# HOBBIES WEEKLY

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IN THIS ISSUE




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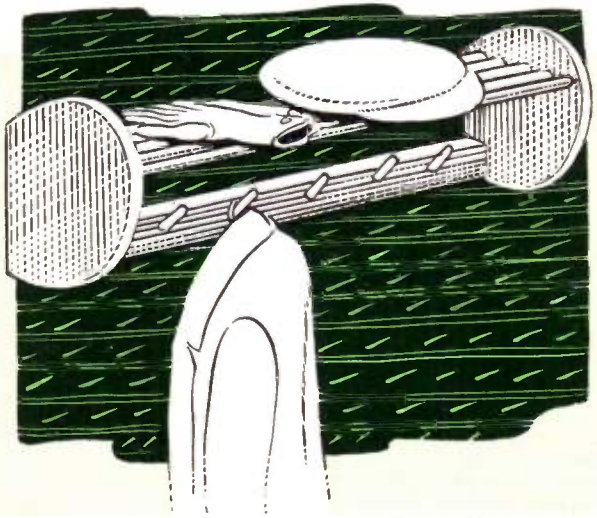
# COAT HAT and GLOVE RACK

*A 'ONE EVENING' JOB*



THIS modern rack is ideal for the contemporary home. It is neat and efficient, and can be constructed in one evening.

Since it is intended to be painted, the wood selected should be close grained and free from knots. An open grained wood such as oak will need more preparatory work in filling, but can be used if nothing else is obtainable.

The ends should be marked out as shown in Fig. 1. The squares should be enlarged to 1in. and the curve drawn square by square. Transfer your drawing to wood by means of carbon paper. Use ¾in. thick wood and let the grain run the same way on both pieces.

The ends are connected by a cross rail 30ins. long by 2ins. wide and ¾in. thick. The pegs are inserted into this rail at intervals of about 5ins. Space

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*Diagrams overleaf*


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them evenly and drill the holes at an angle as shown in Fig. 3. The dimensions of the pegs are also shown in this diagram.

The exact angle of the pegs is not important, but it is essential to ensure that all pegs are at the same angle. To do this, cut a card template in the shape of a triangle, to hold against the drill when drilling. Tops of pegs should be rounded and the ends touched with glue when inserting in the rail.

Bore ½in. holes in the ends to take the dowels forming the hat and glove shelf. The positions of these holes are shown in Fig. 1. The dowels can go right through and be cleaned off before painting. Pay particular attention to

filling the ends of these dowels. The ends must be a tight fit and should be smeared with glue before tapping home.

After fixing the dowels, the peg rail is screwed direct to the ends as indicated in Fig. 2. Use countersunk screws and fill with plastic wood.

All parts should be cleaned with glasspaper and given one or two coats of paint. Rub down with wet silicon carbide paper and apply a final one or two coats. The resulting finish will depend largely upon rubbing down between coats. (M.h.)

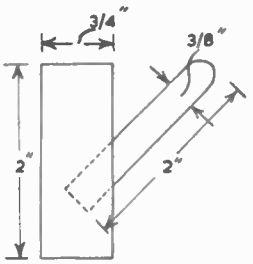


Fig. 3

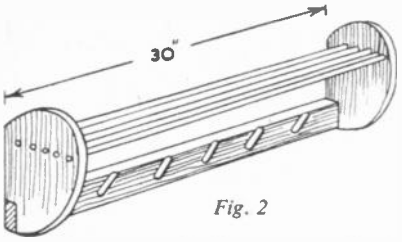


Fig. 2

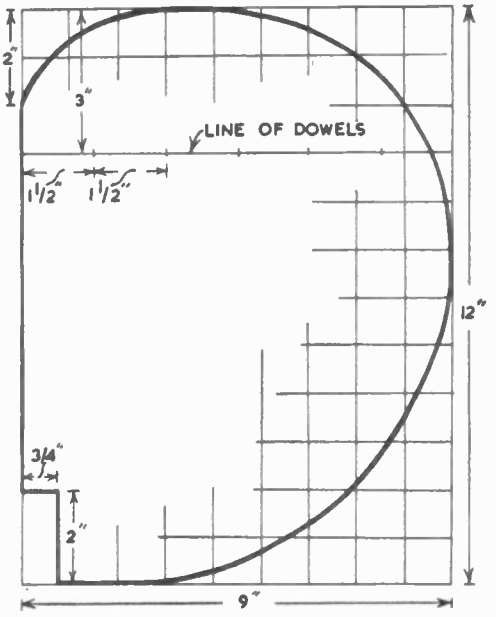


Fig. 1

# Hand Vice for Modellers

THIS little hand vice will be found very useful for a large number of jobs, and if you make two or three in different sizes, you will save quite a lot of time and be able to do the work much easier. It will hold round or oval objects firmly without marking them, and with a convenient handle, will allow you to work in any position.

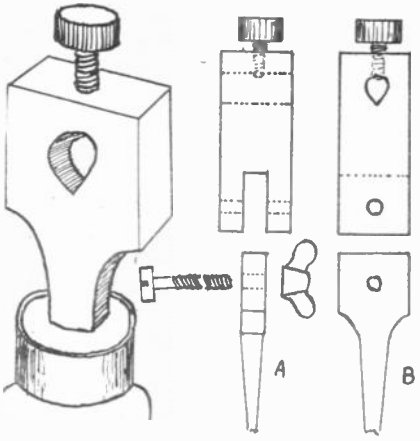
It is excellent for holding screws, so that the head may be shaped or a slot cut, while short lengths of wire and many odd shaped parts can be held firmly for easy working.

Brass is, perhaps, the easiest metal to use, and with care, will be quite serviceable. Mild steel, although more difficult to make up, will stand a considerable amount of strain and rough use, and is, therefore, better for the job.

It is also possible to make a very good vice from hardwood and, provided it is not unduly strained, this will give excellent service.

Size will be determined by the nature of the work which it is intended to perform, and must be left to your discretion. For small work a ¼in. hole, tapering down to a point, should be most useful, and another of ½in. will meet most requirements.

Instead of discarding that broken file, it can be turned into a handy vice provided, of course, that it is thick enough. It will be too hard to cut, as it is, and you will have to take it out of its handle and draw the temper by heating it to red and allowing it to cool slowly. While cooling, keep the metal away from draughts, as this may partially harden it again. If you have heated it over a gas




stove, it is a good idea to turn off the gas and leave it to cool slowly on the stove.

For a small size vice the metal can be about ¼in. thick, but you will find that it will be better and will hold the job more securely if you have it thicker. Having cut your metal similar to the shape shown, drill the hole accurately, and then taper it off to a point.

If there is room to get a small saw in you can start this way, otherwise you must file it to shape, using a triangular or knife edged file. It is not necessary to cut the hole to this shape, and for some jobs you may find other shapes more suitable. Much useful work can be done with just a round hole, but this will not grip the object so well as a tapered slot.

The holding screw should enter the slotted hole in the centre and travel towards the point. A little trouble taken in drilling this hole will ensure the accuracy of the tool. For a ¼in. slotted hole the holding screw should be tapped for ⅛in. Whitworth or 4 B.A. thread and for larger sizes in approximately the same proportions.

