58th YEAR OF PUBLICATION

OCTOBER 1st 1952

Hobbies WEEKLY

Complete with FREE DESIGN for a Decorative Blotter

VOL. 115 NUMBER 2970

Add novelty to your home:

MAKE THIS INN SIGN ASH TRAY

AN ideal present for the smoker is an ash tray in the form of an inn sign. It consists of a base-board into which is slotted a strip of wood forming the post on which the sign is hung. Another small piece of wood is let into the base to hold an upright matchbox. Four strips of beading glued or pinned to the base keep the ash tray in position.

The Base

First the base-board, a rectangular piece of wood (Fig. 1) ¼in. thick is cut 8ins. by 5ins. The sharp edges at the top are glasspapered off. A hole (A) ½in. square is cut out of this, the two outer sides being 1½ins. from the longest side at the back of the base, and 1½ins. from the shortest side at the right of the base. A second hole (B) is cut out of the base, the size of the end of a matchbox, 1½ins. by ½in., so that the cover of the matchbox will fit over a block of wood let into it. This hole is placed so that one short side is 1½ins. from the right hand end of the base, the longer side being 1in. from the front of the base.

A strip of wood ½in. square is cut 12ins. long (G, Fig. 3). This slots into the hole (A) to form the sign post. It may be left square at the top or shaped to a point. A block of wood (C), 1⅞ins. by ⅝in. by 1¼ins. high is made to slot into hole (B), to hold the matchbox. The block (C) pushes up the part of the matchbox containing the matches when the cover is slipped over the block (Fig. 2).

Four pieces of beading ¼in. to ⅜in. in width are prepared to hold the square ash tray, which should be about 2¾ins. square at the base. These are fixed in position in the left hand corner near the back of the base (Fig. 1). Four more pieces of beading are cut to fit round the base of the block (C) to add a nicer finish to this part. At the foot of the post two supports are added (D and E). These are made from ¼in. square strips, and glued or pinned on to the post and base (Fig. 3).

For the Sign

A further strip (F) is cut to jut out 3½ins. and at right angles to the post. It can be fixed about 3ins. from the top of the post, shaped at the end, and strengthened by a small diagonal piece at the top. Before fixing, two small hooks are inserted on the underside, from which to hang the sign.

The sign itself, a flat piece of wood, 3ins. by 2ins., must be thick enough to

IN THIS ISSUE

This is the first issue of a new volume

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THE MAGAZINE FOR MODELLERS, HANDYMEN AND HOME CRAFTSMEN

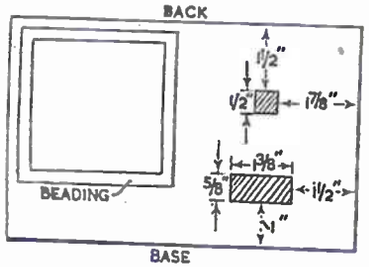


Fig. 1—The base

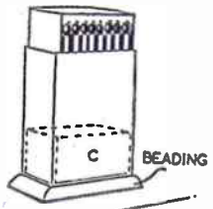


Fig. 2—Details of the matchbox holder

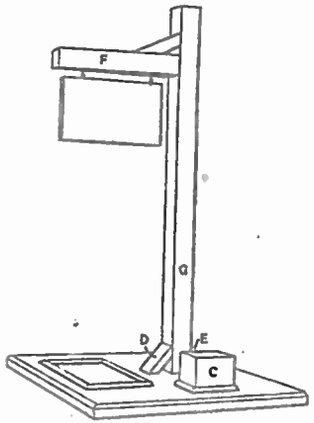


Fig. 3—The main assembly

enable two eyes to be screwed into the top edge, for hanging on to the hooks on the arm of the sign post.

Decoration

The decoration of the sign creates interest. Choice can be made from some famous inn; a modern touch may be introduced, such as an aeroplane or car; or it can represent the local inn of the person for whom it is intended. The sign may have simply the name printed neatly on it, or, perhaps, a simple design, either painted directly on to the wood, or first painted on paper and then carefully stuck on to the sign.

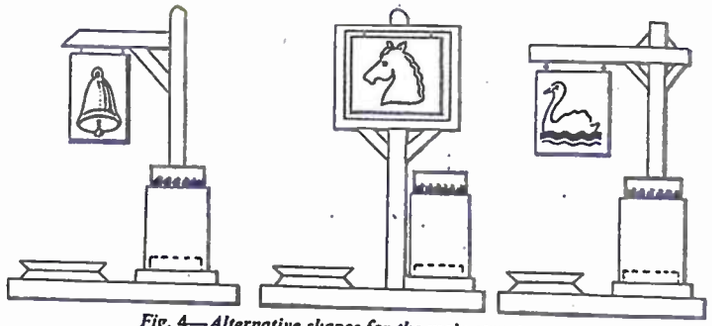
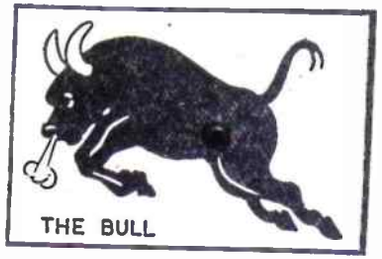


Fig. 4—Alternative shapes for the main structure



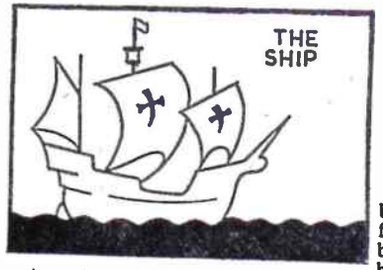


Fig. 5—Examples of various designs

A tracing will have to be made from the original, to get two designs alike—necessary for the two sides of the sign. If painting is not a strong point, a small coloured picture from a magazine may be found of the desired size and suitable for an inn sign. The underside of the base is finished off by covering with baize or a similar cloth.

When assembling, complete the whole of the top part, gluing and pinning where necessary. Then complete the base, and finish by joining these two main completed sections. (D.Y.G.)

Two Books to Read

Chains and Beads
by Greta Pack

WRITTEN by the author of *Jewelry and Enameling*, this is a work manual of chains and beads, recommended to all interested in the art and technique of jewelry making. The working drawings and concise text can be followed easily by anyone who understands the basic process of jewelry work.

Published by Macmillan & Co. Ltd., St. Martin's Street, London, W.C.2—Price 25/-.

Knotting and Netting
by Leslie Willard

KNOTTING is a fascinating pastime, and in this little book will be found all the details necessary for the beginner. It will hold the interest for many hours, and explains how many practical and useful articles can be made. Scores of knots are described in detail and hundreds of other knots can be formed from them.

Published by W. & G. Foyle Ltd., 119-125 Charing Cross Road, London, W.C.2—Price 2/6.

Rivets and How to Use Them

THE art of riveting is, no doubt, one of the earliest of engineering practices. Even before the invention of soldering and welding, and probably more than two thousand years ago, rivets were used to hold together the plates of armour worn by the warriors of old.

The rivet in its simplest form is one of the most practical ways of permanently joining two or more metal surfaces together. Other types of rivet are used extensively for leatherwork, and the planks of small boats are generally fixed together with copper rivets.

The average handyman does not, apparently, make as much use of the rivet as he could and it is the idea of this article to point out its advantages and disadvantages and to try and show how to get the best results from it.

Care in Choosing

It is not advisable to use a rivet for every type of joint and a certain amount of care should be exercised in choosing the right kind for the job. The round or snap head and the countersunk are, perhaps, used more than any other type and these are clearly shown in the drawing, the top row being the rivets before use and underneath as they appear when finished off.

Before describing the various rivets in detail let us first consider a few practical hints which will apply in general to most of them. The size of the rivet, that is the diameter of its shank, should not be greater than three times the thickness of the sheet.

