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FOR CRAFTSMEN OF ALL AGES

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MOST of our stamp articles are of a general nature, featuring each time a number of stamps coming from various regions. This week we are going to discuss the stamps of a particular region and show how these are related to the history, geography and industries of the area concerned.

Let us consider the Bahama Islands, situated between Florida (U.S.A. and Cuba. There are about 700 islands, but only 22 are inhabited and the total population is just over 100,000. Most of these are descendants of liberated Africans who were taken by the Spaniards for slave labour in the mines of Haiti. Almost half of the population live at the capital, Nassau, which is situated on one of the smaller islands, New Providence. The names of some of the other islands sound somewhat quaint to English ears — Cat Island, Rum Cay, Eleuthera, Long Cay, Abaco, Grand Bahama, Watling's Island. It was at Watling's Island that Christopher Columbus made the first landfall in the New World, on 12th October 1492 and he called it San Salvador. By an Act of the Bahamas Legislature this name is now restored.

The principle source of revenue is the tourist industry. The climate is ideal — the winter is warmer than our summer, frost is unknown and the annual rainfall is between 40 and 50 in., rather more than we have in London. Tomatoes are exported to the United States, and lumbering and salt raking are other important industries.

Columbus discovered the Islands in 1492 but they have always been looked upon as British, for in 1629 Sir Robert Heath was authorised to develop them. But little was done until 1647 when The Eleutherian Adventurers was formed to colonize — notice the name of the island in the title. The region was far from quiet, being frequently visited by pirates and in 1729 a man named Woodes-Rogers was sent out to restore order. We shall see very shortly how these names and dates have been commemorated by stamp issues.

The first Bahamas stamp was issued in 1859, but of course before this there had been a postal system and then the stamps used were those of Great

Britain. The only way to distinguish a stamp used in the Bahamas from one used in Great Britain is that the former had the cancellation 'A 05'. Such specimens are known as 'Used Abroad' and are worth more than the ordinary British.

ISSUES FROM THE BAHAMAS By L. P. V. Veale



*Top: Early issues and centenary
Centre: Dated January, issued May
Bottom: Tourist industry demands
modern hotels*

The first stamps issued by the Bahamas were similar to the illustration except that they were imperforate. The colour was reddish-lake and it had no watermark. The portrait of Queen Victoria was reproduced from the Chalon work; you will see this portrait on what are called the 'Classic' issues — the early stamps of New Zealand, Natal, Queensland, Van Dieman's Land.

Then followed what one might well call the usual type of Victorian stamp — the Royal portrait — and that for the Bahamas had two emblems, the conch shell and the pineapple.

In 1901 the Bahamas brought out the very beautiful stamp 'The Queen's Staircase'. This is seen by those who visit Nassau. It was said to have been constructed by slave labour, the steps being cut in the solid rock. The stamp has been overprinted for various uses the first being the Red Cross overprinted with the date 1st January 1917. Actually they did not come out until May owing to a delay in shipment. Other overprints were 'War Tax', 'War Charity', and the fivepenny value was also used for 'Special Delivery'.

In 1902 came the King 'Edward VII issue — seven values in the set with watermarked paper Crown C.A. Four years later four of the values were issued on paper watermarked with the multiple Crown C.A. The same design was used for the first stamps of King George V in 1912, with the portrait changed, of course. These King George V stamps were in use during the 1914–1918 war and were overprinted 'War Tax' in quite a number of different ways. These various overprints need careful attention otherwise one may throw away stamps which are wanted. In 1920 appeared five stamps — ½d., 1d., 2d., 3d., and 1/— in celebration of peace. These are quite nice stamps. The face value was only 1/6d. but by now the catalogue value is about £4 used and £3 unused.

In 1930 (it should have been 1929) appeared the five stamps to commemorate the tercentenary of the Colony. The design shows the seal of the Colony with three dates 1629, 1729 and 1929 in a scroll across the top. 1629 and 1929 are obviously tercentenary dates — why then is 1729 shown? Well, as mentioned above, that is the date that the Home Government sent out Woodes-Rogers, who set up the first General Assembly in that year. In the same way as other possessions Bahamas issued four stamps for the Silver Jubilee and the last stamp of the reign was the 8d., showing flamingoes in flight.

Although the first issues of King George VI's reign were of the same design of those of the two previous issues it was not long before pictorial

designs were introduced. The flamingoes were again used for the 8d., Fort Charlotte figured on the 6d., and the Sea Gardens at Nassau were shown on the 4d. At Nassau there was a photo-sphere — an underwater room with a plate glass window so that visitors could go down and watch the marine life around. To boost the effort there was a special postmark. These make interesting souvenirs but have little real significance.

Then in 1942 came the issue to commemorate the 450th anniversary of the landing of Columbus on Watling Island (or San Salvador). This was a set which provoked quite a lot of speculation. The face value of the set, overprinted '1492 Landfall of Columbus 1942' was just over 33/- and quite a number of sets

were bought in the expectation that they would go up very considerably. But so far they have not come up to expectations.

In 1946 Bahamas had two victory stamps — the Houses of Parliament, 1½d. and 3d. Then two years later 16 stamps ½d. to £1 to commemorate the 'Tercentenary of Settlement of Island of Eleuthera' had pictorial designs, including many of the industries of the group of islands. Each stamp has a scroll at the top with '1647 Tercentenary of Settlement of the Colony 1947' but when the same designs were used for the stamps of Queen Elizabeth II the scroll together with its inscription was deleted. That was in 1954.

There were the usual two stamps for the Silver Wedding Commemoration,

four values for the 75th Anniversary of the Postal Union and a 6d. value for the Coronation stamp. 1959 marked the centenary of the first Bahamas postage stamp and four values of 1d., 2d., 6d., 10d., were issued in as near a form as the first stamp of 1859.

Nassau celebrated its centenary with two stamps containing the Queen's portrait by Annigoni. The Freedom from Hunger campaign was the cause of an 8d. stamp. The talks that took place between President Kennedy and the British Prime Minister meant the overprinting of the 8d. and 10d. values with 'Bahamas Talks 1962'. On 6th September 1963 two stamps were overprinted for the Red Cross and on 7th January 1964 all the current issue was overprinted 'New Constitution 1964'.



THERE are three main types of doll collections — character dolls, period dolls, and native dolls. Character dolls have been known for centuries.

Long before printing was developed, dolls were used in teaching Christian history. These dolls were dressed as Biblical personages and early Saints and were made to act out Bible stories and sacred mysteries for an audience.

When Queen Victoria was young she collected small wooden dolls and dressed them as famous personages of her day. Her collection included singers, dancers and actors. Collectors today are looking for dolls of people prominent in present-day fiction, on the screen, radio and TV.

Fiction dolls offer great variety and a wide field to any collector. Replicas of school-day storybook characters such as Tom Sawyer, Ivanhoe, Rebecca of Sunnybrook Farm, and Huck Finn make these favourite novels even more interesting. Character dolls have been made of Little Women, David Copperfield, Peter and Wendy of Peter Pan; even of Treasure Island's Long John Silver.

Novelty dolls can very easily become collectors' items because children tire of them quickly. Boudoir dolls, curly haired dolls, cowboy and fan dolls — all have their day and are gone unless saved by collectors.

DOLLS OFFER A WIDE SCOPE

By R. L. Cantwell

Period dolls are those which are costumed in clothes worn by men and women of various historical days. To make such a collection first decide what historical dates you want them to portray and buy dolls with heads which resemble the people of that time. If you paint the faces and make the wigs for them they can be made to look very much like a chosen historical figure. You must study the history behind the dolls to dress them in correct costumes. English collectors usually include coronation dolls, and there is a vast field here. Americans often base their collections on ladies of the White House and dress the dolls in the exact pattern and same fabric of their time.

