HOBBIES weekly

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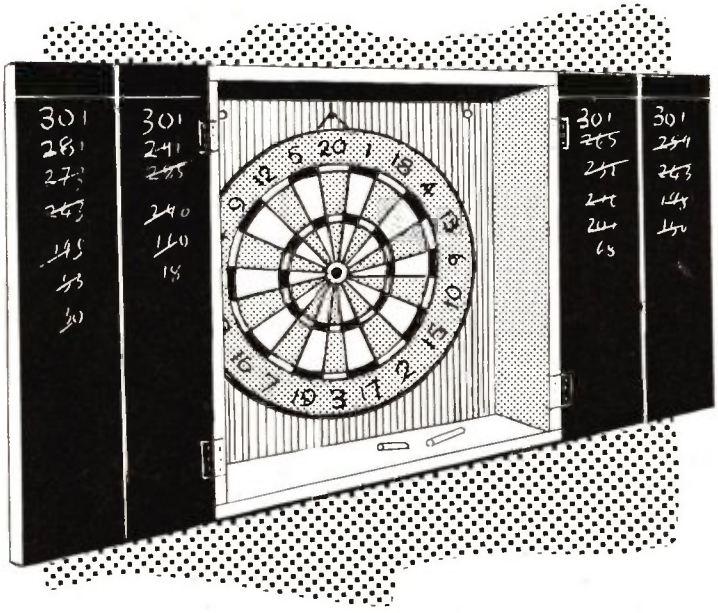
A DARTBOARD SCORING CASE



HANDY FOR HOME OR CLUBROOM

Hobbies

FOR CRAFTSMEN OF ALL AGES

6D

FREEDOM FROM HUNGER ISSUES

By L. P. V. Veale

AT the end of last year the United Nations Food and Agriculture Organization, which was founded in 1945, opened a special campaign to introduce a freedom from hunger drive. The F.A.O., as the organization is called, has been working on the problem of feeding all the people of the world and they published some very startling figures on the subject of food, figures which we here in the Mother Country find very hard to realize but which we ought to try to understand in order that we can play our part in helping the millions who are underfed.

Well, the population of the world in round figures is three thousand millions and according to the work of the F.A.O. no fewer than half of these are hungry. Now that does not mean the hunger that we feel after we have had a good long walk or a hard game of football or cricket but it means that half the population of the world seldom have enough to eat to satisfy their hunger — that after their meal they require more food. The F.A.O. also estimate that twenty-five million people starve to death every year.

Well, these are very alarming figures and as the population of the world is increasing very fast indeed it means that each year we shall require more and more food and it is calculated that by 1980 the world's food supplies will have to be doubled if hunger is to be abolished.

The F.A.O. want everyone in the world to know these facts, they want everyone to do their best to help to double this present food supply and therefore they chose a very excellent medium for spreading the news of this necessity. They appealed to all the postal administrations throughout the world to support the campaign against hunger by issuing special stamps. Well over 100 countries agreed to do this and they issued many stamps to bring home to the people of the world the need for support.

Our own country, as you know, issued two stamps the 2½d. pink and the 1/3d. yellow. Not what one would call very useful values. The 2½d. is of course the cost of sending a postcard inland, but if you wish to send a postcard out of the country then the stamp is the 4d., or if to a part of the Commonwealth then it is still 2½d.

So you see it really is quite important what value stamp you issue for any special purpose. If the idea is to send a message or a commemorative gesture around one's own country then the value of the inland postage is the stamp required. If, however, the message is for the whole world then it is the value of the foreign postage which is necessary.

No doubt you have all got specimens of the 2½d. and the 1/3d. in your collections and if you look at them you will see the emblem of the campaign. It is more clearly shown on the 2½d. than on the higher value.

The first illustration is of the 4d. stamp from Eire (they have to pay 4d. to send a letter here although we only pay 3d.) In front of the globe you can see the three ears of wheat, which nearly all the countries have included in their campaigns.

The second illustration is one of the stamps from France (the 50c value), and this has a very different type of design. The obviously hungry woman is holding out her hands to grasp the three ears of wheat. This is quite a clever design as it forces one to look at that all important symbol.

Now look at the third illustration, the stamp from British Guiana. To me the purpose is much too vague. Presumably the circle at the back is meant to represent the globe. If this is the case then the cow, the fish and the hen which are all very close to the globe are out of all proportion. The hen is nearly half the size of the cow and the fish is also a very meaty specimen. All three are looking away from the ears of wheat which seem to be tucked away as far as possible in the top right hand corner. Were it not for the words 'Freedom from Hunger' it would be almost impossible to say why the stamp was issued.

In a similar way the Jamaican stamp seems to lack a focal point, or if there is one then it is the display of fruit —

pineapple, maize cob, bananas, and oranges. The three ears of wheat seem to be standing in the middle just to balance the cactus on the left and the sugar cane on the right, and the figure planting something is placed there to balance the fruit.

Quite a large number of the countries that have taken part in the campaign have printed the phrase Freedom from Hunger in English, (Syria, Iran, Pakistan, Cyprus, Japan, Libya, and Egypt are examples). Some of the designs, without meaning to be, appear comic, others are pathetic. The Belgian stamp for example shows a couple of peasants sitting down at a table apparently to a cup of coffee and a slice of dry bread. When you look at the stature of the peasants you would hardly say they seem to be starving.

The Republic of Tunis shows the profile of someone who appears to be taking a dose of medicine. The mouth is very widely open and a spoon is being introduced but one has to imagine the expression on the face. From Argentine we have the picture of a small child having a meal. At the moment the picture was made the child had put down its spoon on the plate and had truly buried its face in a very large mug — having considerably more than a pinta!

The Republic of China has naturally chosen a picture of a rice field — a girl worker carrying an armful of rice and a tractor working in the background. But there is a rather unusual note brought in, namely two aeroplanes dropping loads by parachute — an idea which brings out the dire need for speed in this effort.

Kenya, Uganda and Tanganyika also shows a tractor and in the background some workers using hand tools. This evidently is to convey the idea that man must use every mechanical aid and so increase the area of land that it is possible to cultivate. Five or six countries have used pictures of birds, some feeding young at the nest, and one stamp has as its theme a bird eating out of the outstretched hand.

It would be rather a good idea to make a special side line of these 'Freedom from Hunger' stamps. Are they stamps from a country which has something to give or do they come from a country which has 'want'?

★★★★★★★★★★★★★★★★★★★★
★ NOTE TO CORRESPONDENTS ★
★ All correspondence on any subject covered in this magazine ★
★ *must* be addressed to: The Editor, ★
★ Hobbies Weekly, Dereham, Norfolk. If a reply is required, queries ★
★ should be accompanied by a ★
★ stamped addressed envelope and ★
★ reply coupon inside back cover. ★
★★★★★★★★★★★★★★★★★★★★

PAPER DOLL COLLECTING

By R. L. Cantwell

THE origin of paper dolls goes back almost to the invention of paper, in China, centuries ago. The earliest paper figures were used in religious rites and this custom is still practised in some countries today.

Paper dolls, as we know them, were manufactured in England and France as fashion models in the 1700's. They were for grown-ups exclusively and were very expensive. Prior to this and since then paper toys have always been popular with children. It is not unusual for a child to prefer paper dolls to those of more lasting materials.

Usually discarded after childhood, paper dolls are now becoming choice items in the adult collector's search. Collectors of antique dolls usually include a few paper dolls to represent a type of doll as part of their collection. More and more collectors are specializing in this one phase for several reasons. Easy storage and economy are important considerations when collecting and paper dolls are no problem here. They not only record the history of costume and manners but they are colourful, varied and entertaining. Paper houses, furniture and buildings in 2 dimensions or 3 dimensions have captured the fancy of the 'scissors and paste' wielders for many generations. The amount of pleasure and education derived from this pastime can never be measured because they are limitless.