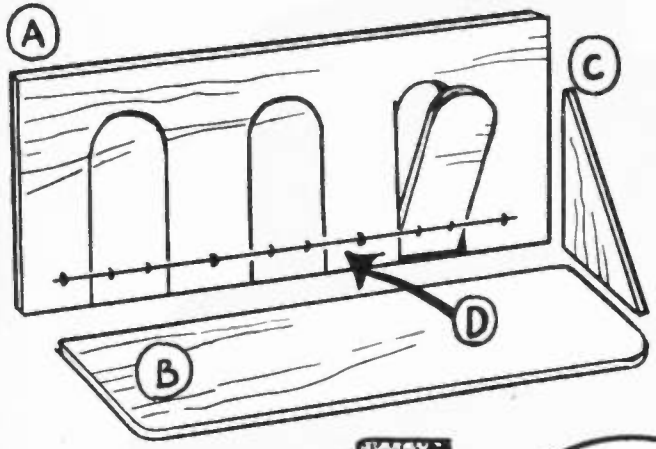
The bottom end of this screw is nicely rounded, while the head can be of various types. A knurled knob or wing top is quicker to adjust, but you may prefer an ordinary slot or hexagon head.

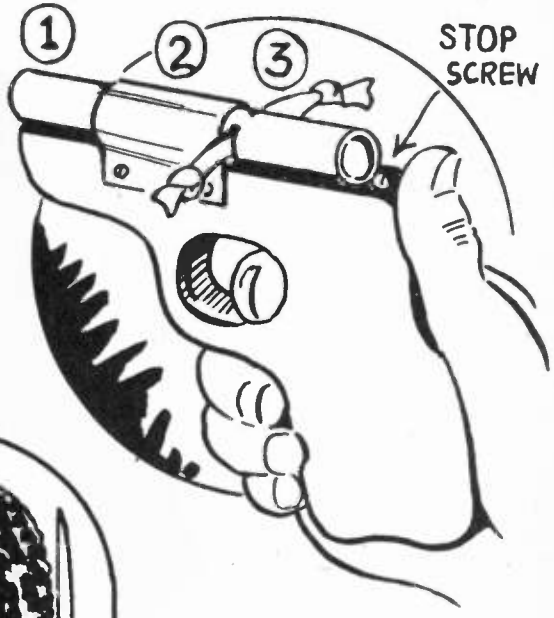
Another method of making the vice is shown at (A) and (B) (side and front view), where a block of metal is slotted and riveted on to the end of an old file. Several different sized and shaped blocks could be slotted and fitted to the same handle, securing them with a bolt and wing nut, so that they can be changed easily.

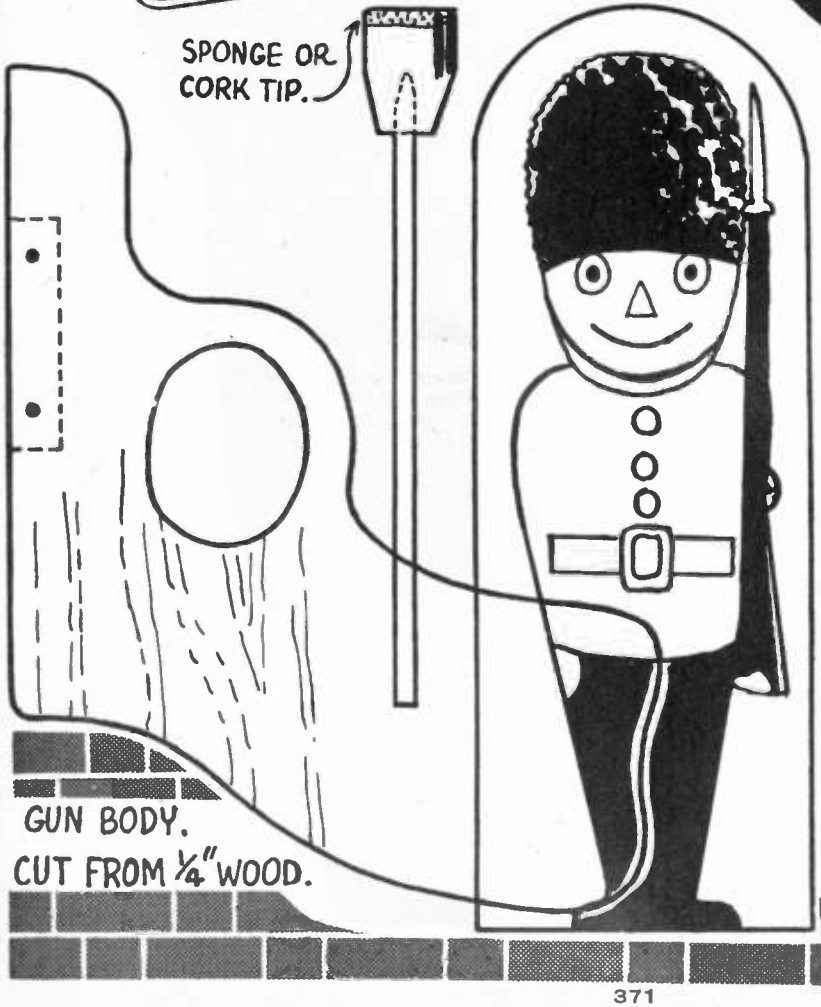
The handle should be a medium size, so that it is comfortable to hold, and very good use may be made of an old chisel handle. (A.F.T.)

# SHOOTING RANGE

*For fun and games*




## Described by T. Richmond

YOU can easily make this exciting gun and target game from oddments in an hour or two. Gun parts are: (1) 3ins. length ½in. diameter bamboo cane for barrel. (2) Piece of thin tin, 2½in. by 1½in., bent to shape to form holder for barrel. (3) 2½ins. length rubber strip. (Cut ⅝in. width from cycle inner tube.)

Make two saw-cuts 1in. from one end of cane. Slot rubber strip through and knot each end, as in sketch. Fix barrel to top edge of gun body with tin holder screwed in position. A stop-screw prevents barrel slipping when loading gun.

The missile used for shooting consists of a lolly-stick or other dowel glued into hole bored in short length of ½in. dowel rod projectile shown on pattern. The projectile rod is slotted in barrel and held in loaded position by cork-shaped nose until released by touch with thumb at rear of barrel.

Pieces of ½in. wood required for making up target are: (A) 11ins. by 6ins. (B) 11ins. by 2½ins. (C) 2½ins. by 3½ins. square, cut to form two triangular end supports.

Cover upright (A) with red brick paper. Draw and paint three soldier targets. Glue to front of board. When set, cut out around figures. Glass-paper edges smooth before replacing. Fix a length of stiff wire across the back of board, securing with small wire staples. (D) Each cut-out figure is hinged to this wire with staples, so that they can fall backwards when hit by missile. The base piece, when nailed to back of target, prevents the soldiers from falling forward, as well as providing firm support. Paint the gun and target parts not covered with brick paper, with gay enamel as desired. Number the figures 5, 10, 25 for scoring.

# CHEMISTRY IN THE HOME

# EXPERIMENTS WITH ESTERS

WHAT are esters? They are combinations of acids and alcohols. They thus resemble salts, which are combinations of acids and bases.

Esters form yet another group of chemicals familiar in everyday life. The fragrant smell of many fruits is due to their containing esters, and every handyman is familiar with the ester amyl acetate — the well known pear drop smell of cellulose adhesives and lacquers. Their smell and taste make many of them useful for producing artificial flavourings.

A host of esters is known, but by making a few of the more common ones we can gain a good deal of chemical knowledge. As refluxing and distillation are used in their preparation there is added interest, for nearly all chemists, amateur and professional, enjoy these operations.

**Ethyl acetate**

Ethyl acetate is one of the commonest esters. To make it you will need first to dry some sodium acetate. This is done by gently heating 83 grams of sodium acetate crystals evenly spread out on a flat tin dish, taking care that a small flame is used, so as not to char the salt. Stir with a glass rod and occasionally hold a watch glass close to the salt. At first the glass will mist over, showing water of crystallization is being given off. When it no longer mists, the salt is dry.

Powder it when it is cold.

