HOBBIES WEEKLY

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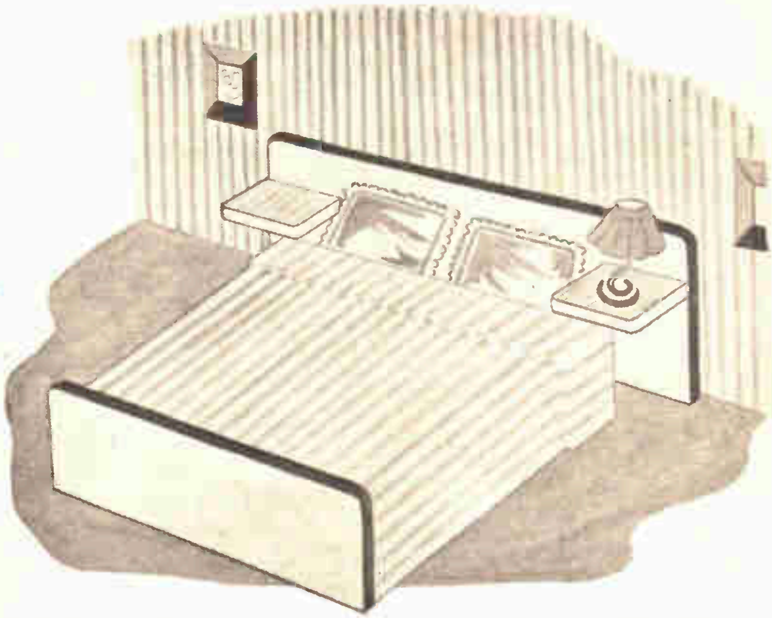
IN THIS ISSUE

The first of a series of articles on making—



CONTEMPORARY FURNITURE FOR THE DOLL'S HOUSE

THE illustration shows the first of a series of articles showing how to make contemporary furniture for dolls' houses. We already list two wallets of furniture in our Handbook and these are extremely popular. Although there is not quite the demand for the ultra-modern designs, we are sure that they will appeal to enough readers to warrant their inclusion in *Hobbies Weekly*.

Popular Scale

The scale chosen is approximately $\frac{3}{4}$in. to 1ft., which is suitable for a medium or large size doll's house with a room height of not less than 6ins. Room height could extend to anything up to 9ins. and still be in keeping as far as scale is concerned. Of course, there is no need to be particular about exact scale in everything. The main requirement is for the overall size to be more or less in proportion with the room.

In this issue we give details of how to make up a double bed complete with headboard. The mattress part is shown full size in Fig. 1, and is cut from $\frac{3}{16}$in. wood. The small shelf is also cut from $\frac{3}{16}$in. wood and is shown full size in the same diagram. Note that two shelves are required, one on each side of the bed. The headboard and foot of the bed

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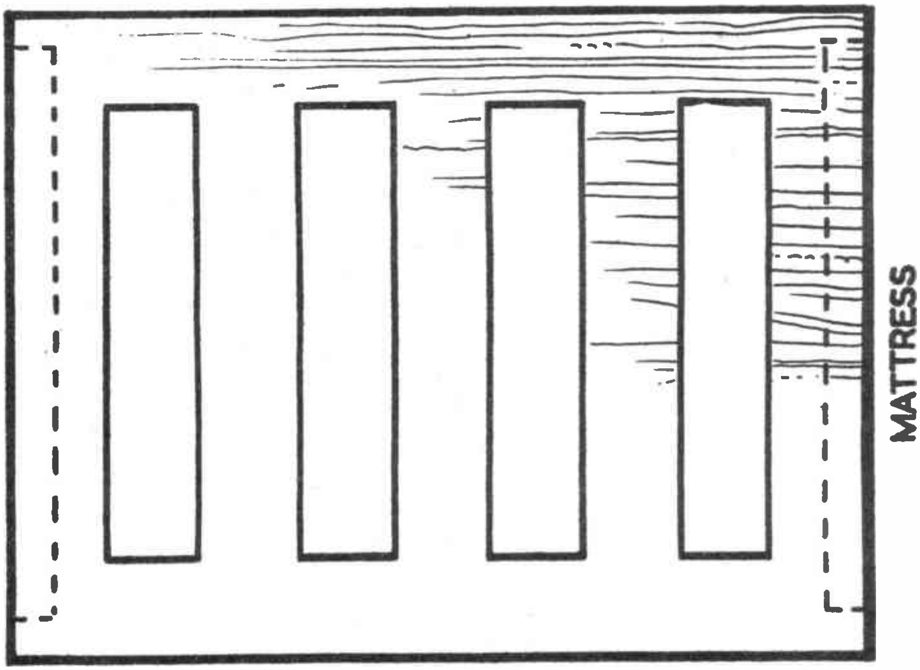
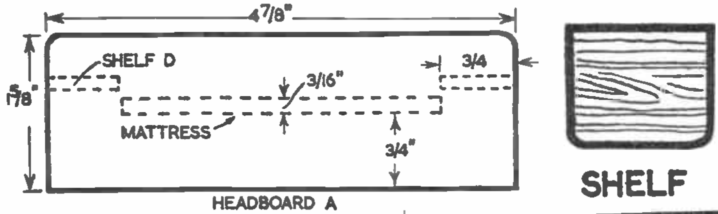


Fig. 1



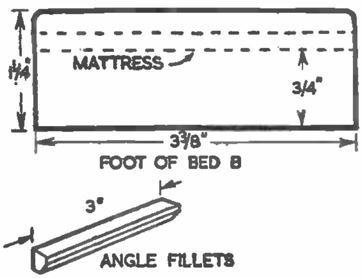


Fig. 2

are shown in Fig. 2. Sufficient measurements are shown for you to be able to draw them out full size. The dotted lines show the positions of the mattress and the shelves. Cut both headboard and foot from $\frac{3}{16}$in. wood.

The mattress should be pinned and glued to the headboard and foot, and two pieces of angle fillet are glued underneath for added strength.

Finish

Much of the contemporary furniture is left in the natural wood and we suggest this is a good finish for the dolls' furniture. It would also look well painted with plastic enamel paint in a pastel shade. The wood must be well cleaned with fine-grade glasspaper before the paint is applied, and if two or more coats are needed, a light rubbing before applying the next coat will improve the appearance. (M.h.)

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Soldering Techniques

untinned surfaces, or ·001in. with tinned surfaces (R). Such gaps will fill by capillary action, if the joint faces are clean and the solder hot enough.

Electrical joints are about the easiest to make in one sense. They usually involve the easiest metals to solder, such as copper, tinned copper, or brass. On the other hand, great care is often needed to avoid damaging insulation or components with the heat of the iron, and in making truly neat connections.

Stripping insulation of wires is the first problem. Wire cutters can be used, or a knife (S), but take care not to cut into the wires themselves. After cutting nearly through the insulation, it can be pulled off to expose a short length of bare wire. Plastic insulation is best removed by 'cutting' with the tip of a hot iron and then pulling off.

The exposed wires should be clean and ready for tinning, which is done as shown in (T). If the wires are enamelled, this must first be scraped off carefully, as otherwise the solder will not adhere.

Having tinned the end of the wire it should now be held on the terminal with one hand, the iron loaded with solder, and then pressed over the joint. The solder should flow readily to cover the joint, when the iron can be removed. Continue to hold the wire until the solder has frozen. The real secret of success is clean terminals, tinned wire, and a really hot iron applied for the minimum amount of time necessary to make the solder flow over the joint. And do not put more solder than necessary on the joint.

Finally, a word or two about soldering leads to dry batteries. This is very difficult to do properly unless the battery terminal, or case, is properly cleaned with a file. If the battery is intended for short-term use only, then it is permissible to use a corrosive flux to ensure a good joint. Otherwise rely on good mechanical cleanliness produced by filing and a resin-cored solder (U).

