

Hobbies

WEEKLY

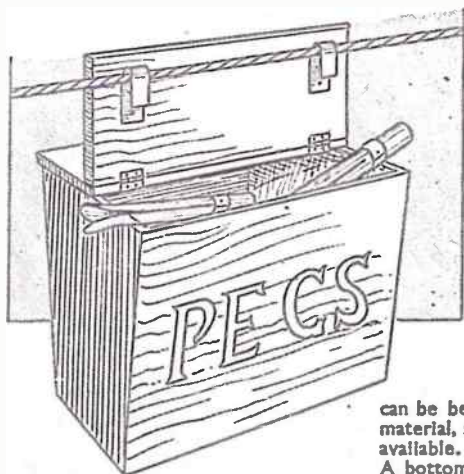
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DESIGN SHEET FOR A 'FLYING' BIRD	

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A PEG box such as this is a very useful article for the housewife, as it can be suspended from the clothes line, and slid along as the line becomes filled. The pegs are all to hand, and no needless stooping incurred, and are kept clean when not required. The box can be made from almost any wood available, even common box wood, if you like, but for preference, it is suggested to construct it of plywood and $\frac{1}{2}$ in. deal, and make a really neat attractive article.

Dimensions

A front elevation of the box is given in Fig. 1 and a side view in Fig. 2, from which the general dimensions can be taken. These are not arbitrary, and those with rather an extensive wash to cope with, with a proportionate number of pegs, can add a few inches to the

Make mother a present of A USEFUL PEG HOLDER

length to increase the accommodation of the box.

Cut the front and back from plywood or other thin wood about $\frac{1}{2}$ in. thick. The ends can be better cut from slightly thicker material, say, $\frac{3}{4}$ in. wood, or whatever is available. Then nail and glue all together. A bottom, also of thicker wood, is cut a close fit inside, and then tapped in place and securely nailed. Though not imperative, a neater fit for the bottom

about $\frac{1}{2}$ in. and saw across, leaving the lid portion $3\frac{1}{2}$ ins. wide. The narrower portion is to be nailed and glued to the box, but before this is done, a handle should be cut and fixed to it.

Shaping the Handle

The shape and size of the handle can be gathered from the diagrams, and be cut from wood about $\frac{1}{2}$ in. thick, but its exact thickness is not important. A hole, $\frac{1}{2}$ in. diameter is bored through to facilitate lifting purposes. When cutting the handle, allow enough extra at the bottom to form a dovetail. A dovetailed notch is cut away from the front edge of the fixed part of the cover, as in detail drawing, Fig. 3, to admit the handle, which is then glued and also nailed in position. The cover is then fixed to the box, and the lid portion hinged to it.

For suspending the box from the clothes line, a pair of metal hangers will be required. These are made from two strips of brass or other metal about $\frac{1}{2}$ in. wide and to length given in the inset in Fig. 2. Allow a portion, say, 1 in. long, for nailing to the inside of the lid, and in this portion drill or punch a couple of screw holes. The remainder is bent over a piece of $\frac{1}{2}$ in. rod, as seen in the general view of the box. Fix these to the inside

FREE INSIDE!
Grand Design for Toy
'Flying Bird'
See page 291

will result, if the latter has its side edges bevelled to the slope of the box, but this must be allowed for when measuring up, obviously.

The top is divided into two portions, afterwards hinged together to form a lid. Cut the wood (about $\frac{1}{2}$ in. thick is suggested) to overlap sides and ends

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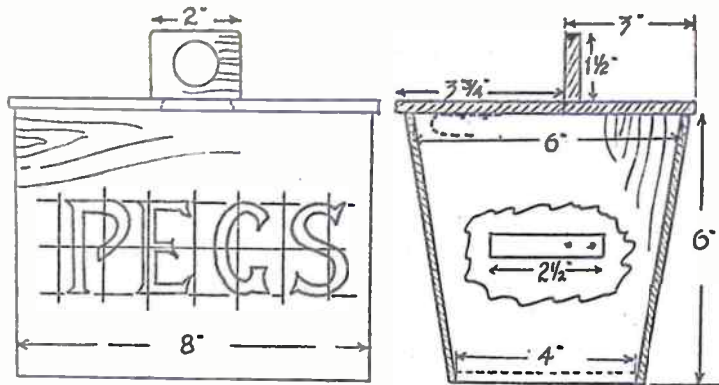


Fig. 1 and 2 — Front and side views

of the lid, about in the position shown by dotted outline in Fig. 2.

Make a Clean Job

This completes the work of construction. Give the whole a good rubbing all over with medium and then fine glasspaper, inside and out, to remove roughness, and possible splinters. This is rather important, as groping in the box for the pegs, if the wood is at all on the rough side, may result in a nasty little splinter or abrasion. The box can easily be left in the plain wood, but

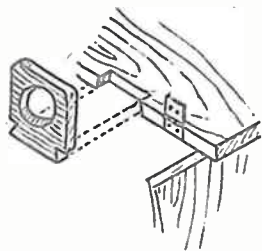


Fig. 3—Details of the handle

wears better if nicely varnished or painted white.

Those artistically inclined, may like to paint the word 'PEGS' on the box, to finish it off. A suggested form of lettering is given in Fig. 1, drawn over 1in. squares for ease in copying. Some suitably coloured paint, and a fine brush will be needed here, and the tyro would be well advised to lightly pencil the letters in. Fretworkers could easily copy the lettering, and cut it out with the fretsaw, quite an easy job. A little dust may work its way into the box, but not enough to soil the pegs within, but if this is objected to, it is a simple matter to glue over the lettering on the inside of the box a piece of stiff lining material or American cloth. This will not only exclude dust, but show the lettering up better.

Overlay Letters

If a little piece of thin overlay wood is to hand a good use for it would be to cut the letters needed from it and glue to the face of the box, and if coloured to contrast with the paint used for the box, would ensure a pleasing result. Possibly for home use the reader would scarcely consider such work necessary, after all it is only a peg box, may be the thought, but if made nicely, especially as a present, the extra work is well worth the trouble for the pleasure the box will give to its recipient. (254)

Some Timely Tasks for Hikers

ONE of the little tasks that can very well be done during winter evenings by the hiker is the renovation of maps. These cost money; therefore, devote a few minutes of your time to the care of such indispensable documents.

Probably you will have used several of your Ordnance Survey sheets during the past summer touring season, and you may find that some of them, especially the unmounted paper ones, crack badly at the folds. Wear and tear soon plays havoc with maps, and there comes a time when you take one out of your haversack to consult it, and the thing falls into pieces. Which is a bit of a nuisance, to put it mildly.

Much may be done to prolong the life of a paper map by pasting gummed slips along the folds. You can do this when the map is new, on the principle that prevention is better than cure. A map so treated will last much longer.

Cloth maps, though more expensive than paper ones, are the best, and it pays to buy them. They do not suffer so greatly from wear and tear, but even so, it may be necessary to gum slips along the folds or over frayed edges.

Soiled maps may be cleaned with a piece of soft India-rubber or a bit of soft

white bread-crust. Store your maps during winter in a dry place where there is no risk of damp or mildew affecting them—a bookcase cupboard or a drawer in your desk.

Always remember that maps are the 'friends' of ramblers and cyclists. Do not neglect them. Indeed, even on a winter evening, with a set of maps spread on the table under a softly-shaded light, you will get much agreeable entertainment; for the next best thing to the open road is thinking about it and planning new adventures to follow when spring and summer come round again. A true out-of-doors lover studies his maps as carefully as a book-lover buys his books.

Winter, too, is a suitable time to overhaul hiking kit generally. With equipment at so high a price nowadays it is wise to 'make do and mend' wherever possible. Rucksacks that have given way at the stitchings should be re-sewn. Where the cloth or canvas is badly worn, patches can be sewn on. Straps frayed or worn may be replaced; buckles seen to, and a general renovation undertaken.

