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THE ORIGINAL
'DO-IT-YOURSELF'
MAGAZINE

HOBBIES *weekly*

FOR ALL
HOME CRAFTSMEN

Patterns for a pleasing picture

Also in this issue :

DISC BREAK
WITH CHUBBY

COLLECTORS' CLUB

TWO TRANSISTOR
SPEAKER RADIO

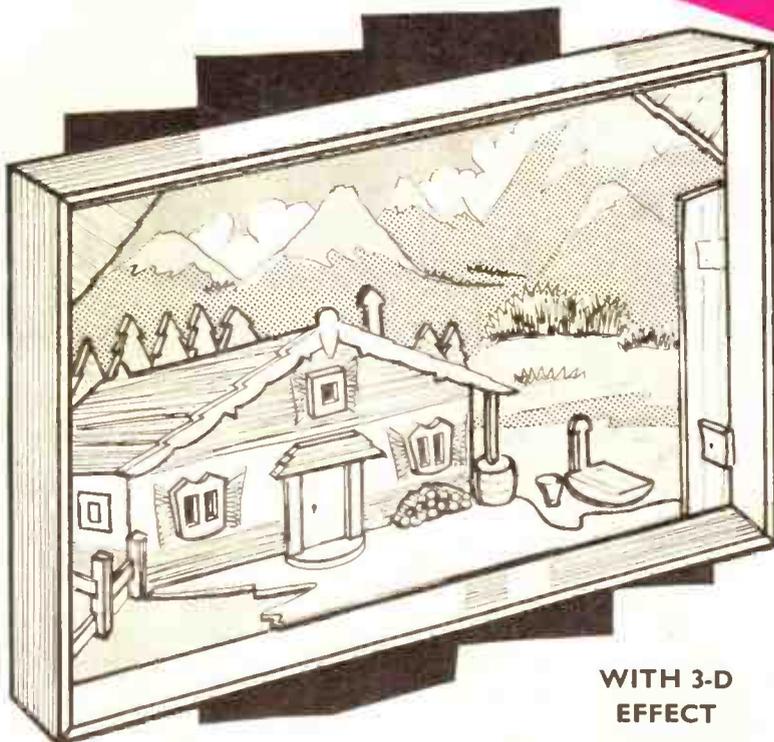
SHOE-CLEANING
TIDY AND STAND

EXPERIMENTS
IN CHEMISTRY

SCULPTURES
IN CONCRETE

PATTERNS FOR A
JIGSAW PUZZLE

ETC. ETC.



WITH 3-D
EFFECT

ALPINE SCENE

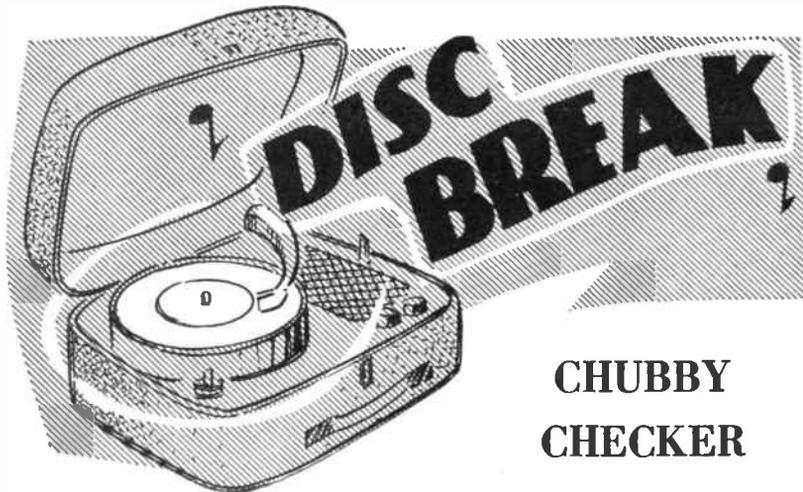


Up-to-the-minute ideas

Practical designs

Pleasing and profitable things to make

5^D



CHUBBY CHECKER

THE Twist is the new dance rage and the man behind it all is Philadelphia-born Chubby Checker. Chubby's hit disc of *The Twist* — released here on Columbia 45-DB4503 — has set the dancers of America in a whirl. And now the dance is set to repeat its success in ballrooms here.

When Chubby recorded his hit record he had no idea that *The Twist* would become a national dance craze. Wherever he appeared, people called out and asked him to dance it. He didn't mind in the beginning, but after fulfilling all the requests, he found after three weeks that he had lost 27 lb!

Twenty-year-old Checker was discovered in a Philadelphia market where

he had an after-school job selling pieces of cut chicken. He was heard singing at his work by the market owner, who recommended him to a record company.

How do you dance *The Twist*? Mr R. E. Collier-Brinkworth, director of the Arthur Murray School of Dancing, describes *The Twist* thus: 'It's most certainly an animated dance and an extremely happy one at that.'

'You dance it to a rock'n' roll rhythm and you dance it on one spot. But there are several different foot positions to give it a sense of movement with such patterns as 'The Backscratcher', where the couples dance back to back, and 'The Boxer', where the gentleman uses his hands to 'defend' the lady.



Some Books to read

Wooden Toymaking Step by Step by Richard Irving

THIS book has been devised to assist the worker wishing to make pleasing gifts for youngsters. First the tools and materials especially useful for wooden toymaking are described. Then follow detailed instructions and material lists for making forty-four toys for both boys and girls from the nursery stage upwards.

The text is supported and clarified by 550 drawings and sketches showing each project in progressive stages. The aim throughout is to give clear guidance, so that attractive and serviceable toys may be produced.

Published by Frederick Warne & Co. Ltd, Bedford Court, Bedford Street, Strand, London, W.C.2. Price 10s. 6d.

Cone's Book of Handicrafts by J. G. Cone

HOW often does one hear it said, 'I was never any good at making things'. This is not because of the lack of opportunity or the want of materials, but invariably because people have never been taught how to be skilful with their hands. This book describes a host of really artistic examples which can be made from mere odds and ends; showing that handicraft is within the reach of everybody. More than thirty spare time outlets are covered in explaining dozens of projects which should create sufficient interest to pass away many an hour in a constructive form of activity

Published by Frederick Warne & Co. Ltd, Bedford Court, Bedford Street, Strand, London, W.C.2. Price 12s. 6d.

Scooter Care

by Michael Marriott

THIS will be a valuable work of reference for all scooter owners. Each machine is treated individually in an easily understood manner. The book's main concern is to save money for the owner on routine overhauls, including that most important task — decarbonizing.

Published by Arco Publications, 29 Great Portland Street, London, W.1. Price 12s. 6d.

* * *

Tape Recording and Hi-Fi

by R. Douglas Brown

THIS book sets out, in a simple, non-technical way, all the average reader needs to know about high-fidelity recording and reproduction of sound, covering both disc and tape equipment, and also dealing with the latest stereophonic developments.

Published by Arco Publications, 12s. 6d.

BUILDING A SPEAKER TWO

QUITE a number of circuits have been given, and it is felt that actual constructional details of a two transistor receiver should be helpful, especially for beginners.

The receiver described here uses a diode detector, followed by two stages of amplification. This is about the smallest type of set which can be expected to give reasonably satisfactory loudspeaker reception. As there are only two transistors, an external aerial is required, but this need not be very long. Several feet of wire, used indoors, should generally be sufficient.

