

HOBBIES WEEKLY

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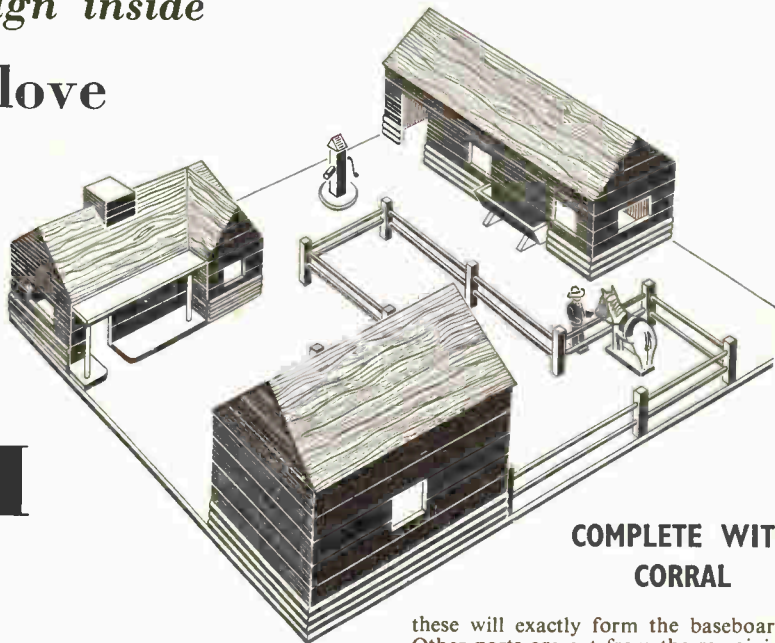
★ *FREE Design inside*

All Children love
to play with

A TOY RANCH

ALL children love playing 'Cow-boys and Indians' and what better model to enable them to indulge in flights of fancy than a toy ranch? With the addition of lead horses, Cow-boys, Indians, wagons and other figures, this design can be made up into a very interesting layout, and will give hours and hours of pleasure to youngsters.

It consists of a baseboard 24ins. by 18ins. on which are positioned a ranch house, stable, barn and corral. All are made up separately and can be moved to different positions on the baseboard.



**COMPLETE WITH
CORRAL**

The buildings and baseboard consist of $\frac{1}{4}$ in. hardboard and the buildings are strengthened at the corners with triangular fillet which ensures a sturdy construction. Measurements for all parts are given on the design sheet, and they are all three-quarter scale.

In Hobbies kit the hardboard panels measure 24ins. by 18ins., and one of

these will exactly form the baseboard. Other parts are cut from the remaining sheets in the kit. It will be found that there is a good margin of hardboard to enable all parts to be cut out easily, and in several instances one fretsaw cut will suffice for two parts when placed together.

Study the design sheet carefully, measure off the parts to their correct sizes on to the hardboard and cut them

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For Modellers, Fretworkers
and Home Craftsmen

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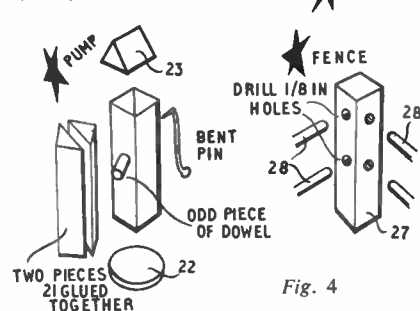
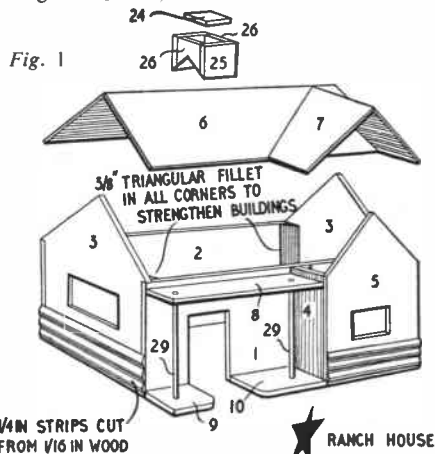
A Kit costs only 13/6

Kit No. 3196, containing all materials for making the Ranch, costs only 13/6 from branches or Hobbies Ltd, Dereham, Norfolk (post free)

all out. For ease when assembling, number each piece as cut.

Commence assembly with the ranch house as shown in Fig. 1. The ends (3) go inside the front and back (1 and 2) and lengths of triangular fillet are glued inside the corners. Next add pieces 4 and 5, again strengthening at the corners with triangular fillet.

The verandah is made up from pieces 8, 9, 10 and 29, and this section is now glued to the main building. Pieces 6 and 7 which form the roof can next be added individually. Make up the chimney, noting that piece 24 is fitted inside the

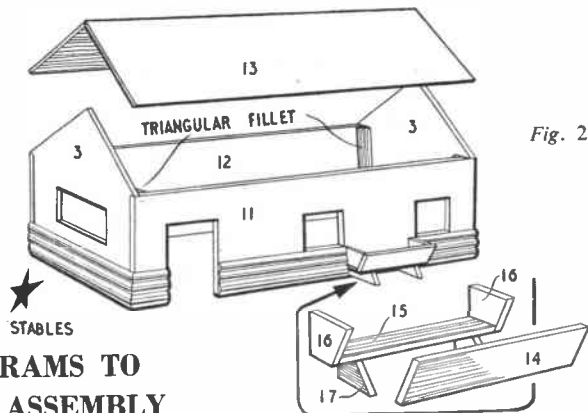


top opening, and this assembly can then be glued in the centre of the roof.

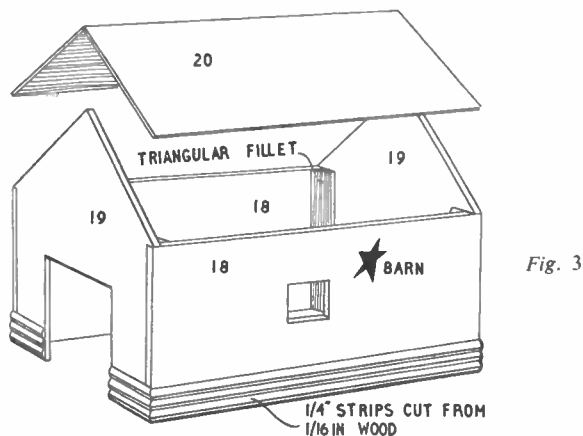
Now leave the ranch house and make up the stables as shown in Fig. 2. The construction is in the same sequence as for the ranch house. The trough can be made up separately as shown in the inset before gluing to the building.

Fig. 3 shows the construction of the barn, and here again the principle of makeup is the same as for the other buildings.

Now the strips which simulate 'logging' can be glued round these three buildings. Strips $\frac{1}{4}$ in. wide are cut to the



DIAGRAMS TO ASSIST ASSEMBLY



required lengths from $\frac{1}{8}$ in. panels. The outside edges of these strips are glass-papered to give the half-round appearance before fixing to the buildings.

Now make up the fencing which forms the corral (Fig. 4). The posts are $\frac{1}{2}$ in. square stripwood, and the rails consist of 3in. lengths of $\frac{1}{2}$ in. diameter round rod. Posts for the straight lengths of railing can be drilled right through, and the corner posts drilled to the centre on two sides. Dowels can be glued in or left loose so that the shape of the corral

can be changed about as required.

The pump (Fig. 4) is made from two pieces of triangular fillet (21) glued together to form a square section. The cap (23) is glued on top and piece 22 at the base. The spout consists of a piece of dowel glued into a hole drilled at an angle into the post, and the handle is formed from a bent pin or piece of wire, and pressed in position.

It is suggested that the hardboard be given an undercoat before finishing in bright, gay colours.

QUEER HOBBIES OF THE WORLD

He Collects Licences

MR. F. W. NORMAN, the official Motor Licensing Officer of Johannesburg, South Africa, can justly claim that his hobby — and the fruits of it — are unique. He collects the driving licences issued by various countries throughout the world. Naturally his professional interest in these very necessary documents has stimulated his particular hobby, but he prefers to acquire the out-of-the-way and

the unrecognisable licences from such places as Chile, Fiji, Madagascar, Brazil, Palestine, China, Liechtenstein, and a good many of the various states and colonies in Africa. Some of his licences are queer documents indeed, and are hardly recognisable for the purpose for which they were issued. That is the kind of thing that adds spice to this most individual hobby. (D.G.)

DETAILS OF PICK-UP

FOR 78 r.p.m. records, a general purpose magnetic or crystal pick-up will be necessary for inclusion in the radiogram which has been described in previous issues. The crystal type is looked upon as giving best quality of reproduction, though a magnetic model will be satisfactory. The older type of pick-up gives greater volume than modern, light-weight types, so it is particularly suitable in the present case. There is also the advantage that no special matching or input circuit will be required.

To avoid hum being induced in the pick-up leads, and then amplified with the signal, these connections should be fairly short and direct, and well away from leads carrying A.C. Screening the leads will also help to avoid hum, and only a few feet of screened flex will be required. The metal braiding will then form the earth return.

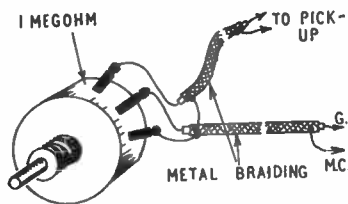


Fig. 1—Gram volume control

As the receiver volume control only functions on radio, a further control, for records only, is mounted near the turntable. Connections for this potentiometer are shown in Fig. 1, which also indicates how the leads from the pick-up are screened. Many pick-ups already have a screened lead issuing from the base of the mounting, and this can then be taken to the volume control.

When the circuit is plugged in, the braiding must go to the socket which is wired to the chassis. The inner, screened lead goes to the valve grid circuit. Reversing these leads will cause loud hum.

When making the connections, the braiding must be removed so that some insulation projects, to avoid possible shorts between braiding and inner lead. The strands of thin wire forming the braiding should be twisted together, and soldered to the short lead forming the M.C. connection, which goes to chassis, as explained. A little free lead should hang down from the pick-up mounting, so that the pick-up can move freely.

Fig. 2 shows the motorboard layout. The motor is mounted first, a ½ in. diameter hole serving to clear the turntable spindle. Most motors have rubber mount-

ing bushes. The screw holes should be accurately positioned, and the fixing screws not tightened excessively, or the bushes will be so much compressed that the motor is no longer 'floating'. After fixing, the turntable is replaced.

If the correct distance from pick-up to turntable axle is given with the items, the mounting should be screwed down accordingly. If no instructions are available, position the mounting so that the pick-up needle comes to rest on the centre of the turntable spindle, when the pick-up is swung right in.

