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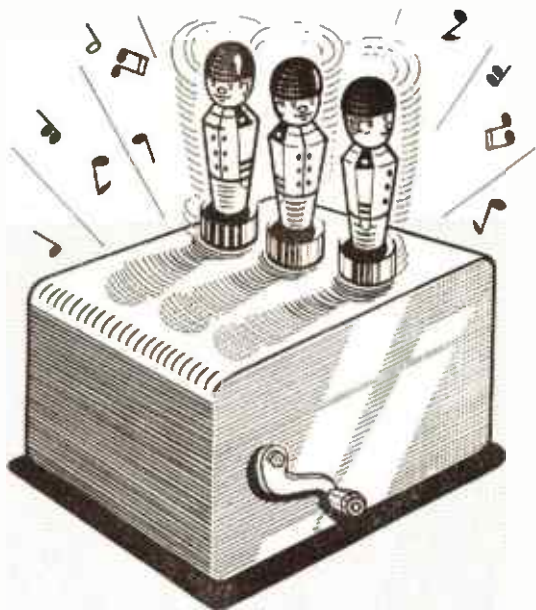


All correspondence should be addressed to the Editor, Hobbies Weekly, Dereham, Norfolk

★ *FREE design inside*

THE DANCING DOLLS

A MUSICAL TOY FOR CHILDREN



ALL children love a musical box, and a novel added attraction to this design is the set of three dancing dolls which go merrily round and round to a happy tune when the handle is turned, an elastic band taking the drive from the musical movement on to the doll mechanism.

Patterns for all the parts required are shown full size on the design sheet.

Trace these and transfer them to their appropriate thicknesses of wood by means of carbon paper. Then cut out the various parts neatly with a fretsaw.

The 'dolls', it will be seen, are fashioned from 1in. diameter round rod to the shape shown. Cut the rod to the lengths indicated and pare off the surplus wood with a craft tool and wood file. The silhouette of the dolls

shown on the design sheet is the same all round, and feature details will be added later by painting.

It will also be noted that there are two pulley wheels required (pieces 6 and 7) which have to be grooved to the section shown to take the elastic band. You should be as accurate as possible in cutting out the various parts, particularly the wooden cogs, as on their clean

cutting will depend the easy action of the dancing dolls movement.

When all the parts have been cut out, study the detail on the design sheet and Fig. 1 before commencing the assembly.

The musical movement which is, of course, operated by means of a handle, can first of all be screwed to the end piece 2 in the position shown by the

This novelty can be made up from Hobbies kit No. 3286 which costs only 8/1 from Branches or from Hobbies Ltd., Dereham, Norfolk (postage 1/6 extra).

Suitable hand turning musical movements which can be incorporated are 'Clementine' and 'Here we go round the Mulberry Bush'. These cost 15/- (postage 6d.).

dotted lines on the design sheet. Then assemble the three sides of the box consisting of two pieces 2 and piece 4, by gluing and pinning together, and add this assembly to the base (piece 5) as seen in Fig. 1.

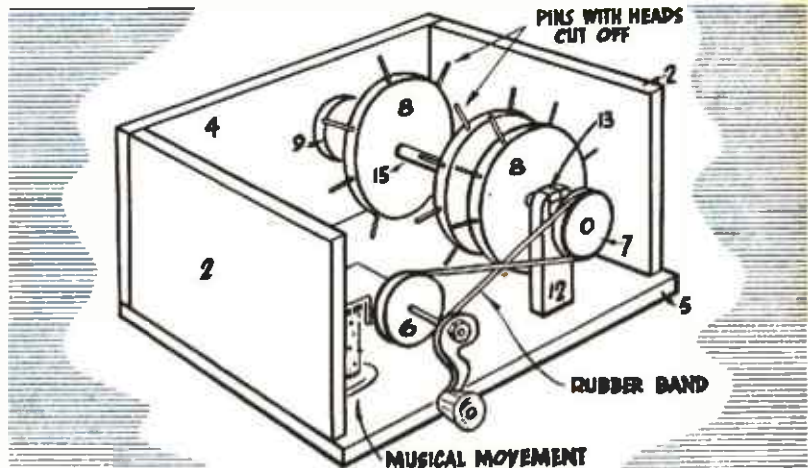
Leave this section and continue to make up the driving mechanism for activating the dolls. This consists of three large wheels (8) and the pulley (7) which are glued to the axle (piece 15) in the locations shown on the design sheet. Glue piece 12 to the base (piece 5) in the position shown. This forms a 'cradle' for the pulley end of the axle. The other end of the axle is a loose fit in the disc (piece 9). This disc is glued to the side (4) so as to hold the axle horizontally (see Fig. 1). The small piece (13) is glued into the opening in the top of piece 12 after the axle has been located, in order to prevent it lifting.

The dolls can now be fixed on the lid. An exploded view of this set-up is shown on the design sheet. The cogs (10) are glued to the ends of the dowel pieces (14) which are then inserted through the holes in the lid from the underside, and fixed by gluing on pieces 11. These dowels must turn freely in the holes in the lid to give an easy rotating action. Next paint the dolls with features to suit individual taste. An indication is given in the illustration of the finished toy, but can be amended to choice. When the paint is dry, the dolls are glued firmly to pieces 11.

Now fix pins round the edges of the three big wheels in the box, as shown in Fig. 1. These are ordinary household pins with their heads removed, and they are pushed into the wheels with pliers. The action is that when the wheels rotate, the pins engage the wooden cogs and turn the dolls round. It will be seen that the greater the number of pins

inserted in the wheels, the faster the dolls will rotate. The pins on individual wheels can also be spaced differently to give different individual speeds and actions. Ensure, however, that the pins are left of sufficient length so as to accurately engage the teeth of the cogs, but not too long so as to foul the underside of the lid when in position.

the handle (either way) this in turn rotates the three wheels and consequently the dolls. Place the lid temporarily in position and turn the handle. Make sure the action is working satisfactorily and that the pins are freely engaging the cogs before finally screwing down the lid. Adjustments will possibly have to be made to the angles of the pins before



Now push the pulley (piece 6) on to the shaft of the musical movement so as to be in line with the other pulley (7), and ensure that it is a tight fit. The elastic band can now be placed in position (Fig. 1) and the handle of the musical movement replaced.

It will now be appreciated that by operating the musical movement with

finally gluing on the remaining side (piece 3) through which the handle protrudes. The lid of the toy is, of course, screwed on in order to facilitate any future adjustments to the musical movement or doll mechanism.

Before finishing with gaily coloured paints, the edges of the toy should be rounded slightly with glasspaper.

● Continued from page 51

Home Race Game

Each player is given an equal number of counters (or other objects, such as peas or matchsticks) and the six horses are lined up on the numbered spaces, facing down the track, with the winning post in position. The object of the game is to discover who is left with the greatest 'fortune' when an agreed upon number of races have been run. At the commencement of each race the players place their 'stakes' with a person who is to act as bookmaker, and who announces the odds on each horse. One counter is staked per horse and a player can, if he wishes, select more than one likely winner. When all the players have made their choices the race can begin.

The 'bookmaker' cries 'they're off' and throws the three dice. According to the numbers which appear so the appropriate horses move forward one space. For instance, if numbers 1, 3 and 5 are thrown, the horses numbered 1, 3

and 5 are each moved forward one place. Again if 4, 4 and 6 is thrown, number 4 will be moved two places, while number 6 will only be moved one place. A horse has won when it is moved on to the space marked 'Finish', which counts as one space. If a horse, for example Number 3 is on the space before the finish and two or more threes are thrown, then it must not move forward. Thus a horse must land on the finishing space in order to be proclaimed the winner. The bookmaker now pays out the winnings from his kitty, according to the odds already stated at the beginning of the race.