A LADY'S SEWING CABINET AND WORK TABLE

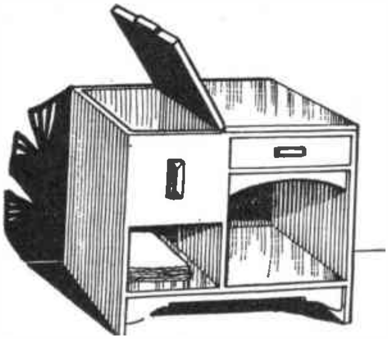

Fig. 1

THIS useful piece of furniture would be the delight of any lady, as it considerably aids the problems of sewing. Moreover, its construction is well within the limits of the average handyman. The article consists of a large cabinet for holding material that is being made up, and when the lid of this is lowered, this and the table top alongside will form a very convenient cutting-out table. A drawer for cottons, etc., is provided and space for pattern books, etc. is arranged for beneath the cabinet.

In Fig. 2 are all the necessary measurements for making, and in Fig. 3 a section through the drawer giving further constructional help. The two ends (A) are 24ins. long by 13ins. wide

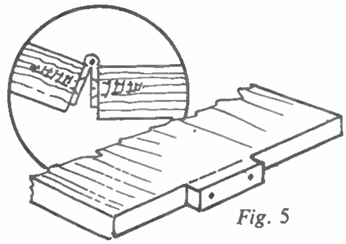

Fig. 5

by 5/8in. thick, and they are grooved for the main floor (B). One end is also grooved for the tongues on front and back (D). The top of the right-hand end and also the centre partition (C) is slotted to take the cross-rails (F). The rail (E) is also slotted into the above and in the centre partition, all as shown in detail Fig. 4. It will be noted that (C) is grooved on the left face to take the two parts (D) and that tenons are cut along the bottom to fit into the mortises cut in floor (B). There are two stiffening rails, one long one to go under the edge of the floor (B) to which it is countersunk screwed and glue-blocked as shown in Fig. 2. The second stiffener is under the rail (E), and its shaping can be determined by the radius line of 18½ins. shown. The detail Fig. 4 shows how all

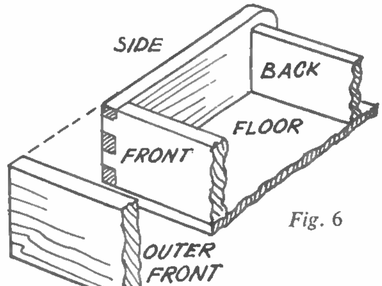

Fig. 6

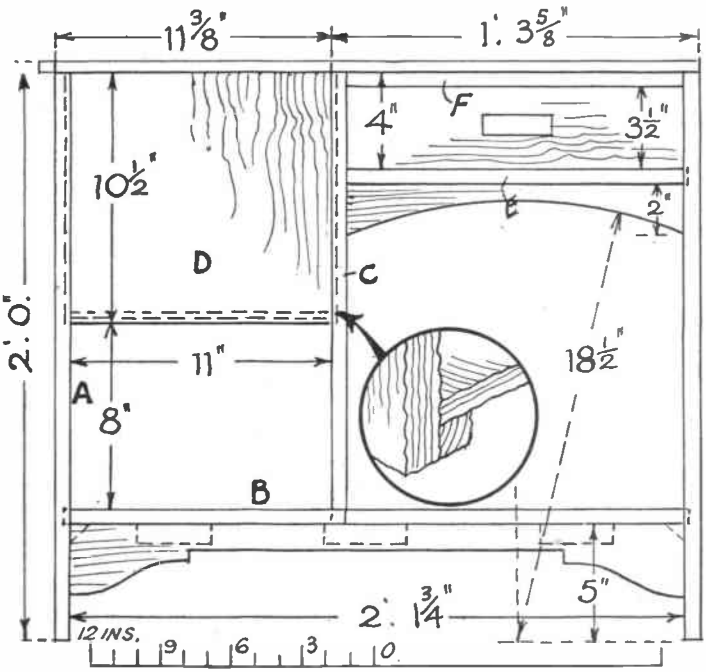

Fig. 2

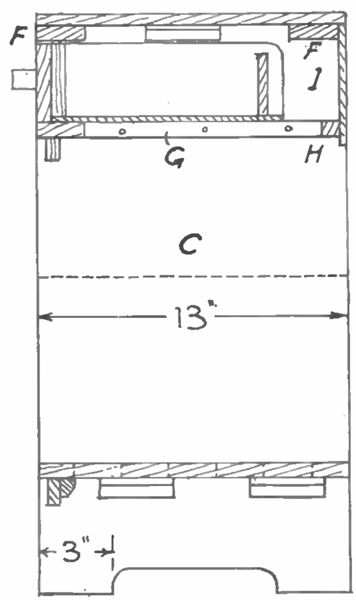

Fig. 3

the parts are grooved and cut before assembling.

The floor of the box may be of plywood ¼in. thick, and set on four

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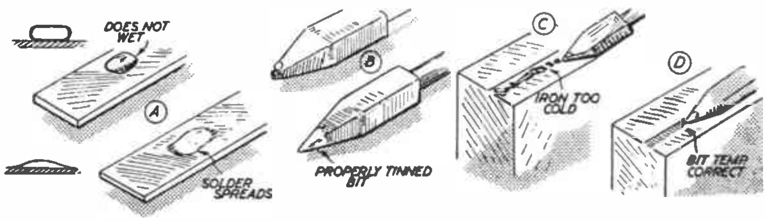
SOLDERING TECHNIQUES

By R. H. Warring

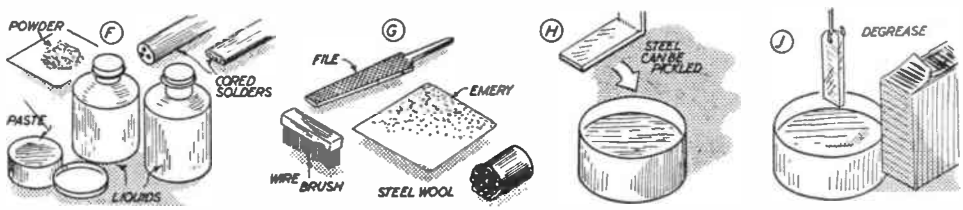
TECHNIQUE is all important in making good soldered joints. One of the principal considerations is that the solder should 'run' or wet the surface to which it is being applied. If a blob of molten solder is run on to a piece of metal which has been lying around in the workshop for some time, it will just collect in the form of a blob, which, when solidified, can be picked off quite easily. In other words, the solder has not wetted the metal, and has little or no adhesion to it (A). On the other hand, if the metal surface is clean and/or flux has been applied, the solder will spread out over the surface, and this time will be difficult, or even impossible, to pick off when cold.

The same remarks apply to a large extent to the soldering iron as well as the metal to be jointed. If the iron is dirty, it will still melt solder pressed on to the bit, but the solder will not stick. It will roll up into blobs and drop. With a clean iron the solder will actually amalgamate with the copper of the bit, spreading out over the surface and 'tinning' it (B). More and more solder can then be added and will cling to the tinned bit until quite a large blob is hanging suspended, which can be transferred to the work surface. A well-tinned iron will 'carry' a considerable amount of solder to the joint. An untinned iron will carry no solder at all, except any which you are lucky enough to balance on the end of the bit.



