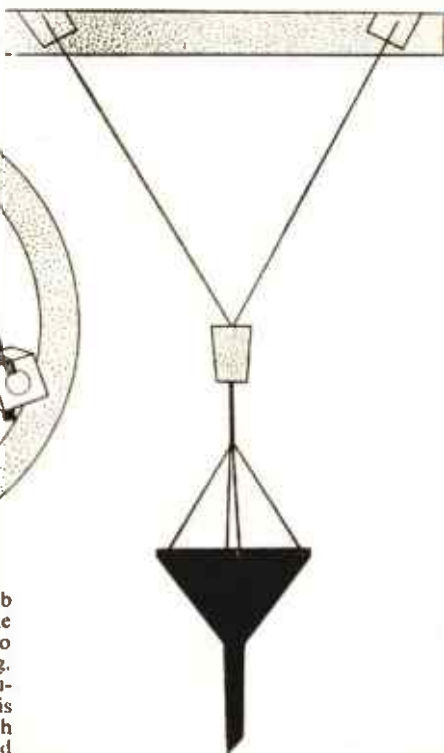
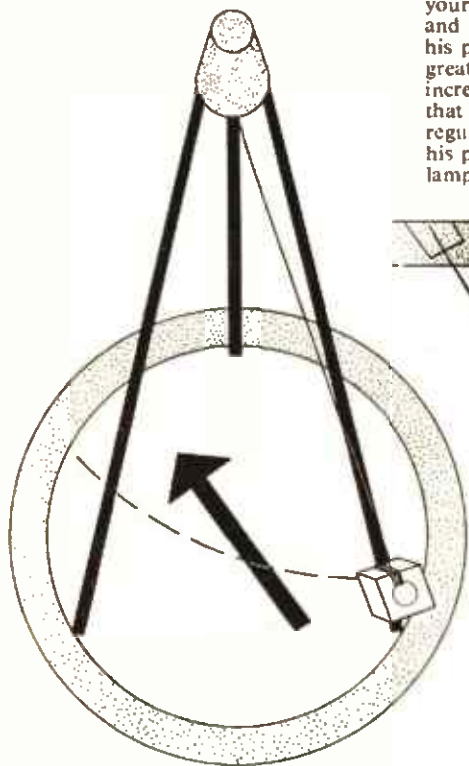
Galileo also demonstrated that the period of a pendulum depends upon the square root of its length and not upon the weight of its bob. Thus you may halve the period of your timing pendulum by reducing its length to one quarter and you can double its period by making the string four times as long.

The French scientist Foucault used a pendulum to prove that the earth rotated upon its axis. Your own simple experiments will confirm one of the basic principles of Foucault's technique. Observe that your vibrating pendulum will always swing in the same plane if you hold it quite steady. It will not tend to turn. Foucault suspended a heavy pendulum from the roof inside the dome of the Pantheon, in Paris. Its heavy bob was fitted with a needle-like point which drew a stroke in some sand as the mighty apparatus swung from side to side of the building. As time passed, the marks in the sand seemed to 'turn' about the middle. Foucault argued that, since his pendulum vibrated along a straight track, the earth itself must have turned, in order to produce the crossed marks in the sand.

Working model

You may have seen the huge Foucault pendulum which swings inside the Science Museum at South Kensington, London. Visitors to the exhibition may witness for themselves the evidence that Foucault produced to convince his countrymen of the earth's rotation. You can make a working model to illustrate this historic experiment. Erect a tripod, formed of three 2 ft. lengths of ¼ in. diameter dowel rods, upon a circular tea tray. Secure together the tops of the dowels by pressing them into holes pierced in a large cork. Open out the base of the tripod and fix in place with strips of Sellotape. Suspend a pendulum with a heavy nut bob underneath the tripod, then paste a cut-paper arrow across the middle of the tray.

Set the pendulum swinging along a path in line with the paper arrow. While the pendulum continues to swing, gently turn the tray about its centre. The pendulum will continue to oscillate in the same plane and soon there will be a considerable angle between the plane of swing and the paper arrow. When you turn the tray you imitate, in exaggerated fashion, the rotation of the earth about its axis. This simple demonstration will illustrate the practical part of Foucault's experiment but, in fact, the French scientist needed to employ mathematical



irrespective of the distance the bob actually swings through during one 'beat'. Amplitude is the name we give to the depth or distance of each swing. Thus you will notice, a swinging pendulum will become slower as its energy is exhausted and the amplitude of each beat becomes less. Galileo discovered

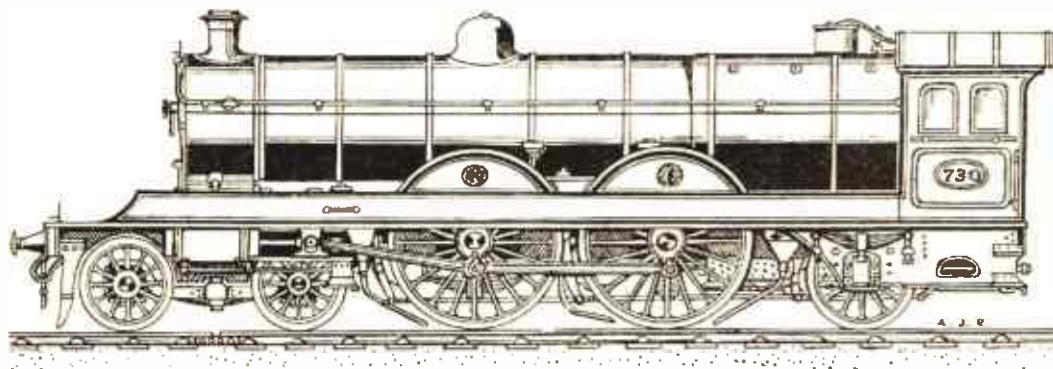
● Continued on page 219

N.E.R. 4-CYLINDER ATLANTICS

THE 4-4-2 Four-cylinder Compound 'Atlantic' express locomotive No. 730 shown in the drawing was one of two locomotives built in 1906 at the Gateshead Works to the designs of W. M. Smith for the North Eastern Railway.