If the game is too slow for your taste you can speed up the race by using only two dice (a large and a small one) and move the horse indicated by the large die forward the number of spaces indicated by the small die. As before, the winner must reach and not go beyond the finish with his final throw. (A.W.)

A HOME RACE GAME

THE next time you entertain your friends at home why not run your own Derby? At very little cost you can make your own race track, complete with horses and jockeys with which you will be able to enjoy all the excitement of going to the races. The instructions given here are for a giant sized racing game,

$\frac{1}{2}$ in. by $\frac{1}{2}$ in. is prepared for the winning post, which is set up in the same way as the horses.

When painting the horses, use different colours such as black, brown or white and it will add greatly to the appearance of the game if the jockeys are painted with brightly coloured shirts and caps.

each is made up of 20 rectangular divisions 3ins. long and 2ins. wide (the exact size of the bases of the horses).

If you can obtain large enough piece of green bookbinder's cloth you might like to make your track of that. Such a race course will have a striking appearance and will last for years if hems are sewn

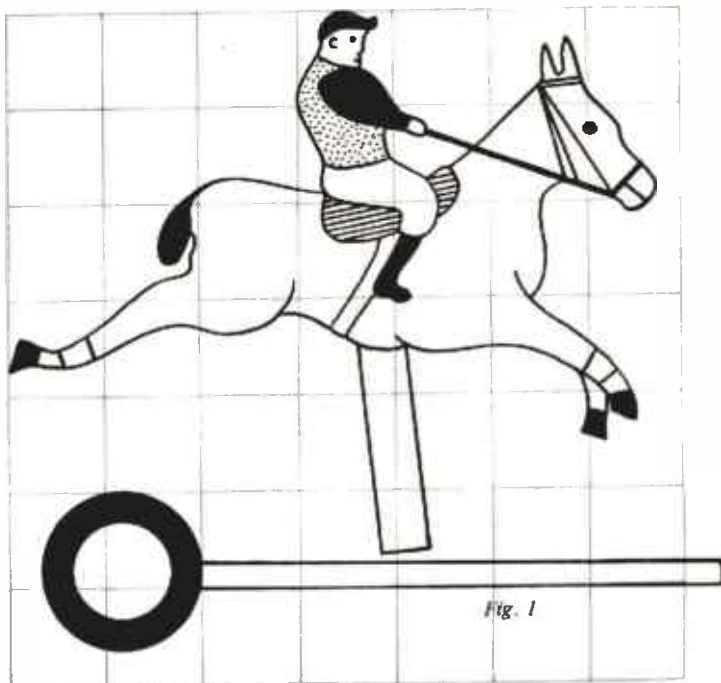


Fig. 1

so that a large gathering of people will be able to enjoy the fun without the inconvenience of crowding around a small game track of conventional dimensions.

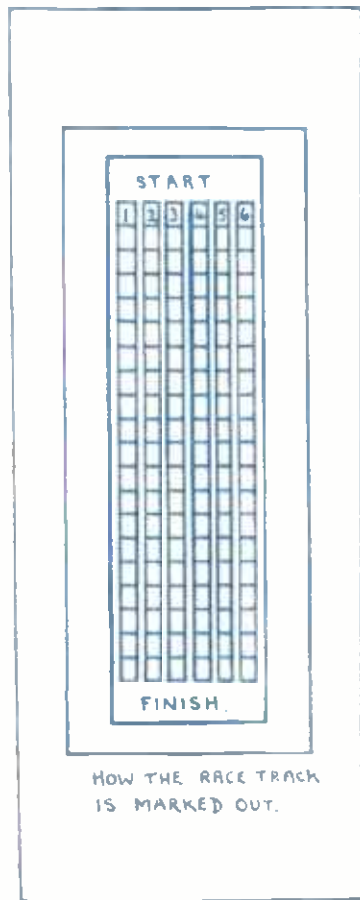
You will need six horses and riders. These are made in $\frac{1}{2}$ in. plywood from the pattern given in Fig. 1. Enlarge the squares to 1in. The winning post is also made in the same manner.

The seven pieces are carefully cut out with a fretsaw and finished off with a fine grade glasspaper. The bases for the horses are constructed from wood and should be 3in. long, 2in. wide and $\frac{1}{2}$ in. thick. Rectangular holes $\frac{1}{2}$ in. by $\frac{1}{2}$ in. must be made vertically through the blocks.

The horses are mounted on the base blocks by gluing the supporting bars into the rectangular holes. A similar base block 2in. long and with a square hole

Details, such as the riders' faces and horses' harness are added afterwards and numbers can be painted in white on the horses' flanks. The supporting bars are painted white and the winning post is coloured white with a bright red circle.

Now mark out the race track as follows. Use a length of stiff drawing paper about 6ft. 6ins. long and 2ft. 6ins. wide. A length of brown paper or wall-paper will serve, but it is better to use two or more sheets of cartridge paper glued together to form a strip of the required length. The marking out can be done using heavy wax crayons and may be in one or more colours. Lines can be ruled using a ruler and a long straight piece of wood. It will be more convenient if the lines are at first pencilled in; then any alterations can be made before the track is finally marked out in crayon. The length of the 'lanes' in Fig. 2 is 5ins. and



HOW THE RACE TRACK IS MARKED OUT.

Fig. 2

around the edges with the aid of a sewing machine. To complete your equipment you will need two or three dice and a cup to use as a 'shaker'. If you wish you can make your own dice from cubes of wood. These are painted black with white spots. Dice made from 1in. cubes of wood will be easily seen by all players of the game.

● Continued on page 50

A TRANSFORMER FOR MODELS

WHEN A.C. mains are available, current for a model may be drawn from this source, and running costs will be very low indeed. Batteries are no longer required, and the inconvenience of battery replacements is avoided. Though the running of small electric motors, etc., is, perhaps, most likely to be wanted, it is also easy to operate other low-voltage items, such as bells, huzzers, and so on.

To obtain the necessary low voltage, a transformer is used. This steps down the 200 V to 250 V mains to some 3 V to 12 V or so, for the model. This low voltage output from the transformer is just as safe as that from a battery, so that there is no danger of mains shocks.

Transformers cannot be used with D.C. mains. The output from the transformer is A.C., and this will run lamps, bells, huzzers, or model motors with wound field and armature.

If a D.C. output is necessary, a rectifier must be added. The current from this will be suitable for purposes where direct current is required. That is, for accumulator charging, electroplating, and running motors with permanent magnet fields. Such motors can easily be checked, because they reverse direction of running when the battery polarity is changed. They are often fitted in model trains, so that the engine can be reversed by using a polarity-reversing switch.

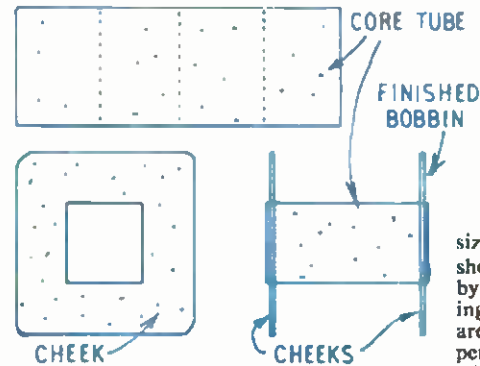


Fig. 2—Bobbin for windings

When a transformer is to be wound, three factors have to be considered: mains voltage, output voltage wanted, and current to be drawn. However, requirements can easily be met for any ordinary model.

The core

This is made up from a fairly large number of laminations, or thin metal

plates stamped out in a suitable size. (T) and (U) stampings are most usual, as shown in Fig. 1, several dozen being lain one upon another to make up sufficient thickness for the completed core.