E

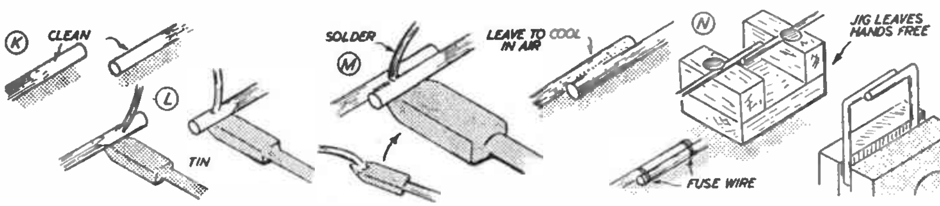
TIN	LEAD	BIT TEMP
60	40	229
50	50	254
45	55	265
40	60	272
30	70	295
20	80	315



If cleanliness is the first of the rules of soldering, the second is correct iron temperature. If the iron is too cold it will not completely melt the solder, but will keep it in a pasty state. It can be applied to the work, but the result will be unsatisfactory (C). With the iron at the correct temperature the solder will 'run' on a clean joint, which is the ideal.

There are quite a number of different types of solder and each one has a definite minimum temperature for satisfactory performance. The lower the tin content of the solder, the higher the temperature needed (E). In this table the temperature of the bit is given in degrees Centigrade. Tin costs five to seven times the price of lead, so the higher the tin content of the solder, the greater its cost. Thus 60/40 solder is used for high-quality work, and is more expensive than 40/60 solder. There is not a great deal of difference in the performance of these two particular solders, except for the difference in bit temperatures required. Solders with an even lower tin content are of little use to the amateur. 30/70 solder, for instance, is used for fuses, motors and dynamos; and 20/80 solder for lamps and dynamos.

It will generally pay to use 60/40 solder for most model work where soft-soldered joints are to be made. This gives a minimum temperature which is over 40 degrees less than 40/60 solder, and it will be better suited to electric irons. The latter are widely used today and frequently misused, or do not give a satisfactory service. The reason for the latter is almost invariably the result of operating the iron on a sub-standard voltage. The majority of electric irons are rated for 230-240 volts and tend to give indifferent results on much lower voltages. The actual supply voltage may be appreciably less than the nominal figure at certain periods, too. Thus using a 230 volt iron on what is supposed to be a 200 volt supply is bad enough; but at a peak load period the actual supply voltage may be as low as 180 volts. No wonder, therefore, the iron does not heat up properly.



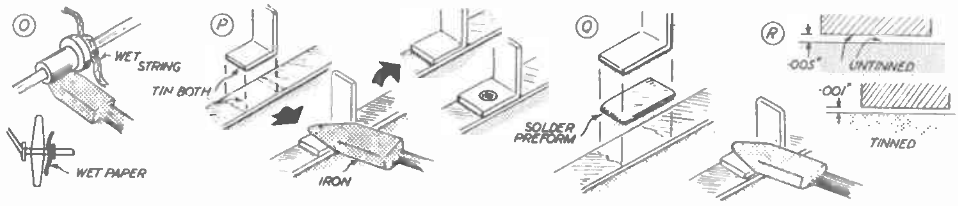
The third rule of good soldering is to use the proper flux for the job. There are a variety of fluxes available—some in powder form, some as pastes, some liquids. In addition there are 'cored' solders which contain the flux in the solder itself (usually a resin-type flux) and do not need any other flux in use. Cored solders are particularly useful for soldering electrical connections (F).

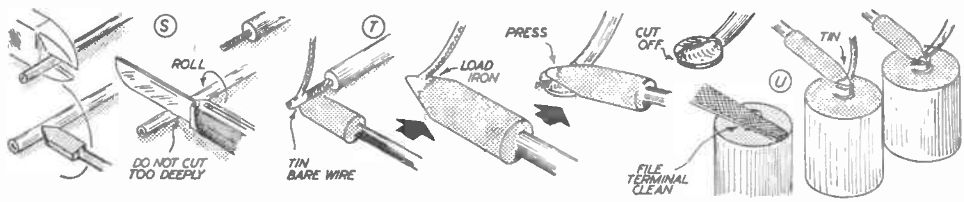
Broadly speaking, fluxes are of two main types—those which are 'active' and those of a passive nature. An active flux, as the name implies, produces a definite chemical reaction of a corrosive nature, which may be excellent from the point of view of cleaning the surfaces involved, but cannot be left to remain active once the joint has been completed. Hence active fluxes have normally to be neutralised or washed off after completing the joint. They should be used only when necessary, and never for electrical connections. As a rough working rule, an 'active' flux is generally advantageous when soldering steel, or where complete cleanliness of the joint is difficult to achieve. Otherwise use a 'passive' flux which has no corrosive after-effect.

For cleaning joints prior to soldering, a wire brush, a file, emery paper, or steel wool can be used, according to the type of job and article involved. A file or emery paper is usually the easiest to manipulate with small articles. A useful steel-wool 'scrubber' can be made by wadding steel wool into a short length of rubber hose or a card mailing tube to act as a grip, protecting the fingers at the same time (G).

Where steel articles are concerned and the surface has rusted, pickling in a 50-50 mixture of hydrochloric acid and water is most effective (H). The steel should not be left in the acid any longer than is necessary to remove the rust, otherwise the surface may become etched and pitted. It should then be rinsed in hot water and dried thoroughly straight away.

Besides getting the surfaces chemically clean (i.e., free from oxides, scale and other products of natural corrosion), it is also necessary to make sure that they are free from grease. Solder will not wet a greasy surface and even fingerprinting an otherwise clean article may produce this undesirable effect. Degreasing can be accomplished very simply by dipping in a hot solution of household detergent, swilling around, and then withdrawing, rinsing in warm water again and drying (J).





These rather elaborate cleaning methods mentioned may not be necessary in every case. Quite often a rub with emery paper or a file is all that is necessary to produce a surface satisfactory for good soldering; but it is as well to know how to tackle a really dirty surface, should the need arise.

Steel is not considered by many people to be a good subject for soldering. If the steel is properly clean, however, and an active flux is used, like Baker's fluid, perfectly satisfactory joints can be made with a minimum of trouble. A gas-heated iron is often preferred for such jobs, particularly if 40/60 solder is used.

Thus the stages in joining two steel wires are:—Clean the joint surfaces thoroughly (K) (and after cleaning do not finger, nor delay the actual soldering), tin (L), bring the joint surfaces together (M), and fuse with more solder.

If the steel is clean, it will tin readily after being brushed with flux. Hold the iron under the wire, apply the solder to the top and it should run over the fluxed area. If the solder is sluggish, the iron is not hot enough. If the solder does not wet properly, then the surfaces are not properly clean.

Capillary Action

In completing the joint (M), load the iron with solder and apply to the underside of the joint. The solder should then be drawn up into the joint by capillary action. Touching the solder on top of the joint will melt more solder into the area to give the required build-up. Again this is a check if the iron is hot enough. If solder will not run on top of the joint, the iron is not heating up the joint area enough. Either the iron is not hot enough or is too small for the job and losing its heat too rapidly. Once made, the joint should be left to set without disturbing and to cool off gradually. Quenching produces rapid cooling but may result in a brittle joint.

It is a great help with jobs like this to make up some form of simple jig to hold the parts to be soldered (N). Even binding the two pieces together with fuse wire will do. Any sort of simple jig (or holding the parts together in a vice) leaves both hands free, one to manipulate the iron and the other the solder.

Sometimes the wetting action of solder on a good clean surface can be a disadvantage as well as an advantage. In this case a binding of wet string or a mask of wet paper can be used to stop solder flowing past this point (O). The string or paper can easily be removed after the joint is completed.

Diagram (P) shows a method of soldering on a bracket. Both joint surfaces are generously tinned, brought together and a hot iron placed on top. An additional blob of solder may be added to the upper facing joint surface before bringing the two together for a stronger joint. Alternatively a 'preform' of solder may be used (Q). This is a piece of solder of the shape of the joint, sandwiched between the two and subsequently melted by the heat and pressure of the iron. The joint surfaces in such cases only need very light tinning, or even none at all if thoroughly clean and well fluxed.