There are two ways to have a native doll collection. You can make native dolls yourself, carefully studying the costumes of races and natives of various

countries and copying their appearance and dress. You can also make a collection of dolls from the native countries themselves. This is more difficult but is well worth the effort. The Irish make dolls from life in papier-mâché and give them hand-painted faces. They make all the clothes by hand and follow the most minute costume detail. Guatemalans make dolls after their own likenesses and professions. The dolls are of wood and dressed in cotton.

Peddlers make dolls which look like peddlers. Weavers make weaver-dolls. Dolls are made of hickory nuts, of Mexican straw, Staffordshire china, carved wood and many other materials. They can be an inch high, or so huge that they must be dis-jointed to be packed.

All over the world little girls collect dolls, likewise adults. Three famous Queens have made doll collections and it is recorded that one man has a collection of over 2,000. You can easily begin a good collection for there are so many types from which to select.

And with the great scope offered by the Pen Friend introductions of 'Hobbies Weekly' native dolls can be obtained from overseas readers in exchange for stamps and other hobby lines. So there is no reason for any reader, male or female, to be denied the pleasures offered by this rewarding hobby — why not try it?

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WORKING MODEL AEROPLANES

CONTROLLING model planes by radio is quite a popular hobby, and it is usually possible to fit a radio control mechanism in an existing plane of reasonably large size. Such control is sometimes used with large gliders, but the equipment is too heavy for small craft powered by twisted elastic. Most radio control planes use a motor of about 1.5cc upwards and have a wing span of at least 30 in. The larger type of plane is less likely to be damaged than the small, higher speed 'stunt' craft.

The actual degree of control provided may be very simple indeed, or complicated and expensive. The simplest possible system is described here.

Rudder control

The simplest radio system allows the rudder of the plane to be turned either way, or set straight. The advantage of this method lies in the fact that the transmitter and receiver can be of the simplest, cheapest, and lightest type.

That is, for single channel working. With single channel equipment, operating a key at the transmitter allows a relay in the model to be opened and closed. Earlier articles on radio control show how this is done.

It may seem that satisfactory flying will not be possible if only the plane rudder can be controlled, but this is not so. Trim in the machine is adjusted so that the plane climbs gently when the motor is running and the craft is flying straight. With the motor stopped, the machine should glide safely to a landing, as with an ordinary free-flight model plane. Finally, when the rudder puts the machine into a turn, it should lose height.

With this simple method of control, the plane can be allowed to fly straight, to gain altitude, and it can be turned with little loss of height. To reduce altitude, the plane is kept in a turn, to spiral down. Sufficient height is maintained, so that when the motor stops from lack of fuel, the craft can be glided into a suitable position and

turned as necessary to make a safe landing.

Control device

The equipment for this type of control is shown in Fig. 1. This is sometimes termed a 'fail safe' device because if the radio transmitter, receiver, or other equipment should cease to work, the rudder automatically turns straight, so that the plane will eventually glide to earth. There may then be a chance of recovering it undamaged.

The rudder is pivoted, and the crank rotates in bearings, power being obtained from the twisted elastic, which runs down the fuselage to a hook. The crank rests in a long wire loop shaped to engage it.

With the escapement arm in the position in Fig. 1, the rudder is straight. End A of the arm is engaged with end B of the hook. When the transmitter radiates a signal, the receiver relay in the model closes, completing the battery circuit to the electro magnet. End B of the hook is drawn to the magnet, freeing end A of the arm. The elastic turns the arm until end C of the arm comes to rest on end D of the hook, thereby moving the crank and rudder.

When the relay is released, C is held by B, and the rudder is again straight. Keying the transmitter again frees the arm so that A turns to D, moving the rudder the other way. This can be repeated until the elastic is unwound. If equipment fails, the spring draws D to the stop, so that A or C rests against B, and the rudder is straight.

Ready-made escapement units of this kind can be purchased. Some have contacts operated by rotation of the arm, and wired to switch the magnet circuit so that only a small current is needed to hold the arm. This reduces battery drain during long periods of circular flight.

Transmitters

For equipment of this kind, only one control channel is wanted, and any transmitter and receiver will provide this. Advantages and limitations of popular transmitter circuits may be briefly listed.

One-Valve Tuned Transmitters give satisfactory control up to a modest

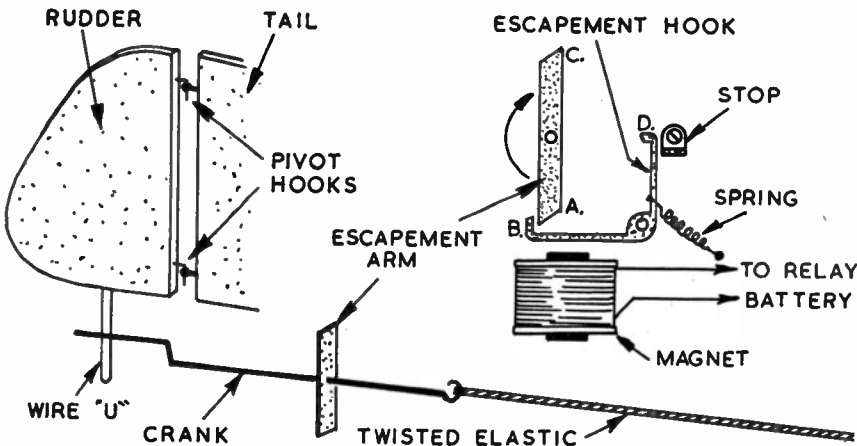


Fig. 1—Simplest type of plane control

range and are very simple and cheap to build. They have to be tuned to frequency with a wavemeter, and the frequency may drift due to movements of the aerial or other changes.

Two-Valve Tuned equipment is similar, but has much longer range. Battery drain is higher, so that new batteries are needed more often. For simple models and general use, a 2-valve tuned transmitter is probably best, and most often employed.

Crystal Controlled Transmitters work on a fixed frequency determined by the crystal, so do not shift in frequency. They cost more to build or obtain ready made. Range is generally less than with a 2-valve tuned transmitter.

Transistor Transmitters cost very much more to make than valve transmitters, and are nearly always of low power. For a good range, a more sensitive receiver is wanted. The transmitter may be small, held in the hand, with a projecting rod aerial.

Tone Transmitters can normally be used to control a carrier wave type of receiver, or a single channel tone receiver. The transmitter is more expensive and complicated, but can work at a greater range.

Receivers

Any model control receiver will have at least one channel, but each type has its limitations and advantages.

Gas-Filled Valve Receivers were once very popular. They are small and light, and produce a good current change to work the relay. The actual working life of the valve is short (perhaps 20–30 hours). Some commercially made receivers still use this type of valve.

Vacuum Valve equipment is larger, but a very long working life is not unusual, and one-valve receivers of this kind are quite popular. Adjustment is rather critical.

Transistor Receivers for good range are complicated and costly, but small and cheap to run. The receiver may use a relay, or may have a power transistor which passes enough current to work the model without a relay.

Some receivers also use combinations of valves and transistors. 'Carrier' type receivers may be worked from even the simplest type of transmitter. 'Tone' receivers must be used with a transmitter which produces an audio tone, and so cannot be worked from carrier type transmitters.

Transmitter aerial

For general use with all types of transmitter, a vertical rod, tube, or wire about 8 ft. 6 in. long is often employed. The transmitter is in a box placed on the ground, and the aerial stands vertically from the box.

