

Hobbies

WEEKLY

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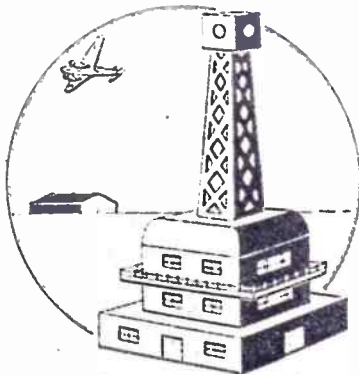
January 30th, 1952

Price Fourpence

Vol. 113 No. 2935

Modern youngsters would like this

MODEL AIRPORT SIGNALLING TOWER



headed screws as studs for the switch contacts. Particulars are given for making the model in its simplest form, but there is, of course, no end to the additions (such as a little ladder up the tower and a figure or two on the veranda) that can be added by the air-minded enthusiast.

Cutting Out

The ground floor of the model is simply a piece of 1in. wood 7ins. by 7ins. and the walls of the building are four pieces cut to form a box 6ins. by 6ins. and 2½ins. high. The roof is cut from another piece of 1in. thickness, and is 6ins. by 6ins. with the top edges rounded off as shown. This roof is later secured to the walls with a pair of hinges, to give access to the interior (where the battery is housed). The tower is cut from four pieces each 5ins. by 2ins. and fretted out as shown at Fig. 1 to resemble the steel interlacing. Rub the bottom and top edges down to a slight angle with glasspaper, so that when the four pieces are fixed together the bottom edges make a flat contact with the roof and the top edges with the bottom of the lamp house. Bore a small hole in the centre of the roof piece, for the flex to come through.

Fig. 2 shows the details of the lamp house. Mark out the six little pieces as given in the Cutting List and draw a hole

½in. in diameter in the centre of the four sides. Remember, of course, to cut out these holes before separating the pieces, as the pieces are rather small for handling afterwards. Cut three narrow strips ½in. wide, one 7ins. and two 6ins. long, for the balcony. The battery is held up one corner of the box by two pieces screwed to the inside of the walls. The size of these pieces will depend on the battery to be used, but for a standard two-cell type they will be one 3½ins. and the other 2½ins.

Assembly

Having cut out all the pieces and glasspapered them up, we can start the assembly. Screw three of the four wall pieces together and glue them down in the centre of the base. Do not add the fourth side until the switch and rotator have been added, as explained below. Screw in the two pieces that are to hold the battery in one corner of the box, and glue or screw the four pieces of the tower together. Next screw the two lamp holders down to the lamp compartment base, not forgetting the holes underneath them to allow the flex to come through and down the tower to the controls.

The Switchboard

The fourth wall of the model is used as a switchboard, particulars of which are

FOR indoor games with model aircraft, make up this airport tower to add to the fun. From this type of tower the men who operate our big airports maintain radio contact with nearby planes, sending out position and direction bearings and weather information, and giving landing instructions to incoming pilots. In our model a two-colour signalling device takes the place of radio transmission; but the lighting system, operated from a torch battery and control board at the base of the model, is capable of a good deal of variation and adds quite a realistic effect.

Made from Oddments

Only small oddments of thin wood are needed, as shown in the Cutting List, the other requirements being a couple of flashbulb holders and lamps, a torch battery, a little strip brass or tin, a piece of twin flex and a few round-

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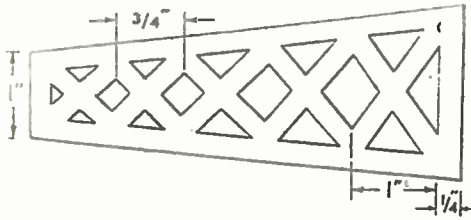


Fig. 1—The sides of the tower

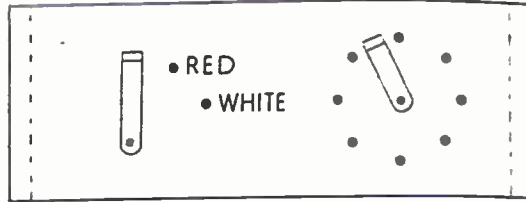


Fig. 3—Details of the switchboard

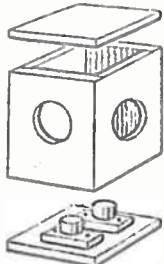


Fig. 2—How the lamp-house is made

CUTTING LIST (for wood of 1/2" thickness except where stated)		
No. of pieces	Description	Size
1	Base	7" x 7" x 1"
2	Sides	6" x 2 1/2"
2	Sides	5 1/2" x 2 1/2"
1	Roof	6" x 6" x 1"
4	Tower	5" x 2"
2	Lamp-house sides ...	1 1/2" x 1 1/2"
2	Lamp-house sides ...	1 1/2" x 1 1/2"
2	Lamp-house top and bottom	1 1/2" x 1 1/2"
1	Battery holder ...	3 1/2" x 1 1/2"
1	Battery holder ...	2 1/2" x 1 1/2"
1	Balcony strip ...	7" x 1 1/2"
2	Balcony strips ...	6" x 1 1/2"

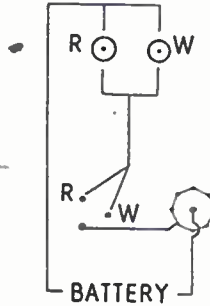


Fig. 5—The wiring plan

shown at Fig. 3. Cut a strip of the sheet brass 1 1/2 ins. long and 1/2 in. wide. Bore a hole at one end for a screw and turn up the other end to a right angle, 1/2 in. from the end, to form a handle. Screw this down to the board, with a washer between so that it is just clear of the wood, and put two round-headed screws in the path of the handle as it turns. Cut another similar piece of the metal, but only 1/2 in. from the screw hole to the turned-up end, and fix this down similarly. Then put in eight of the round-headed screws in a circle 1 1/2 ins. diameter round it, so that as the piece is rotated the arm contacts each of the studs in turn.

The Wiring-up

In the following it is assumed that red and white are the two coloured lights chosen, though this may be any other combination, of course, if preferred. Coloured flashbulbs may be purchased at most electrical stores; or ordinary white bulbs may be covered with coloured varnish or transparent paper to give the same effect. The wiring is shown at Fig. 4. Take a piece of the twin flex, connect one of the wires to each of the lamp holders, run the flex through the lamp house base, down through the tower, through the hole in the roof and so to one terminal of the battery. Another piece of the twin flex has one end connected to the other terminal on each lamp holder and runs similarly down the tower and through the roof, then one wire goes to each of the studs marked red and white on the switch-

board. To get these wires of the correct length, stand the roof and the tower temporarily in place on the walls of the model, but remember to allow enough flex to allow the roof to be opened, when it is hinged permanently to the walls. And have the switch board lying close up to where it will be fixed, while making the connections to it.

Now take a single wire (or the twin stuff used as one wire) and connect it to the stud holding the arm of the switch, then twist it round each of the studs of the rotator and back on to itself. A piece of single bared wire is easiest for this, provided care is taken to see that it does not touch anywhere to cause a short. Otherwise covered wire must be bared at each stud. Finally connect the stud holding the arm of the rotator to the other battery terminal. Put in the two bulbs and test the wiring before the remainder of the assembly work is done. If the rotator is left at rest on one of the studs, the switch provides either a continuous red or white light; or a flashing light in either colour is obtained by slowly turning the rotator.

Having fixed the wiring, the switchboard can be screwed in place and the four sides of the lamp house added to the

base. If an oddment of transparent material such as perspex is glued to the inside walls of the lamp house, over each hole, this improves the finish of the model. Glue the lamp house to the top of the tower, and glue the tower to the roof. Then hinge the roof to the wall, on the side opposite to the switchboard, and add a small fastener of the hook and eye type to hold the roof closed. The three narrow strips forming the promenade are glued round the outside walls, half way between base and roof. There is, of course, no room for a piece on the switchboard side. But first put in a few neat tacks all round the top edges, and twist a piece of thin wire round, to make the guard. Fuse wire is just the thing for this, as it needs to be very thin to be in scale with the rest of the work.