with inside bearings for the carrying or trailing axle were the three French DeGlehn four cylinder Compound 'Atlantics', Nos. 102 *La France*, 103 *President*, and 104 *Alliance*, built for the Great Western Railway at Belfast in 1903 and 1905.

effort to further enhance their road performance they were later provided with superheaters. The Compound 'Atlantic' type was, however, never perpetuated, and they were finally broken up at Gateshead in 1934, the three-cylinder 'Simple' 4-4-2 engine having become



Mr Smith was at the time the Chief Draughtsman at Gateshead, and when these engines first appeared, they were rather unusual for the N.E.R. in that they were provided with Belpaire boilers, and they were the last and final Compound engines to be built for this line. They were erected from Mr Smith's drawings under the supervision of Mr Wilson Worsdell, the Locomotive Superintendent.

The leading features incorporated two outside high-pressure cylinders $14\frac{1}{2}$ in. diameter by 26 in. stroke, and two inside low-pressure 22 in. diameter by 26 in. stroke, all four cylinders in line actuating the leading coupled axle. Piston valves driven by inside valve gear were adopted for all four cylinders, that for one of the engines being Stephenson's, and for the other — No. 731, Walschaerts gear. Ratio — 2.38. The wheel diameters were: bogie 3 ft. 7 $\frac{1}{2}$ in., coupled, 7 ft. 1 $\frac{1}{2}$ in., and carrying 4 ft. The wheelbase was 6 ft. 6 in. plus 7 ft. 3 in. plus 7 ft. 6 in. plus 7 ft. 6 in. Total — 28 ft. 9 in. The boiler heating surface was: tubes 1,916 sq. ft., firebox 180 sq. ft., giving a total of 2,096 sq. ft. The grate area was 29 sq. ft., and working pressure 225 lb. per sq. in. The total engine weight in running order was 73.6 tons, and the weight available for adhesion was 39.15 tons. The carrying axle under the footplate was provided with outside bearings, this being the usual practice for the various British 'Atlantic' type locomotives, the only 4-4-2 locomotives to run in this country

The N.E.R. Smith Compound 'Atlantics' proved successful and reliable upon their introduction, and at the time showed some marked economy in coal, oil, and water consumption, and in an

mostly standard as the principal express type on the N.E.R. at the time. The tenders provided were of the usual N.F.R. six wheels type of the period.

(A.J.R.)

● Continued from page 218

PENDULUM EXPERIMENTS

calculations as well, in order to make his proof conclusive.

A pendulum which is free to swing in two directions at once will enable you to produce beautifully curving patterns. The special pendulum needed is a small plastic funnel. Bore three or four holes, using a red hot needle, round the rim of the funnel. The holes will help you when you attach several lengths of strong thread to the funnel rim. Tie the cords together so that the funnel may be evenly suspended. Thread a 3 ft. long loop of the same thread through a small cork, using a darning needle. Tie one pair of ends of the doubled thread to the strings supporting the funnel and open out the free ends of the thread to make a large Y figure. Use strips of Sellotape to secure the upper 'arms' of the Y to a broomstick and fasten the broomstick, by means of a clamp or a pile of heavy books, so that it projects over the edge of a table.

The funnel should hang about 2 in. above the floor. Place a large sheet of black or brown paper beneath the pendulum. Now fill the funnel with free-running table salt and hold the funnel to one side. Naturally during these operations, you will keep a finger over the end of the funnel to prevent the salt from spilling. When you finally release the pendulum, its complicated path of swing will cause the salt to be deposited upon the paper in a beautiful and intricate pattern. Slide the cork up or down so that you alter the ratio between the lengths of the upper and lower parts of the pendulum. Repeat the experiment. Obtain many new designs by varying the amplitudes of your 'two-way pendulum'. The patterns produced by your salt 'harmonograph' are taken seriously by scientists who wish to study the relationships between sets of different vibrations which are able to exert influence upon each other.

WITH ROD & LINE

IN my last article I wrote about fly fishing for trout, and propose to go a stage further this week.

First of all we hear quite a lot about fly fishing being the most sporting method of taking trout, and with this I am in the fullest agreement. What I do dispute, however, is the necessity to tie a fly which is the exact imitation of the natural fly on the water. You just can't make this exact imitation. Immediately you pick up the hook you have got hold of something solid and opaque, which isn't found in the natural insect.

The silks and feathers used, whilst possibly being a close approach so far as colour is concerned, cannot look anything like the living creature. Therefore, I am in favour of using modern materials rather than keeping to the feathers and silks used by our forefathers. They used these materials simply because they had no others. Today the natural insects can be so faithfully copied in plastics that you don't merely make a near copy, but you have an exact imitation.

These plastic lures can be cast on fly tackle, and looking through my box I find that I've got about a couple of dozen different things ranging from plastic Mayflies down to the smallest water beetles.

Trout feed on their own kind, too, if they manage to get hold of them, and so I've got tiny copies of fish no more than

$\frac{1}{2}$ in. in length. All these lures would be fished beneath the surface as with the wet fly.

I've used them, and I catch fish on them, otherwise I would not recommend their use. They are very light, so you will not damage your fly rod in

Further notes on

TROUT FISHING

By 'Kingfisher'

casting them, and if you vary your technique somewhat you will catch trout on them. The way to vary your technique will depend on the water you are fishing. Some waters are noticeably clear of surface weed whilst having a layer on the bottom, this in particular being the case in lakes. In rivers where the faster currents flow you may well be fishing over sand and fine silt or even small gravel. Here you can let the lures trip along the bottom. This applies to the beetles and the small freshwater shrimps.