By 'Radio Mech'

The circuit is shown in Fig. 41, and consists of the diode detector, followed by the amplifier in Fig. 19. It may be run from a 9V. miniature battery, or from the slightly larger 7½V. battery. Alternatively, two 4.5V. 3-cell flashlamp batteries can be wired in series, to provide a 9V. supply. Any battery between

The OC71 has a red spot to mark the collector. With the XC101, the collector is coded white. An OC72 is also very good for output purposes in this type of circuit, and this would have a red spot to mark the collector wire.

Tuning

Any of the tuning coils or ferrite rod coils described can be used, or a ready-made coil or ferrite rod may be fitted. For tuning, an air-spaced condenser of

20 turns, for the aerial coupling coil.

Construction

The same method of construction will be found convenient for almost any transistor set. All the parts are mounted on a thin Paxolin or ebonite panel. For small sets, ¼ in. thick Paxolin is satisfactory, but ½ in. Paxolin is better for larger sets.

Large parts, such as the volume control and tuning condenser, are secured to

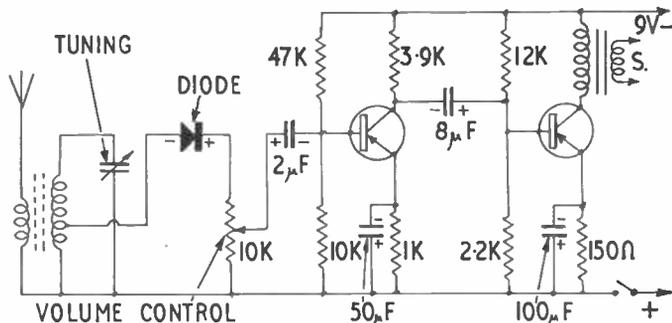


Fig. 41—Transistor receiver circuit

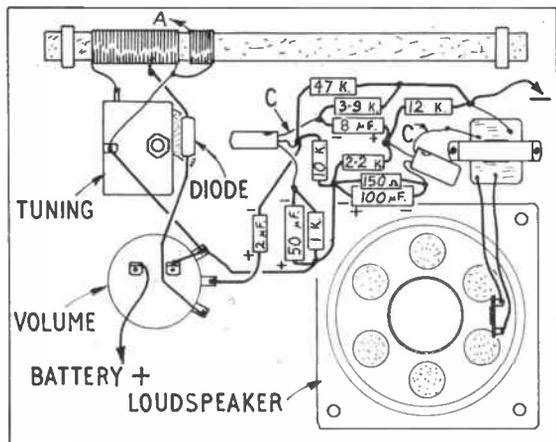


Fig. 42—Wiring plan of the receiver

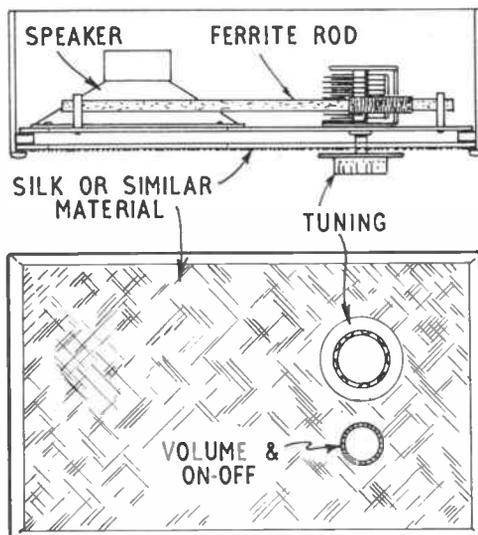


Fig. 43—Receiver in cabinet

6V. and 9V. can be employed, but more than 9V. should not be used.

Transistors

The circuit was for an OC71 in the first position, and XC101 in the output stage. It is in order to use any of the numerous types of transistors already described, but cheap surplus transistors cannot be expected to give the same volume as best quality ones of named manufacture.

roughly 350pF is most suitable, but 500pF (.0005µF) condensers can be fitted, if to hand.

If a ⅜ in. diameter rod about 5 in. to 8 in. long is used, the winding can be 52 turns of 26 swg cotton-covered or similar wire, with the detector tapping 9 turns from the 'earthed' end of the coil. Leave a small space, and wind on about

the panel by the fixing nuts or bolts normally used. The speaker is also bolted in position, fitting over a round hole of the same diameter as the cone.

When wiring up the resistors, condensers, transistors, and other small parts, holes are drilled at convenient positions; so that the leads may pass through, to anchor them. This was

shown in Fig. 31. There is no need to anchor all the ends of every item, as about half a dozen fixing points will be sufficient.

This type of construction is quite usual, in transistor sets, and components and wires are often placed on both sides of the Paxolin sheet. For large sets, this saves space. But when there are only relatively few parts, it is best to keep all components and wires on one side of the Paxolin. There is then less chance of any errors in wiring.

Fig. 42 shows the Paxolin sheet, and all components and wires are on one side. If a miniature receiver is required, a 2½ in. speaker unit is necessary, and a small air-spaced tuning condenser, and volume control with switch. The whole set can then be built on a panel 3 in. by 5 in. If miniature parts are not used, except for the speaker, a panel 4 in. by 5 in., or even larger, will be needed. The tuning condenser is likely to be the largest item.

If a miniature set is not wanted, a panel about 6 in. by 8 in. will give enough room for ordinary components. The exact positions of the parts will not be important, provided wiring is correct.

Transistor wiring can be checked as follows — OC71, or similar: Emitter to 1K and negative of 50µF; Base to 47K, 10K, and negative of 2µF; Collector to 3·9K and negative of 8µF. XC101, OC72, or similar: Emitter to 150 ohm and negative of 100µF; Base to 12K, 2·2K, and positive of 8µF; Collector to primary of speaker transformer. The remaining primary lead goes to battery negative.

The ferrite rod can be mounted by means of two small pieces of wood. The

lead marked 'A' is taken to the external aerial wire, as the signal pick up from the rod alone is not sufficient to work the speaker, except very near a station.

It will be seen that the various other detector and amplifier circuits which have been given can equally well be wired up in this way. A receiver of this kind is also a good beginning for the constructor who wishes to experiment, as alterations can easily be made.

The receiver, built as in Fig. 42, is a complete working unit, and should be tested before fitting it in a case or cabinet. It is very important indeed that the battery is never connected in the wrong polarity. Positive and negative clips, or a non-reversible 2-pin plug, may be obtained for a few pence, and will assure that the battery is always connected properly.

Case

Here, the same form of construction can be used for a small table receiver, a miniature set, or even a pocket-sized set. With the latter, however, it is easier to obtain one of the coloured plastic cases which are readily available. Such cases usually have an opening for the speaker, and a hole for the tuning condenser spindle, so these items must be fixed in appropriate positions on the Paxolin sheet.

A cabinet which can be made from thin wood is shown in Fig. 43. The cabinet front has an opening, which matches approximately with the position of the speaker. There are also clearance holes for the tuning condenser spindle and volume control spindle. The front is completely covered with some kind of fabric, of the required colour.

The receiver, built on its Paxolin sheet, is inserted from behind, and rests on the spacing strips shown. A few small screws will hold it in position.

There is a space between the Paxolin sheet and the front of the cabinet, and this is just sufficient to clear any small resistors or fixed condensers which might be placed on this side of the Paxolin. It also gives clearance for nuts or bolts holding the speaker, etc.