Assure that the arm can move freely. The leads pass down through a hole under the mounting. The rest is then screwed in place, so that the arm can lie upon it, keeping the needle off the motorboard.

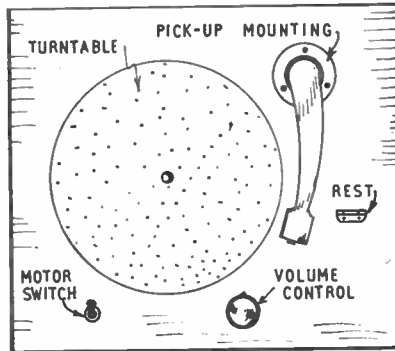


Fig. 2—Layout of motorboard

The volume control is located as shown, connections having been described. A small mains-type toggle switch controls the motor. This is wired in one lead from motor to mains.

All mains connections should be of good quality flex, and no bare joints should be left. As both receiver and motor require mains supplies, it will be convenient to screw a small junction box inside the cabinet, near the back. A twin flex cord can be taken from this to a suitable plug, to suit the wall socket. Other leads can then go from the junction box to motor, switch, and receiver.

If a 3-socket wall plug is available, a 3-core cord can be used. It will then be possible to earth the receiver to the mains earth. This is worth trying, though in a few localities it may be found that the mains earth carries much interference.

With some motors the possibility of interference, when playing records, is much reduced by earthing the motor frame. A terminal or tag may be present

for this purpose. If so, it is connected to the mains earth, or to the receiver chassis.

The circuit employed leaves the one section of the tuning condenser in parallel with the pick-up, and this serves to reduce needle scratch slightly, the effect increasing as the tuning condenser is closed.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★
 ★ This is the fourth and last article ★
 ★ in the series on making a three- ★
 ★ valve radiogram, by F. G. Rayer. ★
 ★ Previous issues describing the ★
 ★ cabinet, receiver circuit and power ★
 ★ pack can be obtained from the ★
 ★ Editor price 6d. each, post free. ★
 ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

The equipment, as described, is best suited for 78 r.p.m. records, and is intended for this purpose. Most popular records are of this type. They are much less costly than the long playing kind, while the pick-up and motor will also be much less expensive.

Long Playing Records

However, if it is desired to use long playing records eventually, a 3-speed turntable unit should be fitted. This will give 78, 45 and 33 1/3rd r.p.m., according to the position of a switch or lever. It will thus do for all records of all types.

The type of pick-up has to be chosen to suit, as the usual 78 r.p.m. unit is not suitable for long playing purposes. If a 78 r.p.m. pick-up is to hand, it can be used for 78 r.p.m. records, with the 3-speed player. But on no account should it be used on a long playing record, or the latter will be damaged.

If long playing records are eventually to be used, a dual-purpose pick-up is thus best, if a unit has to be purchased. The most popular type has a turn-over head. One position provides a needle for 78 r.p.m., and the other position a different needle, for long playing records.

When long playing records are eventually used, it will be necessary to add a pre-amplification, tone-correction circuit. This is required because the frequency response is modified, when records of this kind are made. Tonal response thus has to be readjusted, when playing them, for proper results.

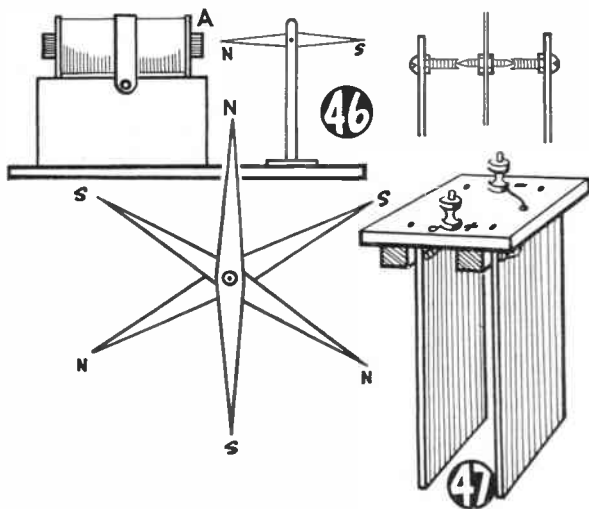
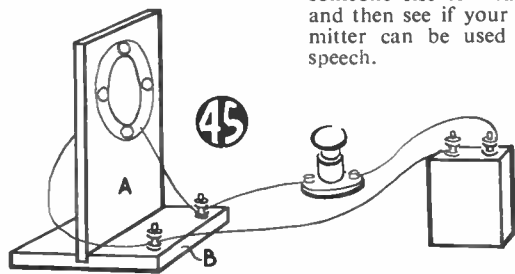
A MODEL MICROPHONE

TAKE a piece of wood (A), about 6ins. by 2½ins. by ½ in. and near one end make a circular hole about 1½ins. in diameter (Fig. 45). Make four cardboard rings to fit round the edge of this hole. Obtain two ferro-type discs from an old pair of wireless headphones. Solder a piece of insulated wire to the edge of each disc. Place one of the discs between two of the cardboard rings and fix the disc and rings over the hole in the wood, using four screws and washers. Do not turn the screws too tightly in the wood to allow slight movement of the disc.

Take a carbon rod from an old electric cell and grind it up into very small pieces. Fill the hole in the wood with these carbon particles and then fix the other disc in a similar way, over the hole in the opposite side of the wood. Fix the piece of wood (A) to another piece of wood (B), which serves as a base, and join the two pieces of insulated wire to terminals fixed to the base.

You have now made a model microphone or telephone transmitter. Join it in series with a 4.5-volt battery and a 3.5-volt lamp and notice how, when you press your finger against one of the discs, the lamp gives a brighter light. The carbon granules are pressed together more tightly, the resistance which they offer to the electric current is diminished and a pulse of stronger current flows along the wires. When the discs move away from each other the pressure on the granules is diminished, their resistance increases, and a pulse of diminished current flows.

Now talk with a loud voice near one of the discs and note how the light given by the lamp varies in intensity. The sound waves emitted by the voice are giving rise to pulses of electricity. Remove the lamp and connect a pair of wireless headphones to the battery and microphone, using long pieces of insulated wire, so that the headphones can be used in another room. Ask someone else to wear the headphones and then see if your home-made transmitter can be used to transmit your speech.



How an electric clock works

You have no doubt often realised how difficult it is to regulate a spring-driven clock or watch so that it always indicates the correct time. You will have heard various remarks about the clock on the mantelpiece such as, 'Is this clock fast?' or 'Is this clock slow?' Variations of temperature are always liable to alter the rate at which the mechanism travels. Compensated pendulums and balance wheels have, of course, been designed to overcome these difficulties, but nowadays, whenever time is to be measured accurately, it is usually done by electricity.

If you have made the model transformer described in a previous article and have a secondary coil to give about 12 volts A.C., you should try to make this working model to show how a rotor can be made to travel at a perfectly uniform rate. Such a rotor can be geared to pointers which will always give the correct time.

Make a bundle of soft-iron faggot binding wires about 1in. in diameter and 4ins. long (Fig. 46). Wrap paper round this bundle and fix plywood ends to hold about three hundred turns of No. 26 D.C.C. copper wire. Connect the ends of the wire to the 12-volt terminals of your transformer. Near one end of the iron wires mount a magnetic compass needle in a stand so that it can rotate in a vertical plane as shown in the diagram. If you can obtain a simple model magnetic dip needle this will be ideal for the purpose. If not, you can mount a compass needle as shown in the smaller diagram. The ends of the compass needle should be about ¼in. away from the ends of the soft-iron wires.

Switch on the current and flick the end of the needle with your finger. If you get the needle turning at approximately the correct speed it will continue to revolve at a high uniform speed.

If the frequency of your current supply is 50 cycles per second, the magnetic polarity of the ends of the iron wires at (A) changes or alternates 50 times per second. Now when the ends at (A) have north-seeking polarity they will attract the south-seeking end of the compass-needle, and when the polarity changes to south-seeking the wires will attract the north pole of the compass needle.

Two changes, therefore, produce one revolution of the compass needle. During 50 changes of polarity, that is in one second, the magnetic needle will therefore make 25 complete revolutions, that is 1,500 revolutions per minute.

You should try to discover how this high speed of turning is reduced in an

electric clock rotor. What would be the disadvantages of such a high speed of turning? Using other compass needles, try to build up a compound rotor as in Fig. 46 and note how the speed of turning is reduced.

A model accumulator

Many people who use accumulators know little of how to take care of them. If they are properly cared for they will give you many years of excellent service, whereas neglect and wrong treatment will soon impair their efficiency. Perhaps you have an accumulator for the wireless or a car battery which consists of three or six accumulators joined together in series. Learn how to get the best out of your accumulator and keep it in good condition.

Using a jam-jar you can make a simple model accumulator as in Fig. 47. All you require are two pieces of lead, three small pieces of wood and a little diluted sulphuric acid.

A plumber will give you two pieces of scrap lead. The illustration shows how to fix the pieces of lead to the piece of wood which fits over the mouth of the jam-jar. The pieces of lead must be connected by short lengths of thick copper wire to the terminals as shown. Paint one of the terminals red and the other one black.

Fill the jar with dilute sulphuric acid and then connect up the model accumulator to a direct-current supply of about six volts, taking care to connect the red or positive terminal of your accumulator to the positive terminal of your source of current. If you do this the electric current will pass into your model accumulator at the positive terminal and out at the negative terminal.

Place an electric current direction indicator in the circuit for a short time and note the direction of deflection of the compass needle. Watch carefully what happens while the current is passing through the accumulator.

If you have made the model transformer, you can use it to give a direct current supply by using a small rectifier with it, as was described in a recent article in *Hobbies Weekly* on electroplating.

Note what happens to the positive plate. The change on this plate is due to the deposition of a chemical. Find out the name of this chemical, what is happening to the negative plate and the nature of the gas that is being set free? You can lift the plates out of the jar to examine them. Replace them and allow the current to pass for a few minutes. This process is called charging the accumulator.

Now disconnect the accumulator from the current supply, join it up in series with a switch and a 2.5-volt lamp and again place the current detector in the circuit. When the switch is pressed you will now find that an electric current is passing from the positive terminal of the accumulator in the opposite direction to the charging current. (T.A.T.)

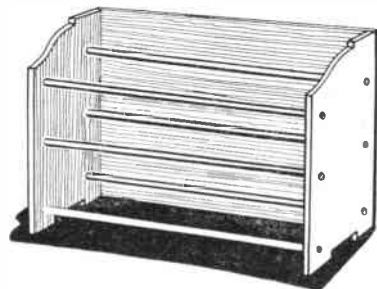
Handy Shoe Rack

THIS useful shoe rack can be made to fit any corner or cupboard. By using dowel rods for the shelves, the rack is open and airy, keeping shoes perfectly dry. The fitting is easily made and, if necessary, a small curtain can be made to cover the front.

