3rd JUNE 1959 VOL. 128 NUMBER 3318

THE **ORIGINAL** 'DO-IT-YOURSELF' MAGAZINE

HOBBIES *weekly*

FOR ALL HOME CRAFTSMEN

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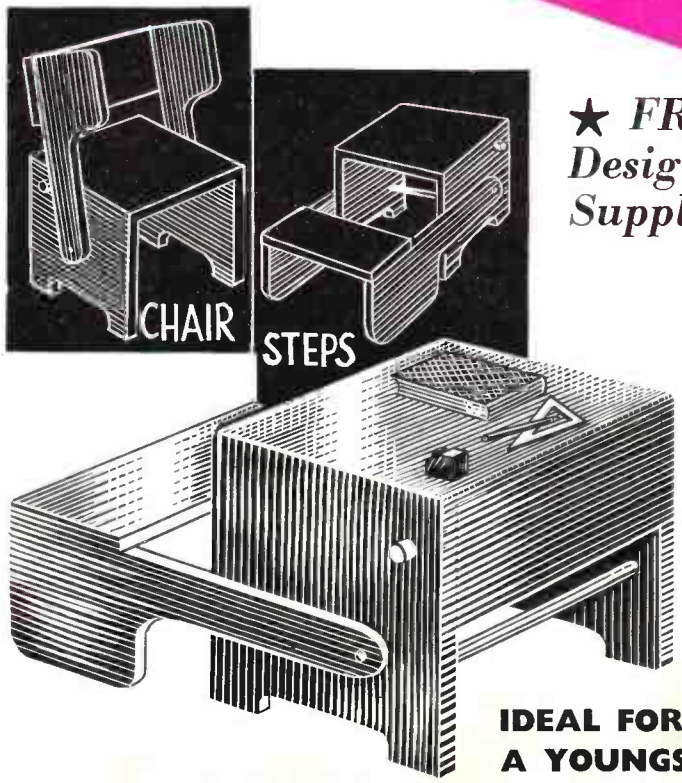


★ *FREE Design Supplement*

IDEAL FOR A YOUNGSTER

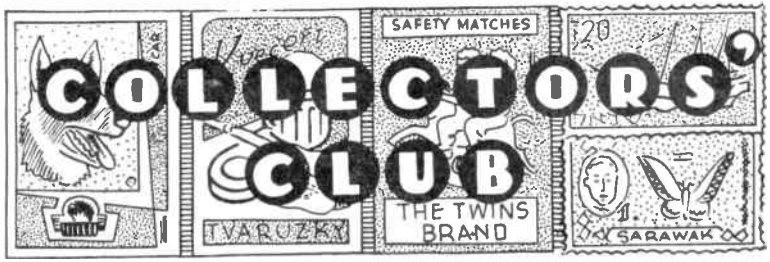
STEP-CHAIR-DESK

Up-to-the-minute ideas

Practical designs

Pleasing and profitable things to make

5D.



JUNE probably takes its name from the goddess Juno, in whose honour a yearly festival used to be held in Rome. And again, it may have been named after Juniores (Junius), the inferior branch of the Roman Senate.

The Saxons called it Weyd-Monath because in this month the cattle were turned into the meadows to Weyd or feed.

'Stamps: Italy 1911, 15 cent grey — The Glory of Rome — 1/3d. mint. 1938, 10 cent brown — The Founding of Rome — 2d. mint. Australia 1953, 3½d. red — Cattle — 3d. used.' Many match, cheese and beer labels depict cattle and farmyard scenery.

JUNE — *By R.L.C.*

June was regarded by the ancients as the most favourable month for marriage. This belief was shared by the maidens of old who on Midsummer's Eve (June 23rd) used to spread a table with clean cloth, on which they placed bread and cheese. They then set the door wide open, and, seating themselves at the table, waited expectantly for the stroke of twelve, when their future husbands were supposed to enter, bow, drink to them, and go out again.

'Stamps: Bulgaria 1938, 7 leva violet — Roses — 1/- used.'

Other June anniversaries:

6th, 1944, 'D' Day — French stamp of 1954, 15 franc red and blue — Liberation — 3d. mint.

10th, 1921, Duke of Edinburgh born — The Queen and Duke of Edinburgh are depicted on a 3½d. Australian stamp of 1954 — 4d. used.

12th, 1897, Anthony Eden born — The Houses of Parliament appear on Bahamas Victory stamps of 1946.

17th, 1940, French sue for peace — Marshal Petain appears on a 1941 50 cent French stamp — 1d. mint.

21st, 1887, Queen Victoria's Golden Jubilee — 1887 ½d. stamp of Great Britain depicting Queen Victoria — 2d. mint.

23rd, 1894, Duke of Windsor born — Newfoundland stamp of 1932 depicts the Duke when Prince of Wales — 2d. used.

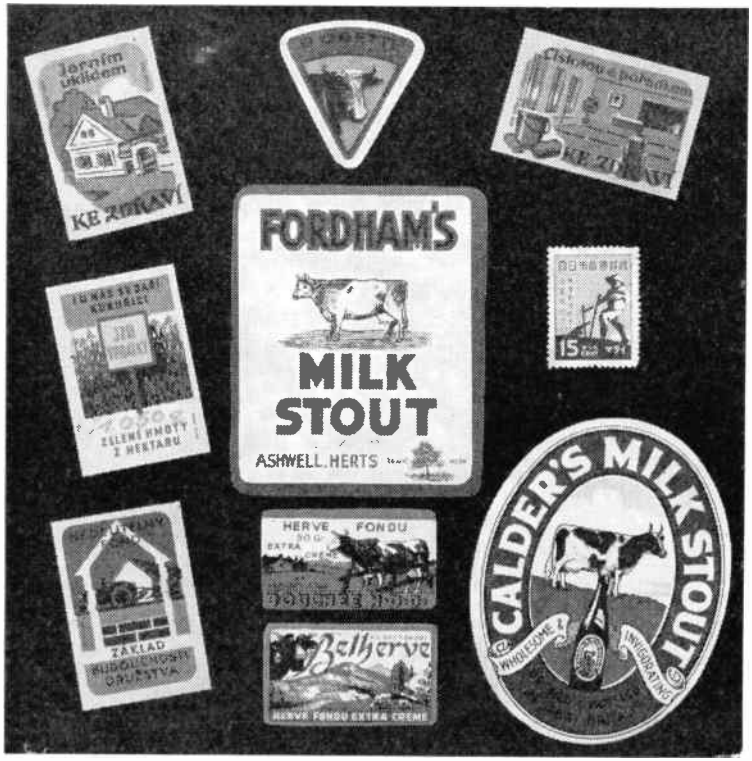
June is the month of agricultural and flower shows and gymkhanas. The end of the month is famous for the opening of the World Lawn Tennis Championships at Wimbledon, and the Royal Regatta at Henley. Two turf classics, the Derby and the Oaks, and Royal Ascot week are also June events.

'Stamps: San Marino 1953, 2 lira brown and black — Tennis — 2d. mint. Austria — various issues depicting horses. Match labels: Czechoslovakia 1956 — set of 12 sports designs — 2/- mint.'

Weather lore:

'Calm weather in June
Sets corn in tune.'

Canadian stamp of 1946 — Harvesting — 4d. used.



THE TONGUE

IN 1953 Australia issued a special stamp to mark the 25th anniversary of her Young Farmers' Clubs. This stamp, depicting two young farmers and a calf, is cat. at 3d. used, and suggests notes on the following lines:

Some animals use their tongue in place of a hand. If you watch a cow eating long grass, you will notice that she pushes out her rough tongue and passes it round a tuft of grass, pulling the tops of it into her mouth.