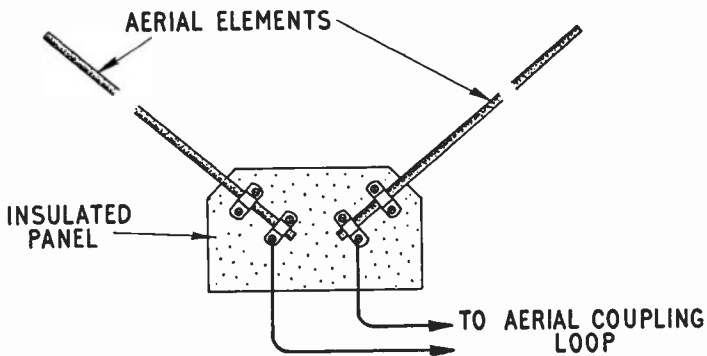


Fig. 2—Aerial for high radiation

The vertical aerial gives the same signal strength to all points of the compass, which is useful. Signal strength falls off somewhat above the vertical aerial. For this reason, it may be preferred to use an aerial like that in Fig. 2.

The aerial has an insulated panel or block, supporting the two aerial elements. The block can be fixed to the top of the transmitter box. Each of the aerial elements is about 8 ft. 6 in. long, and consists of interlocking tubes or rods, or telescopic tubes similar to those used for car and transistor receiver aeriels. A twin lead feeder goes from the elements to a coupling loop which is fitted near the transmitter coil.

The radiation from this type of aerial is rather greater than from the single vertical aerial, so it may be used to secure greater range, or more reliable working.

Receiver aerial

This is often a thin wire strained from the tip of the tail to a stand-off insulator near the fuselage nose. Or the wire may be from a wing tip to the tail.

The length of the aerial has considerable affect on most simple receivers, so it should not be changed unnecessarily, once the equipment has been fixed up and tested.

Boats

It is clear that exactly the same equipment could be used to guide a model boat. Ready-made escapements for this purpose usually have a clockwork motor, and a 4-tooth escapement. One position of the escapement switches off the boat propulsion motor.

For a boat (or any land model) low-angle radiation is wanted, and the simple vertical aerial is best. On a small pond, a range of a few hundred feet may be enough, and the aerial may be much shorter.

Sailing craft (e.g., not motor-driven) are sometimes controlled by radio, the rudder being turned by a clockwork escapement. If any type of boat is used on a pond, chances of losing the model are very small.



GLENDA COLLINS



WHEN charming Glenda Collins tried to join her school choir she was told she had a voice like a foghorn — and she sang too loudly! Wonder what they think of 'old girl' Glenda now... doing nicely, thank you, in the pop world. Glenda's latest record is 'Lollipop' — on H.M.V. POP1323.

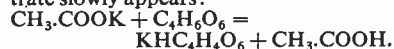
CHEMISTRY AT HOME

IN one form or another we have all partaken of tartaric acid, for it is used in some baking powders, soft drinks, health salts and also medicinally. Its full formula is $\text{COOH.CHOH.CHOH.COOH}$, though for brevity it may often be referred to as $\text{C}_4\text{H}_6\text{O}_6$. From the full formula it will be seen that it contains two carboxyl groups, $-\text{COOH}$, which makes it capable of combining with one or two atoms of a monovalent metal such as potassium, K, so that one can have an acid or a normal salt.

An example of an acid salt is potassium hydrogen tartrate, $\text{KC}_4\text{H}_4\text{O}_6$ or $\text{KHC}_4\text{H}_4\text{O}_6$. This is familiar to all of us as cream of tartar. It exists in grape juice and is deposited during wine-making. From this crude tartar, or argol, as it is often called, tartaric acid is made. Cream of tartar is produced by recrystallizing and decolorizing the crude tartar.

As potassium hydrogen tartrate is only slightly soluble in cold water (about 1 part in 200 parts of water) its formation may be used as a test for potassium.

Dissolve a pinch of a potassium salt, such as potassium acetate, CH_3COOK , in about 2 ml. of water. Add to this a solution of tartaric acid (about 2 grams in twice its bulk of water). A crystalline precipitate of potassium hydrogen tartrate slowly appears:

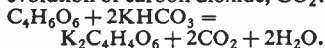


Scratching the sides of the test tube with a glass rod hastens the process. When the precipitate settles pour off the clear upper liquid and add an equal bulk of methylated spirit. The small amount of the salt remaining in solution is mostly precipitated, because it is even less soluble in ethyl alcohol, $\text{C}_2\text{H}_5\text{OH}$ (which makes up the bulk of methylated spirit) than in water. This explains why tartar is deposited during wine-making; as the alcohol content increases so does the insolubility of the tartar.

The text distinguishes potassium from sodium, Na, salts, the latter not being precipitated by tartaric acid.

In contrast as regards solubility is normal potassium tartrate, $2\text{K}_2\text{C}_4\text{H}_4\text{O}_6 \cdot \text{H}_2\text{O}$. This is very soluble in water. To prepare it dissolve a few grams of tartaric acid in hot water and add small amounts of potassium bicarbonate, KHCO_3 , until a drop of the liquid just turns red litmus paper purple. Effervescence occurs during the

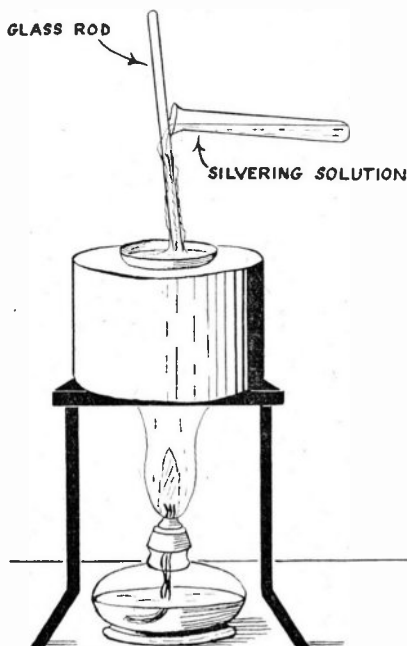
potassium bicarbonate addition, due to evolution of carbon dioxide, CO_2 :



As the salt is very soluble in water attempts to obtain it as crystals by boiling off most of the water will result in some loss. Hence it is better to evaporate it to dryness on the water bath. As it attracts water from damp air it should be kept in a well closed bottle.

Rochelle salt

Having shown that either one or two atoms of the hydrogen, H, of the carboxyl groups in tartaric acid can be replaced by a monovalent metal, can one be replaced by one such metal and one by another so obtaining a salt containing two metals? They most certainly can. An important example is potassium sodium tartrate (Rochelle salt), $\text{KNaC}_4\text{H}_4\text{O}_6 \cdot 4\text{H}_2\text{O}$, important in that it forms part of the reagent Fehling's solution, so much used in testing for sugars.



Making a mirror

TARTARIC ACID EXPERIMENTS—1

To prepare this useful two-metal tartrate first make potassium hydrogen tartrate by dissolving 5 grams of tartaric acid in 50 ml. of hot water and adding gradually 3.33 grams of potassium bicarbonate. Now add gradually to the hot liquid 2.8 grams of sodium bicarbonate, NaHCO_3 . When carbon dioxide bubbles cease to appear the conversion is complete:



Owing to the high solubility of potassium sodium tartrate in water it is difficult to obtain in crystalline form without substantial loss. Hence it is better to evaporate the whole to dryness on the water bath.

There are many sugars. Some produce a red precipitate of cuprous oxide, Cu_2O , with Fehling's solution on warming, others do not. Hence we have a means of differentiating them.