By F. G. Rayer

The transformer windings are upon a bobbin which slips over the centre limb of the (T) stampings. The (U) stampings go outside this bobbin. All the windings thus have to be accommodated in the space indicated, and this limits the number of turns. For this reason, it is best to use a fairly large core. It is better to leave some of the winding space unused, rather than find the windings so bulky that the (U) stampings cannot be fitted.

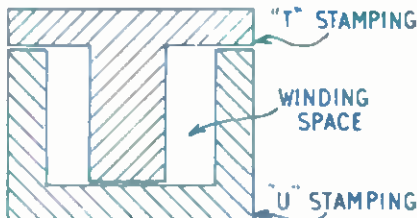


Fig. 1—How the core is made

If the centre limb of the (T) stampings is 1 in. wide, and enough stampings are used to make up a core 1 in. thick, the transformer core will have a cross-sectional area of 1 sq. in. With such a core, 8 turns may be used for each 1 volt, on both primary and secondary.

If the core happens to be of another size, the width of the centre limb should be measured, and multiplied by the thickness of all the (T) stampings. This will give the cross-sectional area of the core. If the T.P.V. (turns per volt) rating of the 1 sq. in. core (8) is divided by the cross-sectional area of the core actually used, this will give the T.P.V. for that core.

It will be found that fewer turns are necessary on a larger core, and more turns on a smaller core. If stampings are to be obtained, such calculations can be avoided by using those giving a core of 1 sq. in. cross-sectional area.

Laminations may be purchased new, or obtained from old broken or ex-service chokes and transformers. The latter are very cheap, and may have

mounting brackets, etc., which will be useful. Stampings usually have insulation on one side (thin paper or paint), and this should not be removed.

Number of turns

With 8 turns per volt, the primary is of 1600 turns for 200 V, 1760 turns for 220 V, or 2000 turns for 250 V. In practice, a hundred turns or so either way will not be important. This means that a winding of, say, 1840 turns, though correct for 230 V, would do for 220 to 240 V. However, when the mains voltage is known, it is as well to wind for this figure.

For the secondary, 8 turns are similarly used for each volt required. That is, the total is found by multiplying the desired voltage by 8. For a model lit by 3.5 V bulbs, 28 turns would thus be necessary. A 6 V motor would need 48 turns, with 96 turns for a 12 V motor.

Tappings may be provided on the secondary, for various voltages. For example, a 96 turn winding, tapped at 32 turns, would allow 4 V (32 turns), 8 V (64 turns) or 12 V (the full 96 turns) to be had.

The best voltage for the model will often be marked on the motor, or given in instructions. If not, it can be found from the battery normally used. When winding a transformer, it is very easy to provide an extra volt or so, with a lower voltage tapping, or to use a little resistance wire in series with the model if the voltage is a trifle high. This is better than completing the transformer and finding the output voltage is not quite enough for good running of the model.

Current rating

The primary current will be low, with any ordinary model, so that 32 S.W.G. or similar wire will suffice here.

For the secondary, 20 S.W.G. will allow 1 amp. to be taken. For 2 amps., 16 S.W.G. is sufficient. For 3 amps., 15 S.W.G. is stout enough, while 14 S.W.G. can be used for up to 5 amps.

The fact that the secondary is wound for a particular current does not mean this current *must* be drawn. For example, a 4 amp. winding could equally well run a small model taking only 1 amp. or less. But *more* than the rated current should not be drawn for long periods, or the transformer will grow hot.

Some models have the current consumption indicated. If not, it can be assumed that a model run from dry batteries probably does not take more than 1 amp. Most small 12 V trains consume 2 amps. Some fairly powerful model motors consume 4 amps.

especially when intended to run from a 6 V accumulator.

It is easy to use a stout enough wire to provide more current than wanted, and this may afterwards be put to good use by adding bulbs to illuminate the model.

Bobbin and winding

A strong bobbin is required, and can be made from two checks and a centre tube, as in Fig. 2. The tube, which is square when finished, should just hold the (T) stampings. The checks are just small enough to allow the (U) stampings to go round them. Stout cardboard, glued together, will do for the bobbin. If varnished, and allowed to dry, this will strengthen it. A weak bobbin may collapse when winding the transformer.

The primary is put on first, the beginning passing through a small hole

and cover the joint with tape, passing the flex through a small hole in one cheek. After winding the primary, join on a similar piece of flex, tape the joint, and pass the flex through a second hole. This gives stronger external connections, as the flex issuing from the bobbin is less likely to be broken than is the thin enamelled wire.

As the secondary is of thicker wire, there is no point in soldering flexible leads on here. Instead, the beginning and end of the secondary can be taken to two terminals, as in Fig. 3.

Finishing the transformer

A layer of tape will hold the secondary firm. The stampings are then inserted. (T) and (U) stampings are placed in position from alternate ends of the bobbin, so that joints between (T) pieces and (U) pieces come first one end, then the other. This can be seen in Fig. 3.

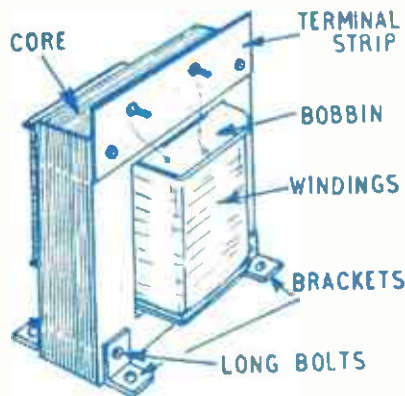


Fig. 3—Completed transformer

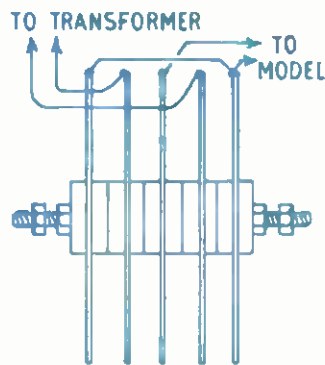


Fig. 4—Rectifier for D.C. Models

pierced in one cheek. Turns are wound on evenly, side by side. When enamelled wire is used, it is wise to prepare strips of thin paper, exactly the width between the cheeks, and to add one of these when each layer is finished. This paper, between each layer of turns, will prevent the enamel insulation breaking, and permit expansion of the wire.

When the required number of turns is on, the wire is brought out through another small hole. Holes should be so placed that they will not be covered by the stampings.

Two layers of good quality insulating tape are placed on the finished primary, the tape being kept well up against the cheeks. The secondary is then wound on top, the number of turns again being chosen as explained.

If there is no objection to soldering, the transformer can be provided with flexible leads. To do this, join the beginning of the primary wire, before winding, on to about 6 ins. of thin flex,

The last stampings should be pressed in firmly. If the core is still a little loose, a thin wedge of wood should be pushed in, or the stampings will vibrate when the transformer is in use.

If the stampings have corner holes, four long bolts will clamp the core firmly together, and allow a terminal strip and mounting brackets to be added, as in Fig. 3. If there are no holes, the core can be clamped between two pairs of long brackets, the bolts coming just outside the stampings.

Using the transformer

Any exterior joints in the primary leads must be well insulated. It is a good plan to use a small 2-way fuse holder, taking the primary leads to the fuses. A length of 3-core flex can then be used for mains current, two wires being used for the primary, and the third to earth the transformer core, and secondary. To do this, the earth conductor (green) is clamped to one of the mounting brackets

of the transformer, and one secondary terminal is also joined to this bracket. A 3-pin mains plug will be required, with the earth conductor wired to the large earth pin.

With this method, a breakdown in the transformer cannot cause any dangerous voltage in the secondary circuit or model, because secondary and core are earthed.

The transformer can be enclosed in a wooden box, with two rows of ventilating holes. This will avoid any possible damage to it, or any chance of primary connections being touched.