Into a 250 c.c. distillation flask pour 37·5 c.c. of methylated spirit. Very gradually add to this while swirling the flask 30 c.c. of strong sulphuric acid, cooling the flask as it warms by the reaction by holding it for a few moments in cold water.

Connect the flask with a condenser and receiver, as shown in Fig. 1, and slowly add the powdered dry sodium acetate. Cork the flask and let it stand two hours. Then heat up the water-bath to boiling. When no more liquid distils over into the receiving flask, change the water-bath for wire gauze and continue distilling until nothing more comes over.

Pour the distillate into a separating funnel, add an equal volume of strong salt solution. Stopper the funnel and shake for a minute or so. Let the whole stand until the liquid separates into two layers. The upper layer is ethyl acetate.

Run off the lower layer of waste salt solution and pour the ethyl acetate into a dry distillation flask fitted with a cork and thermometer and connected with a condenser. Add a few pieces of calcium chloride to dry the ester, cork the flask and let it stand overnight. Then distil off the ester on the water-bath, collecting only the fraction which distils at 74 to 79 degrees Centigrade.

The ethyl acetate you will thus obtain has a delightful fruity smell, rather like apples. Wine vinegar owes its characteristic flavour to this ester, since it contains a small proportion. Methylated spirit, which is mostly ethyl alcohol, reacts with the acetic acid liberated from the sodium acetate by the sulphuric acid to form the ester, showing that acid plus alcohol yields an ester.

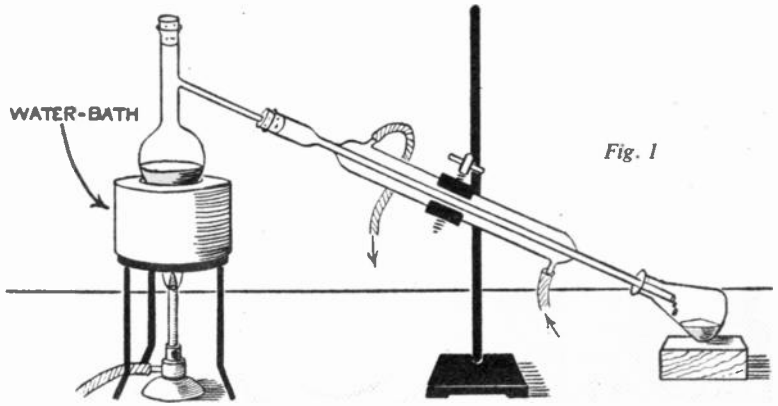



*Fig. 1*

**Ethyl formate**

Another interesting ester produced in a similar way from a closely related acid is ethyl formate. This, too, has a pleasant odour, as we shall see, and quite different from ethyl acetate.

Pour into a distillation flask 37 c.c. of methylated spirit. Gradually add 27 c.c. of strong sulphuric acid, swirling the flask and cooling it in water. Connect the flask with condenser and receiving flask, as shown in Fig. 1, but replace the water-bath by a sand-bath, and then add 35 grams of sodium formate. Cork the flask, and let it remain awhile. Any liquid distilling of its own accord into the receiver should be poured back and then the flask heated on the sand-bath until the distillation slackens.

Add water a little at a time until the ester separates as an upper layer. Remove this by means of a separating funnel and shake it with a little milk of lime (a milky mixture of slacked lime and water) until a slip of blue litmus paper dipped into the mixture is no longer reddened. Separate the upper ester layer again and pour it into a flask containing a few pieces of calcium chloride. Cork the flask and leave it overnight.

The ethyl formate is now obtained by distilling it in the apparatus shown in Fig. 1 and collecting only the fraction passing over between 50 and 60 degrees Centigrade.

Now note its odour. Pleasant, aromatic and very like rum. In fact, this ester diluted with pure alcohol forms artificial rum flavouring.

For the next ester we use another alcohol. Namely, methyl alcohol, which is commercially known as wood spirit or wood naphtha, since it is prepared by the destructive distillation of wood. Commercial grade methyl alcohol is cheap and is pure enough for this experiment.

Slowly add 10 c.c. of strong sulphuric acid to 10 c.c. of methyl alcohol in a round bottomed flask. Swirl the flask and cool in water as it warms up. Add 20 grams of salicylic acid, and boil the mixture for one hour in the apparatus shown in Fig. 2. Let the mixture cool. Add sodium hydroxide solution, stirring well, until the mixture is alkaline, that is, it turns red litmus paper blue.

An oil separates. Remove this with the

help of a separating funnel, shake it with a little water, again separate it and pour it into a distillation flask containing a few pieces of calcium chloride. After standing a few hours, distil it in the apparatus shown in Fig. 1, but replacing the water bath by wire gauze and the water condenser by a straight wide glass tube.

**Methyl salicylate**

The liquid which collects in the receiver is colourless and has a strong embrocation-like smell. It is methyl salicylate, which is the chief constituent of oil of wintergreen — so much used in embrocations.

Like most common esters, the ones we have prepared are liquids. There is, however, one common ester which is a solid. This is methyl oxalate. The materials for its preparation are oxalic acid and methyl alcohol and both must be dry.

Heat 70 grams of oxalic acid in an evaporating basin on the water-bath for two hours, stirring frequently, then in an air-oven to 120 degrees Centigrade for another hour. Dry 80 c.c. of methyl alcohol by letting it stand overnight in a corked bottle with some pieces of quicklime and then distil off on the water-bath.

Put the dried oxalic acid and 63 c.c.

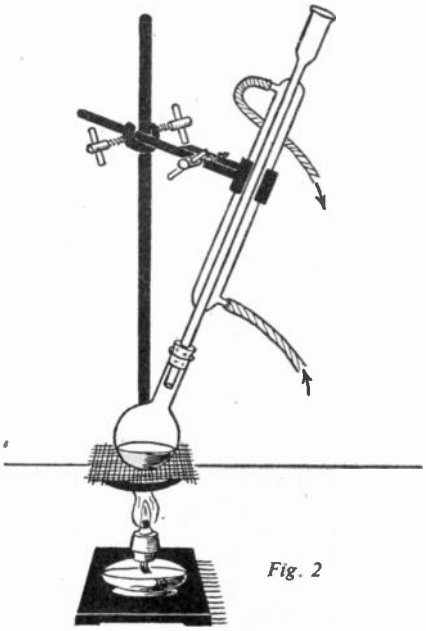


*Fig. 2*

of the methyl alcohol into a round bottomed flask and heat for two hours in the apparatus shown in Fig. 2, but replacing the gauze by a water-bath. Pour the liquid into a distillation flask fitted with a thermometer, connect to a condenser and distil. The distillate coming over up to 100 degrees should be thrown away.

Now run the water out of the condenser and collect the fraction distilling over between 160 and 165 degrees, using an evaporating basin as a receiver. The distillate solidifies. This white solid is methyl oxalate.

An interesting experiment is to note the action of ammonia on methyl oxalate. Dissolve two or three grams of it in just enough methylated spirit and then add ammonia until the liquid smells strongly. A white precipitate of a substance known as oxamide appears. Filter this off, wash it with a little meths. and let it dry in the air. (L.A.F.)