For maximum joint strength, the gap between the joint faces which is filled with solder should be ·005in. with

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APPARATUS FOR THE HOME CHEMIST

A TWO-TIER TEST TUBE RACK

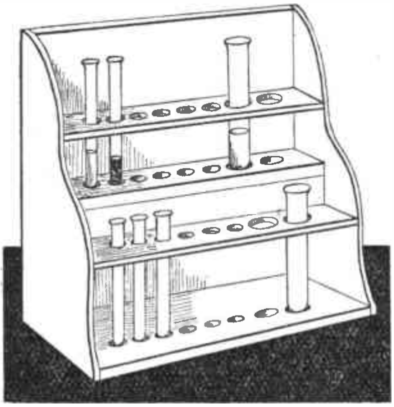


Fig. 1

PROBABLY no chemical laboratory fitting comes in for so much use as the test tube rack. While the usual one-tier type is easy to make from odd pieces of wood, a little more work and material will produce a much superior article, such as the two-tier design shown in Fig. 1.

The lower tier is intended for the temporary holding of tubes during tests. If it is desired to keep the contents of any tubes for observation, they can be transferred to the upper tier and labelled. As the bases of these tubes are clear of the mouths of those in the lower tier, the behaviour of the contents can be noted at a glance, without having first to lift out the test tubes.

The rack can stand against the wall at the back of the bench, or be hung from the wall by means of eye plates. For preference, hardwood should be used, owing to its higher resistance to water.

Fig. 2 shows the general construction. The back (A) is cut from ½in. wood, 13ins. by 11¾ins. Also cut from ½in. wood are (B) 4ins. by 11¾ins.; (E) 2ins. by 11¾ins.; (D) 1½ins. by 11¾ins. Wood ¾in. thick is needed for (C) 1½ins. by 11¾ins.: and (F) 2ins. by 11¾ins.

The broken lines in Fig. 3 indicate the centre lines for positioning the holes and hollows. In (C) six holes ⅞in. in diameter are drilled, starting 1¼ins. from the end and allowing ¼in. between each. The two 1⅛ins. diameter holes are also spaced ¼in. apart. The hollows in (D) are spaced similarly and should be gouged ¼in. deep. The holes in (F) and the hollows in (B) are spaced similarly along the centre line.

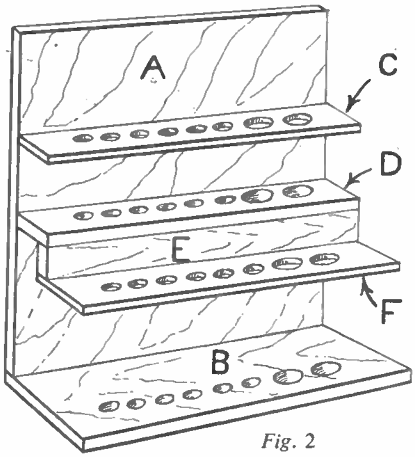


Fig. 2

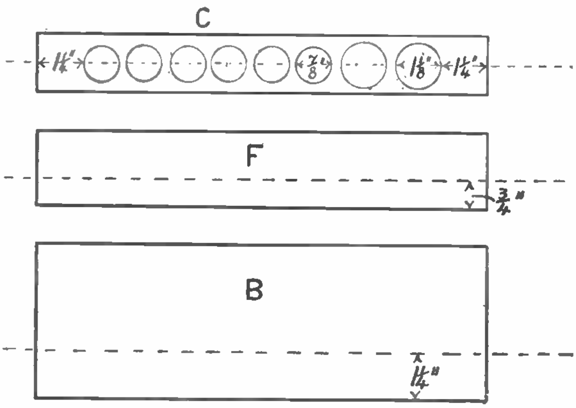


Fig. 3

The ends of the rack should now be cut from ½in. wood. The wood is marked off in 1in. squares and the cutting line drawn on as shown in Fig. 4.

(A), (B) and the ends should first be assembled. (B) is screwed to (A) with brass screws. To avoid marring the ends with screws, they should be fitted to the rack with glue. A few fine fret nails or panel pins will strengthen the whole and be inconspicuous.

The top of (C) lies 3½ins. below the top of (A) and is fixed in with glue and fret nails—two at each end and a few along the back of (A). (D), (E) and (F) should be fastened together as a complete component before fixing in the rack. (F) is screwed to (E). Glue and fret nails serve to fasten (D) to (E).

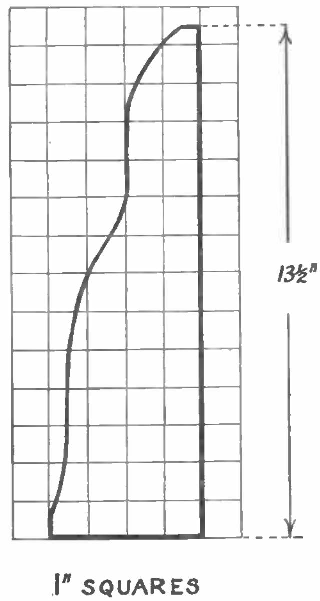


Fig. 4

When the glue is dry (D) is screwed to (A) from the back, the top of (D) lying 7ins. from the top edge of (A). The edges which abut on the ends are previously coated with glue. Fret nails through the ends make the whole rigid. (L.A.F.)

How to Fix those Screws

Although a well-fitted wood-screw should remain secure and tight, this is not always the case. If it is fitted in something which is subject to much vibration or shock, in time it may work loose.

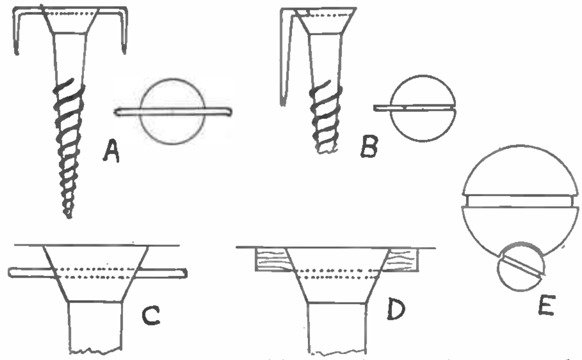
Unless you want the trouble of having to tighten it up quite often, a locking device is needed and there are several ways in which it can be done. Screws that have to be taken out occasionally will receive different treatment to those which are permanent fixtures.

Fixing Permanent Screws

The simplest way of fixing the permanent type is to drive a staple or bent wire across the slot as shown at (A) or a brad driven in to one end like (B). When the screw is sunk below the surface of the wood, a slot can be cut and a piece of wire laid across the slot and soldered in, and this method is also useful if you do not want to puncture the wood with the points of a staple. This is shown at (C).

A very neat and secure job is made by cutting a circular or square sink a little larger than the countersink and gluing in a plug (D). When nicely done with the same kind of wood, it could be practically invisible.

When the screw has to be withdrawn occasionally a slightly different technique must be adopted. File a small semi-circular nick in the side and insert a tiny lock-screw (E).



These methods are only suggestions, and can be modified to suit your own problem and the materials available. (A.F.T.)