The main parts are the two ends, made from $\frac{1}{2}$ in. plywood, measuring 2ft. 8ins. by 10ins. One end is marked out as shown in Fig. 2, by ruling a line lengthways 3ins. from each edge. The back rod is fixed 5ins. from the top and 3ins. from the edge, while the other back rods are spaced 10ins. apart. The top front rod is 10ins. from the top, 3ins. from the edge, with the same spacing between the other rods. These measurements will be suitable for most sizes of shoes, unless they are extremely large, but if you propose catering for children's

shoes, a little modification may be necessary.

Mark out the shape of the end as shown in Fig. 1, and the small cut-out for the feet. Clamp the two ends together when both may be drilled and worked at the same time. The holes for the dowel rods should be made to accept $\frac{1}{2}$ in. rod, and must be perfectly vertical or the ends will be thrown out in the assembling. Moreover, a good fit is essential, so it is a good plan to use a bit of slightly lower gauge. Alternatively, if you make a sawcut in the ends of the rods, drive in small wedges and trim up when the rods have been fixed. The length of



the dowel rods depends on the size chosen for the rack, and this may be determined by the space available for the fitting. When measuring, do not forget to allow for the thickness of the ends.

With the rods fixed in position in the ends, a suitable piece of hardboard is required for pinning to the back. This will also strengthen the rack, besides giving a better appearance.

The shaped ends should be smoothed with glasspaper and the whole given one or two coats of gloss paint.

One or two modifications may be suggested for those not wishing to go to the trouble of preparing shaped ends. The end pieces may be perfectly square at the top and a piece of plywood or hardboard fitted to form a cover. Note that there is no alteration whatever in the position of the dowel rods if this method is adopted.

As mentioned, you may attach a small curtain to the front, held in position by spring curtain wire, fixed by means of cup hooks screwed into the top face edges of each end. Finally, some may prefer to include a baseboard, but the fitting described can be made with a minimum of material, yet be perfectly satisfactory. (S.H.L.)

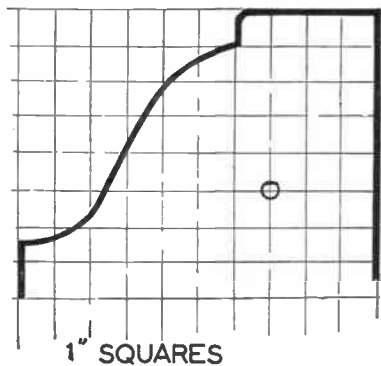


FIG 1

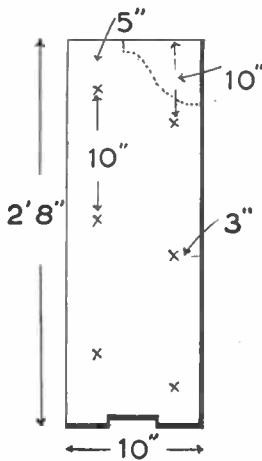


FIG 2

TONING YOUR PRINTS

WINTER is the time when the amateur photographer normally works more at home with his year's prints, sorting, making up albums and the like.

Toning certain efforts should come into the winter programme for there is no doubt that some pictures look infinitely better in sepia than in black and white. Toning, too, will at times 'save' prints that are not a too good black —

which it is considered improves the colour. For general use, however, the solution can be used as given.

To tone, the prints are placed in this bath and then slowly brought up to a point near boiling. The heat does no harm to the emulsion and as a higher temperature is reached the black finish slowly disappears, the picture turning sepia without any loss of quality. When the change is complete, which does not

removes any deposit that might be clinging to the surface. If any of the toner remains it dries as a white scum which can quite spoil things. Following the sponging, the prints are given a short wash and then dried naturally or on a glazing sheet.

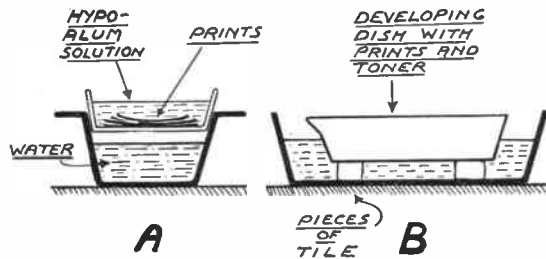
The solution stores well in a jar and can be used repeatedly, being kept up to strength by addition from time to time of a little more hypo and alum, the water volume also being retained.

An important point is the kind of utensil in which to do the 'boiling' for obviously there must be no chance of the prints scorching on the bottom. The writer has found an intermediate 'water jacket' excellent. A porcelain developing dish is obtained which will just sit in the top of some domestic enamel utensil, say a pie dish, without going to the bottom, see (A). This lower container is filled with water, the prints with the hypo-alum going in the upper dish, and the whole arrangement is then put on the gas-ring. By this method the prints are heated through the water below in a very even way and manipulation of them is easy all the time.

If a developing dish and matching domestic dish cannot be found, then the developing dish can be put in something much larger, being kept off the bottom by standing on four pieces of, say, tile, as at (B). Quite a large water jacket can be made this way.

Different papers, it will be found, give slightly varying sepias, but this is no drawback as your prints will probably have been turned out all on the same make of material, but, as mentioned, the best blacks give the best sepias.

It is interesting to note that hypo-alum: was quite a standard method of toning by older photographers. (H.A.R.)



though the best sepias in general come from the best blacks.

The usual method of toning with sulphide is rather smelly and not too pleasant in the house but here is a simple and inexpensive way of giving prints a sepia livery. All that is necessary is a little ordinary hypo, some crude alum (the better 'chrome' is not needed), a couple of dishes and a gas-ring — the top of an ordinary cooker will do.

A solution of the hypo and alum is first made up as follows: hypo 4 oz., alum 1 oz., and water 20 oz.

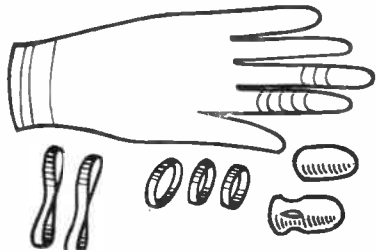
There is some latitude with regard to the quantities of hypo, alum or water, and with amounts varying to some extent you will still get results. This bath works well as it is, but certain photographers like to add other ingredients

take very long, the prints are washed and dried.

So much for the general idea—now for some practical points that crop up in the toning. The prints must be kept on the move as the temperature rises. This can first be done comfortably with the fingers, but as the solution gets really hot tweezers have to be used. Do not tone too many prints at once, but work in small batches. The solution functions better the older it is and to get a new bath going it is good to boil (and leave) a few unwanted prints in it for quite a long time.

After a very little use the toner becomes whitish and somewhat thick so when prints are taken out after processing they should be placed in luke-warm water and sponged over. This

Uses for old Rubber Gloves



DO not discard those old rubber gloves because there is a slit in the finger. Their period of usefulness is not finished yet and there are

many things you can do with them. In most cases the rubber is in quite good condition and ready to do further service.

First, then, we can cut off a number of rubber bands in various widths; small ones from the fingers and larger ones from the wrist and palm. If you want a long strip this can be cut in spiral form starting at the wrist, and provided you keep the width even, it will be quite strong.

It is often difficult to keep a bandage on the tip of the finger or thumb, but if a cot is cut from about half of one of the fingers it will be found to fit tight and

hold a light bandage in place securely. By cutting a series of short slots round the end of the cot as shown it will in some cases be more comfortable to wear for long periods.

The palm of the hand is a difficult place for fixing a bandage, but this can often be overcome by using a rubber glove with all or most of the fingers cut off.

Home-made wine makers will welcome the following tip to make corks air-tight. Cut off a finger tip of the same length as the cork, slip this in and insert in the bottle for a perfect fit.

For counting sheets of paper and turning over the pages of books quickly a rubber cot on the end of the index finger is very useful and efficient. (A.F.T.)

Always useful in the home

MAKE A STURDY STOOL

THE legs of this sturdy stool are cut from a length of broom stick 1 in. diameter, assembled with four rungs. The stout plywood top then screws directly on to the tops of the legs. The whole job should be an easy one-evening project.

The top is 11½ ins. square, cut from ¾ in. or ½ in. ply. Mark the position of the fixing screws and check that these agree with the leg positions on your frame before drilling. Attach the top to the frame with countersunk screws, pulling down flush with the ply surface. If you prefer, you can countersink the ply and pull the screws right down below the

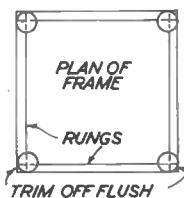
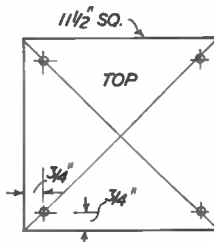
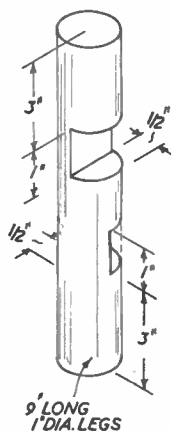
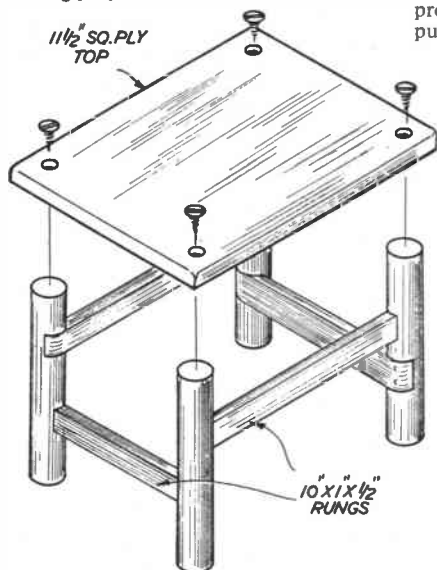
surface, filling in with plastic wood to mask the screw heads completely.

Finishing is largely a matter of personal choice. The wood can be stained and polished or varnished, or just painted. A padded top can be fitted, if desired, or a loose cushion made to tie in place with tapes.

All the details required are shown in the drawings. Start by cutting the 1 in. diameter stock into four 9 in. lengths, checking that the legs are exactly equal in length. All four legs are slotted in an identical fashion. Sawcut the edges of the slots to a depth of ¼ in., and remove the rest of the wood with a chisel, taking care to get each slot as true and square as possible.

The rungs must be cut exactly 10 in. in length from 1 in. by ½ in. stock. Cut the ends dead square when the legs can be assembled in the leg slots to make up the frame as a self-aligning assembly. Glue and pin all joints. When set, the edges of the rungs should be rounded off to blend with the legs.

