HOBBIES weekly

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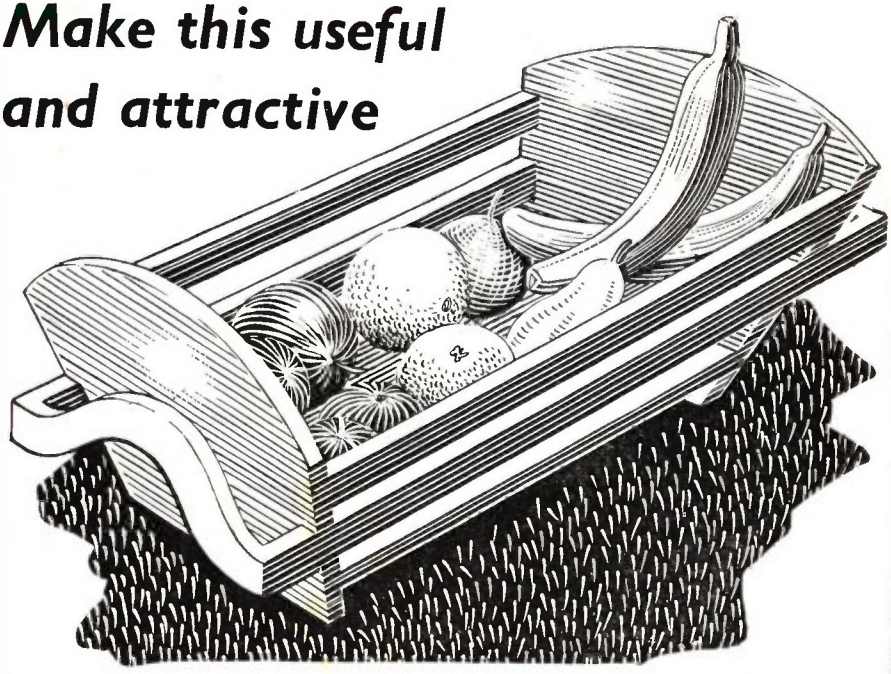
Make this useful and attractive



FRUIT TROUGH

Hobbies

FOR CRAFTSMEN OF ALL AGES

6D

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.

SUPREME MAMMAL

By R. L. Cantwell

THOUSANDS of stamps and labels depict mammals — but these are outnumbered by almost as many thousands by those depicting man — the most important mammal of all.

Man is the only animal to walk erect, the only one which may truly be said to have a hand and the only one which talks. It is true that monkeys can stand erect, or nearly so, that they use their forefeet sometimes like hands; but they usually walk on all fours and their hands are fitted for only a few motions, while those of man are adapted to almost every kind of movement.

Parrots and some other birds can be taught to speak. But their words are only imitations of those of man.

In some ways man is inferior to other animals. He cannot swim as well as fishes, nor fly like birds. He cannot run, nor jump, nor climb as well as many quadrupeds and insects. But he can do a greater number of things than any other animal.

It is not, however, in his body that man chiefly excels all other animals, but in his mind, which enables him to reason and to use his limbs and faculties.

Mankind has been divided by different writers in several different ways. But the most usual classification is into five great families or races, as follows:

1. Caucasian or white race, so named from the Caucasus Mountains in Asia, near which they are supposed to have first lived. This family is the most powerful and civilized of all the races, and includes nearly all the great nations known in history. It now occupies the whole of Europe, a large part of Western and Southern Asia, Northern Africa, Africa, Australia, and most of North and South America.

2. Mongolian or yellow race, so called from Mongolia, now a part of China, whence they came. They live now mostly in China and Japan, and Northern and Eastern Asia.

3. Ethiopian or black race, so called from Ethiopia in Africa, which was once a much larger country than it is now. This family live chiefly in Central and Southern Africa.

4. Malay or brown race, named from the Malay Peninsula in Southern Asia. This family live now in South-eastern Asia and in most of the islands of the Indian Archipelago and of the Pacific.

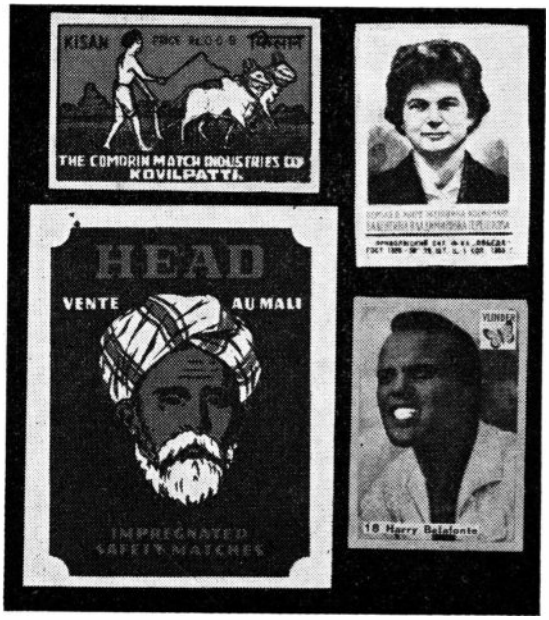
5. American or red race, consisting of the Indians of both North and South America.

All these families may be sub-divided into many kinds, some of which differ greatly from each other.

Some people think that all men had a common beginning, and are descended from one pair of parents, who lived many thousand years ago. But there are some who deny this, believing that each family of mankind is distinct and had separate parents of its own, and therefore that there is no blood relationship between the different families.

Others believe that man is descended from an animal similar to the ape. It is not thought that any of the now living apes was the ancestor of man, but that some former kind grew little by little both in body and in mind until it became like man, and afterwards advanced through many ages of growth to man's present state.

Collectors will find this an interesting theme.



* * *

AUSTRIA

A set of 6 stamps appeared on April 16th to mark the Viennese International Horticultural Exhibition. The designs depict flowers and fruit to be seen at the show.

Make this attractive

FRUIT TROUGH

FRUIT will look much more luscious and attractive if placed on the sideboard in a suitable container. It is intended that this trough should be constructed of soft-wood such as obechi and then painted. The finished colour should be broken white, magnolia or the palest cream obtainable. This will show off the colours of the fruit to advantage, making them very appetising to look at.

the base B shaping the ends to the correct angle and marking the positions on the ends. Drill for screws, countersinking to the correct depth.

Screw the ends in place and check to ensure that they are symmetrical. This will be easy if a card template is used as shown in Fig. 2.

The rails C and D are now laid in place and their positions marked off on the edges of the ends A. Withdraw the screws and remove the ends from the base and cut the slots for the rails. Rail C will be cut off flush but D will continue through. Now reassemble the base and ends (Fig. 3) adding the rails and securing all with glue and screws (Fig. 4). Wipe off any excess glue before it has time to dry.