Footwear

Footwear, too, needs attention. If repairs are necessary, boots or shoes should be handed over to a good cobbler early—do not leave such matters until

just before they are needed again. If footgear requires re-studding only, you may be able to do this job yourself, if handy with tools. Do not stud them too heavily.

Even though one may be an all-the-year-round hiker, as keen in winter as in summer, this season gives an opportunity to overhaul one's hiking kit, for there are many long evenings at home which can be profitably employed in sorting over and going through one's equipment. Some items may need discarding, and renewing. Other stuff can be cleaned and refurbished up.

Now comes the opportunity to add new items to the essential dunnage. Make out a list, and then run your eye down it and tick off with a pencil all the items as you inspect them, putting an X against anything that needs attention, as repairs or renewals. Clothes, boots or shoes, socks or stockings, rucksack or haversack, maps, first-aid compact, camera, cape or 'mac', and the rest. It is as well to make the necessary replacements or additions bit by bit during the winter, then the expenditure will not fall too heavily all at once. It is much better to see to these matters now, and not leave them until the time you wish to set off on a long tramp when spring-time comes round again. (243)

How to make up Design No. 2936 — A TOY 'FLYING' BIRD

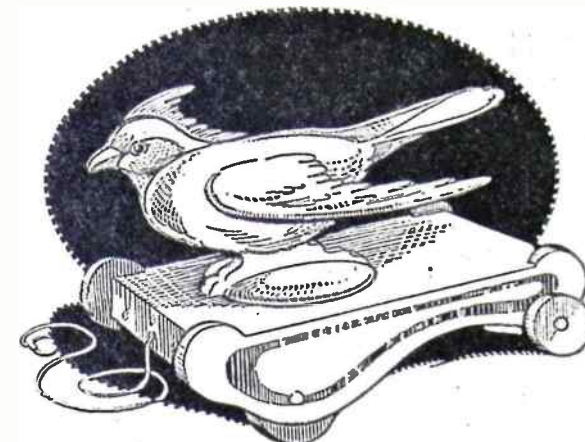
PULL-ALONG toys have always been popular with small children, and this one will be no exception. It consists of a perfectly detailed bird mounted on a wheeled platform. The front wheels have their axle set off-centre, so that as the toy is pulled along it rises and falls rhythmically. This movement, to the children, will be likened to 'flying'.

Preparing the Patterns

Before beginning construction, trace off the pattern pieces on to the required thicknesses of wood, and mark in any necessary dotted lines, etc., which show the positions of tenoned pieces and overlays. The dotted lines on the wings should also be marked in as a guide to the way the wings will later be painted to represent feathers.

Begin the actual building of the toy by making the complete undercarriage. This consists of the floor, two sides, the two cross rails, the axles and wheels. The cross rails are rounded to section as shown on the design sheet.

These parts are now assembled. First glue the two front wheels with their



This is how the toy looks when made up — fit for any nursery. The instructions on this page should be used in conjunction with the Design Sheet free with this issue

of binding or the toy will fall to function properly.

Making the Bird

The whole chassis can now be laid aside to harden thoroughly, and attention can be concentrated on the bird. This is made up of a main body piece, which is cut from 3/4 in. wood, the two side body pieces and the wings. The overlays which fit at either side of the feet of the bird are not, strictly speaking, a part of the bird, but these may also be cut now and this will complete the actual fretsaw work.

When the pieces have been nicely cleaned up, glue the side body sections into position as shown by the dotted line on the main body, and then glue the wings into their respective mortises in the body sides. Before assembly, these wings should have been tapered towards their tips as shown on the design sheet.

It will be found that the bird has a better finished appearance if the tail and body generally are nicely rounded with a file and glasspaper. In fact, there should be few squared edges on it at all.

Final Assembly

The bird, having been satisfactorily completed, can be glued into position on the floor of the chassis, and the two overlays, which give it added strength, should be glued in position after having been nicely rounded as shown.

Construction is now complete, and as soon as the whole thing is perfectly hard, the work of painting can be commenced.

YOURS FOR 4/8

A complete kit of materials for making this toy can be obtained from any Hobbies Branch, or post free from Hobbies Ltd, Dereham, Norfolk. Price 4/8, including tax.

eccentric centres on to their appropriate axle. This axle, it will be noted, is made so that the wheels run inside the chassis, whereas the back wheels run on the outside of the model to give it stability. When gluing on the front wheels, make sure that the position of the two eccentric centres is identical; otherwise the toy will be given a rolling effect rather than a straight up and down movement.

Completing the Chassis

When these wheels are fixed solid on the axle, complete the assembly of the chassis, using glue and small fret pins to secure the sides to the floor and cross rails. Be sure to use only fine fret pins in order not to split the wood. When assembly has proceeded this far, the back axle can be inserted and the two back wheels glued on. Be careful to see that there is ample room between the inside edges of these wheels and the side rails. There should be no suggestion

A painting plan for the bird itself is given on the design sheet, and although this need not be strictly adhered to, the worker should aim at something on these lines if his finished product is to look like the real thing. Use good quality paints, and prepare the wood with a suitable woodfiller.

Contrasting Colours

The chassis itself can be finished in gay colours which contrast suitably with the bird. The worker should not be afraid of bright colours as these hold untold fascination for small children. Be careful when painting the chassis to avoid running paint into the axle holes, as this will, inevitably, tend to bind the axles so that the toy does not function properly.

When the painting has been finished to the worker's satisfaction, and is quite dry, the whole thing should be given two coats of a good clear varnish and left to harden. Then, when it is later presented to its lucky recipient, it will stay bright and unscathed for quite a long time.

Remember — Design Sheets (worth 8d.) are presented free with alternate issues of 'Hobbies Weekly', but not with back numbers. Give your newsagent a regular order.

DESIGNING AND BUILDING MODEL RAILWAYS

By E. F. Carter

WHATEVER one chooses by way of a practical hobby, planning and designing play a very important part. Good designing is half-way towards a satisfactory job, and careless planning will, inevitably, be reflected in the finished article, whatever it is, and however much careful work has been put into its construction.

Model Railways are no exception to the rule, and the writer has seen many model layouts in which the general standard of workmanship has been very good—in fact, of an extremely high order—which have been completely marred in their overall character by careless planning and 'hit-and-miss' methods.

Let us look at the facts of the case. The two primary considerations which must be thoroughly studied before even

the scale will be about one forty-third full-size. In other words, each foot on the model represents 43ft. on the real railway—prototype, as it is called.

Prototype Trains

Now a prototype main-line passenger express train is usually about 500ft. long, and if we scale this down we shall find that we require about 12ft. of track to accommodate an 'O' gauge model of it. This 12ft. is longer than one side of our room—even assuming that the line can be run right into the corners of the room, which is not the case.



The type of engine to use on a small layout

a piece of wood is cut or a nail driven, are the area (space) available for the layout, and the amount of cash available for the hobby.

The first of these matters is usually outside the reader's control, being arbitrarily dictated by the size of his house or by other limitations; whilst the second is largely also present to a definite limit!

A Small Room

If a small box-room—say, 10ft. square is available, then either a small 'O' gauge line, or a fairly extensive 'OO' one can be considered; but if the proposed layout has, perforce, to be of a portable nature, then only 'OO' scale is acceptable, and then only as a less ambitious railway.

Analysing the possibilities of a 10ft. by 10ft. 'O' gauge layout first, let us examine the terrain and see just what can and cannot be done in the available area.

'O' gauge scale is 7 millimetres to the actual foot, so that anything we make in

The Value of Planning

consider the case of the 'OO' portable layout; which may, perhaps, be the only thing possible for the greater number of potential modellers.