The case need only be deep enough to accommodate the largest item. If a miniature speaker and other parts are used, a depth of 1½ in. is sufficient. If a small table receiver is in view, a depth of about 3½ in. will be enough for most small speakers, and will also allow a standard cell 7½V. battery to be used.

Modifications

The set, as described here, should prove to be very useful for the reception of local stations. If it is later felt that another transistor can be added, this may be used as a regenerative detector. A circuit for this purpose was shown in Fig. 33. Coupling to the amplifier would be as in Fig. 35, and the 50K regeneration control would be fitted in place of the 10K volume control shown in Figs. 41 and 42, which would not be needed.

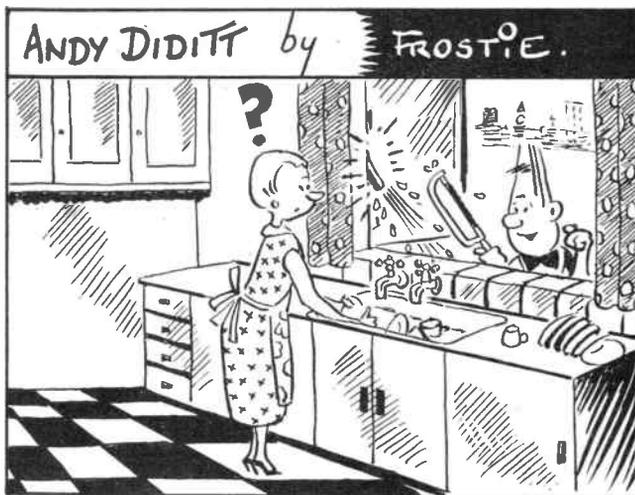
When the diode has been replaced by a further transistor in this way, the set will have three transistors, and will be much more sensitive to weak signals. In reasonably favourable circumstances it will then be possible to receive local stations without any external aerial, though a short aerial wire, or telescopic rod (Fig. 40) may be used, for greater volume, or more range.

EMERGENCY CISTERN REPAIRS

Cistern ball-cocks always seem to fail late at night when plumbers are unobtainable. The following simple emergency repair may be employed when the ball sinks due to perforations developing.

Remove the ball and lever arm (having first shut off the water supply at the main). Warm the ball under the hot tap to force out the water collected in it. Obtain a piece of aluminium cooking foil about 1 ft. square, and loosely wrap it round the ball, taking care not to tear the foil. Bend the edges of the foil tightly around the lever arm, and tie with string. Replace ball, and the cistern will function properly until the plumber can be called.

Incidentally, the Southport reader who sent this tip says his 'temporary' repair has been functioning quite well for a year! We think the same result could be obtained by using a watertight polythene bag. — Ed.



"THAT TAP WONT DRIP ANY MORE, M.A."

FOOTPATHS TO PLEASURE

TO the ever-increasing band of enthusiasts who love to explore on foot the sylvan lands of England or the hills and glens of Scotland, the following hints may come not amiss now that the tramping season is here again. The holidays afford a good opportunity to take the footpath way to pleasure.

Foot comfort is a primary consideration. It is important to wear a pair of stout, easy-fitting, watertight boots, and if intending to do some hill-climbs, have the boots studded. Prior to a long tramp, wash your feet carefully, and rub a little Vaseline over the heels and in between the toes. At the end of the day's march, examine your feet again, and attend to any little troubles that may have developed. If there are any signs of blistering, apply boric ointment to the affected places.

Carry the minimum of luggage, and dress sensibly. Remember, you are cross-country walking, not going to a garden party. A light waterproof cape should be carried in case of need. Be provided with a good, clear map of the area you intend to explore, and remember that short cuts in strange country seldom result in a gain of time; the Ordnance Survey maps with scale of 1 in. to one mile are excellent. Plan your tramp with care. Avoid the busy main motor highways — stick to field-paths, old green lanes, and moorland tracks. It is possible to make your way from village to village, and never do more than merely cross over a main road.

Some do's and don'ts

It scarcely seems necessary to thrust lessons on deportment upon the rambler who is 'country-minded'; but, perhaps, we may venture to remind the beginners of a few do's and don'ts.

Ramblers should make a point of closing gates after passing through into the next field or the road. 'Please shut this gate' is a sign which is not painted on a gate to be merely ignored. Leaving them open or unfastened may cause a lot of trouble for the farmer, as animals in the fields may stray away on to the roads or into other fields where crops are growing. If with a party, the last person through the gate should be responsible for closing it.

Do not stray or straggle away from the footpath that crosses a field of unmown grass or where corn or other crops are growing. When there are a dozen or so in a party, if there is a lot of straggling from the path each side, a lot of harm can be done unintentionally.

Do not invade private grounds — at least, not unless by mistaking the route, when an apology, if necessary, should be made to the owner. Woods, coverts, and spinneys are private property or held by the Forestry Commission. Here, again, stick to the path; do not damage trees or shrubs, and do not heedlessly pick flowers only to throw them down a few minutes later. Many people cannot resist picking flowers — they hope to reach home with them intact, but, generally, the posies droop and wilt long before the day is through.

Keep to the tracks

When tramping over moors, keep to the well-defined tracks, especially on grouse moors. On most moors and heaths there are public footpaths, and though you may be tempted to strike off across the heather, it is wiser to resist. The short cut across a moor may be the longest way round by the time you have negotiated patches of bog or marsh, or found a spot where you can wade a stream. 'Ware snakes — they may be adders!

Perhaps it is better to carry with you a small kettle and a spirit stove, if you wish to have a 'brew-up' on the journey, rather than to risk an open fire. Cigarette ends still alight are the cause of many fires. Be most careful about this,

and see they are stubbed out before casting them aside.

We still find rubbish spoiling the countryside everywhere. Please do not become one of the 'litter fiends'. Country lovers simply hate them! For they prowl about in the beauty spots, leaving a trail of sandwich papers, empty bags, cartons, cigarette packets, matchboxes, wrappings, scraps — even glass bottles on occasion.

After your wayside meal, destroy all litter, push it down a rabbit burrow or in a hole in the bank; or carry it home, and dispose of it there. But, for goodness' sake, don't dump it into a stream. People and cattle living in the valley where the water flows may have to depend upon it for drinking purposes, especially in remote countryside. Do not look upon the burn or beck or river as a convenient dumping-ground for empty sardine tins, etc.

If using the Youth Hostels be prepared to do your share of the chores before you leave after a night's doss. Don't infringe any rules of the Association. Do not omit to carry your membership card in your pocket. During the height of the season you will be well advised to book your lodgings in advance. Try and ensure that you arrive at the hostel on time if your evening meal has been booked. (E.)

Booked your Easter Adventure yet?

Thousands of youngsters will be hitting the hostels trail this Easter, exploring the country on foot or cycle, and spending the nights at the friendly hostel. It's high time you joined the Y.H.A. and booked your hostels. Send today for details!

To Youth Hostels Association, Trevelyan House, St Albans, Herts.

Please send me free booklet "Going Places?" and an enrolment form.

Name

Address

HW 623

Alpine PICTURE WORKED IN RELIEF

THE picture shows a typical Alpine scene, with mountains in the background, and a chalet in the foreground. The chalet is built up in relief, using a series of overlays to give a 3D effect. When finished the picture gives a pleasing and realistic representation of a Swiss scene.

