# HOBBIES weekly

14th APRIL 1965 VOL. 140 NUMBER 3618

## GAMES TABLE

WITH A DRAWER FOR STORAGE

Hobbies

FOR CRAFTSMEN OF ALL AGES

6D

# A Popular Games Table

THE age old game of chess has been a favourite of kings, vikings and knights, and in its present form dates back to the 16th century. It has remained a popular game to this day and great interest is taken in international games. Age is no bar and most schools have their chess clubs. Draughts, too, is an ancient form of recreation and there can be few houses where a draughts set is not to be found.

In response to many requests for something a little more permanent than a folding board this small table has been designed. It incorporates a drawer for storing draughts and chessmen, with ample room for other small games. The top measures 20 in. square and is large enough to serve as a small occasional table.

The diagrams in Fig. 1 show a side view and plan, with an indication of the main measurements. The overall height is 30 in. and the drawer depth 3½ in. By comparing Fig. 1 with the section in Fig. 2 and the diagram in Fig. 3 it will be obvious how the table is built up.

The legs are cut from 2 in. square wood and are planed to taper down to 1 in. square at the bottom. The sides, back and front rails are all cut from ½ in. wood, the legs being cut away sufficiently to receive them. Fix the back first, then the front rails, screwing and gluing them in position. Then fix the sides to complete the table carcase.

The drawer is shown in Fig. 4 and is made up from ½ in. wood and a bottom of ¼ in. plywood or ⅛ in. hardboard. The sides are made up in two pieces to provide a groove which coincides with the runner shown in Fig. 3.

Screw or nail the sides to the back and front, adding glue for extra strength. Pin the bottom in place, making sure that all is square. Finish off by adding the front cover piece. This can be fixed by screwing through the front.

The top consists of a piece of ¾ in. thick plywood 20 in. square which is now screwed down to the legs and sides, using countersunk screws. The heads need not be filled because they will be covered by the top veneer.

The chequered top is covered by contrasting squares of wood each 2¼ in. square, and the edges finished off with strips mitred at the corners. The wood should be about 1/16 in. thick (Hobbies inlay panels would be suitable) and can be stained walnut or dark oak for the dark squares.

The squares are glued down with balsa cement, keeping the grain running all one way. The mitred strips are also fitted and glued in place. Use plenty of glue, allowing to it squeeze out at the joints. Cover with a sheet of paper and place under weights overnight.

The surface is smoothed by first scraping with a sheet of glass and then finishing off with glasspaper. Rub with the grain where possible and take particular care at the corners since these can be accidentally rounded off.

Finish off by cleaning all round with fine glasspaper. Legs and woodwork can be stained and then the whole table given two or three coats of polyurethane varnish. Rub down between coats with silicon carbide paper used wet. Add a suitable knob or handle to the drawer. (M.h.)

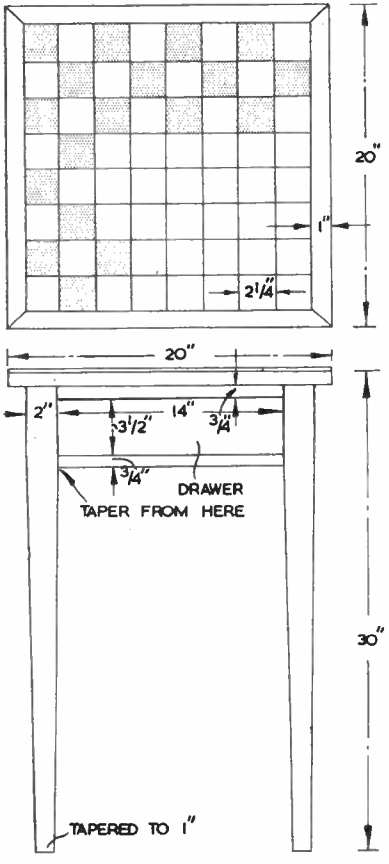



*Fig. 1*

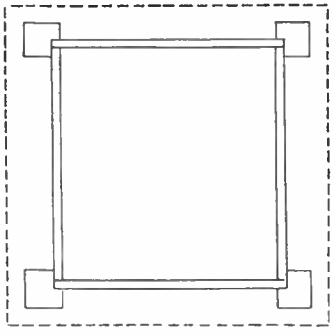


*Fig. 2*

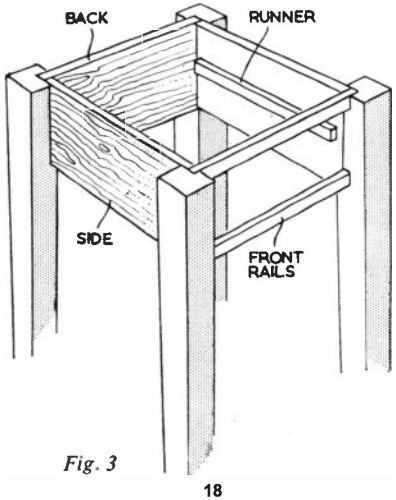



*Fig. 3*

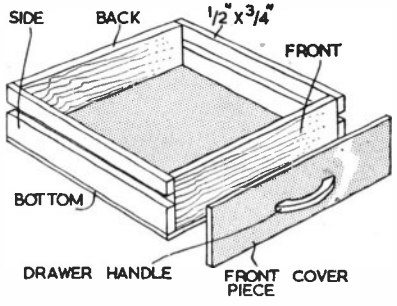
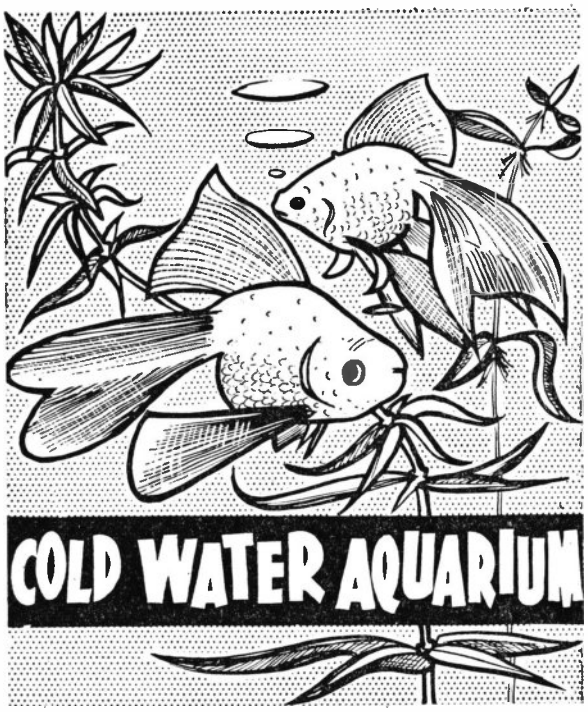



*Fig. 4*




IF the advice given in the first article in this series has been followed the water in the tank will be clear and the plants well established before the stock has been bought.

One point that might be cleared up is that of 'aeration'. It has been explained that fish depend on oxygen and that this oxygen is absorbed through the water surface in contact with the air. To increase the amount of oxygen available some fish-keepers bubble additional air through the tank with a small electric motor. Usually a 'diffusing stone' is put at the bottom of the tank so that the air is released in very small bubbles. It is connected to the motor by a rubber tube of narrow bore.