The rivet hole should be only slightly larger than the rivet shank — the clearance need not be more than about 5 per cent of the diameter. When working in sheet metal the distance between rivets is never less than three times the diameter of the rivet nor should it be greater than eight times if a strong job is wanted.

Rivets should not be placed too near the edge of sheet metal—twice the diameter of the rivet is the very closest that should be made, otherwise the joint will be very much weakened.

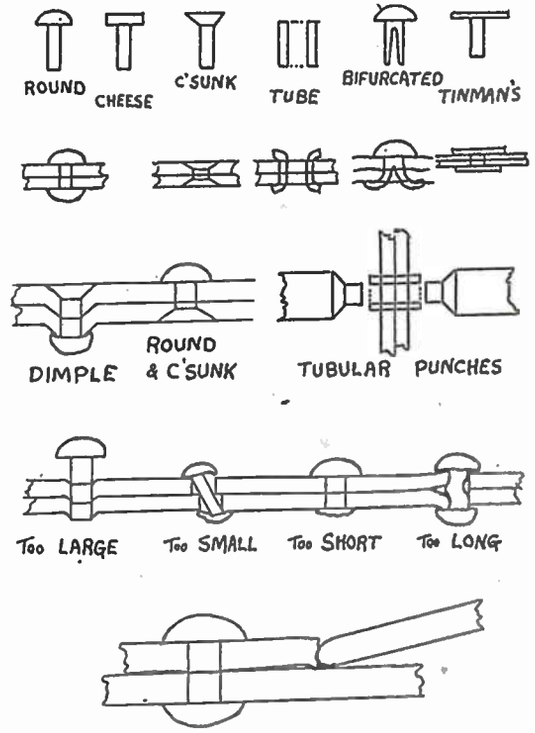
Any burrs that have been made in drilling or punching the holes should be filed off and the surface made level before inserting any rivets, as failure to do this will result in a bad joint and if it is a vessel to hold liquid there is bound to be a leakage.

The amount that the shank of a rivet projects beyond the sheets to be joined is rather important, and a safe rule is to allow about one and a half times the diameter of the rivet.

All rivets should be rather soft so that a well shaped and evenly spread head will be formed during the hammering. This cannot be done if the metal is too hard and it may be necessary to anneal the rivet by heating it and allowing it to cool gradually.

When the rivet is not made of the same metal as the job, then the rivet should be the softest of the two, and even when both metals are alike the rivet should be well annealed.

The round head or snap rivet as it is sometimes called is probably used more than any other type, and for hand riveting it is the best. To form a neat round head is quite an art and requires a certain amount of practise. Do not hit the rivet directly on the end with a heavy hammer as this may cause it to fracture and probably bulge badly in the centre. A series of light taps is much better and these should be started round the edge of the projecting shank and gradually worked towards the centre.



The head of the rivet should be placed on a hard metal surface which has a sink of a similar shape in order to support it while the other head is being formed. Round head rivets can be bought quite cheaply in a large variety of sizes and of various metals with one head already formed.

In some jobs it is necessary that the head of the rivet should not project above the surface and it is here that the countersunk rivet is useful. Although not so strong as the round head it is quite satisfactory and is much used in aircraft and similar work in order to reduce wind resistance and prevent any loss of speed due to this.

The ordinary countersunk rivet can only be used on medium and thick material and is not satisfactory for sheet metal thinner than 20 S.W.G. on account of the serious weakening due to cutting the metal away to form the sink. This fault can be overcome to a certain extent by using a dimple rivet which is clearly shown in the drawing. Instead of drilling out the countersink, the metal is forced down to the required shape with a punch and die.

It is sometimes an advantage to use the round head rivet in conjunction with the countersunk.

Small Work

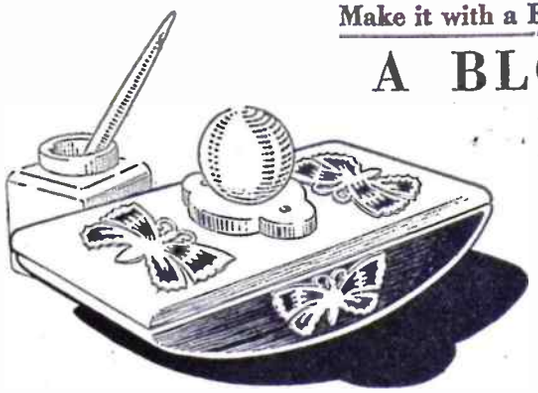
For small work where there is very little strain a tubular rivet is sometimes used and a good example of this type is the eyelet of a shoe. Special punches are really necessary in order to make a satisfactory job, but these can be easily made and the drawing shows two ready to close over the ends of the rivet.

Thin sheet metal plates are usually held together by a tinman's flat head rivet, the head of which covers quite a large area and helps to keep the thin sheets in close contact.

(*Continued on page 4*)

Make it with a Fretsaw from Design No. 2970

A BLOTTER WITH A BUTTERFLY MOTIF



COMPLETE KIT FOR ONLY 3/8

For making this attractive desk or bureau fitting, a complete kit comprising all necessary wood, turned handle, and screws, can be obtained from any Hobbies branch, or post free from Hobbies Ltd., price 3/8, including tax.

APART from the usefulness of a blotter such as that illustrated, its value is enhanced by the fact that it is highly decorative. It would look well on any desk or bureau, and is a worth-while project for any fretworker.

Construction is well within the capabilities of anyone handy with tools, and even beginners will not be in difficulty.

Trace the Patterns

First trace the pattern pieces on to the right thicknesses of wood, taking particular care with the butterfly overlays. Now cut piece 1 (the top), shaping the edges as shown, and the pieces 2 and 3. These latter are all the same shape, but pieces 2 are those which show the dotted lines of the overlays.

Next cut piece 4 and glue the ball foot in the centre hole. Glue the pieces 2 and 3 securely together, and when dry, shape up so that the surface is true and smooth.

The next job is to cut the butterfly motifs from thin ply. These should be tackled with care to avoid breaking the 'ties', and the centre frets should be removed before the outline is cut.

The large overlays belong on the top of the blotter, and the small ones on the sides. When they have been nicely cleaned up they can be glued into position. A final cleaning up with glasspaper, and the whole article is completed except for staining or painting.

Finish is largely a question for the individual, but many will, doubtless, wish to stain the blotter in two shades, the second shade being used for the motifs. If paint is preferred, two colours, one for the motifs and one for the blotter, should still be used.

It has been found by experiment that a really first class finish for this article can be obtained by filling the centre frets of the motifs with sealing wax. This is run in hot and smoothed with a hot knife. When set, the surface is glasspapered quite smooth.

Any colour wax can be used, and the butterflies can be made more attractive by painting the unwaxed portions another colour. If the main body of the blotter is then lightly stained (light oak is suitable) and the whole thing varnished, the result will be found extremely attractive. In the prototype model, the stain used was light oak, and the butterflies were completed with red sealing wax and black indian ink.

Ready for Use

To prepare the blotter for use, cut three or four strips to the required length (sufficient to allow a turning each end, as seen in the drawing on the design sheet), place them in position, and secure the top with a large screw. The ball foot assembly is then placed in position with its two screws, and the larger screw is hidden. The sketch showing the general construction will make these points clear.

Rivets and How to Use Them

(*Continued from page* 3)

Bifurcated Rivets

Another very useful rivet is the bifurcated which really needs very little description. It is an ordinary round headed rivet that is slotted down the centre of its shank for about three-quarters of the way. Chiefly used in leatherwork it is only necessary to place it in the holes already punched and turn over the two projecting ends. Strut back hinges are often fixed to photo frames with this type of rivet.

Water Tight Joints

To draw two riveted plates together so as to form a water tight join a process called caulking is sometimes adopted. This can only be done when thick plates are used and it consists of hammering along the edge of one of the plates with a punch as shown in the sketch, so as to force the edge of the metal into close contact with the other plate.