The full-size patterns on pages 384-5 are used throughout in building up the picture, and you should also consult the 'step by step' pictorial instructions in Figs. 1 to 4.

First cut out the backboard from $\frac{1}{4}$ in. plywood. The border shown will allow for the rebate of the picture moulding. If you are competent enough to paint the background scene you should commence with oil paints as in Fig. 1, filling the grain before you start, to prevent the paint soaking away. Take your picture as shown on pages 384-5, tracing and transferring the shapes with carbon paper in the usual manner. Alternatively an Alpine scene from a calendar or magazine can be stuck down to give the same effect.

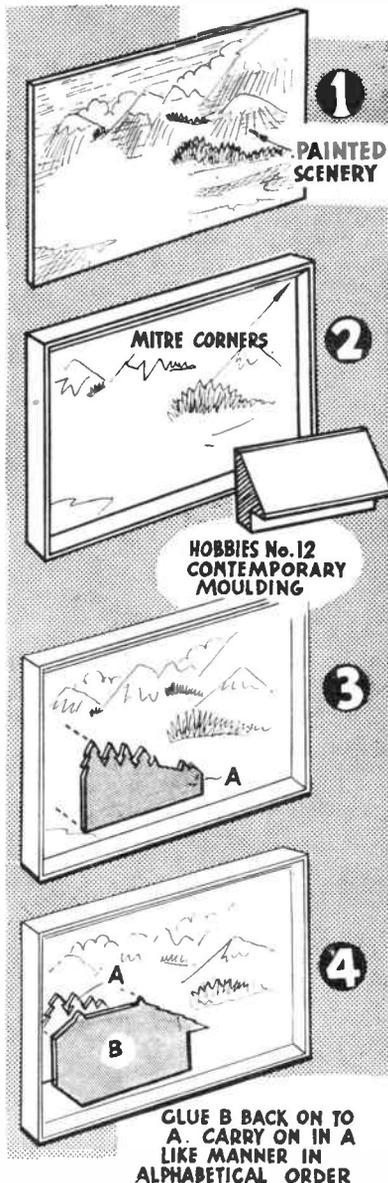
'PENGUIN' JIGSAW

THE basis of the attractive 'Junior jigsaw on page 391 is the Decorette transfer No. 400. Select a piece of $\frac{1}{4}$ in. plywood just a little larger than the transfer and paint it white. Two undercoats and one top coat will be sufficient.

PATTERNS ON PAGE 391

Now slide off the transfer on to the painted surface exactly as described in the instructions. When the transfer is dry the jigsaw lines are pencilled in as indicated by the thick black lines.

The cutting is done with a fretsaw, taking care to hold the saw upright. Clean up the edges with glasspaper after cutting. The Decorette transfer No. 400 costs 2s. 3d. per sheet, postage 3d. (M.p.)



Next mitre Hobbies No. 12 contemporary moulding round the edges as in Fig. 2, and glue in place to form the frame.

Now you are ready to build up the chalet, etc. All the overlays are cut from $\frac{1}{8}$ in. wood. They are lettered in the order in which they are fixed. Start with the trees A, gluing them down to the painted background, as seen in Fig. 3. It will be advisable to scrape some of the paint away in patches to ensure good adhesion. Follow on with the main chalet piece B, gluing it over the trees as at Fig. 4.

FULL-SIZE PATTERNS ON PAGES 384-5

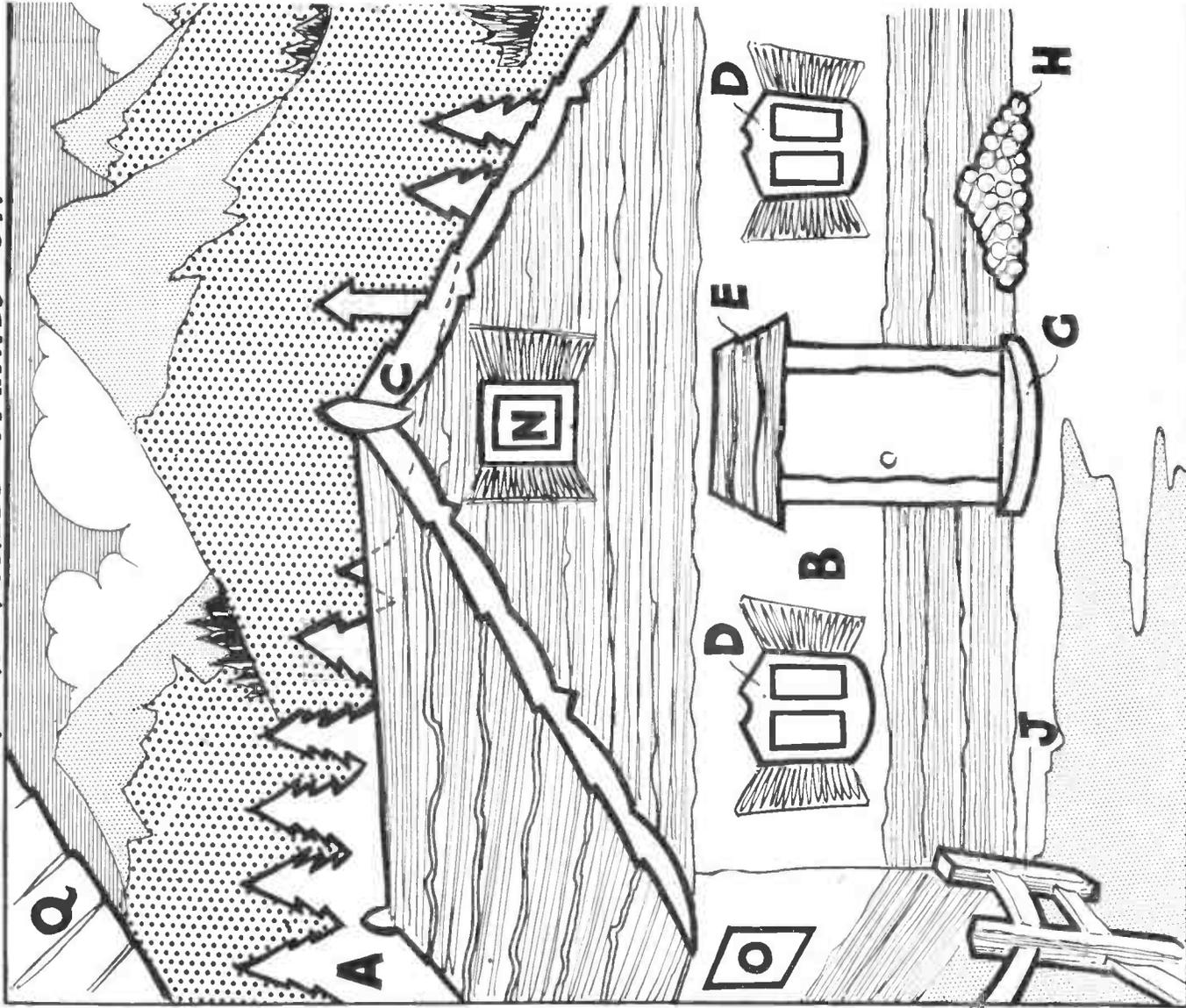
Carry on with the various pieces, gluing them in the appropriate positions. You will see from the drawings that there is scope for additional details. For instance the roof could be further enhanced by the addition of separate overlapping pieces of thin wood. The same applies to the front where thin wood might give a better effect of overlapping boards. The door P and the overhanging pieces R and Q could also be made up of smaller separate pieces.