With the small fish you will have to keep them moving, and I find that to use these in places where there are tiny stones and pebbles on the bottom is offering them to the trout in the very place where they will be most likely to search for them. The small fry of trout and many other fish which like the faster waters, such as, say, grayling and dace will be in the vicinity of these small pebbles, as they offer a safe retreat when large fish are on the prowl for food. It is useless to fish them in a fast current in which such a small fish could never maintain its place.

Trout are wise creatures — they know just where to look for certain kinds of food. To see any particular kind miles from where it should be raises their suspicions immediately. The beetles, shrimps, caddis grub, and Mayfly larva, then, should be fished on the bottom, and in the places where they are most likely to be found in Nature.

It is a wise fly fisherman who reads a book about underwater life so that he knows where these larva live. He can put his imitation in the same place.

If you have weeds near the bank you can also fish these lures a bit off the bottom, as they often crawl up the stems of water plants in their search for food.

The plastic flies, such as March Brown, etc. should be fished off the bottom, and in the same manner as the usual fly. You may feel a little dubious about trying out these things, thinking that if you don't get fish on them you have wasted your day. But I am a firm believer in making experiments because by so doing I find that my blank days so spent are well repaid for in the increased catches which are made later on when I've improved my methods.

The plastic Mayfly should be fished on the surface, of course. I suggest that you try these lures out for a change.

Miscellaneous Advertisements

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Beginner's Guide to Photography

by Edward C. Partridge

THIS book is designed for people who are taking up the hobby of photography for the first time, who know nothing about it, and are puzzled by the multiplicity of apparatus and materials offered to them. What is the best way to start? What kind of camera will suit you best? How can you avoid the pitfalls which may prevent you from getting good results? You will find all this explained in simple language; and if you already own a camera, a study of this book will be well rewarded. Very well illustrated with explanatory photographs and diagrams.

Published by George Newnes Ltd, Tower House, Southampton Street, London, W.C.2 — Price 10s. 6d.



EDEN Kane was born in Delhi, India, the son of a tea planter. At an early age Eden moved with his family to Calcutta. He went to boarding school in Darjeeling (transportation between home and school was by plane), from where Mount Everest was clearly

until leaving school at the age of sixteen.

Until he turned professional singer about a year ago Eden worked for a while as trainee architect, then as a gents' outfitter's assistant in Croydon. It was here that he began to develop the taste for clothes which was to so impress the judges at the Chelsea talent contest and which will probably always be associated with him for the remainder of his career.

His ambition — if he succeeds in making money — is to have his own plane and fly it all over the world. Other ambitions: a Bentley car . . . an extensive wardrobe for a bachelor flat . . . a career as an actor (he is studying dramatic art), as well as that of singer.

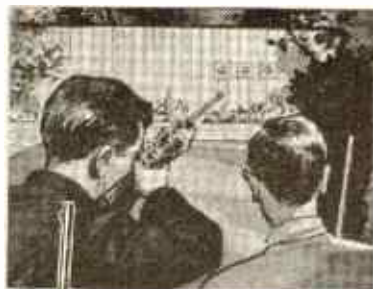
EDEN KANE



visible. He took part in expeditions up the slopes of the mountain on school outings.

When Eden was seven the family returned to England and settled in Croydon where Eden attended grammar school at Waddon. He joined the Air Training Corps and flew a good deal

Eden lives with his mother in Norbury, Croydon. He has a twelve-year-old sister Lorraine (who is very proud of her elder brother though 'she hates to admit it') and two brothers, Peter (17) and Clive (16), both of whom are guitarists. They run their own group and have accompanied Eden from time to time.



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AN OUTSIZE IN HOBBIES

A MAN with an outsize in hobbies is 60 year old George Howard, for he has converted his one-acre garden overlooking the sea at Overcliff Road, Southbourne, Bournemouth, into a wonderland of coloured shells.

George started the shell garden twelve years ago and has spent over £1,000 of his own money on it. Every year he gives, on an average, £350 to local charities, freely donated by visitors who come to gaze at and admire his work.

The garden has been transformed with sea shells, pebbles, statues and stucco into a wonderland of grottoes, miniature churches, pools and tableaux.

George does not make a penny for himself from the garden. Everything goes to charity. His bureau drawers are filled with letters of thanks.

George shifted 800 tons of rubbish before he could start his garden. Every minute of his spare time he uses to improve it. Often the wind blows powdery sand from the nearby shore to cover his

work. With a small handbrush, he goes round removing the sand.

In his early days, George was a roamer. He travelled all over the world, doing any job that came his way. Always he collected sea shells and ornaments for the garden he planned for the future. Now visitors to his garden send him shells from all over the world.

Twenty-eight years ago George arrived in Bournemouth from Cornwall with his wife and two children and 6s. 8d. in his pocket. He made up a barrow from junk and touted around for odd jobs to do. Now, he is comfortably well-off with his

own scrap business and an owner of nine flats.

George has a philosophy about life. 'I was born in abject poverty and I determined to live solely to bring happiness to other people' he told me. 'That was the motive behind my shell garden. I believe that if you live a good life you will succeed.'

'Any reader of *Hobbies* who visits my garden and would like some advice on how to start, say, a miniature garden like mine, has only to ask for me and I will give him or her any advice I can offer,' says George. (E.C.)



The Magic Wishing Well in the Shell Garden

MODELLERS AID U.S. MISSILE INDUSTRY



John Blair, model maker at Lockheed Missiles and Space Company, packs a parachute into a model of a Discoverer Satellite Capsule

MODELS play a key role in the U.S. missile and space industry. Developments at the Lockheed Missiles and Space Company first take shape and form under the skilled hands of the miniature-makers. Projects such as an orbiting communications satellite system or a moon rocket first come to three-dimensional life in the model shop.