The giraffe — shown on the 1937, 1 cent violet and green pictorial of Mozambique (2d. mint) — uses his slender tongue in the same way, grasping the leafy twigs with it and bringing them within reach of his teeth.

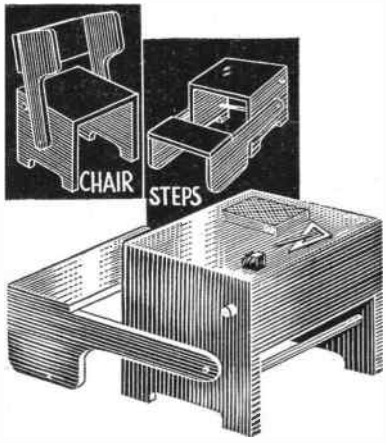
Insect-eating animals use their tongue as a kind of paw to secure their prey.

The ant-eater — Sarawak 1950, 10 cent orange (6d. used) — has a long, slimy, worm-like tongue, which he thrusts into the ants' nests and brings out covered with the insects.

The tongue of the woodpecker is very rough towards the point. This bird lives upon insects secreted in the bark of trees. With his beak he pecks a hole in the tree trunk and pulls out the insects with his rough tongue.

Novel 3-purpose article

HOW TO MAKE THE STEP-CHAIR-DESK



THIS novel piece of nursery furniture is ideal for a youngster up to the age of four or five, and in view of its various uses provides a worthwhile proposition for father to make up.

As a desk and seat, shown in the illustration, it will keep a tiny tot happy for hours, scribbling away on pieces of paper. In this position, the desk can also be used as steps — very useful for enabling a youngster to reach the kitchen sink for such jobs as cleaning teeth and washing, etc. By swivelling the seat back, our illustration shows how it can be used as a chair for a tiny tot.

All the wood can be obtained from Hobbies standard panels. Pieces (A), (B), (D), and (E), shown on the design sheet, are ½in. thick and piece (C) is ¼in. thick. Also needed will be pieces of ¾in. dowelling. The project can be made in an evening, all parts being butted together by nailing and gluing, with paint as a finish.

Cut all the pieces required to the measurements shown on the design sheet, and clean up thoroughly. Note that ¾in. diameter holes have to be drilled in the side pieces (A) to take the strengthening rods (F) and the stops (G).

Glue and pin the various pieces together as shown in the diagram on the design sheet, including at the same time the strengthening rods, which are glued in place. Pieces (D) are pivoted to the sides (A) by screwing, as shown in the side view. Drill holes in (D) to provide sufficient clearance for the screws to obtain easy pivoting.

When assembled, the project should be cleaned up thoroughly and the end grain filled. Give one or two applications of undercoat paint, and finish with hard gloss enamel.

KIT FOR 22/-

The necessary panels of wood, round rod, screws, etc., for making the Step-Chair-Desk are contained in Kit No. 3318. Obtainable from branches, etc., price 22/- or from Hobbies Ltd, Dereham, Norfolk (post 3/6 extra).

Second-hand Books as a Hobby

MANY people have the idea that collecting rare books is an expensive hobby, but this is not necessarily the case, although, of course, there are some books which are worth a huge amount of money.

Book collecting can be a most profitable occupation for the spare-time collector, apart from the pleasure to be gained by book lovers.

Those which are sought after by collectors are out of print books and books which may have something unusual about them.

A collector's work is to find first editions or old books about travel, means of transport, fashion, cookery, gardening — everything in fact, not forgetting maps and children's books. There are many thousands of books of this description hidden away and there are many eager searchers for them.

It does not require much capital to start collecting. In many cases books may be bought for a few shillings or even pence, and, if they are in good condition and have any value, they can be sold at a good profit.

One of the best places to find really saleable books is at a general auction. Sometimes boxes of books from old houses are sold for a very small sum. At an auction held recently at an old country house a towering bookcase full of books was sold for the low price of twenty-five shillings.

Although no equipment is required, with the exception of a certain amount of packing material for sending books through the post, a drawer or shelf must be given up to storing books that you buy until you are able to sell them.

Reference books regarding the pricing of books, which beginners to collecting may find difficult, are available at local public libraries and librarians will recommend the most suitable books to read on the subject. Some reference books will give lists of prices of various books and these will give the beginner a good idea of the price to ask for certain works until he becomes more of an expert at assessing the value, in which case time spent in searching for a particular volume should be taken into consideration.

On no account should a completely inexperienced beginner attend book auctions unless it is in the rôle of onlooker for the purpose of acquiring knowledge. Considerable experience and knowledge of the subject are required before buying books from book auctions, as these are attended by expert collectors. The beginner must be content for a time to buy at general auctions, and it is wise not to amass too large a stock of books to begin with.

Contacting collectors is done through advertisements in various journals which specialize in book collecting and, as time goes on and several contacts are made, a profitable business may be built up.

When a good list of names and addresses has been gained, together with notes of their requirements, it should be possible to specialize in the types of books in which your clients are particularly interested, and in this way acquire a reputation for being a good source of supply. (D.D.)

★★★★★★★★★★★★★★★★★★★★★

Full details and patterns for making 16 in. stringed marionette will be included in next week's issue. Make sure of your copy.

★★★★★★★★★★★★★★★★★★★★★

'WENSUM' SAILING GEAR

WENSUM is rigged with two sails in what is called a gunter sloop rig. The main sail is fixed to a gaff which extends vertically above the mast when it is hoisted. This gives a rig very similar to the racing dinghy's Bermudan sail, but without the complicated rigging which that type involves. Performance is almost as good.

By P. W. Blandford

Wensum under sail has a very lively performance and only a light breeze is needed to give her a good turn of speed. She will, of course, sail in all the usual directions in relation to the wind and hold her own with other craft of the same size.

Although it is possible to make sails, and some workers may prefer to do so, the majority will choose to buy professionally-made sails. A suit of sails for this boat, complete with lacing lines and other ropes which have to be attached to the sails, costs just under £10. Those who wish to make their own sails may use the drawing supplied with the plan and follow the instructions in the book 'Make your own sails' by Bowker and Budd (Macmillan).

The only woodwork involved is the making of the three spars. Sitka Spruce is the wood nearly always used for spars. If you have to use another type, choose a light straight-grained wood free from large knots. The mast and gaff taper, but the boom is parallel. All are round in section (Fig. 19).

To make a spar have the wood supported on a plank or long bench. If it is tapered, plane the taper first in the square section. Next plane the corners off to make the section approximately octagonal. Remove these corners and reduce the wood to round by glasspapering, first around and then across the grain.

The mast has a tenon to fit the mast step (Fig. 19A). At the top are two chocks which hold the forestay and shrouds. Below that is cut a slot to take a sheave (pulley wheel) for the main halliard and immediately below that is a block fixed with a screw-eye for the jib halliard (Fig. 19B).

The gaff has a piece of plywood cut to fit around the mast at its thick end and a hole is drilled to take the main halliard (Fig. 19C). The boom pivots on the mast with a gooseneck. This is a form of universal joint and several patterns are available. The simplest consists of a socket to screw to the mast and a bolt on a pivot fixed in the end of the boom. A better type has a sliding arrangement on a mast track. This helps in adjusting the tension of the sail, but is more expensive. When the spars are finished they should be given three coats of varnish, but it may be as well to have a trial assembly before removing the fittings and finishing off.