Finishing Off

Finish off with coloured enamels chosen as nearly as possible to resemble the real thing. Grey for the steel tower and lamp house; a paler shade of grey for the reinforced concrete walls; and paint in neatly a few windows and doors in a contrasting colour. (237)

FILE CLEANING

Files which are practically useless through grease, dust, etc., can be cleaned by boiling for a few minutes in strong soda water, scrubbing with a stiff brush and finally rinsing in paraffin oil.

WOOD MADE WHITE

When you have finished with a cycle outfit, keep what is left of the french chalk, because when it is gently rubbed on to plywood after it has been glass-papered, you will find it will come up with a white smooth finish.

This picture is a reminder that you can

USE A CAMERA IN WINTER



Are you a 'summer only' photographer? If so, you should read this article and learn how easy it is to keep your equipment in action all the year round.

THE idea that photography is only a summer hobby—which some amateurs definitely have—is an echo of the early days when plates were so insensitive to light that practically no snapshot work could be done after the end of September. Now with high speed of modern material, instantaneous pictures can be taken right through the winter—if one is prepared to put a little study into the special conditions that then pertain.

First you should load your camera with the 'fastest' material possible. On the side of each film carton (and on each box of plates) is an index number—sometimes two. These show the relative sensitivity of the material in question to light. The H. & D. method of indexing is the English and when one sees H. & D. 1,000 it means that the material is twice as sensitive to light as one marked H. & D. 500.

Scheiner numbers are the second popular way but the speeds do not increase in direct ratio to the numbers here. You can take it, however, that when working with films marked 30 degrees or 31 degrees in this system you have got something pretty speedy. All the 'chrome films' (verichrome, selochrome, etc.), are fast enough for winter work. But the 'hypersensitive panchromatics' are twice as fast as the chrome and will give remarkable results under the poorest lighting conditions. Thus it can be seen that there is really a good choice of material about now for winter snapshotting, but do not get anything slower than the chrome—which are about H. & D. 500.

The main trouble in the winter is, of course, the light which has greatly lost its actinic value or power of affected photographic material, also apart from its general weakness, it has become very fickle and changes rapidly—and a clouded over winter's sky means a much greater loss of light than does a similar darkening

in the summer. However, if all this is allowed for, good winter snaps can be taken.

As Much Light as Possible

The main thing is to get as much light on to the film as possible and to do this work with the slowest speed if your shutter has two or three. That is if during the summer the pointer has been set at 1/50 sec. now put it to 1/25 sec. Also if the camera has stops, open up a little. Perhaps f11 has been in place but the stop will open to f8, which is a larger aperture than f11. Set at f8 therefore when the dark days come, and leave at

exposure of 1/25 sec. can be given on a winter's day between 10 a.m. and 2 p.m. (stop at f8) with every chance of success even though the sky is slightly overcast, but in a bright sort of way. This just about suits the ordinary box camera and fixed speed shutter which generally work at about this rate. With 'ortho' films which are slower than 'chrome' this exposure would not be enough. If loaded with hypersensitive panchromatic material, however, 1/75 sec. would do and 1/50 sec. be quite a good exposure.

These reckonings are for ordinary subjects upon which the light is falling freely—not such subjects as in among trees or dark masonry in the shade. Winter light does not penetrate into dark places so well as summer light and pictures taken in such places may need four or five times the normal exposure. On the other hand if the sun was shining brightly you might get away with one third of the normal exposure on an open seashore.

Little 'Spread'

Always bear in mind that there is very little 'spread' in winter lighting and a bigger difference of actinic value between open sunshine and shadow than in the summer. Keep, therefore, to nicely lit subjects and those which are not of a too dark tone.

Apart from being faster the chrome and faster panchromatic films have what is spoken of as latitude. That is you can greatly under or over expose them and still get a passable picture. This helps in winter work for it means that we can still get something, even if the picture could have done with more exposure. An under-exposed snap will not be so rich in detail as one that is well exposed—but do not think that such a picture is, of necessity, a complete wash-out. It may actually be quite an artistic effort. At the same time do not count on under-exposures always being a success and always aim for the most generous exposure possible.

Light seems to pick up rather quicker after Christmas than the corresponding



When buying materials for winter photography, it is important that the numbers on a carton should be understood. Three ratings are shown here, but it is generally enough to understand the H. & D. numbering and the Scheiner.

this setting during the winter.

These two adjustments alone will do much towards giving satisfactory winter pictures but now let us consider something about the actual light experienced. The light of any day, winter or summer, is its strongest between 10 a.m. and 2 p.m. but the value of this light in November, December and January is exactly one quarter that of the same hours in May, June and July. After 3 p.m. there is no comparison at all. Special conditions like snow or open sea (both of which boost what light there is) help in giving good exposures but cloud as suggested takes off the value much more than does the same kind of cloud in summer. Winter fogs and mists also absorb light to a greater degree in winter.

If loaded with a chrome film an



Range Enamel

I WISH to enamel my kitchen range. Would you please advise? (P.N.—Scunthorpe).

IT is practically impossible to enamel a kitchen range satisfactorily, owing to the intense heat burning off any enamel—other than the 'vitreous' enamels—which, of course, have to be done in a special furnace by qualified technicians. The best thing you can do is to use one of the proprietary brands of stove enamels; apply it strictly in accordance with the makers instructions. The enamel can be renewed from time to time as required.

Suitable Solder

COULD you tell me how to make nickel-solder for soldering the following metal:—Silverine and white nickel—this is for brazing with gas and air. (J.H.D.—Walsall).

PROBABLY a solder composed of:—Copper 47 per cent, Nickel 11 per cent, Zinc 42 per cent will be found suitable for your purpose, but actually the solder or brazing material should be specially adapted to the particular constituents of the particular metal to be brazed, or the same metal can be used but adapted to melt at a lower temperature by the addition of zinc or some suitable metal.

Hardened Rubber Rollers

I HAVE a pair of rubber rollers which I have not been used for some months and have hardened. Can you tell me how to soften them? They are in good condition apart from being hard. (T.J.—Uxminster).

Use a Camera in Winter—(Continued from page 275)

fall off in autumn and by February pictures can be risked between 8 a.m. and 4 p.m. but for the best light it is still best to keep to the middle hours, whenever feasible.

And now for a few odd points about winter photography. Rain pictures can be quite good—that is pictures taken in the rain. But be sure that not a single drop reaches the lens or a blurred image will result. Rain can be kept well off, however, by holding something out over the front of the camera. A folded newspaper will do quite well.

Remember that in opening the lens up to its fullest aperture the depth of field

THERE is no practicable way of restoring hardened rollers because, with the passage of time, the nature of the rubber changes and hardens. Some amelioration of the surface hardness might be obtained by carefully rubbing with very fine clean sandpaper, and wiping off every trace of grit with a clean rag steeped in acetone. When using the acetone, remember it is toxic and inflammable, hence do the job in the open air or a well ventilated place and remote from any kind of naked flame.

Plaster Problem

IS there anything, either liquid or powder, which I could mix with plaster of paris to make it non-porous when dry, so that I would not have to size before painting? (C.R.—Conway).

WE know of no composition, powder or chemical that will render plaster of paris non-porous. This is largely due to the fact that gypsum, of which plaster of paris is made, is itself of a porous nature. A practical surface seal is shellac varnish, either white shellac or brown. This is applied to the plaster when it is thoroughly dry, will harden nicely and seal the surface.

Repairing Plastic Spectacles

CAN you tell me how to cement or otherwise repair a broken pair of plastic spectacles? These have a fracture just over the nose bridge and I believe this can be repaired by some method which is practically invisible. Also I should like to know if it is possible to do a small welding

has been shortened—that is the distance from the nearest item in focus to the distance of the furthest. This means a little more careful setting of the front if focusing is effected by scale and not having items too near if the camera is of the fixed-focus type. The slower shutter speed also means that the camera must be held particularly steady.

Only attempt what is really possible in winter or you will not be satisfied. Pictures in woods and dark places should be cut out entirely. Even a long exposure does not put light where there is none or give a bright sparkling effect to a dull, drab under-illuminated subject. About

of brazing repair without costly apparatus. (D.B.—Dundee).