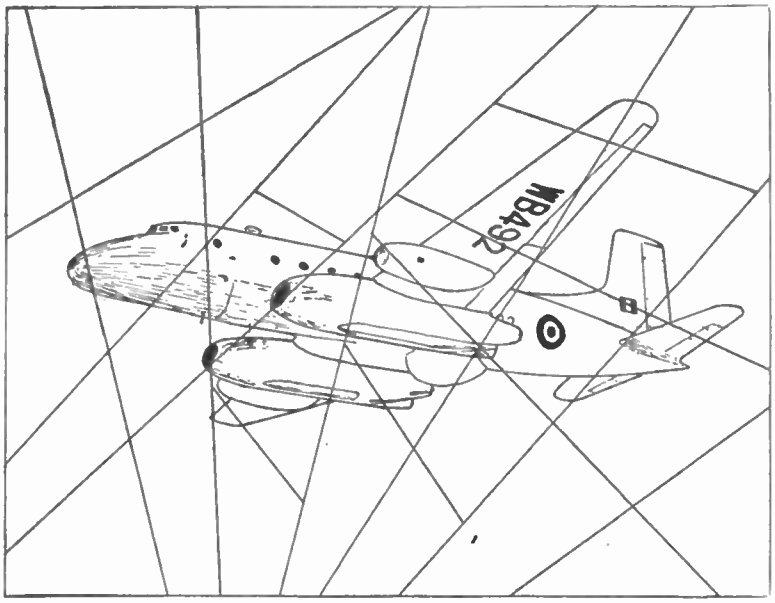
**Next week's free design will be for a Toy Fire Station, complete with look-out tower, and an ideal suggestion as a Christmas Gift for a youngster.**

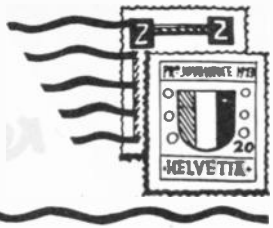
# Solution to Jig-Quiz No. 2

THE illustration shows how last week's puzzle fits together to produce a picture of the Avro Ashton research aeroplane. Powered by four Rolls Royce Nene turbojet engines mounted in pairs — one pair in each nacelle — the aircraft's basic design was evolved round the Avro Tudor 2, a civil airliner, and was a direct successor of the Tudor 8. This aeroplane together with the other five have played, and indeed are still playing, a major part in guiding future trends in airliner design and prove effective test beds for all types of turbojet engines.

**Auto Pilot**

This particular machine has a very accurate auto pilot installation and has been flown extensively at the Radar Research Establishment at Defford on, among other things, radar bombing research. It is fitted with a tricycle undercarriage and the 'pods' on the underside of the wings can be used to carry bombs or, alternatively, fuel tanks.





# GOLD COAST FACTS

## *By R. L. Cantwell*

THE Natives of the Gold Coast are composed of many African tribes, all of whom are loyal friends of Great Britain. A book could be written about their varied customs, social manners, domestic and political institutions. The more interesting of these, combined with geographic and historic facts may be briefly recorded in stamps.

The name 'Gold Coast' was derived from the amount of gold traded there from the Natives from the earliest time, and out of which gold the 'guineas' were originally made; hence the name.

The colony, with Ashanti, the Northern Territories and Togoland under British Mandate, is situated on the Gulf of Guinea and covers a total area of 91,843 square miles.

On the whole the climate is hot and damp. By the aid of medical science and sanitation it is becoming less unhealthy. Most of the natives are pagans but there are many Mohammedans, and the number of Christians is increasing.

Missionaries are assisted by the government in religious and educational matters. Churches and schools have been established, also a college at Achimota, six miles from Accra, the capital.

Principal exports from the Gold Coast include cocoa, gold, manganese ore, and diamonds. Ashanti: cocoa, gold, mahogany, cedar, maize and fruits. Northern Territories and Togoland: cocoa, cotton, palm kernels, kola-nuts and tobacco.

Current pictorials of the Gold Coast bear the following relevant designs: Map (½d.). Emblem of Joint Provincial Council (1½d.). Northern Territories Mounted Constabulary (2½d.) Trooping of the Colour (2/-). Christiansborg Castle at Accra (1d.). Talking Drums (2d.). Manganese Mine (3d.). Cocoa Farmer (6d.). Breaking Cocoa Pods (1/-). This set is catalogued at 3/5 used.

This Ashanti method of extracting gold from soil is very primitive. 'A quantity of the earth, sand and gravel through which the scales and little bits of gold are scattered, is dug up by means of a hoe, and washed in a "calabash" by a sharp rotary movement, which gradually tosses off the earth and sand, and allows the heavier gold to remain at the bottom of the vessel.'

Gold buying on the west coast of Africa is not a trade for inexperienced hands. The weights are black seeds called 'telekessi', and each buyer has his own weights and scales — when it is a pitched battle between seller and purchaser as to who can cheat the other.

'Bogus dust' is manufactured by preparing nuggets of copper and silver mixed, and the fine dust gold is simulated by copper filings and red coral powder. The 'telekessi' weights are soaked in butter to make them heavier, and imitation ones of pebble are even put in their place.


Natives at work in the gold mines are pictured on the 1934 3-cent stamp of British Guiana — catalogue 5d. used. The current $2 value shows a modern gold dredging plant — 5/- used, and a gold mine — South Africa 1933–48, 1½d. green and gold — 3d. used.

When two women meet, the one of inferior rank drops on one knee and bends her head. The superior then lays her hands on the inferior's shoulders. After remaining in this posture for some time, and whispering some words in an undertone, they stand and enjoy a gossip.

When a Watusi meets a friend, he holds out the knobbed end of a five-foot stick, which he always carries. This done, no further courtesy is necessary, and they converse freely.

The Weeze look upon the Watusi with profound respect. When the former meets a member of the latter tribe he presses the palms of his hands together while the Watusi returns the compliment by gently clasping them within his own.

Among the Wagonda, if a superior has occasion to present anything to an inferior, he pats and rubs it with his hands, finally stroking each cheek with it. The object being to stave off witchcraft and the mischief of the 'evil eye' from the donor.

Wagonda etiquette in regard to dress of each rank is very strict. The least infringement of the laws regarding dress, salutation, sitting or standing before the king, etc., meets cruel punishment.

The skin of the leopard can only be worn by those of royal descent. The king wears his hair in the shape of a cock's comb on the crown of his head, the rest being shaved off. This privilege

● **Continued on page 375**

*Make them yourself*

# CYCLE PANNIERS

A PAIR of cycling panniers fixed to the back wheel for holding one's kit will be found an essential on a cycling tour and, to save the cost of these, why not make your own for a matter of shillings?

The panniers can be cut from 1¼yds. of American cloth, 48ins. wide. Also needed are strong thread, two pairs of hooks and eyes, and some leather strapping. For the pannier frame you will require about 3yds. of 1in. by ⅛in. aluminium strip, some nuts and bolts, and a spare strip of wood about 1ft. in length.

Spread out the American cloth on a table or flat surface, the wrong side uppermost, and mark out the patterns of the six pieces, as shown in Fig. 1. Cut out the pieces with a pair of sharp scissors. One piece of (A), (B) and (C) will form each pannier.

Taking piece (C), bend this 18ins. from each end and sew one 18ins. side of piece (A) on to the corresponding

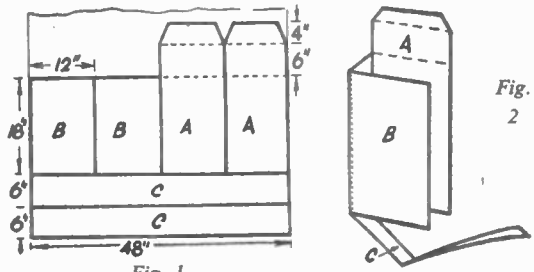



*Fig. 1*




*Fig. 2*

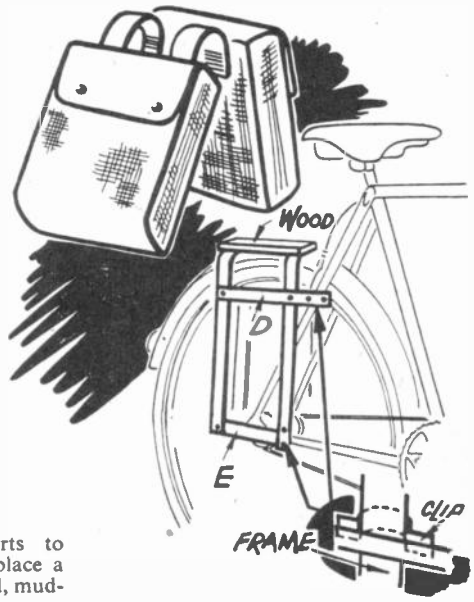
18ins. of piece (C). Note that in making the bags the finished surfaces are inside. On the other side of (C) and at the same end, sew on piece (B). Fig. 2 clearly shows this stage. Now continue sewing piece (C) to the two bottom edges of (A) and (B), finally sewing up the other sides. You should now have a rectangular pack with a flap.