Paper dolls recall nostalgic memories of childhood for some of us and fortunately a great deal of this ephemeral material escaped the ravages of time and remained for us to collect.

Countless varieties of paper dolls, cutout toys, pushouts, standups, paper models and paper theatres are being manufactured in most countries. Modern printing methods make the latest products exceedingly colourful to youngsters and adults alike. Many of the old fashioned paper dolls are to be reprinted.

You will find many mini-dolls on sale in toy shops. In Oxford one can buy male and female dolls dressed in 'cap and gown' — all ready to take their exams. At seaside resorts whole stalls are devoted to the doll trade and some real worthy specimens can be found.

Whether you start collecting with one of your own long forgotten paper dolls or one of the very newest 3D paper dolls you will find yourself on the road to hobby adventure.

For those readers who have written to the magazine for information about a club for doll collectors, 'The Nyasaland Doll Club' has just been formed by Mrs. Mary Davies, P.O. Box 711, Limbe, Nyasaland, Central Africa. There is a small yearly subscription. But where foreign currency is difficult, a doll dressed in national costume instead of cash will be accepted. The club also deals with African curios and souvenirs.

And now some pen pals for doll collectors:

Vera G. Crouch, 1500 44th Ave., San Francisco 22, Calif., U.S.A.

Mrs. Wayne Reed, R. R. 2, Sheffield, Iowa, U.S.A.

W. M. Braun, 2020 Central Ave., Duboque, Iowa, U.S.A.

Mrs. Anna M. Mcinnis, East 814 Queen Ave., Spokane, Washington, U.S.A.

1—USING THE HOME RECEIVER

By 'Radio Amateur'

MANY valve receivers of the kind used in the home have one or two short-wave bands, and these often give quite good SW reception. It may thus be possible to start listening on these bands without any expense at all. SW listeners often begin with a secondhand or old broadcast band receiver that has one or two SW ranges. A set of this kind may have been replaced by a modern transistor portable, or by a receiver giving long, medium, and VHF reception. If so, there should be no objection to the old set being used especially for short-wave listening.

Most commercially-made receivers of this type have about 4 to 6 valves. Sets known to be very many years old can still give good results, if the valves are in proper condition. If reception is weak or distorted, or if the set has ceased to work at all, it is possible that some new valves will cure this. Many receivers made several years ago have octal (8-pin) valves, and the most popular valve types are used in such large numbers that they are still easily bought from postal valve suppliers. The price depends on the valve type, but is generally about 2s. 6d. to 10s. 0d.

If there is any doubt about the efficiency or otherwise of valves already present, most radio shops will test them.

SW bands

The short-wave coverage of these popular old receivers varies greatly. Some sets have a single SW range, covering a band from about 19–50 metres, or about 16–6 megacycles. Other receivers had two SW bands, one covering about 12–25 metres (25–12 mc) and a second perhaps 25–60 metres (12–5mc).

If the tuning dial of the receiver is examined, this will show what short-wave bands are included, and what wavelengths they cover. The scales are often given in metres. Sometimes markings are in megacycles, and occasionally the receiver has a 0–100 or 0–180 scale, so that readings can be noted down.

At first, it may seem confusing to have both wavelength in metres, and frequency in megacycles. This is necessary because some receiver dials are calibrated in wavelengths, and others are marked with frequencies.

It is actually very easy indeed to change any wavelength in metres to the corresponding frequency in megacycles, or the reverse. If 300 is divided by the known factor, the wanted factor is found. That is:

$$\frac{300}{\text{mc}} = \text{metres.}$$

$$\frac{300}{\text{metres}} = \text{mc.}$$

For example, it is wished to tune to 30 metres, but the receiver dial is marked in megacycles. What reading in mc is wanted? 300/30 = 10 mc.

The chart shows frequencies and wavelengths, and can be kept to hand to avoid any need for working out the result.

SW tuning

When first using the receiver on a short-wave band, it will be noticed that very many stations may be heard over an

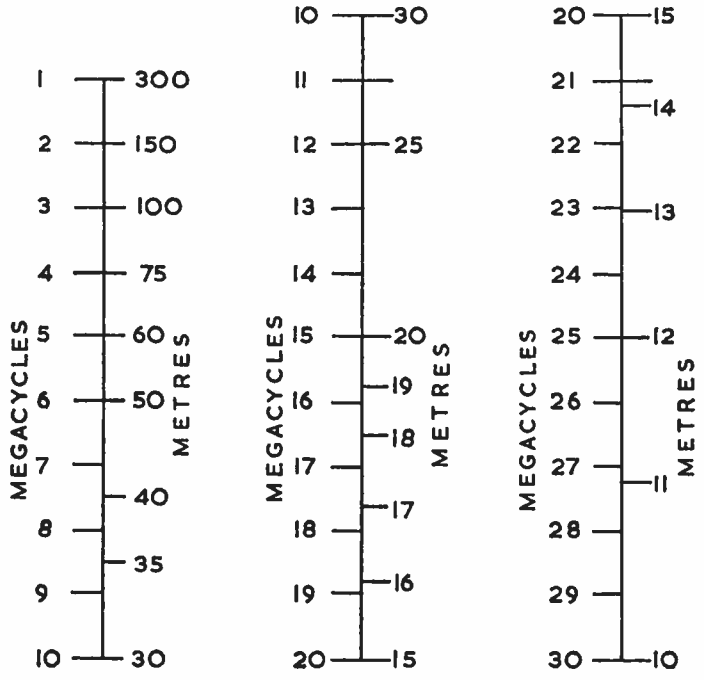


Chart showing frequency and wavelength

exceedingly small movement of the tuning pointer. There may also be large parts of the tuning range where only an occasional transmission is noticed.

Many ordinary broadcast stations, which radiate music, news, and other items, are congregated into small bands. For example, a short-wave station list shows no fewer than 250 stations working between 30 metres and 31·5 metres. This is called the 31 metre band.

Several bands of this kind may be marked, especially the 19 m, 25 m, 31 m, 41 m and 49 m bands. These are the spots where ordinary short-wave stations are most likely to be found.

Tuning in one of these bands is generally very critical, because so many stations are present close together. Many stations all over the world broadcast in English for at least part of the day.

Other bands are provide for amateurs, who use short wave radio to communicate with each other. This will be covered later.

Time of day

Short waves travel upwards at an angle, and are then reflected down again to earth, when conditions are suitable. In this way, a SW transmission may be heard at an enormous distance.

The ionised layers around the earth which reflect the waves change from hour to hour, and day to day. The extent to which they bend or reflect the transmission also depends on the frequency.

This means that some SW bands may be almost completely dead, at some times of day. A few hours later the same band may be full of long distance stations. The ionised layers are influenced by daylight, so it may be found that the remote areas from which SW transmissions are heard move round the globe.

Whenever a period of listening begins, it is as well to check most of the bands, even if they seemed useless earlier. Advantage can then be taken of any change in conditions. The experienced listener soon gets an idea of what to expect. More details of band conditions will be given later.

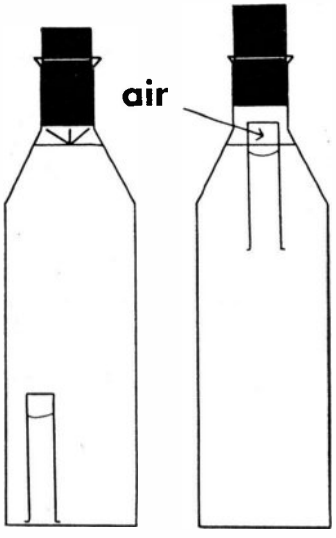
Dx reception

Dx is an abbreviation for long distance, and many SW listeners aim to log as many remote stations as possible. They may wish to get confirmation cards from 100 different countries, or merely one Amateur confirmation card from each county of England. Collecting such cards is somewhat like collecting stamps or matchbox labels.