Faults to Avoid

There are a few faults that must be avoided when using rivets and we must refer to the sketches where some of them are clearly shown. A rivet that is too large will force the metal out of flat when driven in and not make a tight joint. On the other hand when too small a rivet is used, both the heads are liable to be torn off when any strain is put on the plates.

Very little head can be formed if the rivet is left too short, but, perhaps, the worst fault is in using too long a rivet. This will cause it to bulge in the centre and probably make the plates gape and besides making the rivet weak, it produces a very bad joint.

Removing Old Rivets

The best way to remove an old rivet is either to file off the head if this is possible or to drill down a little way with a drill slightly smaller than the rivet shank and then cut it off with a tap or two with a cold chisel.

By taking particular note of the hints given in this article quite a high degree of proficiency will soon be gained and the knowledge acquired can be turned to very good account in a variety of ways. (A.F.T.)

IDEA FOR PHOTOGRAPHERS

Efficient Print and Film Washer

THE thorough washing of films and prints is one of the most important of all photographic operations. Many good pictures have been spoiled and much valuable time wasted because this simple job was not carried out properly.

It is not necessary to have any elaborate equipment, and this article describes how to make a really efficient washer for a very small outlay. In fact it is possible that the junk box will provide the odds and ends necessary for the job.

Thorough Washing Essential

To keep photos from fading or discolouring with time, the various chemicals that have been used to produce them should be very thoroughly washed out. One way of doing this is to let them soak for a time in a dish of water that must be changed frequently. The only drawback with this way is that a good deal of time is wasted in changing the water and a much better method is to have a fairly large tank where the water changes itself automatically.

Besides being much more thorough with the washing it allows you to be free to carry on with other jobs. The simple apparatus is made up in an ordinary wash basin, sink, or it could even be done in a bath.

The drawing clearly shows that fresh water from the tap is carried to the bottom of the tank where it mixes with the impure mixture and gradually dilutes it. As the tank fills this escapes down the extended waste pipe until, after about an hour the water is quite pure and free of all injurious chemicals.

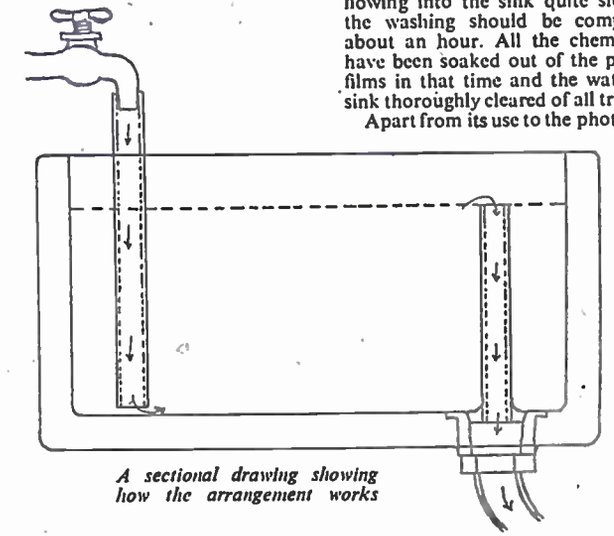
Rubber Tube

A piece of rubber tube that fits on to the tap fairly tightly and reaches almost to the bottom of the sink or basin is all that is necessary for the fresh water supply. If any difficulty is experienced in getting a piece to fit, a length of cycle inner tube can be tied tightly on the tap and will answer very well indeed.

Provided the sink or basin is fitted with a plug to the waste outlet it will be quite easy to make the extended overflow. These plugs are either made of metal or plastic and it will be necessary to make a hole in the centre to take a piece of pipe.

The size of this pipe is not very important but it should not be less than ¼in. in order that it may clear away the waste water fairly quickly. If you are using a small pipe a twist drill will cut the hole in one operation, but for larger sizes it may be necessary to drill a circle of small holes close together and then file between them to cut the piece right out.

Smooth up the hole with a half round file to a perfect circle, so that it will be a tight fit on to the piece of pipe. See that it is upright, and if it is a metal plug, then it can be soldered in to make a water tight joint.



A sectional drawing showing how the arrangement works

For a plastic plug the hole should be made a little smaller than the pipe, the end of which is filed to a slight taper, so that it may be driven in to the plug. To avoid splitting the plug by driving the pipe in too tight, both plug and pipe should be filed quite round and so made into a really good fit.

The actual length of the pipe will be determined by the depth of the basin or sink, but about three-quarters of the way up will be found about right.

It is only necessary to have the water flowing into the sink quite slowly and the washing should be completed in about an hour. All the chemicals will have been soaked out of the prints and films in that time and the water in the sink thoroughly cleared of all traces.

Apart from its use to the photographer this little gadget can be very useful for sinks and baths that have not got a safety overflow, by preventing them from being filled too full if the tap is left on by mistake.

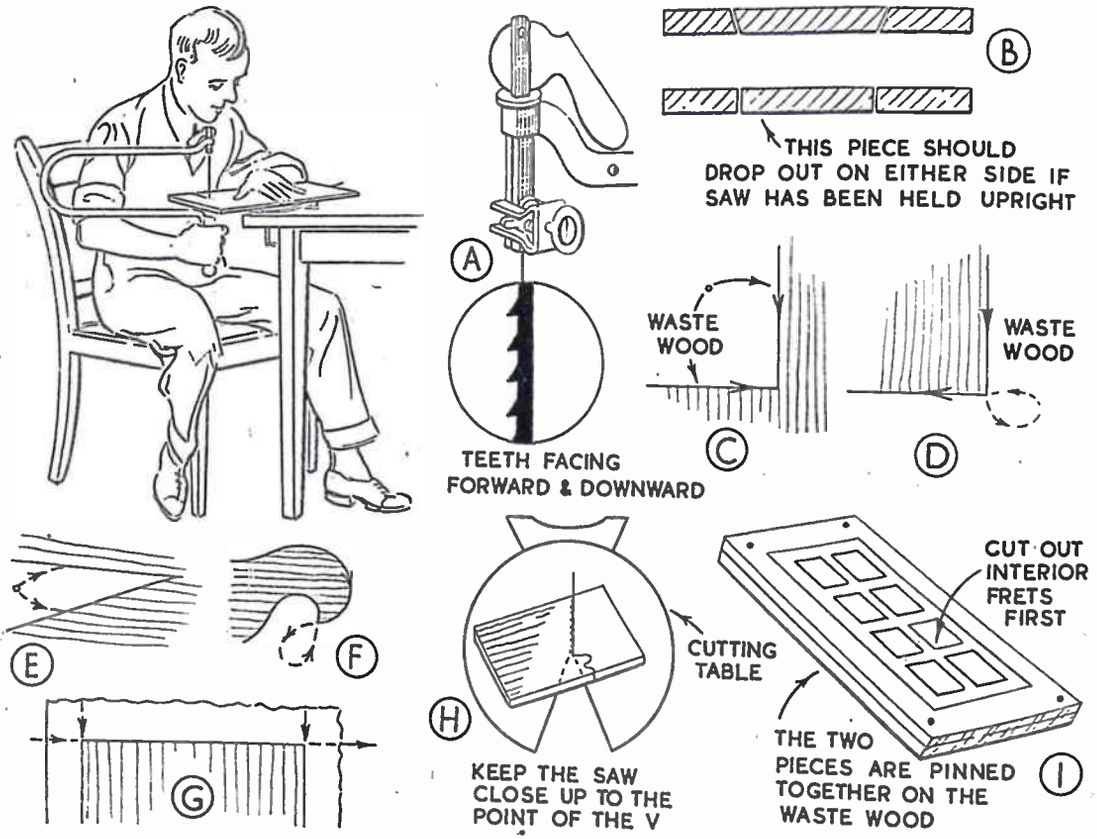
For this purpose it is a good plan to use a piece of pipe as large as the plug will allow. With a plastic plug this, unfortunately, must not be too great, otherwise it will be considerably weakened and may split when the pipe is pushed in. (A.F.T.)