The handles E are screwed to the ends of the longer rails D. They are marked out to the approximate shape shown and

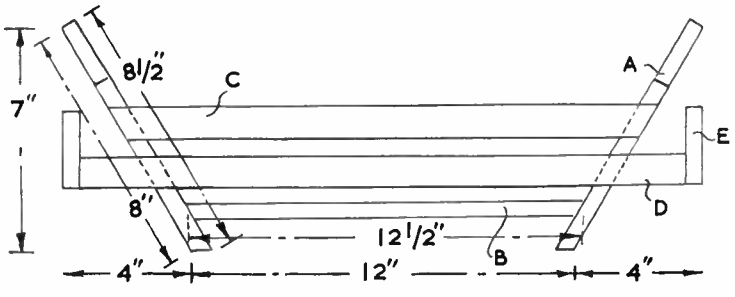
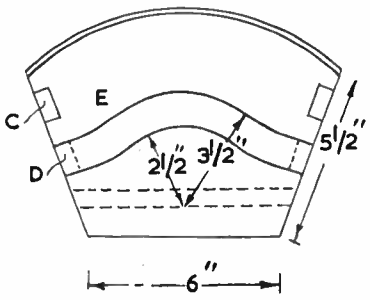


Fig. 1

SIDE



END

Completed Fruit Trough Illustrated on Front Cover

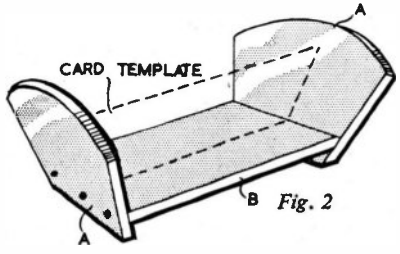


Fig. 2

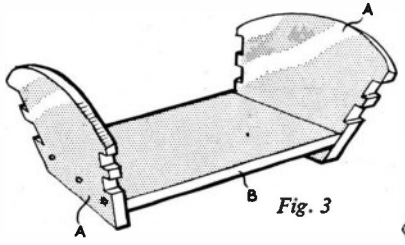


Fig. 3

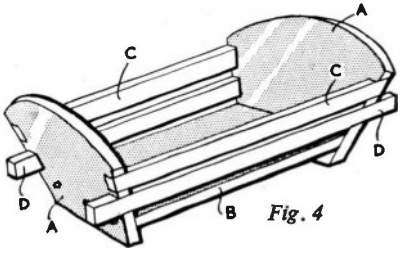


Fig. 4

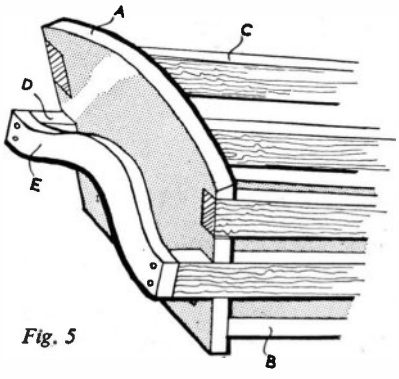


Fig. 5

The trough is 20 in. long over all as will be seen in Fig. 1. The ends A are curved at the top and are splayed at an angle with the base B. The rails D extend through to provide projections to which the handles E are attached. All parts are cut from ½ in. wood.

The first step in construction is to draw out the shape of the ends A. The measurements in Fig. 1 give all the details required, the curve being drawn in with compasses. Next prepare

can be cut with a fretsaw. They are secured by glue and screws as seen in Fig. 5.

Clean up all parts thoroughly and fill the grain. Rub down with fine glasspaper and give an undercoat of matt white. Finish with two top coats of high gloss paint. Rub down between coats with silicon carbide paper used wet. This will help to ensure a professional looking high gloss. (M.h.)

THE model control equipment dealt with in previous issues has employed CW (continuous wave) transmitters and receivers. For more complicated models, tone equipment is often used. This type of transmitter and receiver employs more valves or components, but can allow better control of the model, than is possible with CW equipment.

TONE EQUIPMENT

Two methods of control by tone equipment are in general use. With one system, a simple audio tone generator (or modulator) is used with the transmitter, and the receiver responds to almost any tone which is produced. This allows single channel working, in the same way as with a CW receiver such as that described in the 11th March 1964 issue. There is the advantage, however, that operation of the relay no longer depends on the critical adjustment of a super-regenerative detector, because the detector no longer has to produce the current change which works the relay. This system is the one described here. It is used with steering and other actuators of the kind shown in the 15th Jan. 1964 issue.

The second method has a modulator or tone generator which can produce several particular tones (3 to 10 are commonly used). A tuned reed relay is fitted in the receiver. The reeds only respond when their own particular tone is transmitted. It is thus possible to control as many circuits in the model, as there are reeds on the relay. A 3-reed unit is popular, and allows control of *three* complete circuits, which may steer the model, adjust its speed, etc. This system will be dealt with in the next article.

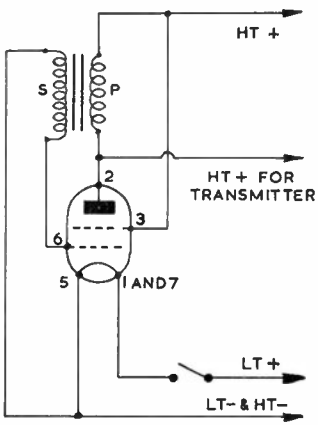


Fig. 1—Modulator for C.W. transmitter

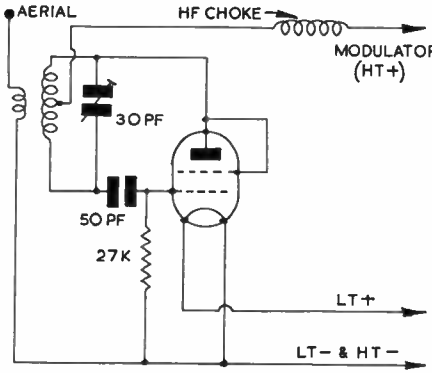


Fig. 2—Circuit for 1-valve C.W. transmitter

Modulator

The modulator for control of a single tone receiver can be a simple oscillator, such as that in Fig. 1. Pin connections are for a 3V4 valve, but other small power and output valves are equally suitable.

The valve, with holder, and an audio coupling transformer, are the only parts needed. The transformer can have a ratio of about 1:2 to 1:5, and its size and type are not important, provided it produces a reasonably good tone. The primary P must also be able to carry the HT current required by both the audio oscillator valve and the valve or valves in the transmitter.

The actual transmitter is exactly the same as described for CW control. A crystal controlled transmitter was described in the 12th Feb. 1964 issue, and a 2-valve tuned transmitter in the 23rd Oct. 1963 issue. Either of these can be used with the modulator in Fig. 1. Fig. 2 is a circuit of a suitable CW transmitter, which may be used with the modulator.

Both valves are run from the same LT and HT supply. The 3V4, wired as in Fig. 1, requires $1\frac{1}{2}$V for its filament (LT) and a further 3V4, or similar valve, can be used in Fig. 2. For high tension, about 90V is convenient. A lower voltage can be provided for short range. For long range, 120V can be supplied.

The CW transmitter section should be tested and tuned to the Model Control band, as described for other CW transmitters. The HT positive connection is then changed to the modulator anode, Fig. 1, so that HT current for the transmitter passes through the transformer primary P.

Tone Monitor

A simple tone monitor is useful for checking the equipment, and can be made to the circuit in Fig. 3. The pick-up loop is about 5 turns of insulated wire, about 1 in. in diameter. A small crystal diode, and headphones, or single phone, complete the monitor. If the capacitor C1 is fitted, it can be 100pF to 1,000pF, but with many phones it can be omitted.

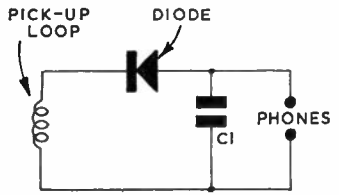


Fig. 3—Monitor to listen to tone transmitter

The field-strength meter shown in Fig. 4 in the 26th Feb. 1964 issue can be used

as a tone monitor, by connecting phones in place of the meter.

When the transmitter is switched on, a strong audio tone should be heard in the phones, when the loop is a little distance from the transmitter coil.

If no tone is heard, reverse the two leads going to the secondary S of the modulator transformer. Should the tone be extremely high pitched, it can be lowered by wiring capacitors across the primary or secondary of the transformer. Values from about 1000pF (·001uF) to 0·01uF can be tried. The aim is to get a good strong tone of roughly 250 to 500 cycles (about Middle C, to one octave above Middle C). The exact tone does not matter, for single channel working. But the receiver is not likely to respond so well if the tone is extremely low pitched, or very high in pitch.

Should the tone heard at the first test be too low in frequency, it can be raised by inserting a resistor between the secondary S and pin 6. Or a 1 megohm variable resistor or potentiometer can be added, so that the tone can be adjusted.