Here, for reasons of surface area, it is only possible to consider the smaller scale, and even so, only as it pertains to the 'small country line' type of layout.

The average dining table top is about 3ft. by 6ft. (expanded), and the construction of a home-made sub-structure to carry the model may be out of the question; or, perhaps, there may be no convenient place to erect it, even in portable form.

Location

This 'location' business is the major difficulty with railway modelling. Space-area—in effect, 'land' is needed upon which the tracks can be laid and buildings constructed. Model railwaying is essentially a living hobby, and cannot be compared with the static modelling of ships in glass cases.

Howbeit, each reader must face his individual problems and solve them to the best of his ability. Planning, scrapping, and re-planning with paper and pencil—not forgetting the yard measure—until a sound idea is at last formed of exactly what is expected of the finished model, and the scale to be used to achieve that end.

Paper and pencil are cheap, and planning can be very interesting, so do not be misguided and start laying lines all over the place without first deciding on your plan, scale, and design.

Later we will delve deeper, and examine some possible layouts which are capable of filling both space and 'the bill', and at the same time of providing some interesting building work and operation. (262)

Make sure not to miss the remaining articles in this series—written specially for 'Hobbies' by a man whose name is known to all railway modellers. Place a firm order with your newsagent NOW.

Before making the choice in respect of the 10ft. by 10ft. box-room, let us now

FOR RADIO ENTHUSIASTS

Using Microphone and Pick-Up

IT appears that quite a number of readers are interested in using a microphone or pick-up, or both, with an existing radio receiver, in order to play records, or for other entertainment purposes. If a few important points are kept in mind, excellent results can be obtained without difficulty, and it is, therefore, proposed to set out the best methods of installing such an arrangement. It is possible to obtain a great deal of amusement with very little outlay.

Using the Pick-Up

A radiogram pick-up resembles the tone-arm used in gramophones. Such pick-ups may be bought at most radio shops, and may be used to replace the tone-arm in an existing gramophone. When records are played in the usual way, the pick-up delivers a signal which can be amplified up to any desired strength, and the volume and quality of reproduction are much better than with the old fashioned gramophone.

Most popular pick-ups are of the electro-magnetic type, and this is most generally suitable for average needs. Piezo-electric crystal pick-ups are also available; these are more expensive.

The pick-up normally has a screened lead as shown in Fig. 1. If pick-up sockets (usually marked P.U.) are present on the receiver, it is only necessary to connect plugs as indicated and plug in. If howling and oscillation arises, reverse the plugs in the sockets so that the inner screened lead is the one going to the valve grid, as shown.

Fitting a Socket Strip

If no such sockets are available, a small socket strip may be fitted at the back of the receiver. If the set is battery-operated, one lead from the sockets is taken to grid-bias negative (best voltage being found by trial). With a mains set, take this lead to the metal chassis. This can also be done in battery sets with 'auto' bias, where no grid-bias battery is used.

The second lead must be taken to the control grid of the first valve dealing with low-frequency signals. This will be the detector, in the simpler sets. In superhets, it will be the triode section of the second detector. The grid socket can be found by following the wiring, or by looking up the valve reference number in a valve list. The new lead should not be unnecessarily long.

No changes should be made to mains sets without first disconnecting from

the mains. In cases of doubt, any radio shop should be able to point out connections.

For Carbon Microphones

Ex-service and other carbon mikes are extremely cheap, but the user sometimes



Fig. 1—Connections for gram pick-up

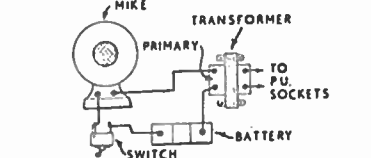


Fig. 2—Transformer and battery with carbon mike

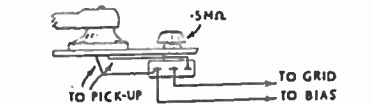


Fig. 3—Adding a volume control to pick-up

overlooks that these microphones generate no signal themselves. They only provide a fluctuating resistance to an applied current. A battery and microphone transformer are, therefore, absolutely essential, and are wired as in Fig. 2. To avoid having to disconnect the battery, a switch may be included in one lead, as illustrated.

The microphone transformer has a low-resistance primary, and a step-up ratio of about 1:50 or 1:100. The secondary is taken to the P.U. sockets. An old speaker output transformer will work well, here, if the low-resistance secondary is employed as primary.

A dry battery is used. Its voltage will to some extent influence results, and the best voltage may be found by trial. About 3 to 6 volts is a usual figure.

Some of the larger carbon microphones have a transformer built into the stand. This can be ascertained by examination. If so, no additional transformer is required, but the battery will be retained.

Other Microphones

Moving-coil and ribbon microphones generate their own signal, but require a matching transformer. Their output is fairly small, which means that more

amplification is required for loud reproduction. They give better quality than the carbon microphone. It is only necessary to take the transformer primary to the microphone, and the secondary to the P.U. sockets.

If a small moving-coil speaker is to hand, this will make a good microphone, though it is rather bulky. The old type of cone speaker can also be used. A single earpiece will also function in this way, but is only sensitive to fairly loud sounds at a short distance.

With crystal and other special microphones the manufacturer's individual instructions should be followed.

Adding a Volume Control

In some receivers the volume control functions on radio only. Here, a volume control for the pick-up or microphone can be added as shown in Fig. 3. If used for a pick-up, the .5 megohm potentiometer is best mounted on the motor-board near the turntable. In the event of oscillation arising, the lead from the centre tag of the control should be screened, as shown in Fig. 1. This will only be necessary if the leads are long, and the receiver provides a good deal of amplification.

If a microphone is to be used, the volume control may be mounted either at the back of the receiver, or as convenient near the microphone itself.

A 'Mixing' Panel

When home entertainments with both records and microphone are attempted, it is useful to be able to have both in action at once, and control the volume of each independently. A background of music may then be faded in while the microphone is in use, and so on.

This may be done by wiring two volume controls as shown in Fig. 4. The parts may be mounted on a small panel, or enclosed in a box. Both microphone and gram inputs are taken to it, and the output taken by two leads to the P.U. sockets of the set. Knobs with pointers should be fitted to the controls, so that their position can be ascertained at a glance.

Points to Note

In some cases it may be desired to have the microphone in the same room as that in which the receiver is situated. If this is so, direct sound-waves from the loudspeaker should not be allowed to reach the microphone, or continuous

(Continued on page 294)

A practical handyman explains some ideas for IMPROVEMENTS IN THE HOME

SOMETIMES we do up a room and sit back on our laurels and leave it at that. We should make a much better job of it if we attended to all the smaller details inside the room, and this would not take long or cost much. It would certainly make a great difference to the finished job.

Tarnished Light Fittings

Probably you have the hanging type pendant lamp bowl and the chains are tarnished. You can buy, in short lengths, suitable chain in bronze or silver to replace these. The cost is not great, about 3/-. Metal fittings near the ceiling can be cleaned with warm soda water and given a coat of bronze paint obtainable from art shops.

Many of us still have the old type ornaments of figures and groups on the mantel-piece, and these get to look a little grubby with time. Clean them down with warm water, and give a coat of copper bronze or dull bronze put on with a small soft brush. They will then look much brighter.

Over a period of years all the window catches, latches and fittings may get patches of half-worn paint or enamel on them. Why not have them all uniform and neat? Clean mine down and give them a coat of aluminium paint as this looks good whatever the shade of the room decoration. It dries very quickly and preserves the metal.

Having decorated the rooms, why leave the weak catch on the kitchen door to annoy you all winter? Springs cost a few pence and all you have to do is take off the lock and fit a new one. I take down the lock and keep all the parts together

and if I am not sure where they go I make a small rough sketch. This is better than getting it to pieces and then getting mixed up.