MOST spectacle frames have a cellulose base, and if this is so in your case, a repair can be made by moistening the joint surfaces with acetone (obtainable at most chemists), and at once pressing the parts together. Hold them firmly for a minute or so, then lay aside carefully for half an hour or more. Welding is a skilled job that needs experience and an oxy-acetylene or other appropriate source of great heat. Small brass brazing jobs or silver soldering can be done with a small 'self-blowing' gas burner to be had for about 7/6d. from most good tool shops. For details of these processes see the handbook 'Soldering and Brazing', published by Percival Marshall & Co.

Removing Mirror Silver

I HAVE a large mirror which I wish to use as ordinary plain glass, but cannot remove the silver from same. I have scraped the red backing from it, but not the silver itself. Would you be good enough to tell me how it can be removed without scratching the glass? (G.A.P.—London, S.E.24).

THE removal of old silvered surfaces is more or less an experimental matter, as the nature of the actual silvered surface is unknown. However, it is probable that a dilute solution of nitric acid will remove the silver deposit. It must be carefully noted that nitric acid is poisonous and 'fumes' or throws off poisonous gases and also burns the hands or stains the clothes, so use it with the greatest caution. Directly the silver has dissolved it should be washed away with hot water, and the glass finally cleaned and polished in the usual way. To avoid the use of nitric acid you could try the effect of repeated washings and gentle rubbing with Manger's sugar soap, obtainable from most ironmongers and paint stores. Use it fairly strong and do not get the strong solution on your hands; apply it with a mop or a rag on the end of a short stick.

the dark corners which seem to get light all right in summer, these come out black in winter because the weaker light has been entirely absorbed before getting right into the depths. In summer, some by reflection does get in. There is all the difference in the world between no light and a little light.

However, if you keep to the possible, excellent snaps can be obtained and winter offers some artistic shots quite denied to the summer-only photographer. So do not put the camera away this winter but load with the fastest film possible and take it as usual on your next walk or cycle ride. (220)

Enhance your home with a replica of A 17th-CENTURY CHEST

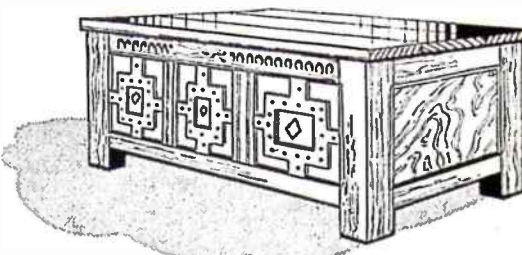
THE chest described in this article is based on the design, and follows the proportions of, the oak chests used in the early part of the seventeenth century. It has, of course, been necessary for reasons of convenience and economy, to modify the size and design of the prototype to some extent, otherwise the charm of its balanced proportions and rugged decoration would be outweighed by the cost and comparative difficulty of obtaining some of the materials which a true reproduction would require. It has been decided, therefore, to limit the size of the chest to 3ft. 6ins. by 1ft. 8ins. by 1ft. 9ins., and to re-design the legs of the chest to avoid the use of the 4ins. by 4ins. timbers used in the prototype.

Construction

Reference to the diagrams will show that the construction of this interesting

lower ends. (A) and (B) are glued and screwed together with the corner fillets (N) added for extra strength. Drive the screws from the inside and through the fillets so that the screws lie at right angles to the grain of the fillet material.

The framing members (D), (E) and (F) are rebated to accommodate the panels (G) and (H). The rebates are 1/2in. wide, 1/2in. deep and are set back 1/2in. from the front surfaces of the framing pieces. It will be seen from the diagram that the front framing members (D) and (F) are carved with the simple designs indicated. The carving on (D) is 1/2in. and the V-shaped chasing on (F) 1/2in. deep.

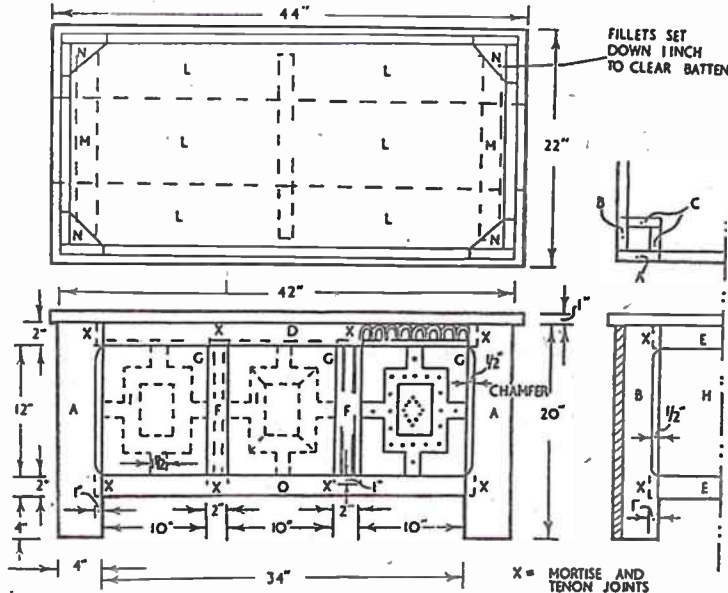


is better to dispense with outside hinges altogether and rely on a pair of 3in. brass butt hinges fitted inside the chest to perform this function.

The overlays (I) are mitred at the corners. All the joints on these are butted and glued. The indentations are drilled with a 1/2in. twist or counter-sinking drill to a depth of 1/2in. The overlays are secured to the panels by screws driven through from the inside surface of the panels.

The diamond-shaped ornaments in the middle of each of the front panels are formed from four pieces of 1/2in. moulding glued and pinned into position.

Furniture of this kind generally looks best when finished to a dark oak shade and wax polished. Be this as it may, the finishing scheme is very much a matter of personal taste, and if a lighter shade is preferred in any particular case, the staining can be reduced to medium oak without detriment to the general appearance of the chest. Whichever shade is chosen, care must be taken to see that all the wood work is glass-papered until it is free from tool marks and other blemishes before staining is commenced. (276)



All necessary dimensions are given in these drawings

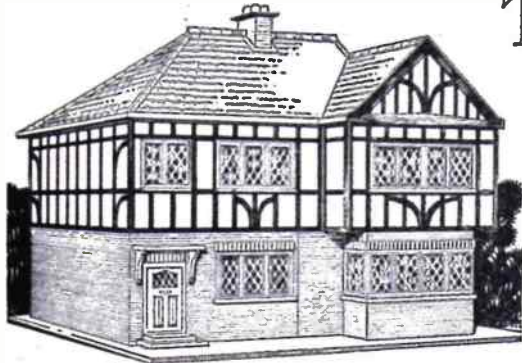
piece of furniture is quite simple and straightforward and a convenient start can be made by sawing and planing the component parts to the sizes and shapes given in the part list on this page.

The structure of the legs will be clear from the small inset diagram. (A) and (B) are butted together with the false back and side (C-C) secured in position at the

Flooring and covering components call for little comment. The former are supported on fillets attached to the lower framing members (D) and (E)—the latter battened together with the 2ins. by 1in. pieces (M) as shown in the diagram. If a set of really heavy wrought-iron hinges are available, these are ideal for joining the top to the body. If not, it

- PART LIST**
- (A) Leg components (4)—1ft. 8ins. by 4ins. by 1in.
 - (B) Leg components (4)—1ft. 8ins. by 3ins. by 1in.
 - (C) Leg components (8)—3ins. by 3ins. by 1in.
 - (D) Framing (4)—3ft. by 2ins. by 1in.
 - (E) Framing (4)—1ft. 2ins. by 2ins. by 1in.
 - (F) Framing (4)—1ft. 2ins. by 2ins. by 1in.
 - (G) Panels (6)—1ft. 1in. by 1ft. 1in. by 1/2in.
 - (H) Panels (2)—1ft. 1in. by 1ft. 1in. by 1/2in. (approx.)
 - (I) Overlays—9ft. by 1 1/2ins. by 1/2in. (approx.)
 - (K) Floor pieces (3)—3ft. 4ins. by 6ins. by 1in.
 - (L) Lid pieces (1)—3ft. 8ins. by 8ins. by 1in.
 - (M) Lid pieces (2)—3ft. 8ins. by 7ins. by 1in.
 - (N) Lid battens (3)—1ft. 4ins. by 2ins. by 1in.
 - (O) Corner fillets (4)—3ins. by 3ins. by 1in.
- * Odd scraps for fillets, etc.
• Each divided diagonally in half.