If the transformer hums, when plugged into the mains, this shows some of the stampings are loose. If it grows hot, with no model connected, turns are shorted in primary or secondary. Such a defect is unlikely.

When the model is operated, the secondary circuit can be interrupted with a switch, exactly as if a battery were used. But when the model is left for a long period, the transformer should be disconnected by withdrawing the mains plug.

For D.C. models

When direct current is wanted, a metal rectifier is added, as in Fig. 4. This is known as a 'full wave' rectifier, and has positive and negative (or red and black) tags, to take to the model. Two other tags, usually marked green, or (AC) are taken to the transformer secondary.

The rectifier should have a voltage and current rating equal to, or greater than, the voltage and current required. For example, a 12 V 2 amp. rectifier would suit any model needing 12 V or less, and not consuming more than 2 amps.

The rectifier should be mounted on brackets with its fins vertical, so that air can pass between them to dissipate heat. It may be included in the case with the transformer.

Winding wires of any required gauge may be obtained from Post Radio Supplies, 33 Bourne Gardens, London, E.4. Ex-service transformers and chokes with suitable cores may be obtained by post from Annakin, 25 Ashfield Place, Otley, Yorks.

★★★★★★★★★★★★★★★★★
★ Next week's issue will contain ★
★ patterns for making a Toy Tele- ★
★ phone, and Brick Trolley. Also full ★
★ details of constructing your own ★
★ Brick Fireplace among other 'do-it- ★
★ yourself' features. ★
★ MAKE SURE OF YOUR ★
★ COPY ★
★ ★
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A USEFUL FOOD CABINET



By
W. J. Ellson

CUTTING LIST	
Rack sides (4)	3ft. 3 ins. by 8 ins. by $\frac{1}{2}$ in.
Shelves (4)	1ft. 1 $\frac{1}{2}$ ins. by 6 $\frac{1}{2}$ ins. by $\frac{1}{2}$ in.
Fronts (A) (2)	1ft. 1 $\frac{1}{2}$ ins. by 4 ins. by $\frac{1}{2}$ in.
Fronts (B) (2)	1ft. 1 $\frac{1}{2}$ ins. by 5 ins. by $\frac{1}{2}$ in.
Backs (2)	2ft. 6 ins. by 15 ins. by $\frac{1}{2}$ in. ply
Cupboard, floor 1ft.	3 $\frac{1}{2}$ ins. by 15 ins. by $\frac{1}{2}$ in.
Cupboard, back 2ft.	4 $\frac{1}{2}$ ins. by 17 $\frac{1}{2}$ ins. by $\frac{1}{2}$ in. ply
Cupboard, door 2ft.	1 in. by 15 ins. by $\frac{1}{2}$ in. ply
Cabinet, top	2ft. 11 ins. by 16 $\frac{1}{2}$ ins. by $\frac{1}{2}$ in. ply

For frames and door, 30ft. run $\frac{1}{2}$ in. by 2 in. wood

FITTINGS

- 1 pair 2 in. brass butt hinges
- 1 cupboard knob and fastener
- 1 ventilator, food safe pattern

FOR use in a kitchen or kitchenette, the food cabinet, illustrated, will prove a useful article of furniture. It is provided with a central cupboard, or safe, with racks each side for vegetables, or other edibles. The whole is of relatively small dimensions, unlike the usual cupboards for food stuffs and therefore most suitable for flats and houses where room space is limited.

Commence with the side racks. These are designed as separate units, afterwards to be joined together to leave a cupboard space between. Fig. 1 shows a vertical section, half of which is shown as a vertical section to make clear the shelf arrangements of the racks, and other details.

Cut the sides to dimensions given, and square across lines as guides for fixing the shelves. Provided a little extra work is not objected to, it would be a good plan here to chisel out $\frac{1}{2}$ in. deep grooves to house the shelves, but if this is done be careful to allow the extra in shelf length needed, i.e. $\frac{1}{2}$ in. to that given in the cutting list. The lower parts of the rack sides are sloped inwards a little, as seen in the drawing.

Glue and nail the shelves across. The vertical fronts (A), which make each shelf a rack, are next cut and also nailed across. These are fixed $\frac{1}{2}$ in. inwards, and will leave a space of about $\frac{1}{2}$ in. between them and the shelves for any dirt to be more easily brushed out from the racks. A 1 in. wide strip, (B), is nailed across at the top of each rack side, in line with rack fronts (A). A back piece to each complete rack (C), is next cut, and nailed in place. Note that these back parts come down to the lower shelf only. At (D) and

(E), screw across the back of each rack a $\frac{1}{2}$ in. sq. fillet to which the top of the cabinet and the floor of the cupboard respectively can be nailed.

Now make a couple of frames to dimensions given in Fig. 2. These can be put together with simple halved joints at the corners, but a neater effect results if

racks by 1 in. plus the thickness of the backs of the racks. The latter being of $\frac{1}{2}$ in. plywood, this means that 1 $\frac{1}{2}$ in. will go over the racks, and pencil lines that distance from the inside edges of each rack should be drawn down as a guide.

The floor of the cupboard can now be cut and nailed to the fillet (E), and at the

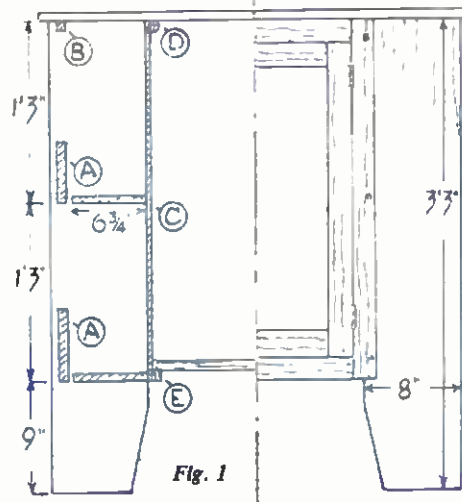


Fig. 1

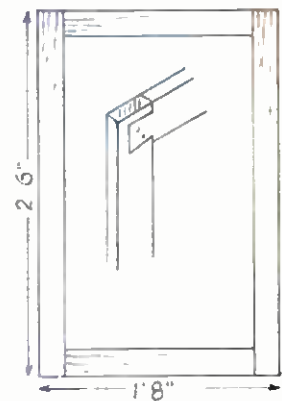


Fig. 2

mortise and tenon joints are used, or a dovetail lap, the latter shown as an inset in the diagram. No unsightly cross grained ends are thus on view. Glue, and nail the joints to ensure firm frames.

These frames are to be screwed to the rack side, one at the front and one at the back. The front one should have its vertical front edges slightly rounded off for appearance sake. Screw to the racks with 1 $\frac{1}{2}$ in. round-headed screws, and to ensure a firm fitting let them overlap the

same time, drive in a few nails through the frames at back and front into the edges of the floor to stiffen the whole structure.

A $\frac{1}{2}$ in. plywood back is now cut and nailed inside the cupboard space to cover the rear frame. It will be necessary here, of course, to saw out at each upper corner of the plywood a $\frac{1}{2}$ in. sq. piece to pass over fillets (D). Finish this part by cutting and nailing down the cabinet top.

● Continued on pag 55

LIGHTWEIGHT MODEL CARRIER



By Gordon Allen

ALTHOUGH there are some aeromodellers who believe in having a huge wooden box (a 'coffin' it is called!) in which to carry several types of models to the flying field, there are others who prefer the convenience of a lightweight container to accommodate just one favourite model. Such containers are not easy to come by, so here is how to make one from a few sheets of cardboard, and it is tailored to fit most model aeroplanes in the light-weight class.