Fire Place Surrounds

Even the old-fashioned flowery fire place surround can be brought up-to-date with a little trouble. Give it a coat of cream flat paint to cover up the glazed surface. Now choose, perhaps, bright green and yellow for a mottled effect. Mix a little of each in a lid and then apply with a short stencil brush. A third contrasting shade can be used if you feel quite confident.

Sometimes we have a mantel-shelf which is rough and paints badly. I treated such a shelf with a special panel of plastic material cut to size. It may be a little expensive but it is worth it and prevents structural alterations. This can be drilled and will hold with little nails.

Picture hangers can be replaced quite cheaply. Over the years these become a depressing green. New ones cost about threepence each and look much brighter. The same applies to kitchen hooks and the new white porcelain ones are ideal.

Renovating Skirting Boards

I recently decorated my kitchen, which is not a very large room. Gaps had appeared under the skirting board and I had some trouble with mice nibbling their way under. I made a neat finish at the base of the skirting, and level with the floor, with some 1/2 in. quarter round moulding. Actually, treated in a contrasting shade this is rather effective in a small room and adds to the finish.

There may be many items you can stain and which will considerably add to the beauty of a room. Varnish stains can make quite a difference.

Most houses have several small tables of the low type and these are mostly rather dull. Try a pot of enamel on these in bright red or even Chrome yellow. These two shades will tone in well with tapestry curtains with contrasting shades of fawn, nigger and red. These make points of colour which you may not have thought of before.

We mostly keep to our pictures as otherwise walls look bare. If gold frames have ceased to be bright and they have gold surrounds try doing them in jet black. This is most attractive.

Brightening Wooden Pelmet

Wood pelmet can look heavy at times and a little dowdy. To paint them may mean too much work and may not fit in with your scheme. Mine were of the rounded corner type in thin three-ply. I covered them with an attractive shade of pale orange parchment and added tassels in old gold. This idea is simple but looks quite different.

Some people have the old-type round wall plaques in metal or plaster. With age these become very dull and dismal. They are again very fashionable but cost anything up to 17/6 each in colour. I treated mine to a new coat of enamel in the appropriate shades getting my ideas from a children's cut-out book. A little artistic work on roof and tree effects can make these most enchanting.

Many more ideas may come to you. Think them out and enjoy living in brighter surroundings. It costs little and you will gain by the experience (247)

USING MIKES AND PICK-UPS

(Continued from page 293)

howling will arise. A screen of sound-absorbing material between the mike and loudspeaker will be sufficient if volume is kept down. If high volume is required, however, then it will be necessary to take the microphone into another room, running leads from it.

Pick-up Not Affected

As a pick-up is not influenced by sound-waves, it, with record-player, may be in the same room as the receiver.

It is desirable to keep the leads from pick-up to receiver as short as possible. If long, they should not run near other wiring, or oscillation may arise, or hum

be introduced. Normally, however, this matter is not critical, though it may need to be kept in mind, in a few special cases.

Finally, in cheap A.C./D.C. type receivers, one mains lead is wired to the metal chassis itself. Proper insulation should, therefore, be used throughout the insulation, so that shocks are not caused by bare joints, etc., being touched. Alternatively, include a .5 mfd. condenser of good quality in

each lead, at the receiver end of the wiring, to isolate pick-up, microphone, etc., from the mains voltages. (260)

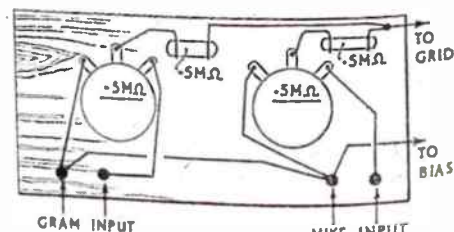


Fig. 4—Back view of mixing panel

Little girls will like this 'upholstered' TOY FURNITURE

U PHOLSTERED furniture for a doll's house is inexpensive, attractive and easily made.

The materials needed are ice cream cups, pill boxes, small, fairly deep cardboard boxes, scraps of felt, chintz, cotton or velvet and some silk cord. From these, armchairs, sofas and pouffes can be made which will delight any little girl.

The simplest piece of furniture to make is the pouffe. This has as a foundation an ordinary pill box. First cut two circles of felt which should be slightly larger than the box. These form the top and the base.

From the side cut an oblong strip the same width as the box and long enough to wrap round it. Join the strip to form a ring, and oversew it neatly to one of the circles of felt. Insert the pill box, put a little padding on top of the box, cover it with the other circle of felt and oversew it firmly into position.

The appearance of the pouffe is improved if silk cord is stitched round the edge, top and bottom, but this is not really necessary.

The Armchair

The foundation of the armchair is an ice cream cup. Cut away from the cup a section as shown by the dotted lines in Fig. 1. The shape of the chair can be varied by cutting the back so that it has straight sides; a curved back or 'wings'.

The instructions given here are for the straight-sided chair. To cover the back of the chair, two pieces of felt are used. The outer piece should extend right round the back of the chair, and the length should correspond to that of the outside of the cup (A-B) in Fig. 2. The inner piece will be slightly smaller, the length being equal to the depth of the cup from the inside base to the top (C-D) in Fig. 2.

These two pieces are oversewn together, leaving a small section unsewn at the bottom of each side (Fig. 3).

This is to allow the inner and outer piece of felt to fit neatly at the lower edges (E) and (F) (Fig. 2).

The back cover is then slipped into position and should be a fairly tight fit.

An oblong piece of felt is then cut to cover the low front of the cup (E-F) (Fig. 2), allowing enough material to turn in over the edge (F-G).

Join the strip firmly to the back cover (E-H) and (F-I) in Fig. 2. Fold the turning over the front edge of the chair and stitch it neatly into place. Make a small round cushion to fit in the seat of the chair, stuff it firmly and sew it in.

Turn the chair over and fill the hollow base with waste scraps, cut a circle of felt to fit the bottom and oversew it to the chair cover.

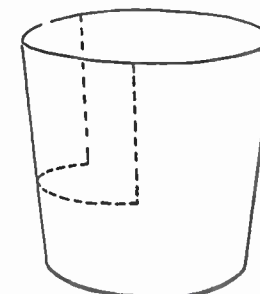


Fig. 1

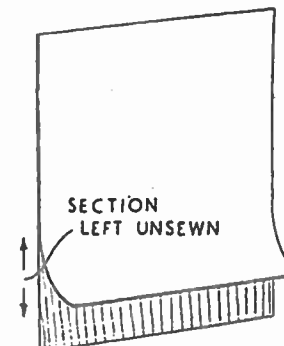


Fig. 3

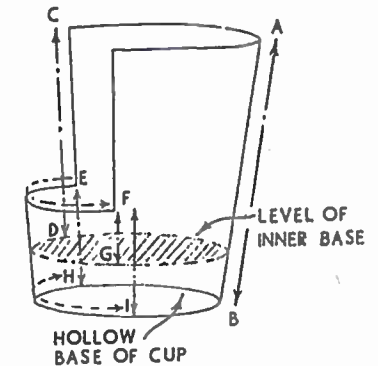


Fig. 2

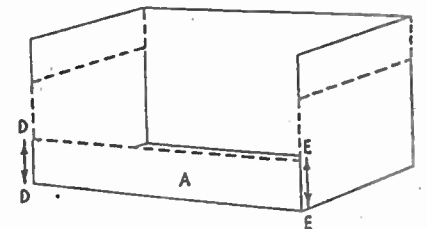


Fig. 4

Finishing touches can be given by either sewing a thin silk cord round the edges of the chair, thus concealing all seams and joins, or by using a decorative blanket stitch in a contrasting coloured silk.

The sofa is made on the same principle as the arm chair, using a small deep cardboard box as a base.