Glazing Hand Painted Dishes

CAN you give me any method of glazing dishes after having hand painted a design on them? I am aware of the kiln method. (*B.G.B.—Forfar*).

MESSRS. Winsor & Newton Ltd., of Wealdstone, Harrow, Middx., can supply all necessities for painting and glazing china without the need for baking in a kiln. They have an extensive range of china-painting water colours, and the permanency of these colours is ensured by the use of a discovery known as Molland Glaze which is painted over the colouring. The article so treated is then placed in a 'moderate' oven and left there for forty-five minutes, when it is removed and allowed to cool. The decoration will then be found thoroughly durable and will withstand both normal wear and tear and continual washing in hot water. Test pieces have been subjected to boiling water and washing detergents without ill effect.

Hints on Using the Fretsaw



IN the issue of August 20th we gave some useful instructions on transferring designs to wood. The next step is, of course, the actual cutting, and although this may at first seem quite straightforward, there are a number of important points to bear in mind.

To an experienced worker it may seem superfluous to mention the position of the blade, but for the sake of the newcomer we must point out that the saw is intended to cut on the downward stroke. Look closely at the fretsaw blade and you will see that the teeth are shaped as in the enlarged view at (A). When the blade is inserted in the fretsaw the teeth should face downwards as shown.

Cutting

Commence cutting with quick light strokes and do not try to press the blade forward too hard. Let the blade more or less 'feel' its way along the line.

Make quite sure that the blade is upright. Glance behind and at the side of the blade as you are cutting. The diagram at (B) shows the result of a sloping saw. In the lower section you will see that the part cut out should drop out from above or below if the saw has been held upright.

Neat Corners

If you find it difficult to make a neat corner just study the diagrams (C), (D), (E), (F) and (G). The arrows and dotted lines indicate the direction the saw must take to make a neat corner.

Always work as close up as possible to the V in the cutting table. This applies particularly to fine work in thin wood. By working close to the V you ensure the maximum support from underneath. Give further support if necessary by pressing down with the fingers from above.

Saving Time

Once you have mastered the art of holding the saw perfectly upright you will be able to economise in cutting time by pinning two or more pieces together where duplication is required. Tap the pins in round the edge on the waste wood and cut out the interior frets first. Use a *Hobbies* drill for making the holes in the frets. (M)

A First-Aid Cabinet

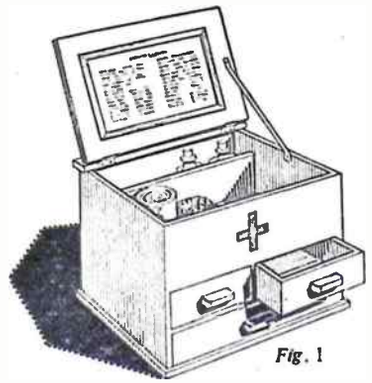


Fig. 1

IT is a good thing to have a useful-size First-Aid cabinet in the home. In fact it seems a necessity, where children are concerned especially, to be able to deal quickly and effectively with cut fingers, bruises, burns, etc.

The sketch in Fig. 1 makes clear the method of construction, and shows the cabinet's capacity for holding all the requisites for first-aid purposes. The width of the cabinet across the front is 12¾ins., its depth, from front to back, 8¼ins., and its height 10¾ins. There are three useful drawers, as can be seen in the sketch, and the top portion is partitioned off for medicine or other bottles. An ordinary medicine bottle is about 7ins. high, including the cork, and 2¾ins. wide, so that the space allowed will be sufficient for four of these bottles. A plain lid is hinged to a top back rail, and a tape screwed to both lid and side helps to hold the former at an angle so that certain instructions on the inside of the lid may be easily read.

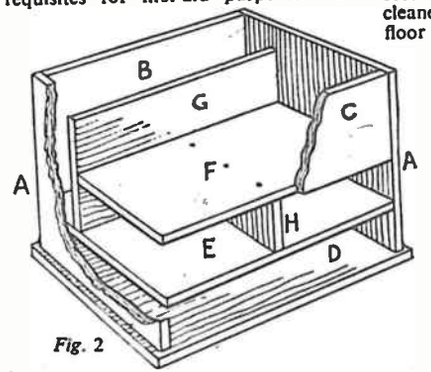


Fig. 2

Construction

The actual construction of the cabinet is clearly shown in Fig. 2, where a portion of the upper front rail and part of one side is shown cut away to expose the inner members and show how these parts are arranged. All parts are clearly lettered and are given, with their various sizes, in a cutting list at the end of this article.

Making the Body

The body of the cabinet or the box, as it may be called, is made up from the two ends (A), the back (B), the front rail (C) and the floor (D). All these parts must be cut accurately, with all corners perfectly square, and checked with a try square before assembly. Note from Fig. 2 how the various pieces fit together, the back and the front rail going in between the sides. All parts will be glued and nailed or screwed, and, if necessary, the joints may be strengthened by the addition of a triangular fillet on the inside of the box. Slender ¾in. long screws with flat heads for countersinking should be used in preference to nails, the heads being recessed and afterwards filled and cleaned off level. The four edges of the floor should be rounded off with glass-paper and made smooth. This work can be done after it is fixed to the box.

The measurements for the upper floor (E) should be carefully taken direct from the made-up box so as to ensure a good fit. Take careful note that this floor stands above the lower or main floor for a distance of 2½ins., see Figs. 3 and 4, the latter diagram being a cross section of the box showing the relative positions of the floors and partitions. Screws will have to be run through the sides into the floor (E), the holes for them being carefully measured for and drilled so that they come centrally in the thickness of the wood of the floor. The measurement, therefore, up the sides (A) from the top surface of the floor (D) will be 2⅛ins. Similar calculations should be made when making the holes for the smaller floor (F). Take note here, that if a triangular fillet has been added in the angles of the box, the back corners of the floor (E) must be trimmed off to allow for them. Screws should be run through the back of the box into the back edge of (E) for sake of strength.

The floor (F), the upright (G) and the cross partition (H) should be carefully

(*Continued on page* 9)

CUTTING LIST OF WOOD

(A).	(2).	10¾ins. by 8¼ins.
(B).	(1).	12ins. by 8¼ins.
(C).	(1).	12ins. by 5ins.
(D).	(1).	13¼ins. by 9¼ins.
(E).	(1).	12ins. by 8¼ins.
(F).	(1).	12ins. by 5¾ins.
(G).	(1).	12ins. by 6ins.
(H).	(1).	5¾ins. by 2¾ins.
(I).	(1).	13¼ins. by 9¼ins.
(J).	(2).	7¾ins. by 2¼ins.
(K).	(1).	11¼ins. by 2¼ins.
(L).	(1).	12ins. by 2¼ins. by ¼in.
(M).	(1).	12ins. by 7¾ins. by ¼in.
(N).	(1).	12ins. by 2¼ins.
(O).	(4).	5ins. by 2¼ins.
(P).	(2).	5ins. by 2¼ins.
(Q).	(2).	5¼ins. by 2¼ins. by ¼in.
(R).	(2).	5¼ins. by 5¼ins. by ¼in.
(S).	(2).	5¼ins. by 2¼ins.
(T).	(1).	6¼ins. by 2ins. optional

Wood ¼in. thick throughout, excepting pieces (L), (M), (Q) and (R) which may be ¼in. thick.