Cardboard which is tough yet flexible is required and it should be about $\frac{1}{4}$ in. thick and be of the glazed type, i.e. shiny on both surfaces. Such material can be obtained from most wholesale stationers.

You need two pieces each measuring 21 ins. by 18 ins. for the body and two pieces each measuring $16\frac{1}{4}$ in. by $8\frac{1}{2}$ in. for the lid, together with some odd strips 1 in. wide for the straps and corner angles. This will produce a carrier 30 ins. long by 6 ins. by 6 ins.

Place the two large pieces together on a flat surface so that the 18 in. edges are flush. Directly over the joint glue (impact adhesive, 'Evostik', was used on the original) a strip of card 1 in. wide, 16 ins. long so that the ends of the strap are exactly 1 in. away from the edges of the card. Mark the combined sheets in pencil with the lines shown in Fig. 1. Cut away the four hatched corners with a trimming knife and score along the broken lines as indicated. The scoring should be about half the thickness of the card.

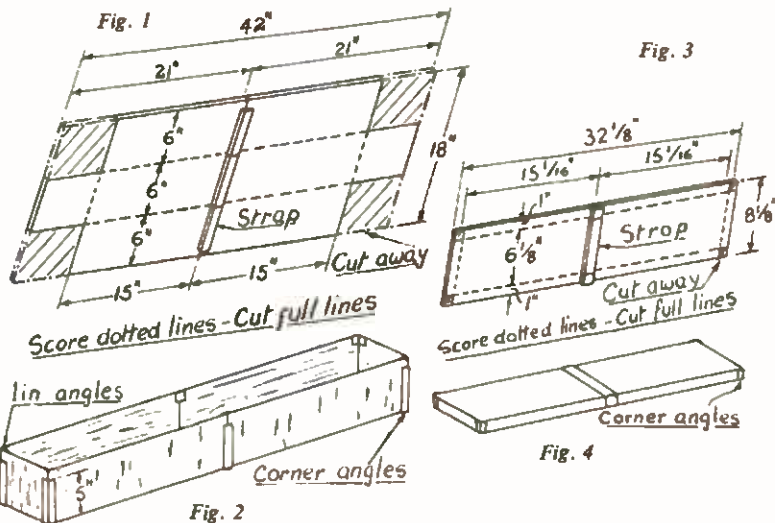
Fold the body to shape and glue the four corner angles in place (Fig. 2). The angles are made by scoring and folding 5 in. by 1 in. strips of card down the middle. Similar angle pieces 1 in. long (made from 1 in. squares of card) are glued inside the container at the corners. Also glue flat 1 in. squares of card on the inside of the container over the joint at the middle.

Figs. 3 and 4 shows the lid of the box is made in a similar way to the body with

the exception that the strap across the middle of the sheets extends over the whole width, i.e. $8\frac{1}{2}$ ins.

When assembled it will be found that the lid makes an easy fit over the body. It is retained with large elastic bands.

Cover all the scored edge of the container with masking tape — not transparent adhesive tape which will peel off in damp weather. Press the tape into the scored edges and then give the entire container two coats of clear lacquer.



● Continued from page 54

Useful Food Cabinet

A door will now be needed for the cupboard part. This is a frame, made up as advised for the frames in Fig. 2 and naturally of such dimensions as will fit the opening. Cover this on its interior face with plywood, glued and nailed over. Its size should be a little less than that of the frame being, say about $\frac{1}{2}$ in. less all round. Fit the door with a pair of hinges, and provide a suitable catch and knob fastener. As an interior shelf will, most likely, be required in the cupboard fillets should be screwed each side of the cupboard on which it can rest.

It would be advisable to fix to the door a ventilator of the food cupboard pattern. One of these can usually be brought at an ironmongers or supplier of cabinet metal fittings. Doors to protect the vegetable racks from mice, if deemed desirable, can be cut to fit between rack sides from $\frac{3}{4}$ in. plywood.

All nails should be punched down just below the surface of the wood and stopped level. Glasspaper the whole and finish with white enamel, or other colour as preferred.

AUTOMATIC LIGHT SWITCH

YOU have a dark, windowless cupboard. You make it usable by installing electric light. Then, what happens? Time after time the light is left on, wasting not-so-cheap current. For you cannot see through a closed door.

For an outlay of half-a-crown you can construct an automatic light switch — one that switches on the light when the door is opened and switches it off when the door is closed. The job is simple enough for any handyman to tackle providing he uses care in carefully adjusting the striking pawl.

By E. Capper

The unit consists simply of a housed toggle (or push switch), fixed on the inside of the door jamb (the jamb which abuts the free end of the door, not the hinged end). The lever of the toggle switch is pushed in to operate its on/off movement by a pawl — a metal strip shaped as a cam. The pawl has a right-angled return end, drilled with two countersunk holes and is screwed through these to the inside of the door, near the top.

As the door is opened or closed, the shaped pawl rubs over the switch lever, pushing it in and switching the light on or off, as the case may be. It will be seen therefore that careful positioning of the pawl is most important. It should be fixed so that it rubs over the switch lever only sufficient to work its mechanism.

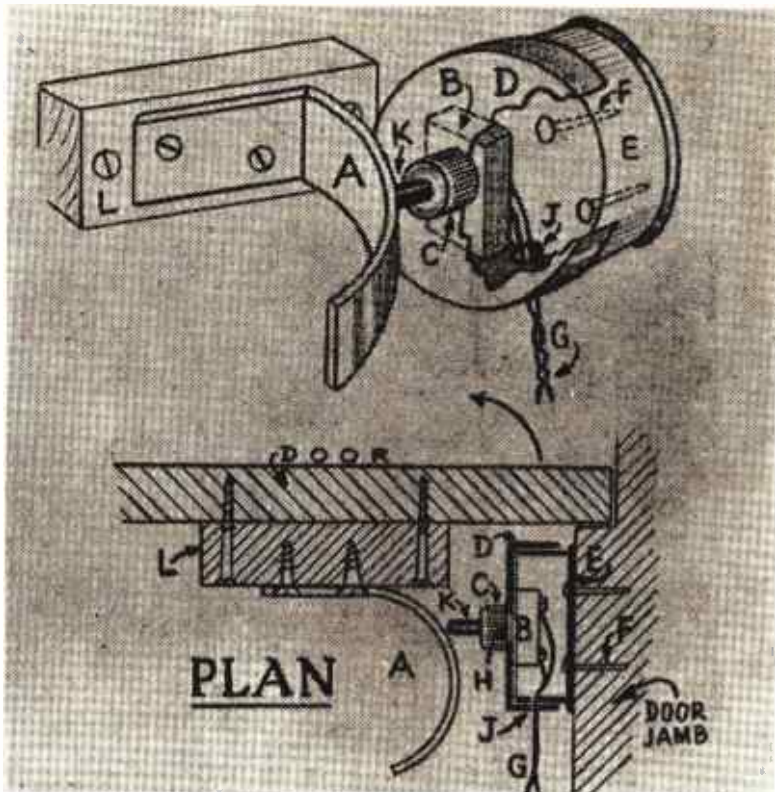
First, purchase a toggle switch of a type shown at (B) in the drawing. The current price is 1/6d. Unscrew the knurled hand nut (C) and put aside for the time being.

Adapting the tin

Now, procure a shallow tin and its lid. A lozenge tin is ideal. Be sure, however, that it is at least 1 in. in depth so that when the toggle switch is housed inside it, the two connections on the switch have ample clearance from the metal sides of the tin.

In the centre of the tin lid (D), drill or punch a hole (H) of a sufficient size to push through the threaded portion of the toggle switch and from which you previously removed the knurled nut. This done, screw on nut (C), and the switch is then held firmly through the tin lid.