However carefully you have sewn the pannier together, it will not be waterproof at the seams, so dab the seams with a waterproof glue. When the glue has hardened, turn the pannier inside out.

Sew two eyes on piece (B), each eye being nearly 4ins. from the top and 2ins. in from the edge. Sew hooks on to the corresponding positions on the inside of the flap. Make quite sure that the hooks and eyes are firmly fixed.

Now a frame is needed to keep the bags away from the back wheel. Although the 1in. by ⅛in. aluminium strip is recommended because of its lightness, other metal strips may be used. Cut two strips 36ins. long and bend over to the inverted 'U' shape shown in the illustration. These will have to be bolted to supporting metal bars (D) and (E). Note that (D) is longer than (E) to allow for the slope of the frame. Drill the bent strips and the four supporting bars at the points of intersection. Exact measurements cannot, of course, be given, as these will vary with different cycles, but it should be easy to determine the position of the various holes once the ends are temporarily secured.

The final fixing is made by bolting with clip fittings the forward ends of (D) and (E) to the cycle frame as shown in enlarged detail in the diagram.




Having finally fixed the metal supports to your cycle, place a piece of wood, mudguard width, across the top of the frame. This does not need any elaborate fixing — it is merely to rest the pannier straps where they will cross the top of the frame above the mudguard.

The panniers will now require strapping together with two leather straps. The length of the straps will depend upon the positioning of the panniers. Test for this and fix the straps accordingly.

Having sewn on the connecting straps, the panniers must be fixed to the bottom supporting frame bars (E). This can be done by using buckled straps which can pass completely round the pannier, buckling on the outside, or may be secured by a short strap and buckle secured to the bottom of the pannier, the strap passing round the supporting bar on each side of the cycle.

It is essential to ensure that no loose strap end is left hanging to foul the rear wheel. (R.L.W.)

● **Continued from page 374**

# Gold Coast Stamps

s sometimes extended to a favourite queen.

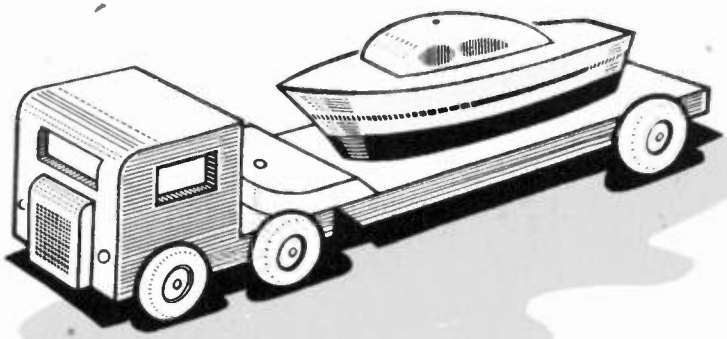
Illustrate these facts with the following stamps: Belgian Congo, 1942, 75 cent black and violet — Head of a Native woman — 2d. used; 50 franc black and blue — Negress Head — 1/6 used; 1 franc 75 cent brown — Leopard — 4d. used. 1948, 10 cent orange — Native Art — 2d. used. 1931, 15 cent grey — Native Hut — 2d. used; 50 cent violet — Native Musicians — 2d. used; 2 franc blue — Riverside scene — 4d. used; 60 cent purple — Native Drummers — 4d. used; 1 franc 25 cent brown — Native Chief — 2d. used; 10 franc orange-red — Witch Doctor — 1/- used.

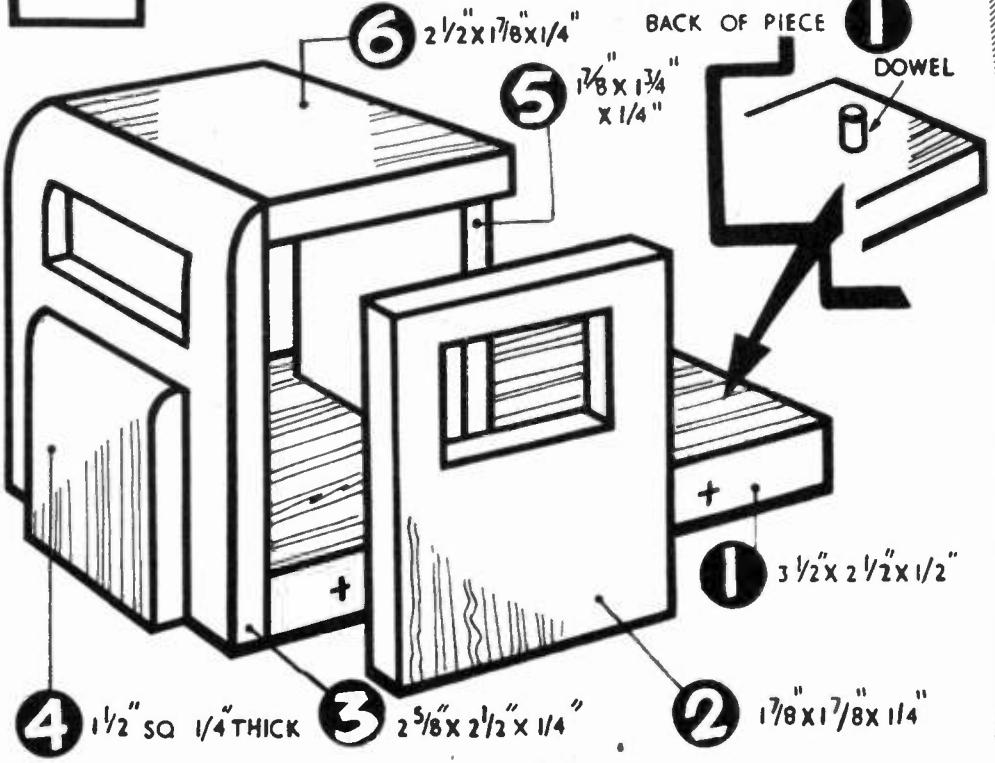
Victorian issues of the Gold Coast are valuable. Here are a few rarities: 1875, 1d. blue — £6 mint; 4d. magenta — £8 mint; 6d. orange — £10 mint. 1876–9 6d. orange — 45/- mint. 1833, ½d. olive-yellow — 95/- mint; 1d. blue — £28 mint. 1889, £1 green and red — £120 mint.