The supports for the mast are a forestay leading down to the stem and a pair of shrouds leading down to the gunwales alongside the forward rowlock socket chocks (Fig. 20A). Although fibre rope might be used for these parts, it is better to use flexible wire rope. The ends should be finished in eyes around metal thimbles. The expert would splice these, but it is possible to buy little wire rope clips or a dealer will finish the ends with 'Talurit' splices, in which a tube is compressed around the rope. At the top

Wensum gives a very lively performance and has a good turn of speed under a light breeze

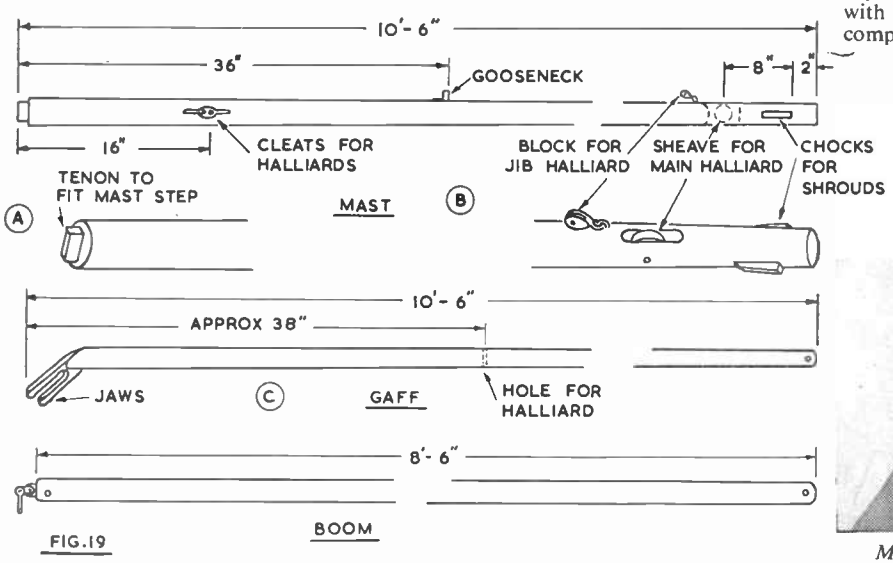
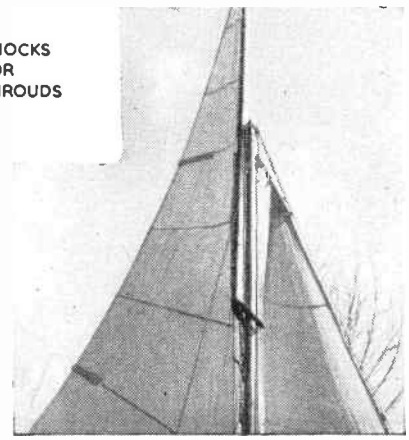


FIG.19



Mast top, showing gaff, jaws, etc.

of the mast the shrouds may be in one piece crossed and seized together (Fig. 20B). A thin rope lanyard at the bottom of each wire is used to provide tension and secure the stay to a ring (Fig. 20C).

The sails are hoisted with ordinary rope halliards which are brought down to cleats at each side of the mast above its thwart. The ropes controlling the sails are called sheets and with a crew of two the skipper holds the main sheet and the tiller, while his mate holds the jib sheets and operates the centreboard. Cotton rope is best for the sheets as it is more comfortable to handle.

There would be too much load for a direct pull on the main sheet so some purchase has to be provided. The sheet is fastened to an eye at one side of the opening in the transom and carried up to a block held by a rope strop near the end of the boom, then down to another block on the transom and forward to the helmsman's hand (Fig. 20D). In a dinghy the main sheet is never fastened anywhere, but is held so that it may run out in an emergency.

The jib has two sheets and is controlled by the one on the same side as the sail. The pull on the sheet should be even on the sail and this is arranged by the rope pulling through a thimble which is held by a lanyard through a hole in the gunwale just forward of the main thwart (Fig. 20E). For single-handed sailing the jib sheet could be brought to a cleat on the centreboard case, but when there are two of you it is held in the mate's hand.

The main sail has large eyelets to match the ends of the gaff and boom and smaller ones between them for lacing. The sail should be lashed to the jaw end of the gaff and the forward end of the boom first, then strained along the spars with the lines at the other end. A new sail should not be strained excessively at first. Light line is used to lace through the smaller eyelets. Leave

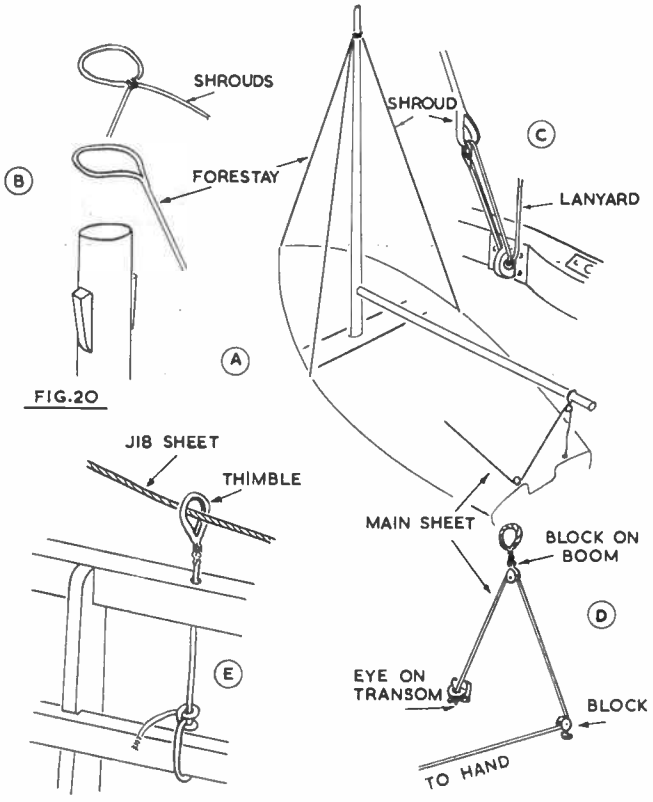


FIG.20

the drilling of the hole for the halliard in the boom until the first trial assembly. It should be located so that the sail is correctly tensioned when the gaff is hard against the mast.

The jib has a short line fastened to its forward corner (the tack). This is fastened to the same eye as the forestay. The halliard is tied or fastened with a shackle to the peak and the sail hanked to the forestay with three little hooks attached to the sail. A boat sails best to windward if the forward edge of the sail is straight, and hanking the jib to the wire forestay helps to keep it straight. The two-part sheet is fastened to the other corner of the sail, outside the shrouds and through the thimbles fixed to the gunwales.

For mooring, a rope painter may be fixed to an eye-plate screwed inside near the bottom of the stem.

Full-size plans available

Complete plans for building the Wensum Sailing Dinghy are available from Hobbies Ltd., Dereham, Norfolk, price 16s. 0d., plus 9d. postage. The plans include all the information needed to build the boat — full-size drawings of the frames and other shaped parts, several other detail drawings, a material schedule and step-by-step instructions — for rowing, outboard motor and sailing.

LAMPS AND SHADES FOR DOLLS' HOUSES

IN many of the smaller dolls' houses the use of flash lamp bulbs for lighting spoil the effect, owing to their size. Even in the larger models built to scale of 1in. to the foot, a scale size bulb would have to be $\frac{3}{16}$in. diameter, the smallest flash lamp bulb being $\frac{3}{8}$in. diameter.

Due to the large increase in gauge OO model railway equipment small 'pea' bulbs and holders are now readily available operating on a 12 volt supply. Many cars also use these small bulbs as warning lights. They vary from $\frac{1}{16}$in. to $\frac{1}{4}$in. diameter and many can be operated from the mains supply through a suitable transformer.

These bulbs can be incorporated in many types of shades, giving a most realistic result.