Some listeners get all their satisfaction from hearing remote stations, and do not wish to have confirmation cards.

A good aerial will greatly improve reception, and this is covered in the next article in this series.

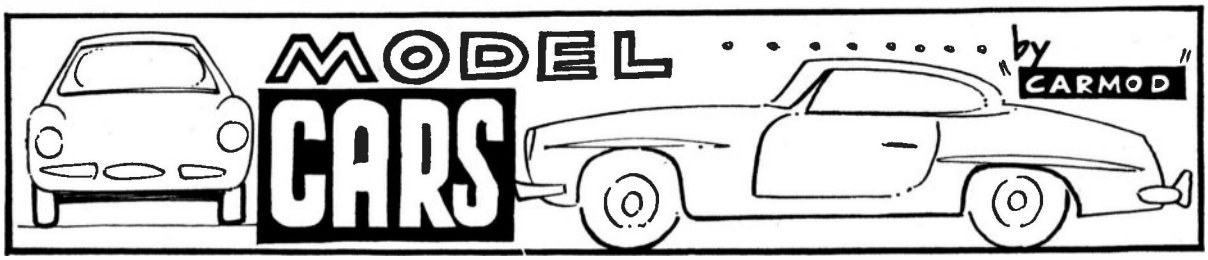
A Submarine in a Bottle



PLASTIC turtles and frogmen divers, sometimes presented free with breakfast cereals, are modern descendants of a toy invented by the philosopher Rene Descartes over three centuries ago. Improvise your own diver by floating an inverted glass tablet tube in a bottle filled with water. Enough water should first be placed into the tube to ensure that it will only just stay at the surface. Thus a 'bubble' of air will be trapped within the tube.

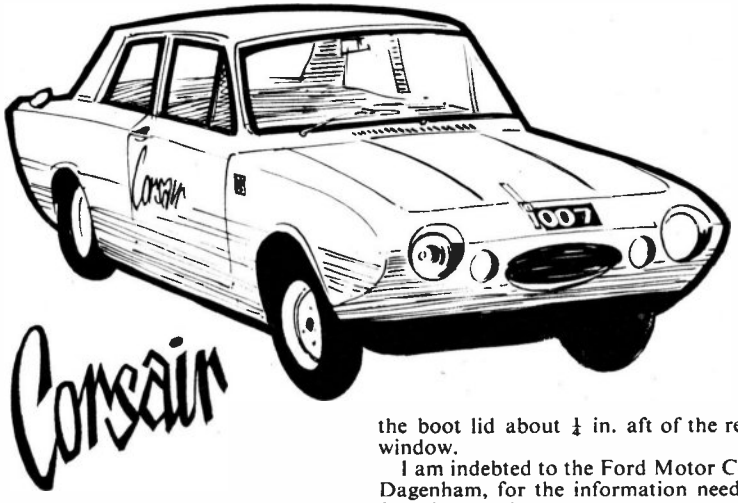
Put a cork stopper into the bottle, and press down hard upon it. The 'diver' will descend. When you gently ease the pressure, the tube will ascend again to the surface.

Air is compressible; water only very slightly so. Pressure upon the cork is communicated to the water, which transmits the force to the air bubble inside the diver. Compression of the air diminishes the size of the bubble, and permits more water to enter the tube, so that it becomes heavier and sinks. Submarines work like this. The diver rises when you relieve the pressure on the stopper, because then the bubble in the tube can expand again and expel some water. (A.E.W.)



AT Whitsun this year a Ford Cortina in standard mechanical form, broke 13 World Speed Records for Class F (1,100 to 1,500 c.c.) cars, at the Monza circuit in Italy. Ten of the new records are over the magic 100 m.p.h. — a great achievement for a car of this kind and its team of six drivers.

A RECORD BREAKER



The Dinky model of the Corsair is suitable for a modification into a replica of this car and the work involved is not as extensive as some of the choppings we have covered recently. Although in standard mechanical form, some 'plastic surgery' was carried out on the front and rear ends and it is these parts which have to receive the chopper's attention.

For the rear end modification it is only necessary to hacksaw and file off the bumper bar. A little more work is required at the front: after cutting and filing away the bumper and the word 'Corsair' (this should be left on the rear end) the front must be built up to its improved aerodynamic shape with a self-hardening modelling material such as Plastone. Before applying this material it is advisable to smear the metal with Durafix to ensure a secure adhesion. Whilst still soft, an air intake and two holes for additional headlamps should be made in the Plastone. Two small balls of Plastone are pressed into position on both sides of the boot to represent petrol filler caps.

Painting details

When all is hard the model is ready for painting. The roof and boot should be painted white while the remainder is coloured in what Fords call Spruce Green. This shade is in their standard range and most Ford dealers will help by showing the colour card. Number plates are '007' and two small Union Jacks should be applied on the sides of the car, just forward of the doors; in the case of the latter, the Wrenn transfers are useful. A bonnet retaining strap can be cut from Sellotape X and pressed in position to one side of the front number plate.

Finally, the word 'Corsair' can be traced on two pieces of thin tracing paper with a black ballpoint. If polystyrene cement is applied to the reverse side of the paper it will be found that the paper will clear and these two 'transfers' can then be placed in position on the doors.

At the French circuit of Montlhery in 1962, a Ford Anglia set up a similar set of records for its particular class. The Dinky model of this car is again adaptable to a replica. In this case the model should be stripped by filing off the button ends of the locating pegs on the underside of the car. Front and rear bumper bars and the radiator grille should be filed off and an air intake slit made in its place. The car can then be re-assembled and painted yellow. A petrol filling cap is formed from a small ball of Plastone and applied in a central position on the boot lid about ¼ in. aft of the rear window.

I am indebted to the Ford Motor Co., Dagenham, for the information needed for this chopping.

A Painting Tip.

One of the difficulties of painting small model cars is knowing just how to hold them while using a brush. If the car is still tacky from an all over paint job it is most frustrating to have to wait until it is completely dry before adding details. Even when the paint seems set it is very easy to leave fingerprints on the soft paint and the whole effect is ruined.

After some time spent in trying to come to terms with the problem I have found an effective way which is so simple that I am now kicking myself for not finding it before. All that is needed is a piece of stiff cardboard an inch or so longer and about an inch wider than the model itself. Cut two short slits at each end about 1½ inches apart and in these slits place two rubber bands along the length of the board. The model can be held firmly to the board by slipping the rubber bands over the wheels — in some cases it is best to remove the tyres. By holding the board only the model can be moved into any position without fear of touching a painted surface.

Illustrated on front page

DARTBOARD SCORING CASE

UNLESS your dartboard is hung in a shed or outbuilding where it will not matter much if stray darts stick in the wall, it is a sensible idea to provide some sort of case to surround the board, and prevent damage to indoor decoration. It should be large enough to provide an overlap all round, and should be quite shallow, so as not to interfere with play.

The illustration shows a suitable case in which use is made of the inner surfaces of the two doors as scoreboards. This would be particularly useful with the junior size boards. The doors are made to swing against four shaped brackets which hold them steady when open, and prevent undue strain on the hinges.

If you are a member of a youth club or similar organization, why not offer to make such a case? It would cost very little for materials, but would be a very useful asset to your club. It could be provided with a simple lock and key, so that it could be closed and remain unobtrusive when not in use. In fact, with suitable decoration, such as transfers, it could be a handsome wall decoration.

The construction is shown in Figs. 1 and 2. No measurements are shown because the size will depend upon the size of the board.

Commence by making the box from $\frac{1}{2}$ in. wood, as seen in Fig. 1. The depth should not be more than 3 in. Cut the wood to size, plane smooth, and butt the four pieces together (sides, top and bottom) to form the frame. Use glue and nails to assemble. Now cut the four shaped brackets, and fix them to the sides in the positions shown. They must be set back from the front the exact thickness of the doors. These brackets are pinned and glued in place after cleaning up.