The advantages of artificial aeration are that it enables more fish to be kept in a tank of given size and ensures that the supply of oxygen is always more than adequate, but except in a really large tank artificial aeration is a luxury.

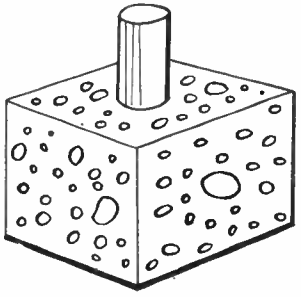


*Fig. 1—(left) Diffusing stone*

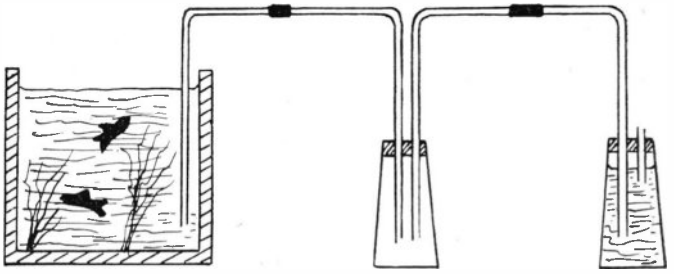


*Fig. 2—(right) Improvised aerator*

For those who would like to do so it is easy to rig up a homemade aerator. This does not look very attractive, but it can be used at night only, and be hidden away during the day.

Two large glass flasks with narrow mouths are required. A tight cork carrying two holes to take thin glass tubing is fitted to each flask.

One flask is filled with water. In one hole of the cork a short length of glass piping is fixed, and the second hole has a tube extending almost to the bottom of the flask. This long tube has a right-angle bend at the top, which can be made by rotating the tube slowly in a bunsen burner flame until it is soft enough to bend.

The second container (the air flask) has two tubes, both with right-angle bends, and another piece of tubing is drawn out at the end to make as narrow an exit hole as possible. Rubber tubing is used to hold the parts together.

The exit end of the tube is placed in the tank and its top end is connected to one tube of the air flask. Water is sucked up into the outlet tube of the water flask, and the free end of the tubing is slipped over the second tube of the air flask.

The action is then automatic, but by putting a spring clip on the tube between air and water flasks, the size and number of air bubbles can be controlled.

## AERATION AND FEEDING

**Don't overcrowd**

The number of fish that can be kept in any tank depends on their size. One 'rule' says that 1 in. of fish (excluding tail) is permitted for every 36 sq. in. of surface water area. So in a tank measuring 2 ft. by 1 ft. by 1 ft., 8 in. of fish can be accommodated. How this length is divided is unimportant. You could have two large, six small, or any combination, provided that their total body length did not exceed 8 in., exclusive of tails.

It must be remembered that, kept under such good conditions, the fish will grow, and eventually the time may come when it is necessary to transfer one or more of them to another tank.

Only healthy stock must be bought and it is an advantage if the fish can be inspected before purchase. Stock that

has been put on rail for a fairly long journey may suffer a slight set-back when first received, but they should pick up again within a couple of days.

In the case of a well-established tank to which newcomers are to be added, the freshly bought stock should be isolated for a week before they are introduced into the tank. The isolation tank need not be elaborately planted, and it is possible to make do with a large plastic bowl. If the new stock has any form of disease it should reveal itself within the week, whereas if the fish are put straight into a tank containing healthy specimens the latter will soon be infected.

All fish should be introduced into a tank gently. Their container should be put under the aquarium water, and the lid removed so that the fish can swim out gently into the main tank.

Apart from live food (such as daphnia) it is unwise to introduce other forms of water-life (snails, terrapins, etc) into the tank.

Coldwater fish need feeding only once daily, and only sufficient food should be given that can be cleaned up in five minutes. Fish do not feed continuously and if spare food is left in the tank it sinks to the bottom, rots, and affects the purity of the water. Repeated over a lengthy period over-feeding causes the stock to become affected by digestive troubles and putrescent gases.

**Varied diet**

Although only one meal is served daily the diet should be varied. The manufacturers of fish-foods vary their compounds so that tins from two different manufacturers will give a certain amount of variety to the diet, but live food should also be supplied occasionally.

Live food is sold by most water-life shops, or arrangements can be made for it to be delivered by post. It includes daphnia and minute white worms, but a meal of chopped earthworm is also appreciated. Some fish-owners find that chopping an earthworm into small enough pieces is a messy business, though it is possible to buy a 'worm shredder' that will do the job more cleanly.

Live food should not be put into a tank in excessive quantities, but it has one great advantage over dried food in that it can remain for days without rotting. If live food is being kept in this way a little dried mixture should be fed additionally so as to keep the element of variety in the diet, but the quantity of dried food must be drastically reduced.

Dried food must be of a size suitable for the stock and must be specially mixed for coldwater breeds. When not in use the container must be protected from moisture and air: dampness may cause the food to rot in its tin. After feeding, any uneaten food should be siphoned off in the way to be explained in the next article. (N.W.)

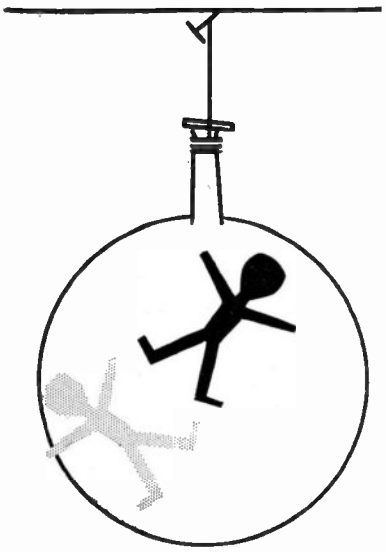
# ELECTRIC PARATROOPS

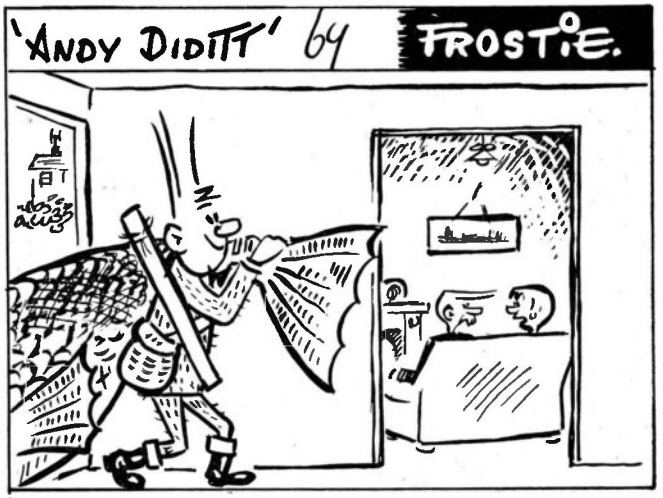
USE variously coloured tissue papers to make half a dozen paper 'men', all of which will be approximately two inches tall. Neat symmetrical figures can be produced if you begin by folding all the papers in half together, and then cut out 'half men' to the sides of the creases, using sharp scissors. Open out the separate figures.