Fig. 1 shows the commonest types of 'pea' bulbs available. In Fig. 1A the 'flying leads' are connected to the supply by soldering, while in Fig. 1B the bulb

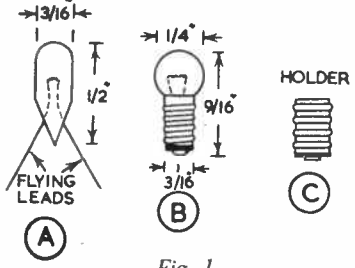
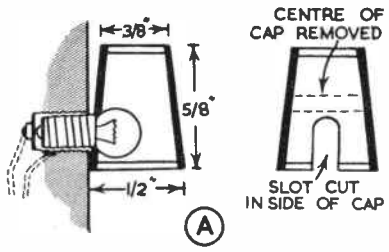
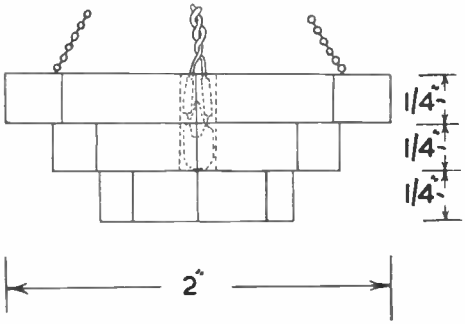


Fig. 1





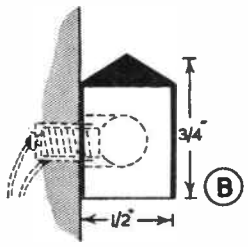


Fig. 4

ALL ILLUSTRATIONS SHOWN FULL SIZE

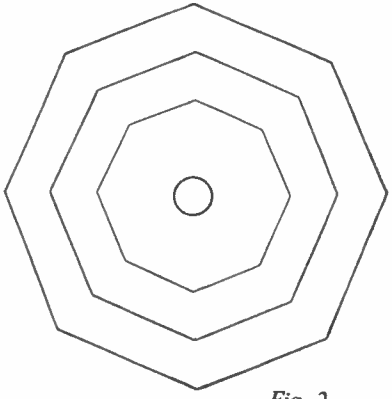


Fig. 2

is screwed into a holder (Fig. 1C). Some holders have plates attached with which they can be screwed to any surface. In most cases, however, the bulb holder will be buried in the walls and ceilings of the model.

Shades from Perspex

In the model lounge or dining-room a large shade hanging from the ceiling is most suitable. Such a shade is shown in Fig. 2 but the shape can, of course, be varied. From a piece of flat Perspex, tinted if preferred, cut out three octagonal sections each $\frac{1}{4}$in. thick. If the Perspex is only $\frac{1}{8}$in. thick, then two pieces can be stuck together with a

No. 254 Special

This sturdy Doll's House stands 20 ins. high. Full kit for making costs 47/11 from any branch or Hobbies Ltd, Dereham, Norfolk. Design and instructions separately, 2/6 (post 2d.). Other models available.

suitable adhesive. Carefully centralise the three sections and stick together.

The most suitable bulb to use in this type of shade will be the one with 'flying leads'. Very fine plastic covered copper wire $\frac{1}{16}$in. thick can be obtained and two pieces should be twisted together to form a 'flex'. Obtain a slightly

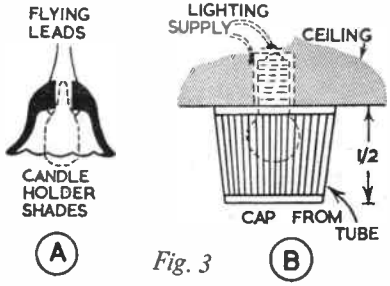


Fig. 3

larger piece of Perspex sheathing and slip over the $\frac{1}{16}$in. wire. Solder the two ends to the 'flying leads' and slip the loose sheath down over the joint. The wire can be conducted away through the ceiling to a junction box or switch.

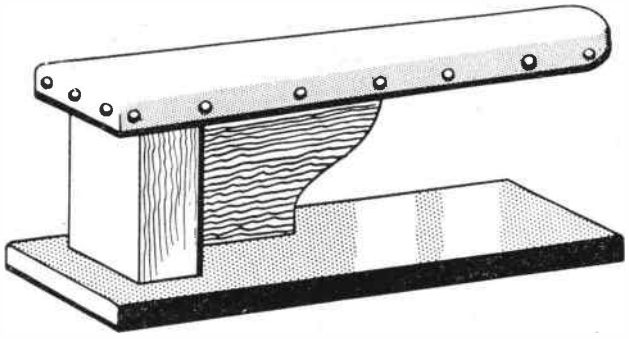
In the centre of the shade bore a $\frac{3}{16}$in. hole $\frac{3}{8}$in. deep to take the bulb. The shade is held to the ceiling by three fine cords or a small chain. Lengths of chain are also available from model suppliers dealing in OO gauge railway accessories. The chain is attached to the perspex by cementing a small hook into it and likewise into the ceiling.

Fig. 3A shows a suitable type of shade for a small room or hall. These shades are made from plastic cake-candle holders — the ones used for Christmas and birthday cakes. Cut off the spike and drill a hole right through, as shown, to take a bulb. Drill two fine holes each side of the main hole and, using the bulb

● **Continued on page 151**

For the good lady

Make a Sleeve Ironing Board



By H. Mann

A SLEEVE board is handy for ironing small articles and can be made in an evening. There are only four parts to shape, while drilling and a few screws complete the carpentry. The remainder of the work consists of attaching a suitable covering.

The wood used should be ¾in. thick, and you will require a piece 21ins. by 5ins. for the arm, shaped and drilled as in Fig. 1. When marking out this piece it should be noted that tapering starts 6ins. from the rear end. The rounded end is obtained by marking with the compass, using a 1¾in. radius on the centre line, afterwards cutting out with a fretsaw. The two central holes to be drilled are for the fastening of the supporting arm, and the others for a block. Countersink the holes in each instance.

The base is merely an oblong piece of material measuring 18ins. by 5ins., and Fig. 2 shows the positions for the holes in this piece. You may either chamfer the edges of the base to an angle of approximately 45°, or round off the edges for a neat finish.

The supporting block, measuring 3½ins. by 1½ins. by 4¼ins., must be cut squarely at both ends, so that the sleeve board and base will be parallel after assembly. This block is hardly sufficient to support the board, which will be subject to pressure, and a strengthener is added as shown in Fig. 3. A piece of wood 6ins. by 4¼ins. is required, and the curved shape is produced by reversed quadrants. With the compass set at a radius of 2⅛ins., an arc is described on the top edge, and then another from the corner of the wood to give the reversed curve. Here again, care should be taken to see that the top and lower edges of the arm are parallel.

You will need two 1¼in. screws for fastening the arm and two 2½in. screws for fastening the block to the board, and similar screws for fastening the baseboard. But before attaching these parts it is as well to mark the correct screw positions on both the arm and block, starting holes with a gimlet. You may also apply a little glue to these parts.

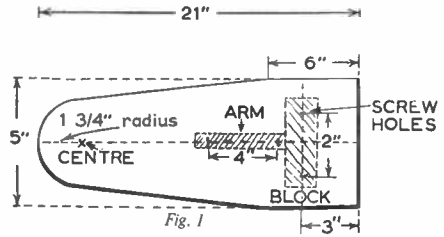


Fig. 1

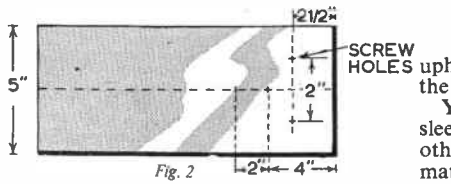


Fig. 2

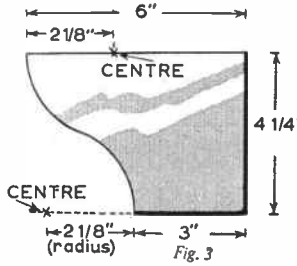


Fig. 3

The sleeve board is covered with a good quality linen or cotton, after adding some flannel sheeting to act as padding. Fasten the cover to the underside by means of tacks, then add a few upholstery pins at the sides, as shown in the finished illustration.