TOY DESIGN

# TOY LORRY

## LOOK FORWARD to CHRISTMAS

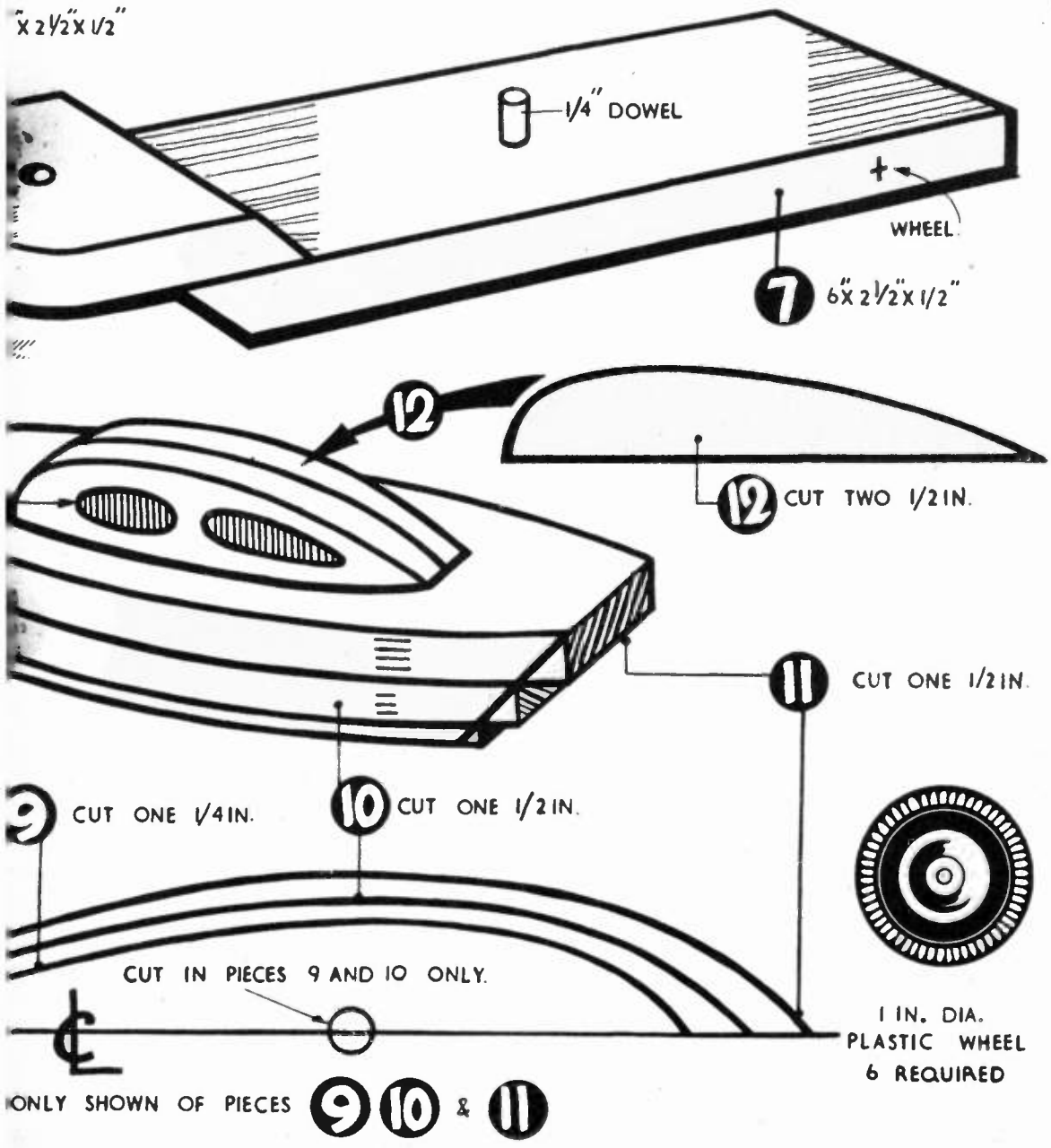






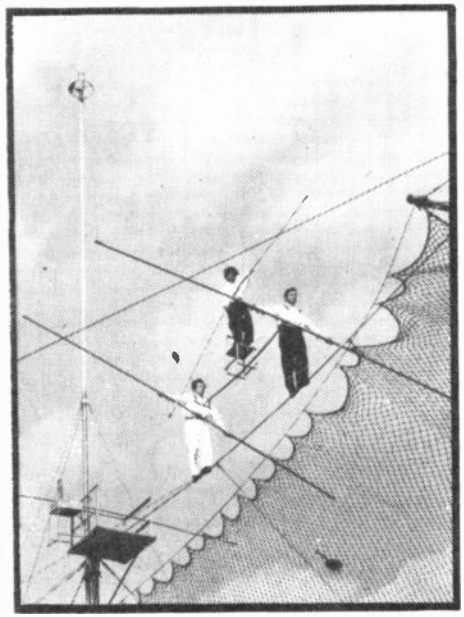

HALF

# BOAT TRAILER



*Photography for amateurs*

# Improving Pictorial Effect



*Perfect balance*

*By*
*C. Robinson*

**A little 'dodging' in the darkroom can do much to enhance the finished result of a picture, says our contributor.**

THE amateur photographer soon learns that if he is to make his pictures attractive, and win the admiration of others he must, by various methods, endeavour to hold their interest within the given space used by the picture format.

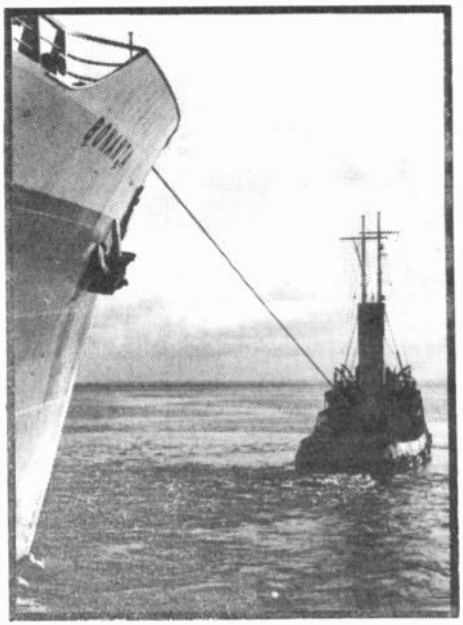
To achieve this they must be interesting, have good composition, the lighting at the time of making the exposure be suitable, and the finished print be of good technical quality. Tests regarding the 'composition' are: Has it got balance? Are there any annoying distractions which will lead the eye away from the centre of interest and out of the picture altogether? Careful consideration should of course be given to these factors before making the exposure, but in certain instances it is possible to 'rescue' a picture which, in itself is interesting, but possesses the above faults, by a little 'dodging' in the darkroom.

The borders round an enlargement are usually white, and uniform in width all the way round. This is merely a routine way of making them whether they are done professionally, or by the amateur, using a masking frame for convenience in positioning the paper. They do not, nor are they intended to help the result pictorially. A thin black border can do this occasionally, when used with the type of subjects for which it is suitable, and helps to eliminate the previously mentioned faults and 'keep the eye' within the picture space.

They must, however, be used with discretion for some subjects can be completely ruined by using one. Child or animal studies, where it is essential to keep a feeling of life and lightness, portraits, where the results would appear in the nature of a mourning, or obituary notice, are but some of these. Open landscapes, or seascapes, where there are large masses of similar light tones are the most likely ones which can be improved by them. Unless the composition is perfect the eye will tend to wander out of the picture at either the edges, or top, and a thin line of a completely contrasting tone will stop this. To be successful this must of course be neat, accurate, and reasonably thin.

Technically, it is quite an easy operation. A piece of card thick enough not to allow any light through it is first cut slightly smaller ($\frac{1}{8}$in.–$\frac{1}{4}$in. all round) than the intended size of the enlargement. This should be cut with a very sharp instrument to give a perfectly clean edge (a razor blade is quite suitable). Exposure is made to the bromide paper, through the enlarger in the usual way, then before development it is covered with the piece of card carefully leaving each edge evenly uncovered. The card is held down firmly, or weighted, to prevent light creeping underneath. The negative is then taken out of the enlarger, the enlarger light switched on for a few seconds so that it will reach the uncovered edges, which will of course come up black after development.