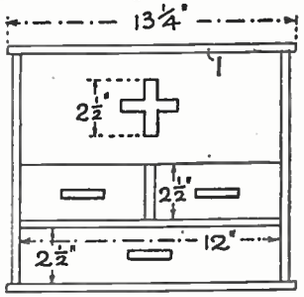


Fig. 3

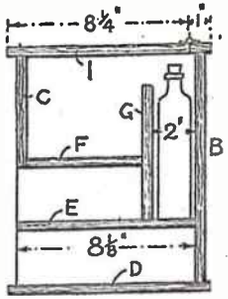


Fig. 4

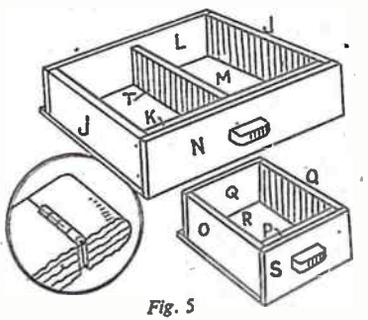


Fig. 5

Part III—A TRANSMITTER

Radio Transmitting and Model Control

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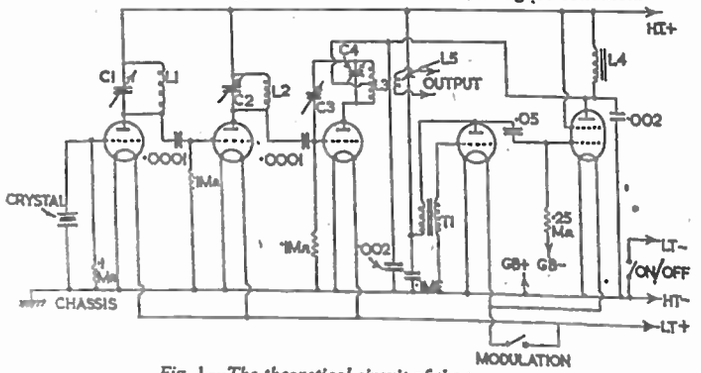

Fig. 1—The theoretical circuit of the transmitter

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Fig. 1 shows the theoretical circuit, and the constructor should be able to wire the apparatus from this, in conjunction with the layout plan given. Here, a 9 mc/s crystal is used. The ·1 megohm leak provides a passage for direct current. L1 and C1 are tuned to 9 mc/s, thereby providing an oscillatory circuit which operates at the frequency of the crystal. This signal is passed on to the second valve, where it is amplified and the 27 mc/s harmonic selected by C2 and L2 being of such values that they resonate at this frequency. The third valve provides amplification, neutralisation being provided by C3, since the valve tends to oscillate upon its own, due to its grid and anode circuits being tuned to the same frequency.

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The crystal has been described. L1 is 1¼ins. in diameter, and consists of 13 turns of 20 S.W.G. tinned copper wire, the winding occupying ⅞in. space. L2 and L3 each consist of 9 turns of 18 S.W.G. wire, on a 1in. diameter former, the windings, in each case, taking up 1¼in. space. These formers should, preferably, be ribbed, or the coils may be wound in a self-supporting form, and the ends soldered directly to the variable condensers.

C1, C2 and C4 are ·00005 mfd. (50 pF) variable condensers. C3 is a neutralising condenser adjustable between about 2 and 25 pF. As the spindles of the condensers are connected to H.T. positive they are mounted on insulated brackets, to avoid a short circuit to chassis and H.T. negative.

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L5 consists of about 2 turns of wire round L3, and provides the output to the aerial. Tuning will be easier if reduction drives are used; if not, fairly large knobs with pointers and scales are necessary. The panel may be of wood. A chassis about 8ins. by 12ins. by 2ins. deep is suitable.

Adjusting

A signal will only be radiated after certain adjustments have been carried out. If these are not correctly done, no signal will be radiated, or the signal will be unduly weak.

It can first be ascertained if V4 is oscillating at audio frequency. To do this, remove V1, V2 and V3, but insert the last two valves (V4 and V5). Now wire phones or speaker across L4 and close both switches. A loud audio tone should be heard. If it is not, reverse the wires going to the primary of T1. After obtaining correct operation, here, V4 and V5 may be removed, and V1 inserted.

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Aerial, etc.

For short distances a simple single wire can be used. One end of L5 is taken to it, and the second end of L5 returned to the chassis. Final, exact adjustment will be facilitated by having a receiver in use, set to the correct frequency. The tuning condensers in the transmitter can then be adjusted very carefully to obtain the maximum possible output.

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The output of the transmitter will depend largely upon the H.T. voltage, accuracy of adjustment, efficiency of valves, and activity of crystal. Using a single valve receiver for monitoring purposes, the signal should be audible at 500yds. range, using aerials of moderate efficiency. Local monitoring may be arranged by using a crystal-diode set, with phones and a coil tuned to the frequency used.

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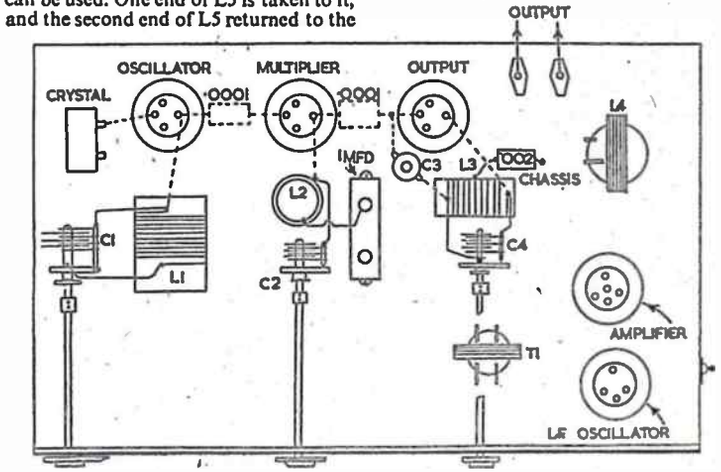

Fig. 2—Practical layout of the components

A First-Aid Cabinet

(*Continued from page 7*)

set-out to checked measurements, assembled, and then dropped into place in the box, glue and screws making a secure fixing at sides and back.

The lid (I) is just a piece to the measurements given, with a back rail formed by cutting through on a line drawn 1in. in lengthways, see cross section Fig. 4. The two parts are hinged together, either by placing the flaps of the hinges flat as shown in Fig. 4, or by the neater fashion shown in the circled diagram in Fig. 5. The 1in. wide back rail of the lid must be very securely glued and screwed to the back of the box, and all sharp edges of the lid and its back rail planed or glass-papered off.

The construction of the drawers is shown in Fig. 5. Before cutting the various pieces which go to the making of them, it will be best to check the openings in the made-up cabinet, then allow full measurements for cleaning off the sides, etc., of each drawer, so as to ensure a good fit. The cross partition (T) of the lower drawer is optional and can be omitted if desired.

Block handles about 2ins. long and 1in. or so wide can be glued to the front of the drawers with screws run through from the inside for sake of strength.

Any good straight-grained wood may be used with plywood, perhaps, for certain parts of the drawers. Clean the surfaces well with fine glasspaper at completion and coat with lead paint, following up with a rubbing of fine paper and two coats of white paint or one coat of paint and one of enamel. The cross may be put on in red to the size suggested in Fig. 2. A plain strip-wood frame may be formed on the inside of the lid to contain any printed instructions for use in handling the contents of the cabinet. (S.W.C.)