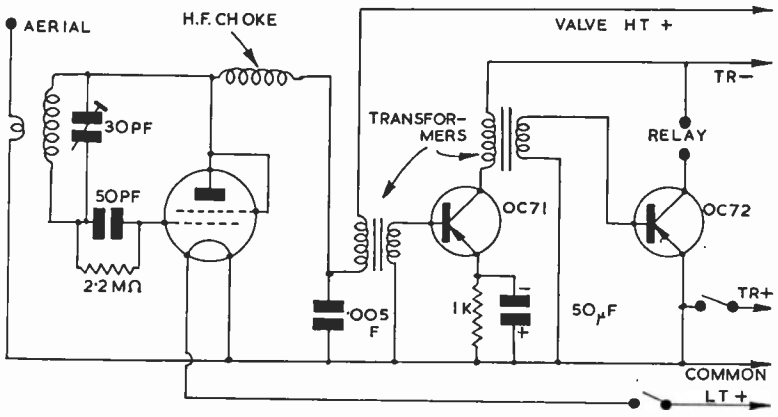


Fig. 4—Tone receiver

Tone receiver

A receiver using one valve and two transistors is shown in Fig 4, and has the advantage that it can also be employed for multi-channel working, with a reed unit, later.

The valve acts as detector, but does not need to be adjusted to give a current change, as with the CW receivers. This means that it is not necessary to have quench coils, or to use a gas-filled valve, as with a CW receiver. Nor need the HT voltage be so high, as 22½V from a deaf-aid or photoflash type battery should do. The valve can be any small battery type pentode, such as the 1S4. Small valves with wire ends are also made, and take up less space.

The tuning coil is about 12 turns of 18 S.W.G. wire, self-supporting, wound to a diameter of ¼ in., and with turns separated so that it is about 1 in. long. The aerial is coupled by a 2-turn loop about ¼ in. from the coil. An insulated tool, such as an ebonite rod, is used to rotate the 30pF trimmer, to tune in the transmitter signal.

Two transistor amplifiers follow the valve, and may use 0C71, or similar audio type transistors. Surplus audio transistors in good condition should be satisfactory.

Small transistor type coupling transformers are used between valve and first transistor, and first and second transistor. These transformers can be of the same kind as fitted in home-built transistor radio sets, and they can best have a ratio of about 3:1 to 5:1 or so.

The 'common' battery lead goes to both HT negative, and LT negative. The valve will generally need a 1½V LT battery. A single reasonably large dry cell, or any other type of 1½V battery, will be satisfactory.

For the valve, some 22½V to 45V will be used, and the 'Valve HT' connection goes to positive. Current drain is extremely small here, so miniature batteries are satisfactory.

The two transistors have their own battery, which is from 3V to 6V, according to the power wanted to operate the relay. Three small dry cells in series will provide 4½V. Polarity must be as in Fig. 4 and the zinc case of each cell will be negative.

A 2-pole switch is necessary, to switch off both the valve filament, and the transistor circuit.

To tune the valve circuit, temporarily connect phones across the secondary of the transformer between transistors, and adjust the trimmer for best reception of the audio tone.

Relay

To use the receiver for single channel working, instead of a CW receiver, connect an ordinary model control type relay to the points in Fig. 4. Relays are covered in the 25th March 1964 issue. The relay should have a windings resistance of about 1,000 to 2,000 ohms or so.

When no tone is picked up by the receiver, the base voltage on the OC72 transistor is low, so that very little current flows in the relay. When the tone is picked up, the OC72 conducts on negative half cycles, causing a considerable rise in current through the relay. This means that the relay armature is drawn down, when the tone is radiated. It is thus necessary to select contacts on the relay which close when the armature is drawn down. (This is exactly the opposite to the system with a CW receiver, where the armature is released when the transmitter radiates.) Most model control relays have one fixed contact each side the armature, so it is only necessary to change over one lead, when using the tone system instead of the CW system.

If the relay armature buzzes, a capacitor of 1uF to 50uF may be connected across the relay windings. The audio tone is not used to work the relay, but merely to cause the OC72 current to rise, which in turn operates the relay.

Reed unit

When a tuned reed unit is used, this is connected instead of the relay. The reeds then vibrate in accordance with the tone picked up, and a capacitor must *not* be added, as described for the relay. Details of reed working appear in the next article.

Construction

If a CW transmitter has been made, it is only necessary to add the modulator, Fig. 1. If the 1-valve CW circuit shown is followed, this can be built on a small Paxolin panel. Wiring should be reasonably short and direct. The coil can be 11 turns of 18 S.W.G. enamelled or tinned-copper wire, on a 1 in. dia. former, with turns spaced so that the winding is 1¼ in. long. The aerial coupling coil is 2 turns of insulated wire, wound round the centre of the 11 turn coil. The transmitter aerial is usually some 3 ft. to 8 ft. 6 in. long, rod, tube or wire, standing vertically, or supported from a bamboo, etc.

For the receiver, the valve detector can be wired up in a similar way to that shown for CW receivers (e.g., 11th March 1964 issue). The Paxolin panel can be extended, to take the two transistors, two transformers, and other few items needed.

CHEMISTRY AT HOME

EXPERIMENTS WITH MERCURY

By L. A. Fantozzi

At least as far back as 300 B.C. mercury, Hg, was known to man. It is the only metal liquid at ordinary temperatures. Its lively habit of breaking into drops and running about gained it the name of quicksilver. Impurities, however, make it less 'quick'. Run a little mercury along a clean glass plate. It should form bright round globules. If it runs a 'tail' behind it, impurities are present.

To clean it prick a few holes in a dry filter paper in a funnel, and pour in the mercury. The metal runs through, and leaves the greyish mechanical impurities behind. If the metal still tails after passing several times through the filter, there are dissolved metals present. These may be removed by covering the mercury with nitric acid, HNO_3, diluted with ten volumes of water, H_2O. Stir occasionally during one day, pour away the acid, and wash the metal several times by shaking with water. Pour off as much water as possible, and then dry the mercury by blotting it. It will now run freely.

The mention of dissolved metals leads to a curious fact about mercury. It does in fact dissolve many metals, forming compounds with them known as amalgams. Some of these are useful in the laboratory, others in industry. A familiar use is in tooth fillings.

Warm about 1 ml. of mercury in a dry test tube, and add a small piece of granulated tin, Sn. The tin dissolves, though the mercury shows no change of appearance on cooling. Warm up again, and add successive portions of tin until on cooling slightly the mercury shows a pasty consistency. Now let the whole grow cold. The amalgam solidifies. It is hard and silvery, but on firm pressure it crumbles to powder.

A similar amalgam of tin and mercury was formerly used for making mirrors, but has been superseded by the use of silver alone. The reason for this is that mercury slowly gives off vapour at ordinary temperatures. The workroom air became saturated with it, and the operators suffered from chronic mercury poisoning.

This vapour formation can be shown by hanging a small article of gold, Au, such as a fountain pen nib in the mercury bottle, corking, and leaving aside for a few days. The gold becomes much paler and more silvery owing to mercury vapour rising from the liquid metal, and forming a gold amalgam. The gold article may be cleaned with metal polish.

Silver amalgam, too, may be made by dissolving silver, Ag, in mercury, but a more interesting way of producing a silver amalgam is by growing it as a 'tree'. Dissolve 0·1 gram of silver nitrate, $AgNO_3$, in 5 ml. of water in a test tube, and add a drop of mercury. Shortly, spiky shoots of the amalgam grow out of the mercury, and build up into a silvery bush.

Metals melt at definite temperatures. Mixtures of metals or alloys melt at lower temperatures. The addition of mercury to mixtures of certain metals lowers the melting point still further. Such alloys have uses where low temperature castings are needed.