Inflate a balloon, seal its neck with a long thread, and rub its tense 'skin' upon a woollen pullover, or rub it with a piece of blanket, to charge the balloon with static electricity. Suspend the electrified balloon from the ceiling by means of the thread and a pin. The paper figures will be attracted to the balloon if they are placed lightly against its surface.

The electricity will gradually 'leak' away into the air and one by one the 'paratroopers' will drop down on to the floor. A leisurely contest can be held at a small family gathering, to decide whose coloured man will remain airborne the longest. In dry winter air the paratroopers will be very reluctant to descend.

(A.E.W.)






"I SUPPOSE ANDY WILL COME BACK HOME WITH THE SAME OLD TALE — I'VE ONLY CAUGHT ONE, DEAR."


# Czechoslovakia and Music

## *By L. P. V. Veale*

A MUSIC lover could find a tremendous amount of material to interest him in a good stamp collection if he took the trouble to look carefully at the designs of stamps. He could not fail to see quite a number of musical instruments as well as portraits of famous instrumentalists, composers, singers and so on. Moreover, there are many stamps which actually have a piece of music incorporated in the design.

As an example look carefully at the sides of the first illustration in which musical signs are incorporated. The stamp was issued by Czechoslovakia in 1934 to commemmorate the 30th anniversary of Antonin Dvorak's death. Dvorak also appears on two stamps issued in 1941 (the 60 haleru and the 1 koruna 20 haleru) which commemorate the centenary of his birth. In 1937 and 1954 three Czech musicians were featured on stamps issued in connection with the Prague Musical Festival, and again Antonin Dvorak was one of these.


*(Left) Antonin Dvorak 1841-1904*

*(Right) Frederick Smetana 1824-1884*

This famous musician was born in 1841 near Kralua, and was the son of an innkeeper. Even in his youth he showed great ability, and went on to study in Prague, and joined the orchestra of the National Theatre as a violinist under Smetana. From 1892 to 1899 he was director of the National Conservatory of Music in New York, and it was while he was here that he wrote his New World Symphony. His choral works contain some fine writings, including his *Stabat Mater*. He died in 1904.

A very similar design was also used in 1934 on the 26th March to commemorate the fiftieth anniversary of Frederick Smetana's death (see second illustration).


*Jan. V. Stamic with his music*

*F. Laub with his instrument*

*O. Nedbal with his baton*

It, too, had a few notes of music in the surround. In 1953 a stamp was issued value 1 koruna 50 haleru which shows a picture of the Smetana Museum in Prague, it was founded in 1923, and as one would expect contains manuscripts and relics of Smetana's works.

Frederick Smetana was born at Leitomischl, the son of a brewer. He studied under Liszt, and was a brilliant pianist. He was appointed conductor at Gothenburg 1856–1861, and he was the first conductor of the Prague National Theatre (1866 to 1874). His best known work is the opera *The Bartered Bride*. In 1874 he became deaf, yet even with this handicap he was able to compose, in particular his symphonic poem *My Country*, and also the celebrated string quartet *From my Life*. In 1884 he died in a lunatic asylum.

Czechoslovakia in June 1952 commemorated the International Music Festival at Prague with two portraits of Ludwig Von Beethoven who was born in 1770 at Bonn. Both his father and his grandfather were musicians so he had every chance of becoming a genius. In fact his musical education began at the age of four, and by the time he was ten he could play both the piano and the violin, and he was also interested in organ playing. His first composition was written when he was ten, though it wasn't published for three years. At twelve he was a member of the opera orchestra, and in 1787 he played before Mozart.

That year his mother died, and at 17 he became largely responsible for the welfare of the family. He settled in Vienna in 1792, and studied for two years under Haydn.

Beethoven seemed quite indifferent to the social graces, but because of his brilliance people overlooked this, and his eccentricities were respected as manifestations of genius. The joyous 2nd symphony Op 36, first performed in 1803 gave no indication of its composer's great troubles. From 1810 Beethoven became increasingly deaf and seriously ill. He died in 1827 said to be shaking his fists in fury at a violent thunderstorm.

Johann Stamitz (or Stamic) was born in 1717 in a small town near Prague. His portrait is given to us on one of the 1957 International Music Festival stamps. It was the jubilee year, and so they had a rather larger set than usual, six different stamps all of the 60 haleru value. In addition to Stamic there was shown F. Laub, F. Ondricek, J. B. Foerster; V. Novak, and J. Suk. In the case of Stamic a few bars of his music are shown, and F. Laub's violin is depicted on his stamp.

● **Continued on page 22**

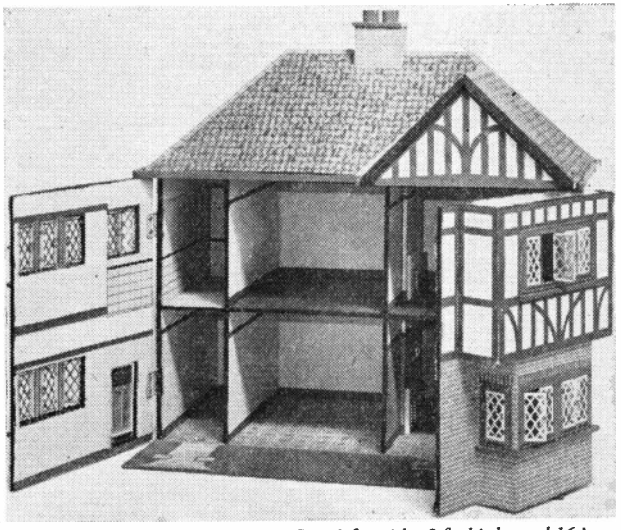
# Doll's House raised £40 for Charity

HOW much is a doll's house worth? The question is raised in a letter from Mr R. G. Leembruggen of Bulawayo, S. Africa, following the completion of Hobbies Tudor Doll's House No. 237 Special.

In the letter he states that making this house gave him weeks of interest. He is a retired civil engineer approaching 70 years of age and so interested did he become in the project that he even made all the furniture from Hobbies contemporary designs.

A bunch of samples from a local carpet manufacturer provided a full set of floor coverings for the house. Provision was also made for electric lighting and all the furniture was upholstered thus giving, as he says, a much more 'affluent' effect.

We now go back to our original query — how much is a house like this worth? Considering the number of hours put into its construction we would place quite a high value on it but Mr Leembruggen was interested solely from the point of view of a local charity — the Rhodesian Association for the Prevention of T.B. He says that the Bulawayo public is very generous in such matters and in a raffle the Tudor Doll's House eventually raised the wonderful sum of £40.



*The Tudor Doll's House (No. 237 Special) is 2 ft. wide, 2 ft. high, and 16 ins. deep. Access to the spacious interior is by the way of a double-door hinged front. Full kit for making costs 97s. 6d. from Hobbies Ltd., Dereham, Norfolk, or branches.*

Mr Leembruggen's letter ends with a gracious tribute to Hobbies kit, which in this instance, he says, 'has given amusement to young *and* old, besides aiding a deserving cause into the bargain'.

**A happy thought, this—threefold value for the price of one. We have always emphasised that the making up of a Hobbies kit gives pleasure both to the maker and the receiver, but here we have the addition of another dimension — namely, charity.** (E).