After all the overlays have been glued in place they are painted or stained to give the best effect. Stain should be used where natural wood is to be represented, but paint can be applied to chimney, windows, drainpipe, door, etc.

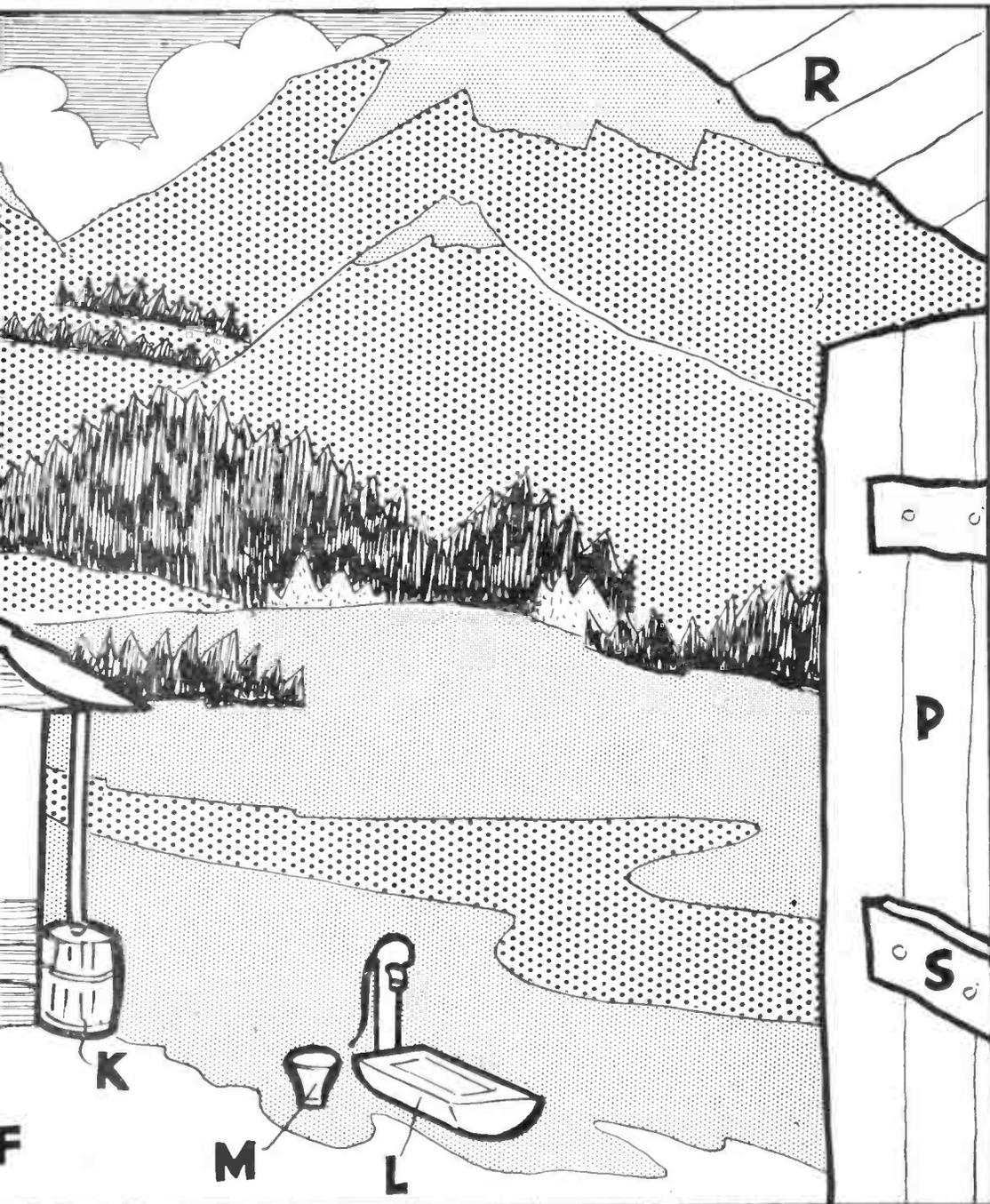
The moulding, too, can be painted to show off the picture. White is probably the best choice of colour, since it will add contrast to the greens and greys of the trees and mountains.

Hang the picture on a wall by means of stout cord attached to picture rings inserted in the back of the moulding. Suitable moulding (No. 12) can be obtained from Hobbies Ltd, Dereham, Norfolk, and from any branch or stockist, price 3s. 0d. per 3 ft. length, post and packing 1s. 6d. extra on any quantity. (M.h.)

MOUNTAINS, SKY & TREES PAINTED ON.



*** Alpine Picture ***



CUT BACKBOARD THIS SIZE

A SHOE-CLEANING TIDY

THIS easy-to-make tidy provides everything necessary for shoe cleaning. The box is divided up into various compartments which are designed to take brushes, tins of polish, jars of cream, and duster. There is room for both brown and black brushes, as will be seen in the illustrations. A rest for your foot is also provided, and there is a stop to prevent your foot from slipping when cleaning.

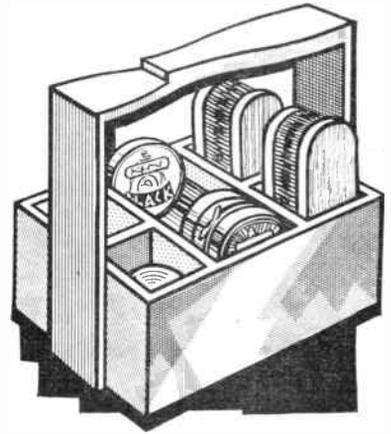
All parts are lettered, and you can refer to the cutting list for sizes and thicknesses of wood. All except the floor E are cut from $\frac{1}{2}$ in. wood.

Glue for strength

Make a start by constructing the box as shown in Fig. 1. Nail the sides A to the ends B. Use glue as well as nails for extra strength. Nail the floor E in position, and set aside for the glue to dry.

The partitions are next built up as in Fig. 2. Cut pieces C and D first, and nail them together before slipping them into position in the box. Use nails and glue to secure them at each end.

Next cut the shaped pieces F from $\frac{1}{2}$ in. wood, using a fretsaw. The radius of the semi-circle will be $1\frac{1}{2}$ in. Glue these pieces in position at each end of the partition as in Fig. 2. Now bend a piece of thin plywood round, and pin it to pieces F as clearly shown in Fig. 3. For easy bending the grain of the plywood should run lengthwise.



CUTTING LIST

A	10 in. by 4 in. by $\frac{1}{2}$ in.	Cut two.
B	6 in. by 4 in. by $\frac{1}{2}$ in.	Cut two.
C	6 in. by 4 in. by $\frac{1}{2}$ in.	Cut two.
D	4 in. by $2\frac{1}{2}$ in. by $\frac{1}{2}$ in.	Cut two.
E	10 in. by 7 in. by $\frac{1}{2}$ in.	Cut one.
F	See Fig. 2.	
G	10 in. by 3 in. by $\frac{1}{2}$ in.	Cut two.
H	10 in. by 3 in. by $\frac{1}{2}$ in.	Cut one.
J	7 in. by 3 in. by $\frac{1}{2}$ in.	Cut one.