A typical alloy is Lipowitz metal. This will liquify even under hot water, since it melts at 61 degrees Centigrade. To prepare it melt together 8 grams of lead, Pb, and 15 grams of bismuth, Bi. Then add 4 grams of tin, and when this has melted, too, stir in 3 gram of cadmium, Cd, taking care that the temperature of the whole is not above 300 degrees Centigrade otherwise the cadmium will burn to cadmium oxide, CdO. Heat 2 grams of mercury to about 220 degrees Centigrade and add it to the molten alloy. Pour out the Lipowitz metal into a narrow trough pressed in hard-packed earth so as to give a rod-shaped casting. On stirring this rod in hot water it just falls away as liquid to the bottom of the vessel. Joke spoons have been made of this alloy.

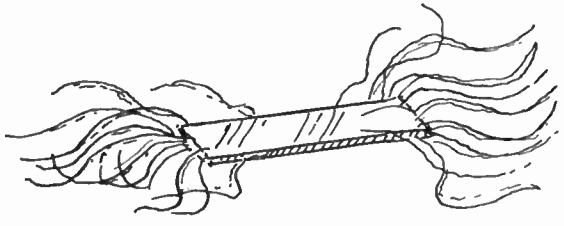


Fig. 1—Aluminium growing 'hair'

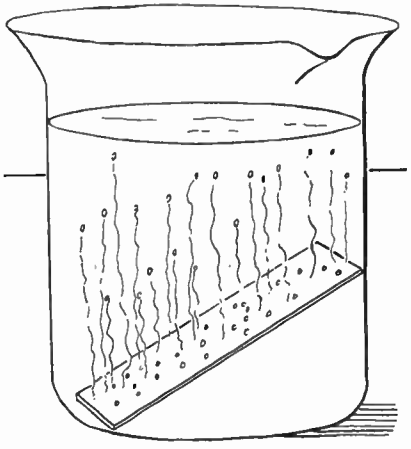


Fig. 2—Aluminium decomposing water

Mercury has some startling effects on aluminium, Al. Aluminium is notable for remaining unaltered in air, that is, it appears to resist the action of the moist oxygen, O, of the air. Actually this metal has a high affinity for oxygen. The reason for its corrosion resistance is that initially there is formed a thin, transparent film of aluminium hydroxide, $Al(OH)_3$, which protects the metal from further corrosion:

$4Al + 3O_2 + 6H_2O = 4Al(OH)_3$.

If this film can be prevented from adhering, then rapid corrosion takes place.

Into a small dry bottle put about 1 ml. of mercury and a strip of aluminium. Close the bottle and shake for about a minute. Remove the aluminium and put it on a sheet of paper. After a minute or so white tufts of aluminium hydroxide begin to grow from the metal. If left for a few hours these grow into long hair-like tresses (Fig. 1).

The reason for this surprising effect is that the mercury forms an amalgam on the surface of the aluminium to which the hydroxide cannot adhere and so the hydroxide is thrown off as it is formed.

A greater proof of the avidity of aluminium for oxygen is that after

● Continued on page 167

POSTER PICTURES

THE age of the magnificent travel poster has long been with us. They can be obtained from travel agencies, and make splendid wall decorations mounted and framed.

By W. J. Smith

This can be done simply and effectively in the following way. Cut from the poster any wording not required. Mount the picture on thick card (straw board if obtainable) using a good paste, press flat and leave to dry.

The frame is made from ½ in. by ½ in. channelled wood. (1) Four lengths are cut with mitred corners (2) for which it is a false economy to use anything other than a mitring block. The four pieces of frame are fitted on to the channels in the wood strips, the mitred ends of course coming together to make the corners. In doing this glue the edges of the picture lightly where they fit into the channels, and the mitred corners. This will stick the whole thing together very firmly, and a quick drying glue is recommended.

The important point when cutting the frame lengths is to note just where the corners of the picture come at the mitred ends. The saw must go across the wood at the points indicated at 3.

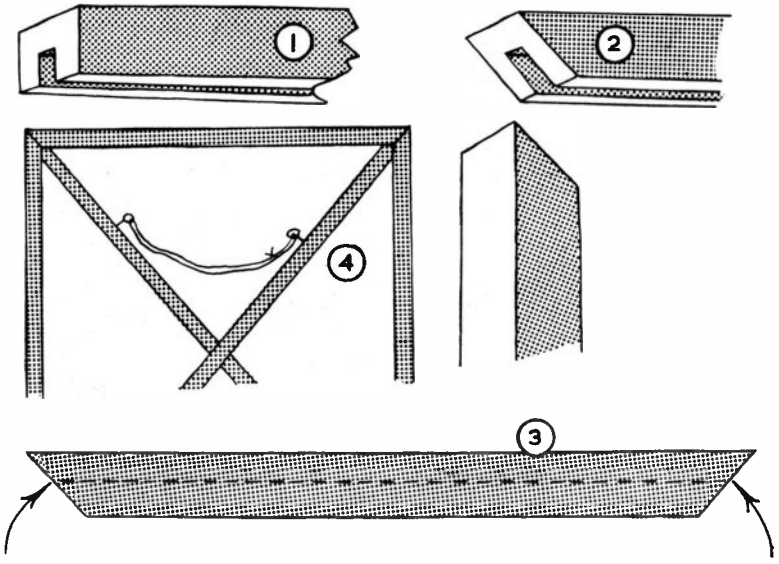
It is more than likely that even with the flattest boards some warping will occur in the cardboard, or there may be a tendency to flap. This can be eliminated by diagonal cross strapping on the back, using a good quality lath section ⅜ in. by ¼ in., half jointing them in the middle. The strip or lath must be mounted on the narrow ¼ in. edge to give rigidity and well glued to the card back. Set a good weight on the crossing point of the straps and leave flat for the glue to set.

The straps will be a little 'proud' of the frame at the back of the picture, but this allows for a good air flow and will avoid an accumulation of dust. Mounting of the eyelets (4) and a short cord as shown will enable the picture to be set flat on the wall.

Poster pictures, while brightening the walls with cheerful colour are so cheap that when the eye tires of one it can be changed with little effort. Simply paste another one on top!

On a smaller scale calendars of the 'picture a month' type can be used very effectively. In this case strapping is probably not necessary.

At any size, pictures of this type have advantages over the conventional kind. They are feather weight to move, have no glass to break or obstruct the picture, and are cheap enough to change frequently!



● Continued from page 166

MERCURY

treatment with mercury it will even decompose water in order to get at the oxygen:

$2Al + 6H_2O =$
$2Al(OH)_3 + 3H_2$ (hydrogen).

Shake up another strip of aluminium with mercury as before and immerse it in water. In a few minutes minute bubbles of hydrogen appear on the metal. After a few hours a regular stream of hydrogen is given off and a sludge of aluminium hydroxide falls to the bottom of the vessel.

By a variation of this experiment the whole of the aluminium can be made to disappear. Almost fill the bottle containing the mercury with water. Put in a strip of aluminium, taking care that it touches the mercury. Leave the whole aside until a regular stream of hydrogen bubbles is rising off the aluminium. Then remove the aluminium, rinse it and prop it up under water (Fig. 2).

Gas evolution continues for several days, the aluminium hydroxide sludge becomes copious and the metal finally completely disappears.