● **Continued from page 21**

## Czechoslovakia

On 23rd August 1960 Czechoslovakia issued five portrait designs in the Cultural Anniversaries set — an historian, a writer, an actress and two musicians (Oskar Nedbal and Otakar Ostreil). Nedbal was a conductor as well as a composer. A pupil of Dvorak, he made the viola his instrument, and at the age of 22 was appointed conductor of the Czech Philharmonic Orchestra.

It is remarkable the number of musicians who are portrayed on stamps. Generally one can say that 'musical' stamps are reasonably cheap, and some of the portraits are really first class. The souvenir sheet issued to commemorate the centenary of the Czech National Anthem, which has the words and the music printed above, fetch up to £60 per set, however. Not many of us could afford that, but with a very small outlay one could easily get together a comprehensive Musician's Gallery.

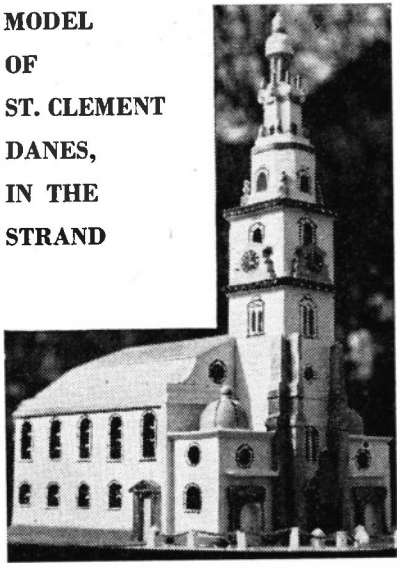
Mr A. J. Crook of Chorleywood, Hertfordshire, sends us this picture of his model of St. Clement Danes church made from Hobbies design No. 3368 and what struck us most was the fact that Mr Crook is now 78 years of age.

In his letter he writes that he has just returned to fretwork as a pleasant and profitable means of passing his time in his retirement. And the last piece of fretwork he did before his latest effort was just after the death of Queen Victoria in 1901 when we issued a design for a memorial in the form of an overmantle.

Mr Crook is now turning a hand to making models for his grandchildren and we wish him all success in this rebirth of a youthful interest.

Hobbies Design No. 3368 for making this 10 in. high model of the famous 'Oranges and Lemons' Church in The Strand, London, costs 2s. 0d. (post 2½d.). The kit with instructions is 16s. 9d. (post 2s. 0d.). If required as a musical savings box the tune 'Oranges and Lemons' is available on a No. 2 movement costing 17s. 6d. (post 6d.). (E).

**MODEL OF ST. CLEMENT DANES, IN THE STRAND**



# Special Photographic Effects

ON occasion you will, no doubt, have seen photographic effects on the television or cinema screen giving the impression that the scene was shot through a keyhole or a pair of binoculars. Sometimes the shape may be a heart, diamond or star. These intriguing effects can be produced by either the camera or enlarger, and all that is involved is the preparation of simple masks. The following describes different methods of producing the effects.

The easiest way is by means of the enlarger in which case all we have to do is to make a mask according to the desired shape, that is, a pair of circles joined together. In Fig. 1 you will see what appears to be a view taken through binoculars. All that happens is that we enlarge a print as usual, then place a cut-out shape a few inches above the printing paper. This mask can be

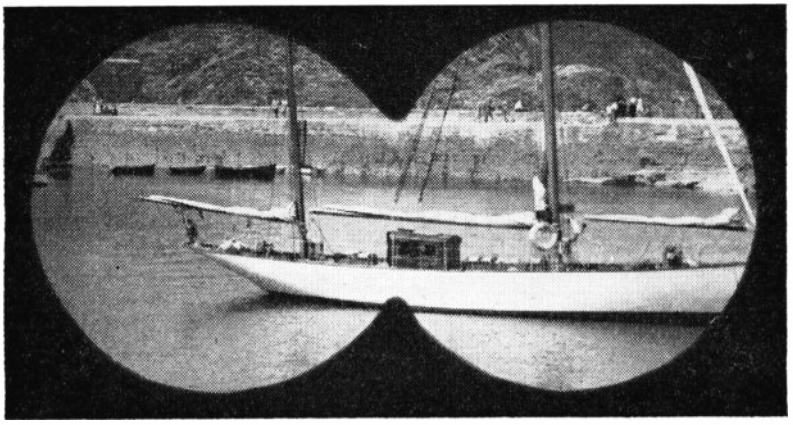


*Fig. 1—A 'binocular type' effect*

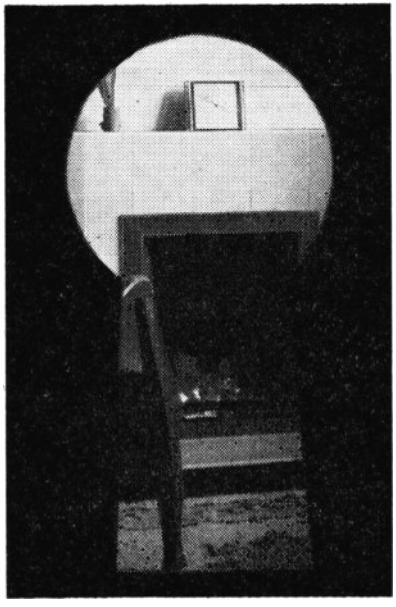


*Fig. 2—A 'keyhole' effect*

conveniently supported on a matchbox, and the tray of same increased in height to adjust the shadow which is created; or you may use a small block of wood.

We now remove the negative from the carrier, and give a further exposure to the paper to make the surrounding area print out black, leaving the picture as shown.

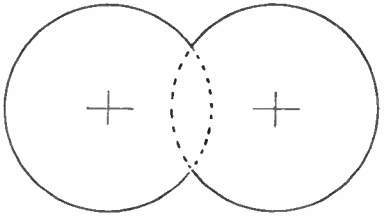


FIG 1A

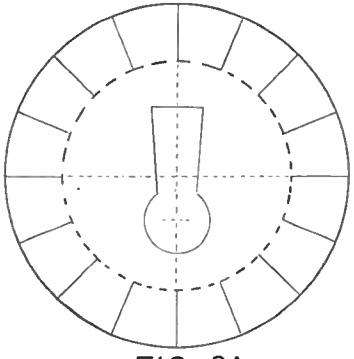


FIG 2A

Fig. 1A shows how to make a mask for this particular effect, using thin, opaque cardboard. Note that it may be advisable to give a coating of black water colour or paste some black paper on the card to ensure that it is opaque. Other shapes can be made in a similar fashion.

Fig. 2 shows how we have produced a keyhole effect, but this was done with the camera, the technique being rather different.

In this instance measure the diameter of the lens barrel, and prepare a small tube to make a mount similar to one for a filter or supplementary lens. Roll up a long strip of thin cardboard about $\frac{3}{8}$ in. or $\frac{1}{2}$ in. wide, applying adhesive as you roll, and on drying we have a small, shallow tube to fit the lens barrel. If it is slack you may add a little paper on the inside or if too tight cut a few notches on the rim so that it will ease on to the barrel.