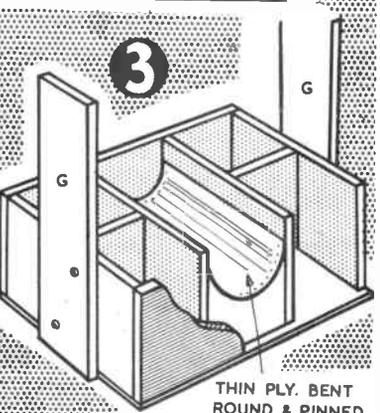
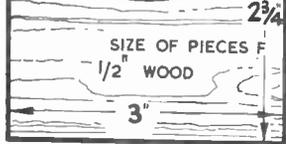
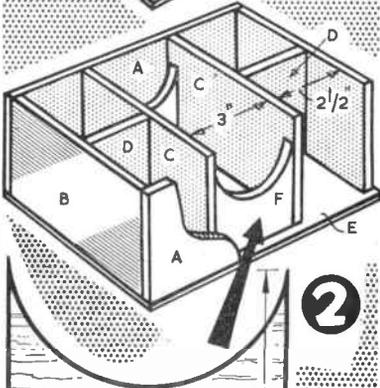
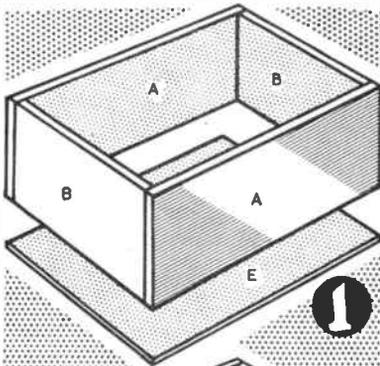
Cut the uprights G from $\frac{1}{2}$ in. wood, and screw them to the ends. They should be central, and extend right down to the floor. Use countersunk screws, and sink them slightly below the surface, so that the holes may later be filled.

Shaping the foot rest

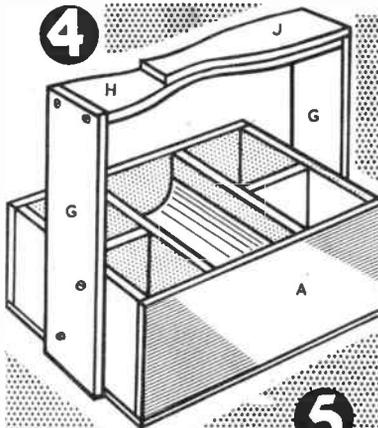
The foot rest is made up from pieces H and J glued together as in Fig. 4. Note that piece J overlaps piece H in order to fit over the upright G. The approximate shape can be drawn out by the square method as in Fig. 5. Enlarge the squares to 1 in., and draw in the shapes one square at a time. Transfer to the wood by means of carbon paper, and cut out the shapes with a fretsaw. Glue them together, and fix to the uprights G as illustrated.

Clean up with glasspaper, and fill the grain before stopping up holes and screws with putty or any form of stopping. Give one or two flat undercoats, and rub down lightly with garnet paper or silicon carbide paper used wet. Finish off with one or two top coats of high gloss enamel. After the enamel has dried, a piece of green baize or heavy cloth should be glued to the bottom of the box.

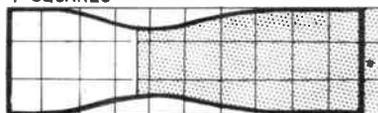
(M.h.)



THIN PLY. BENT ROUND & PINNED TO PIECES F



H. HEAVY OUTLINE
J. SHADED
1" SQUARES



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CASCAMITE 'ONE-SHOT' RESIN GLUE

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time for
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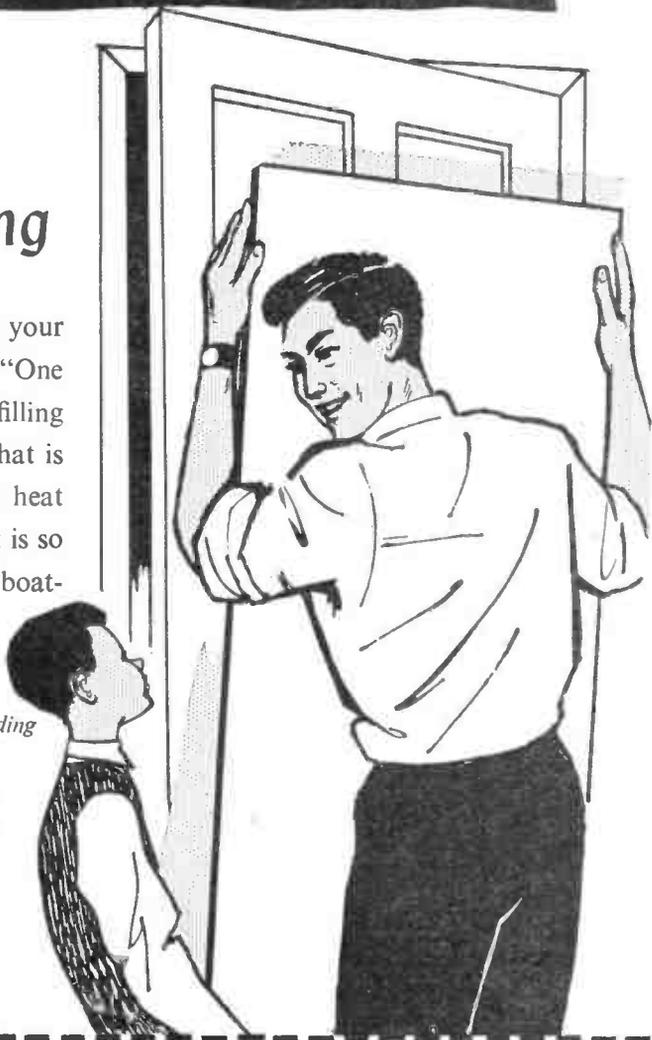


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CHEMISTRY AT HOME

THE saying 'Hydrogen oxide (water), H_2O , for drinking; hydrogen peroxide, H_2O_2 , for blondes' shows us the close relation between the two liquids. Just one atom of oxygen, O, turns water into a highly useful and reactive substance.

Not only is it a harmless bleaching agent for hair, silk, feathers, flax, wool, bone, ivory, and sponges, but it is medically useful for floating out dirt and debris from wounds. All of these actions depend on the release of oxygen, and reversion into water:



The oxygen reacts with the colouring matters to produce colourless substances, or, in the case of wounds, forms a stream of minute bubbles which dislodge undesirable matter.

Labels on bottles of hydrogen peroxide enjoin us to keep it in a cool place. The reason for this is soon evident if you warm a little in a test tube. Bubbles of gas are evolved. Light a wooden spill, blow it out and plunge the glowing end into the test tube. It relights with a 'pop', indicating that oxygen is being given off.

The usual '20 vol.' hydrogen peroxide which we buy contains about 6 per cent weight in volume of real hydrogen peroxide, the rest being water. On warming such a solution it will give off 20 times its own volume of oxygen.