Experiment in

MAGNETIC SCREENING

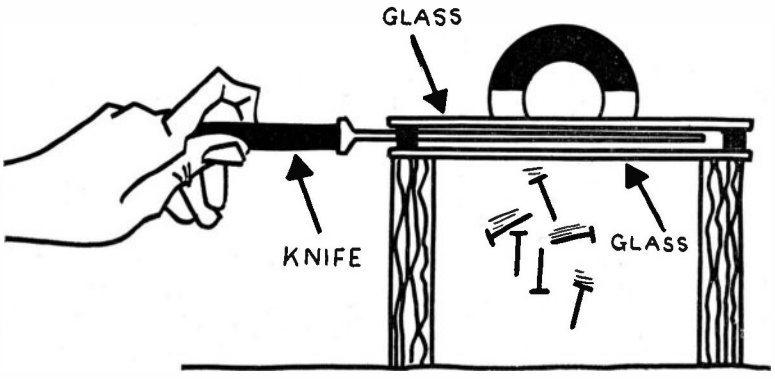
LEARN to short circuit a magnet's force with a steel table knife. The feat is dramatic and the lines of force of the magnet's field are really 'shorted' by the knife in a manner which reminds us of an electrical short circuit.

Support two 4 in. by 6 in. sheets of glass upon some small wooden blocks or toy bricks, to form a little 'table'. Then separate the glass sheets sufficiently to allow a knife to pass easily between them. You can do this by inserting matchsticks.

When the table is ready, put your knife aside and stand a magnet on top of the glass. At the same time hold some iron tacks under the lower piece of glass, and let them hang there — attracted by the magnet's force that passes through the non-magnetic glass and air space.

Afterwards, push the knife blade into the gap between the glass sheets and underneath the magnet. Immediately the iron tacks will fall down!

This happens because the steel knife permits the magnet's lines of force, or 'magnetic circuits', to flow through it much more easily than glass or air do. Therefore the magnet's force is effectively 'short circuited' and cannot penetrate the glass to hold the tacks.



The experiment illustrates the principle of 'magnetic screening', so important where delicate instruments affected by magnetism are in use near electrical apparatus which generates magnetic forces. The troublesome 'magnetic interference' can be effectively eliminated by encasing the electrical apparatus in iron. (A.E.W.)

PAPIER-MÂCHÉ BOWLS

By A. R. Watts

THE making of papier-mâché bowls is both easy and interesting. For the first attempt, obtain a bowl similar in shape to A. Old newspapers should be torn into small irregular pieces about ¾ in. square.

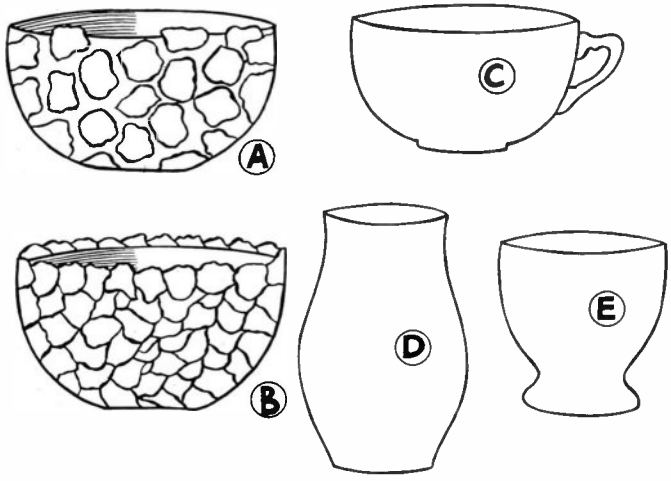
The outside of the bowl should be lightly greased, and on to this are stuck as many small pieces of paper as possible without them overlapping A. As soon as they do start to overlap, commence pasting the pieces before putting them on. Flour paste will be quite satisfactory for this purpose. Continue adding on the pieces of paper until there are several layers, making sure that the pieces project above the rim of the bowl with each layer added as shown at B.

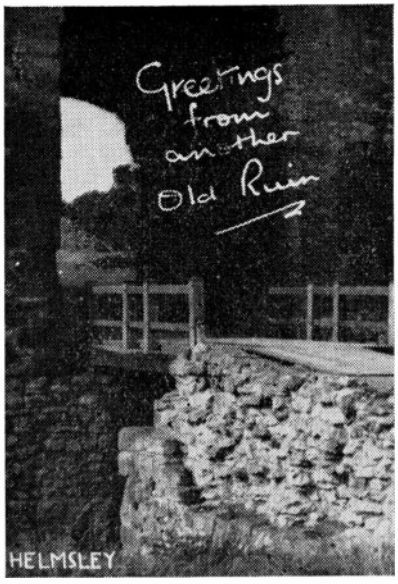
When sufficient layers have been added the bowl should be left until the paste is thoroughly dry, when the top of the paper can be trimmed level with the rim of the bowl. This can be done with a pair of scissors, or better still, a razor blade. Because the bowl has been greased it can be slid out quite easily from the paper covering.

All the grease should be wiped from the inside of the paper bowl and then it can be smoothed both inside and out with very fine glasspaper.

To complete the bowl it should be painted in bright colours and it will probably be necessary to give it several coats in order to cover the printing on the newspaper. Finally it can be varnished.

Many different shaped objects can be treated in this way as long as the top of the object chosen is broader than the base, and not like the examples shown at D and E. If such shapes as these were chosen they could not be slid out of the paper covering. Also, there must not be any projections from the side of the object, such as the handle of the cup at C.





Photographs with

COMICAL CAPTIONS

By S. H. Longbottom

A VERY simple process enables us to make humorous photographs, greeting cards or add titles. The only requirements are a sheet of clear acetate, which you may obtain from Hobbies Ltd, along with some Indian ink and an ordinary steel pen.

The humorous caption, encircled by a balloon in the usual manner seen in comic strips, may require some careful thought but more often than not it is the incongruity which creates the joke. We must emphasize that this aspect is worthy of some consideration if your joke is not to fall flat. Incidentally, words of 'wisdom' coming from the mouths of animals or statuary are rather easier to invent, while friends may appreciate jokes between themselves more than others.

The procedure for enlarging a picture is followed as usual but having decided on a suitable caption we must ensure that it is printed in the best place. Place a sheet of white paper on the enlarger baseboard focusing the image as usual. Examine the image carefully, looking for the lightest patch — which will print the darkest — and if this is suitable for the position of your caption mark a pencil line around the area on the paper.

The paper is removed from this position and the acetate placed on top, when it becomes a simple matter to write the words in Indian ink, prepare a balloon and link same with the speaker. If the ink does not 'take' very well it may be due to a little grease on the surface, probably from your fingers, in which case give a wipe over with a clean rag saturated with methylated spirits.

We must have solid, black lettering and you cannot achieve this if the ink is thin or watery, so do use Indian ink. Moreover, allow the lettering to dry naturally. Clear, block lettering is advisable for this purpose and if you like you may draft out the words on the paper.

When you are ready for the printing process you have only to lay the prepared sheet acetate face upwards on top of the sensitized paper. The two must be in close contact or your lettering may look blurred, otherwise there is no difference from the normal practice. Fig. 1 shows an example of this type of caption and you may do just the same with portraits, animal pictures or statues, while group photographs give you an opportunity to add one or two amusing captions.

Fig. 2 shows how we make a greeting card for birthdays or cheering up a friend in hospital. Again, the wording demands some careful thought.

The procedure for making a card is a little different since it is necessary to use a sheet of paper double the size of the picture, one half left blank for the back and the other half bearing the photograph. Allowances must be made for this when arranging your caption, otherwise proceed as described.