Part III—A TRANSMITTER

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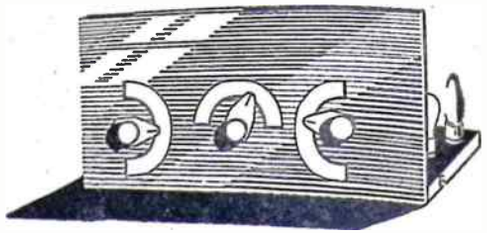

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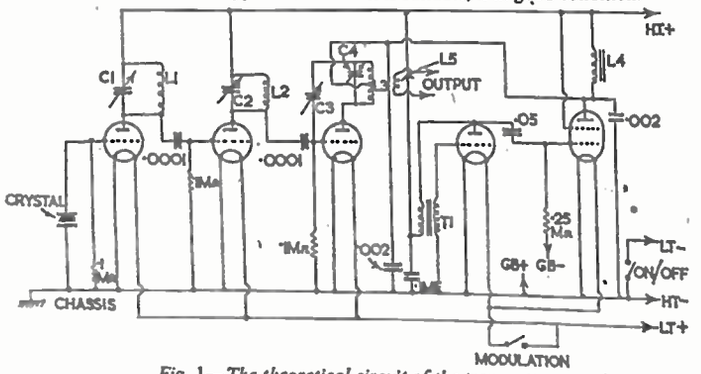

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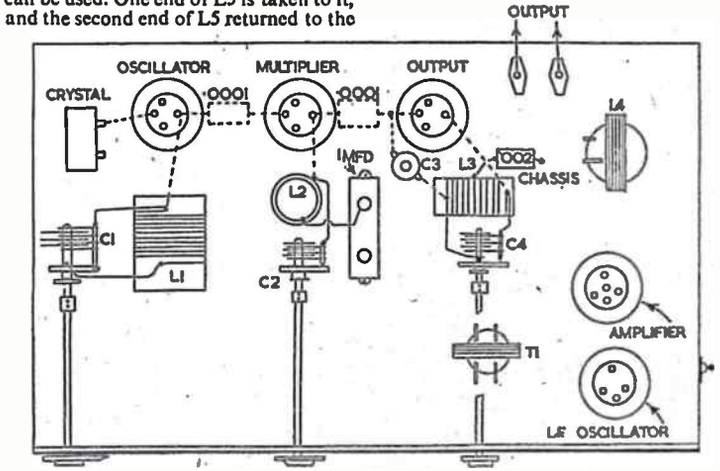

Fig. 2—Practical layout of the components

A First-Aid Cabinet

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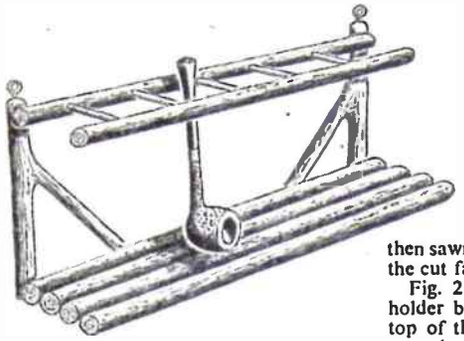
RUSTIC WOODWORK

A PIPE RACK—



SIX 10in. lengths of straight sycamore shoots of ½in. thickness when debarked are needed for this attractive pipe rack. The hooked twigs are of similar thickness.

To fix the four base rods together, pack these close together in a vice and drill right through three, but not quite through the fourth (which will be to the front of the rack). An ¼in. dowel is inserted 2ins. from each end, as shown in Fig. 1. ½in. is then sawn off either end of the rods and the cut faces smoothed on glasspaper.

Fig. 2 indicates the assembly of the holder bars which will be fitted to the top of the rack. These are drilled part way through, to take 1½in. lengths of ¼in. dowel. Centre the holes 1½ins. apart, starting from the middle of the bars. When the glue is set, cut off ½in. from either end and smooth as before.

The hooked twigs, which make the whole rigid, are fitted by countersunk screws, a screw eye in each serving for hanging the rack. The screw holes should be drilled before the hooked twigs are cut to the final 4ins. height shown in Fig. 2, so as to avoid the danger of splitting. The surplus can be sawn off at right angles, or rounded as illustrated.

Orange shellac and meths. varnish makes a gay finish on the white sycamore.

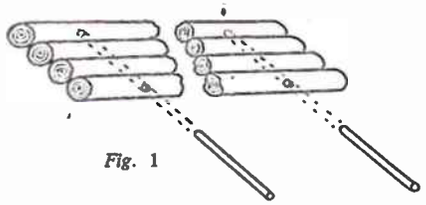


Fig. 1

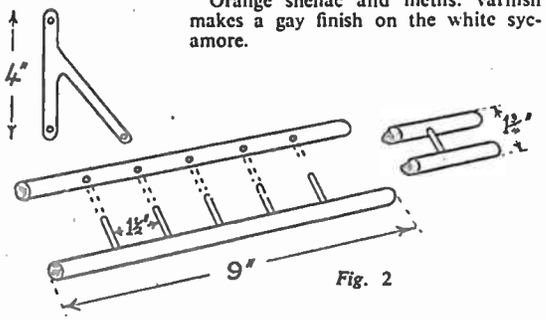
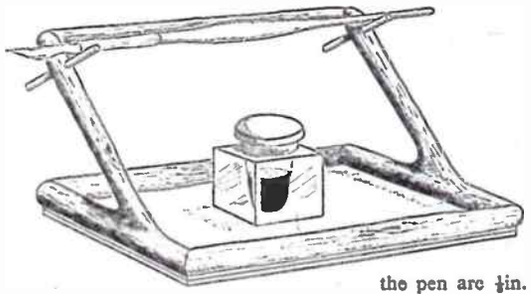


Fig. 2

—And a Pen and Ink Stand



THE primitive appearance of this inkstand, made as it is of thick debarked orange shellac varnished twigs, and with its bright copper base, creates immediate interest.

Sycamore Best

Sycamore trees give the straightest shoots for the job. The twigs should be ½in. thick when peeled. If left in a warm room for a fortnight, they will be quite dry enough to work. Plain mitred joints are used throughout.

To give rigidity, the copper base is fixed to ¼in. plywood, and the slot to take the inkwell is cut with a metal-cutting fretsaw. The holes shown in the constructional diagram take small screws which pass up into the twigs and so bind the whole tight.

The pegs to hold the pen are ¼in. dowels, and the holes to accommodate them should be drilled carefully, so as not to split the hooked twig.

In assembling, it will be found best first to screw up front and back rods to the base, and then to adjust carefully with glasspaper any inaccuracies in the lower mitres of the hook twigs. Give a touch of glue or cellulose cement to the mitres immediately before putting in the last base screws.

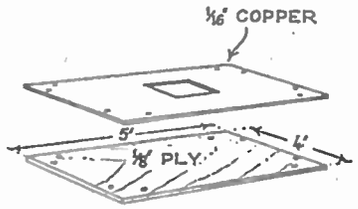


Fig. 1—*The base*

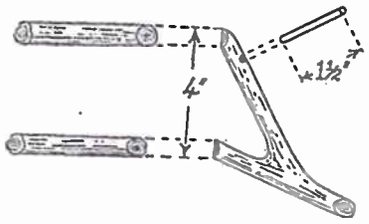


Fig. 2—*The twig assembly*

Finish

A thin coat of orange shellac and meths. varnish should be applied to the base, as well as to the upper wood parts, so as to keep the copper bright. (L.A.F.)

HOME CHEMISTRY

More Experiments with Sulphur Dioxide

ANYONE who has smelt burning sulphur knows what sulphur dioxide smells like. So long as sulphur dioxide is in the gaseous state its odour is a reliable test, but if it is dissolved in water it could be mistaken for formic acid which has a similar irritating smell. Therefore, it is useful to remember the two following chemical tests.

Dip a strip of filter paper in potassium dichromate solution and hold it at the mouth of a test tube containing a solution of sulphur dioxide (made by bubbling the gas through water for a few minutes). Warm the test tube gently. The water will give up its sulphur dioxide and the orange colour of the paper will turn to green.

Repeat the experiment with a strip of starch paper dipped in potassium iodate solution. The paper will turn blue. Formic acid gives neither of these colour changes.

Conjuring Trick

A spectacular conjuring trick can be done with sulphur dioxide and lead dioxide—no less, in fact, than making something red hot without heating it! You need merely place a little lead dioxide in a deflagrating spoon and plunge it into a jar of sulphur dioxide (Fig. 1). The brown lead dioxide will combine with the gas to form white lead sulphate, the energy of the reaction being so great that the lead dioxide will glow spontaneously.

If you have no deflagrating spoon, you can quickly make one from a 3ins. diameter press tin lid, a length of stout iron or copper wire, two pieces of cork, a wireless nut and bolt and a metal screw cap off a bottle (Fig. 2).