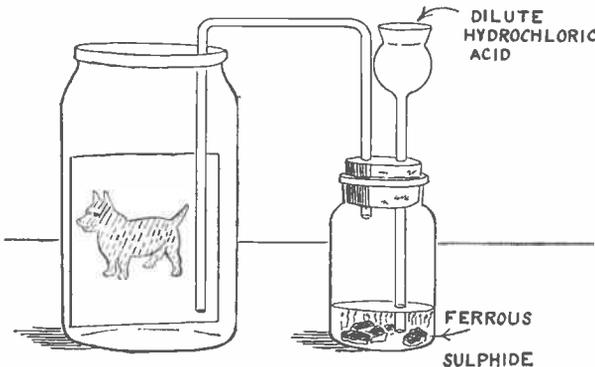


Fig. 1. Blackening the dog

Hence the term 20-vol. Hydrogen peroxide solutions substantially stronger than this are too reactive for medical use, and cause harm. Pure hydrogen peroxide, that is 100 per cent strength, is a dangerous substance. It is a syrupy liquid which sets fire to cotton, explodes in contact

with powdered metals, and blisters the skin.

Its property of easily parting with oxygen is useful in the laboratory. Suitably adapted, a number of startling conjuring tricks may be carried out by means of it. When, for instance, it acts on lead sulphide, PbS , it transfers oxygen and converts it into lead sulphate, $PbSO_4$:



HYDROGEN PEROXIDE

As lead sulphide is black and lead sulphate white a strange example of chemical magic can be shown. A black dog may be changed into a white!

Pencil the outline of a dog on paper, paint within the outline with lead acetate solution, $(CH_3COO)_2Pb \cdot 3H_2O$, and when the paper is nearly dry put the drawing in a jam jar. Now generate hydrogen sulphide, H_2S , from ferrous sulphide, FeS , and dilute hydrochloric acid, HCl :



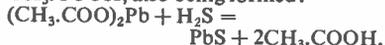
Fig. 2.

Water + Water = Beer
Beer + Water = Ink

pouring this into about 100 c.c. of boiling water, allowing to stand until the starch cellulose settles, and pouring off the upper liquid into the ink bottle).

On pouring from the jug into the

Lead the gas into the jam jar, as shown in Fig. 1. The dog blackens, owing to production of lead sulphide, acetic acid, CH_3COOH , also being formed:



As the gas hydrogen sulphide is very

smelly, the operation should be conducted in the open air.

To effect the black to white change, simply spray the drawing with hydrogen peroxide from a scent spray or a plastic squeezer spray.

It is not generally known that this reaction is used to restore darkened oil paintings. Such paintings darken because traces of hydrogen sulphide in the air gradually act on the lead pigments to produce lead sulphide. The restoration is an expert's job, however, since not all lead pigments are white. A restored picture is actually more durable than the original, for the lead sulphate formed is resistant to hydrogen sulphide.

When dilute sulphuric acid, H_2SO_4 , is added to potassium iodide solution, KI , potassium sulphate, K_2SO_4 , and hydriodic acid, HI , are formed:



Try this in a test tube and then add hydrogen peroxide. The colourless solution becomes brown and smells of iodine, I_2 . The hydrogen peroxide has supplied oxygen to the hydrogen, H_2 , in the hydriodic acid, forming water, H_2O , and iodine:

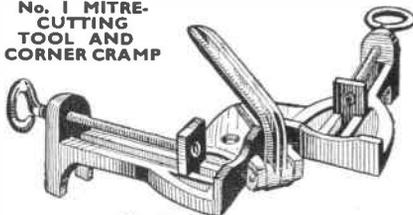


On a larger scale this may be used to prepare solid iodine when required, the iodine being washed by decantation, filtered off, and allowed to dry spontaneously. It should be kept in a glass-stoppered bottle, since it attacks cork.

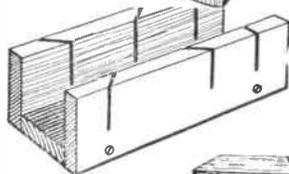
This reaction leads to a double conjuring trick. 'Water' plus 'water' will give 'beer' and the 'beer' when poured into 'water' will yield 'ink'. A little showmanship can make this most effective.

Have before you a small glass jug containing a little 'water' (potassium iodide solution acidified with dilute sulphuric acid), a clear glass bottle containing a little 'water' (hydrogen peroxide), and a clean ink bottle also containing a little 'water' (a clear solution of starch made by grinding about 0.5 gram of starch with cold water,

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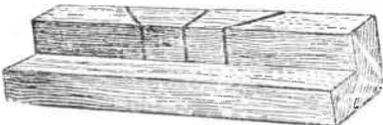
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SCULPTURES IN CONCRETE

Sculpture is a form of art which is usually difficult and expensive to practise and calls for a high degree of skill. The very unusual methods described here, however, enable pieces of sculpture to be produced easily and cheaply, with no previous experience. Garden ornaments and small pieces which can be shown indoors can all be made by this method.

The concrete mixture which is used to produce a soft, easily worked 'stone' is made by mixing equal quantities, by bulk, of sand, cement and peat. The ingredients are thoroughly mixed, and just enough water is added to give a putty-like consistency. The mixture is tipped into a polythene bag and gently kneaded to remove any air pockets.

Various basic shapes can be produced. By filling the bag, an almost spherical cushion shape results (A). A larger bag, partly filled, produces a long pillar shape (B). Filling one corner of a bag gives a cone shape (C).

The bag can be left hanging, pinned to a shelf, or rested on a bed of soft sand while the cement dries, so as not to spoil the cement shape. The shape is left to dry for four days, after which time the

By
A. Liston

polythene bag is carefully peeled off. The concrete will still be fairly soft, and should be left for another day to harden off before being worked.

The most suitable tool for shaping the cement is an old knife, which can be used to score, scrape, pare and make holes. The shape will be of the same hardness as a firm clay at this point, and easy to cut away.

A well-filled bag (shape A), produces a suitable shape for sculpting a head, which is always one of the most satisfactory pieces to make (D). Rather sim-

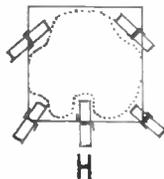
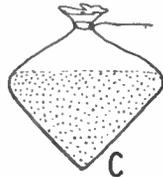
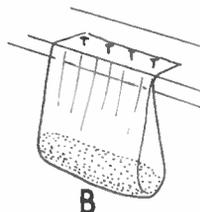
pler, however, is the cone shape, which can become a toadstool for garden decoration (E), or a long pillar shape may be pared down to a modern abstract form (F), according to your fancy.

Amusing little stylized creatures may be made by using a little ingenuity. For example, the owl (G) is made from a flat cushion shape moulded in a plastic bag with clothes peg clamps to produce the rounded basic shape with 'ears' (H).

Another suggestion is the potted cactus (I). This is basically a pillar shape carved out and set in an empty tub-shaped carton which is then filled with cement. The possibilities are almost limitless.

A plinth for completed sculptures is made by standing them in a tin tray or cardboard box and filling this to the required depth with cement. After two days the complete sculpture may be carefully removed.

The concrete of the sculpted pieces takes about a fortnight to harden completely, after which it may be finished off, if desired, by painting with emulsion paint. If an imitation metal casting effect is required, two coats of aluminium or bronze lacquer give a most unusual effect. The concrete, if left untreated, dries out to a pale grey colour, faintly mottled with brown.

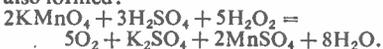


● Continued from page 388

HYDROGEN PEROXIDE TRICKS

bottle 'beer' is produced, and the addition of this to the ink bottle produces 'ink' from the action of the free iodine on the starch solution (Fig. 2).