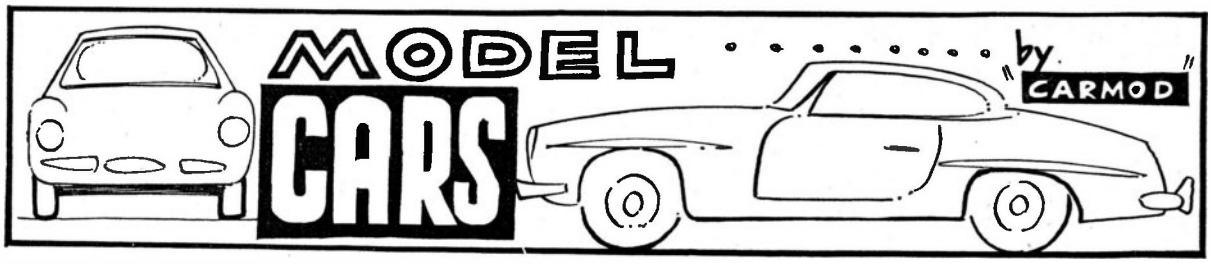
When actually making the print, first lay the acetate on the printing paper with an opaque card covering the left half — which will be the back when finished. Expose as usual and your print will bear the message and picture on the right half with the other half perfectly plain.

The card is finished by scoring centrally down the back of the print and folding but this can only be done after drying. Any other message you wish to convey may be written inside the card.

In this particular example we have also added a title, although this is quite unnecessary for a greetings card. When you wish to merely add a title to a photograph use a narrow strip of clear acetate, say ½ in. wide, which is just sufficient to bear the lettering. You should make this strip much longer however, perhaps 3 in. so that it will project beyond the end of the masking board, permitting you to adjust in the correct position and yet be held in close contact with the paper. It does not matter a great deal which side of the print bears the title but it must be parallel with the base and at one end or the other rather than in the centre.

You will find that the Indian ink will wash away from the sheet acetate with a little warm water. This allows the same sheet to be used indefinitely providing you do not dig into the surface with the pen or spoil with scratches.

Now it's up to you to think of some really snappy captions for your prints.



SUNBEAM 24/70

THE name Sunbeam can be traced back to 1899 when John Morrison founded the Sunbeam Motor Manufacturing Company. In 1912 a 3-litre side-valve 12/16 won the Coupe de l'Auto and this success caused the company to embark on a full competition programme. After World War I, one of the cars to be put into production was the '24'; the start of a line of machinery to carry this designation until 1925.

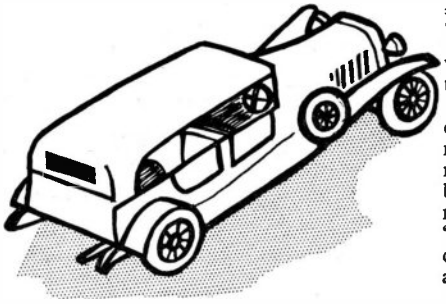
For an example of the Sunbeam 24 range I chose the 1924 24/70 as it is a reasonably simple conversion from the Lesney Model of Yesteryear Mercedes 36/220.

It is necessary to strip the Mercedes completely except for the four road wheels. Taking the chassis first, cut away the centre bracket, on the side which carries the exhaust pipe, which holds the running board and mudguards in place, and file a recess in the running board to accommodate the spare wheel when mounted on the side of the car. The location and size of this aperture are best found out by physical trial with the spare wheel (one removed from the rear of the body): the centre of the wheel should come immediately behind the bonnet line and about 2/3rds the way up from the base of the body.

Fill the gaps between the running boards/mud-guards and the chassis with plastic metal or one of the self-hardening modelling materials; when doing this be certain to leave an unfilled space for the spare wheel to rest. Take off the cross member between the dumb-irons at the front. Saw off the rear mud-guards just above the place where they turn backward.

Body

Fill in the slots where the exhaust pipes enter the bonnet with plastic metal or modelling material, and build up the cut-aways on both sides of the front seat so as to form a continuation of the horizontal line. Cut off the rear of the body with sloping cuts as near as possible to the end of the car. File the bonnet-top louvres and retaining strap to give it a flatter appearance. Remove the windscreen and reset it upright on the car, filling in the gap between the base of the screen and the body.

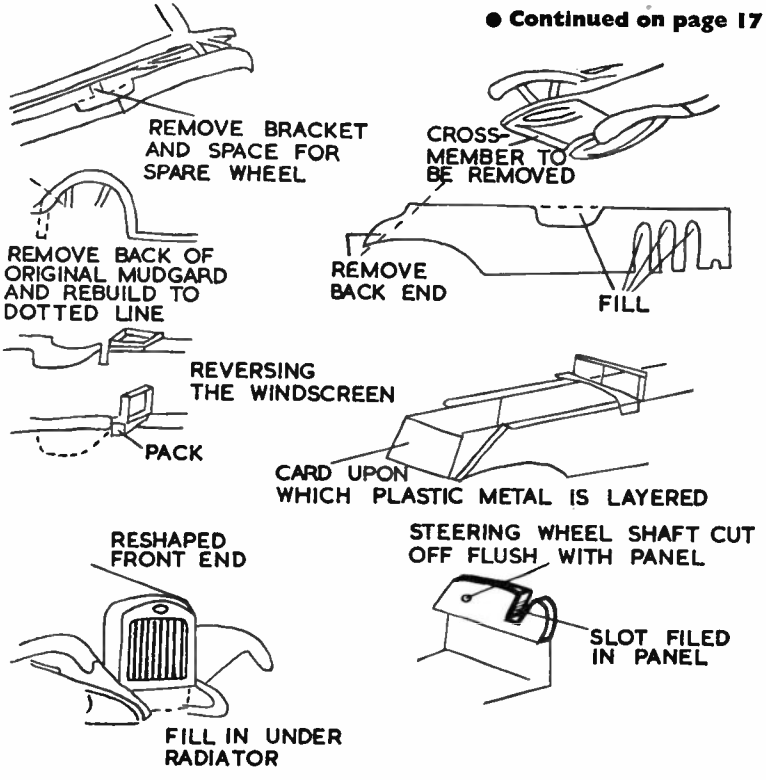


Build up the back of the car by using a piece of thin card to form the required shape, cement the card to the inside of the car and over it spread a layer of plastic metal to the thickness of the side body sections.

While building the rear end it is advisable to test-fit the body to the chassis to see that it matches.

The original radiator front should be discarded, and an entirely new flatfronted radiator built up by using modelling material 4 mm. in depth; the lines of the bonnet are carried forward in this new radiator front. This should now be 'plated' with silver paper by the method described in an earlier article and the actual radiator grille drawn as a piece of

● Continued on page 171



THE TEMPTATIONS

THE Temptations number five, four of whom were in the original group (the fifth is doing his time with Uncle Sam). They all have colourful names like Otis Williams Miles, David Melvin English, Eddie James Kendricks and best of all Elbridge Bryant. El is the one in the Forces, and his place has been taken by Paul Williams. David Ruffin completes the team.

They all have the usual all-American backgrounds. Mel, for instance, is pretty good with a basketball, which fits his image rather well as he looks like a Harlem Globetrotter. Mel is one of those 'I started singing in the church choir' boys. Rhythm and blues these days seems to be born in church choirs!

Otis Miles likes building model planes, and he's also a dab hand at interior decorating. Otis is said to be the business-man of the group, and he looks after their financial affairs.

Eddie Kendricks is the one who never says anything, and the others call him 'The Thinker.' His ultimate ambition is to run a smart night-club.

Paul Williams is the athlete of the group — ex-football star, champion swimmer and stylish dancer.

The Temptations strongly feature the new American R & B sound. Their recording of *The way you do the things you do*, which was penned by two of the Miracles, became a big hit in the States, and was released in this country (on Stateside SS278).

● **Continued from page 170**

SUNBEAM 24/70

thin paper with black ink and this cemented into place. The original headlamps can be returned to their slots in the body while the new radiator front is being built.

Interior

The Sunbeam being a right-hand drive car, the original steering wheel has to be changed from one side to the other. This is done by cutting off the steering wheel shaft flush with the instrument panel, and, with a flat file, cutting a slot in the right hand side of the panel; this can be filled with plastic metal and the steering wheel re-located while the filling is still soft. The front seats should be removed from the floor and divided down the centre, after which they can be cemented on to the floor in a position slightly rear-ward of their original location (for added realism the driver's seat can be stepped slightly forward to that of the passenger. Remove the hood from the rear seats. The interior may now be located on to the chassis in its original position.