Punch a hole through the centre of the lid. On each side of the lid hold a piece of cork (½in. thick) and force the straight piece of wire through. Bend over the top of the wire to form an eye for hanging it up when not in use. Then bend the lower part of the wire as shown. This is fixed to the screw cap by beating out a small flat on the wire, drilling it, and passing the bolt through this and a hole drilled in the cap. The screw cap can be adjusted to any height in a gas jar by sliding the wire up or down through the corks.

Another striking trick is to produce fog by means of light! Take a gas jar of sulphur dioxide and cover it with a greased glass plate. Lay it on its side and shine a strong beam of electric light through the glass plate. In a few minutes a thin fog will appear in the previously clear gas. This thickens until the jar seems full of fog. In this curious reaction the sulphur dioxide breaks up into sulphur and sulphur trioxide. On removing the light, the fog will slowly disappear again!

In our last article on sulphur dioxide we showed how sodium sulphite can be prepared from sulphur dioxide and sodium carbonate. This could also be done by using sodium hydroxide instead of sodium carbonate. The soluble sulphites of many other metals can be prepared in a similar way. Even if the hydroxide or carbonate will not dissolve in water it does not matter.

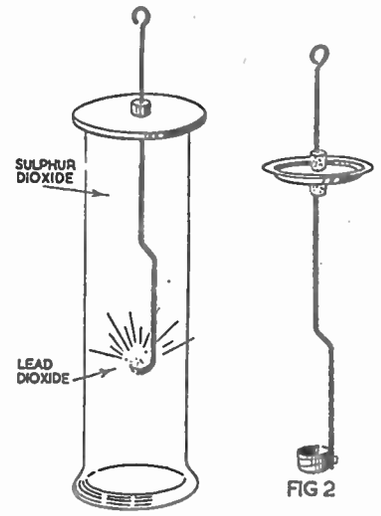


FIG 1

FIG 2

Both magnesium carbonate and magnesium hydroxide are insoluble in water, for instance, but if they are suspended in water and sulphur dioxide passed in, they will dissolve and form a solution of magnesium sulphite.

Try this out with some magnesium carbonate. When the carbonate has nearly all disappeared, filter the solution and evaporate it to the crystallisation point. On cooling and standing overnight, colourless crystals of magnesium sulphite will separate out. Pour off the mother liquor and tip out the crystals on to a porous tile to drain and dry.

There are a few metals whose sulphites cannot be prepared by these methods. Special ways have to be used. Copper, for example, forms several sulphites. Two of these we can easily prepare with the help of sulphur dioxide.

First cuprous sulphite. Shake up copper acetate with about 50 c.c. of cold water in a bottle until enough has dissolved to form a deep blue solution.

Pour the solution off the remaining undissolved copper acetate into a flask. Heat the flask until the solution boils and, keeping it boiling, bubble sulphur dioxide through the solution. Slowly there will be deposited a powder which is sometimes white, sometimes yellowish. This is cuprous sulphite. When no more appears to be forming, filter it off, wash with water, and open out the filter paper on a porous tile. Leave it to dry in a warm room.

When it is dry, divide it into two halves. Bottle one half for your chemical stock.

With the other half, we can make cuprous isosulphite. First make a saturated solution of sulphur dioxide in 50 c.c. of water by bubbling the gas through until the solution smells strongly.

Pour the solution into a beaker and drop in the second half of your cuprous sulphite. Slowly heat the mixture until it boils. A brownish-red powder will be formed. This is cuprous isosulphite. Filter it off, wash it on the filter with a little water and dry it as you did the cuprous sulphite by opening out the paper on a porous tile.

It is interesting to note that sulphur dioxide is contained in the gases thrown out by volcanoes. Many hot springs also contain the gas. (L.A.F.)

VOLUME 114

This is the first issue of Vol. 115, and readers who have a complete set of the issues for Volume 114, just completed, may wish to bind them. Attractive red binding cases are available, price 4/6 post free. An index for Vol. 114 is in course of preparation, and, when ready, copies will be available to readers price 1/- post free.

DESIGNING AND BUILDING MODEL RAILWAYS

By F. E. Carter

READERS who already possess a model railway, as well as those following these notes, will by now possibly be wondering how they can easily improve their layouts and make them more perfect in appearance and operation—with as little financial outlay as possible.

There are many ways of achieving the desired end, but probably the simplest and most interesting—particularly in the summertime—is by taking notes and photographs of railway subjects wherever one finds oneself. There are always things of railway interest to be found when on holiday, and by making notes and sketches—if photography is out of the question—it is possible to bring home a real 'wad' of useful information for winter study and constructional work.

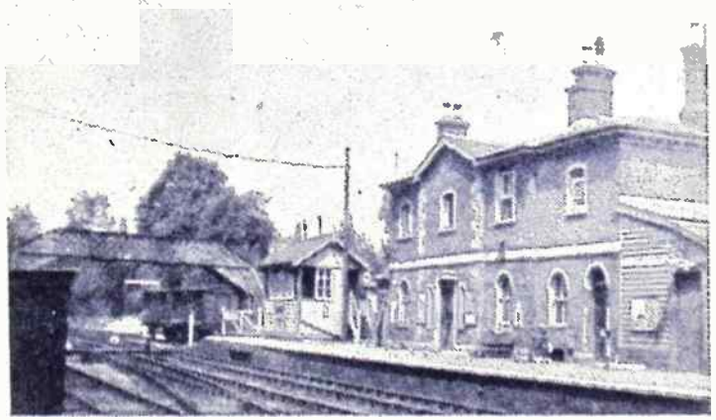
Increasing Value

Over the past thirty years or so the writer has adopted such a principle, and has gradually accumulated many thousands of railway pictures and notes from all over the country which have become increasingly invaluable as they get older.

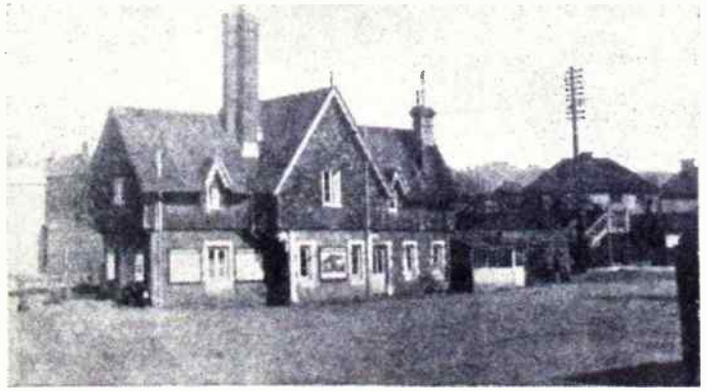
As an example, the lining and livery of pre-grouping engines and coaches, the lettering on old-time private owners' wagons now no longer to be seen, the picture of a station which is not now in existence, or a 'snap' of the old 'Southern Belle' passing through a station which has been entirely rebuilt. All these photographs, and many more were not particularly interesting at the time they were taken, but are priceless today.

And so it is with pictures, sketches and notes made today. They will not only provide the necessary details for the building of station buildings, locomotives in detail, and rolling-stock, but they will also gradually build up into a priceless collection over the years, of which the reader will be proud.

This may be a side of the model railway hobby which may not have been even contemplated, for most people are content to use other peoples photographs and take their word for granted rather than go and investigate for themselves.



Wadhurst Station (S.R.). Date: 24.7.49; Time: 12.40 p.m.; Weather: Fine, sunny; Film: Selo; Stop: f 11; Exposure: Snap; Camera: No. 2 Brownie



A Railway picture taken for a model railwayman. Shalford Station (S.R.). Note the wealth of useful details for modelling purposes, and that most of the Station chosen is of small size

Strange though it may seem, when seeking knowledge upon one branch of the railways for the hobby's sake, one will almost assuredly find out a wealth of other data for which one was not actually looking. This is just how one's store of general railway knowledge can be increased—simply by keeping one's eyes open when in the vicinity of the railway.