'Models enable scientists and engineers to see what their brain children actually look like,' says Mr Eric Osterlund, who heads Lockheed's band of small-scale precisionists. 'They see them in action. They get the feel of concrete relationship. It helps them think.'

'A new five-ton machine built to do a special job on the Polaris programme had to be installed in the right place. The model determined exactly the right place.

When the scientists finish with a model, it goes to the personnel people, to serve double duty in job training.

Most models are built in 1/48 scale. That is $\frac{1}{2}$ in. to the foot. If it's for a plant layout, $\frac{1}{4}$ in. floor squares represent square footage. The engineers move the models around on this floor to find the most efficient layout.

Sometimes the machines to be represented are very complex and the scale must advance to 1/10 so that the hand-wheels and cranks and other working parts won't get too small.

The more complex the problem, the better Mr Osterlund and his group like it. They're at their happiest, though, adapting ingenious materials. A pin becomes an axle. A dress snap is a breakway part, say a fast disconnect fuel line on a satellite. A necklace chain drives a power machine. Parts from old alarm clocks and radios are subject to transformation into advanced space age machinery.

Polaris missiles, the real ones, are armed and transferred to Polaris submarines at a Charleston (S.C.) naval base. The whole thing was first worked out on a table top by the LMSC model makers, thus saving hundreds of thousands of man-hours and dollars.

'The water was the challenge,' says Mr Osterlund. 'We finally hit on the idea of thick paint. When it was half dry we worked it into waves. It looked great — more like water than water.'

(E.)

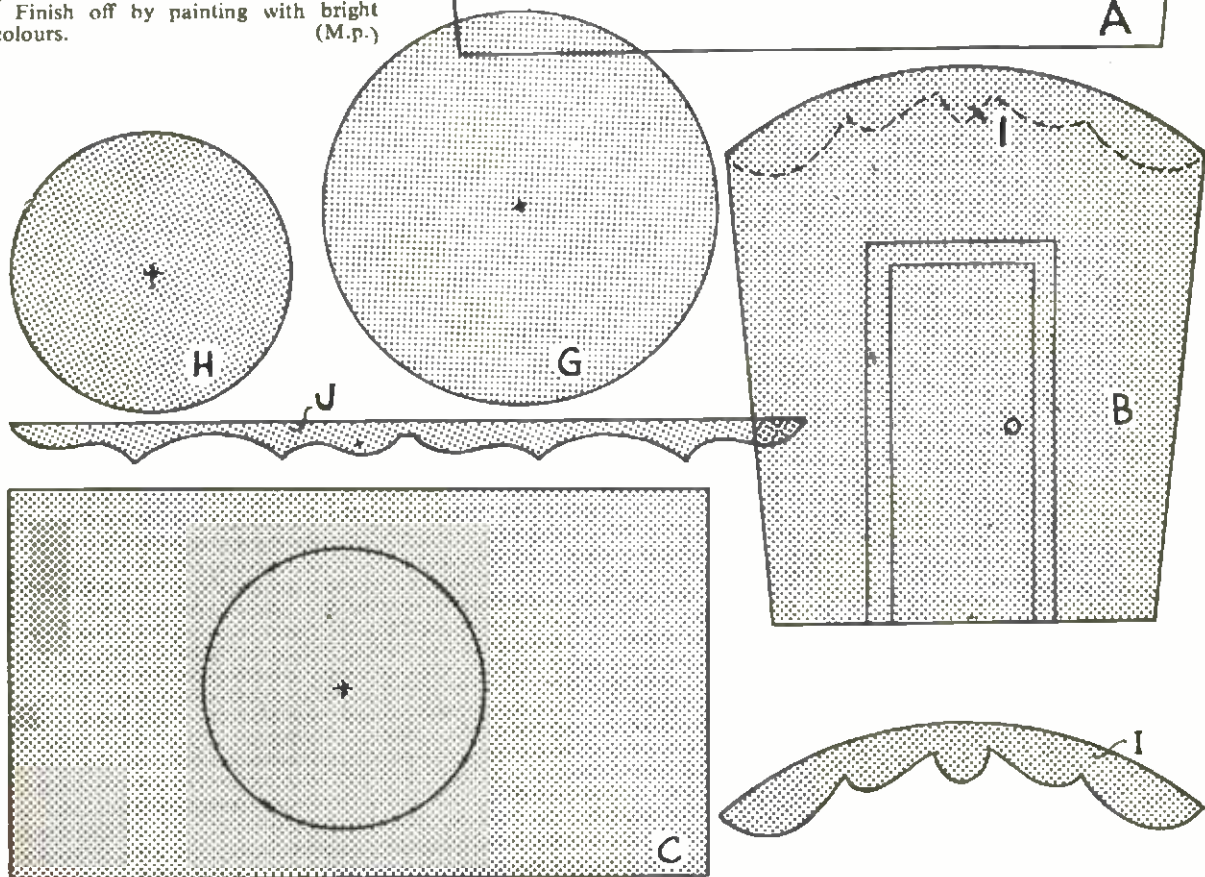
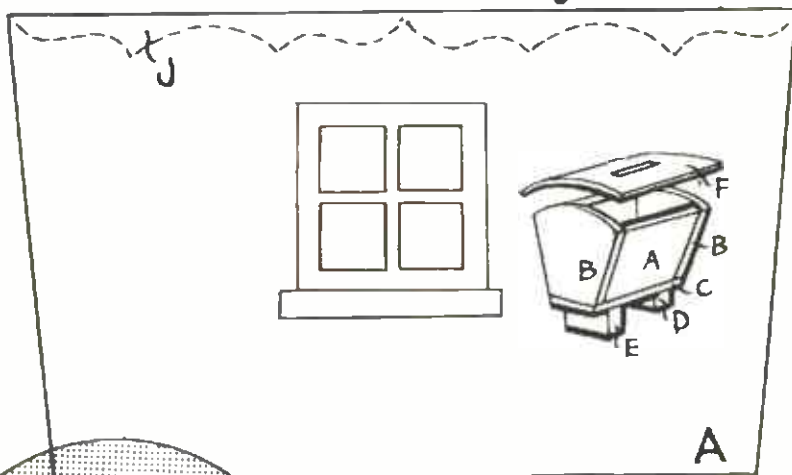
CUT two of A, two of B, and one of C from $\frac{1}{4}$ in. wood, using a fretsaw. The roof F is a piece of thin plywood with a slot cut for the coins. F should be large enough to overlap all round. Glue them together as shown in the detail. The axle E is a piece of $\frac{1}{4}$ in. by $\frac{3}{8}$ in. strip, and the axle D $\frac{1}{2}$ in. by $\frac{1}{2}$ in. Glue them under the floor C. Note that the floor has a circle removed with the fretsaw — this circle will be put back in place, and covered with brown paper pasted over it.