(R.H.W.)



Magic by R. W. Wood

The Fakir's Bangle

ALTHOUGH this unusual trick is very easy to perform, it is most baffling and magical in effect. The sole requirements are a 3 ft. length of white cord or string, of a soft pliable type, and a cheap metal bangle such as may be obtained at a cheap department store. The heavier the bangle the better the trick will work. If a suitable bangle cannot easily be obtained, an old-fashioned wooden curtain ring may be used for the trick. This should be brightly enamelled or painted with one of the well-known metallic paints in gold or silver.

The cord is formed into a loop which is actually a single loose knot. The performer holds both ends of the cord while the loop hangs down between his hands. The bangle is meanwhile being examined by the audience who assure themselves that it is quite innocent of any faking.

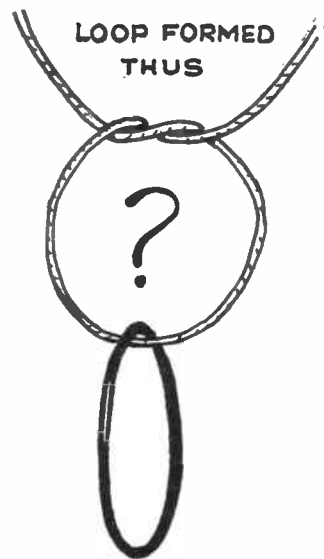
The performer next takes the bangle

in his right fingers, and while directing attention to the loop, he slips one end of the cord through the bangle unseen by the audience. He now appears to throw the bangle at the loop, and in a flash the mysterious bangle passes neatly on to the loop!

The secret is partly in the slipping of the cord through the bangle, but there is also a proper method of making the throw. The bangle is actually thrown through the open loop from the performer's side while both ends of the cord are firmly held.

It will be seen that the trick is entirely self-working. Nevertheless, this fact should not be made apparent to the audience. If the hands are kept in motion while showing the loop and slipping the cord through, this move will not be noticed. The throw should be sudden and unexpected, so as to be thoroughly deceptive.

A few minutes' practice will teach the



amateur the knack. Then he will have yet another neat little trick to add to his repertoire.

Full of good things

A HANDY TEA TRAY

IF you have tea or supper by the fireside this double tray can be used as a small table. There is enough space for everything. Cups and saucers, tea or coffee pot can be placed on one tray and there remains plenty of room for sandwiches and cakes. It enables everything to be carried in one hand, leaving the other free for opening doors.

It is designed in contemporary style and can be finished to suit any existing furnishing scheme. If it is to be left in the natural wood the side pieces (A) and the bottoms of the trays (E) should be of good quality plywood veneered with

With
two
tiers

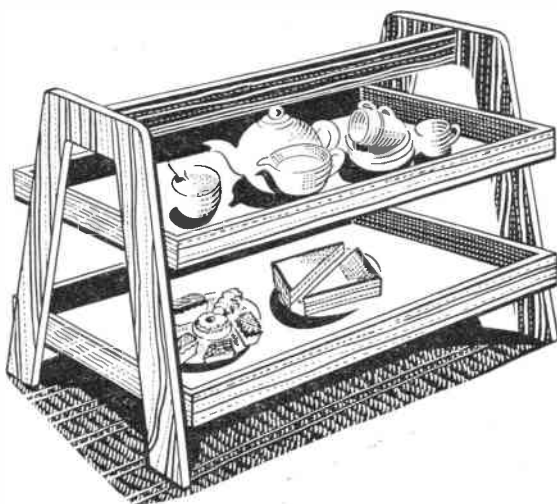


Fig. 1

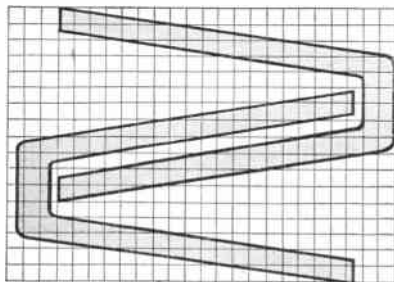
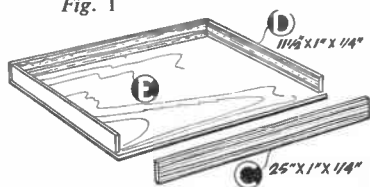


Fig. 2

oak, walnut or mahogany. If this cannot be obtained, it is possible to use birch faced plywood and lightly stain to get the desired effect. If the tray is to be painted the choice of wood is not important except to ensure that a smooth finish is possible.

The two trays are made first, to the dimensions in Fig. 1. The bottom (E) measures 25ins. by 12ins. and is cut from 1/2in. plywood or hardboard.

The sides (C) and ends (D) are only 1in. high and therefore need not be cut from anything thicker than 1/2in. wood. They are butted together at the corners and secured with pins and glue. If you intend to make a mitre joint the end pieces (D) must be longer than shown in Fig. 1.

When cutting out the parts for the trays, make sure that both are exactly the same length or the uprights (A) will not be true when you come to screw them in position.

The uprights or ends (A) are cut from 1/2in. plywood and they are 21ins. tall by 12ins. wide. The shape can be obtained

from the squared diagram in Fig. 2. Note that the squares should be enlarged to 1in. This diagram also shows how it is cut economically from the wood.

The front view and end view in Fig. 3 show the position of the trays in relation to the ends (A). Measurements are given on the front view. This diagram also shows the handle (B) which is cut from 1/2in. wood. It is tenoned at both ends and fits into a mortise in each piece (A). A detail of this is shown in Fig. 4. The edges are rounded off to provide an easy grip for the hands.

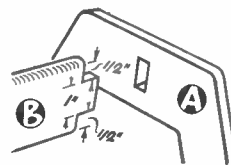


Fig. 4

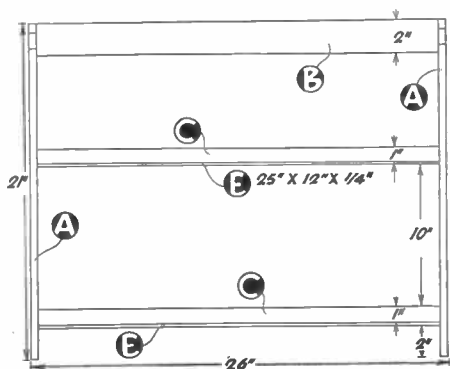
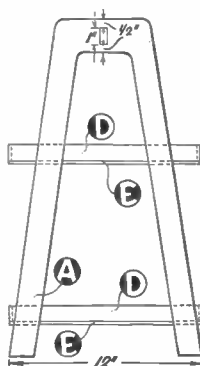


Fig. 3



The trays are secured by means of countersunk screws driven into the ends. The heads are afterwards filled with plastic wood and glasspapered flush. The handle (B), besides being glued, should be further strengthened by means of a panel pin driven in from the underside.

Complete the tray by staining and polishing, or painting. Much will depend upon the finish and it will pay to put plenty of time into glasspapering before attempting to apply paint or polish.

(M.h.)

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 ★ an article on 'Speed Control' will ★
 ★ help model railway enthusiasts ★
 ★ enormously. ★
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Make it for a child

A TOY THAT TEACHES

THESE scales are always right, for the 'weights', cut in the form of numerals, are so balanced that they always balance out arithmetically. For instance, the '1' and the '2' together in one pan weigh the same as the '3' and so are balanced by the '3' being put in the other pan.

By R. H. Warring

Construction of the balance itself is very simple. It can be made from standard 3ins. wide obeche sheet either $\frac{3}{8}$ in. or $\frac{1}{2}$ in. thick, which is readily cut to shape with a small saw. Obeche is, however, rather prone to split and so if used, the assembly should be glued only, not pinned. If ply is used joints can be both pinned and glued for greater durability.

The base is cut to the dimensions shown. The back piece is drilled for the pivot screw before fitting to the base. The small compartment at the centre is made by gluing on 1in. wide strips. Glasspaper the whole job to a smooth finish.

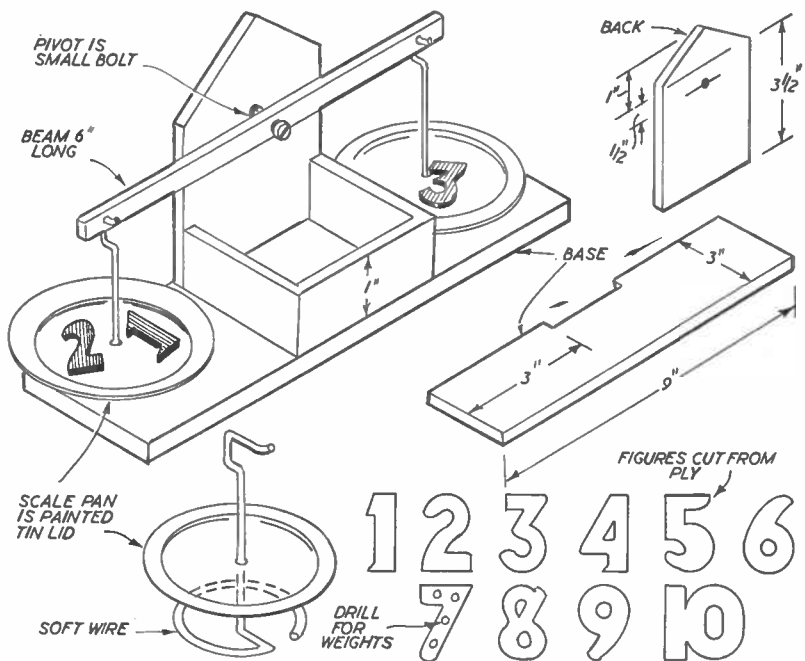
Balance the beam

The beam is a 6ins. length of hardwood strip — about $\frac{3}{8}$ in. by $\frac{1}{2}$ in. or $\frac{3}{4}$ in. section, drilled at the centre with a clearance hole for the pivot bolt. The latter can be 6 B.A. size or similar. Drill holes for the scale pan arms about $\frac{1}{2}$ in. in from each end and then mount the beam on the pivot bolt, using a nut on either side of the back piece and spacing washers to keep the beam away from the back. Make sure that the beam swings freely and is equally balanced.

The scale pan arms are bent from stout but soft wire, e.g., copper wire or galvanised iron wire, and pass through a hole drilled in the centre of each pan, being looped at the top through the beam, as shown. Small tin lids will be satisfactory for the scale pans — the 'treacle tin' type in preference to lids with sharp turned-up edges.

The numerals are cut from $\frac{1}{16}$ in. or $3/32$ in. plywood, using a fretsaw. The larger numbers should be drilled out with holes to take weights, such as lead rivets, etc., to produce the required arithmetic balance. With the higher numbers quite a bit of extra weight may be necessary, depending on the original form and size of the figures.