Details of practical schemes for ADDING STAIRS TO THE TUDOR DOLL'S HOUSE (No. 237) Special



The actual house as it looks when made up. Picturesque and roomy, it is one of Hobbies' most popular kits

In response to several requests from readers we have prepared details of stairs and bathroom for the Tudor Doll's House No. 237 Special. In the original design of this picturesque model the stairs were omitted because of difficulty in supplies of wood, etc. We now have in stock a supply of ready-made metal stairs, which, although they are not quite right for this particular house, can easily be adapted, as

pletely. Cut this piece $7\frac{1}{2}$ ins. long by $3\frac{1}{2}$ ins. wide and from $\frac{1}{2}$ in. wood. To hold the partition in place you must add two side pieces $7\frac{1}{2}$ ins. by $2\frac{1}{2}$ ins. by $\frac{1}{2}$ in. as shown in Fig. 2. This will allow the partition to slide in and remain in position. Just a single fretpin will prevent it from moving. Note, however, that a dummy door and handle must be painted on before inserting. The door can also be represented by a rectangle of thin card suitably lined up in pencil.

The Stairs

The metal stairs mentioned previously can be purchased from Hobbies Ltd., Dereham, Norfolk, for the sum of $2\frac{1}{2}$ carriage paid. Because of the height of the rooms, it will be necessary to add

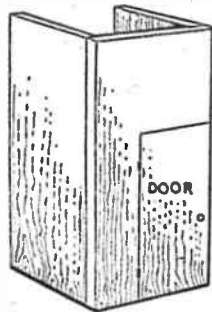


Fig. 2—The partition itself

extra stairs as shown in the diagrams. Fig. 3 shows how the steps are made up from $\frac{1}{2}$ in. wood pinned and glued in position. Notice that the first piece of wood, which is pinned to the top of the stairs, is cut from $\frac{1}{2}$ in. wood. The rest is cut from $\frac{1}{4}$ in. wood. The design in Fig. 3 is recommended because it is

easier to fix in position in a house that has already been constructed. It can be secured by driving two or three countersunk screws through the side of the house into the wood steps. The handrail can be continued by gluing a piece of card in position. The exact size of this must be found by trial and error. Paint the steps and handrail to match the existing stairs, or alternatively paint the whole to match your existing colour scheme.

Incorporating Stairs in a New House

In the case of a doll's house that has not been completed, you will have the opportunity to make a proper well opening at the top of the stairs. The

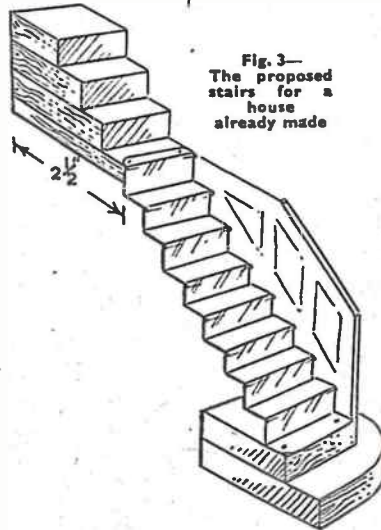


Fig. 3—The proposed stairs for a house already made

position is indicated in Fig. 1. We suggest, too, that you incorporate a small single light window in the side of the house. This will enable you to look in and see the head of the stairs and landing, which would otherwise be hidden by the bathroom partition. The opening will measure $2\frac{1}{2}$ ins. by $2\frac{1}{2}$ ins. and its position is shown clearly in Fig. 1 and Fig. 5. Since the stairs can be fitted before the end is in place, we can afford to be a little more elaborate in con-

struction. The drawing in Fig. 4 shows a neat design which is easily constructed in $\frac{1}{2}$ in. wood, using the metal stairs previously described. The stairs are secured by means of a screw through from the back (A) and one through the bottom step into the floor. Both screws should be countersunk. The stairs are fixed by means of fretpins through the holes provided.

As in the previous case the handrail is continued by means of a piece of pliable card which is extended and glued in place to the bedroom floor; exact position and size will be obtained by trial and error. On the landing a ballustrade may be formed with a piece of $\frac{1}{2}$ in. wood, rounded at the top and glued in place on the floor. The completed stairs can be painted and when completely dry, a strip of coloured paper glued down the middle to represent stair carpeting.

The Bathroom

In this case a single partition as shown in Fig. 1 will suffice. This can be glued in place and a fretpin hammered down

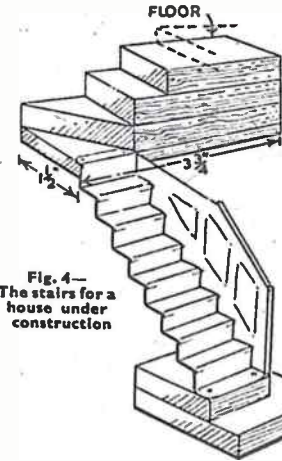


Fig. 4—The stairs for a house under construction

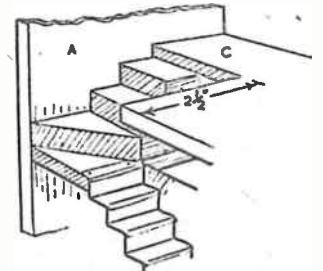


Fig. 5—Details of the top of the stairs shown in Fig. 4

through the roof. The door can be made as previously described, or can be cut out and hinged back in place by means of small

tape hinges. Add a roundhead screw to form the door handle. Paper the walls, ceiling and floor of the landing, making sure that everything is in order before fixing the end. Smear all edges with glue, and pin or screw the end in position.

The experienced worker will, no doubt, be able to construct bathroom fittings from odd pieces of wood but in any case there are many complete sets on view in the shops. (278)

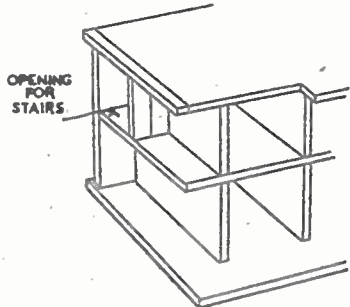
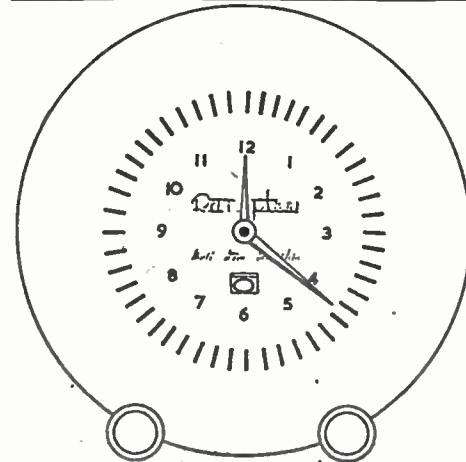


Fig. 1—Showing the position of the partition will be seen in the following diagrams and instructions.

Adding to a Completed House

We will deal first with the problem of adding the stairs and bathroom to a house already constructed. Since it will be extremely difficult to cut a hole in the bedroom floor to form the well to the stairs, we must omit this altogether and find some way of camouflaging it. This is easily done by inserting a partition in the top to form the rear wall of the bathroom. A glance at Fig. 1 shows that the partition with its dummy door will hide the head of the stairs com-

How to make a novel ELECTRIC CLOCK



A NOVEL and attractive electric clock can be made from one of the synchronous units now being sold as government surplus.

They are sold complete with hour train and 5 in. hands and, being self starting, although losing a few minutes during the day owing to power cuts, can be relied upon to be correct in the mornings, which, after all, is the time when most of us need to catch trains or trams.