Fehling's solution

To make up Fehling's solution dissolve 1.73 grams of copper sulphate, $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$, in 20 ml. of water and then make up the volume to 25 ml. Label this solution A. Next dissolve 8.65 grams of potassium sodium tartrate and 2.5 grams of sodium hydroxide, NaOH , in 20 ml. of water, finally making up the volume to 25 ml. Label this Solution B. Immediately before use mix equal volumes of Solutions A and B.

To common sugars can be used to try out this important reagent. Namely, glucose, $\text{C}_6\text{H}_{12}\text{O}_6$, and ordinary table sugar (sucrose), $\text{C}_{12}\text{H}_{22}\text{O}_{11}$. Make a solution of each in separate test tubes, add some mixed Fehling's solution and heat both. Glucose throws down cuprous oxide. Sucrose does not. Here, then, is a ready means of telling one from the other.

Even all the resources of modern chemistry have not completely explained the complex reactions which occur with cuprous oxide-producing sugars and so an equation cannot be quoted for the reaction with glucose. It is, however, known that the complex salt sodium cupritartrate, $\text{Na}_2[(\text{OOC.CHO})_2\text{Cu}]$, exists in Fehling's solution and that this is operative in the reaction.

Though mirrors are now made with an amalgam of mercury, Hg, and tin, Sn, they used to be made with silver, Ag. Potassium sodium tartrate was used in the process.

To try out the process first clean a

● Continued on page 120



Breeding Cage for Birds

**INCREASE
YOUR
STOCK
WITH
THIS
STRONG
MODEL**

between the ends and follow on by fixing the top and bottom of the cage, cut from $\frac{1}{4}$ in. plywood. Note the overlap all round.

Shelf and perch

Just below the entrance holes of the nest boxes glue and pin a small shelf (J) 6 in. long, $1\frac{1}{2}$ in. wide and $\frac{3}{8}$ in. thick, as shown in Fig. 1, on which the birds may alight on entry to, or exit from the nests.

IF you breed birds and wish to save money on a breeding cage, why not make up this model yourself?

Any decent quality wood will do for the job, and a thickness of $\frac{1}{2}$ in. is recommended for the ends (C), and the front cross pieces (A and B). The remainder (as mentioned in the text) can be cut from plywood or $\frac{3}{8}$ in. wood. The joints should be well glued and pinned to make a really strong structure, and all wood glasspapered or planed smooth. The cage is fixed to the wall by means of a pair of brass wall plates.

The main measurements are shown in the front and end views in Figs 1 and 2.

First cut the ends (C) 14 in. long, 11 in. wide and $\frac{1}{2}$ in. thick, then bore two holes in one end for entrance to and from the nest boxes. Cut the upper cross piece (A) 16 in. long, 2 in. wide and $\frac{1}{2}$ in. thick, and the bottom cross piece (B) 16 in. long, 1 in. wide and $\frac{1}{2}$ in. thick. Drill rail A to a depth of $\frac{1}{2}$ in. and the rail B to a depth of $\frac{1}{2}$ in. to take the 16 SWG wire forming the front. Spacing can be about $\frac{3}{8}$ in. to $\frac{1}{2}$ in. Glue and pin these in place noting that B is positioned to leave a 1 in. space beneath it for the sand tray as seen in Fig. 3.

Next glue and pin the back, measuring 16 in. long, 14 in. wide and $\frac{3}{8}$ in. thick,

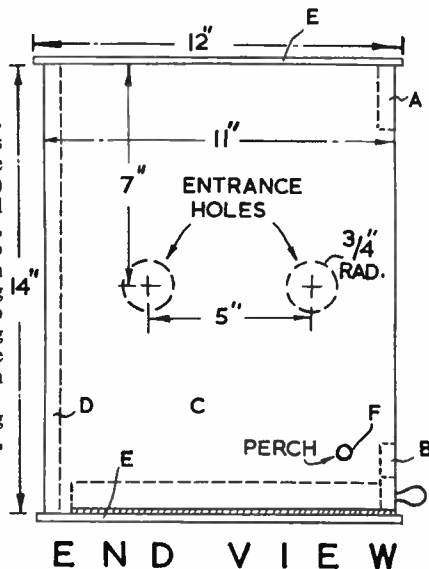


Fig. 2

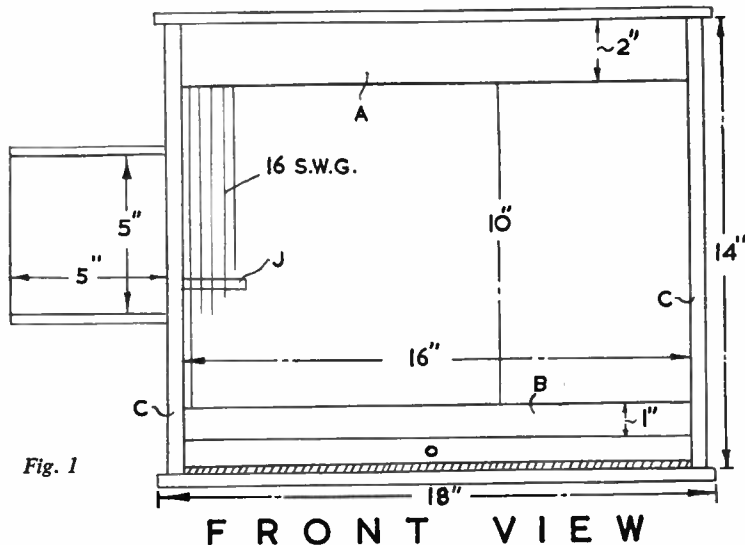


Fig. 1

Fix a perch (F) of round rod at a convenient height for the birds to reach seed pots on the outside of the cage.

Fig. 4 shows the two nest boxes. They are made from $\frac{1}{2}$ in. wood, but the top, bottom and doors could be cut from plywood. No back is needed as the end of the cage serves this purpose. Glue and pin the parts together, hinging the two doors with 1 in. brass butt hinges and a metal or wood button to hold them both shut. A knob fixed on each door will serve to open them. The boxes can now be fixed over the holes already bored in the end of the cage, and screwed from the inside.

Wood perches can be made from dowel

rod, and fitted in any convenient position in the cage.

Make the sand tray from plywood or hardboard to the bottom dimensions of the cage, and to the front of this glue and pin a strip of wood the same thickness as bar B and wide enough to fill the gap beneath it. Glue narrow strips of wood to the remaining three sides to complete the tray as shown in Fig. 5. The addition of a knob at the front will facilitate removal for cleaning purposes.

Use non-toxic paint

To make the front use lengths of 16 SWG straight drawn steel wire $10\frac{1}{2}$ in. long, inserting the ends first into rail A, then dropping into rail B. A horizontal crosspiece may be soldered in place at a suitable height to form a locating point for perches.

The inside of the completed cage can now be lime washed or given a coat of non-toxic paint, and the outside can be painted or varnished. (M.h.)