You may use ¼in. plywood for the sleeve board and baseboard, but the other parts should be made from solid material.

● **Continued from page 150**

Lamps and Shades

with 'flying leads', push the bulb into position so that the leads pass through the small holes. Connect up with solder to suitable 'flex' as already described.

The tops from dental cream tubes also make excellent shades. A flush type fitting is shown in Fig. 3B. In this case a bulb holder is fixed into the ceiling of the model and connected up to the doll's house electrical supply. The bulb is screwed in, and with the centre of the cap bored out, it is fixed over the bulb and stuck in position.

Wall fittings are very popular today, and these also can easily be made up from the plastic tops of dental cream or similar tubes. On one side of the cap a slot is cut the exact size of the neck of the bulb. It is fitted as shown in Fig. 4A and held in position with a little adhesive.

Outside the doll's house a lantern is most effective. From a block of perspex ¾in. by ½in. by ½in., shape as shown in Fig. 4B. At the back bore a ¼in. hole and glasspaper the whole surface to give a frosted effect. Paint the corners and top with dead black to represent metal work and stick over a bulb and holder fixed in the wall of the doll's house.

(C.F.)

Radio Control of Models — 8

'SPACE AND PULSE' STEERING

THIS method of steering a model boat by radio is most suitable for small boats where it is difficult to accommodate the clockwork steering actuator previously described. Its main advantage is the small size, simplicity and lightness of the equipment carried in the boat. It also allows variable adjustment of the rudder, so that curves and turns of any desired degree of sharpness can be made. Actual operation is also more realistic, because a wheel or rudder bar is fitted at the transmitter, and the model sails to the right, left, or straight ahead, as this wheel or tiller is moved.

A disadvantage of the system is that it can be used for steering only. It is not possible to stop the model, or reverse it. This is not important with a yacht, or clockwork or steam-driven boat. The transmitting equipment is also a little more difficult to make.

With space and pulse steering, the actual transmitter, receiver, and receiver relay can be exactly as already described, and no changes are needed to these items. It is, however, necessary to replace the simple push switch or key, previously used at the transmitter, by an electrical space and pulse unit.

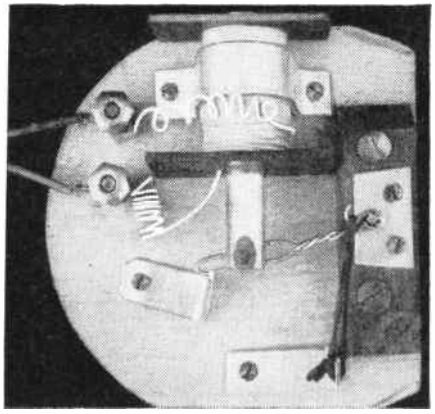
How it works

The boat rudder is turned one way by an electro-magnet pulling the tiller over. When no current flows in the magnet, the rudder is pulled back the other way by a spring or elastic band. For example, when the magnet is not energized, the boat might turn to the sharpest extent to the right; a sharp turn to the left would be achieved when current flows in the magnet.

Pulses of current are fed to the magnet at the rate of some thousand or so a minute. The rudder cannot respond to these, as they are so rapid, but takes up a position depending upon the length of the pulses, and spaces (that is, intervals when no current flows). When the pulses are as long as the spaces, the boat sails straight ahead. As the pulses are made longer, and the spaces shorter, the tiller is pulled a little farther over by the magnet. But if the pulses are made shorter, and the spaces longer, the overall average power of the magnet falls, so that the boat begins to turn the other way.

The pulse generator

This device is fitted at the transmitter and replaces the simple key which is used for control with a clockwork actuator. An electric motor is most suitable, to drive the device, but is not absolutely essential.

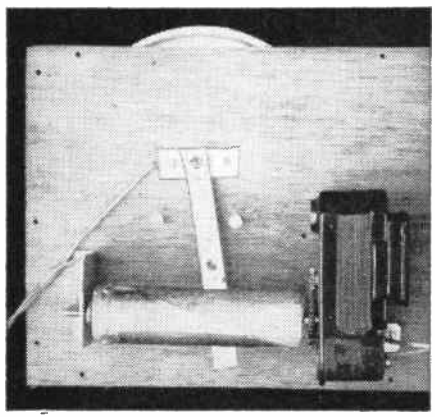


The steering unit

As shown in Fig. 1, a wooden dowel is rotated by the motor. A contact barrel is fitted to this dowel. At the left, it completely encircles the dowel, but tapers away to a point at the right. The contact strip can be swung from side to side, and bears on the rotating contact barrel.

By 'Radio Mech'

When the contact strip is centrally placed, as in Fig. 1, it will make contact with the rotating barrel for about one-half each revolution. For the other half, it will rest upon the dowel, and the circuit will be interrupted. This gives pulses and spaces of equal length, for straight ahead sailing.



Motor-driven space and pulse drum

Turning the contact strip to the left gives longer pulses, but shorter spaces. Moving it to the right has the reverse effect, the spaces growing longer, and the pulses shorter, until the strip is at the pointed end of the rotating contact, when each pulse will be very brief, compared with the space.

The exact speed at which the dowel turns does not make any difference to the relative length of pulses and spaces. But if it does not rotate rapidly enough, the rudder will begin to vibrate from side to side. With the average type of model electric motor, a reduction drive of roughly 3:1 or 4:1 will do. If the dowel turns too rapidly, so that the receiver relay can no longer open and close at each pulse, than the motor battery voltage may be reduced, or a length of resistance wire may be added, to cut down the speed.

The dowel can be about ¾in. in diameter and 4ins. long. A little care is necessary when drilling for the axle, and this should be done accurately from both ends. Two screws passing through holes in the gear will hold the dowel secure. Washers should be placed between gear and dowel to clear the driving teeth of the motor gear, if necessary.

Tinplate is suitable for the rotating contact. For a ¾in. by 4in. barrel, this can be cut 2½ins. wide and nearly 4ins. long. The piece is then cut from the full 2½in. width at one end right down to a point at the other end. It should then be curved to fit the dowel. This is most easily done by tapping it gently round an object of slightly smaller diameter, then slipping it off and pushing it on to the dowel.

Secure the pointed end with a small sprig or screw. Take a couple of turns of wire round the other end, twisting the wire tightly, and soldering it to the contact, and to the axle.

Bearing brackets will be needed both ends if the motor has no suitable bearing hole for the axle. Constructional toy parts are satisfactory for building.

The contact strip, shown in Fig. 1, is of steel or springy brass, and is soldered to the steering wheel axle, or bolted to a bushed crank fitted to the axle. An additional bearing will be needed close under the wheel, to prevent wobble. Stop screws prevent the strip being turned so far that it slips right off the dowel.

Electrical connections are taken from the bearing bracket and steering wheel axle.

For small boats the rudder unit has to be compact and light, and it must work freely. Fig. 2 shows the layout of parts. A solenoid, or hollow magnet, is used, which draws in the core against the tension of a thin elastic band. The tiller wire is fixed to a thin spindle carrying the rudder, as in Fig. 3.

The solenoid is made by taking a piece of thin brass tube about ¼in. in diameter, and drilling two small pieces of Paxolin or other insulating material, to be a push fit on the tube. Tapping with a punch, to expand the ends of the tube slightly, will keep the cheeks from slipping off. A tube can be made by bending thin copper, brass or aluminium round an object of the same diameter as the core.