Some very excellent general articles on photography have recently appeared in these pages to which the writer would draw attention, but there are one or two specialised 'tips' only applicable to railway photography which the writer feels can augment such general knowledge. They are the results of trial and error over a period of over thirty years, during which time some 13,000 railway pictures have been taken.

Never attempt to take a 'snap' of a moving train at speed with a 'box' or other very cheap type of camera—it is

(*Continued on page* 14)

Repolishing a Table

COULD you tell me how to repolish a dining table and remove the old polish which has been damaged with heat? (R.H.—Sunderland).

IF you desire to repolish the table completely, it would be economical to remove the old polish with one of the proprietory brands of varnish and paint removers sold at most oilshops. If only the top, a vigorous glasspapering would remove most, helped by the use of a cabinet-maker's scraper. A rag soaked in methylated spirits would also do it, but it takes longer. The wood should then be re-stained if necessary, and given two coats of brown spirit varnish. When quite hard, go over the surface with a polish rubber, moistened with French polish; this will polish up and smooth the surface, and give quite good results, but such polish will always show heat marks unless a table mat is employed. Why not treat the cleaned surface with a heat-resisting lacquer such as Totem, for example? If you wish to try this you may be able to purchase at the usual stores, or direct from J. Radman Ltd., Cambrian Colour Works, River Street, Bristol, 2.

* * *

Winding a Coil

I HAVE a standard pick-up, the coil of which has been broken in such a way that it requires the winding of another. Could you assist me with instructions as to the winding, i.e.—type and gauge of wire and the required turns? The optimum load of my output valve is 7,000 (ohms). (F.H.—Coatbridge).

IF you are using the pick-up for playing records, the optimum load of your output valve does not in any way relate to the impedance of the pick-up; this optimum load is the output load of the valve (e.g.—the loudspeaker should be of 7,000 ohms impedance). The best plan is to remove the existing winding carefully, and then re-wind, filling the same bobbin with wire of the same S.W.G. and type of covering. The exact number of turns need not be counted. If only a single break exists in the winding, it is usually possible to solder this and cover the joint with tape, to effect a repair. Fine wires of suitable type may be obtained from Coventry Radio, 189 Dunstable Rd., Luton, Beds. If the original winding has been removed and the wire destroyed, satisfactory results would probably be obtained by filling the available space with 48 S.W.G. enamelled wire.

* * *

Model Yacht Query

MY son has a model yacht which does not sail satisfactorily, due I believe, to its being out of balance. It has a flat steel plate keel, but no bottom weights, and I have tried temporarily attaching pieces of lead, but this brings the deck to water level; without the weight, it lies over almost at rightangles and on more than one occasion has actually lain right over on its side. Can you please give me some indication of the trouble? (L.W.—Highbury).

THE trouble with your model yacht is due to the sail area being too large and the only way to overcome it is to reduce the size of the sails. This should be done by cutting down the sails to produce smaller sails of similar proportions. This is easily done if the sails are removed, and generally it can be managed so that only one edge needs cutting, and, of course, a neat hem worked on the cut parts. Probably a reduction of about one third the area will be about right. You can also improve matters by drilling a number of holes through the steel plate fin at the upper half, to reduce the total weight but to lower the centre of gravity and thus increase stability.

* * *

Leaking Fishpond

HAVING made a fish pond I find it leaks very badly, and would much appreciate if you could tell me how to remedy this fault. (S.W.R.—Chesterton).

WE suggest you dry the pond out thoroughly and then give the whole surface a coat to a depth of at least ¼in. of a mixture of one part cement and 'Pudlo' to two parts sand. When this has dried, fill the pool with water and test for leakage. If still leaky, apply another coat of same mixture. This should make it leak-proof. Finally, after filling with water, let it stand for some weeks, during which time any impurities in the cement should have worked out and an adequate test has been made against further leakage.

Designing Model Railways

(*Continued from page* 12)

simply wasting film. If, however, it is felt that a chance *must* be taken, always get as nearly 'in front' of the oncoming train as possible—not right in front! An excellent position is at the end ramp of a platform, looking towards the oncoming engine, and taking the picture when it is about 100yds. away.

Always choose something on the lineside, such as a signal-post or hut at about the 200yds. mark, and locating this in the finder when the train is in the distance, *do not take the eyes off the finder* until the engine appears in front of the 'marker' chosen. Glancing away from the finder at the critical second will more often than not lose the shot.

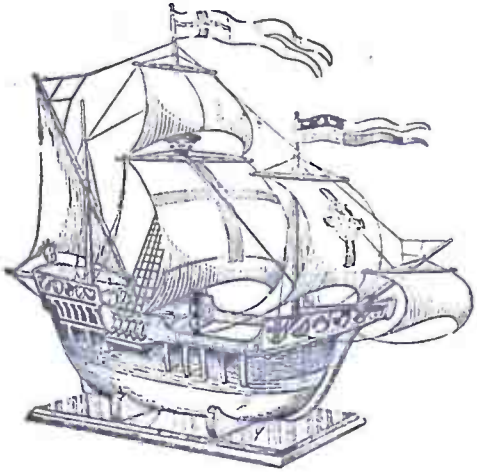
Always choose the side of the train or engine which faces the sun, or if no sun, that which faces south; and always try to arrange things so that the train curves away in the distance, so that all of it is visible in the picture.

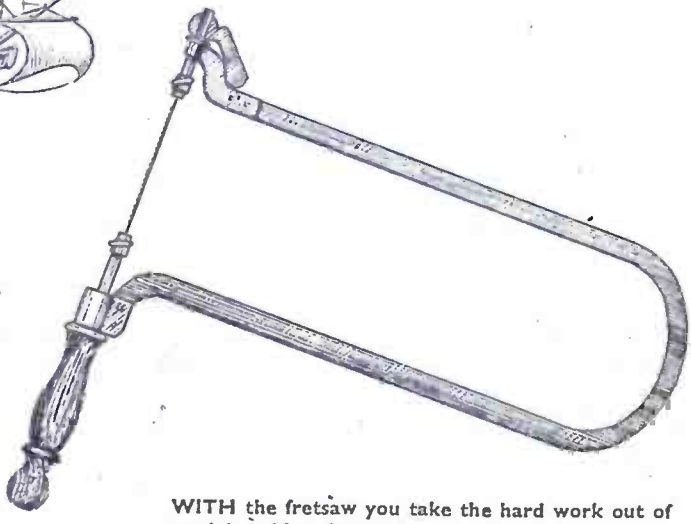
If possible always try to get the number of the engine, and find out what train it was she was hauling, for a picture without these details, and a note of the place, time and date will lose a tremendous amount of its value in later years as a thing of reference.

If when arriving at a station, and desirous of taking a record of its buildings or track layout, never hesitate to check up on the direction of the light to see that the buildings are being illuminated to their best advantage. If they are not, note the time of day and the position of the sun, and arrange to return when the latter has shifted round a bit. Patience, in this particular instance, pays very high dividends in the form of a 100 per cent useful picture instead of a poorly-lighted one on which the very details so vital to the model-maker are either fogged or invisible.

Never work only with a camera. The note-book and camera should go hand in hand on every railway data expedition. Always number each shot taken *at the time* of winding on the film—never trust to memory, it's too risky. Also always keep a record of the technical details of each exposure: type of film, length of exposure, size of aperture, focus in feet, date, class of light, and weather conditions. Note these in the note-book at the time. They will form an infallible guide to future pictures taken under similar conditions and will ultimately be the means of obtaining such a degree of skill in estimation that *every* railway picture taken will be a real railway picture of which the camera owner can be proud, and one which can be studied with a 'glass' on dreary winter evenings and provide just the detail required to finish off a job on the model railway. (E.F.C.)

FOR A FIRST-CLASS MODEL . . .





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