We now have to make an aperture according to the selected effect. Take a piece of black paper, making a circle on it of identical diameter to the lens barrel. Draw basic vertical and horizontal centres, then the shape in the centre of same. This will not be very large, and it may be difficult to cut out by normal methods, but if you prick out the shape with a fine needle you will find that it can then be easily removed.

This mask is now attached to the little tube by making a few scissor cuts all round the circle to make several tabs. These will fold over on to the rim, can be glued down fast, the surplus cut away, and your masking device is complete.

All you now have to do is to slip the tube on the lens barrel, and take your shots in the normal manner. But remember that for keyholes, heart shapes or star shapes the mask must be placed *upside down* on the lens barrel. This is

● **Continued on page 28**

# DALEK

## DD TREASURE RA DD

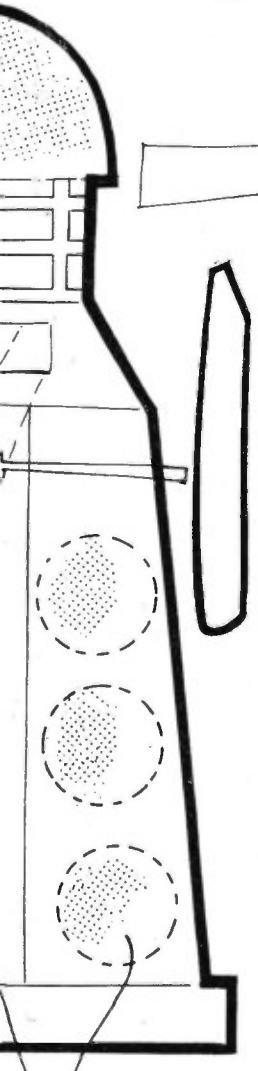

CUT IT OUT WITH YOUR FRETSAW

CUT ANTENNAE FROM 1/8IN. WOOD

CUT "DALEK" TO OUTLINE FROM 1/4IN. MATERIAL

H
W

# RACK



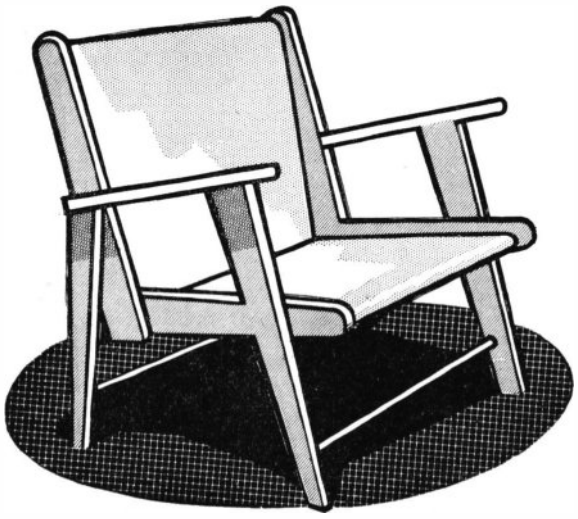
HOBBIES NO.19
WOOD KNOBS

CUT TO
OUTLINE 1/4 IN.

GLUE DOWN

DALEK

CUP HOOKS



# Comfortable Garden Chair

*By S. H. L.*

A COMFORTABLE, lightweight garden chair is ideal for the summer months and has decided advantages over the deck chair, which many find too low for comfort.

The chair shown in our illustration overcomes this difficulty and you will see from the diagrams that the seating has been tilted backwards for comfort. It is made from $\frac{7}{8}$ in. hardwood throughout and for the sake of clarity consists of a seating unit connected with two side units by dowel rods. The back legs are independent of the side unit.

Reference to Fig. 1 will show how the various parts are assembled. You will need screws and waterproof resin glue for the joints. This diagram shows how the seat is assembled from four sections prepared according to the details given in Fig. 2.

Cut four sections as in Fig. 2, and fasten together in pairs. Four screws are suggested at the joint, which should also be glued. When the adhesive has set, place the two sections together as shown so that the seat members are inside the pieces making the back.

Cramp the two pairs together, marking out the positions for the holes and the rounded corners. The centre for the rounded ends should be $1\frac{1}{16}$ in. from the end and also $1\frac{1}{16}$ in. from the lower edge. The front hole is centred $1\frac{1}{4}$ in. from the end and $1\frac{1}{8}$ in. from the bottom edge. The hole at the rear is 2 in. on the diagonal from the extreme lower corner. These two holes must be 1 in. in diameter and drilled perfectly vertical since the two sections will ultimately be joined together with dowel rods. To avoid splitting of the wood when drilling it will be advisable to cramp a piece of waste material underneath the pairs.

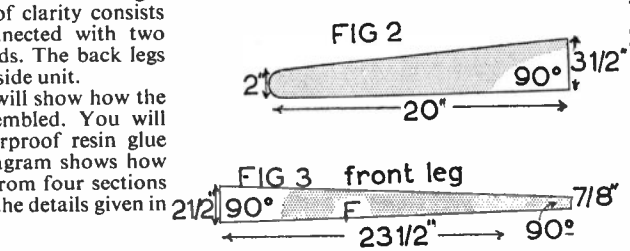
You may now shape the ends of both pieces while cramped together, smoothing and finishing with glasspaper. Release the sections and reverse the positions to bring the two rear members together in order to drill the top hole and shape the ends. This centre is $1\frac{1}{16}$ in. from the end and the same from the rear edge. Use the same centre for making the shape of the ends, then prepare as before.

The arms and legs form the other section, although the back legs are independent, and we make two pairs of these. Note that since there is a danger of mixing the assembly it is advisable to mark the face edges as shown in Fig. 1 and the other diagrams.

Now prepare two pieces each as shown in Figs. 3, 4 and 5, but do not cut out the notches from the arms at this stage. Take one arm, cramping it to the outside of the seat back and at right angles to the back edge. Verify this with a square.

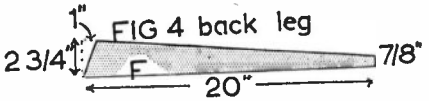
**CUTTING LIST**

| | |
|---|---|
| Seat sides and back | 4 pieces 20 in. by $3\frac{1}{2}$ in. by $\frac{7}{8}$ in. |
| Front legs | 2 pieces $23\frac{1}{2}$ in. by $2\frac{1}{2}$ in. by $\frac{7}{8}$ in. |
| Back legs | 2 pieces 20 in. by $2\frac{3}{4}$ in. by $\frac{7}{8}$ in. |
| Arms | 2 pieces 18 in. by 3 in. by $\frac{7}{8}$ in. |
| **Dowels for seat** | |
| Front seat | 1 piece 20 in. by 1 in. |
| Back and top | 2 pieces $21\frac{3}{4}$ in. by 1 in. |
| **Dowels to join legs** | |
| Front | 1 piece $21\frac{3}{4}$ in. by $\frac{1}{2}$ in. |
| Back | 1 piece $23\frac{1}{2}$ in. by $\frac{1}{2}$ in. |