In Fig. 4 the dotted lines show one-third of each end and two-thirds of one long side of the box cut away.

This gives the shape of the sofa, which can then be covered either according to the directions for the arm chair or, if a more elaborate article is required, the back and arms can be padded. If the latter method is chosen, do the padding first.

Lay a strip of cotton wadding, cut to the same size as the back of the sofa, along the back and sew it down to the cardboard so that the wadding is evenly divided into three vertical sections by the stitching.

Cover the padding with a piece of felt and sew it down along the vertical stitching. Leave the ends and the top free, but sew the bottom of the felt into place.

To pad the arms, lay a piece of wadding, cut to shape, on the inner side, and stitch it into place round the edges only. Cover with the felt. Sew this down along the bottom and the inside edge, catching in the adjacent edge of the back section at the same time.

Then cover the outside of the sofa with a single piece cut to fit the back and arms. Oversew it firmly to the inside piece of felt.

Cut a narrow strip of felt, as long as, and slightly wider than, the front of the sofa (A in Fig. 4). Fold in the extra width as a turning and stitch the ends to the lower edges of the felt covering the sides of the sofa (D,D. and E.E. in Fig. 4).

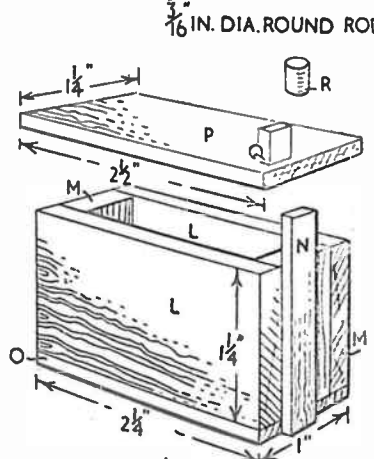
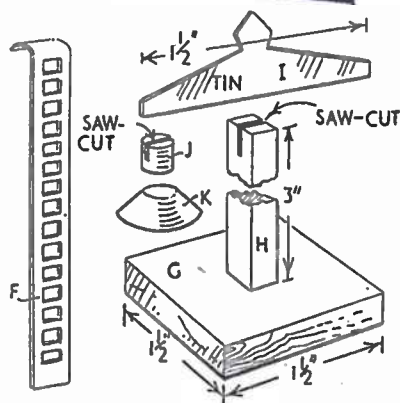
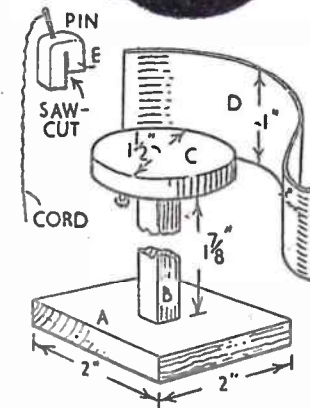
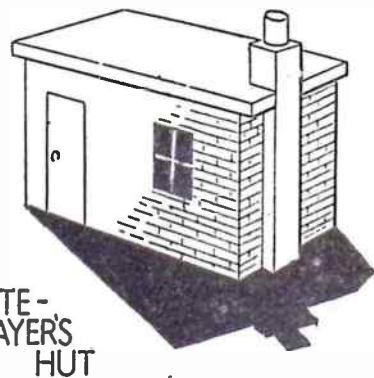
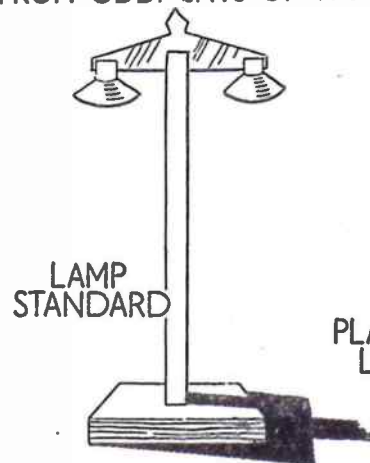
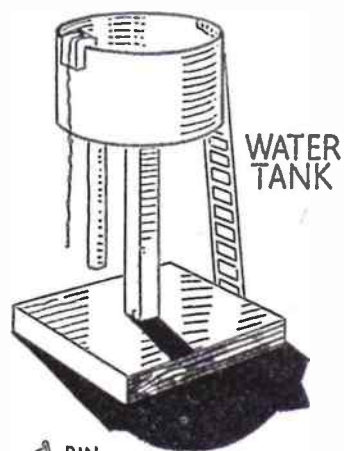
Either make one large cushion to fill in the whole of the seat, or two or three smaller ones. Sew them into place. Cover the base of the sofa with a piece of felt, making it fit as tightly as possible.

Finish the sofa by edging it with silk cord.

The instructions for these pieces of furniture mention the use of felt throughout. If chintz, cotton or velvet are used, turnings must be allowed for on all edges. (239)

More Toy Train Accessories

FROM ODDMENTS OF WOOD



THIS week we give instructions for making a Water Tank, Lamp Standard, and Platelayer's Hut. The Lamp Standard is intended to stand in the goods yard, but can be used for the station if the upright piece is shortened. The base can be omitted altogether and the upright screwed or pinned to the platform.

The Water Tank

The base (A) is cut from $\frac{1}{2}$ in. wood and to this is screwed, from the underside, the upright (B). This is a piece of $\frac{3}{8}$ in. square wood $1\frac{1}{2}$ ins. long. The circular piece (C) can be cut from $\frac{1}{2}$ in. or $\frac{3}{8}$ in. wood and around this is wrapped a piece of thin card or stiff paper to form the tank. Next is added the small block of wood (E) which is $\frac{1}{2}$ in. thick. Notice that a saw cut is made, to allow the block to slip down over the side of the

tank. Drill a small hole with a fretwork drill and push in a short fretpin to which is attached a length of cord or fine chain taken from an old necklace. The ladder can best be made from card. It should be just long enough to reach from the base to the top of the tank. Draw it out first and then cut with a razor blade. Glue it to the base and the top of the tank. The filler hose is made from a length of valve rubber, and is pushed up on to a round-head screw.

The Lamp Standard

The base (G), which is shown slightly larger in proportion to the other drawings, is $1\frac{1}{2}$ ins. square and is cut from $\frac{1}{2}$ in. wood. As in the case of the water tank the upright (H), cut from $\frac{3}{8}$ in. by $\frac{3}{8}$ in. stripwood, is glued and screwed in place. The cross piece at the top, piece (I), is cut from tin and is dropped into a slot in the upright (H).

The lamps are each made up as shown, from two pieces, one (J) and one (K). Piece (J) is a $\frac{1}{2}$ in. length of $\frac{1}{8}$ in. or $\frac{3}{16}$ in. round rod and piece (K) is a $\frac{1}{8}$ in. diameter circle of $\frac{1}{2}$ in. wood. Shape as shown in the sketch.

The Platelayer's Hut

Cut the base (O) from $\frac{1}{2}$ in. wood and upon this build the four sides (L) and (M). The sides (M) are $1\frac{1}{2}$ ins. by $\frac{1}{2}$ in. and all four pieces are cut from $\frac{1}{2}$ in. wood. The roof is cut from $\frac{1}{2}$ in. wood and has a slot cut away at one end. You will see that the chimney, piece (N) fits in here. To make up the thickness of the chimney at the top, piece (Q) must be glued in place. Piece (Q) measures $\frac{1}{2}$ in. by $\frac{1}{2}$ in. by $\frac{1}{2}$ in. On the top of this glue the chimney pot (R), which is a $\frac{1}{2}$ in. length of $\frac{1}{16}$ in. diameter round rod.

Clean all the parts with glasspaper and give two coats of enamel. (264)

Your pictures will 'live' in A STEREOSCOPE

SOME time ago we gave a method of making stereoscopic pictures with an ordinary single-lensed camera and here is described a simple stereoscope for viewing either pairs of pictures produced by yourself or those bought commercially as finished stereo slides.