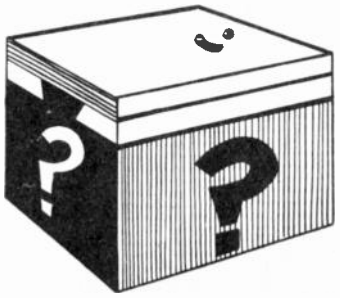
To give the best effect the print should be trimmed till the border is of the required thickness then mounted on a white mount.



*Departure*

*Try it on your pals*

# A PUZZLE BOX



A PUZZLE BOX is generally a popular diversion, especially at a party, or other convivial gathering and the box illustrated is a good one being very mystifying to the uninitiated. It should be made strongly as such a box will be called upon to stand up to hard usage through energetic attempts to open it. Fretwood, ¼in. thick is suggested for construction and this should make a strong box and not too clumsy in appearance.

*By W. J. Ellson*

The puzzle mechanism is concealed in the lid, but the rest of the box is of simple construction as will be gathered from Fig. 1.

Cut the wood to the dimensions given, and glue and pin together with a rebated corner joint as in inset. To make this joint it is only necessary to rebate the side each end to half thickness, and ¼in. wide. For nailing, panel pins are best. They are almost headless and can be punched down and stopped up level, being then practically invisible. The bottom is glued and nailed on.

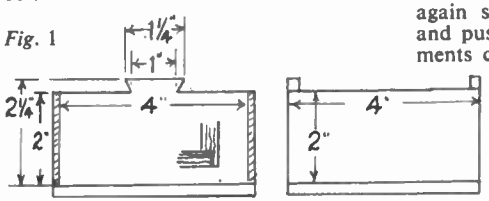
**Making the lid**

The lid of the box is made of two pieces of the ¼in. wood, both exactly the same in dimension. The upper of these is not glued down, but fixed with a single screw, which permits of it swinging sideways, the extent of movement being limited by a stop screw in a slot. Cut both pieces to size first and treat as follows.

Fig. 2 shows the lid parts, (A) being the lower one and (B) the upper one. Starting with part (A), draw a pencil line down the centre and on it mark off the points (C), (D) and (E) accurately. At each make a fine hole with an awl. Follow up by cutting out a dovetailed mortise at each end, which should be a close, but not tight fit for the mortise each end of the box. Touching the left one saw out a slot the same size. This should fit over the mortise pins and a trial should be made now as to fit by fitting part (A) over the pin on the box and if correct a push sideways should cause the lid to slide over the mortise pins and lock.

This being satisfactory, at point (E) on the lid cut out a circular recess a shade over 1in. diameter and deep enough to allow a halfpenny to sink in just below the surface. The detail sketch of this portion of the work is given in Fig. 3. Now replace part (A) on the box and start on the upper part of lid, part (B).

*Fig.* 1



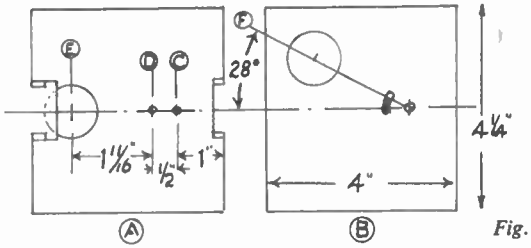




*Fig.* 2

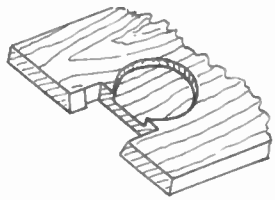
Run a pencil line down the centre and on this mark with an awl points (C) and (D) as before. From point (C), draw line (F) at 28 degrees from the centre line. This can easily be done with a protractor. On line (F) mark a second point D and then joint (E). All these are stationed the same distances apart as those on lid part (A) and are not therefore repeated in the diagram. At points (C) and (D) (both D's), drill holes just large enough to take the shank of a ¼in. round-headed screw.

The wood between the holes at (D) is now cut away to leave a curved slot for the screw to work in and limit the sideways movement of part (B). At point (E) cut out a recess exactly the same diameter and depth as that already cut in part (A). Now lay a halfpenny in the recess in (A), place part (B) on top, reversed, and through the hole at (C) drive in a ¼in. round-headed screw, the thread of which should enter the small hole in (A). A similar screw is driven in at D. Both should only be in tight enough to allow of a sideways movement of the upper part of the lid.

**Natural movement**

As the position is now, the box is locked. To release the lid, push (B) sideways, reverse the box, and the coin should drop from its recess into part (B). Push this part back to normal and the lid can be pulled off. To lock the box again slide (B) sideways, reverse box and push (B) back again. These movements can be made so naturally as to give no clue to the opening secret, and cause much mysticism to the victims.

*Fig.* 3



**Finish**

Glasspaper the box all over and make smooth the sharp angles and corners to make it comfortable to handle. Finish with a polish or just varnish.

For construction, a Hobbies panel J4 will provide enough wood, though it will be necessary to glue two pieces together to make the bottom of the box. Alternatively the bottom could be plywood.

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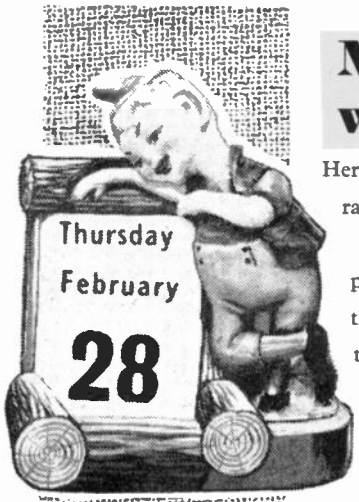


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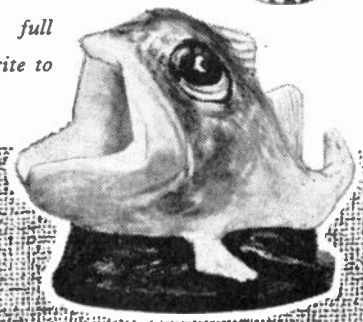

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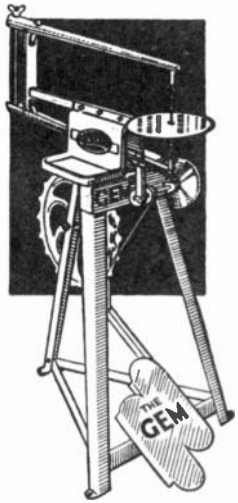


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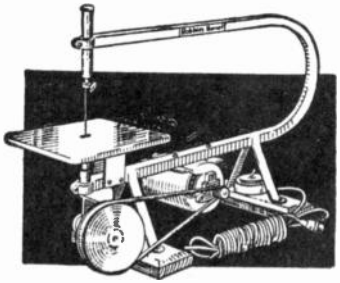

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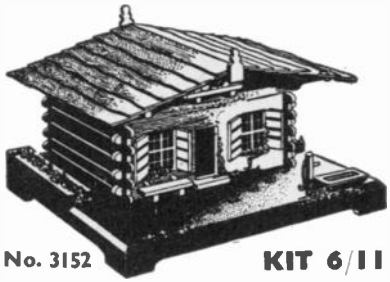

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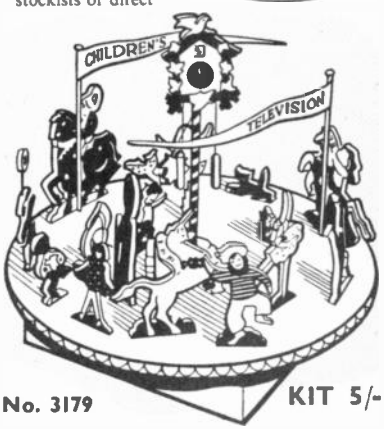