Through the bottom of the tin (E), punch two small holes (F), sufficient to take two 3/16 in. long, round-headed nails



and which hold the tin bottom finally to the door jamb.

Lastly, cut out a semi-circle on each of the rim of the tin lid and bottom (J), so that when the lid is placed over the bottom, a hole is left right through and allows the electric flex to pass, when finally fitted. That completes the switch housing.

Measure a length of twin flex to reach from the existing switch now fitted in the cupboard to a point, plus 6 ins. to where the automatic switch will be fixed. Bare and connect the two ends of the flex to the connections at the rear of the toggle switch, pushing the trailing flex through hole 'J'.

Switch off mains

Connect the other ends of the flex to the two points on the existing flex. Most handymen have sufficient knowledge to do this simple connection, but if you have not, do not take any chances. Most likely a friend can show you this operation or at the most an electrician would do it for you at next-to-nothing

KEY TO DRAWINGS

A. Shaped metal pawl (or striker). B. Toggle (or push) switch. C. Knurled hand nut. D. Tin lid (shown as a cut-away). E. Tin bottom. F. Nails holding tin bottom. G. Twin flex. H. Hole to carry switch. J. Hole through tin for flex. K. Push lever on switch. L. Distance piece.

cost. Naturally, the mains supply must be switched off and a tidy job made of it by taking the flex leads through the back of the wooden block carrying the switch. Later, the flex can be anchored secure to the wall with the usual insulated hooks.

You can now test the new automatic switch arrangement. Put the old switch at 'on' and work the lever of the toggle switch. The light should go on and off at successive pushes. Later, when the automatic light is completely fitted and working, the old switch is left at the 'on' position — the new unit working the on and off movement.

● Continued on page 57

ARBORICS

By D. Hillesley

CARVING in wood is a long and complicated business, and it demands much in the way of materials, tools, time, tuition and patience. This is a formidable list of necessities, and though not insurmountable, it is sufficient to deter those who have to work on their own.

There are some, however, who are artistically inclined, and who find pleasure in working in new materials. They have no wish to take the subject too seriously, but are willing to spare a little time and effort in producing a pleasing and satisfying piece of work.

This article does not hope to show a short-cut to wood-carving, but to introduce an idea which relies on nature's natural forms, and the imagination of the artist concerned. Here the two latter points are much more important than the ability to use tools. Indeed, all that is required is a small saw and a sharp penknife.

Since earliest times men have sought the timber they required from the woods and hedgerows of the countryside. This being so, they have had to use what they



A PROUD POODLE?

have found in its rough state, rather than a smooth block such as that obtained from a wood-merchant. A fallen tree would often supply a section of a branch of the required shape and size. If the artist had not previously decided on a subject for his work, the form of the untrimmed branch would often suggest a starting point or subject for his carving.

Primitive peoples have done a great deal of primary sculpture based on natural forms, and much interesting work has resulted from this. Ritual batons, clubs, etc., are but a few examples of this type of work.

Today the 'moderns' in the world of art have revived this practice under the name of 'arborics'. Those interested search the sea-shore or river-banks for the bleached and twisted skeletons of driftwood branches. At other times they wander the fields and woodlands with an alert eye open for any interesting shapes to be found in the branches that lie

across their path, or in the twisted roots of a fallen tree. These are the materials for the fascinating occupation of 'arborics', and a little imagination aided by a few cuts where required, can transform these into things of interest and beauty.

Polished driftwood

Carving itself depends much on the grain of the wood being worked, but in this case the texture of the bark is often much more important. The latter is often left to add to the appearance of the finished article, though driftwood that has been smoothed by the elements, looks well when polished.

Finishing touches are added if the work is mounted, singly or in groups, on a polished or natural base. Dancing figures and animal forms are but two of the subjects that the student of 'arborics' will visualize and construct from natural shapes.



SALUTE TO DICTATOR?

● Continued from page 56

Automatic Light Switch

A distance piece of timber (L), of approximately 1in. square measurements will be needed to pack out the pawl so that the curved, cam portion reached the switch lever (K). This is screwed to the door as shown. The timber distance piece can be dispensed with if preferred but the only disadvantage of so doing is that a longer length of metal strip protrudes as the pawl and does tend to look ugly.

As mentioned before, the positioning of the metal pawl is important and must be preceded with on a trial and error basis. However, a study of plan shown will give some indication of its relation to

the rest of the mechanism. Do remember to aim at the minimum amount of pressure made to work the switch. This way your automatic switch will give you years of trouble-free service.

Finally, fix the toggle switch and its housing to the top of the inside door jamb so that it clears the jamb angle by approximately 1in.

The pawl (A) is made from a strip of 1/4in. by 1/2in. metal, cut to a length of approximately 5ins. Form half of its length into a smooth semi-circle as shown. On the remaining straight portion drill two 1/4in. countersunk holes to take the fixing screws.

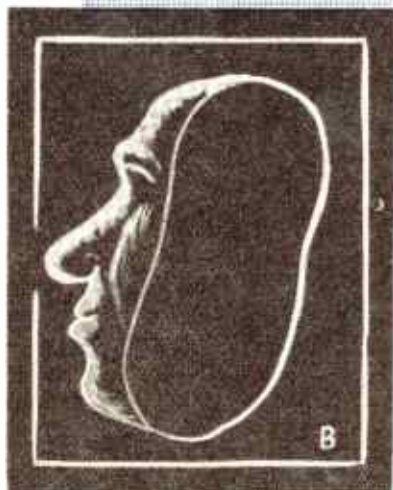
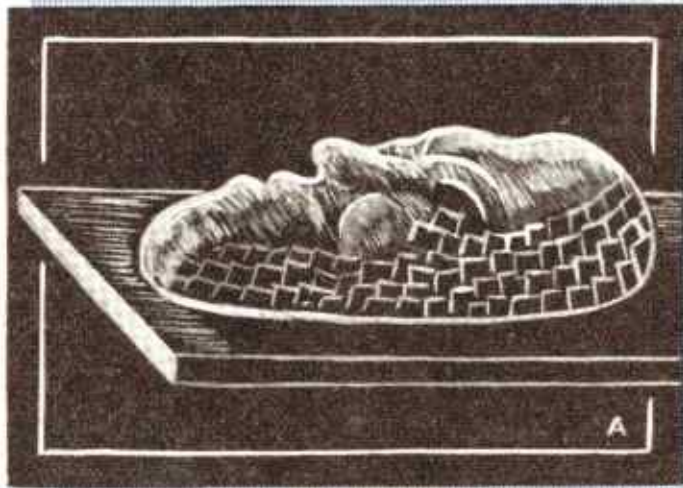
MAKE A MASK FOR THE GUY

THE know-how of mask making is extremely useful at all times of the year, but it is especially so as one begins to contemplate bonfire-night activities.

Types of masks are numerous, and there are a great variety of methods by which they can be constructed. Some are light and easily destroyed, whilst others

are extremely heavy and carved out of a solid block of wood. Neither of these methods are suitable for the young artist working at home, and so I propose to outline a method that results in work that is both strong and light, yet easily made.

The basis for the construction of this type of mask is clay. The latter can be



that used in art work, fire-clay, or even clay obtained from some local excavation. Working on a piece of board the clay is shaped to a size slightly larger than the face for which it is intended. This is the rule, of course, if it is to be worn, but if intended for a guy, actual size will be more correct.

The clay is then modelled boldly in relief, so that the face is noted for the exaggeration of its essential features. The nose, cheeks, eye-sockets, chin, etc. deserve special attention, and there should be no fine detail (Fig. A).