The back may consist of a sheet of $\frac{1}{4}$ in. plywood or $\frac{1}{8}$ in. hardboard. It should be fixed with glue and panel pins. Two holes should be cut for hanging or alternatively brass wall hangers may be screwed to the back, projecting above the top.

Each door is made up as seen in Fig. 2. A framework of $\frac{1}{2}$ in. by 1 in. stripwood is halved together, and covered with $\frac{1}{4}$ in. plywood or $\frac{1}{8}$ in. hardboard. Alternatively the door may consist of a piece of $\frac{3}{8}$ in. or $\frac{1}{2}$ in. plywood with no framework. The doors are hinged to the sides, using two pairs of butt hinges. Two small pull handles may be screwed in place, and ball catches inserted in each side.

The case may be painted inside and out, applying an undercoat, and then two finishing coats. Rub down between coats with silicon carbide paper used wet.

The surface of the doors to be used as scoreboards should not be undercoated, but should be treated with 'Blackboard Black' which gives a jet black surface free from shine. 'Blackboard Black', which is the correct finish for any surface to take chalk markings, costs 1s. 3d. a jar from Hobbies branches or by post from Hobbies Ltd, Dereham, Norfolk (carriage and packing 9d. extra). (M.h.)

Fig. 1

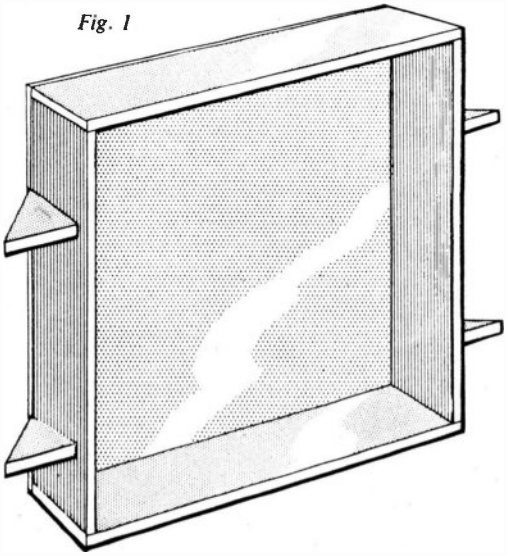
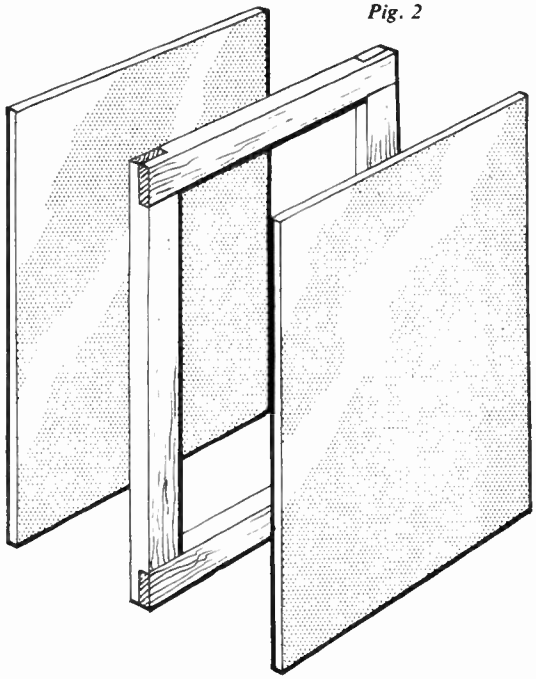


Fig. 2



CHEMISTRY AT HOME

CITRIC ACID EXPERIMENTS

By L. A. Fantozzi

THE term 'acid' has come, unfortunately, to have rather sinister associations. This is mainly due to the corrosive properties of the common mineral acids. Yet of the vast number of acids known to chemists a great many are harmless and even beneficial. One such is citric acid, $C_6H_8O_7.H_2O$. Lemonade owes its pleasant flavour to it. Besides occurring in lemons, it is found in limes, oranges, currants, and unripe gooseberries.

Its formula is more explicit if written fully, thus:
$C(OH).(COOH).(CH_2.COOH)_2.H_2O$,
for this reveals three carboxyl groups, –COOH, and each carboxyl group will react with one atom of a monovalent metal such as potassium, K. One, two or three potassium atoms can be reacted at will, so forming three distinct salts of the acid. Citric acid is, therefore, a tribasic acid.

The hydroxyl group, –OH, also confers special properties. The other relevant detail is the H_2O, which is, of course, a molecule of water of crystallisation.

To prepare the three potassium citrates is an instructive exercise in learning how to deal with a polybasic acid, for the principles involved may be applied to other such acids should occasion arise.

To prepare normal potassium citrate, $K_3C_6H_5O_7.H_2O$, or
$C(OH).(COOK).(CH_2.COOK)_2.H_2O$,
we must replace all three hydrogen atoms of the carboxyl groups. As normal potassium citrate is neutral to litmus and the other potassium citrates are acid to it, we have a ready means of gauging the amounts of potassium and acid needed to produce them. If we note what proportions of potassium hydroxide, KOH, and acid are needed to produce a neutral solution we shall have a guide to what is needed for all the salts. Dissolve 10 grams of citric acid in 50 ml. of water in a beaker. Over it clamp a burette containing a 10 or 20 per cent solution of potassium hydroxide. Press a damp slip of red litmus paper on the wall of the beaker, so that it dips partly into the citric acid (Fig. 1).

Run in potassium hydroxide solution a little at a time, stirring well until the litmus paper turns purple, but not blue. The beaker now contains a neutral solution of potassium citrate:
$C_6H_8O_7 - 3KOH = K_3C_6H_5O_7 + 3H_2O$.
Read off the amount of potassium hydroxide solution which has been added. Make a careful note of it.

Evaporate the solution to dryness on the water bath. Bottle the white potassium citrate so obtained while it is still warm, for it is deliquescent.

To make di-potassium citrate or potassium monohydrogen citrate, $K_2C_6H_6O_7$, add to a solution of 10 grams of citric acid in 50 ml. of water two-thirds the volume of potassium hydroxide solution used for the preparation of the normal citrate:
$C_6H_8O_7 - 2KOH = K_2C_6H_6O_7 + 2H_2O$.
Again evaporate the solution to dryness on the water bath.

Mono-potassium citrate or potassium dihydrogen citrate, $KC_6H_7O_7.2H_2O$, is prepared by adding only one-third the volume of potassium hydroxide to a solution of 10 grams of citric acid in 50 ml. of water:

$C_6H_8O_7 + KOH =$
$KC_6H_7O_7 + H_2O$

This salt is readily obtained in crystals. Evaporate the solution in the water bath to the crystallization point, which is ascertained by taking up a drop on a cold glass rod, when it should crystallize at once. Let this concentrated solution cool and stand overnight. White prismatic crystals will have separated. Filter these off, and concentrate the mother liquor further, so as to obtain another crop of crystals, and filter off these, too. Dry the salt by spreading the crystals on a porous brick.