The rear wheels G are attached to the axle D, and the front wheels H to the axle E by means of round-head screws. Cut two each of the overlays I and J from $\frac{1}{4}$ in. wood, and glue them in the positions indicated. The door and windows are, of course, painted on. Other refinements such as chimney and steps could be added if desired. Make a chimney from a small piece of $\frac{1}{4}$ in. round rod. Steps could be cut from $\frac{3}{8}$ in. wood.

Finish off by painting with bright colours. (M.p.)

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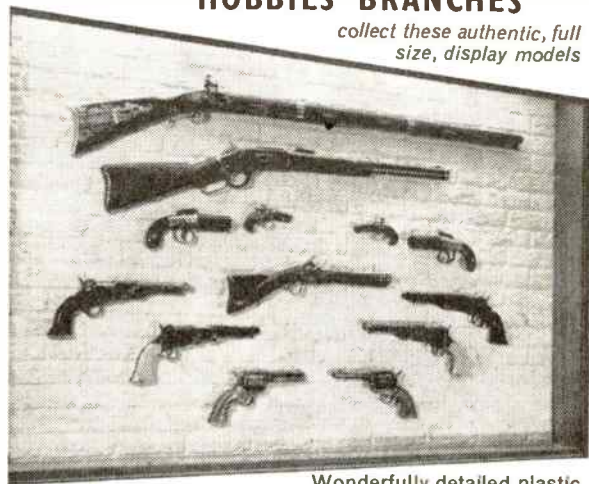
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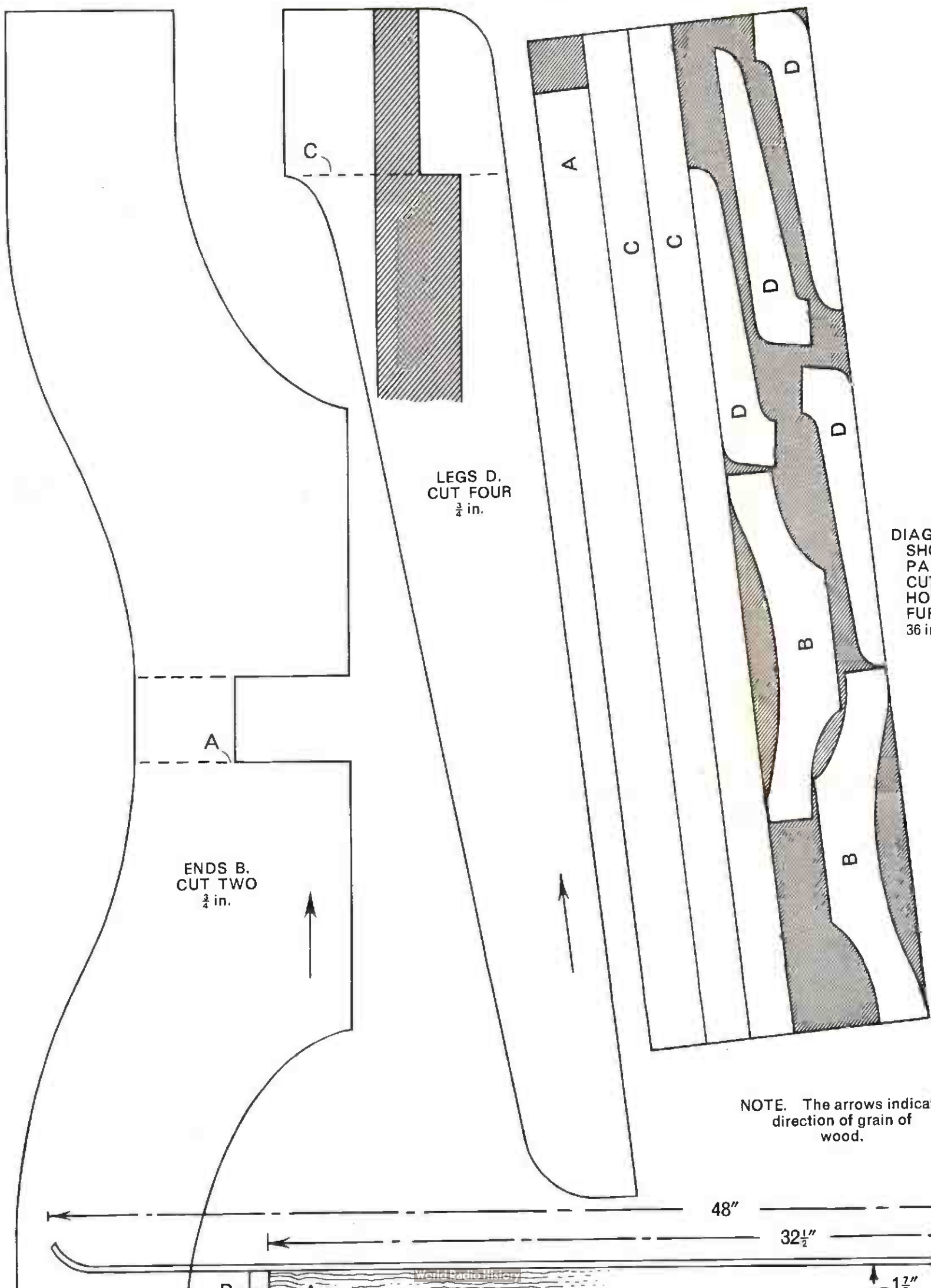
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C

A

C

C

D

D

D

D

B

B

LEGS D.
CUT FOUR
3/4 in.