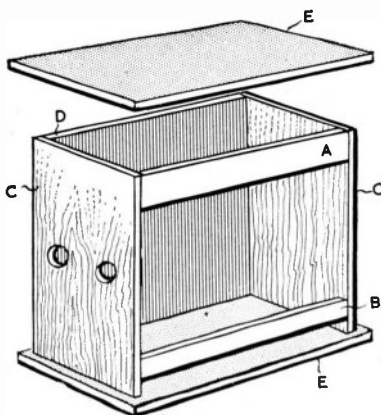


Fig. 3

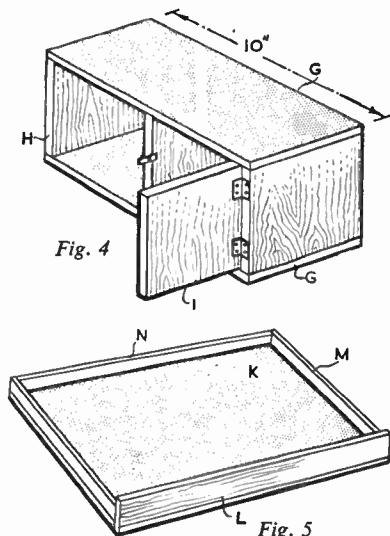


Fig. 4

Fig. 5

● Continued from page 118

TARTARIC ACID EXPERIMENTS

watch glass by boiling it for a few moments in a solution of sodium hydroxide. Rinse it well in water and let it dry. To prepare the silvering solution dissolve a pinch of potassium sodium tartrate in about 2 ml. of water. Add to it a solution of silver nitrate, AgNO_3 , little by little until a permanent white precipitate of silver tartrate, $\text{Ag}_2\text{C}_4\text{H}_4\text{O}_6$, is formed. Finally add dilute ammonium hydroxide, NH_4OH , until almost all the precipitate has dissolved.

Deposit of silver

Put a small crystal of silver nitrate in the watch glass and set the glass on a boiling water bath. Carefully fill up the watch glass with the silvering solution by pouring it slowly down a glass rod (see diagram). Silver is gradually deposited as a brilliant film. Rinse out the watch glass, let it dry, and paint or varnish the hollow side to prevent tarnishing of the silver. The reverse side gives you a convex mirror. On a larger scale, using a clock glass, this process can be used to make the convex mirror for the fashionable sunburst type of decorative wall mirror.

VINEGAR is usually regarded as a condiment to add an appetising flavour and it is not generally recognized that it can be used to help in lots of ways to ease domestic cleaning. Here are a few ways to lighten the housewives' chores.

Carpets and upholstered furniture will look much brighter if one teaspoonful of vinegar is added to the rinsing water.

When rinsing clothes and household articles vinegar will also brighten the colours if similarly added.

warm water and 1 tablespoonful of vinegar. Polish as usual when dry.

Mirrors, windows and pictures will come cleaner if rubbed with a cloth moistened with vinegar. This produces a good shine and removes all fly marks.

A solution of one tablespoonful vinegar in $\frac{1}{2}$ pint of warm water helps to remove shine from clothing. It is also good for sponging dark coloured materials before pressing.

A few drops of vinegar added to a bowlful of warm water is a good rinse

Vinegar as a Home Help

Stains on copper or brass can be removed by means of a cloth first dipped in vinegar then in salt. Rinse and dry thoroughly before polishing with the usual metal polish.

Stains which accumulate in flower vases can be removed by a solution of one tablespoonful of salt and $\frac{1}{4}$ pint vinegar. Allow the solution to remain in the vase for about half an hour, brush vigorously and finish by washing in warm, soapy water. More obstinate stains on glass and china can be removed with a cloth soaked in vinegar and dipped in salt.

Polished wood and linoleum sometimes becomes dirty and sticky and this can be cleaned by a rub with a soft cloth wrung out in a solution of 1 pint of

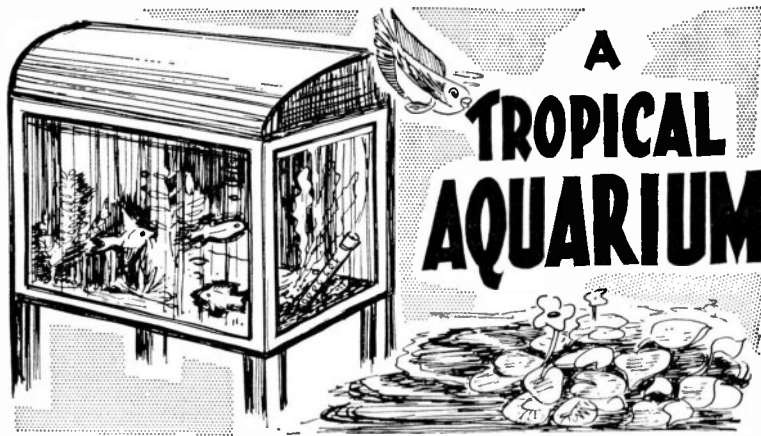
for the hair after a shampoo.

Leather can be cleaned by rubbing with a cloth dipped into one teaspoonful vinegar mixed with two teaspoonfuls salad oil. Polish the surface with a soft duster until all traces of oil have disappeared. This will make the leather softer and prevent it from cracking.

A remedy for winter coughs can be made from $\frac{1}{2}$ lb. honey, $\frac{1}{4}$ pint vinegar and $\frac{1}{4}$ pint water. Heat until all the honey has dissolved and take frequently. Suitable doses are one teaspoonful for children and one tablespoonful for adults.

One teaspoonful of vinegar in a glass of warm water makes a most effective gargle.

(S.H.L.)



BREEDING YOUR OWN FISH

By N. Wainwright

When breeding is to be practised seriously it is advisable to separate the sexes while the fish are still young so as to prevent premature mating. With very young fish it is not always easy to distinguish the sexes but there are two simple guides that are almost 100% accurate. Given any true pair, the most gaily coloured specimen is the male, or, when darting about the tank, the hunter is the male and the hunted the female.

The parents-to-be need careful selection. They must be both mature and in perfect health.

The parents are 'conditioned' before mating by segregating them, often in a tank with a removable glass partition so that the two fish can see, but not come into contact with, each other. The partition is removed when the fish cruise, in company, alongside the partition, obviously eager to mate. The diet of live food is scaled up at this time, and the amount of dried food is cut down a corresponding amount.

The breeding tank does not differ greatly from the ordinary aquarium, though the rock-work need not be so elaborate. It may be quite shallow but the temperature must be kept at a steady 75°F. A breeding tank may well be home-made.

Several births result from the one act of fertilisation, the fry (approximately ¼ in. long) being born over a period of several days.

The cannibalistic tendencies of some parents have already been noted. These can be thwarted by the removal of the male once the female has been fertilised, and by the installation of 'breeding traps'.

Breeding traps usually take one of two forms. The first is a small tank that fits inside the main tank, the small tank having slits or holes in the bottom that are large enough to allow the fry to pass through, but too small for the adult to follow suit. The pregnant female is put into the smaller tank, then, when her young are born, they have an excellent chance of gaining the security of the main tank without being eaten.

The second type of breeding trap consists of a series of closely spaced glass or

A PART from the sheer interest, tropical fish-breeding is done either to increase the stock at little cost or to develop certain characteristics so as to produce the 'ideal' fish. This latter form of breeding can be most complicated and scientific, so this (and the next) article will be devoted to considering breeding for stock increase.

As far as breeding habits are concerned tropical fish are divided into the 'live-bearers' and the 'egg-layers'. With the first the mother gives birth to perfectly formed miniature fish that are able to fend for themselves as soon as they are born.

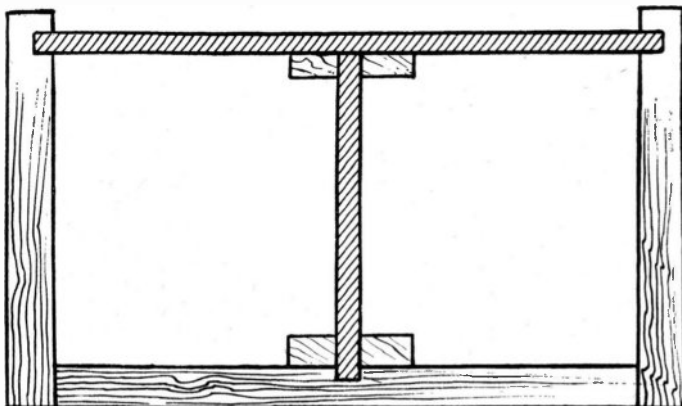
In egg-laying breeds the mother may lay the eggs on the sides or bottom of the tank, on plants, or may deposit them in a nest of air bubbles in which they are guarded by the males, but in either case there must be a period of time between the laying and the actual hatching of the eggs.