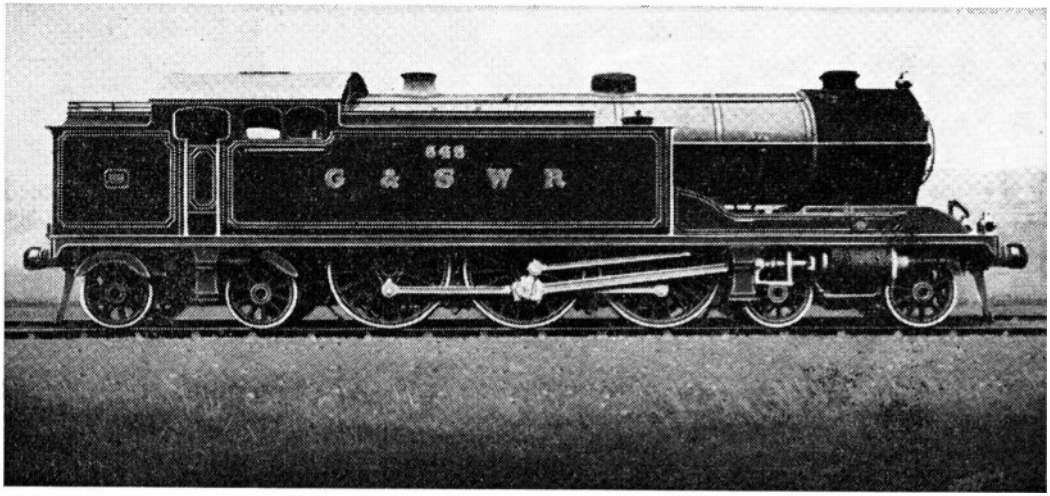
After trimming and smoothing the body, this may be cemented in place on the chassis, using the forward rivet as a locating peg. Fill in the gap under the radiator front to form a base for a number plate. Also fill in the gaps between the body and the rear mudguards, extending these mudguards downwards to a point mid-way between the rear springs. Fair in the rear of the body with the chassis.

The exhaust pipe should be cut forward of the silencer and the silencer section cemented to the under-part of the chassis, locating it in its slot at the rear.

The model is now complete except for lining of doors and painting the car. A hood may be made by the gummed-paper strip method described in an earlier article. Suggested colour scheme: British Racing Green with black hood.

Interesting Locos—74

The 'Baltic' Tank Locomotive



Glasgow & South Western Railway. R.H. Whitelegg's 4-6-4 'Baltic' type express tank locomotive No 545

SIDE tank locomotives of the 4–6–4 wheel arrangement known as the *Baltic* type for express passenger work were in the past used by the London, Brighton and South Coast, the London, Tilbury and Southend, the Lancashire and Yorkshire, the Furness and the Glasgow and South-Western railways.

In 1922, Robert H. Whitelegg designed a series of six handsome 'Baltic' Tanks for the G.&.S.W.R. They were numbered 540–545 and were outshopped from the Hyde Park Works of the North British Locomotive Company Ltd, Glasgow in that year. They were intended primarily for working the fast and often heavy trains, serving the numerous holiday resorts of the Ayrshire coast as associated with the Clyde Steamer services.

These engines, which were the first of the type to appear in Scotland, carried several interesting and unusual features. They had the Robinson 21 element superheater giving a steam temperature of up to 650F°, Walschaerts valve gear and Skefco ball bearings for the connecting rods. In order to facilitate easy manipulation in running forward or backward, all the main controls, including the regulator, vacuum brake valve, whistle and sanding lever were provided with duplicate handles on either side of the footplate. A steam reversing gear and an automatic ejector for removal of the ashes in the smokebox were also provided.

The leading details were — cylinders 2 outside 22 in. diameter and 26 in. stroke. Wheels diameter; bogies, leading and trailing 3 ft. 6 in., coupled 6 ft. 0 in. Heating surface (evaporative), tubes 1,574 sq. ft., firebox 156 sq. ft., total 1,730 sq. ft. Superheater surface, 255 sq. ft., giving a combined total of 1,985 sq. ft Grate area 30 sq. ft., working pressure 180 lb. per sq. in., tractive force at 85 per cent boiler press 26,741 lb. The coupled wheelbase was 13 ft. 2 in., and total engine 39 ft. 0 in., whilst the length over buffers was 47 ft. 7¼ in. Weight in working order was 99·07 tons of which 54 tons was carried by the coupled wheels. The tank capacity was 2,400 gallons, and the bunker held 3½ tons of coal.

When these six engines were taken over by the London Midland and Scottish Railway in 1923, they were renumbered L.M.S. 15400–05 in the same order. They were given power classification '5' and some were painted in the L.M.S. crimson livery.

In 1935 they began to be replaced in service by the Stanier 4–6–0 Class '5' mixed traffic tender engines which soon became very popular among the Scottish enginemen. The *Baltics* were Mr Whitelegg's last design as Chief Mechanical Engineer of the G. & S.W.R.

(A.J.R.)

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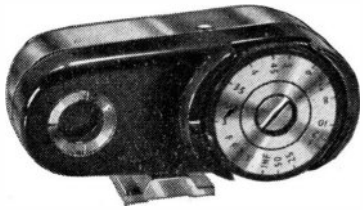

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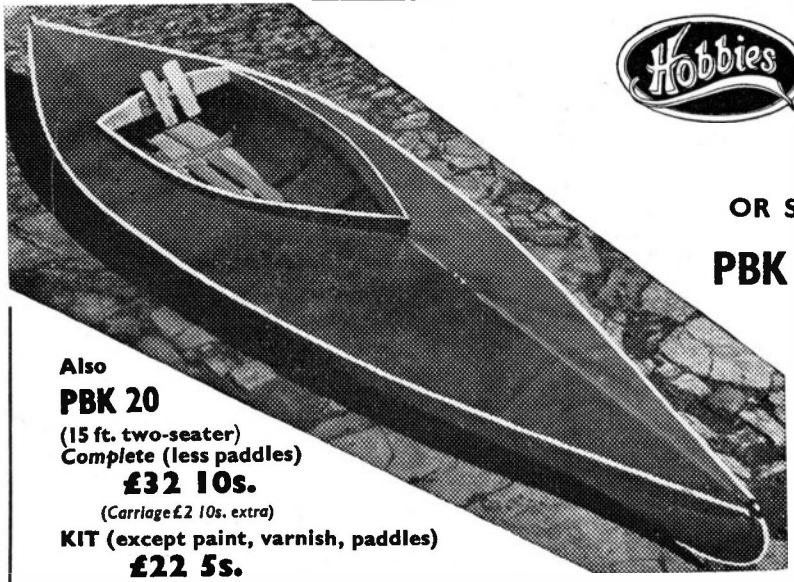

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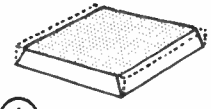
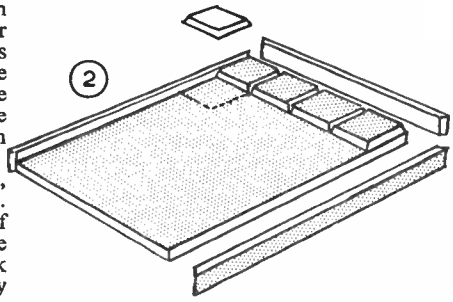
Mosaic Coffee Table

By A. Liston

AN extremely attractive coffee or occasional table, with a mosaic top composed of squares of differently coloured wood blocks, is quite inexpensive and simple to make.