ENDS B.
CUT TWO
3/4 in.

DIAG
SHO
PAR
CUT
HOE
FUR
36 in

NOTE. The arrows indicate
direction of grain of
wood.

48"

32 1/2"

1 7/8"

**CONTEMPORARY
LOW TABLE**
(WITH CURVED ENDS)



SIZE: 48 in. long, 15 in. wide and 12 in. high.

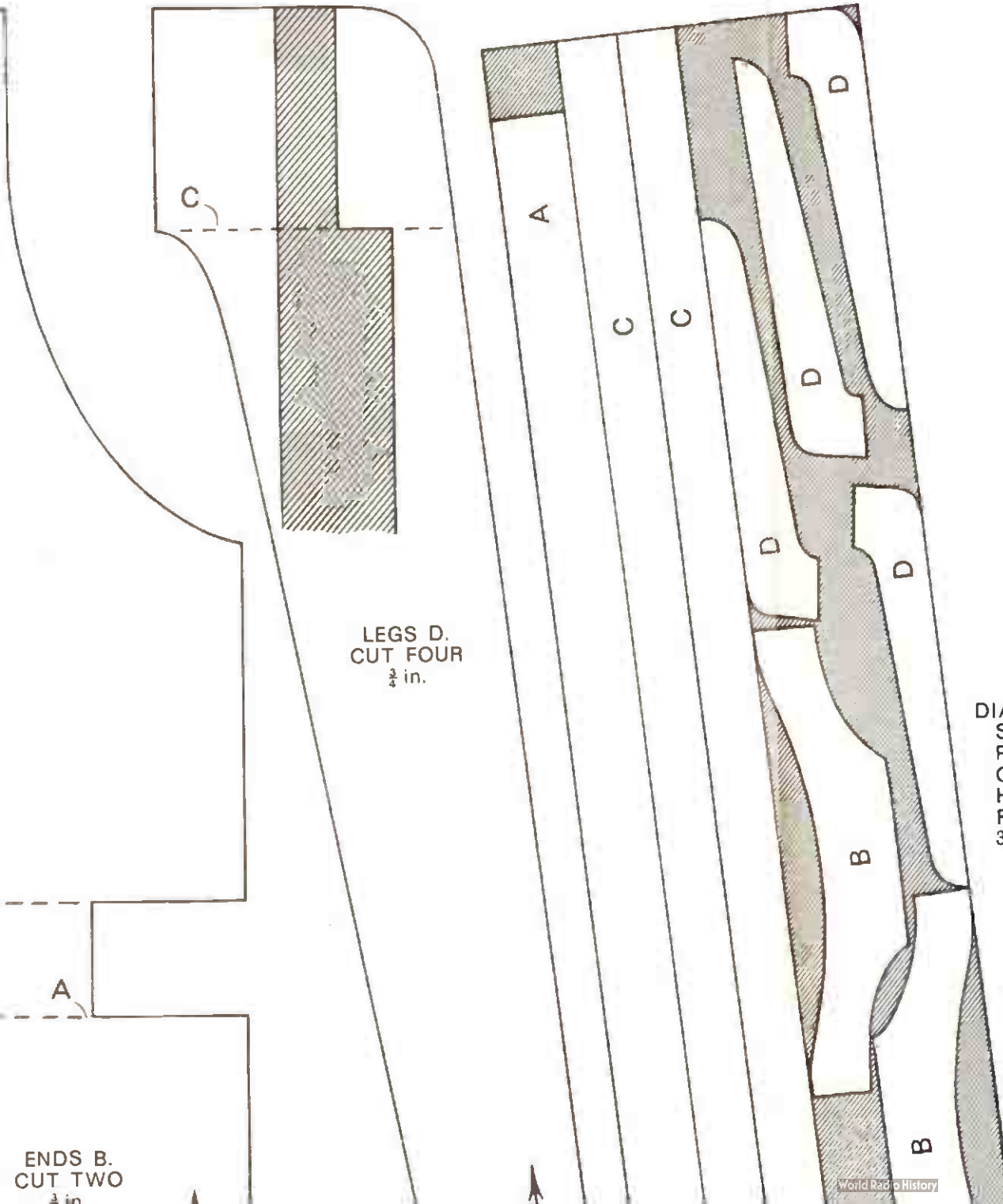
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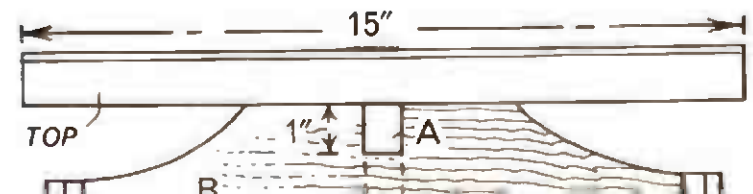
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LEGS D.
CUT FOUR
 $\frac{3}{4}$ in.