Calcium citrate, $(C_6H_5O_7)_2Ca_3.4H_2O$,

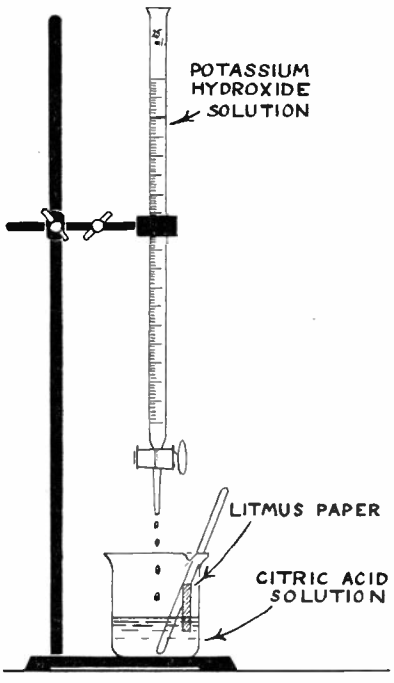


Fig. 1—Preparing potassium citrate

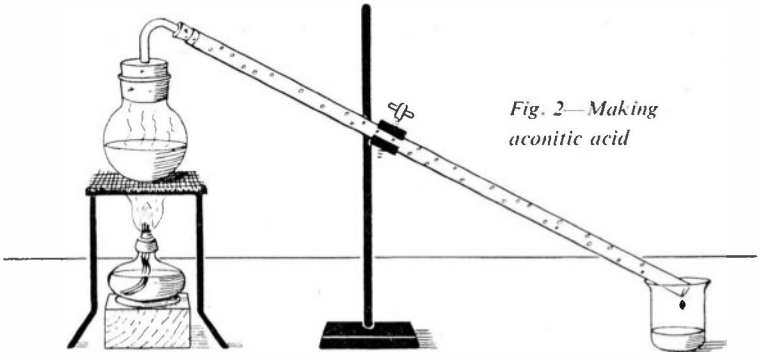


Fig. 2—Making aconitic acid

is a curious salt in that it is more soluble in cold water than in hot, thus disobeying the general rule. Yet this serves as a useful test for citric acid. Dissolve a few specks of citric acid in 2 ml. of cold water. Add about 5 ml. of lime water, $Ca(OH)_2$. Although calcium citrate has been formed thus:

$2C_6H_8O_7 + 3Ca(OH)_2 = (C_6H_5O_7)_2Ca_3 + 6H_2O$,

it remains dissolved. Now boil the solution for a minute or so. The calcium citrate separates out, but redissolves on cooling.

On heating citric acid moderately it first loses its water of crystallization at about 130 degrees Centigrade. At around 175 degrees the anhydrous acid parts with hydrogen, H, and oxygen, O, in proportions sufficient to form another molecule of water, but in doing so changes into aconitic acid, $C_6H_6O_6$ or $CH(COOH):C(COOH).CH_2.COOH$:

$C_6H_8O_7 = C_6H_6O_6 + H_2O$.

Higher temperatures cause production of other compounds, whose separation is rather tedious. Aconitic acid, however, is simple enough to prepare.

There will be needed a wide glass tube about 20 in. long to act as a condenser, and a small flask with as short a neck as possible, preferably a bolt head flask, as shown in Fig. 2. Put 25 grams of citric acid in the flask and heat it slowly. It first melts, gives off water, and later oily drops appear in the condenser tube. When the tube is lined throughout its length with these drops stop heating, and pour out the liquid from the flask into an evaporating basin. Stir in 4 ml. of water.

Now heat on the water bath until the liquid solidifies. Remove the basin from the bath, and let it cool. The mass of aconitic acid so obtained may contain unchanged citric acid, but as aconitic acid is soluble in ether, $(C_2H_5)_2O$, and citric acid is not, we have a means of purifying the aconitic acid.

Powder the solid, put it in a bottle together with about twice its volume of ether, cork the bottle securely, and shake well. Let it stand an hour or two, shake again, and filter the ether solution into a distilling flask connected with a condenser and receiver. All flames should be extinguished in the laboratory while working with ether, for it is highly inflammable. Fill up a water bath with hot water, and distil off the ether, finally disconnecting the condenser, and continuing to heat the flask on the water bath until the aconitic acid has lost every trace of ethereal odour.

The purified aconitic acid remaining may be removed from the flask by warming with a little water to dissolve it, pouring into an evaporating basin, and evaporating to dryness on the water bath.

SET UP AN INDOOR FLYING DISPLAY

By A. E. Ward

INDOOR flying is fun and inexpensive. You'll need a rubber-powered balsa wood toy aeroplane, like those sold in most toy and model shops. The idea is to fly it while tethered by a light wire to a heavy bottle 'pillar'.

Obtain a wine bottle with a wide base and a cork to fit its neck. One-third fill this bottle 'pillar' with water or sand C.

Bore a hole through the cork, using a red-hot nail held with pliers. The hole must be wide enough to take a 3 in. long thin tube of metal or glass.

Obtain a 1 yd. length of thin stiff straight wire, and insert it 'downwards' through the tube in the cork. Bend the wire aside sharply ½ in. from its lower end, to prevent it being pulled out from the top. Put the cork in the bottle B.

Stand the bottle on a table, and let the wire lean over in a natural curve. Put the assembled aeroplane under the end of the wire, with its fuselage pointing anticlockwise at 90° with the wire's end.

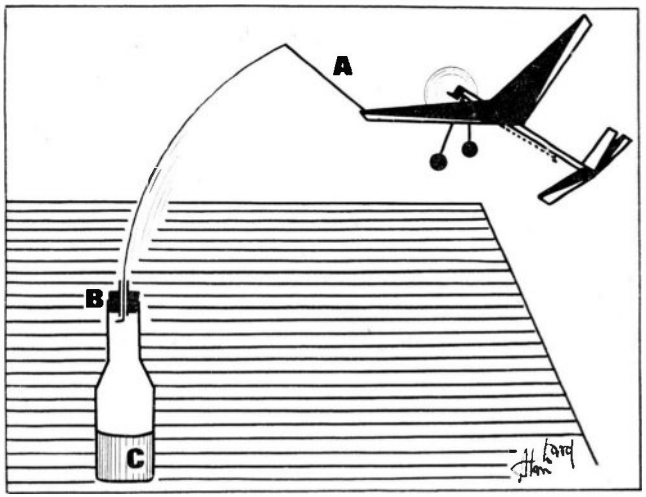
Bend upwards a 1 in. length of wire near the 'free' end. Then bend down a length of the wire, so that the bent back end comes just under the leading edge of the aeroplane's wingtip A. Fix the wire under the wing, using Sellotape. On no account must the wire's springiness lift the stationary aeroplane.

Set down the whole arrangement in a widely cleared floor area, or garage. Wind up the aeroplane's propeller 200 times, put the toy down, and let it go. When accurately set up the plane taxis, takes off, flies several vigorous circuits of the bottle — diving and soaring — then it levels out, flies low, and makes a neat 3-point landing.

Clear an 'airfield' in the middle of a model train layout, and let the aeroplane fly over the moving trains. Disguise the bottle as an airport control tower.

Another idea is to adapt the flying toy as a novel 'Wheel of Fortune' at a fete. Set up the apparatus on two long tables placed side by side. Pin numbered paper flags around the circuit, and paint a gay banner: 'Lucky Aerodrome' above your stall.

Patrons can buy numbered tickets — and you can award a prize to the ticket holder whose number corresponds with the flag number nearest the aeroplane after a flight. Don't forget to stock a reserve model plane and some rubber bands — in case of accidents!



More about Veneer Matching

IN our issue of 12th August the method of matching veneer to cover a square panel was described.

Much the same idea can be used for covering a panel that is rectangular in shape but not square, though the result will look most satisfactory if the matching is done round the diagonals, as shown at A. As before, two pieces of veneer are needed, each one slightly longer than the longest side of the panel. One of the sheets should be cut to the width of the panel, as shown at B. The marking out and cutting will be done in the same way as the square matchings previously described.

When a large matching has to be assembled the method of working now to be described will be found the easiest.

The four parts of the matching are first assembled into two pairs by narrow strips of gummed brown paper on the face. The two pairs are similarly assembled to make the matching. Still working on the face of the matching, the whole of it is covered with horizontal and vertical strips of gummed paper, these having about 1 in. between their edges. This should strengthen up the matching so that it can be handled quite freely without any fear of causing damage to it.