Even if fish are kept haphazardly a certain amount of breeding may take

place, especially among live-bearers. However, very few of the young may survive. Many tropical fish show strong cannibalistic tendencies, and even the mother will eat her young quite greedily if she can get at them.

Nature has given the newly-hatched fry strong instincts of self-preservation and immediately they are born they will make a dart for any plants, rock-work, etc., that seems to offer protection and will lay hidden for a few days until their size is such that they no longer represent a potential meal. Fish eggs laid in a community tank never stand a chance of hatching, for they are eaten almost as soon as they are laid.

Although both kinds of fish can be bred successfully under controlled conditions the most successful results are likely to come from the live-bearers. Early experiments in breeding should be conducted with a pair of guppies and having successfully reared the young of these other live-bearers should be bred before trying to breed from egg-layers.



Plan of home-made breeding tank with removable glass partition

Ideas for Your Decorations

HERE are a few ideas to help you make this Christmas one of your brightest and easiest yet. And ideas that the children can join in with too.

Our photograph shows a decorative choirboy and a fancy candle. These may be made in sets, large or small, and dotted on the table or mantelshelf as decorations. While we give directions for making a large choirboy it will be realized there is no reason why you should not make them half the size if desired and they will be equally attractive.

You will need the following items for a large choirboy:

Black paper 6 in. by 12 in. Red paper 10 in. by 10 in. Pink paper 3½ in. by 10 in. White paper ¼ in. by 10 in. White Plastic doily about 12 in. in diameter. Pastel paper will be quite suitable for the main portions of this novelty.

By
*Anne
Bradford*

Holly Hoop



*Choirboy and
Candle*

Make a cone of red paper 10 in. high by preparing a semi-circle and cutting out. The top half of this is covered with half the doily while the remainder of the doily is cut in two and formed into cones for the arms.

Now prepare a cylinder of black paper 5½ in. high. The top 1½ in. of this cylinder is fringed all the way round to represent the hair. You will find it easier to make the cuts for this fringe before gluing the ends together to make the cylinder and if you ultimately run the fringe between the thumb and a scissor blade it will curl outwards.

Now cover the rest of the cylinder with pink paper for the face, adding the white strip at the bottom for the collar effect. The eyes, mouth and tie are cut out separately from black paper and stuck into position.

The head can be fixed to the body by means of pipe cleaners glued inside the head and inside the body.

The decorated candle is very simple to produce, the base being a cardboard tube. We are not fussy about the dimensions of the tube but suggest that it should be about 1½ in. or 2 in. in diameter and about 15 in. long. If you have no such tube available it is possible to buy postal tubes from stationers' shops.

You will no doubt have plenty of seasonal wrapping paper in the home and all you need do is to cut a broad strip of this, lay on the table and roll round the tube diagonally, tucking plenty of sur-

plus into both ends to hold firm. We now take a piece of gold or silver foil paper and stick on a piece of cardboard for the base.

The 'flame' is a double thickness of gold paper cut to shape with a match stick sandwiched between the two. This will enable you to attach the flame to the candle by pushing the match stalk into

the surplus paper at the top of the tube. You may finish off the candle by means of a ribbon and fancy bow or some tinsel wrapped round diagonally from top to bottom.

Holly hoops are simply yet attractive forms of decoration and are simple to prepare. You will need a hoop not too large in diameter. It may be a child's hoop or one fashioned from flexible wire. Make an initial covering with green crepe paper cut into strips and wrapped diagonally then fasten well berried sprigs of holly with strong black thread.

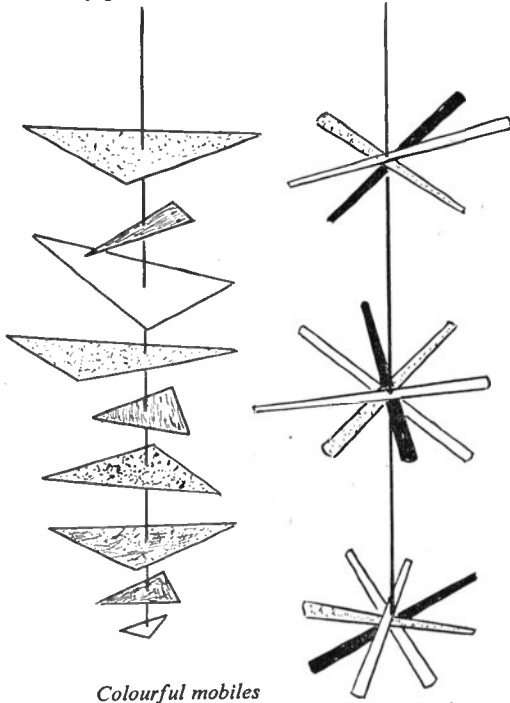
Simple but novel mobiles can be made from coloured celluloid or cardboard covered with gay papers. Coloured celluloid is very attractive if you can collect some scraps, since it catches the light. All you need to do is to cut it into odd triangles of different sizes and suspend on a long piece of thread. Tie a knot at the base, add a triangle, tie a further knot about 2 in. above, add another triangle and continue until you have a length. Coloured foils may also be used in the same manner if mounted on thin cardboard and cut into shapes.

Coloured foils may also be rolled into tapering spills and fastened on a thread to make star mobiles.

Take a square of foil and roll into a spill by starting at a corner. Paste the ends

A Holly Hedgehog

Only too often do we find some small sprigs of holly which are difficult to deal with yet we do not wish to waste them. So why not use these for a Holly Hedgehog? Take a medium sized potato, passing a strong thread through the centre for suspending, tying a knot at the end. Sharpen the ends of the holly sprigs then stick them into the potato, which should be entirely hidden. You can produce a really attractive finish by trimming the sprigs after setting in position.



Colourful mobiles

fast. Collect a few together in different colours and thread a cord through the centre as shown.

If you happen to have an old umbrella frame open it out, give it a coat of bright paint and then use it for decoration or hanging the smaller presents. You may either hang it from a beam, plant it in a tub or carry it into the room when ready to distribute the gifts.

We are all familiar with the gay baubles usually hung on the Christmas tree but these look really attractive if suspended from the inside of a lamp shade. They also look well on a centre light or in the hall if hung at different levels.

Whenever we display our Christmas cards on the piano top or mantelpiece they always seem to topple over, especially when the door opens. This year we are going to hang them on ribbons down the rods of the staircase. The cards will be pinned to lengths of 1 in. ribbons, brilliant red and green, and fastened to the rods of the banister.

● **Continued from page 121**

BREEDING YOUR OWN FISH

plastic rods that stretch across the tank. These, too, allow the fry to escape without letting the female through into the bottom of the tank. Both types of trap can be bought at water-life stores.

In the case of egg-laying breeds there are slight differences as regards treatment.

Plants are particularly important in tanks for egg-layers. Unless the breed specifically needs it, aquarium gravel is not laid and the plants are anchored into place with lead sinkers.

The parents-to-be are brought into proper breeding condition by segregation

and feeding up on a variety of live foods. When the time is considered ripe for mating the male is put in with the female overnight.