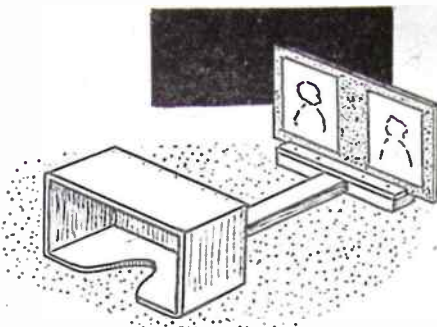
Not Magic

First it must be realized that there is nothing magical about the lenses of a stereoscope. The effect of relief can actually be obtained from a stereoscopic pair of prints with the naked eye, the only effect of the lenses being to enlarge the pictures and help to a certain extent in the quick adjusting of the vision.

To get the effect without a stereoscope, hold the slide out before the eyes and then as it were, look beyond it to an imaginary far horizon. This means the optical axes (lines taken from the eyes) are parallel. The slide, of course, looks blurred but in a moment a third picture appears in place of the two, the middle one becoming steadily clearer till it is in

the stereoscope (see Figs. 1 and 2). The arm (A) is 10 ins. by 1 in. by $\frac{1}{2}$ in. and on this slides the assemblage (B) which holds the picture. This is made up of two pieces (C) and (D), the former having a rectangle cut out in the centre just large enough to take (A), while (D) is merely a flat strip that goes on the top to make the opening into a tunnel. If cut carefully this holder will just slide nicely on the main member. Both (C) and (D) are 5 ins. long, (C) being 1 in. by $\frac{1}{2}$ in. in section and (D) just a strip $\frac{1}{2}$ in. thick.

After fitting together with sprigs and glue, slice away a strip $\frac{1}{2}$ in. wide at the rear side of (D) and fasten in position the upright (E), 2 ins. high, with two small screws. The stereo slides are thus held by placing the lower edges in the groove



there are no side supports, it must be seen that the cards are centred about the middle strip and it may in some cases be advantageous to hold the viewer tilted slightly downwards.

Now we come to the front panel which

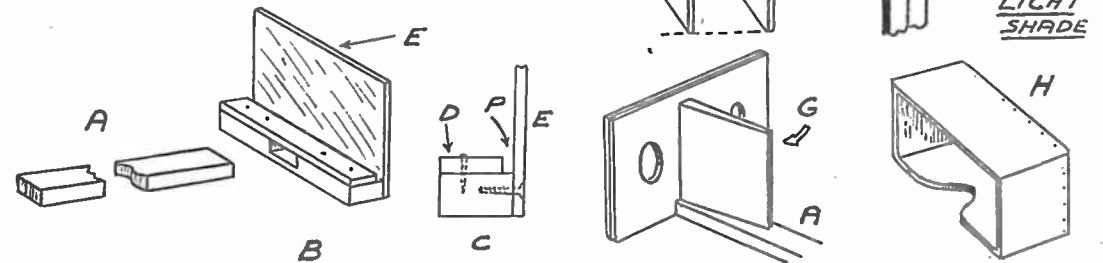


Fig. 1—Details of the sliding picture holder

Fig. 2—The front panel and eyeshade

sharp definition. This middle one is then seen to be standing out in full relief.

It helps a little with some persons if a card is held edgewise against the nose, so that one eye looks along one side of it and the other eye along the other.

The main point in making a stereoscope is that the lenses must be matched, and to this end strong lenses from a discarded pair of ordinary spectacles will do well—or cheap spectacles can now be obtained for about $\frac{3}{16}$ from certain chain stores.

Two watchmakers magnifiers matched, also do very well for stereoscopic lenses, with the added advantage that they have eye shades which cut out all side light and help to make the picture clearer. Furthermore, already being in small cases it is very easy to fit these magnifiers into the front panel of a viewer.

Now with regard to the woodwork of

(P) formed by the cut side of (D) and the back.

There are no end pieces on this holder as there are on most, so any length of slide can be taken, from a fairly small 'eye separation' to the full standard stereogram. This is an advantage but as

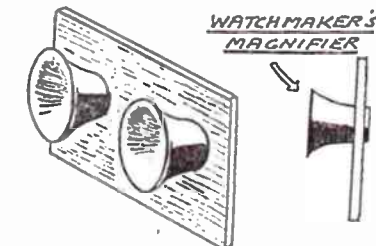


Fig. 3—The front panel when watchmaker's magnifiers are used as lenses

supports the lenses.

It is good to have got the stereoscopic effect first by just holding the glasses before your eyes and then you will know just what is being aimed for.

If you are using spectacle lenses these must be from a strong pair, so that there is good magnification at a fairly close range. Weak glasses that are intended to give a focus many yards away are useless. The watchmakers eye-glasses are good in this respect and especially satisfactory if the pictures on the slide are small.

The Front

The front assemblage is made up of two pieces of plywood (F) Fig. 2, $4\frac{1}{2}$ ins. wide and $2\frac{1}{2}$ ins. high, and also the division (G). The panel is held eventually

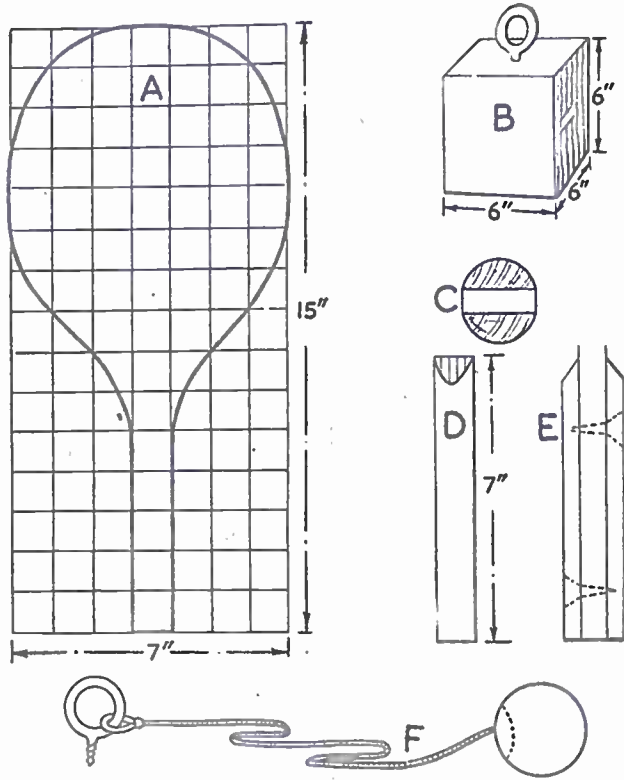
(Continued on page 298)

How you can MAKE AND PLAY JOKARI

THIS French game is great fun and good exercise for two to six players. Given any space from 25ft. to 30ft. square, all you need is a 'Kumbak' type tethered tennis ball, wooden block and bats similar to those used in table tennis but about twice the size, with a longer handle. The ball 'flies through the air with the greatest of ease' at the free end of a 12ft. elastic, the other end of which is anchored to a 6in. square wooden block by means of a screwed ring-hook.

On grass it may be fastened to a long metal tent peg or meat skewer driven up to the head into the ground. In practice, the block is the better method of the two. The snowshoe-shaped bats are cut from three-ply or ½in. wood as per the diagram. Draw a full-size copy to scale to provide a pattern for pasting on the wooden oblong for cutting out. Two 7in. lengths of split broomstale or dowel rod—sawn in half lengthways and shaped to a blunt point at one end—form the handle. These are fastened to the bat with a slender 'countersunk-headscrew' each side. To finish off the handle, bind with fine twine, stout fishing line, or strong adhesive tape. A large cycle handlebar rubber or tennis racquet grip may be used if desired.