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Lady's Sewing Cabinet

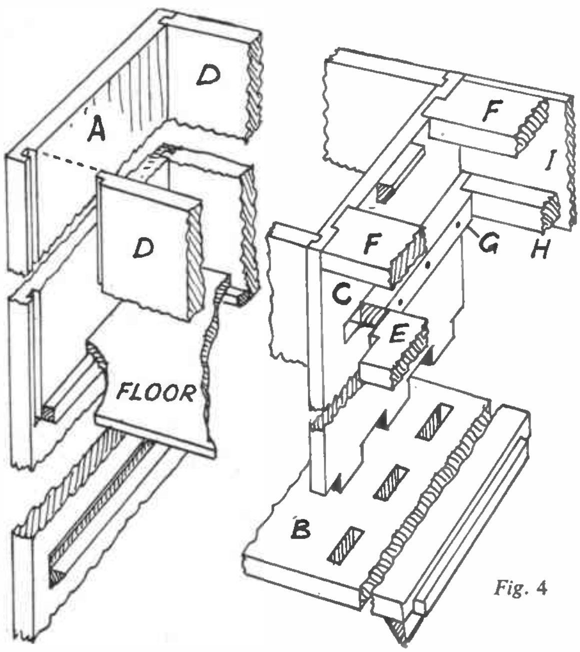


Fig. 4

$\frac{3}{8}$in. square fillets as seen in the cut-away section in Fig. 4. The top cross-rails should be $\frac{1}{2}$in. thick and let in half way into the thickness into the right-hand side and into the partition (C). Drawer runners (G) and (H) must be glued and screwed inside the sides and along the back (I). This latter consists of $\frac{1}{4}$in. plywood fixed to the back of rail and to (H), see Fig. 4 and Fig. 3. The top of the table, on the right, is $\frac{1}{2}$in. thick and may be of plywood, as is also the lid of the cabinet alongside. The top is screwed to the rails and glue-blocked as seen in Fig. 3. The lid is, of course, hinged to the top as in the detail Fig. 5. On the left of the lid is screwed a block of wood to act as a lift when opening it Fig. 5).

Making the Drawer

The drawer is made up as shown in the sectional diagram Fig. 6. The sides and the front are half-lapped and glued together and the back nailed a little way in from the back edge as shown to make a firm hold. The $\frac{1}{4}$in. plywood floor is screwed over the frame and the outer front then attached, screws being put through from the back to run well into the outer front. The drawer might well measure 8ins. clear inside front to back, while the length should be carefully ascertained from actual measurements taken from the drawer opening.

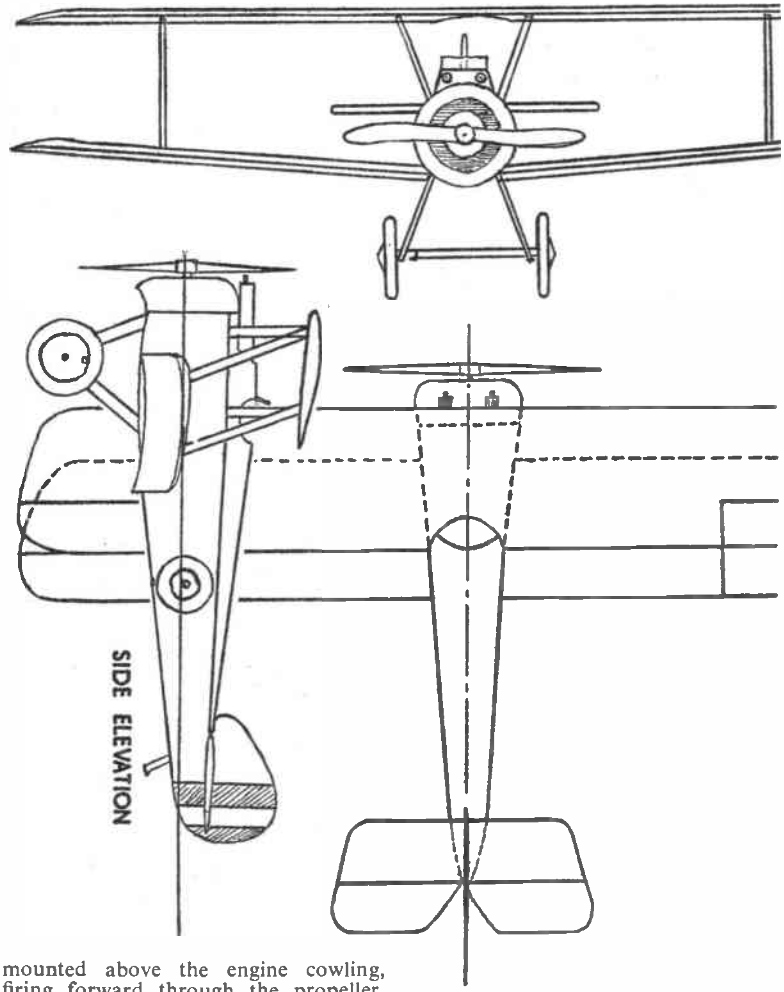
If objection is taken to the exposed edges of the plywood lid and its neighbour, then a half-round beading could be glued and nailed on with small sprigs. Beneath diagram Fig. 2, a scale has been added, this will be found useful for getting further measurements in addition to those already included.

(S.W.C.)

The Sopwith Camel Single-Seater Scout

By D. G. Norton

PERHAPS the most famous of all World War I aircraft, the Camel, built by the Sopwith Aviation Co., which is now the Hawker Aircraft Co., appeared in France in 1917 at a period when the Royal Flying Corps (as the R.A.F. was then known) was experiencing a difficult time fighting against superior German aircraft. The Camel was a tremendous success and did an immense amount of work. It carried twin Vickers' machine-guns,



PLAN VIEW

mounted above the engine cowling, firing forward through the propeller. The machine had a reputation for being tricky to fly, and there is no doubt that it had many dangerous habits. But as soon as a pilot had mastered it, it became a weapon to be reckoned with, and accounted for more than 2,000 German aircraft. The recognition features were distinctive. A flat top wing, with a large amount of dihedral on the bottom wings. It could climb to 12,000ft. in twelve minutes, and at that height fly at 115 m.p.h. Its wing span was 28ft. and length 18ft. 9ins. It was powered, in its later form, with a Bentley rotary engine (a rotary engine being one that turned with the propeller). The flying endurance of the Camel was 2½ hours, in which time it used 26 gallons of petrol.

Building a Scale Model

The plan is drawn to a scale of 1/72nd, or 6ft. to the inch. All the models in this series are to the same scale, and are very inexpensive to build.

Here is a list of the materials required. A block of balsa 2⅝ins. by ⅝in. by 9/16in. for the fuselage; a sheet of balsa 4¾ins. by 2ins. by 3/32in. for the wings: for the tail units a sheet of balsa 3ins. by

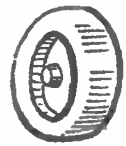


Fig. 1

Engine cowling

1½ins. by 1/32in.; for the struts (interplane, centre-section and undercarriage) thin sheet metal from coffee, biscuit or other food tins will be found extremely useful and should be cut with thin-nosed metal cutters or a pair of old scissors. Reference will be made later to other parts such as guns, wheels, propeller and engine cowling.

Balsa wood is recommended for the wood parts, since it is easy to work, but before painting it should be treated with a good coat of clear dope rubbed in well with the fingers, then, when dry, the surfaces should be smoothed with fine glasspaper. This will give the balsa wood a smooth finish that will receive coloured dope satisfactorily.

The following is a rough guide to the tools most likely to be needed: A small bradawl or pointed instrument for making holes; thin-nosed metal cutters or an old pair of scissors; a small file (this will be very useful for shaping); small long-nosed pliers; a tube of balsa cement; a ruler measuring in 1/10th, 1/12th and 1/16th of an inch, a razor blade (one-sided, for preference) and glasspaper.

These tools are sufficient for all the models in this series.