Provided you get the pivot balance 'light' enough, one very good way of making up the weights is to cut each



from fairly thin light material, like coloured plastic sheet. The weight of the material is then largely negligible and the individual figures can then be balanced by fitting with the appropriate

number of heavy metal rivets — e.g., one rivet in the figure '1', two rivets in the figure '2', and so on.

The scale assembly itself should be finished by enamelling in bright colours.

A Novel Bill Spike

IT is useful to have somewhere to keep bills which have been paid. Tradesmen do sometimes make a mistake and send in a bill which has already been paid. If you know where to find it, it will save yourself frantically turning out drawers looking for it.

Full size Patterns on page 303

The novelty lies in the fact that the spike is 'protected' by the head of the giraffe. Children could easily scratch themselves on an unprotected spike. To spike the bills simply turn the animal sideways and turn back again in position afterwards.

Make pieces (A) and (B) from $\frac{1}{4}$ in. wood and pivot (B) to (A) in the position shown by the dotted lines. It should be fairly tight, but not too tight to turn by hand. The giraffe is now glued to piece (B) in the slots provided.



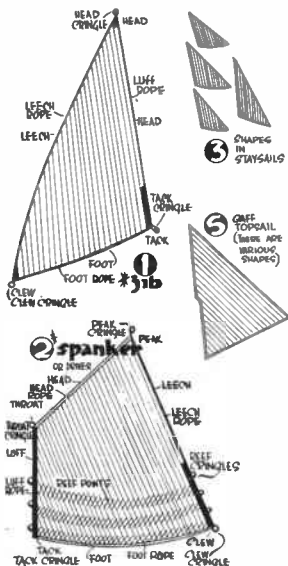
Cut four feet (C) from $\frac{1}{2}$ in. wood and glue them at the corners. The spike consists of a steel knitting needle inserted in the base.

Clean up with glasspaper and give two or three coats of plastic enamel paint. There is no need to paint the giraffe in natural colours, leave it as a silhouette in a plain colour such as black. (M.p.)

MAINLY *for* MODELLERS

IN a previous article we studied the make-up of square sails, in particular those of the 19th and 20th centuries. Now let us consider the fore and aft sails of the same period. In the actual making of models the amount of detail included will be subject to the scale size of the model and the patience of the modeller. The details given will enable correct detailed sails to be made or sails detailed to suit the particular model maker's requirements.

Fig. 1 shows a jib sail. The types of jib are, flying jib, outer jib, and jib. The second is sometimes known as the foretopmast-staysail jib. The make-up of



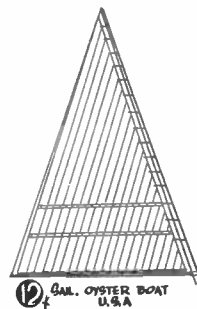
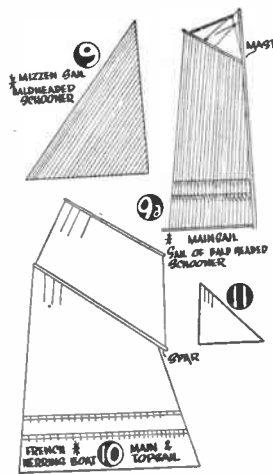
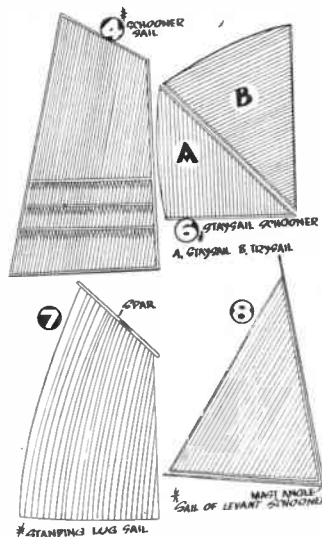
aft schooners and is actually much easier to model in detail than the square sails of the full rigged ship types.

Jibs and staysails are made in the same manner as those described above, but there is, however, the gaff topsail peculiar to the fore and aft rigged vessels and this is shown in Fig. 5.

Staysail and Trysail

In some types of ship, brig, snow etc., the spanker is also known as the driver or trysail.

In Fig. 6 we have that peculiar sail that appears in the case of the staysail schooner, the staysail itself, together



the individual sails is the same as shown in the sketch, the names denoting position and purpose in the sail plan of the ship. On large full-rigged ships, we also get the inner jib, making, on this type of vessel, four jibs in all.

Fig. 2 depicts the spanker, which, with the staysails, several types of which are shown in Fig. 3, constitute the fore and aft sails that are part of the sail plan of square-rigged ships, clipper ships etc.

Fore and aft rigged type

We now come to the fore and aft rigged type of ship. I use this term as being more generally understood by the layman. To the sailor, of course, a ship is always a square-rigger, hence the term ship-rigger.

Fig. 4 shows the type of sail used as main, fore and mizzen on the fore and

with the trysail above it.

In Fig. 7 we have another individual type of sail, the standing lug sail. This and the following types are generally met in local craft, such as fishing boats, sailing lifeboats, etc.

In Fig. 8 is illustrated the type of sail used as the main sails in the rig of the Levant type of schooner. In addition to two of these, one on each mast, the rig consists of three jibsails and one staysail.

Fig. 9 shows the mizzen sail on a ship known as a bald-header. This is unusual in being triangular instead of the usual spanker shape. These vessels were known as bald-headed because they had no topsails, the rig being introduced in an attempt to cut down running costs.

Fig. 10 depicts the shape of the main and main topsail of a French herring

FORE AND AFT SAILS

By 'Whipstaff'

fishing vessel, Fig. 11 showing the different type of jib used in these boats.

We have, in Fig. 12, a type of fore and aft sail from the other side of the world, the sail of an American boat designed for oyster fishing.

The range and variety of types of fore and aft rig, particularly in the local craft of all nations is very large and

beyond the scope of this short article. We shall, however, be modelling many out-of-the-way craft in our miniature history series. For ordinary model making purposes, however, the above outline of the main types will cover all the average model maker's requirements.

New methods

We have already dealt with some methods of making sails in an earlier article, but I am always trying out new methods of obtaining the best effects and have many new ideas to pass on and I shall be re-writing the article on sail making to bring it up to date with the latest methods I have been using in my own workshop, particularly in obtaining the correct effect of the sails being wind-filled and lifelike.

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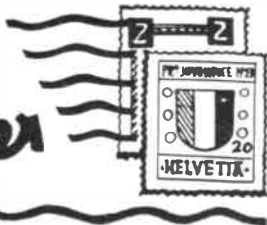
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Stamp Collector's Corner



'WILD WEST' ISSUES

By R. Cantwell

THE 'stampevized' story of the 'Wild West' can be almost as exciting as a Western film. Stampedes, range-wars, trail hold-ups, bank robberies, runaway stage-coaches; all the thrills are pictured in some form in stamps.

No Western collection would be complete without Indians, and brief notes regarding their chief customs and ideas. An Indian archer appears on a 10 cent Mexican stamp of 1934 (2d. used), and an Indian chief on a 1922, 14 cent American pictorial (6d. used).

The word Indian is applied to many tribes — almost nations — all sharing a great family likeness and similarity of customs. The following facts concerning the Canadian Indians will serve as a general example.

They believe that the souls of the dead go to a good country located somewhere in the region of the setting sun. They are hospitable but reserved to strangers. Among themselves they are, however, great gossips.

Children are taught by the old men the virtues of respect and silence in presence of their parents and elders; modesty; not to interrupt conversation, and so on. That is why the Indian is a most polite person.

The Indians excel in running and walking. It is not unusual for one to walk forty or fifty miles a day.

The old people are treated with great respect. They are the instructors in 'Powwowism' (oratory), in medicine and tradition. Some of the elders still have their heads closely cropped or the hair plucked by the roots, leaving only the 'scalp lock' on the top.

All Indians believe in the spirit world. Besides the one great spirit there are many minor ones including those of game, fish, winds, stones and trees. The bad spirits inhabit the bodies of the wolf, toad and venomous snakes. Natural scenery, canyon, waterfall and prairie are regarded with great pride and reverence.

They worship the spirit of the sun, moon and stars. At sunrise warriors and chiefs assemble to chant and offer up praise to the great 'life-giver'. At sunset there are prayers and thanksgiving for his light and heat during the day.

Superstitions

An eclipse of the sun brings fear and anxiety to the Indian, who regards it as a threat of death. As the dark grey chill spreads over the earth when the shadow of the moon blots out the sun the Indian hastily fixes burning coals to the tips of his arrows and shoots them into the air

still lingers. The widow will jump over the grave and run behind trees to avoid the spirit of her husband who otherwise might 'haunt' her. A hole is left in the end of the penthouse or wigwam over the grave through which, after dark on the night of the burial, the men fire their muskets. Strips of folded birch bark are hung round the grave to scare off the 'spirits that haunt the night'; children's faces and necks are brushed with a singed deer's tail before they go to sleep. As the soul or spirit is believed to linger about the body some time after death, these means are also supposed to expedite its departure.

The rank of Indian chief is an hereditary one, but the war chiefs are elected.



to re-kindle the dying sun. Children are warned never to point a finger at the moon, or they may have it bitten off.

The thunder is believed to have its abode on the top of a high mountain in the west, where it lays its eggs and hatches them like an eagle, who then leaves its eyrie to take flight all over the earth in search of serpents on which it feeds and takes from under the earth and the trunks of hollow trees. But first comes the lightning, fiery arrows which the thunder god has shot at a serpent and caught it away in a second.

When an Indian is buried his body is interred in the ground with his bow and arrow and other weapons of war and the hunt. The grave is covered over with a sort of penthouse of wicker-work, mats or birch bark. Meat, soup and other foods are offered to the dead or used as a burnt offering.

Though the body is dead the spirit

The former, with the aid of a council of elders, administer the laws of government and justice. Offences against the law are punished.

Dancing, foot-races, shooting with bow and arrow, running, swimming, wrestling, jumping, figure in the Indian's sports and amusements. Their ages are reckoned by 'snows' or winters; the time of their birth by some particular circumstance characteristic of the period such as hoeing, gathering corn, croaking of frogs, the spring, and so on.

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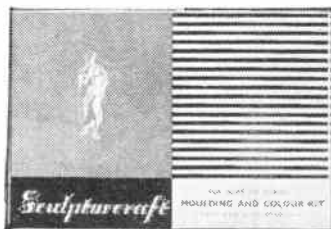
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Replies to Readers

Is this YOUR Problem?