Now try adding a little dilute sulphuric acid to potassium permanganate solution, KMnO_4 , and then pour a c.c. or so of the wine-coloured mixture into about a c.c. of hydrogen peroxide. The final mixture becomes colourless, and effervesces strongly. A glowing wood spill plunged into the test tube above the liquid bursts into flame, showing that oxygen evolution is the cause of the effervescence. Potassium sulphate, manganese sulphate, MnSO_4 , and water are also formed:



This reaction, too, may be turned into a startling trick. Namely, turning 'wine'

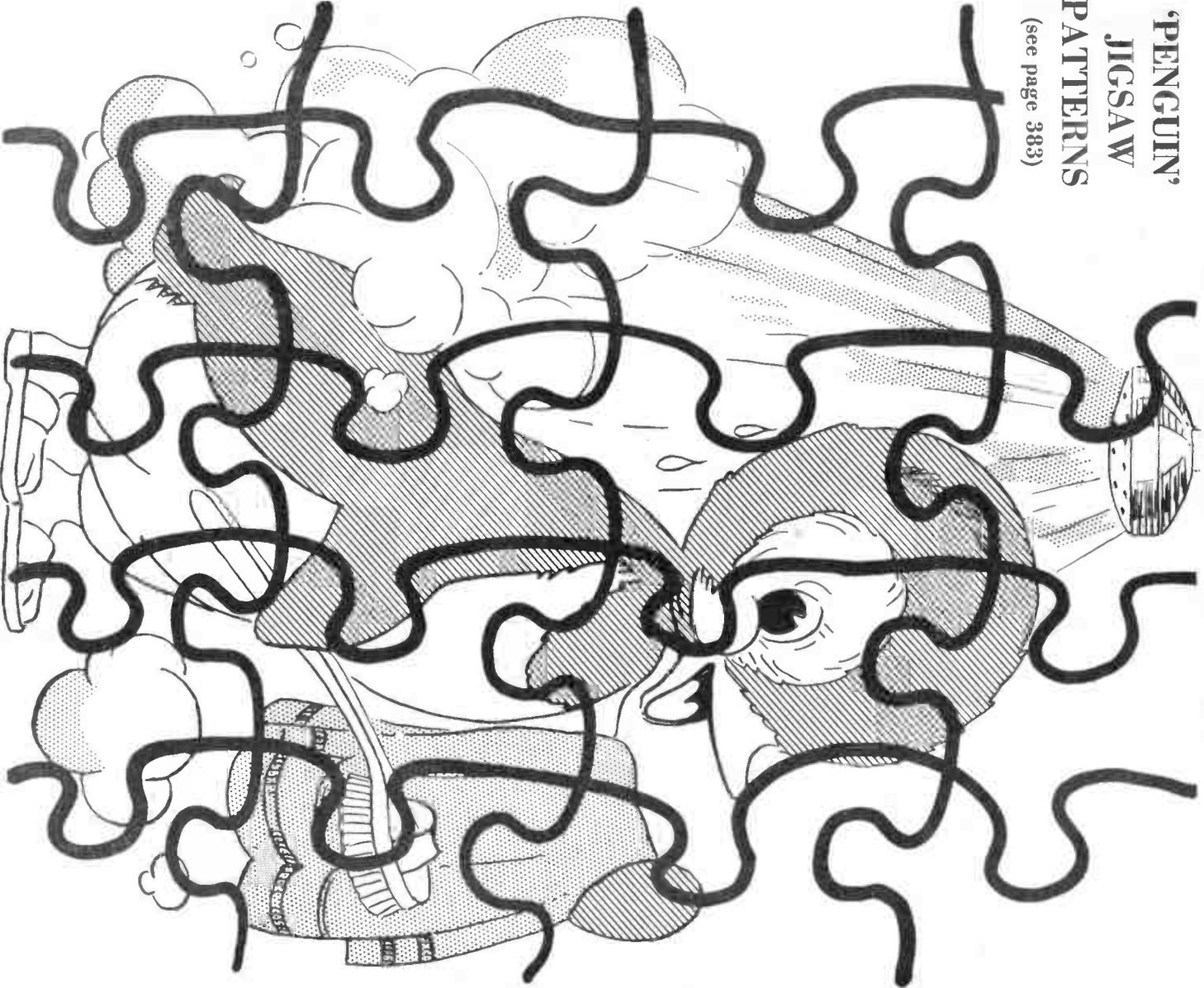
into 'health salts' by adding 'water'. Have before you a wine bottle containing acidified potassium permanganate solution to represent wine, a small glass jug containing hydrogen peroxide to imitate water, and an empty tumbler.

Pour some 'wine' into the tumbler, follow up with a little patter such as: 'They say one should take a little water with it', (picking up the jug of 'water'), 'but health salts are more refreshing', (pouring 'water' into the 'wine'). The 'wine' instantly decolourizes to foaming 'health salts'!

Needless to say, none of the 'beverages' of these tricks should be tasted. Though none are lethal poisons at the dilutions used, all household vessels used should be washed out five or six times with water before putting them back into domestic use.

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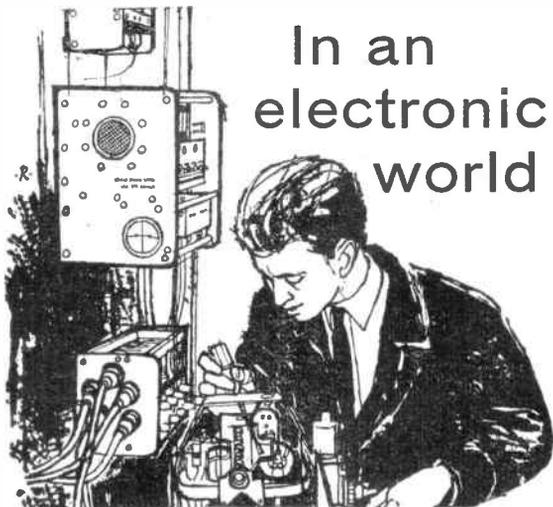
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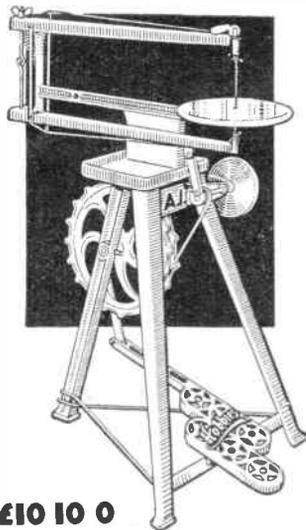
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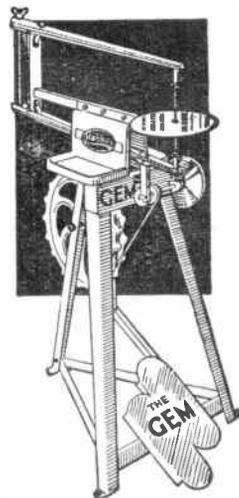
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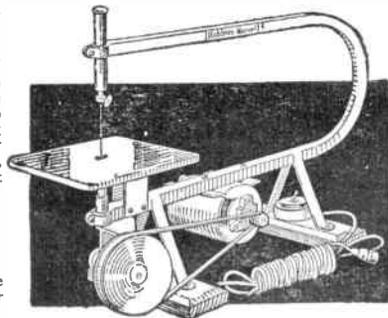
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