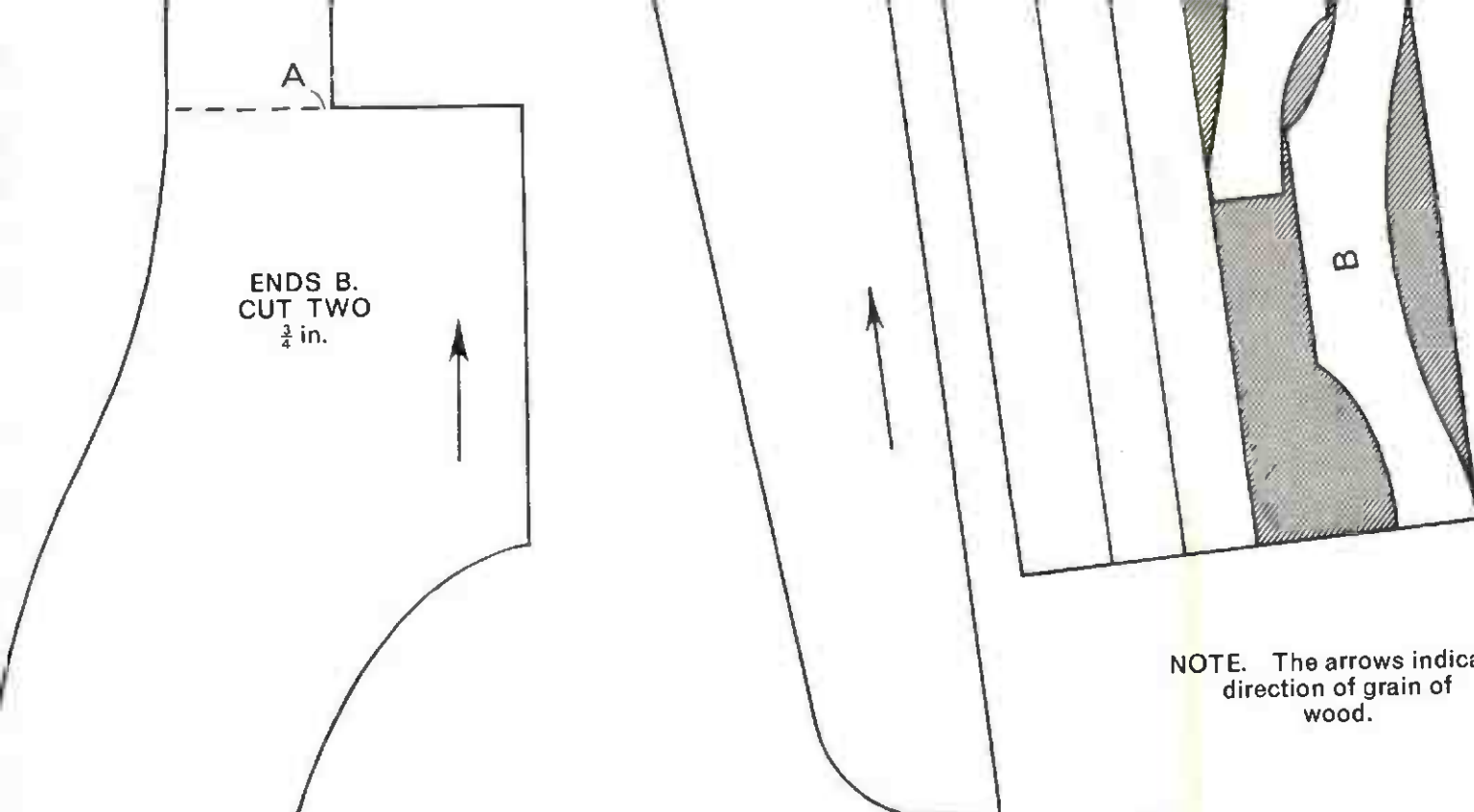
DIAGRAM LEFT
SHOWING HOW
PARTS ARE
CUT FROM A
HOBBIES S12
FURNITURE PANEL.
36 in. BY 10 in. BY $\frac{3}{4}$ in.

ENDS B.
CUT TWO
 $\frac{1}{4}$ in.



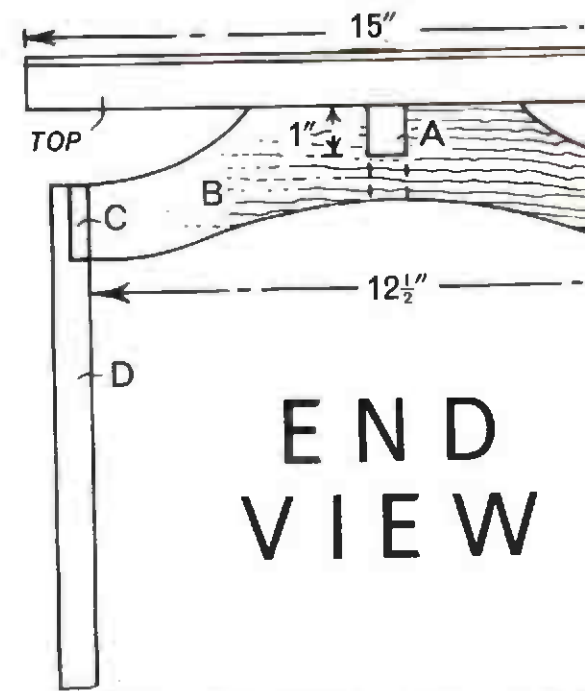
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BUY CROICO FROM YOUR LOCAL HOBBY