Renovating Lino

WE have on our floor, inlaid linoleum which has lost its gloss although the pattern is still prominent. Can you suggest a varnish or solution which will give a polished surface without being too slippery? (H.W.—Wisbech).

FOR a good renovating varnish, mix half a pint of gold size with three pints elastic oak varnish. Wash linoleum first with warm soda water to remove grease and dirt, let dry, then apply a coat of the varnish. When dry, apply a second coat.

Staining Hardboard

I COVERED my counter top with lin. hardboard, now it is being marked with stains from mineral and beer glasses and these are difficult to remove. Is there a way to do this as I would like to stain it darker and give one or two coats of varnish and so be enabled to wash the counter down once in a while. (T.H.—Hull).

HNATURAL wood fibres, should be treated as wood. Any wooden counter top would be protected in some way; similarly so should hardboard. A material costing about 6d. a square foot cannot have the same qualities as an expensive plastic surface. The marked hardboard surface should first be glass-papered. This will remove any surface grease or foreign matter. It should then be stained with a wood or spirit stain to the required colour (Colron wood dye is excellent). Then the surface should be french polished, waxed or varnished. Alternatively it can be given applications of floor sealing compounds which will be quite suitable for this purpose (examples, Gleem, Bourne Seal, Ronseal, Tretol floor seal).

Cleaning Silver

I RECENTLY purchased a silver-mounted cane, secondhand, with a very ornate silver knob. I would like to know how I can clean this knob and also remove a monogram cut in the top of the knob, so that I can have another set of initials put there. (W.B.—Bargoed).

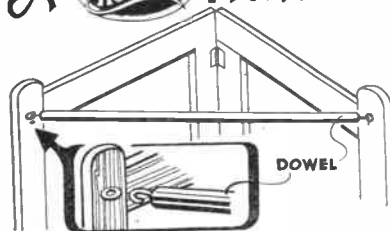
TO clean the silver, a special polish must be made. Dissolve 8 grams of bar soap shavings in 80 c.c. of boiling water, remove the flame and stir in 16 grams of precipitated chalk. When nearly cold, stir in 2.5 c.c. of household ammonia. Before use, shake the polish. Apply liberally with a rag and buff with

a soft dry cloth. Presumably the monogram is engraved. Buffing this out would be better than chemical means. A fine abrasive such as emery powder with water, first; jeweller's rouge next, to remove fine scratch marks; lastly, the special polish recommended above.

Porcelain Cement

COULD you please advise me of a white substance to repair chips in a white porcelain sink? (A.W.—Swanwick).
THE following cement may be useful for your purpose: 3 parts plaster of Paris; 3 parts litharge; 3 parts white lead and 1 part powdered resin. When required for use, mix to a thick paste with boiled linseed oil. It sets hard in three days. Smooth surface and paint with bath enamel. If the powdered resin is difficult to obtain it may perhaps be omitted.

A Hobbies Hint



A THIRD side for a clothes airer that has only two sides, can be made with the aid of dowelling. Put screweyes into the ends of suitable long pieces of dowel and fasten them to the side pieces of the airer with other screweyes which have been opened. For storing, the lengths of dowelling can be easily removed.

Removing Stains on Glass

COULD you tell me how to remove black stain out of glass? Also how can I polish the glass? (M.M.—Forest Hill).

WITH no details as to whether the black stain on the glass is an interior or an external one, we are dealing with the question under three headings:—(Paint) — this may have

been used to cut down sunlight in the greenhouse. Remove this by swabbing with a mixture of three volumes of benzene and two volumes of methylated spirit. (Pitted dirt) — brush with a hot solution of detergent. (Black glass) — that is, manufactured black glass; this is very unlikely, of course; nothing can be done to remove the black colour. The glass can be polished by rubbing with a paste of jeweller's rouge and water, or whitening and water.

Curing Wall Dampness

THE walls of my lavatory suffer from damp. For a distance of 2ft. from the floor the plaster comes off, and the paint is covered with patches of white. I covered one hole in the plaster with cement, and it was soon covered with a white fungus. I am thinking of putting white glazed tiles round it 2ft. up. Would they stick on? Please advise. (P.N.—Scunthorpe).

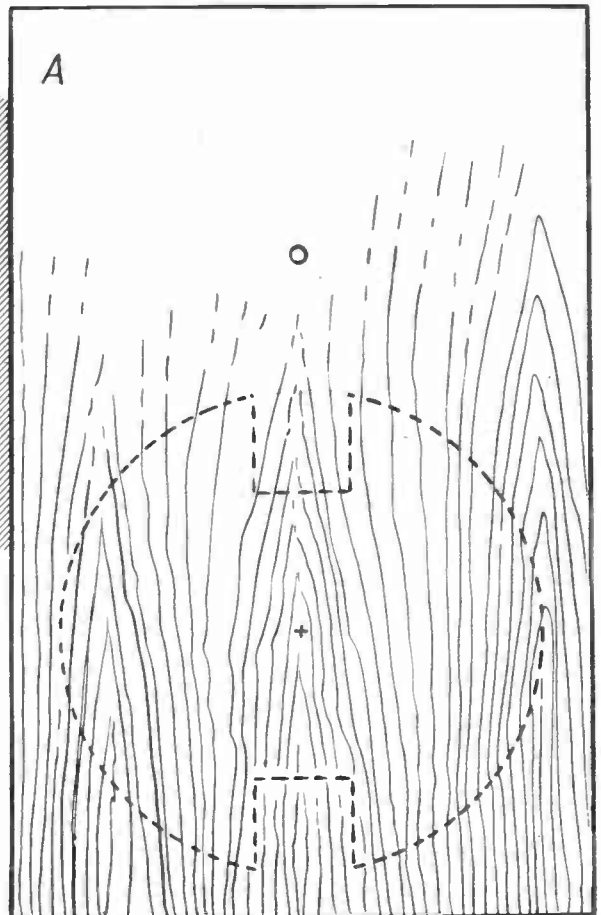
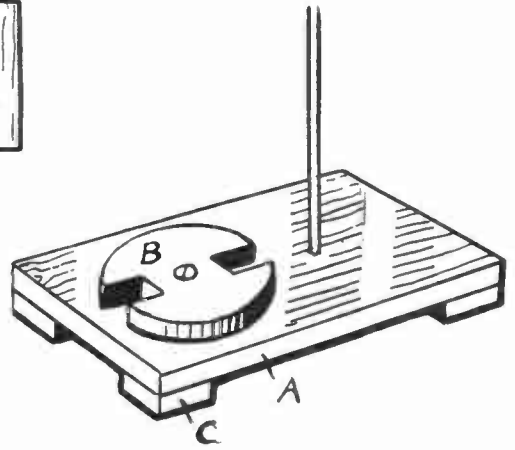
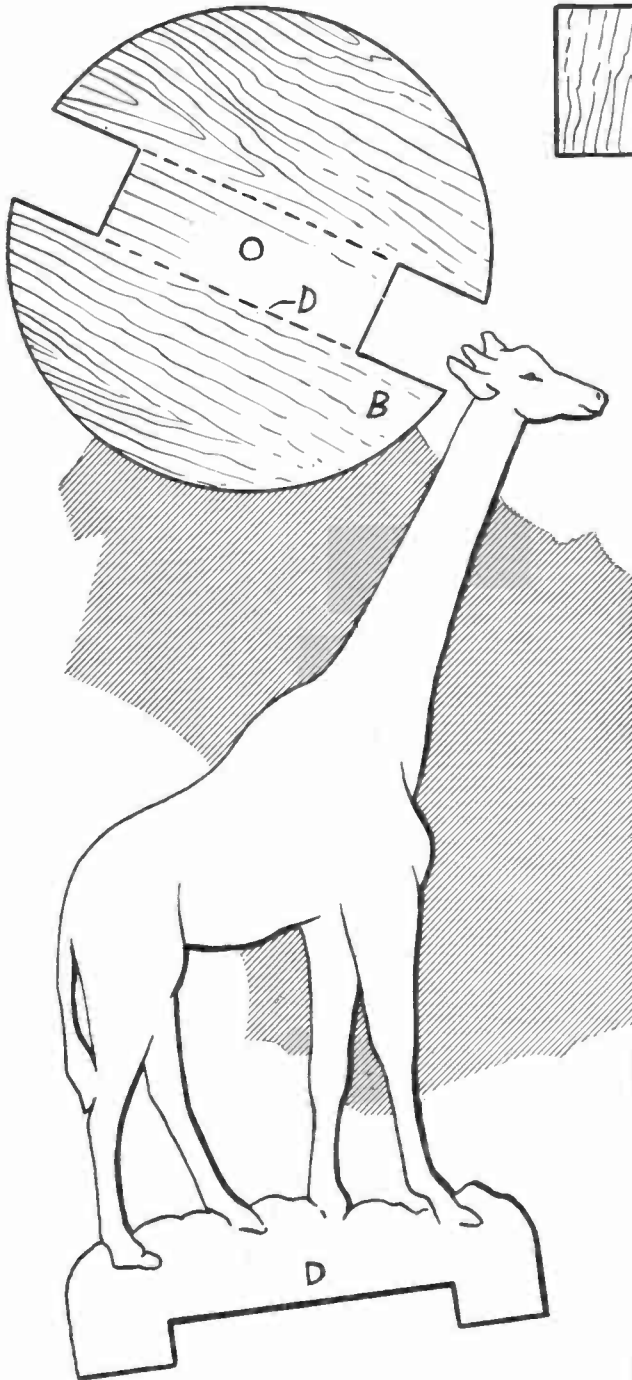
IF your lavatory is on the ground floor, it would be as well to examine the wall outside. Sometimes in such a case as yours, a rendering of cement concrete to the exterior wall from just below ground level to a height of 12ins. will cure the trouble. In any case, for the interior walls apply Macstet over the plaster. This should provide a waterproof surface in a few hours. Test out for a few days before fixing any tiles, should you prefer the latter decoration. Macstet can be obtained direct from Devon Paints Co., Church Lane, Barnstaple, Devon.

Removing Paint Stains

PLEASE advise me how to remove paint stains from a pair of trousers. (M.T.—Brentford).

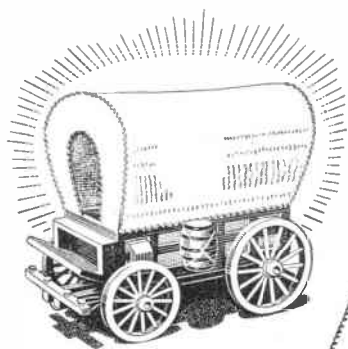
THE colour and type of paint and the colour of the stain on the cloth are vital factors here. If the paint was black, it is highly likely that it was based on bitumen or carbon. In this case the oil will have contained finely divided carbon, which lodging in the crevices of individual fibres, is notoriously almost impossible to remove entirely. Ordinary laundering with soap or detergent usually lightens it, but rarely takes it completely out. The same remarks hold to a lesser extent with other pigments. If the oil was free from colour — i.e. free from coloured pigment — we have to deal individually with several types of paint media:—(Common oil paint) — treat with a mixture of three volumes of benzene and two of methylated spirit, immersing the stained area if obstinate. White spirit (turpentine substitute) is also useful. (Cellulose) — treat with amyl acetate or a mixture of this with acetone in equal volumes. (Emulsion) — treat with ethyl acetate or butyl acetate.