First of all we require one old 10 in. gramophone record. Divide the record into the twelve hour positions with a pair of compasses and a soft pencil, then divide each hour into five minutes. This gives you the minutes. With a sharp pointed tool make a deep scratch towards the centre at each division

slightly larger than a gramophone needle, fill each scratch with cement, and when tacky, press an old needle firmly into each space, then lay aside to dry.

Take two pieces of black plastic tubing, about 6 ins. long, and 2 ins. from one end, and saw a slot the thickness of the record. These are the stands, and when the record is slipped into the slots, make it stand firmly without danger of falling over.

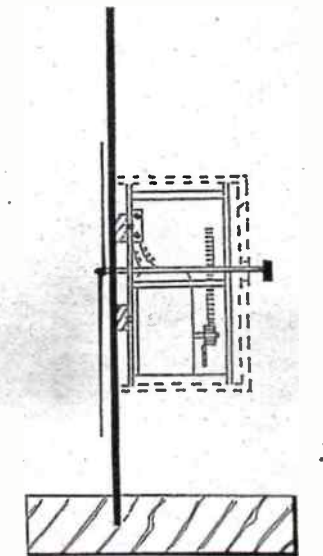
As the units are mostly three hole mounting, take three small blocks of wood $\frac{1}{2}$ in. thick and about $\frac{1}{2}$ in. square, and fix with small screws to unit. When tight, pare off with a gouge to the shape of the clock movement, to allow the cover to fit tightly.

Now, holding the spindle central, cement the blocks to the dial, and leave to set, when the screws can be removed, leaving the blocks firmly in position.

The Cover

The cover is made from a small piece of plastic, heated and bent to shape round a small jar. The joint is cemented, back cemented on, and holes bored for small screws to screw the cover to the blocks; to let out the hand setting spindle, and the wires to plug.

Now the unit is screwed back to the small wood blocks, and the dial is fitted



A side view of the clock

to the slots in the tube. The cover is screwed into place, and we are all ready to switch on a clock which will bring gasps of admiration from all who see it.

A glance at the sketches will make everything clear. (279)

Here are some more IDEAS FOR HOME HANDYMEN

THOSE who want to make themselves useful fitments will do well to get a stock of the hardboard now available from the woodyard and off permit. This works out at about 8d. per square foot and is in large panels mostly 48ins. wide and in lengths of 6ft., 8ft. and 10ft. Cases of 100 sq. ft. can be had for about 58/-. This material is stout, strong, drills, cuts and fixes well and can be bent round curves.

The beauty of making your own

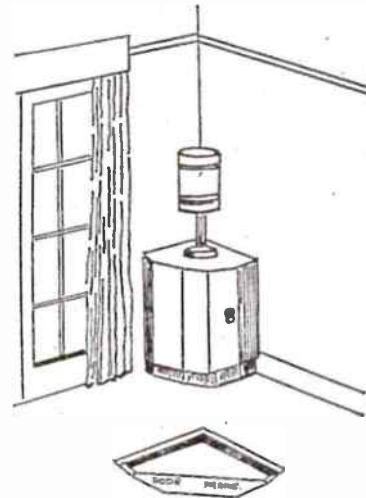


Fig. 1—A corner cupboard

fitments is that one can design his own style to fit in with the present furniture. In Fig. 1 is shown an attractive corner table which fills the corner and does not obstruct the curtains at the French windows. This can be made on a wooden frame as shown and note the cut-away at the base to enable cleaning equipment a clear floor when cleaning or polishing. Half-round 1/2 in. beading will make a neat finish if added with panel pins. Such a cupboard would be ideal for glasses and drinks. The lamp is designed in Perspex or some other ornamental material with

a deep wooden base which the average Hobby worker can manage.

Very often we have a spare door in a room and this may have no further use. Turn this into a neat cupboard for coats and hats. Put on a surround of 2ins. wide wood, finished with mitred corners. Measure the height needed for the coats and then arrange the shelves accordingly. Make a new door with panel board and on a frame of 1 in. by 2ins. wood. Fit with streamlined erinoid handles.

Three-tier Table

The ordinary small table is not sufficient to take all the articles one needs when resting on the settee. Make a three-storey table as shown so that it fixes back to the wall and the top section, in which is embodied a light fitment, can then be used for cigarette box, ash tray and other items. This could be lined with pastel shade Perspex.

The second shelf can be reserved for periodicals and is cut a little shorter than the top one. Make the third shelf as long as the top, and this can be adjusted with some beadings to make it hold volumes of books in continual use. One can finish it with blocks for feet or, as an alternative, castors. This is a useful shape, can be used in any room and would be handy if transferred to the bedroom in the time of sickness.

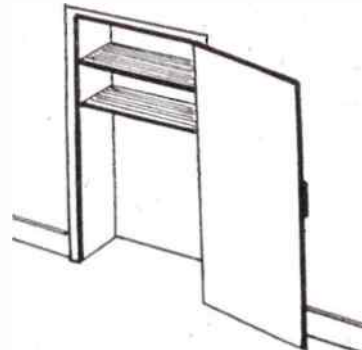


Fig. 2—Arrangement for a hat and coat cupboard

In making these ideas the worker may find that he can make good use of Obecchi wood. In small strip size this has been used in model making, but it is only in the last few months that it has been on show in the local woodyard. Actually it is rather soft, but excellent in use where you have no particular stress or strain. It has a clean finish and a fine grain. One coat of stain will work the grain up to a very fine tone. Flat paint is best added before a glossy. When purchased it needs very little glasspapering. For small joinings, flat nails are best or long thin nails. Screws tend to split it. For clean cuts crossways it is not wise to force the saw.

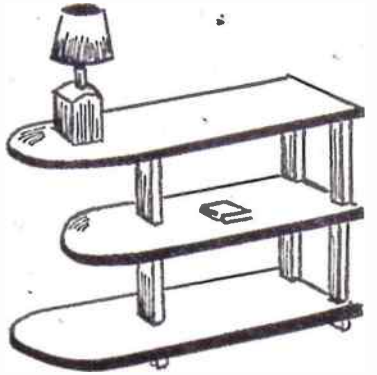


Fig. 3—A table with plenty of surface space

Panel board can be painted or stained but care should be taken not to get the corners of the cut out sections damaged, as they will double up and spoil. In bending this material it is wise to bend only a small section at a time, otherwise it will split.

Beadings are always a good finish to furniture, but should be used in moderation. Strip Obecchi from the model shop will always make a neat beading if glued on and then slightly glasspapered with a fine grade of glasspaper. Beading should be mitred with a mitre box to get neat corners. Be careful that you tone up your stain to shade in with the beadings. This defect will become apparent after you have added the first coat. Be careful on edges not to let lumps of stain dry on. If you do, this will congeal and, when chipped off, take away the surface of the wood. Glasspaper all outside edges down well and stain carefully, as they will always dry darker than the actual flat surface. Try and get all edges away from the front of the furniture. (215)

Grow plants without soil using this AUTOMATIC FLOWER POT

GROWING plants without soil is a fascinating and instructive hobby. But many fight shy of it on account of the cost of water-tight beds, pumps and other fittings which are supposed to be required.

It is true, they are required on a big scale, but there are several devices for the home that are simple, cheap, yet highly effective if operated with care. One of the best is a design which the writer has provisionally patented in this country, but which any reader of

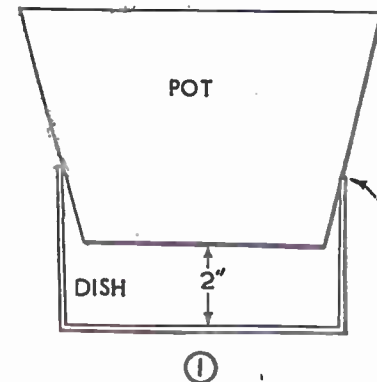
ambitions to grow one of those brightly-foliaged coleus plants 2ft. high, you will need something really roomy!

The next essential is the means by which the solution is led up to the roots. The most permanent and satisfactory way of doing this is to make a hollow tube of wood which just fits the hole in the upper pot, and lip it at the top to prevent it sliding down. The length should be enough to just clear the bottom of the dish when the tube is in place. Fig. 2 indicates this.