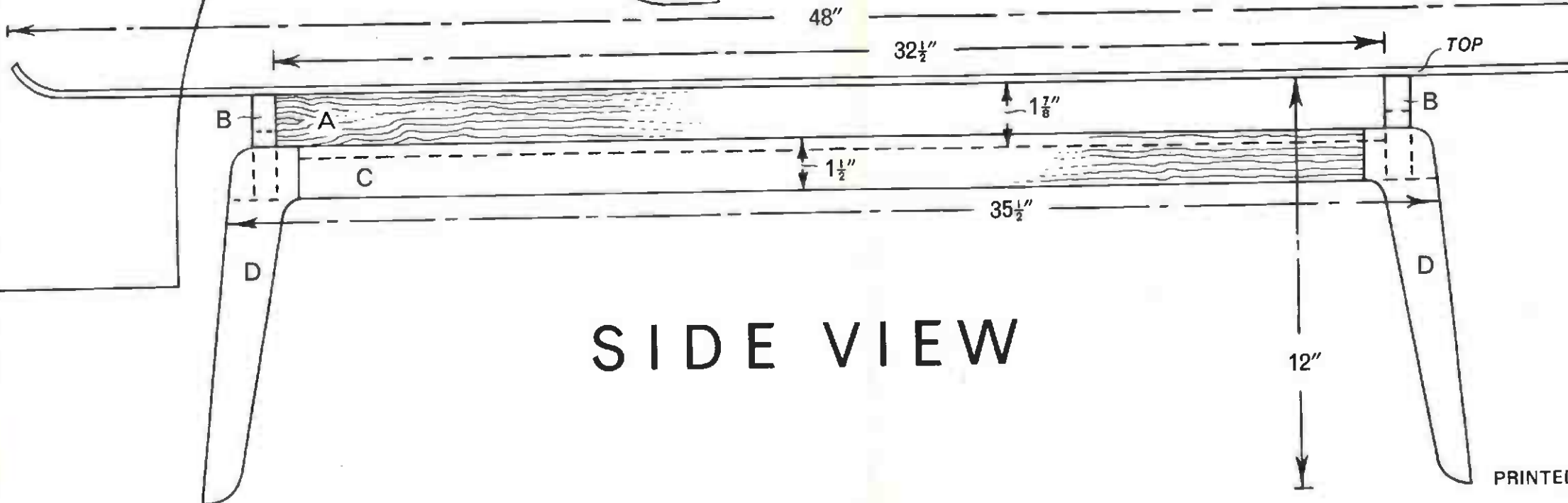


ENDS B.
CUT TWO
 $\frac{3}{4}$ in.

NOTE. The arrows indicate direction of grain of wood.



END
VIEW



SIDE VIEW

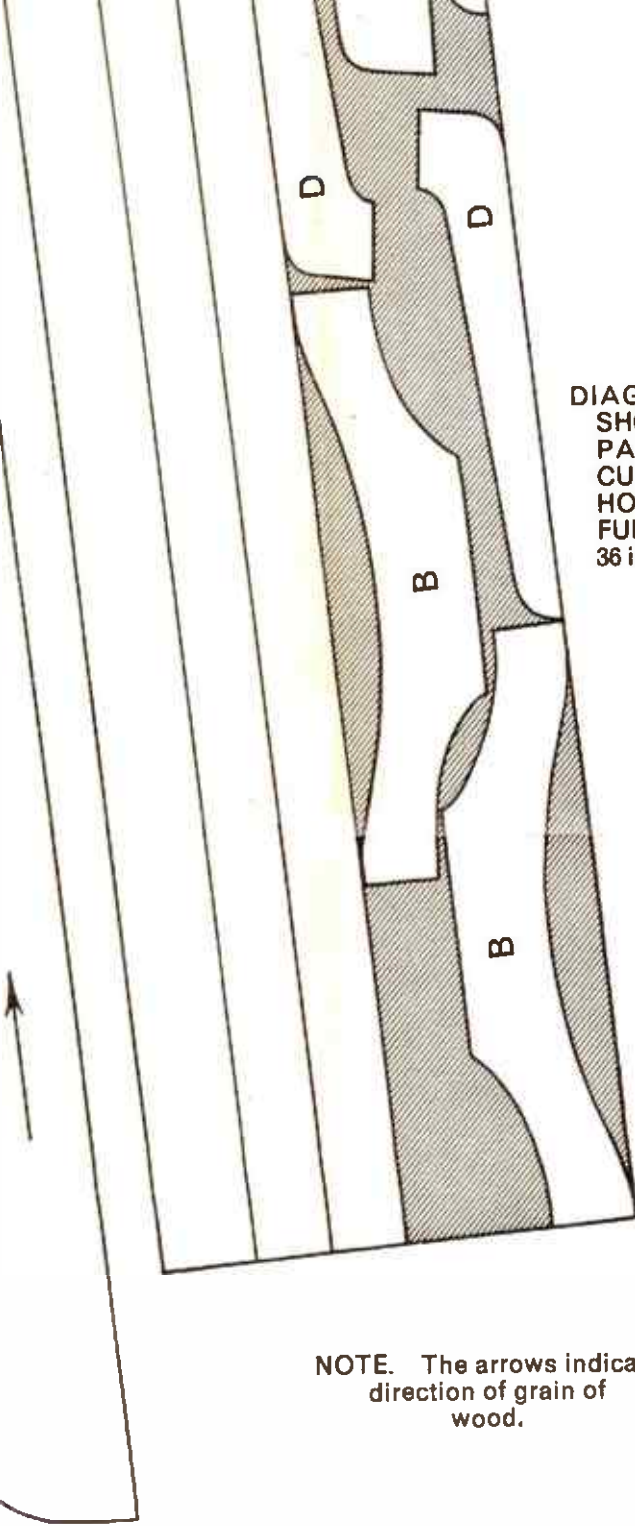
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SIZE: 48 in. long, 15 in. wide and 12 in. high.

A KIT OF MATERIALS FOR MAKING THIS DESIGN IS SUPPLIED BY HOBBIES LIMITED, DEREHAM, NORFOLK. PRICE ON APPLICATION.

DIAGRAM LEFT SHOWING HOW PARTS ARE CUT FROM A HOBBIES S12 FURNITURE PANEL. 36 in. BY 10 in. BY $\frac{1}{4}$ in.



NOTE. The arrows indicate direction of grain of wood.

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Croid POLYSTIK

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