If you have not the amount of play room mentioned, shorten the elastic to half the length of whatever space you have available; and use the smaller table tennis bat, using the stoutest kind you can get. (Note that the length of elastic should not be less than 6ft. for satisfactory play). Tethered balls are sold by sports shops. (221)



Drawings to help the constructor

A STEREOSCOPE

(Continued from page 297)

by a screw going into the end of (A), while the division (G), which is ½in. thick at the rear end, thinning to the other like a wedge, is secured by glue and a few small pins, in through the (F) pieces.

Before finally putting together, cut two holes in one of the panel sections about ½in. diameter, and at points 2½ins. apart (the average measurement between the eyes) and in the other piece, take out two holes with the same centre but with a diameter equal to that of the lenses. Thus, when the two pieces are brought together, recesses are formed, each of which will hold a lens.

Once in position the glasses are secured by strips of cloth (K), having

½in. holes cut in them, which are glued over the wood and glass at the open side.

Having finally assembled the front and made it secure, complete with the eye shade (H). This is a rim of card with an opening cut in the lower side to accommodate the nose. The card is held round the edge of (F) with glue and a series of short pins.

Testing

The viewer is now complete, and if all has gone well, a stereo slide placed in the slot in (B)—with its centre over the middle of (A) and then moved about till the right position is obtained—will suddenly blossom into a picture in full relief.

The centre division helps a lot in getting the single picture quickly, but if you have not had much practice of this sort of thing, do not be over concerned if it does not jump at you at once.

If you are using the watchmakers glasses, the eye shade (H) can be dispensed with. The two just wedge into holes cut in the front as Fig. 3. In this case be careful that the glasses are level one with the other and that they are not sticking through for different distances. The magnifiers are secured in position by glue, but the slight springiness of the attached eye shade really makes them hold quite firmly by friction only.

The completed viewer can be stained any suitable colour, but the side of the front that comes towards the eyes must be of a dark tone. (266)

MAKING A SMALL OCCASIONAL TABLE

ATABLE such as the one illustrated would be useful for standing in the corner of a room to support a bowl of flowers or bulbs. It would also answer as a card table or a smoker's companion for the winter nights round the fire. Construction is simple, as the diagrams will show.

The top, being fairly large and octagonal in shape, should be made in two or even three widths glued together. Glue up the pieces and weight them down until the glue has hardened. If the worker is any hand at making a good dowelled joint, then two or three hardwood dowels may be let into the glued edges to make a really strong joint.

From the measurements given, set

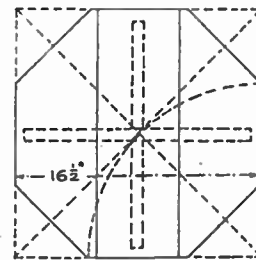


Fig. 1

out the square and draw the two diagonals across the board. Take one half of a diagonal and measure from each corner of the board each way along the edges to determine the points at which to cut off the corners. These, of course, are at an angle of 45 degrees. The diagram Fig. 1 shows the lay-out, the dotted lines indicating the diagonals and the curved line struck from one corner. Connect the points, and then cut off the four corners to the lines, using either a coarse fretsaw or a small-tooth tenon saw.

Cross Rails

Next, set out the position of the two cross rails which go beneath the top. These are shown by the dotted lines. The two rails are each 15ins. long by 2ins. deep, and the ends will be set out as shown in the elevation of the table in Fig. 2, and in the detail Fig. 3.

Each leg fits against a shoulder on the cross rails and is thus held rigidly when screwed. The top of the table is fixed to the rails by means of countersunk screws put down through the top, the heads being driven well down and

afterwards filled with a suitable stopping.

The two lower cross rails consist of flat ½in. boards 17ins. long, 2½ins. wide. At each end of the rails set out the tenon and its wedge hole, as shown in Fig. 4, and then carefully set out the angle at which the legs rest in relation to the rails. This latter angle can best be got by setting out a full size detail and making an angle square for final checking.

The Lower Rails

The two lower rails will be halved together in their centres and cut down and cleaned out as Fig. 5 shows. Two

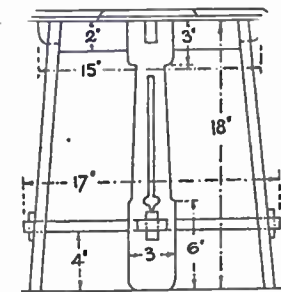


Fig. 2

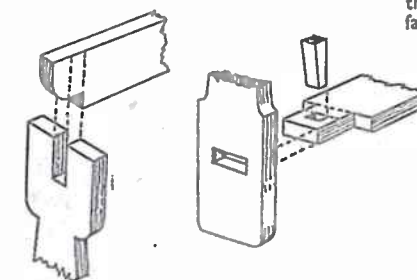
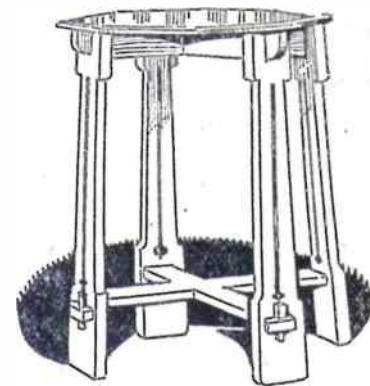


Fig. 3

Fig. 4



screws run in from underneath the rails will hold them secure, while the legs are being put on.

The legs are set out and cut from ½in. or ¾in. wood measuring 18½ins. long, 3ins. wide. Draw in the mortise for the lower cross rail 2ins. long, and as wide as the thickness of wood used.

Shaping the Legs

Shape the legs according to the measurements given and cut the open fret to some simple outline such as that shown. In finally putting the legs on to the rails, fit them carefully, first examining the angles and bevels and cutting and trimming wherever necessary.

Four tapered wedges or keys are cut as shown in the detail Fig. 4 and driven through the slots in the lower rails. To fasten the legs to the top rails, either

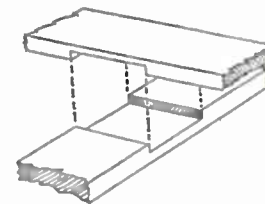


Fig. 5

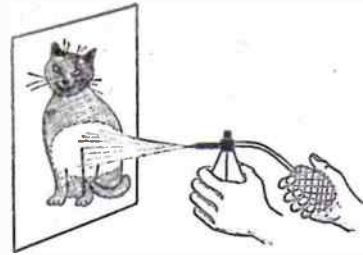
glued angle blocks can be put in the angle at the back of the legs, or countersunk screws run in from the sides of the legs.

Finish

The matter of finish for the wood will depend upon the variety of wood used. If oak is chosen, it should be stained down to the tone desired and then either wax polished or oiled and rubbed up. Or the surfaces may be waxed and rubbed up. The top of the table will be improved in appearance if the edges are chamfered. (280)

A COTTON REEL CANDLESTICK

Get two or three cotton reels and clean off rims to make them perfectly round. Then get a dowel rod ½in. diameter and hollow out the reels to the right width. Fit the dowel rod through the reels and hollow the top reel to ½in. wide and ½in. deep. Then make three rings 4ins., 3½ins. and 3ins. in diameter of fretwood for the base. Glue together and stain to suit your fancy.



A change of colour for a cat!

'Magic' with hydrogen peroxide in HOME CHEMISTRY

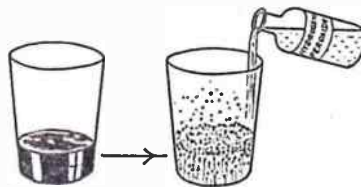
bleach shows that it is safe and does not spoil the material to be bleached. Therefore it is used to whiten materials which are damaged by chlorine bleaches, such as feathers, straw and silk.