Making the Tube

The tube can be made of a piece of old broom or tool handle, hollowed out either with a drill or red-hot poker. When the tube is made, drill or pierce holes 1/16 in. diameter the full length, staggered in the design shown. They should be 1/4 in. apart.

The only items now required are a handful or two of glass wool, HERE and some coarse sand or fine



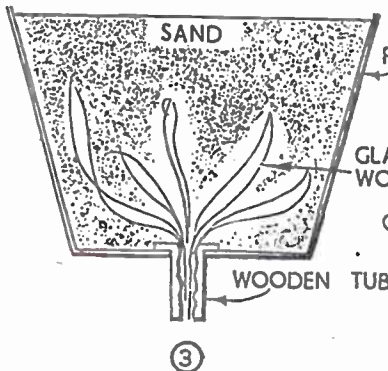
Hobbies Weekly may copy if this is not done commercially.

How it Works

The principle is a pot consisting of two parts, the upper one containing the plant, and the lower one the chemical solution that feeds it. The top may consist of any vase, bowl or pot with a hole in the bottom, or in which a hole can be made. As the ordinary garden flower pot is so common, this will probably be the article chosen. The bottom may be any dish, jar or vessel that holds water. The one essential feature is that it should be of such a size that when the upper pot is fitted into it, it rests with the bottom at least 2ins. above the bottom of the lower container. Fig. 1 makes this clear.

The bigger the lower container, the less often you will need to replenish the solution, but on the other hand, if it is too tall, the set-up becomes clumsy and might be knocked over.

The size of the top container is decided by the size of the plant you want to grow. A trio of bulbs, for example, would require a wide shallow bowl. A single geranium would need something narrower and deeper. And if you have



cinders. The size of the particles should not be larger than 1/16 in., and the material should be meshed to ensure this. Then wash it several times with plain water to remove any dirt, clay or fine matter that might clog the glass wool.

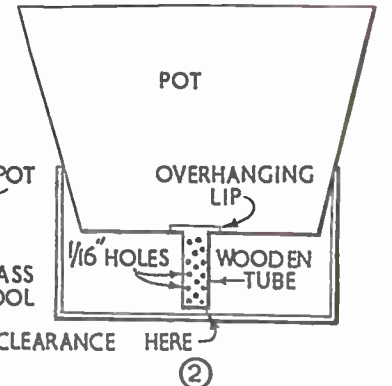
The pot is assembled by first loosely packing the tube with glass wool, leaving enough sticking out at the top to reach half-way up the upper pot when in place.

Put the tube in the hole, lipped end upwards, and spread out the strands of glass wool fan-wise as in Fig. 3. Then holding the wool in place with the fingers of one hand, carefully pour in the sand or cinders with the other hand. If the material is dry, a small jug is best for this. When the pot is half-full, the wool can be released and will stay in position.

If you are planting bulbs or rooted plants, you can then put them in, pouring more sand round the roots until the pot is full. If seeds, you should fill almost to the top, leaving just enough room for a light covering while the seeds germinate.

Now for the chemical solution, the secret of the whole business. One of the best is:—

- potassium nitrate ... 1oz.
 - monocalcium phosphate ... 1/2oz.
 - magnesium sulphate 1/2oz.
 - ammonium sulphate one small teaspoonful
 - iron sulphate ... half a teaspoonful
- These should be crushed up and well mixed together. Use one-quarter of the



mixture (just over 1/2oz.) to a gallon of water. This should be kept in an enamel pail or bowl, not a galvanised one.

The chemicals can be bought at the chemists, or if you prefer, tablets are on the market in the big stores ready made for sand culture. (240)

Using the Apparatus

To use the pot, fill the lower dish with solution to within 1/4 in. of the top of the tube. It will gradually seep up the wool into the sand. Every week or so, according to the amount used up, fill up the dish to the same level again. Once a month lift out the top pot, and carefully dip several times into plain lukewarm water. This will wash out any unused chemicals. (240)

If you enjoy Hobbies Weekly, so would your friends. Tell them what they're missing

A Useful Home-made Polish

Wood that is not polished will look nice if you give it a rub with the following: Mix equal quantities of linseed oil, sour beer and methylated spirit. Put into a bottle and shake well before using. Apply with a soft flannel cloth, rubbing up with a duster or a piece of velvet.

The SHIPMODELLER'S Corner

PART 2

HAVING collected together the available information about our model, we now turn to the pleasant task of actually building her.

Before commencing to cut out our hull parts look at Fig. 1. This shows the actual section shapes of a hull of this period and type, at various points.

These are taken from the 'body' lines of the draught of a vessel of the period and will make clear the degree of 'tumble home' referred to in the first part of this article.

Most kit designs are prepared with the object of enabling the novice, as well as the experienced modeller, to make an attractive model, and, therefore, show little of the extreme tumble home. To re-draw the hull parts and bulwarks, etc., is beyond the ordinary beginner's experience, but we can achieve the effect of the 'tumble home' of the hull by cutting the centre hull block (Block B on your design) $\frac{1}{2}$ in. over-size, as in Fig. 2.

Building The 'ARK ROYAL' from Kit No. 211 sp.

By 'Whipstaff'

Having cut the six hull blocks, glue and dowel them together to make your two halves of the hull, use a waterproof casein glue.

While these are setting, which will take some time (in fact, they are better left for twenty-four hours), proceed to cut out the centre keel piece and round off all the edges except the top edge on which the deck piece will rest.

It will add to the appearance of your model if you add the figurehead of the period. Only the Lion and the Dragon figureheads were in use at this period and the most probable for the 'Ark' is the Lion.

Trace the Lion in Fig. 3 and cut two from soft wood $\frac{1}{8}$ in. thick, glue one on either side of the stern and curve roughly to shape by rounding off all edges, etc.

Alternatively, if you are good at modelling, you can model the figurehead direct on the stern head in plastic wood. Either method will surprise you when the finished effect is seen, painted and gilded.

Your next piece of work is to cut, shape and fix the deck pieces of the hull, and the deck piece itself, as in your kit instructions.

By now your hull pieces should be firmly set and they can be carved to shape before gluing to the keel.

By carving them into one another by gentle curves you will obtain the required shape. Make both sides balance in shape, and if you have cut piece (B) larger, as instructed, you will see the tumble home taking shape as in Fig. 4.

When the carving is complete, glue to the centre keel and add the deck piece and pieces (D), (E), (F) and (G) in accordance with the position lines on your design. These are shown on your keel piece pattern.

Lay the hull away on one side for the glue to harden and set, and proceed to cut the bulwark pieces (upper sides) of thin plywood.

To simplify the later work of painting these bulwark pieces, sketch in the design before gluing and pinning them in position on the hull. Trace the shape of the bulwark piece on to a piece of tracing paper, fill in the designs you are going to paint on the upper sides and transfer the sketch details on to the bulwark pieces while flat. Reverse the tracing paper for the second piece and by doing so you will have the design in both port and starboard pieces exactly the same.

Pieces (H), the beakhead deck and the capping rails to the bulwarks in the waist can now be fitted as your kit instructions.

We can now start to add some details suggested by our collected information. First, let us take the side castles, two each side of the ship. In our design these are made of round dowel for simplicity of construction, in the actual ship they were hexagonal, see Fig. 5.

To make these, obtain a strip of square stripwood $\frac{1}{2}$ in. square and plane off the corners until it is hexagonal along its length, cut off the individual side castles to length and add the ornamental side turnings, as shown on design. Next make and add the stern gallery and side castles as described in your kit instructions.

The deck fittings we are going to add are better painted before fixing in position.

First the hatch. In our kit design it is shown with a peaked roof. Instead of this, cut it of $\frac{1}{4}$ in. wood and slightly camber the upper surface. The grating can be painted on but a more correct appearance is obtained drilling holes in the hatch piece and punching them

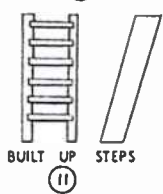
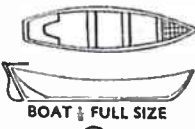
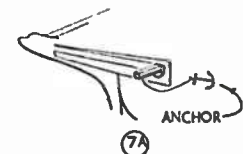
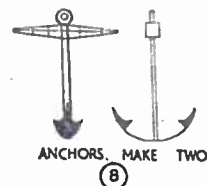
square with a small square nail. Modellers who are good at miniature work will find it interesting to actually build up the grating as in actual practice.