By N. Wainwright

When the matchings are reasonably small they can usually be laid quite successfully with the help of one of the modern impact glues. To make a good job of the gluing when using these it is necessary to make certain that the glued panel and the back of the matching do not come into contact until they are in their proper positions.

The easiest way of doing this is to coat the veneer and panel with glue, and allow it to set. A sheet of brown paper as long as the panel, and half its width is then laid on the panel, level with its top edge. (The brown paper will not stick to the glue as it is untreated). Keeping the lower edge of the matching raised, the upper edge and sides can be lined up with the paper. The lower edge is allowed to drop into place, is pressed in close contact with the panel, then the brown paper is slid out of place, so that the upper half of the matching can be pressed flat.

For large matchings, or when the use of an impact glue is not otherwise convenient, scotch glue or similar can be used. With such adhesive the panel and matching (covered with a sheet of waxed paper) should be put under a weight until the glue has set.

Circular panels

Although only square or rectangular shapings have so far been considered, it is quite possible to match the veneer on circular or other panels.

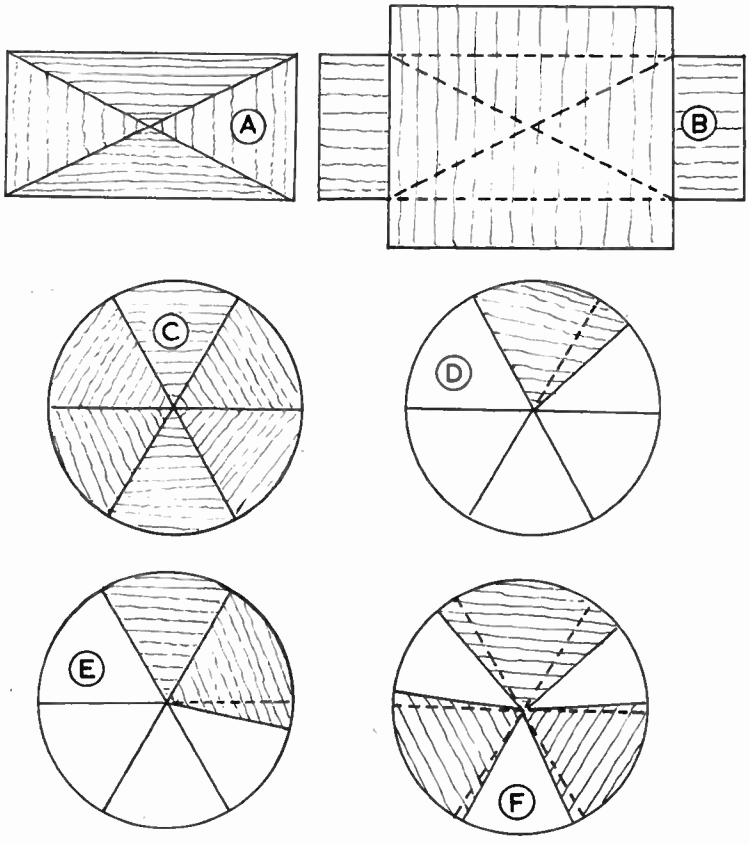
At C is shown a matched circular shaping which could well be the top of a coffee table or something similar.

The first step is to decide on the number of segments that are needed to make up the matching, and to rule across the shaping in pencil to get the number and size of the segments. When it comes to arranging the veneer for matching it must be remembered that the direction of the grain figure needs to run round the centre, and not from the centre to the outside edge.

Veneer matching circular shapings is usually a slow business, and needs to be done with a glue of a type that gives plenty of time for working. One method of doing the matching is as follows.

The segments are cut to a size slightly larger than they will eventually finish, one edge of one segment is trimmed, and it is glued on to the table top with the trimmed edge hard against one of the pencilled lines D. The second segment is then taken, its edge is marked in pencil, and it is laid into place. There will then be a double thickness of veneer on the edge of the first segment (*i.e.* the extra that was allowed on its width, and the waste veneer of the second segment laying on it).

With a straight edge and a sharp craftwork knife both pieces of veneer are cut through simultaneously, and the waste on the first segment is prised off the panel. The second segment is then glued into place, and its edge should be



● Continued on page 395

Plotting the Circle's Centre

By A. E. Ward

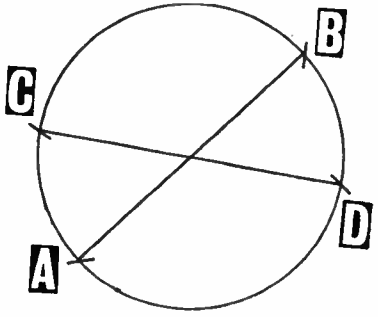
SCHOOL geometry has many practical applications in everyday life. Consider the fact you were taught to prove: that the angle in a semicircle is a right angle.

Think awhile, and you will realize that if the corner of a rectangle is permitted to fall over a circle and touch its circumference, then a line joining the points where the edges of the corner cross the circumference must divide the circle into two equal parts, and pass through the centre.

Commercial artists, draughtsmen, and craftsmen employ this principle to discover the centres of circles and discs.

In the first diagram the corner of a magazine page (or sheet of paper) overlaps a circle, and touches the circumference. Where the edges of the page intersect the circumference, points A and B have been indicated by little marks.

The position of the page corner has been shifted to obtain another pair of points, C and D in the second diagram.



AB and CD have been joined by ruled lines.

Since it is understood that the circle's centre will lie along AB or CD, the point where the lines cross over is bound to be the geometrical centre of the circle.

PUZZLING DOVETAILS

IMAGINE two blocks of contrasting woods which have been fitted together (as illustrated) to form what is, roughly speaking, a 'cube' — but where you can see a genuine dovetail joint at each of the four faces.

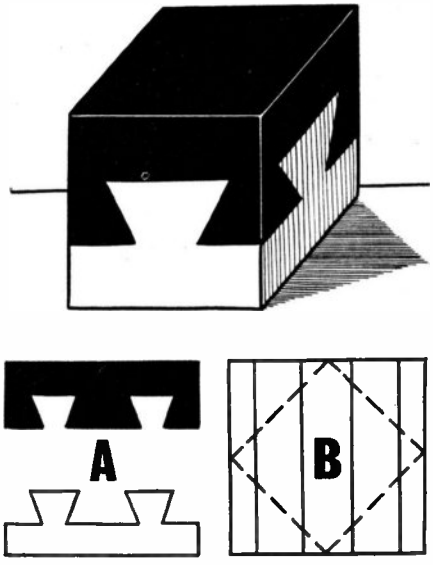
Think a moment and you will realize how technically 'impossible' this description sounds. Nevertheless a good woodworker can construct such a puzzling object for his own amusement and for the mystification of his friends.

Oddly enough the method is both logical and simple. You will need to prepare twin blocks of different woods, possessing square tops and bottoms (e.g. 6 in. by 6 in.) and each being roughly one third as tall as their longest edges (e.g. 2 in.).

Join together these blocks with a pair of identical and parallel dovetail joints. (See diagram A). Then, after gluing together the interlocking contrasting blocks, you must cut or plane away the corners to produce a roughly cubic form that can be smoothed and polished to make the finished puzzle. Diagram B shows how you must do this.

Afterwards, by inserting a metal plug into a suitable hole bored in the base of the puzzle block, you can convert the object into a novel paperweight.

(A.E.W.)



● Continued from page 394

VENEER MATCHING

found to make a perfect fit with the edge of the first segment E. Additional segments are laid in the same way, leaving a spare strip on each for fitting, until the shaping is covered. When the last segment is to be fitted one edge will have to be trimmed to fit the leading edge of the first segment before its waste can be cut off.