Spawning usually takes place in the early morning or, occasionally, overnight. The male frenziedly chases the female, releasing the fertilising fluid as he does so, while the female releases her eggs. The latter are either sticky or non-adhesive. If the former they may stick to the sides of the tank, plants, etc., but if non-adhesive they fall to the bottom of the tank.

The male will cease his chasing as soon

as all his fertilising fluid has been released, the eggs being fertilised by simple contact with the fluid. When spawning is over both adult fish should be netted and returned to the community tank.

The eggs must remain undisturbed until they have hatched. When this happens the fry will be almost transparent and will have a sac containing egg nutriment beneath their bodies, but this egg sac will gradually disappear and the fry will become true free-swimming fish.

The period that must elapse between egg-laying and hatching will vary from two to seven days according to breed, etc. Hatching is followed by an inactive period during which the sac is being absorbed. During the whole of this period no food should be put in the tank as it will only decay.

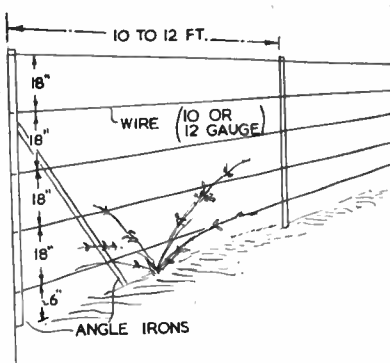
Feeding of the fry will be considered in a following article.



BLACKBERRIES CAN BE A DELICACY

CULTIVATED blackberries are amongst the most useful and prolific soft fruits in the garden. They provide a heavy crop of large delicious berries which can be used for dessert, cooking or bottling. In good soil, with the addition of farm yard manure, their growth is fantastic, but even with average conditions they can be relied upon to give a heavy crop.

There are a number of varieties; early, mid season and late, and a selection could be made from a nurseryman's catalogue. But the most popular by far is the commercial variety known as Himalaya Giant. It is hardy, it bears fruit on old and new wood and gives an immense crop of delicious berries. It is



vigorous enough to form a dense hedge or windbreak.

Most varieties should be planted about ten feet apart, but Himalaya Giant should be given 12 ft. stakes, and wires should be provided before planting, as shown in the illustration, and the new growth tied in as it grows. December is a good month for planting, the first season's growth being tied in at convenient points. Fill in with the following season's growth and cut out dead wood where necessary.

Aim at providing as much humus as possible in the form of manure or compost, digging it in at the outset and providing yearly mulches. Lawn mowings can be used to advantage but farmyard manure is of course preferable. The addition of a little bone meal and sulphate of potash each year is advisable.

If you wish to increase your stocks it is a simple matter to tip root some of the new shoots, close to the parent plant, in July or August. They can be severed in March and replanted in their final positions.

Pruning should be done in the spring before new growth commences, and consists merely of cutting away dead or unwanted wood. Cut away dead canes as low as possible, using a pruning saw if necessary on the larger stems.

Fortunately blackberries are seldom attacked by pests or diseases, although cane spot and raspberry beetle may sometimes be encountered. Cane spot is indicated by purple spots on the foliage, the usual remedy being a spray of Bordeaux mixture during May. Raspberry beetle is controlled by dusting the flowers with derris dust and by spraying the liquid derris when the fruit has set. (M.h.)

Miscellaneous Advertisements

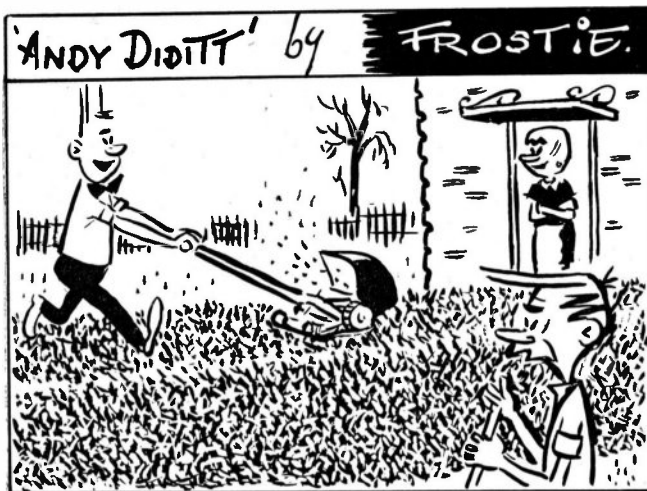
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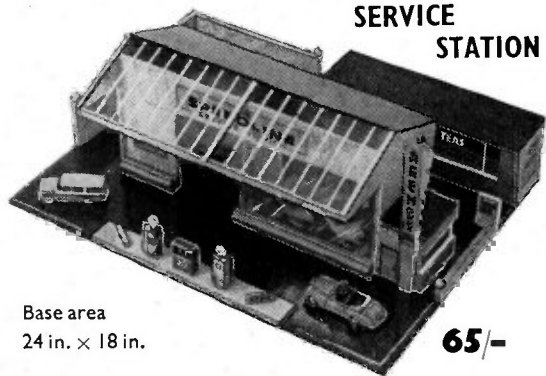
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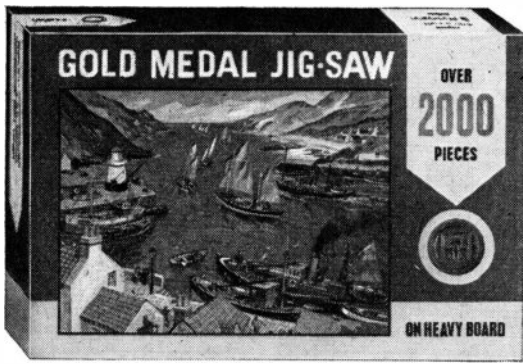
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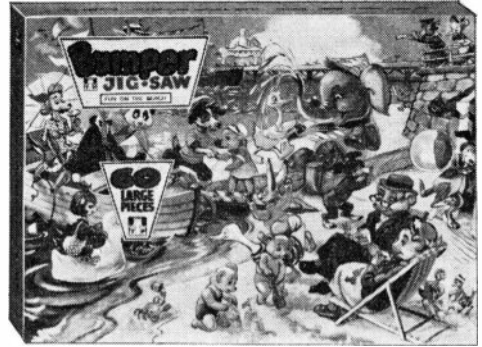
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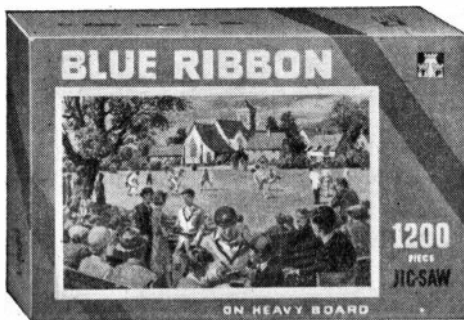
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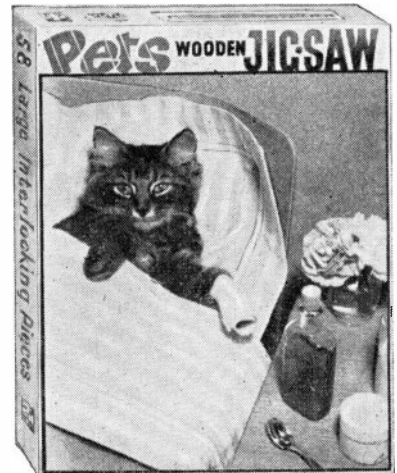
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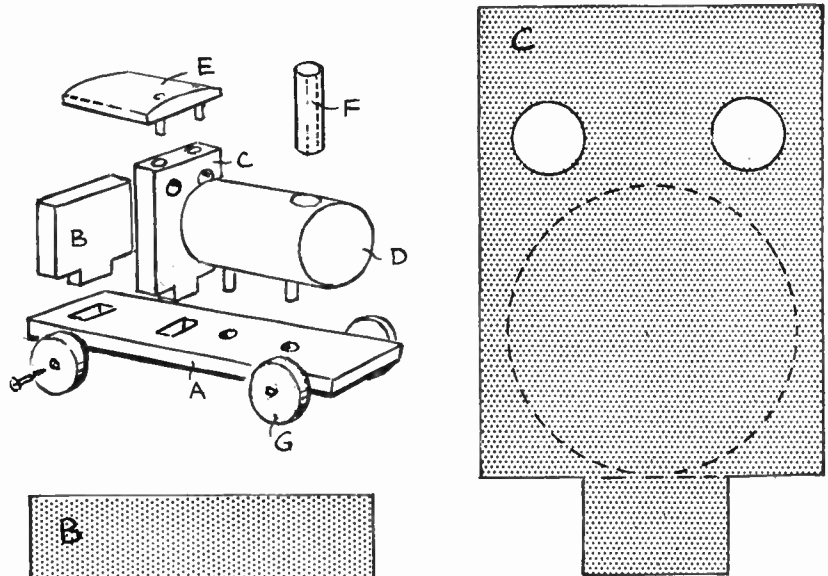
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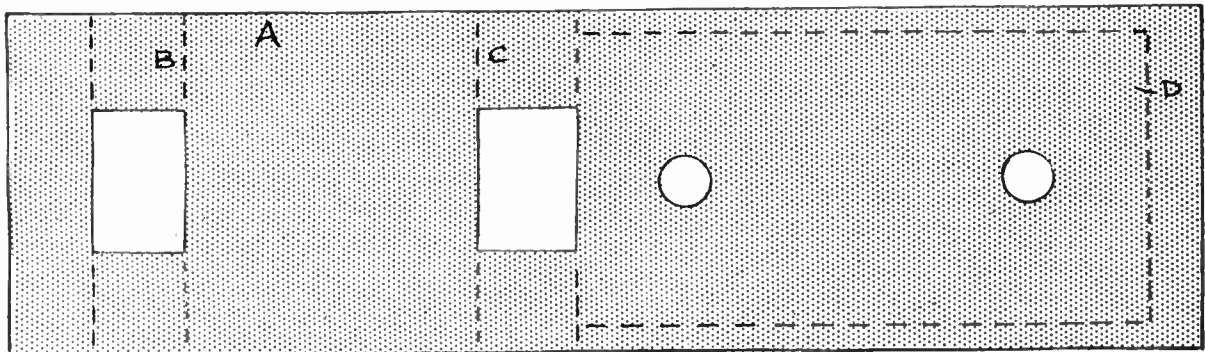
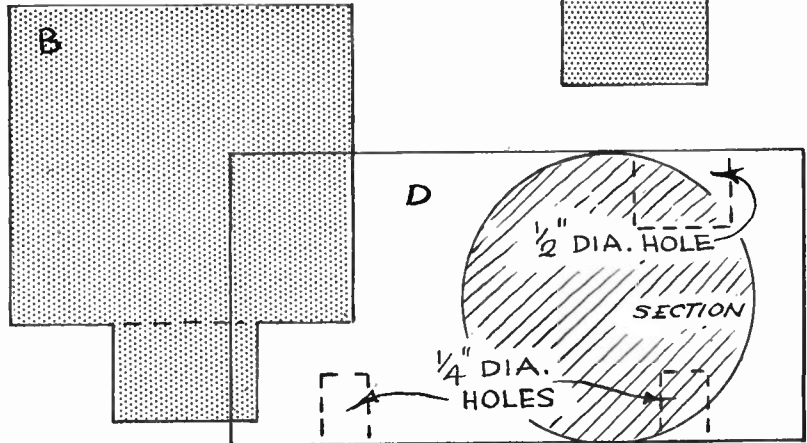
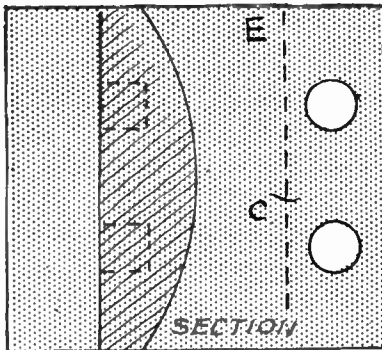
THIS toy is constructed from odd pieces of wood and is designed to take apart and fit together again by means of dowels and tenons. It forms an educational toy for the very young.