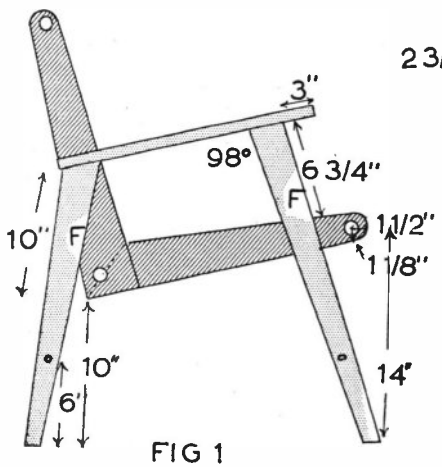


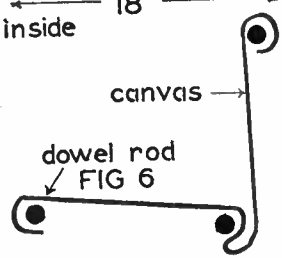










Reference to Fig. 1 will show that it is 10 in. from the top of the arm to the extreme corner of the seat. Verify this position then scribe a mark on the inside edge of the armpiece where it crosses the back. Remove from this position and gauge a line $\frac{1}{8}$ in. in from the edge round the rear end of the arms. Cut away this portion to permit the inside edge of the arm to fit flush with the seat back member The arm is subsequently fixed through the backing piece by two screws. Fit the other arm in exactly the same manner.

After making these markings on the armpieces release from the position in order to prepare for the housing of the front leg. Here you should note that the front leg is set into the arm at an angle of 98°. This angle may be marked with either a sliding bevel set appropriately or a cardboard template carefully prepared. Note the details in Fig. 1 indicating that the front edge of the leg is set 3 in. from the front end at the stated angle. Cramp the two legs together for drilling holes for the dowel rod, then after preparing the housing in both arms glue and screw the front legs in position.

When the assemblies are ready for fitting together smooth off the top of the front legs flush with the surface of the arms. The front legs will overlap the seat section and you may secure to this by screwing from the inside.

Pair the rear legs, drill holes for the dowel rod and fit by screwing to the seat back from the inside. To ensure the feet are correctly trimmed place a straight edge across, mark and saw off the waste.

Join the two side frames together by inserting and gluing the dowel rods in position. Drive in until they just project a little then remove the waste. If desired you may insert a fine nail through the back of the legs. All screw holes should be drilled and countersunk. If you care to go to the extra trouble these holes can be deeply countersunk and plugged with dowel rod. Remember, however, that the material is only $\frac{7}{8}$ in. thick so any work of this kind must be accurate and the holes not drilled too deeply.

At this stage you may clean up the chair generally with glasspaper, making sure there are no sharp edges, especially on the arms. You may leave in the natural colour, stain or apply finishing coats of paint for protection against the weather.

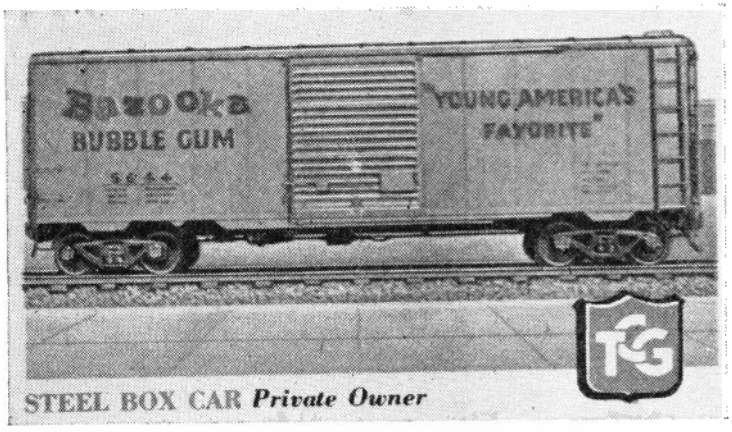
You will now require $1\frac{1}{4}$ yards of 18 in. wide canvas for the seat and the back. This is fastened on to the dowel rods as shown in Fig. 6. Start at the front of the chair, fold the canvas over and tack into position underneath. Take the canvas to the back dowel rod, make a fold, pull taut and nail underneath. Now take the canvas to the upper dowel rod, fold over the end and nail underneath.

# STEEL BOX CARS

THE most numerous and widely used type of freight car on all American railroads is probably the ordinary or standard box car, swiftly transporting goods and merchandise for long distances throughout the country.

owners have to continually order new freight cars either to replace the older units, which in time become obsolete, or to meet the demands of increased and faster freight traffic.

In 1952, the Union-Pacific Railroad in a widespread freight loss and damage




Besides those owned and built by the railroads themselves many box cars are privately owned. The steel box car shown in the illustration is a typical example of a private owner car. It was built in 1954 for an American bubble gum company by A.C.F. Industries Inc. It weighs in road order 46,500 lbs., has a capacity for 100,000 lbs., and a load limit of 122,500 lbs., and in its manufacture use has been made of all the latest and most modern components and improved construction methods.

American railroads and private prevention campaign carried out some interesting experiments with one of its standard box-cars. This car, No. 124557 was completely rebuilt with fully transparent sides, and renumbered 195220. It went into service on the U.P.R.R., and was also demonstrated on various other major U.S. lines. It was known as the 'Plexiglas-Car', the interior being fully visible through the glass sides (from outside), so that shippers and car loaders could actually see the effectiveness of loading and bracing methods.

(A.J.R.)

*Interesting Locos — 83*

# The Gas Turbine Locomotive

*The B.R. Western Region gas turbine locomotive No. 18000 at Old Oak Common*

THE British Railways gas turbine locomotive No. 18000 was manufactured in Switzerland by The Swiss Locomotive & Machine Works of Winterthur in 1949, being put into service on the Western Region in that year.

The engine is a Brown-Boveri, 2,500 b.h.p. gas turbine, the transmission being Electric, having four frame-mounted traction motors driving through spring drive. The locomotive is classified A1A–A1A and weighs 115 tons in running order. The total b.h.p. is 2,500 and the driving wheels are 4 ft. 0½ in. diameter, the maximum tractive effort being 60,000 lb.

At the present time there is only the one locomotive of this class in service on B.R. It nevertheless carries many interesting details which are well worthy of description. It can be said that the gas turbine is the turbine equivalent of the diesel engine. It has no reciprocating parts and is therefore cheaper to construct, easier to maintain, and is able to provide more power into less space than the conventional diesel.

The gas turbine works on a comparatively simple principle. A rotary air compressor draws air in at the front and compresses it to some 50 pounds per sq. in. Compressed air of course becomes very hot, but heat may be added to that in the gas turbine by passing it through a heat exchanger, where it absorbs heat from the exhaust gases of the turbine. It is then fully hot enough to ignite the crude oil-fuel when the two are brought together. The air and the burnt fuel now form a very hot gas which is guided and deflected against the blading of a turbine rotor, causing it to revolve. It passes through several sets of blading before leaving the turbine as exhaust gas. The exhaust may then be led through a heat exchanger to heat incoming air, before it finally reaches the atmosphere.