Work with papier mâché

When a smooth surfaced model has been prepared and allowed to dry, one must then commence work with papier mâché. The latter consists of layers of small pieces of soaked newspaper coated with flour and water paste or paper-hangers' paste. The tips that will help at



this stage are: 1. Before commencing it helps to smear a thin layer of vaseline over the model to ensure that the papier mâché casing can be easily removed when dry; 2. To ensure even layers and thicknesses of papier mâché it will help if white newsprint and coloured football paper are used for alternate layers.

As the work progresses, layers must be pressed into place, so that the papier mâché coating follows the contours of the face. Twenty or more layers are required to make a sound casing, which when thoroughly dry can be removed (Fig. B).

Final decoration

If the mask is to be worn eye holes can be pierced, and the work can be decorated. Tempera or household paint can be used for this purpose, but yet again features must be exaggerated. Hair for beards, wigs and moustaches can be made out of a variety of materials, and these can include those such as horse-hair, cotton-wool, raffia, or even straw.

When completed you will have a mask that is different, and if this method is borne in mind, you will find other opportunities of using and making masks of all descriptions. (D.H.H.)

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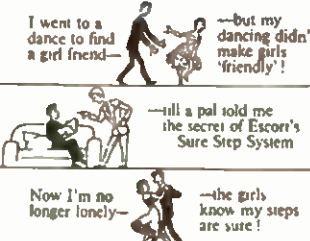
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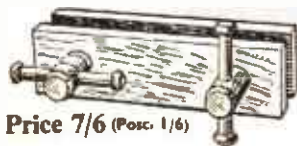
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Timber when ordered as sawn, will be of the stated measurements. A piece of 2ins. by 4ins. sawn will measure 4ins. on the broad surface and 2ins. on the narrow edge. This applies to all sawn timber. Planed timber, however, loses a $\frac{1}{8}$ in. on each planed surface. So the measurements of planed wood are nominal. A piece of 2ins. by 4ins. planed will measure 1 $\frac{7}{8}$ ins. by 3 $\frac{1}{2}$ ins.

Loss in finishing

Mouldings, tongued and grooved flooring and matchboarding, lose even more in width. They have to go through yet another process. In the case of the flooring and matchboards, the tongue is included in the original width. This is important to remember when taking an estimate of the amount required for a large area, such as a floor repairing job. Thus 1in. by 6ins. tongued and grooved flooring will be $\frac{7}{8}$ in. in thickness and its covering capacity 5 $\frac{1}{2}$ ins.

Sash rail and sash bar undergo two processes. So too, does horticultural bar, which is a bigger edition of sash bar, and is used mainly for greenhouses and conservatories. Take care, therefore, to make two allowances for each surface when determining the size required.

Make out your order clearly so that your supplier will have no doubts as to your requirements. Give first the size, actual or nominal, then whether sawn or planed, the variety of wood and finally the number required with the lengths. Here is a sample order which any supplier will readily understand.

- 2ins. by 4ins. sawn deal. 2/10ft. 3/12ft. 4/8ft. 2/18ft.
- 1in. by 6ins. planed deal. 8/13ft. 7/12ft. 6/10ft. 8/6ft. 8/5ft.
- $\frac{1}{2}$ in. by 2ins. planed oak. 2/6ft. 2/7ft.
- 10mm. ply gaboon. 1 sheet 6ft. by 4ft. 2 sheets 4ft. by 4ft.

Paint coverage

Use a colour card when making your paint selection, and having made it, give the colour, its number on the card and the maker's name. This is essential because paintmakers have their own methods of naming and numbering the various shades. Some manufacturers give the information on the card that the colour samples apply to their particular brand of paint, emulsion and

distemper. Others issue a separate colour card for each commodity.