Pieces A, B, C and E are cut from $\frac{1}{2}$ in. wood, piece E being shaped as shown by the section. Piece D is shaped from a piece of square wood or balsa block and piece F is a short length of $\frac{1}{2}$ in. dia. dowel. Cut the wheels from $\frac{1}{2}$ in. wood or use ready made wheels.

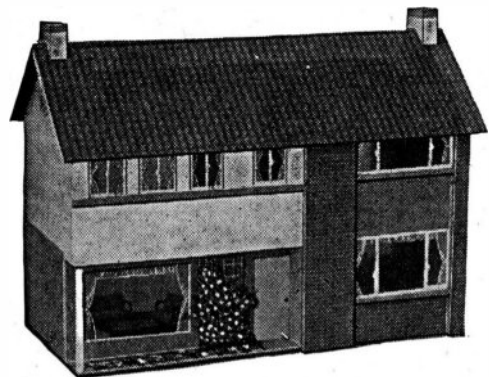
Assemble as shown in the small diagram, drilling holes and using dowels where indicated. Pivot the wheels to A by means of roundhead screws. Finish off by painting in bright colours. (M.p.)



Educational Project for the very young



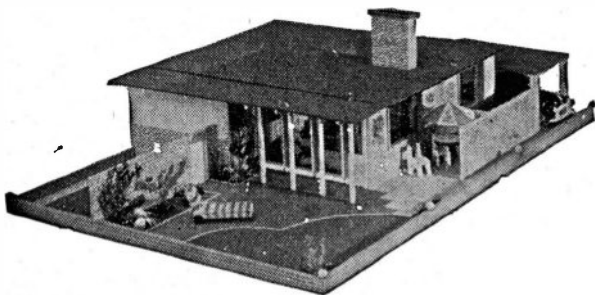
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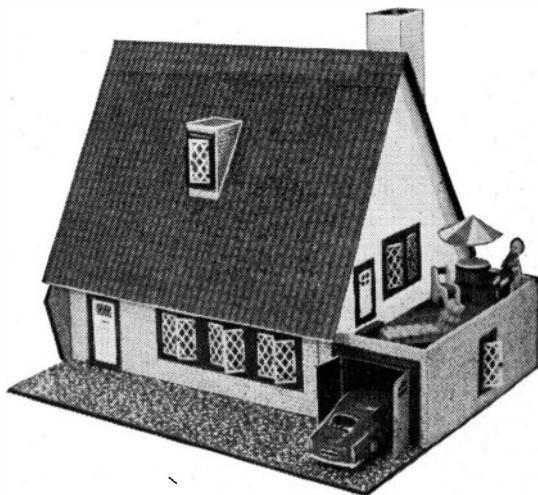


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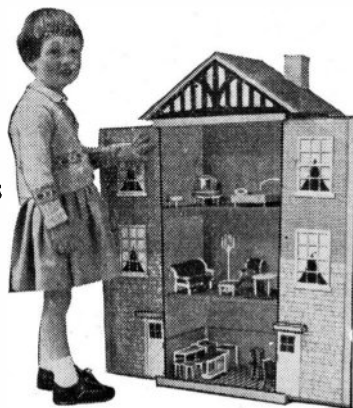


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