Construction

Trace the side elevation of the fuselage (leaving out the engine cowling), place the tracing against the block of balsa and pinprick the outline. Then

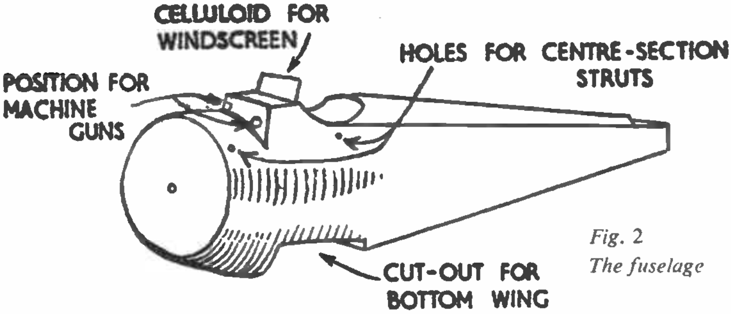


Fig. 2
The fuselage

mark it in with a ball-point pen or a pencil.

Carve or file the side elevation of the fuselage, then draw a centre line along the top surface of the block and mark in the plan view of the fuselage. File away the surplus wood. All that remains is the final shaping of the fuselage. Before you do this, glue on the engine cowling. (See Fig. 1.) The engine cowling can be turned on a lathe or made by hand (see note at the end). The cowling, glued in place, will act as a guide for obtaining the roundness of the front part of the fuselage. The bottom is flat, but the top continues its rounding to the tail-plane. But the rounding on the sides gradually disappears and, at the cockpit, is flat. Note that there is a flat-topped hump in front of the cockpit. This has the machine-guns glued to the front of it. (See Fig. 2.) Mark in the position of the cut-out for the bottom wing (see Fig. 2), and with file and razor blade, remove the surplus wood. The cockpit can be hollowed out. For this you will require a small drill, or you can paint the cockpit area black. Holes should be made for the centre section and undercarriage struts.

Draw the plan of the wings on to the sheet of balsa and cut them out. Glasspaper the leading and trailing edges until you achieve the aerofoil section shown in Fig. 3. The bottom wing should be prepared (see Fig. 4), so that it will fit into the cut-out in the bottom of the fuselage. Shallow holes are made in the wings for the interplane and centre section struts. Fig. 5 gives you the exact size for these struts, and also those for the undercarriage. The tail-plane and rudder are made in a similar way to the wings. Wheels can be made from $\frac{3}{8}$in. linen buttons and painted; machine-guns from short lengths of $\frac{1}{16}$in. dowel, and the propeller may be cut out from thin card.

Assembly

Before you glue the bottom wing into place, it should be given its correct dihedral. Hold the wing between your finger and thumb about 6ins. over a candle flame and, *very gently*, bend it until the correct dihedral is obtained. Then glue it beneath the fuselage in the cut-out. Glue the centre-section struts into the holes in the fuselage, and then fix the upper wing on top of them, purely as a trial. The wing should rest $\frac{5}{16}$in. above the fuselage (not the machine-gun housing). You may have to adjust the centre-section struts to obtain the correct distance between the wing and fuselage. When you are satisfied, glue the interplane struts into the bottom wing, adjusting them for correct stagger (their forward slope) and then glue on the top wing to centre section and interplane struts, making sure that all struts are correctly in line, both from the front and side. Glue the undercarriage struts into place, adjusting them to their correct position (the track should be 7/10th of an inch). Thread the axle (a piece of florist's wire is excellent for this) through the holes, put the wheels on, add a touch of glue on the ends of the axle, or burr the wire to keep the wheels in place.

Rudder and tail-plane are now glued in place and the tail skid, which is a short piece of wire, is glued into the fuselage, beneath the tail-plane. Glue the machine-guns into place, and fit the propeller with a pin.

Fig. 3

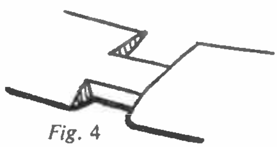


Fig. 4

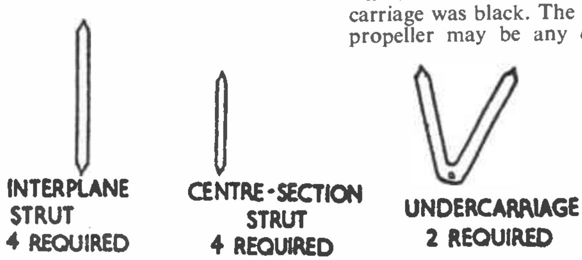


Fig. 5

Painting

The Sopwith Camel was painted dark green on all upper surfaces, and cream on the under surfaces. The engine cowling was painted silver. Interplane and centre section struts were varnished and were almost the colour of yellow ochre. (This can be obtained in poster colour, and if a touch of Seccotine is added, the paint will take well on metal.) The undercarriage was black. The wheel discs and propeller may be any colour and the rudder red, white and blue, with the red at the end.

Night fighter Sopwith Camels were painted dark green on all surfaces.

Take care with your painting, remembering that two thin coats are better than one thick; and make sure that all surfaces are smooth and free from finger marks. The modeller will find that the transfers of cockades from model shops will be most useful. Two cockades are on the top wing, two on the bottom wing and one on each side of the fuselage midway between the cockpit and the tail.

Celotex Perforated Hardboard

CELOTEX LIMITED, who were the first people to introduce the completely packaged pegboard in Britain, have now entered the perforated hardboard field. Their Five-Star Hardboard, which is a rigid high-density wood fibre board, is now available in perforated form.

The Celotex Five-Star Perforated Hardboard, which will conform to what is accepted now as standard measurements—lengths 4ft., 6ft., 8ft. and 12ft., with perforations of $\frac{3}{16}$in. diameter at $\frac{3}{4}$in. centres—is a double-sided board—on one side it has a smooth surface providing an ideal base for the applied finishes required in certain decorative schemes, and on the other it has a 'canvas' texture which is much sought after.

Make a Warm-Air Drying Cabinet

By A. F. Taylor

PROBABLY one of the most useful accessories to the enthusiastic photographer is a cabinet in which films and also prints can be put to dry.

It is well known that the chief drawback to the drying process is the dust particles which float about in the atmosphere and delight to stick on to any wet surface. Large specks of dust can make ugly marks on the negatives, and when these have to be enlarged, they are a real nuisance. Therefore, anything which will reduce this menace and help to produce better photographs is sure to win approval from the keen photographer.

Not only does the drying cabinet, described in this article, help to combat the dust menace, but the warm air element accelerates the drying process. Under damp weather conditions this will be found invaluable, and besides drying films, the cabinet can be used equally well for prints.

The heating element is a small electric light bulb housed in the base. This warms up the air as it enters through a filter near the bottom, and as warm air rises, it helps to dry the film.

Individual Requirements

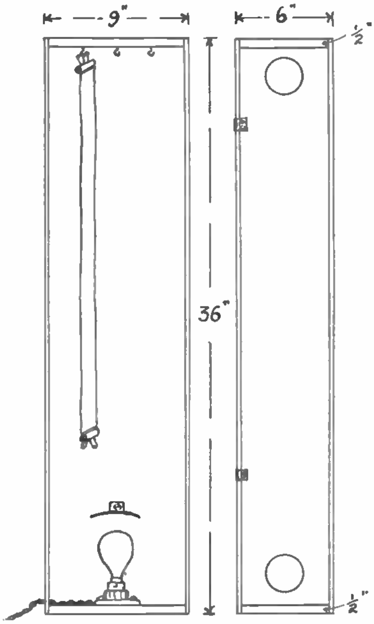
The size of the cabinet will depend on several factors all of which must be determined by individual requirements. The length of the film governs the height, while the number of films which the cabinet is required to hold will decide the width. Quite thin plywood is suitable for the construction, which should not present any difficulty nor take up much time to make.

The cabinet described and the measurements quoted will prove a very useful size. It is suitable for films up to about 24ins. long. Although designed for two films, it could hold three, but there is a risk of the films touching and sticking together should the cabinet be knocked accidentally.