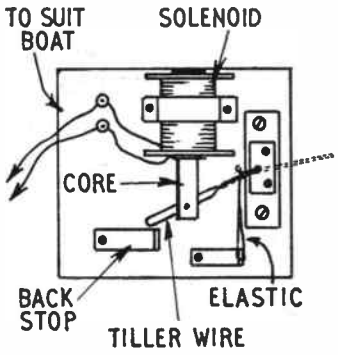


Fig. 2—The rudder unit

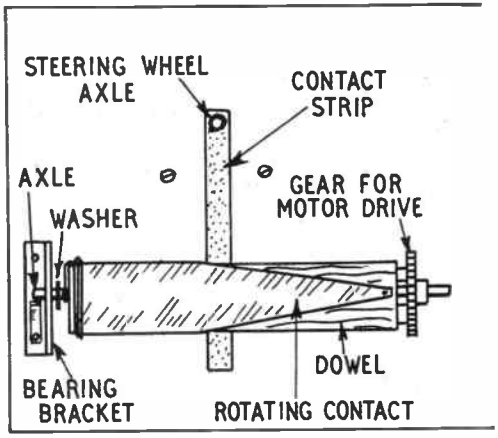


Fig. 1—The rotating contact unit

For 6V. operation, about seven layers of 28 SWG cotton covered wire will do. For a lower voltage, 24 SWG or 26 SWG can be used. The exact power of the magnet is not important, provided it can turn the rudder against the pull of the elastic.

The core is of iron, and can be sawn from an iron bolt. A saw cut is made in one end, to take the tiller wire. A tiny hole is drilled so that a pin can be slipped in to engage with the slot in the tiller wire.

The tiller wire is twisted as shown, leaving a parallel space for the pin mentioned. The other, twisted ends are taken round the rudder spindle, and soldered. One end of wire should be left projecting slightly, and is bent into a hook for the elastic band.

A small metal bracket, notched at the top, holds the other end of the elastic band. The tension on the tiller wire can be adjusted by swivelling this bracket, before finally tightening the screw.

Another metal bracket forms the back stop, which prevents the core being drawn right out of the solenoid. This back stop is similarly adjusted, to obtain a suitable movement of the tiller wire.

The tiller wire must be quite short, and the solenoid near it, or there will not be enough movement to make the boat turn sharply. The whole unit must work freely. When the battery is connected, the core should be drawn right in. With the circuit broken, the elastic band should draw the tiller wire back against the stop, as in Fig. 2. The tension of the elastic is adjusted until this is so.

Testing

The units are best tested by wiring them directly together, with the battery in circuit. The motor turning the rotating drum contact must be set running, and the flat contact strip adjusted to about the middle position, so that equal pulses and spaces are obtained. The core on the rudder unit should then take up a central position, with the rudder straight. If this does not happen, adjust the elastic tension until the rudder is approximately straight.

Turning the steering wheel should then result in the core taking up a new position, as necessary to set the rudder. When the units are found to be working properly, the transmitter and receiver may be brought into use.

The transmitter is a 1-or 2-valve model, as previously described, and the pulse and space unit is included in the H.T. negative circuit.

The receiver is tuned to the transmitter as already dealt with, and the receiver relay must already have been adjusted, so that it opens and closes smartly each time the transmitter H.T. circuit is completed. Adjustments cannot easily be made with the pulse and space unit running, but can be made by turning the drum by hand, or temporarily including the key or push switch instead.

It is necessary to use a relay with a light armature, such as the twin coil 1700 ohm Siemens high speed type which was suggested for the clockwork

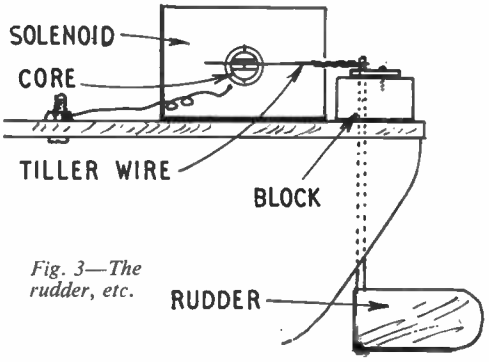
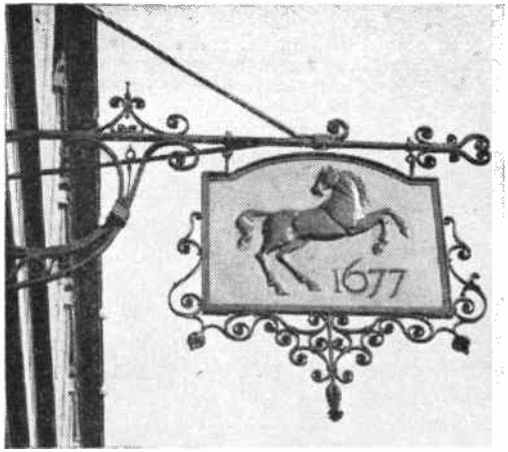


Fig. 3—The rudder, etc.

actuator system. A relay with a heavy armature will not open and close with sufficient speed, as this happens continuously, to agree with the rotations of the pulse and space drum.

The relay contacts are wired to the rudder unit, with a battery in circuit. A switch may be included, to turn off the equipment when required. Most relays have twin contacts, one pair closing when the armature is drawn towards the magnets, and the other pair opening simultaneously. If the rotating drum is wrongly fitted, so that the rudder turns in the opposite direction to the steering wheel, this can be corrected by changing over to the other pair of relay contacts. Or itshould be remembered that Fig. 1 is the underside of the unit. Turning the wheel clockwise moves the end of the strip towards the pointed end of the rotating contact. This keeps the receiver relay contacts open longer, so that the solenoid core moves out, making the boat curve to the right.

Next week 'Radio Mech' will cover control of vehicles and aircraft



A London Banker's sign, one of several such subjects for the camera which are to be seen in the City.

Out with a camera

LOOK UP FOR YOUR SUBJECTS

By A. Gaunt

PRACTISE looking upwards instead of straight ahead, and you will find many unexpected subjects which merit a photograph — old shop signs, carvings, memorial tablets, and statues, for instance.

Many a place which seemed photographically exhausted will be found to have many remaining possibilities if this idea of focusing attention higher than usual is adopted. The photographs reproduced herewith demonstrate the truth of that statement and emphasize the variety of subjects available.

Test of skill

This branch of photography also tests one's photographic skill. Some of the oddities are not too elevated to cause much difficulty in recording them; others are so far above ground level that considerable ingenuity is needed to obtain satisfactory pictures of them.

A camera with an eye-level viewfinder is more suitable for this work than one with a finder used at waist level, as it is used at a somewhat greater height and the camera need not be tilted quite as much. Excessive tilting should be avoided if possible, although a minor amount of tilt can be remedied by tilting the enlarger when prints are being made.

Generally speaking it is better to move back a short way from the subject than to cause undue distortion by pointing the camera upwards at an angle. The image of the main subject will be smaller, but it can be enlarged in printing.

Go for silhouettes

An advantage of this kind of photography is that only short exposures are needed, as most of the subjects receive plenty of light from the sky. With the shutter set at 1/100th sec. or less, and the lens stopped down to *f*/11 or even *f*/16, good results will usually be obtained on medium-speed film.

The short exposure means less risk of impairing the definition of the negative by unwitting movement of the camera when the trigger is being pressed. Sharply defined negatives are especially needed in this work, since the main part may have to be enlarged considerably.

Silhouette signs are among the easiest to photograph, and they do not demand

The attractive silhouette sign outside the Brontë Museum, Haworth

as accurate an exposure as other subjects. Most hanging signs, indeed, call for only a moderate amount of skill.