On first sight, the gas turbine would appear to be the ideal answer to many problems, but unfortunately there are several drawbacks. One is that the turbine is only fully efficient when running at its full power and speed. At slow speeds and when involved in frequent starting and stopping it is very wasteful on fuel and less efficient. A separate diesel engine is needed in order to generate current for the various auxiliaries and to move the locomotive on short trips and in the running shed. This, of course, requires two kinds of fuel to be carried as, although the turbine may be started upon diesel oil, it operates on a much cruder and cheaper form of oil.

The speed at which the turbine revolves is, of course, very high — far too high to couple it directly to a dynamo. Reduction gearing is therefore required which adds considerably to the cost and weight. Another drawback is the enormous noise the gas turbine makes especially when running 'flat out'. Up to the present gas turbines have only been successfully used in locomotives having electric transmission, although hydraulic transmissions have been experimented with in Czechoslovakia and France.

Switzerland and Sweden have tried out gas turbine electric locomotives, but at the present time America's Union Pacific Railroad is the only line which operates them regularly and in any large numbers. (A.J.R.)

---

● **Continued from page 23**

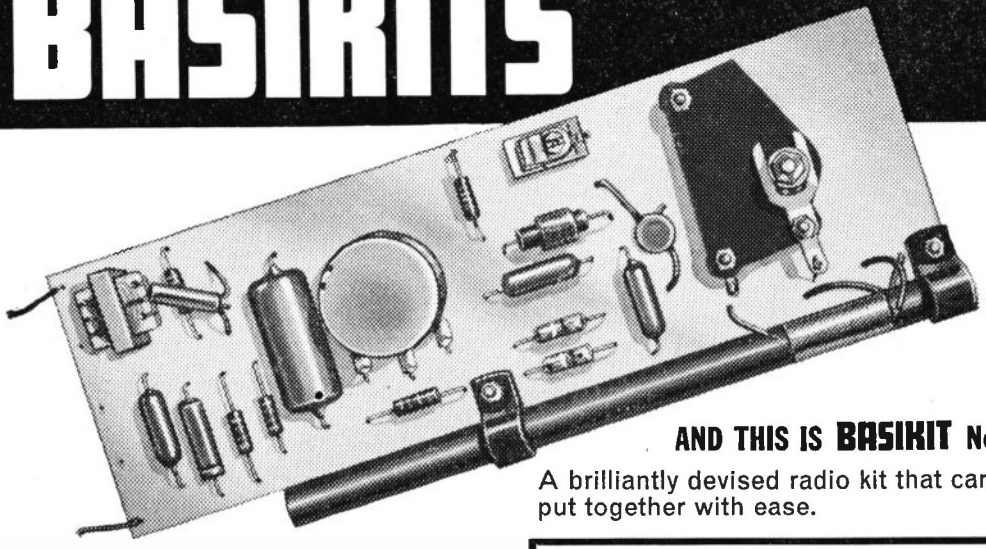
## SPECIAL EFFECTS

not important with the binocular or diamond shapes since they are the same both ways.

We would also mention that when making keyhole shots the camera must be in a position that it will give the effect of peeping into a room. With a little care and experiment you can easily make some fascinating pictures by these simple means. And remember that if you are unsuccessful with direct camera shots, perhaps because the lens is too small to accept a mask, or the latter is too small to cut, you may still produce the effect with the aid of the enlarger.

(S.H.L.)

# HERE COMES THE BIG BREAKTHROUGH IN EDUCATIONAL ELECTRONICS – BASIKITS



**AND THIS IS BASIKIT No. 1**

A brilliantly devised radio kit that can be put together with ease.

## YOUR KEY TO THE FASCINATING WORLD OF ELECTRONICS

All circuits are designed around top quality components, not near equivalents. Full size printed circuits with every component position marked. Makes construction extraordinarily simple. No fiddling with microscopic connections—no inspired guesswork called for. A lavish instruction manual not only tells you how to construct your BasiKit but also advises you on its use and explains exactly how your Basikit works.

- ✳ VOLUME CONTROL
- ✳ PRECISE TUNING
- ✳ PULLS IN A HOST OF STATIONS
- ✳ MORE THAN TWENTY FULL SIZE HIGH QUALITY COMPONENTS

**59/-** complete for your biggest and best ever opportunity to learn as you build!

**ALSO AVAILABLE:** The *BasiKit mains battery Power Unit* which powers all BasiKits. Yours for **42/6.** The *BasiKit Amplifier* that brings real full-voiced power to your BasiKit No. 1 Radio. **57/6** complete.

**Watch out for more BasiKits.**

## ORDER YOUR BASIKIT ON THIS COUPON:

***TO: BASIKITS DIVISION, K.L.B. ELECTRIC LTD. 335 WHITEHORSE RD, CROYDON***

Please supply BK1 Radio @ **59/-**
BK2 Audio amplifier @ **57/6**
BK3 Power unit @ **42/6**
Illustrated leaflet on BasiKits (enclose stamped addressed envelope)

From: **NAME**_____

**ADDRESS**_____ **P.O.**

_____ **CHEQUE** H.W.

# ELECTRONIC ENGINEERING


**KIT**
**E.E.8**

**£4.19s.11d.**
*(post free)*

Made by the world-renowned firm of PHILIPS.

All components are of the highest quality. Kit contains detailed wiring plans, an interesting instruction manual, and components to make eight electronic devices, including Transistor Radio, Amplifier, Burglar Alarm, Morse Code Set, Moisture Indicator, etc. Simple to assemble, dismantle, and reassemble. No soldering. Completely safe. Works off two small pocket lamp batteries.

KIT A.20. This is a supplementary kit, and expands the basic E.E.8. kit to at least twenty-one circuits. These include an Electronic Organ, Room-to-Room Intercom, Three-Transistor Receiver with loud-speaker, Test Unit, etc. **£3.9s.6d.**

*Note: The A.20 cannot be used by itself, but only in conjunction with the E.E.8. kit.*

**To HOBBIES LTD (Dept. H.23), DEREHAM, NORFOLK**

Please send me Philips Electronic Kit No. for which I enclose cheque/Postal order

Name .....

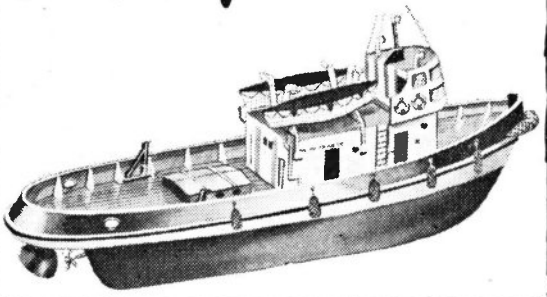
Address .....

.....

.....

**SPARES AND REPLACEMENTS AVAILABLE**

# A model finish!



# HUMBROL

# spray paint

Welcomed by modellers everywhere, this revolutionary new painting method gives a perfect authentic finish to all your models. A range of 11 superb enamel colours plus gold, silver, black, white and clear varnish. Humbrol Spray Paint is suitable for polystyrene, is simple and economical to use and cuts painting time in half.

FEATURING A NEW SPRAY HEAD!
NO SPIT—NO SPLATTER!


**4/11**
**ECONOMY SIZE AEROSOL**

A FINISH OF OUTSTANDING QUALITY BY HUMBROL PRODUCTS MARFLEET, HULL.