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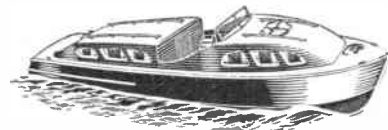
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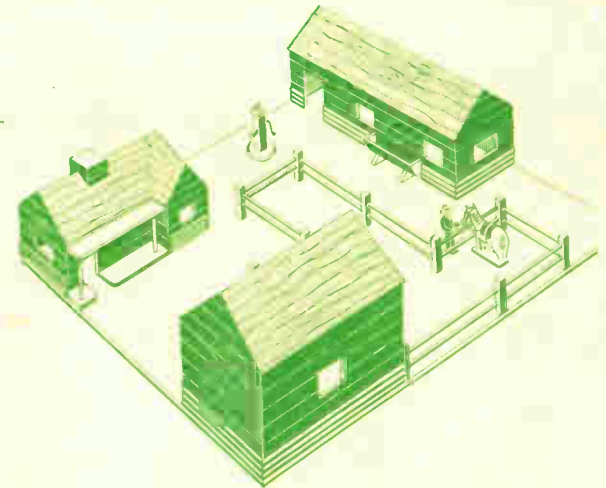
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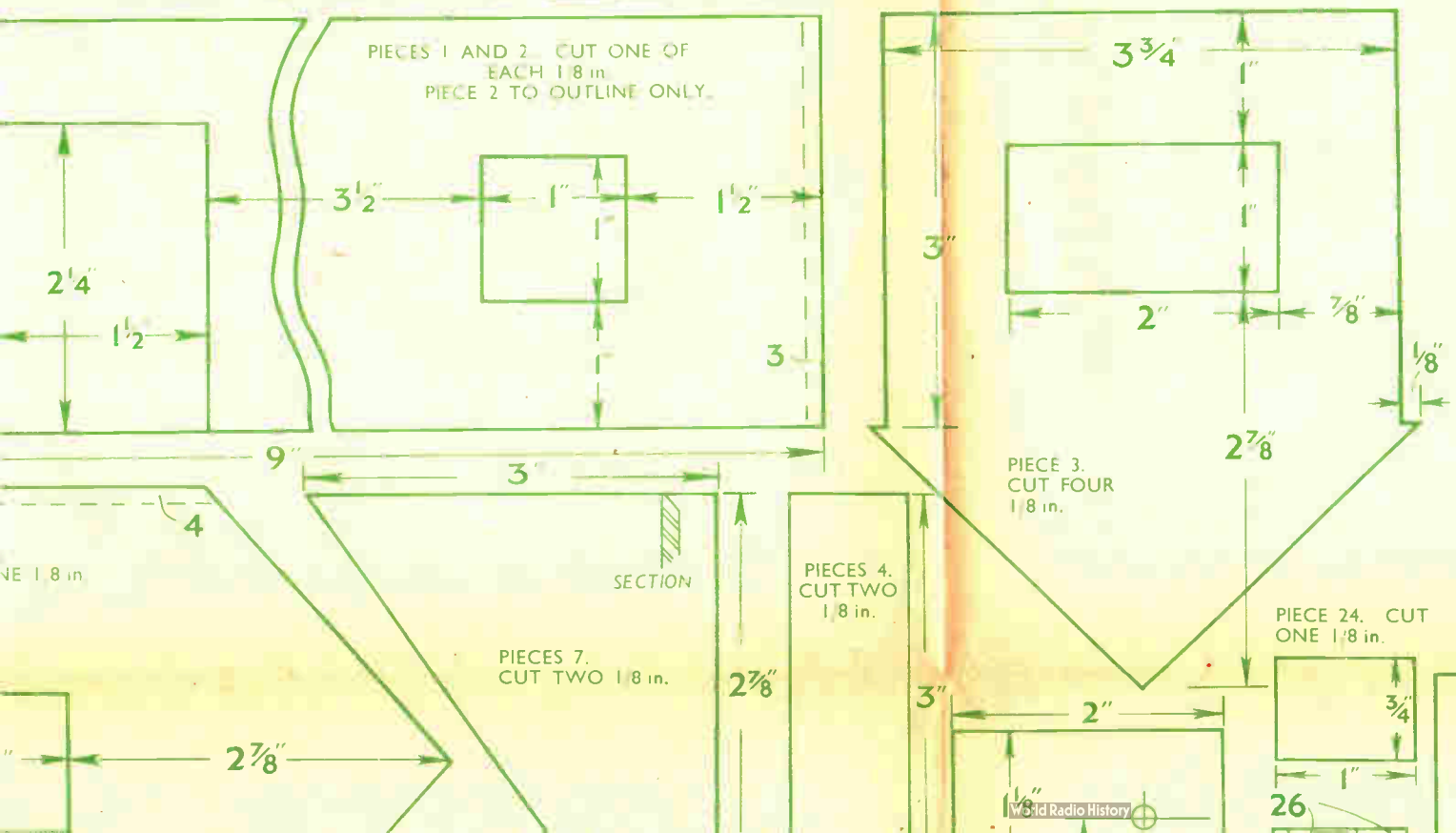
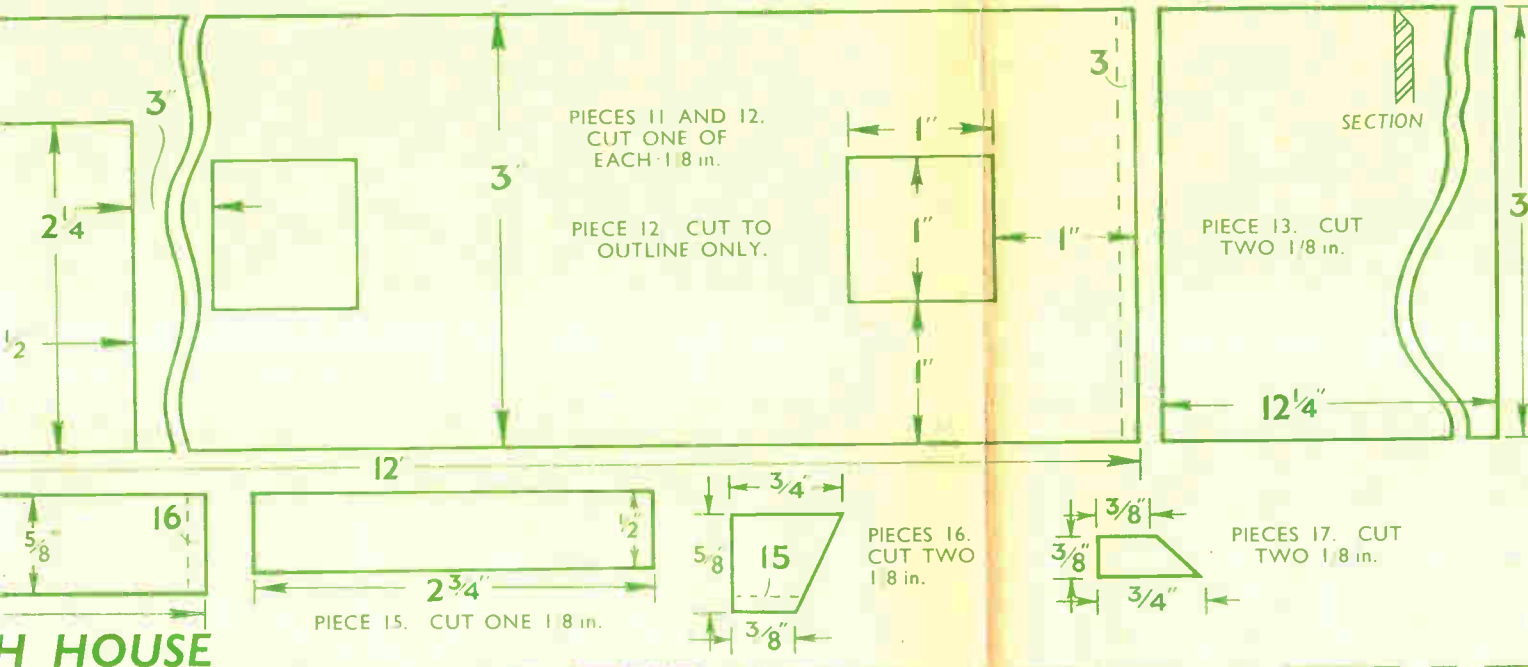
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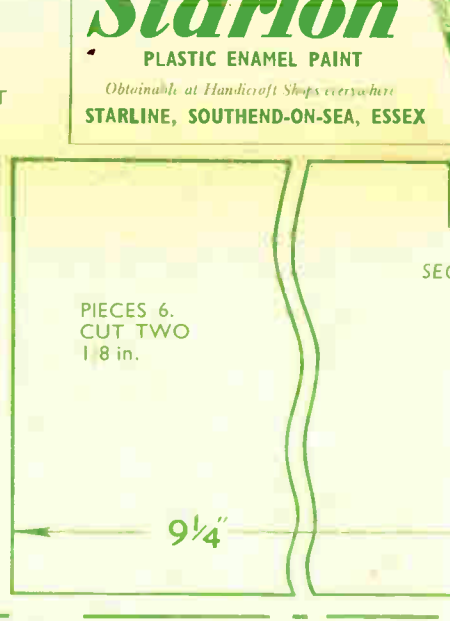
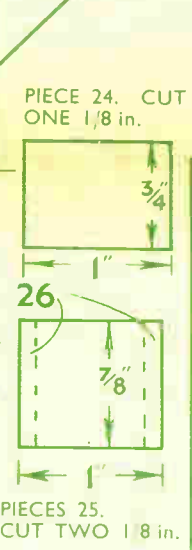
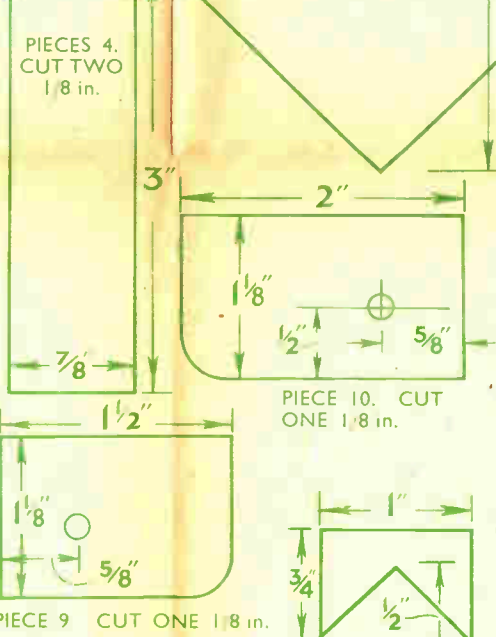
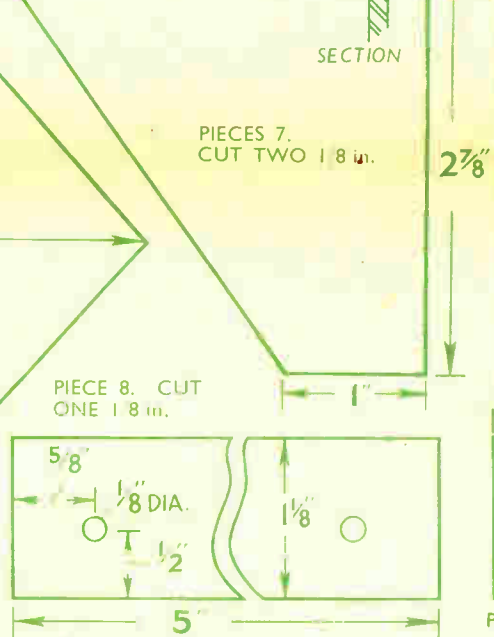
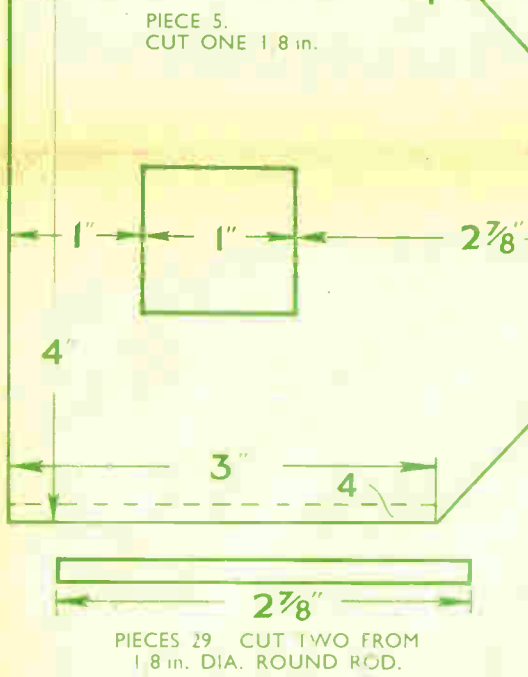
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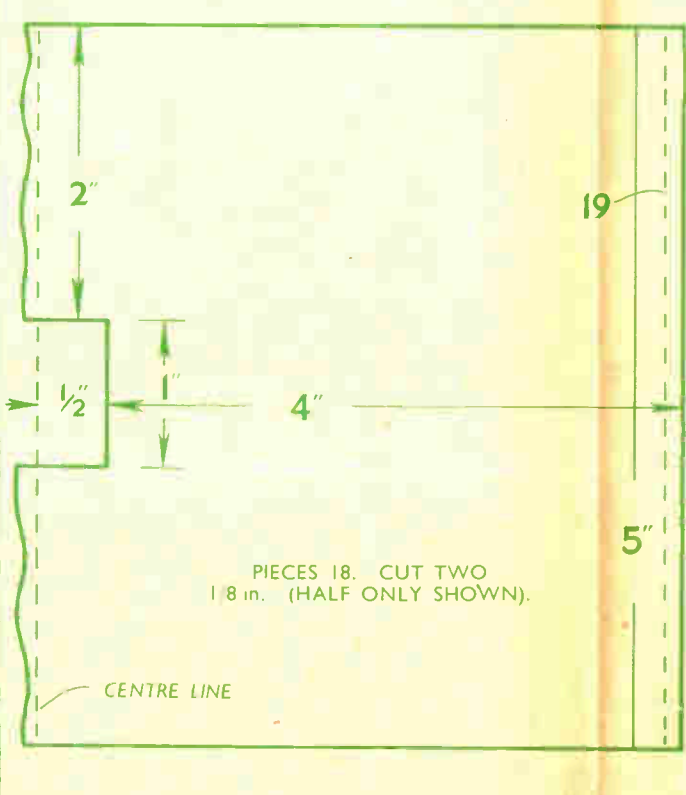