For the sides two pieces 36ins. long, $5\frac{3}{4}$ins. wide and $\frac{1}{8}$in. to $\frac{3}{16}$in. thick will be needed, while the back and front are 36ins. long, 9ins. wide and the same thickness as the sides. The top and base are thicker, and it is on to these that the sides and back are fastened. Two pieces of wood $8\frac{3}{4}$ins. long, $5\frac{3}{4}$ins. wide and $\frac{1}{2}$in. thick will serve well.

Reference to the drawings will show two circular holes cut in the sides. These are for the cold air to enter at the bottom, and after being warmed, it passes out at the top.

In order to keep out any dust particles these holes are covered with a piece of muslin which acts as a filter. It is quite simple to glue this in position on the inside. A better and stronger finish is obtained if a thin ply rim is glued over the muslin, and this should be about 3ins. in diameter, with the 2ins. hole cut in the centre.



After fixing the filters the cabinet can be assembled, gluing the sides and back to the top and base. Panel pins may be used to strengthen at the top and base, and corner strips used down part or all of the length.

The front of the cabinet is a door fixed with two or three small brass hinges. There may be some difficulty in fixing the hinges with ordinary wood screws owing to the thinness of the wood. It is, therefore, much better to use small bolts for the job.

Screw a suitable bulb-holder to the centre of the base and lead the wires through a small hole in the corner. The heat of a 25-watt bulb should be sufficient for most purposes, and an even smaller wattage may be found to do the job quite well. It is not advisable to use too large a bulb, as the heat generated may do considerable damage to the film by melting the gelatine instead of drying it.

It is an advantage to fit a deflector 1in. or 2ins. above the bulb to break up the heat waves and disperse them more evenly over the area of the cabinet. Although this is not essential, the effect of a deflector should be tried out before deciding whether to discard it or not. It will be found useful if too much heat is produced by the bulb near the lower end of the film.

The form for the deflector can best be found by experiment, and will most probably be semi-circular as shown in the sketch, although a straight piece will be quite effective. Any highly polished sheet metal such as tinplate, chromium, or copper about 4ins. wide, and extending from the back to within about 1in. of the front door is fixed to the back with a small wood screw or bolt.

Suspend Films from Hooks

Two or three small brass hooks screwed into the top will complete the dryer, the films being suspended from these with spring-type paper clips. To keep the films straight another clip is fastened to the bottom end, and if this is not sufficient, a small weight can be attached.

Much longer films can be accommodated by hanging both ends on the two top hooks, but it is a better plan to hang them straight if possible. If much work is done with long films, it would be better to build a taller cabinet.

Good clean plywood should not need any further attention, but if the inside of the cabinet is given a coat of varnish, it will be easier to wipe out occasionally to keep it free from dust.

One final word of warning is necessary—do not put in any films that are dripping wet, especially if no deflector is used, as this may result in a cracked bulb. Remove as much moisture as possible with a rubber wiper first before hanging them up to complete the process in the dryer.

CHILDREN'S MOBILES

FOUR different designs for novelty mobiles for children have been produced by Philmar Ltd., London. They are 'Super Circus', 'Pixies', 'Favourite' and 'Round-up', and working on them provides hours of interest. When assembled and suspended from the ceiling the animation of the various figures provides an absorbing fascination. The kits cost 7/11 each.

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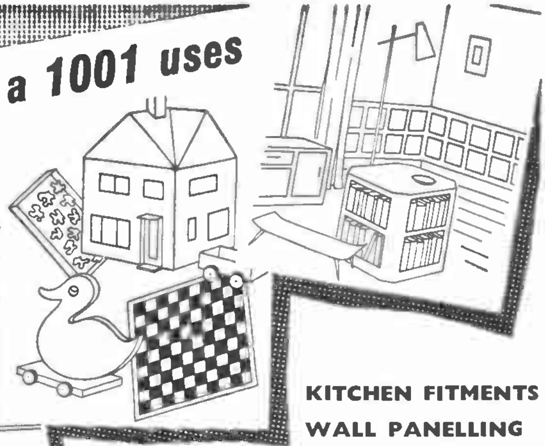

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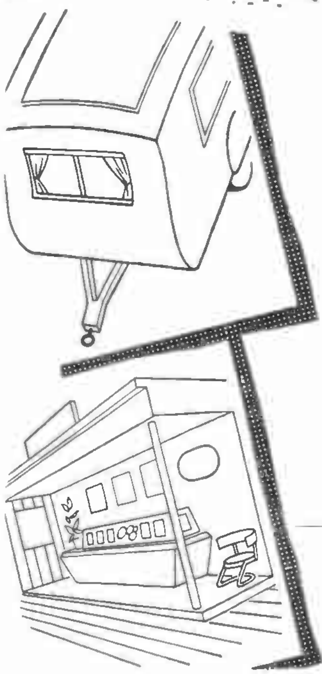

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Cost of Recording Equipment

CAN you tell me whether the price of recording equipment is high? What roughly is the cheapest price, and could it be operated by anyone? Is a licence necessary? (C.D.—Wrexham.)

THE price of good recording equipment is quite high; no licence is required. The modern tape recorder is possibly most suitable. You will see these advertised in many periodicals. Various tape units, etc., are also advertised in radio and technical periodicals such as *Practical Wireless* and these enable a recorder to be made up at rather less cost than the ready-manufactured type. The cost depends on the specifications of the equipment, type of microphone, etc., and will usually lie between about £15 to £80.

* * *

Tinting Wood

COULD you give me the formula of the chemical, and the method used, to give sycamore and maple the grey-green tint to make it known as Greywood or Harewood? (D.H.—Colne.)

WHILST the required tint could be obtained by the alternate application of dilute water solutions of the dyes Nigrosine and Brilliant Green, a colour faster to light will be achieved by using a pigment base. This can be used in an oil, spirit or water medium, according to preference. Experience with pigments on hardwoods would make it appear that water is best. The requirements are whiting, chrome green and lamp-black. First grind the whiting with the chosen medium, work in enough chrome green to give a fairly full colour and then tone with lampblack. As chrome green varies somewhat, a little ultramarine may be needed to increase the grey tone. It is important that genuine chrome green be used; this consists of chromic oxide, whereas some so-called chrome greens are mixtures of chrome yellow and Prussian blue. The stain is rubbed into the wood with a cloth pad. After drying, smoothing can be done in the usual way.

* * *

Repairing a Drum

CAN you tell me how to repair a bass drum? I am an instructor of a children's jazz band and last week the skin got broken. I have some old skins of another drum which I could use for patching. What adhesives do I use, and how do I apply same? (R.M.—Mountain Ash.)

PROBABLY the best way to approach the repair of a drum skin is first to remove it entirely, lay it out flat and draw the broken parts as nearly into proper position as possible. Skive the joint edges and thin them out taperwise, and put clean paper under this part. Prepare a suitable size patch, corresponding in shape to the damaged area but overlapping about 1in. all round, and similarly skive the edges. Apply an even film of good glue, such as Le Pages fish glue, to the joint faces, and when about to get tacky, lay the patch flat and even in place. Leave to dry under pressure applied by weights on a smooth board, or the like, put a clean piece of paper over the patch. When quite dry and hard, refix the drum skin in the usual way. It is, of course, probable that the tonal quality will, in any case, be depreciated by any repair.

* * *

Mounting Colour Photographs

PLEASE tell me the best way to mount colour photographs such as Dufay, for viewing against light. I am not referring to transparencies for projection. (L.S.L.—Amersham.)