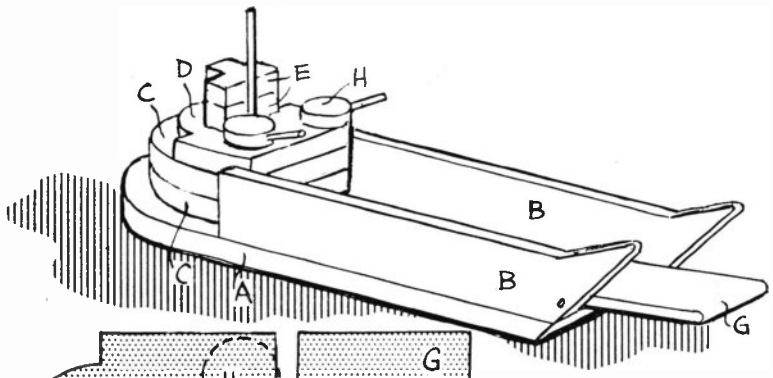
**AVAILABLE FROM ALL GOOD HOBBY & MODEL SHOPS**

# Balsa Model Landing Craft

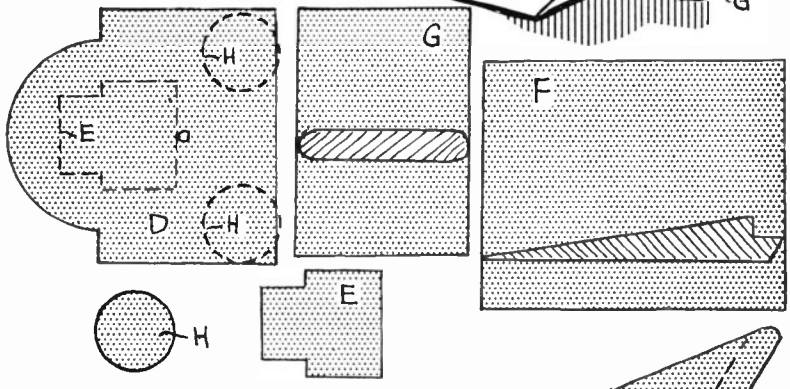
MAKE this floating model from sheet balsa and assemble the parts with balsa cement. Finish off by painting dark green.

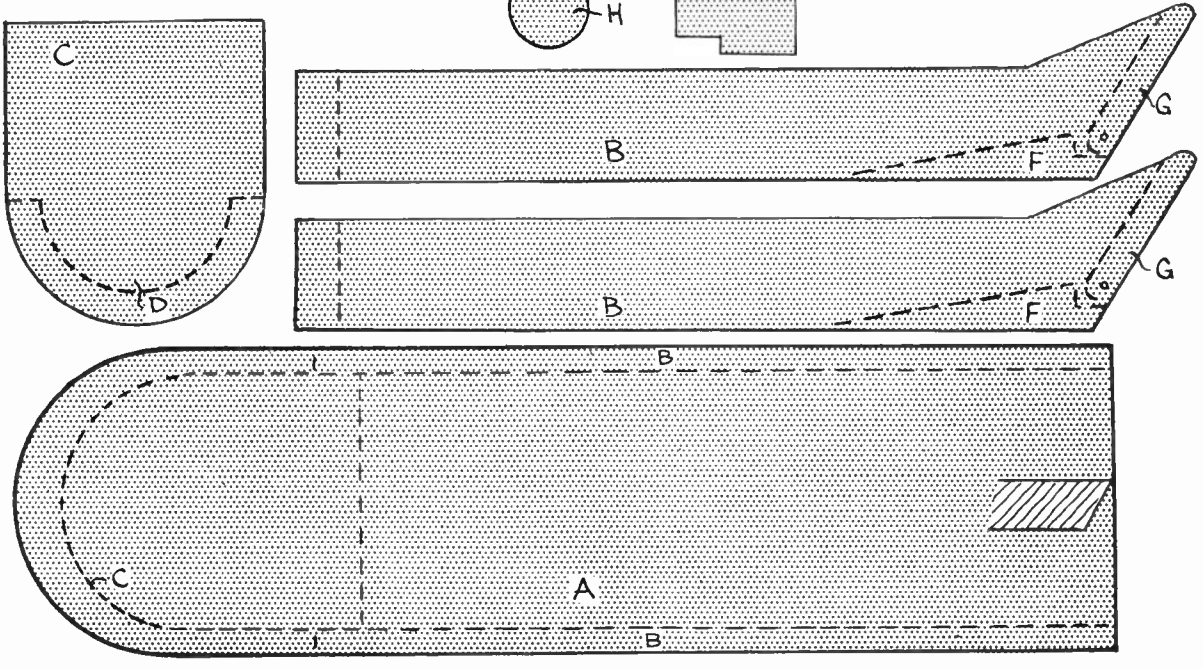
Using a sharp modelling knife, cut one of A, two of C, one of D, two each of E and H, and one of F from ¼ in. sheet. Cut two of B and one of G from ⅛ in. wood.

Shape the various parts as shown by the shaded sections and glue together as indicated in the sketch. Piece G is pivoted in place by means of two brass pins, one at each side. Short lengths of wire inserted into the turrets H represent guns and a length of slightly heavier gauge can be used for the mast. (M.p.)




## CUT OUT THE SECTIONS FROM THESE FULL-SIZE PLANS






Printed by BALDING + MANSELL, LTD., London and Wisbech, and Published for the Proprietors, HOBBIES LTD., by HORACE MARSHALL & SON, LTD., Distribution Centre, 8-11 St. John's Lane, Clerkenwell, E.C.1. Sole Agents for Australia and New Zealand: Gordon & Gotch (A'sia.) Ltd. For South Africa: Central News Agency Ltd. Registered for transmission by Canadian Magazine Post.

READER'S REPLY HW APR. 1965

# JUST LIKE THE REAL THING!

One of the most famous ships in the history of the Royal Navy, the Royal Sovereign was launched in 1637, saw action in four wars and six of the greatest sea battles of her era. This remarkable 1/600 scale model is complete with ratlines, sails and rigging instructions. 297-part kit, only 17/6d. There are over 200 Airfix Kits, covering 13 different series. And at 2/- to 17/6d. you can well afford to make all your models *just like the real thing!*

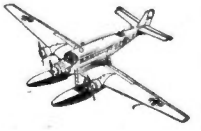
**AIRFIX CONSTANT SCALE**

## CONSTRUCTION KITS

*Just like the real thing!*

From model and hobby shops, toy shops and F. W. Woolworth

## LATEST AIRFIX PRODUCTION



**JUNKERS 52**

One of the most important of all German aircraft used in the Second World War. The J.U. 52 first flew in 1930. Developed as a troop carrier and bomber it had a top speed of 165 m.p.h. and a range of 800 miles with a crew of two or three and carrying up to 18 fully equipped troops. 109 part kit — 7/6

**ALSO NEW!** Messerschmitt Bf 109 G-6. Super 1/72 scale model of Germany's most famous fighter plane. 38 part kit-2/-

*ALL THAT'S NEW IN MODELLING!*

Airfix Catalogue 9d. and Monthly Magazine 1/6d.