Coloured signs, such as those outside many inns, require more care if the colours are to be translated successfully into monochrome, but the user of colour films will find these subjects ideal.

At all times an efficient lens hood should be used; because the camera is being pointed skywards, glare from extraneous light may reduce the brilliance of the negative unless this precaution is taken.

There are many curious signs and inscriptions in old streets, and one might specialise in old shop signs. In London there are various plaques on houses associated with famous people, and a series of photographs showing such tablets might be got together.

Some business houses display interesting signs, and here and there are to be found fire insurance plates dating from the time when private fire brigades could be summoned to premises bearing the plate of the company concerned.

It is wise to look upwards when seeking subjects around churches, too. Gargoyles, statues in niches, and other entertaining but often overlooked subjects will be found in that way.

Some of the most difficult subjects in these several categories — those exceptionally high above the ground — may entail the use of a telephoto lens to photograph them really successfully. But there are many others sufficiently within range to be recorded without much difficulty by the photographer who does not own such a lens.

Tilt the baseboard

A tip about correcting distorted vertical lines. Only the fairly expensive type of upright enlarger has a tilting head for remedying these, but tilting the baseboard is equally effective.

The masking frame holding the bromide paper can be propped up at one side, thus achieving the same result as that given by a tilting enlarger head.

Dick Turpin rides again— a striking sign seen at York

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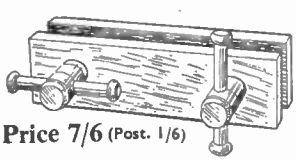

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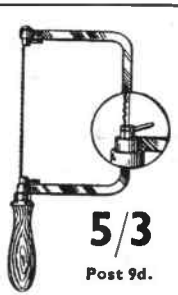

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Fixing Runners for Drawers

By B. Wise

EVERYONE is familiar with the conventional drawer runner whereby the base of the drawer travels along the runner piece, as shown in Fig. 1. It does not follow that you must always use this type of runner when constructing drawers. In fact, in some cases, other forms of runners are more convenient and often more suitable.

For instance, you may wish to construct a chest of drawers to fit into an odd space, which we will assume is the odd figure of 31ins. in height. The drawers must each be of 6ins. in depth, and it is absolutely essential that you fit in as many drawers as possible.

By using the conventional method it is quickly seen that only four drawers will be able to be fitted. The 31in. space will be filled in with four drawers, each of 6ins. in depth, four in-between runners of 1in. in depth and a top rail of say, 1in. in thickness and the odd 2ins. left and wasted.

However, if you use the construction shown in Fig. 2, the same space of 31ins. will accommodate five drawers of 6in. depth. No under-the-base-drawer runners are used. Instead, 2ins. by ½in. strips of timber are employed. Two are screwed through from the inside of the drawer, along the top and bottom of the drawer side to form a channel. Another similar strip is used as the runner, and is fixed by screwing through from the side of the hull of the chest of drawers, as shown.

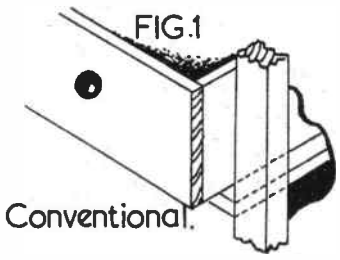
Use french chalk

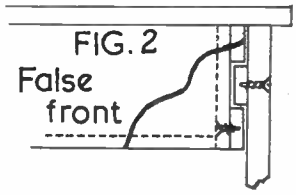
It will be seen that subsequent drawers fitted below can almost abut one another, and in a space of 31ins., five drawers can be fitted; the remaining inch being taken up by the thickness of the top rail or chest top piece.

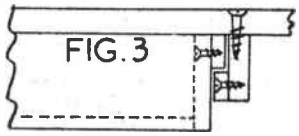
Care must be taken to see that the 2ins. by ½in. strips are fitted exactly square and glasspapered smooth. A dusting of french chalk will stop any 'stickiness' along the runners. Do not use candle grease or soap. They work well for a while and then become cloggy.

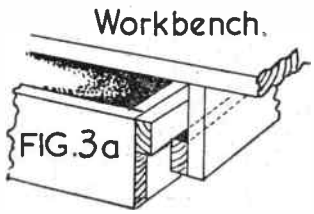
The front appearance of this type of drawers is vastly improved by gluing and 'tacking on' a false front, consisting of a piece of ⅛in. thick hardboard or 3-ply, cut to the depth of the drawer front, but its length extended so that it covers in the drawer runner mechanism.

For your workbench, the suspended type of drawer is probably the best construction. It is shown in Figs. 3 and 3a, and consists of a stout bearing piece of timber — oak, if you have it — screwed at right angles to the underside of the bench, with screws from the bench top.





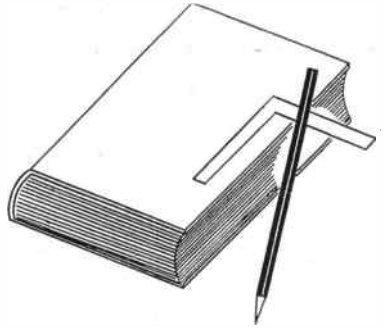




To the bottom and inside face of the bearer, a runner strip of approximately 2in. by 1in. thickness is screwed. On the drawer side another strip is fitted along the top side edge.

The advantage of this type of drawer runner is the extra space allowed all round the drawer by the absence of the conventional runners fitted across supporting uprights. This is a boon when every bit of space in the workshop is valuable.

Cardboard Boomerangs



ONE of the most ingenious weapons in the world is surely the boomerang used by the Aborigines in certain parts of Australia. It was probably invented by accident when a club or throwing stick cast at an enemy returned to its thrower.

You can demonstrate the flight of the boomerang with the aid of little models cut out of stout cardboard. Make a cardboard 'L' shape with arms 3ins. long and ½in. wide. You may round the edges if you wish, and thereby obtain a more satisfactory shape.

Lay the model, pointing away from you, upon a book held high in your left hand and give it a sudden sharp flick forward with a pencil held in your right hand. The toy boomerang should fly off in front of you for a few yards and then return to your feet along a curved path. This happens because when you launch it into the air you impart rapid backward spin in addition to forward impetus. When its forward momentum has been exhausted, the toy continues to spin in a manner which makes it fly in an arc back towards its place of departure.

Actually, the aerodynamic principles of real boomerangs are much more complicated and it is interesting to reflect that the old natives of Australia arrived at them purely by methods of trial and error. There are, in fact, several different types of boomerang designed for various uses in battle and hunting. A skilful thrower can make his implement perform amazing aerobatics before it falls to the ground or returns to his feet.

Should you wish to attempt carving a life-size wooden boomerang ensure that the arms are of equal weight and make the cross-section flat below and convex on top. (A.E.W.)

EVEN the tiniest back yard can provide room for a garden pool. All that is needed is a watertight container. An oak tub (or even half a tub), an old zinc bath, a stone trough or kitchen sink or even a discarded kitchen copper; any of these is suitable. Polythene bowls have great possibilities. They are practically indestructible. A green coloured bowl gives that very pleasing shade to the water that looks so attractive.

Whatever container is used it must, of course, be thoroughly cleaned. Anything rusty should be discarded for obvious reasons. The receptable can be sunk into the ground to rim level and enclosed with a path of crazy paving stones. Alternatively, it can stand in the corner of the back yard or can be raised on a platform of bricks. Either way looks attractive but do choose a sunny spot for its position. Avoid the proximity of trees or the pool will be cluttered with falling leaves during the autumn.

A container of say, 15ins. deep is better than one of 5ins. Different water plants flourish best in their required depth of water. A deep pool allows a variety of plants to be accommodated and with the use of small stones, banked to retain soil, plants needing shallower depths of water can be included.