A boat is carried on this hatch cover, on chocks, and that is why we avoid the peaked roof in favour of the correct cambered surface. Actually three boats were carried, but if one is added it will help the appearance and correctness of our model. The boat can be hollowed out, and seats, thwarts, oars, etc., added in thin veneer or card, as in sketch.

For greater realism, we will build up the bits and fife rails situated before the masts in ship fashion, using stripwood and halving the joints as in Fig. 6.

We can next add the two catheads at the bow. Cut them as in Fig. 7, from boxwood if possible, drill them for the sheave holes and glue and pin them in position. On the half deck in front of the bits, add the whipstaff shelter. This can be built up of wood or card or merely carved from a block of wood to the dimensions given in Fig. 9.

Next, make and add the pump and steps, completed as in your kit instructions, or, if you have the gift for small work, build up the steps by halv-



ing the rungs into the stiles as in Fig. 11. A few coils of rope lying near the

bulwarks of the poop and forecabin decks will add a touch of atmosphere to the model.

For painting use the Hobbies painting plan in your kit, using mainly the Tudor colours, red, white and green. Colour is optional as regards detail, as we have no details of her decoration, but stick to the main Tudor colours for most of the work.

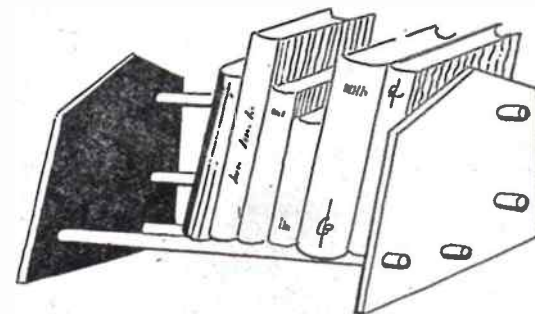
An alternative plan is to use the painting plan given with our Elizabeth Jonas kit. This is founded on the only existing colour plan of a ship of the period and size.

Our present model being large enough to allow of much detail I propose in the last part of this article to go more deeply into the detail of the rigging of this period than in my earlier articles on Elizabethan rigging last year, they being written mainly for use on our smaller models. This will make our model more interesting from an historical point of view. (232)

An hour's work is sufficient for this SIMPLE BEDSIDE BOOKCASE

HERE is a little bookcase that is easy to make, and very useful for holding books on the top of a desk or on a bedside table. The length may be varied, though a convenient length is 12 ins. All you need to make it are four pieces of dowel rod, 13 ins. long and $\frac{1}{2}$ in. in diameter, and two pieces of plywood, 5 $\frac{1}{2}$ ins. by 6 ins.

Fig. 1 shows the way in which the plywood should be cut. Holes $\frac{1}{2}$ in. in diameter should be drilled at the places marked. To find where to drill the holes,



How the case looks in use

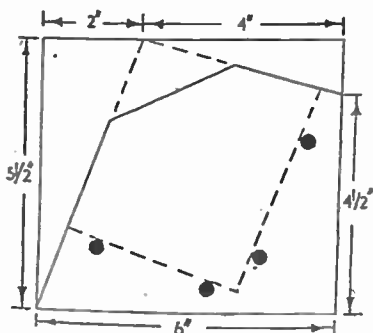


Fig. 1—The necessary dimensions

place a book on the plywood, as shown in Fig. 2, so that the lower corner (A) is $\frac{1}{2}$ in. from the bottom and the book tilts slightly backwards. Then make two marks along its bottom edge and two along its back edge. It is best to drill

both pieces of plywood together to make sure that the holes come in the same place.

Assembly

Glasspaper the edges of the plywood and the ends of the dowel rod. The rods are then simply fitted into the holes in the two end pieces, thus making the book-rack. The rack may be painted or stained, but do not forget that if it is painted you will have to make the holes slightly larger. The rack is easily taken to pieces for travelling; but if you want it to be fixed permanently, a little glue in the holes will keep the rods in position. (212)

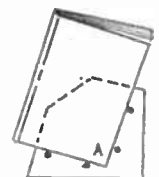
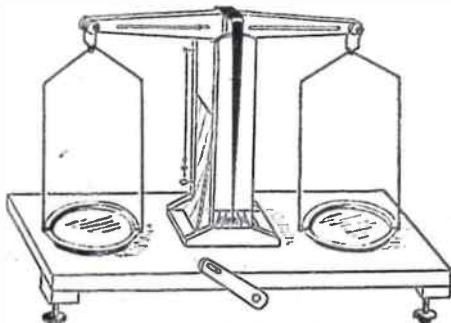


Fig. 2 Deciding the positions of the holes for the dowels

You can make this accurate CHEMICAL BALANCE



A LARGE number of chemical experiments and preparations can be done without a means of weighing. But there are many more to which a balance is necessary. This is especially so in the preparation of double salts and in most organic preparations, where weighed quantities are needed for the experiment to succeed.

The balance illustrated is a replica of the ordinary student's balance which laboratory furnishers sell for about £4 13s. 0d. Made with reasonable care it will readily turn with one-tenth of a gram or less.

For a balance to work properly the essential points are that:—

1. The knife edge and stirrup pivots must lie in one line parallel to the length of the beam.
2. The distance from the knife edge to the stirrup pivot must be equal on each side.
3. The centre of gravity must be below and close to the knife edge. If it is above, the beam will try to invert itself and inaccurate weighing result.
4. The balance must have a levelling arrangement.

5. An arrestment should be provided to lift the knife edge off the bearings, so as to prevent wear.
- All these points are taken into account in this balance.

First the base (Fig. 1). This is made of $\frac{1}{2}$ in. wood with a centre slot cut out to house the pillar. The levelling arrangement consists of three, round-headed screws working loosely in 1 in. square blocks of $\frac{1}{2}$ in. wood glued in the positions

shown. Small washers are soldered to the screw heads so as to make them easier to handle.

The pillar (Fig. 2) is made of $\frac{1}{2}$ in. wood throughout. The bottom is glued into the slot in the base and, to give extra strength, the spacing strips (A) should be screwed to the base. The plumb-line consists of a small needle driven through an air gun slug, and suspended from a fret nail by a silk thread.

Be Sure It's Level

Before putting in the screw eye, lay a spirit level on the base and turn the levelling screws until the base is level. The screw eye is then fixed in the pillar dead below the needle point. Whenever using the completed balance always first adjust the levelling screws until the plumb-line is true.

The raising mechanism (Fig. 3) is built along a $\frac{1}{2}$ in. thick dowel which should be $5\frac{1}{2}$ ins. long. (B), (C) and (D) are cut from $\frac{1}{4}$ in. wood. The lever (B) is $\frac{1}{2}$ in. wide and $1\frac{1}{2}$ ins. long and is glued $3\frac{1}{2}$ ins. from the handle (D). A brass