It also decolourises acidified potassium permanganate. Mix one volume of a cold strong solution of potassium permanganate with one volume of dilute (ten per cent) sulphuric acid, and then add one volume of hydrogen peroxide. The purple-red colour is instantly destroyed and a brisk effervescence occurs. Pass a glowing splint into the test tube. It will burst into flame with a 'pop' in the oxygen which is being evolved.

Another Trick

In this reaction we have another party trick and a way of making manganese sulphate.

The trick consists of turning 'claret' into 'health salts' (Fig. 2). Pour some



Changing the 'beverages'

acidified potassium permanganate into a tumbler. Add hydrogen peroxide. The instant disappearance of the colour and the brisk effervescence make this trick impressive. The 'health salts' must not be drunk, of course.

To prepare the manganese sulphate repeat the experiment with 50ccs. each of the three ingredients and then add more potassium permanganate solution until it is no longer bleached. Filter the solution and add the filtrate to 100ccs. of a thirty per cent solution of washing soda.

A white precipitate of manganese carbonate forms. Filter it off and wash it on the filter until the wash waters no longer give a white precipitate with barium chloride.

Transfer the manganese carbonate to a beaker and add dilute sulphuric acid until only a little of the carbonate remains undissolved. Filter the solution and evaporate it to the crystallisation point. On cooling, crystals of manganese sulphate will separate. Let the solution stand overnight to complete the crystallisation. Then drain and dry the crystals on a porous tile.

A very characteristic test for hydrogen peroxide is its action on chromates or bichromates. Put into a test tube a drop each of potassium bichromate solution and dilute sulphuric acid. Half fill the test tube with water and mix well. Add one drop of hydrogen peroxide. A brilliant blue colour develops, which chemists believe to be due to the presence of unstable perchromic acid.

Hydrogen peroxide also liberates iodine from potassium iodide solution. Add a few drops of dilute hydrochloric acid to the potassium iodide and then drop in hydrogen peroxide. Slowly the colourless solution becomes yellow, then brown and smells strongly of iodine.

Many ordinary oxides and hydroxides can be converted into peroxides by means of hydrogen peroxide. Barium dioxide is one of these.

To prepare it add hydrogen peroxide to barium hydroxide solution until no more white precipitate forms. Let it stand half an hour and then filter off the precipitate, which is barium dioxide. No washing is necessary, as water is the only other product of the reaction. Dry it in a cool oven.

Cadmium peroxide is prepared by a modified method. Add ammonium hydroxide solution to cadmium sulphate solution until the white precipitate first formed redissolves. Now add hydrogen peroxide. The cadmium peroxide will be thrown down as a white precipitate. Filter it and wash it on the filter and then dry it on a porous tile.

Unstable

An unstable peroxide is copper dioxide—so unstable that unless it is made under carefully controlled conditions one has only time just to see it before it decomposes.

To have a glimpse of this elusive compound first prepare a little copper hydroxide in a test tube by adding sodium hydroxide solution to copper sulphate solution. The copper hydroxide appears as a blue precipitate.

Watching closely, add hydrogen peroxide. The blue hydroxide is changed to olive-coloured copper dioxide but immediately darkens, evolves oxygen and passes into ordinary copper oxide.

Although the dilute solution of hydrogen peroxide we have used in these experiments is so safe, the pure 100 per cent substance is not nice to know. It is a thick liquid which blisters the skin, sets fire to cotton, and if some powdered metals are dropped into it explodes violently!

(218)

AMATEUR MICROSCOPY

MAKING MICROSCOPE SLIDES

PEOPLE making a hobby of microscopy, sooner or later want to make a collection of microscope slides with insects, or parts of insects, retained as permanent mounts.

The Northern Biological Supply Company, of High Park Drive, Heaton, Bradford, will supply almost any insect, or part of insect, beautifully mounted, on request, but the amateur microscopist will often enjoy collecting his own insects and mounting them. When out on a country ramble take a small screw-capped jar partly filled with methylated spirits and catch whatever insects you see. Place these in the jar and they can be left there indefinitely until you desire to make your mount.

'Pickled'

Such a jar can soon contain a house fly and a horse fly, a bee and a wasp, small spiders, a centipede and a moth. They will all be overcome by the vapour of the spirits and then drowned in the liquid, before remaining thus 'pickled' until required.

Any insect or part of an insect you desire to mount, that has not been so pickled, should be placed in methylated spirits for at least twenty-four hours before proceeding to be mounted.

Obtain a number of microscope glass slips 3ins. by 1in. and a supply of ½in. diameter cover glasses. These are both obtained very cheaply from any microscope dealers or leading chemists' shop. Also obtain a small bottle of Canada

Balsam, and a little turpentine, at the same time.

The legs, wings, etc., of insects (but not their bodies), after thus soaking in spirits, should be allowed to dry in the air and should then be soaked in turpentine for three hours or more. Now place one drop of Canada Balsam on a glass slip, warm it slightly in a spirit flame, remove the insect part from the turpentine on the point of a needle, and place it on the Canada Balsam. Place a cover glass on top again and press down gently. Allow it to stand for a few days. A thin ring of ordinary black lacquer can now be painted round the outer edge of the cover glass to protect the edge of the balsam but this is not really necessary, although, if carefully done, it gives the mount a nice finish. A small gum label at the end of the slip, with the description of the specimen, now completes the mount.

Insect heads and bodies, whether pickled or not, need to be soaked in 10 per cent Caustic Potash solution for three or four hours, before being removed on a needle point and washed well in a small stream of running cold water. Now place your specimen on a piece of clean glass (a microscope slip would do admirably) and gently squeeze with a glass rod to remove all the inside. The washing in running water should now be repeated and the specimen should be placed in methylated spirits for twenty-four hours, after which the mounting process is exactly as already outlined for legs, wings, etc.

Occasionally a very small insect, or portion of same, will be better seen under the microscope if stained, and this is most easily done by soaking it in a methylated spirits solution of Pieric Acid and allowing it to dry in the air, before placing it in the turpentine.

First Attempts May Fail

Very rarely is an amateur successful in making very satisfactory mounts at the first attempt. Often bubbles will spoil the result, due to over warming of the Canada Balsam, or particles of dirt can be seen, under the microscope, because the glass slip or the cover glass were not perfectly clean when the mount was being made. Such cleaning is usually best effected by breathing on the glass and gently rubbing on a clean cotton handkerchief.

One who is seeking to make a large collection of insect mounts will usually want to prepare a set of instruments for the purpose. These can be made by fixing strong darning needles and the blades from an old pocket knife into handles made from short lengths of round stick. The writer made such a set of scalpels, using the centres of camera film spools as handles, lead being poured into the holes, and the finished handle filed and glasspapered to make it more pleasant to the touch. Thus equipped, an amateur is ready to make a most interesting collection of microscope specimens that will be increased after every country outing. (222)

KITS for OLD TIME SHIPS

Hobbies range of Ship Models includes Elizabeth Jones, Cutty Sark, Victory, Mayflower, etc. Complete kits of wood, sail material, guns, pulleys, cord, etc., with full size patterns of parts and planed wood ready to cut out, shape and construct. A fascinating pastime. Kits for models 7ins. long and upwards. Ask for free illustrated lists at Hobbies Branches or from Hobbies Limited, Dept. 99, Dereham, Norfolk.



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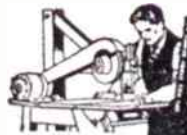
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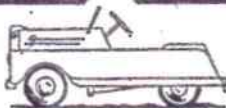
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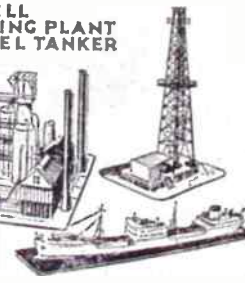
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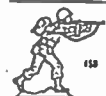
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