No special soil is needed to grow aquatic plants although turfy loam should be used if obtainable. A large turf, cut to the size of the pool bottom, and about 2ins. thick, should be placed in the pool, grass side down. The roots of aquatic plants are then simply pressed into the turf roots. Alternatively the plants can be anchored to the loam with small stones until they have taken root.

Three or four tubs sunk in the ground in an irregular pattern, but not too far apart, and the intervening spaces covered with crazy paving look particularly pleasing. A few, well-placed rockery stones and plants give the effect of a series of pools and if fish of different varieties are kept separately in the pools, the effect is fascinating.

For those of you prepared to go to a little trouble and expense, a 'wishing well' type of pool will grace even the smallest garden. Flat walling stones are laid in a circular shape, with a compo mixture of 3 parts sharp sand to one of cement. A foundation must first be laid, 2ins. thick, of a mixture of 3 parts sharp sand, one of chippings and one of cement. The ground underneath should first be excavated to a depth of 6ins. and filled in with hard core, brick ends, etc, well rammed down.

When laying the stones, do check constantly with the aid of a spirit level. Do not have the joins between the stones in successive layers opposite to one another. Tap the stones down firmly and remove excess cement that is squeezed out.

After three layers of stones have been laid, start to build in the two upright 2in. diameter poles that are to carry the canopy over the pool. The poles should be kept upright in the early stages of building-in, being supported by struts.

Across the top of the poles fix triangular framing as shown in the illustration. Across the framing nail boards; any scrap wood lying around will do for this purpose. Finally, 'thatch' the boards with layers of straw. Your local wine dealer may provide you with the straw from cylinders in which his bottles are packed. They are ideal for the thatching. Do not make the canopy too wide, so that the pool still gets as much sunlight as possible.

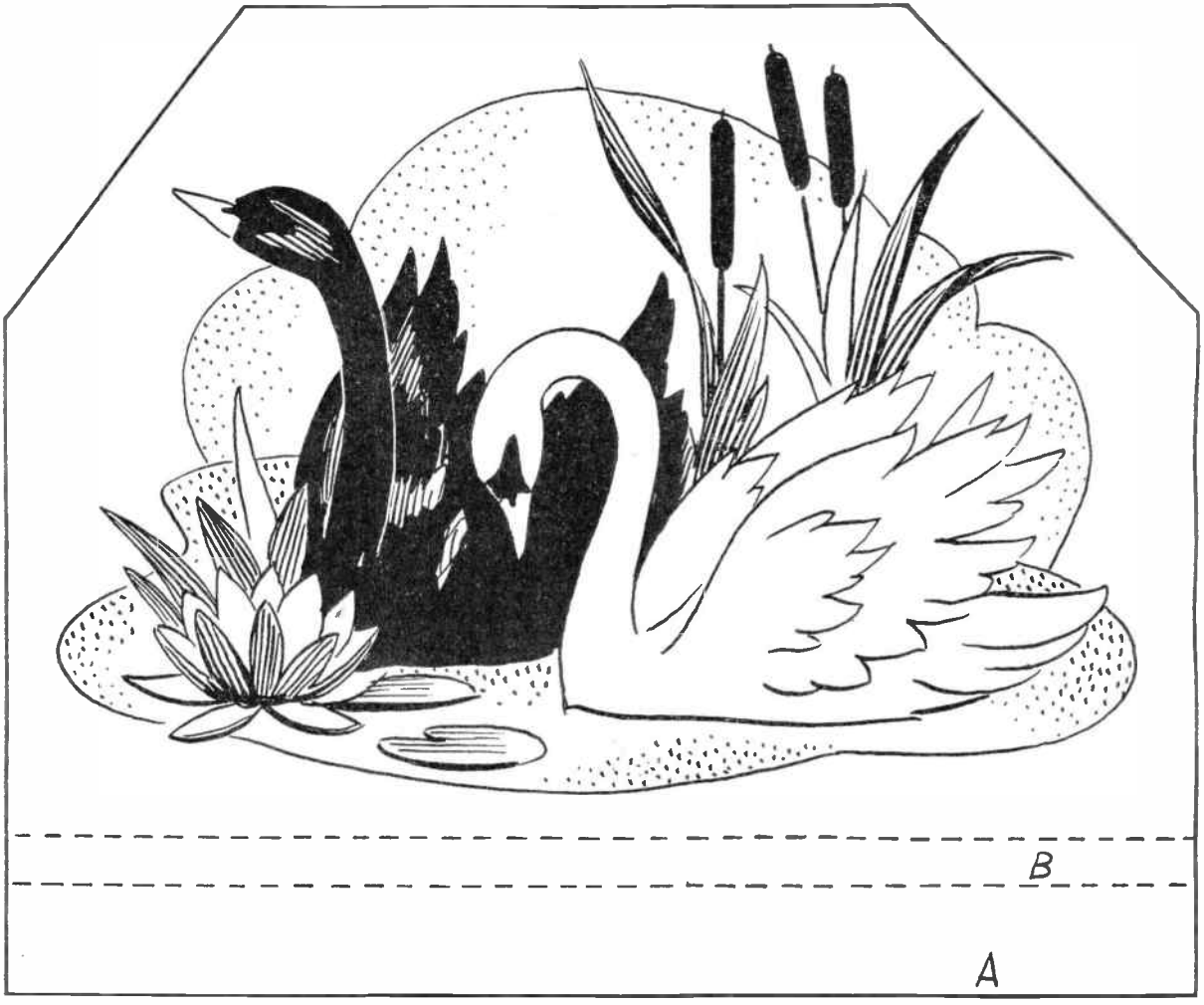
The inside of the stone wall should be finally rendered with an inch thick layer of a mixture of 2 parts sand to one of cement. An application of a sealing compound such as Glasol will ensure that the pool is absolutely watertight.

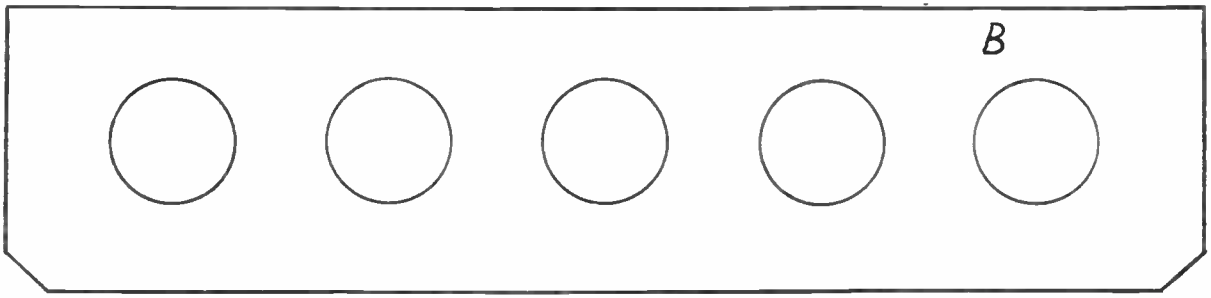
A newly-made pool cannot immediately be stocked with fish or plants due to the toxic elements in the cement which soak into the water. To rid the pool of this danger, it should be emptied, scrubbed and re-filled, three times over the period of a fortnight. If you are in a hurry, sufficient crystals of potassium permanganate can be added to the water to colour it like red wine. The pool is then left to stand for a week, emptied and re-filled with clean water, when it will be ready for use.

'SWAN' RACK

(FOR TOOTHBRUSHES)

CUT one each of pieces (A) and (B) from ¾in. wood. Glue together and varnish. Apply transfer No. 406. Coloured transfers (two on a sheet) are obtainable from Hobbies Ltd., Dereham, Norfolk, price 2/3, postage 3d. (M.p)





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