There is a rather quicker way of doing a matching of this sort. With this, the first and alternate segments are laid into place, with an allowance for waste on both edges F. The remaining segments are added in turn by preparing them to a size larger than necessary, and cutting the double thickness of veneer on each side in turn to make a proper fit. The only problem here is to hold the veneer firmly while the cutting is being done.

AMUSING BALLOON NOVELTIES

MANY kinds of novelties, which can be made either for personal amusement or for party decorations, can be devised from balloons. A 'goldfish in a bowl' balloon for example, is a fascinating and puzzling decoration, raising much speculation about how it is made, (1).

This is, in fact, very simple. A fish shape, about 6 in. long, is cut from thick cardboard and brightly painted in a colour which contrasts with the balloon. A pinhole at the point of balance of the fish enables it to be suspended from a length of cotton, preferably the same colour as the balloon, so that it is not too obvious.

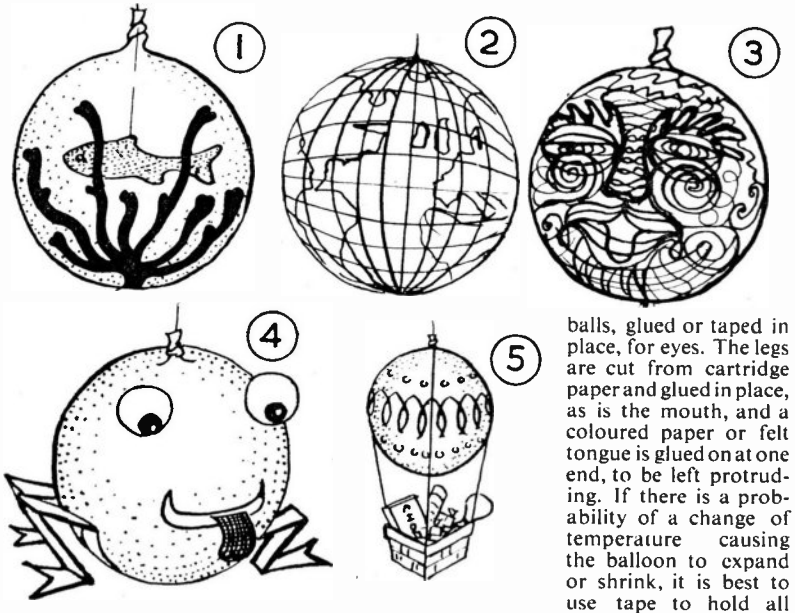
By A. Liston

The neck of the balloon is stretched out as widely as possible, using the handles of two teaspoons as levers, and the fish, with cotton attached, is slipped inside the balloon. The end of the cotton should, of course, be hanging outside. A trial inflation of the balloon will soon determine whether the fish is hanging in the correct position or not, and the cotton can be lengthened or shortened accordingly. Blowing up the balloon while the cotton is protruding is not difficult, as a trial will show.

After being inflated, the balloon is tied tightly at the neck, through which the cotton will still be passing. This knot must be tight; if desired, the neck can be sealed with adhesive or sealing-wax. Lastly, green 'pond-weeds' are painted on the outside of the balloon. While poster colour can be used for this, the easiest way to apply it is to use a felt-tipped pen. The decoration is hung on a thin thread, so that the fish 'swims' round inside with every movement of the balloon.

Many highly original effects can be obtained from balloon modelling. This is done by blowing up a balloon, tying the neck tightly, and hanging it at about eye-level. Long lengths of string are then steeped in paste until they are saturated. They are then wound round and round the balloon to form various designs such as the globe of the world (2), with the countries also outlined in string, or the head (3).

The completed design should be left for a day, after which time the string should be dry and hard. A small hole is cut in the balloon at the neck, so that its collapse can be controlled. The shrivelled balloon is then withdrawn, leaving the design in lacy, filigree-like tracery.



The strings forming the design must criss-cross as much as possible or the shape will not be strong enough to support its own weight. The paste-soaked string must also be perfectly dry before the balloon is withdrawn. The use of differently shaped balloons widens the scope of this form of decoration, and various colours of string, dyed with ink or paint, can also be used.

Wildly improbable animal balloons (4) are easily made by using table-tennis balls, glued or taped in place, for eyes. The legs are cut from cartridge paper and glued in place, as is the mouth, and a coloured paper or felt tongue is glued on at one end, to be left protruding. If there is a probability of a change of temperature causing the balloon to expand or shrink, it is best to use tape to hold all the pieces in place, rather than adhesive.

Lastly, a simple variation of a charming Mexican custom is easily achieved with balloons. At children's parties in Mexico, a plaster animal, filled with sweets and trinkets, is suspended above the guests' heads. Before the party ends, it is beaten with sticks until the contents shower down on the children.

A less expensive idea is to tie small fruit baskets or cartons below balloons as shown (5). Each basket and balloon is decorated with a bright design and the name of a guest. The baskets are filled with sweets and trinkets, then hung in position, to be cut down and presented to the guests on leaving.

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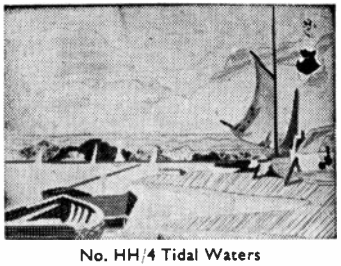

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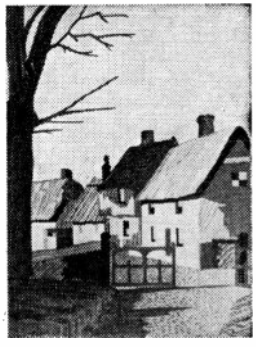

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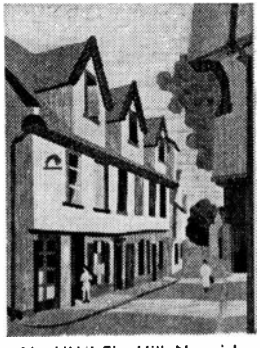

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MAKE YOUR WINES FROM THE TREES

TREES can play an important part in the manufacture of home-made wines. To many of us, it is not looked upon as a suitable subject for our experiments in wine making, but there are a large number of splendid drinks that can be produced from the various parts of trees, including the leaves, buds, flowers, and even the sap.

Oak leaf wine is probably the best known, and there are two distinct types. One is made in the spring from young leaves, while the other makes use of the old leaves just before they fall in the autumn.

The young leaves picked in the spring when the tree is bursting with activity is considered to produce a better brew than the more mature crop that is ready in the autumn, but that is a matter of personal opinion. Try both recipes, and see which you like best.

Oak Leaf Wine (Spring)

Some people recommend picking the leaves just as they have opened in the spring, while others name the last week in June or the first week in July as being the best time.

1 gal. Oak Leaves
4 lb. Sugar
2 Oranges
2 Lemons
1 gal. Water
½ oz. Yeast

Remove the dust from the leaves by washing well in cold water, Cut the peel from the lemons and oranges so as not to include any of the white pith, which will make it bitter, and add to the leaves. Pour over this a gallon of boiling water, and allow to steep for a day. Then bring to the boil, and simmer for about a quarter of an hour. Strain through butter muslin, stir in the sugar until dissolved, and add the juice of the lemons and oranges.

When the temperature has fallen to blood heat (98°F) add the yeast, which has previously been dissolved in a little of the liquid. Let this ferment until the gas bubbles have practically ceased, then strain without disturbing the sediment, and put into bottles, corking lightly at first.

Young oak buds may be mixed with the young leaves as a slight variation of the above recipe.