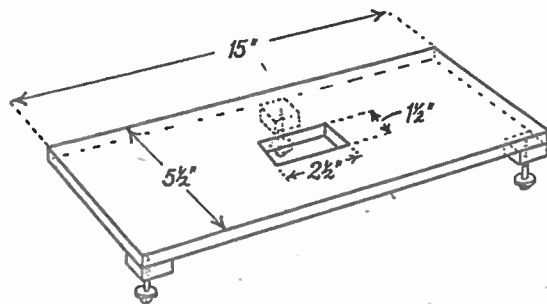


Fig. 1—Details of the base

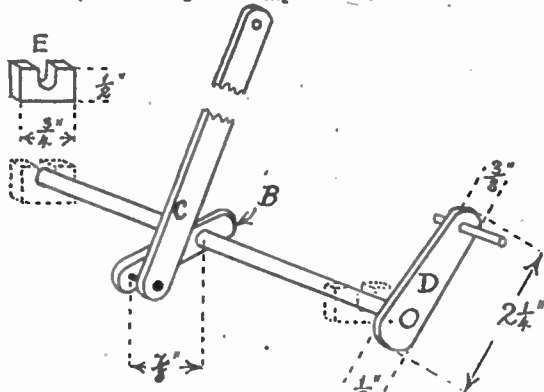


Fig. 3—Dimensions of the raising mechanism

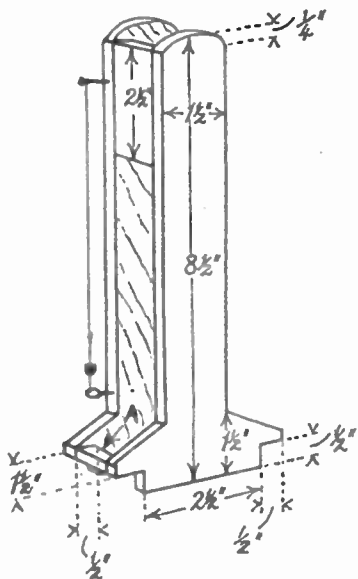


Fig. 2—The pillar

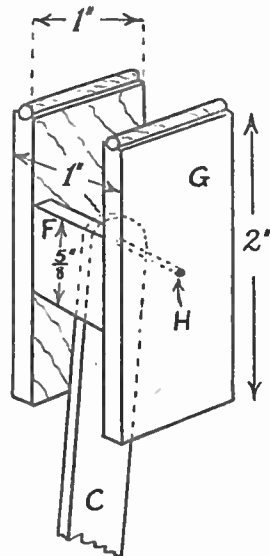


Fig. 4—The bearings

fret pin driven carefully through the narrow edge into the dowel ensures a good grip.

The raiser bar (C) should be cut $8\frac{1}{2}$ ins. long and $\frac{1}{2}$ in. wide. A $1\frac{1}{2}$ ins. length of thin dowel is glued into the narrow end of the handle (D), $\frac{1}{2}$ in. of this projecting towards the pillar to form a stop against the upper side of the base. Both (C) and (D) are fixed to the dowel when the bearings (Fig. 4) have been inserted in the pillar.

Two Stops

Meantime, two stops (E) are cut from $\frac{1}{4}$ in. wood. These will support the dowel as indicated, and their slots should be just large enough to allow easy turning. Both are glued beneath the base, the rearmost against the block carrying the rear levelling screw, the foremost flush with and in the centre of the outside edge of the base.

The bearings (Fig. 4) consist of two pieces of glass rod cemented into grooves on the uprights (G). Two struts (F) are fixed with their top edges $\frac{1}{2}$ in. from the top of the uprights (G). Both (F) and (G) are cut from $\frac{1}{2}$ in. wood. The raiser bar (C) is fixed slackly on a length of steel knitting needle (H).

The completed bearings should now be lowered into the pillar. If they do not slide up and down easily, glasspaper the sides until movement is smooth.

Next fix the raiser bar (C) to the lever (B) by a slackly fitting bolt. The raiser bar should lie to the left of the dowel, and now be pulled down as far as it will go. Handle (D) is then fixed in the

position shown in the completed balance. On turning the handle to the right the bearings will move up; down when the handle is returned to the left.

The beam (Fig. 5) is cut from $\frac{1}{2}$ in. wood and is $10\frac{1}{2}$ ins. long overall, 1 in. wide in the centre and tapering to $\frac{1}{2}$ in. at either end. Two slots are cut on either side, as shown; a small radio nut and bolt being inserted later to adjust the balance.

A $\frac{1}{2}$ in. wide flat should be cut at the top and bottom edge of the beam centre and glued here at either side is a strengthening block of $\frac{1}{4}$ in. wood. Likewise, two $\frac{1}{2}$ in. discs are glued at either end to support the stirrup pivots.

To ensure that the centre of gravity lies below the knife edge, a thin lead strip is fixed in the position shown.

The knife edge is a $\frac{1}{2}$ in. length of triangular file with the millings ground

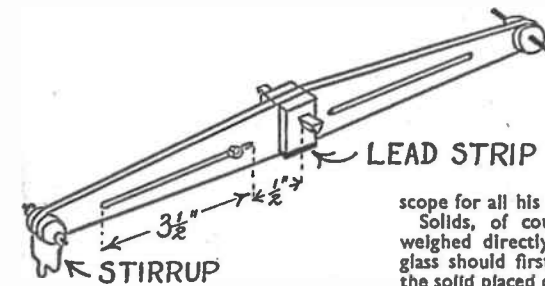


Fig. 5—The beam

off. A triangular slot is now cut in the beam centre to take the knife edge. Its lower angle should be in a parallel line with the holes drilled to take the stirrup pivots. The latter are $1\frac{1}{2}$ ins. lengths of steel knitting needle, and the holes in which they are inserted should be of such size as to assure a fairly tight press fit.

The pans (Fig. 6) are made from tin press lids of $3\frac{1}{2}$ ins. diameter. The suspending wire, bent to the shape shown, should be of stout copper or brass, the lower ends of which are beaten flat, drilled, bent at right-angles and bolted to the pan edges. The stirrup (I) measures 1 in. by 1 in. and is also made from stout copper or brass wire.

A tin or sheet aluminium pointer should now be cut and fixed to the beam. The scale is cut from ivory or card, graduated in twelfths of an inch, and glued to the bottom of the pillar.

The balance is now ready for adjustment. Put the beam in place, and fix pans and stirrups to the beam ends. If you now turn the handle (D) to the right, the bearings will move up out of the pillar top, connect with the knife edge and lift the beam off the top of the pillar.

Balancing the Pans

One pan will almost certainly be heavier than the other. To balance this up, put a small radio nut and bolt in the beam slot on the lighter pan's side. Move the bolt along until the pointer swings an equal number of graduations on either side of the centre line on the scale. Then screw up the bolt tight. The balance is now adjusted and ready for use.

On turning the handle back to the left the bearings are withdrawn from the knife edge and the beam rests on the top of the pillar. This should always be done when changing weights, so as to avoid the pans swinging violently about.

Weights from 0.1 gram to 10 grams should be bought from a laboratory furnisher. The following will be needed: 0.1 gram (two), 0.2 gram, 0.5 gram, 1 gram, 2 grams (two), 5 grams and 10 grams.

Student's quality weights should be asked for, and are quite cheap. With these to use as standards, two 20 gram weights can be made from sheet lead and thus give the home chemist

scope for all his normal weighing needs.

Solids, of course, should never be weighed directly on the pan. A watch glass should first be counterpoised and the solid placed on it. For liquids, a small beaker is used. (275)

A balance such as described is not only of use to home chemists. Photographers who do their own processing, will find them ideal for measuring photographic chemicals, etc.

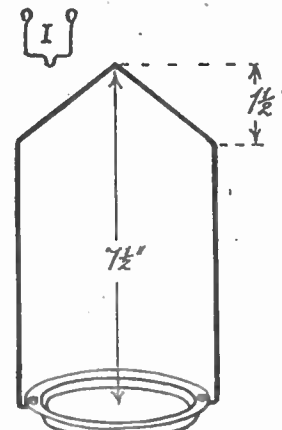


Fig. 6—Details of the pans

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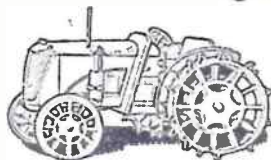
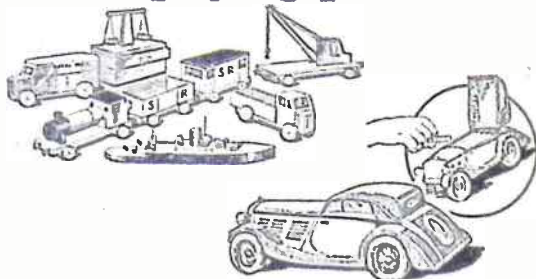
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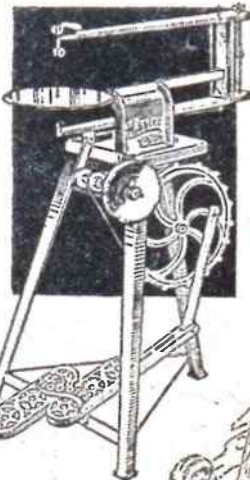
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