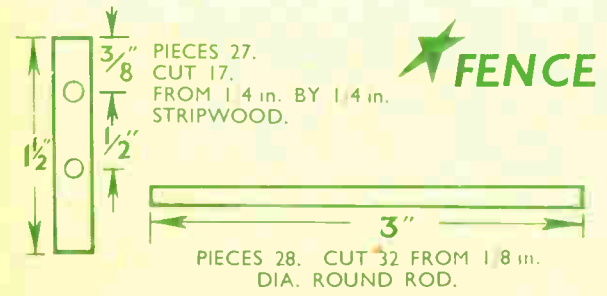
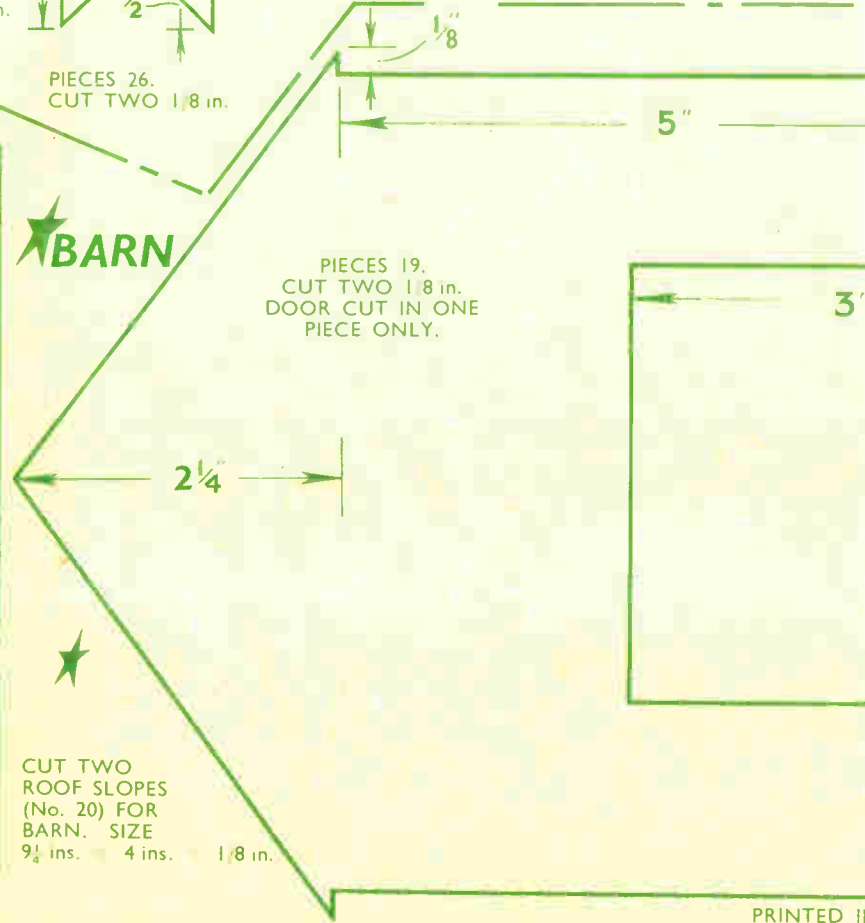
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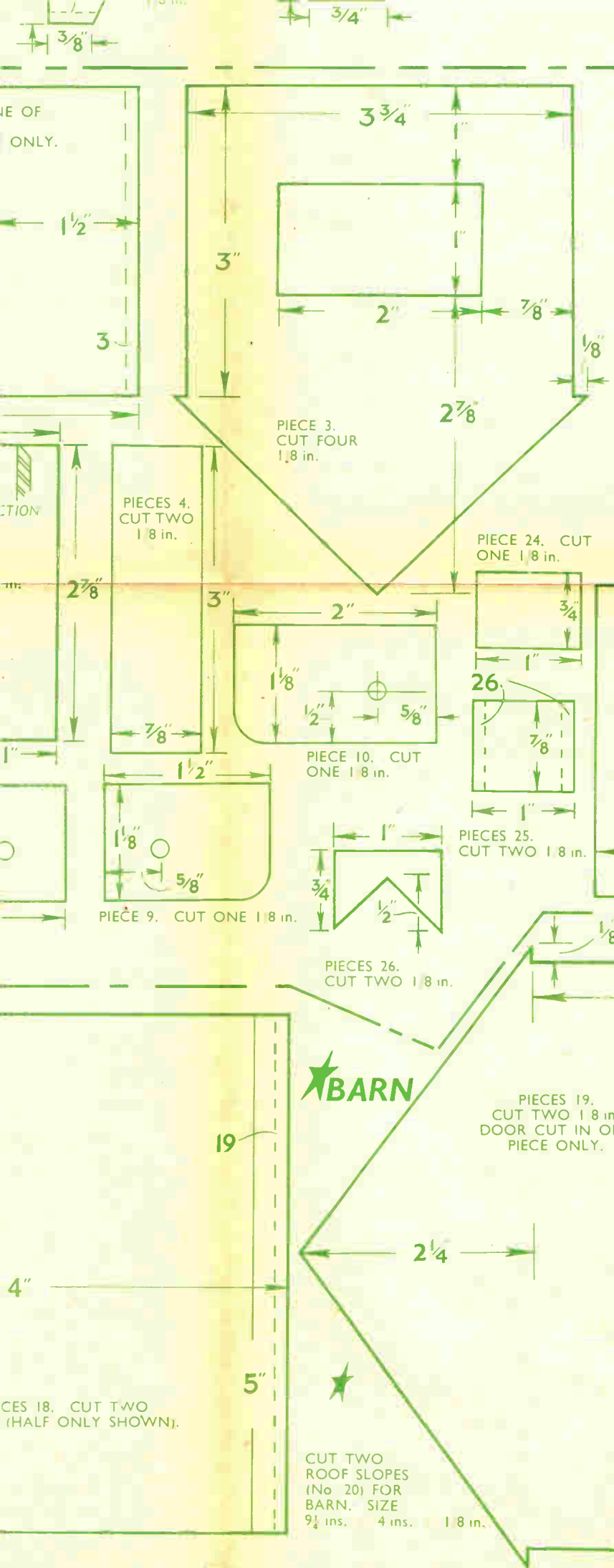
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