Oak Leaf Wine (Autumn)

3 Oranges
¼ oz. whole Ginger
4 lb. Sugar
1 gal. Water
½ oz. Yeast

Pick the leaves in late September or early October when they are beginning to turn yellow. They will need washing well in cold water. Put the leaves in an earthenware jar, pour over them the boiling water, and allow to stand for three days before straining through butter muslin. Well bruise the whole ginger by hammering it and put this with the grated rind of the oranges, their juice and the sugar, and boil gently for half an hour. Add the yeast when the liquid has cooled to blood heat, ferment for fourteen days, and bottle.

Walnut Leaf Wine

Perhaps not so well known, this is quite good and easy to make.

1 large handful Walnut Leaves
1 lb. Raisins
3 lb. Sugar
1 gal. Water
½ oz. Yeast

After rinsing the leaves in cold water, put them in a bowl or earthenware jar, pour on the boiling water, and leave to soak for twenty-four hours. Then strain, add the sugar, and stir until dissolved. Chop up the raisins, and add these to the mixture, then add the yeast, and leave to ferment for twenty-one days. Bottle up as usual, and store in a cool place.

Lime Wine

One of the joys of a walk through the countryside in early summer is the scent of lime trees in full flower, and the wine made from them is equally delightful. The flowers are pulled from the tree when they are fully open, and preferably on a sunny day. They are then dried in the sun for a few days, which is supposed to bring out the flavour to the full.

1 pint Lime Flowers
¾ lb. Raisins
3½ lb. Sugar
1 gal. Water
½ oz. Yeast

The flowers are first put into a saucepan with the water, brought to the boil, and then allowed to simmer for thirty minutes. Strain, add the raisins chopped up into small pieces together with the sugar, and when the temperature has fallen to blood heat (98°F) mix in the yeast.

Let this ferment for fourteen days, then bottle up in the usual manner.

Birch Sap Wine

This is a wine that has been made for centuries in the Scandinavian countries.

1 gal. Birch Sap
1 Orange
1 Lemon
3 lb. Sugar
½ oz. Ginger
½ oz. Yeast

A little care is needed when gathering the sap so as not to damage the tree in any way. A gallon is a good allowance to expect from one tree, and it may take a week or two to gather this amount. March is the correct time to gather the sap, and it is best done when the weather is cold.

First drill a small hole (about ¼ in. diameter) in the trunk of the tree about 15 in. from ground level. The depth of the hole should be from 1 in. to 1½ in. according to the size of the tree trunk. A tube is then inserted in the hole, and this can be glass, polythene or a hollow wood stick such as a piece of elder stem with the pith extracted. Do not use a metal tube because it is liable to affect the flavour of the resulting wine.

The sap is allowed to drip into a glass or earthenware bowl (not metal), and boiled each day until you have collected enough for your requirements. Put this into a bottle, and cork up tightly.

The wine is made by first thinly cutting off the peel from the orange and lemon, then boiling gently in the sap, and the crushed ginger for about half an hour. Any liquid lost by evaporation is made good by adding water. While still hot, dissolve the sugar, and then add the yeast when it has cooled to 98°F. Allow to ferment in a warm temperature until most of the gas bubbles have ceased to rise to the surface. Strain through muslin, put into bottles stored on their sides until ready to sample after at least six months.

This last recipe can be varied by adding ½ lb. raisins, and leaving out the ginger, or you can use two lemons instead of the orange and lemon. Using the same recipe and methods, you can substitute either walnut or sycamore for the birch sap.

You may also like to try peach leaf wine. Although not classed as a tree, a very good wine is made from grape vine leaves.

(E.)

TOOTH BRUSH HOLDER

THIS useful holder should be hung inside the bathroom cabinet, where the brushes will be kept clean and free from dust.

Cut one of each piece and glue together as shown by the dotted lines. Use a fine grade fretsaw for cutting the outlines and clean up the edges with glasspaper.

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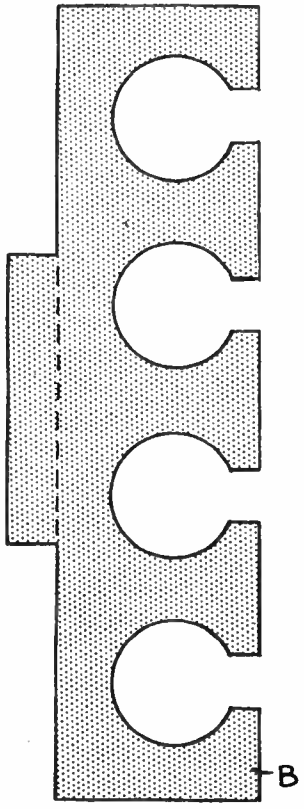

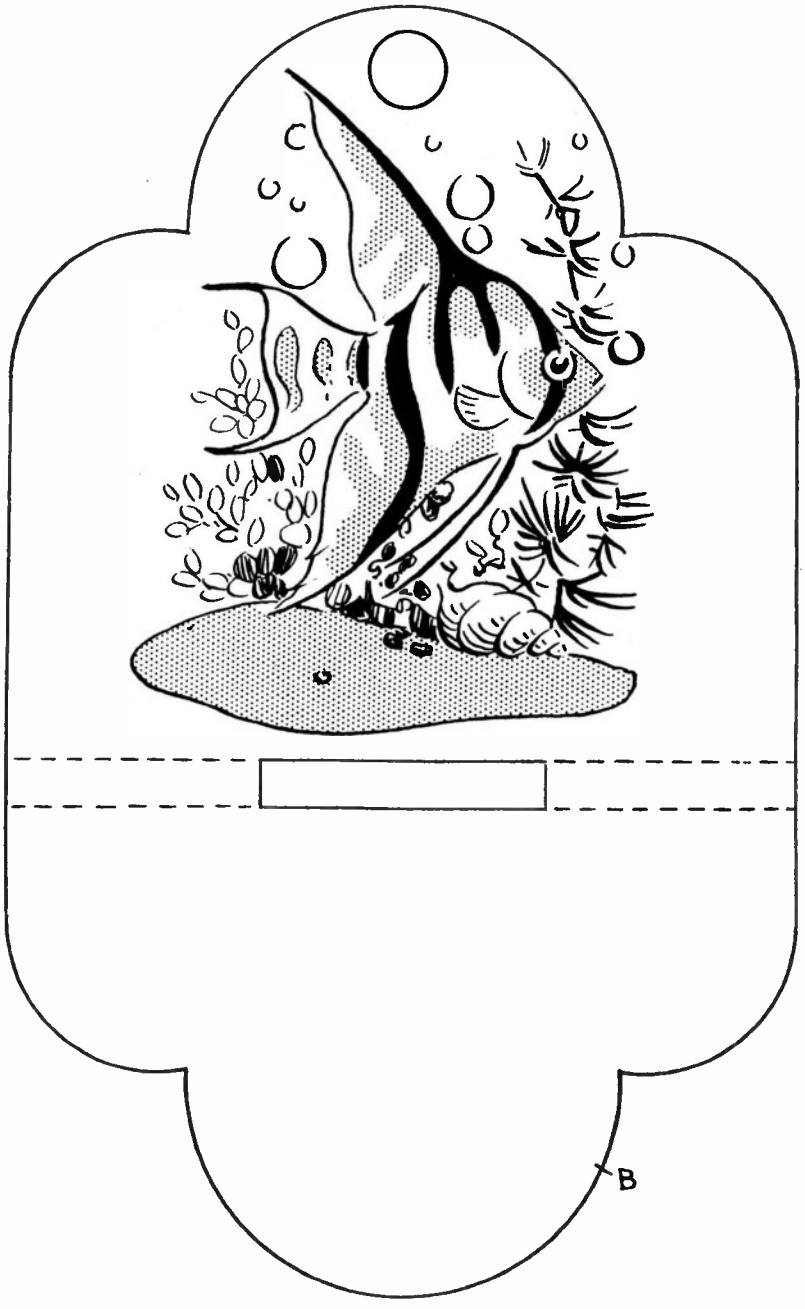

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