Undercoating should not be confused with priming. Undercoat paint is used as a building up or bodying process in preparation for the high-gloss finishing coat. Some jobs will require several applications of undercoat, but only one coat of priming is applied. An oxide priming is used for ironwork. On new woodwork or where the paint has been burnt off for redecoration, a lead-based priming is advisable. This is either pink or grey and should be applied after all knots have been treated with a coat of knotting. If the finished colour is to be dark, such as a green or brown, use a grey priming. Pink priming is advisable for a job to be finished in white or cream.

~~~~~  
*By M. Hughes*  
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1pt. of ready-mixed paint will cover in the case of priming and undercoat, approximately 8 sq. yds. This will vary a little either way, according to the amount of suction on the surface to be treated. 1pt. of high-gloss finishing paint will cover approximately 12 sq. yds.

Distemper estimate

To estimate the amount of paint required to treat windows, take the area of the window. As an example, a window 9ft. wide and 6ft. high, with the normal number of sashes, say eight or ten, will require the same amount of paint as a flat surface of the same area, that is, 6 sq. yds.

28 lbs. of distemper will be enough to treat a room 15ft. by 15ft. to two good coats. The actual table to which estimators work, is 1 cwt. of distemper mixed with petrifying liquid will cover 400 sq. yds. Petrifying liquid is the right and proper thinners for distemper.

One roll of wall-paper, known in the trade as a 'piece' will cover about 50 sq. ft. Measure the area to be papered, from floor to picture rail, and corner to corner. For estimating purposes ignore the doors and windows. In other words, measure as if they did not exist.

A room 10ft. by 12ft. with a picture rail 6ft. 6ins. from the floor, will take six rolls. Papers with a large pattern obviously have a bigger wastage, and in the case of tight measurement an extra roll is advisable. Quite often if a roll is

ordered later to rectify a mistake, it may be slightly different in colour.

Sand, bricks, etc.

Sand and similar material is sold by the cubic yard. Most handyman's suppliers and builder's merchants will be pleased to deliver smaller quantities, even bushels.

Soft sand is best for bricklaying, sharp sand for paving and rendering. Rendering is the name for a coat of cement mixture or mortar applied to the surface of a wall or a path.

Ashes, clinker, ballast and shingle are also supplied by the yard and like quantities. A good mixture for path-laying is sharp sand and shingle in equal parts; your supplier will deliver it together. It will get well mixed in the usual course of mixing with the cement.

When estimating the quantity of aggregate, as such material as sand, shingle and ballast is called, err on the side of quantity. A cubic yard of any one of these, when mixed with cement and water, will not fill a hole the cubic capacity of which is a cubic yard. The mixture gains in density, it must, therefore, lose in volume.

Quantities for mixes

Let me give a few guiding facts. A 3 to 1 mixing takes 7 cwt. of cement to 1 cubic yard of sand, ballast or shingle. This is a strong mixture. As a mortar, that is when sand is used, it will serve for about 1,000 bricks. For rendering purposes, it will cover 50 sq. yds. laid on $\frac{1}{2}$ in. thick.

A 4 to 1 mixing takes 5 $\frac{1}{2}$ cwt. of cement to 1 cubic yard of aggregate. With ballast, and laid 3ins. thick, it will cover 9 $\frac{1}{2}$ sq. yds. For each $\frac{1}{2}$ in. you add in thickness, you reduce in covering capacity by 1 sq. yd., thus:

- 3 $\frac{1}{2}$ ins. thick covers 8 $\frac{1}{2}$ sq. yds.
- 4ins. thick covers 7 $\frac{1}{2}$ sq. yds.
- 4 $\frac{1}{2}$ ins. thick covers 6 $\frac{1}{2}$ sq. yds.

A 5 to 1 mixing takes a little more than 4 cwt. of cement to 1 cubic yard of aggregate. An 8 to 1 mixing takes 3 cwt. of cement to 1 cubic yard. It is not advisable to use a mixture weaker than 8 to 1.

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BEEER-GARDENS are popular in Germany and no general collection of labels would be complete without a selection of German beer, wine and spirit covers.

The north of Germany is very flat, the centre is somewhat hilly. The mountains are the Erggebirge, and the Riesengebirge, between Saxony and Bohemia; the Harz, and Taunus mountains, in the Schwarzwald or Black Forest.

'Stamps: 1935. 12 pf. +6 pf. red — Black Forest — 6d. used.'

Lake of Constance. A little below this lake are the celebrated falls at Schaffhausen. The river in three leaps falls over 100ft. The thundering noise of the falls can be heard six miles away.

Chief towns

There are many large towns on the Rhine. Chief amongst them are Constance, Basle, Freiburg, Strassburg, Spire, Mannheim, Worms, Mayence, Coblenz, Bonn, Cologne and Dusseldorf.

'Stamps: 1947. 84 pf. green — Rhine — 3d. mint. 1945. 3 pf. black and red — Rhineland — 1d. mint.'

The Danube is a beautiful river and the second largest in Europe.

Many Minerals

The mineral products of Germany are many. Lead and silver are found in the Harz mountains. Iron, salt, copper, coal, alum, sulphur, nickel, arsenic and other minerals are abundant. Wheat, hemp and flax are grown in the northern and central district. Wine is produced in the valleys of the Rhine, Danube, Maine, Neckar and Moselle.

On the plains of Mecklenburg cattle are raised, and Hanover is celebrated for its geese. The sheep of Saxony are justly famous.

Toy Centre

Hamburg is celebrated for its dry sherries, brandies, tobacco and snuff. The Black Forest is noted for toys, clocks and woodcarvings. Leipzig and Munich are the centres of the printing trade.

'Stamps: 1953. 18 Industrial Designs — 2/6 mint.'

GERMANY

—By R.L.C.

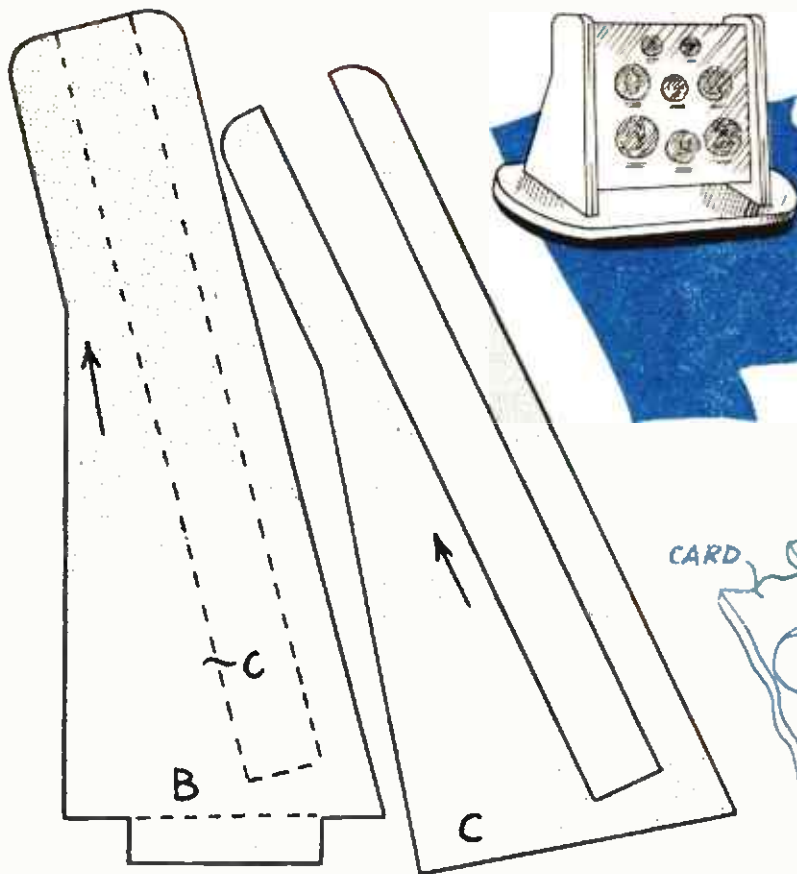
Germany possesses some of the most important rivers in Europe. The Rhine rises in the Grisons in Switzerland, flows north-west for 800 miles, having 12,000 tributaries falling into it, and, covering an area of 86 square miles, falls into the North Sea. It passes right through the



Most German hotels have spacious gardens where guests can sit, eat, drink and chat to the music of the hotel band. The Seehof Hotel, Constance, is depicted on a stamp of 1949 — 5/- mint.

Ideal for the collector

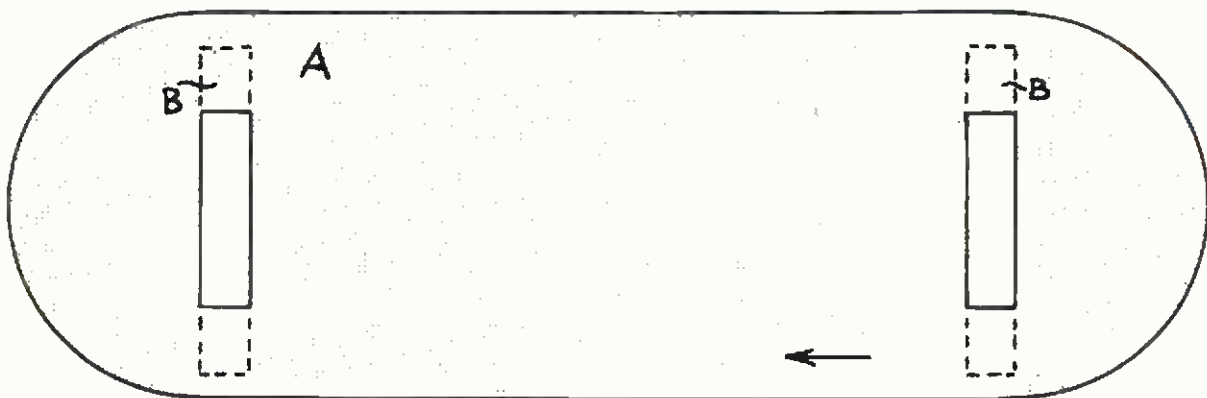
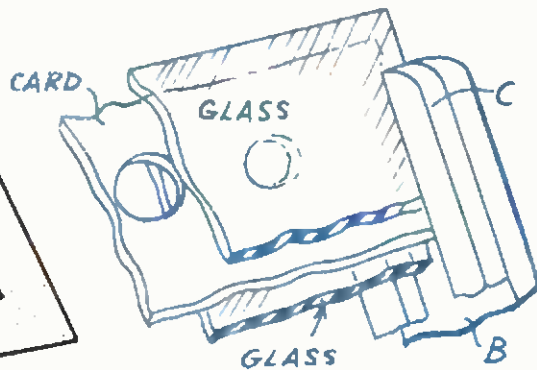
COIN DISPLAY CASE



FOR displaying a few specimens of old coins this little case is ideal. Cut one piece (A) and two pieces (B) from $\frac{1}{4}$ in. wood and glue pieces (B) into the mortises in (A). Now cut two pieces (C) from $\frac{1}{4}$ in. wood and glue them on the inside of pieces (B).

Cut two pieces of glass and one piece of card $3\frac{1}{2}$ ins. wide and 4 ins. deep. The card should be about the same thickness as the coins. Arrange the coins nicely on the card, mark round them and cut out the circles with a sharp pointed knife. The card goes between the two pieces of glass and the 'sandwich' of glass, card and coins slips into the slots in pieces (C). Descriptions of coins can be printed on the card if desired.

The frame may be painted with a good enamel or finished with stain and varnish. (M.p.)





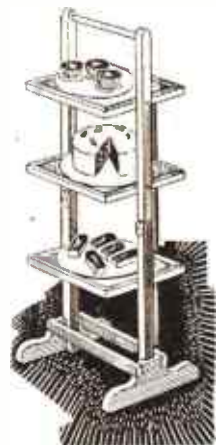
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