WE would advise that several methods of mounting transparencies for viewing by transmitted light exist. A type of ready-made frame is available, in packets of 25, into which the films can be inserted. A cheaper method is to employ square cover-glasses, the film being sandwiched between two of these, and the edges secured together all round by self-adhesive tape. Thin tinfoil masks, with square aperture, can be obtained to include with the films, to give a square frame. These items and others of like nature may be obtained from large photographic dealers. Cheapest of all are paper masks, at 2/- per 100, with glasses at about 6/- for 50, or cardboard frames with glasses at about 7/- per 25.

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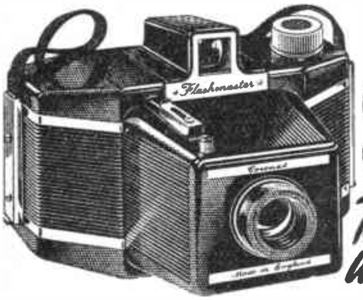

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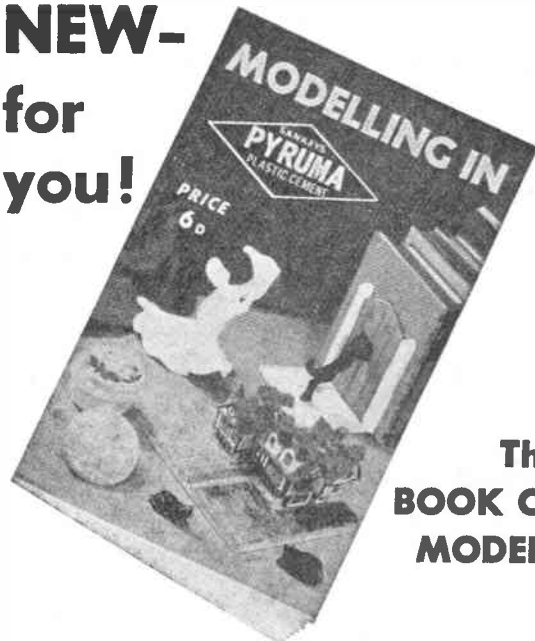

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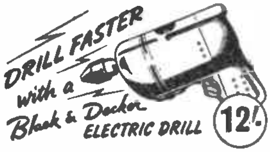

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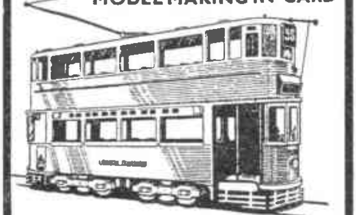

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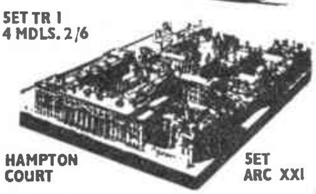

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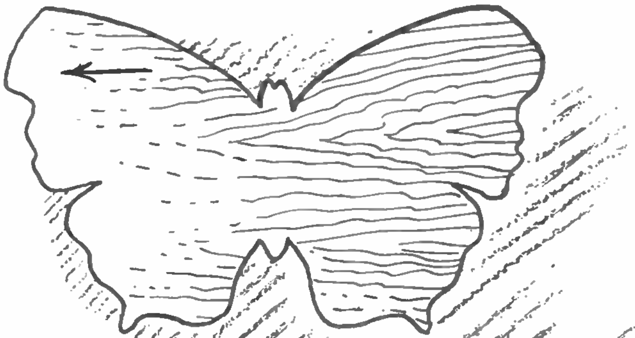

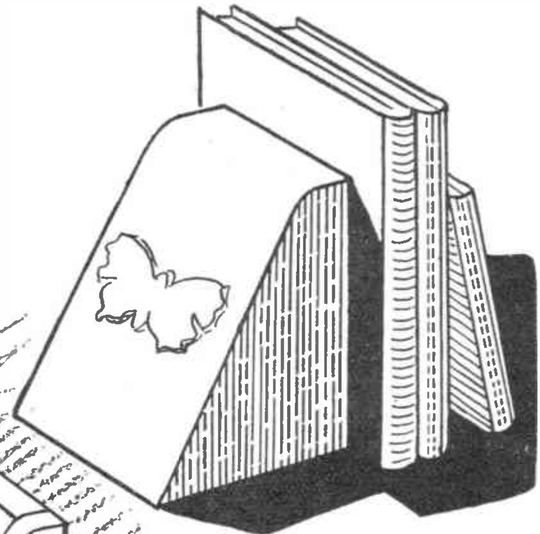

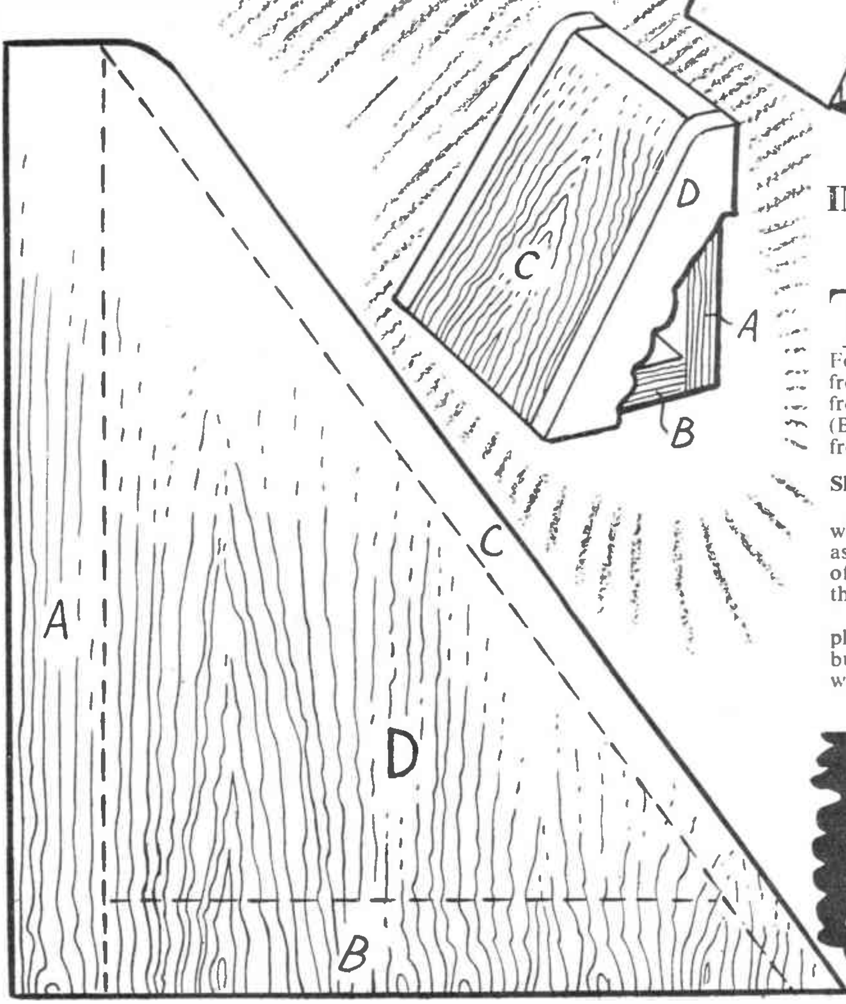

INSTRUCTIONS FOR MAKING

THE instructions on this page are easy to follow and the parts present no difficulty in marking out. For each bookend cut two pieces (D) from ¼in. wood and two pieces (A) from ½in. Piece (A) is 2¾in. wide. Pieces (B) and (C) are the same width. Cut (B) from ½in. wood and (C) from ¼in.

Shaping

A little shaping is needed after the whole assembly has been glued together as will be seen from the full-size pattern of piece (D). The dotted lines show the sections of pieces (A), (B) and (C).

Paint the finished bookend with plastic enamel paint and then glue the butterfly overlay, which is cut from ⅛in. wood, in position.

CUT OUT WITH A FRET-SAW

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