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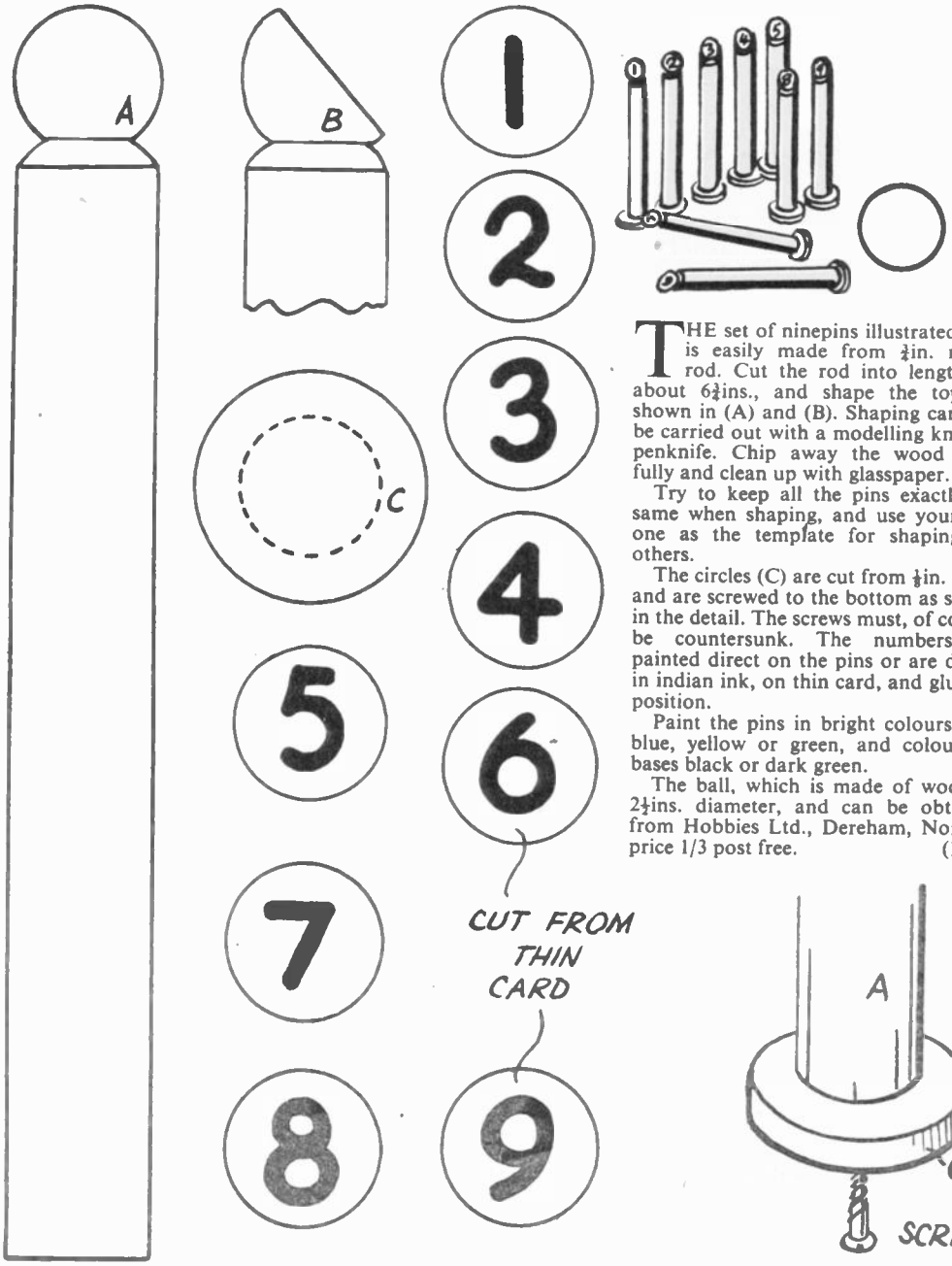




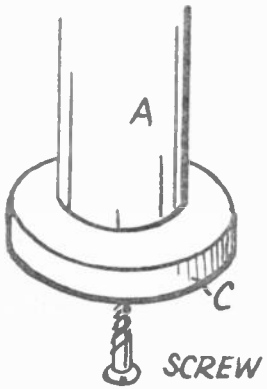

THE set of ninepins illustrated here is easily made from ¾in. round rod. Cut the rod into lengths of about 6¾ins., and shape the tops as shown in (A) and (B). Shaping can best be carried out with a modelling knife or penknife. Chip away the wood carefully and clean up with glasspaper.

Try to keep all the pins exactly the same when shaping, and use your first one as the template for shaping the others.

The circles (C) are cut from ⅛in. wood and are screwed to the bottom as shown in the detail. The screws must, of course, be countersunk. The numbers are painted direct on the pins or are drawn in indian ink, on thin card, and glued in position.

Paint the pins in bright colours, red, blue, yellow or green, and colour the bases black or dark green.

The ball, which is made of wood, is 2½ins. diameter, and can be obtained from Hobbies Ltd., Dereham, Norfolk, price 1/3 post free. (M.p.)



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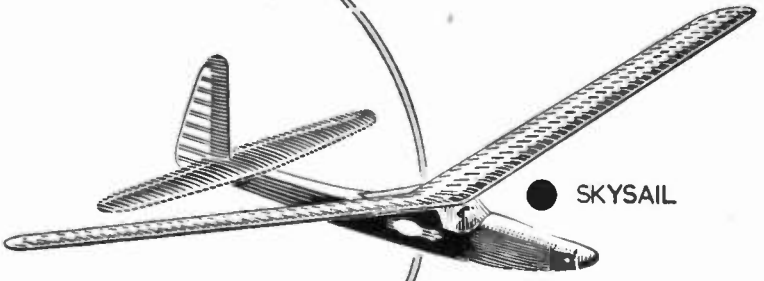

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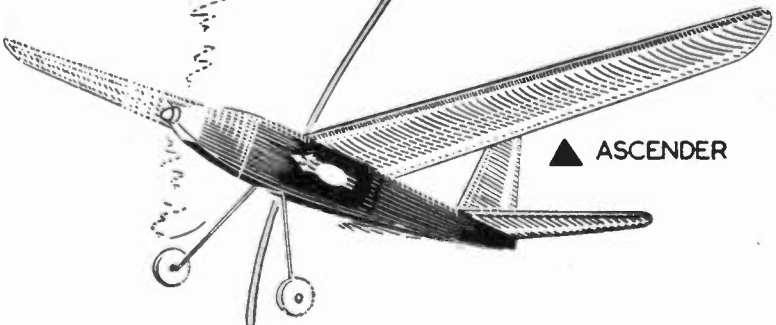

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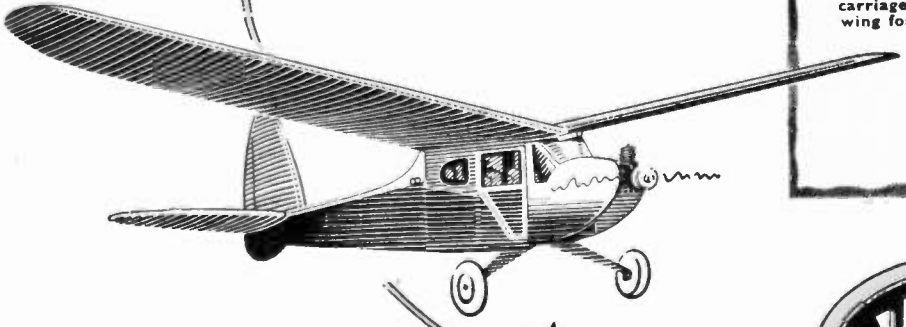

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