First, the wooden blocks for the mosaic are cut from a length of 2 in. by ¼ in. stripwood. This must be cut into perfect squares, remembering that the actual width of the stripwood is slightly less than the nominal 2 in. Each of the squares is then given bevelled edges on all four sides, (Fig. 1) ⅛ in. being taken from each side. Either a file or a shaper tool can be used for this, and the block is then smoothed with glasspaper. The cutting of these blocks should be done with great care, as the appearance of the finished table depends almost entirely on their correctness.





The number of blocks needed depends, of course, on the size of table required. To avoid having to use fractions of blocks, the length and breadth of the table should be multiples of the block size. A table measuring approximately 15 in. by 30 in. is a reasonable size, the exact dimensions depending on the width of the stripwood used.

The blocks are then stained with wood dye, using one, two or three colours, as well as retaining the natural finish on some blocks, if desired.

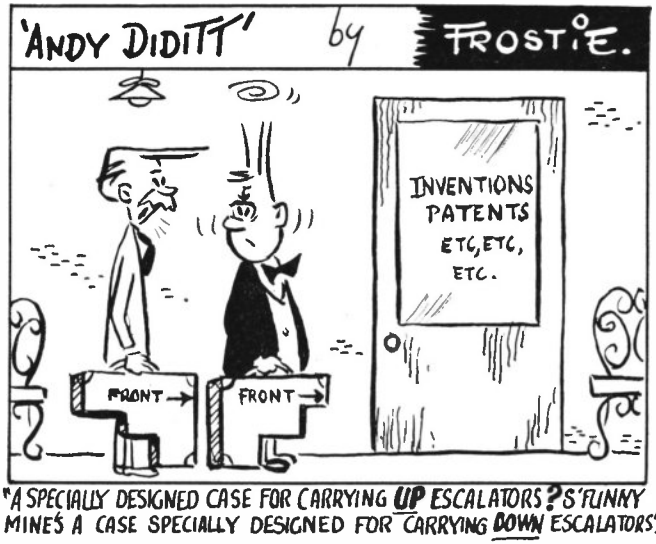
The base for the mosaic is made from a piece of ½ in. thick chipboard. This is cut to size, and the table is assembled as shown in Fig. 2. The blocks are fixed in place with impact adhesive, making sure that their edges are flush with those of the chipboard base. They should fit together so that no part of the chipboard is seen between them. Try each block in place first, glasspapering it if necessary, to get an exact fit.

A random colour pattern of blocks looks best, but a chequerboard pattern can be used where this harmonizes better with the existing furnishings. When the adhesive is completely dry, two or three coats of wood sealer should be applied to the blocks, its hard, glossy finish bringing out their colours. Alternatively, varnish or clear lacquer can be used.

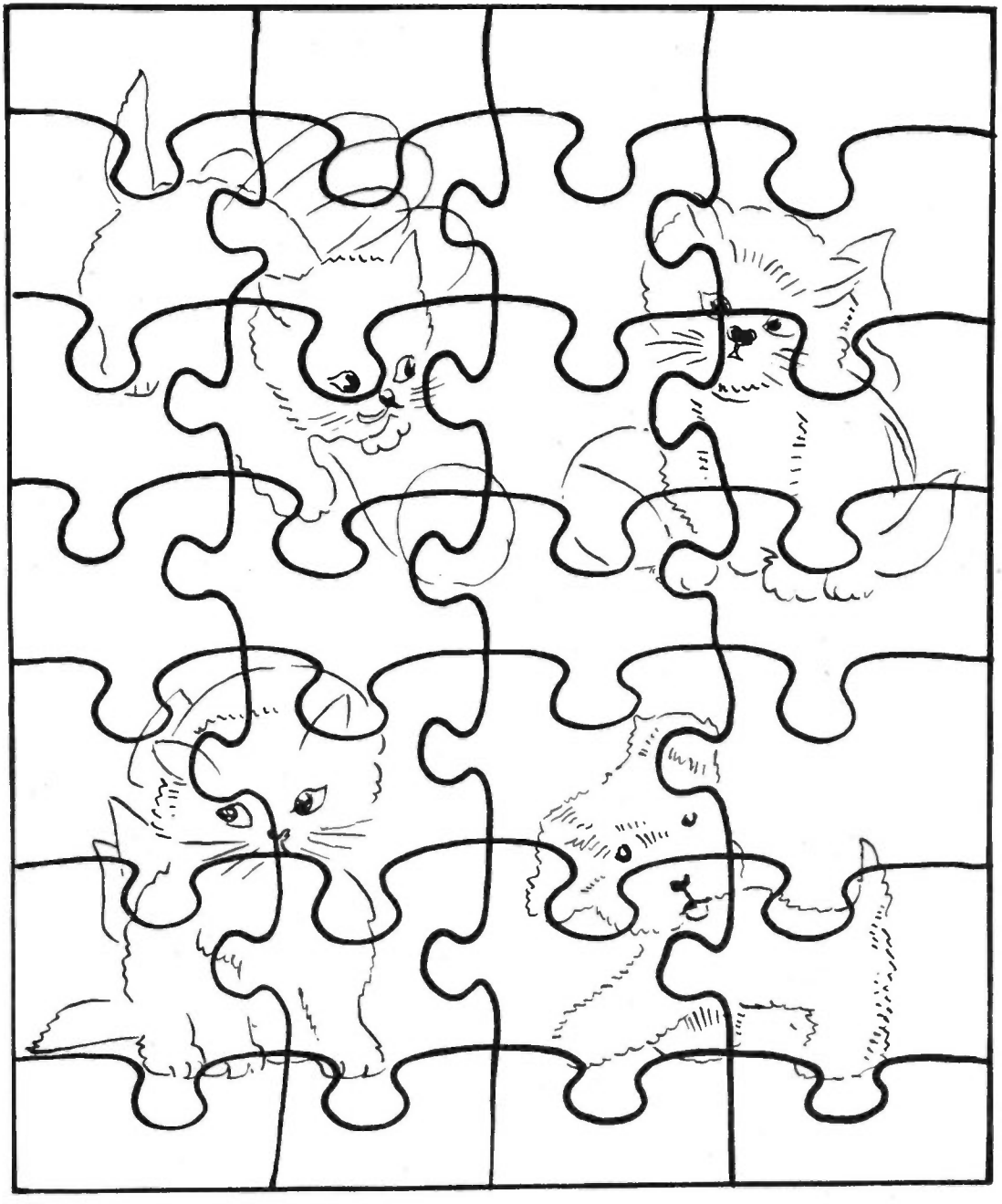
When this is dry, the edging is pinned and glued in place. This consists of four pieces of ¾ in. by ¼ in. stripwood, and can either be mitred or butt jointed. To avoid marking the wood blocks, the edging should be already painted matt black before being put in place, the heads of the panel pins being painted over with the same finish after the edging is in position.

All that now remains is to screw a set of Hobbies table legs, preferably ebonized ones, to the underside of the chipboard. The leg length will depend on the size of the table and the purpose for which it is to be used.

Other variations which can be tried are those of colour; a white edging, for example, also looks well, and if the wood for the blocks is attractively marked, the staining of these can be dispensed with altogether. Another possibility is the use of 1 in. by ¼ in. stripwood for the blocks, to make 1 in. square blocks. This undoubtedly gives much more work, but if care is taken it can be well worth while, for the finished effect is very attractive.



JUNIOR JIGSAW PUZZLE



THIS easy to make interlocking jigsaw is cut from ¼ in. plywood, using a Hobbies Fretsaw. The picture consists of a Decorette transfer (No. 212) consisting of highly coloured pictures of cats and dogs. The plywood is first cleaned up and the transfer fixed. The whole panel is then given two or three coats of varnish. Trace the jigsaw pattern and transfer it to the back of the plywood, and then cut out. The transfer costs 2s. 3d., post 3d. from Hobbies Ltd., Dereham, Norfolk.

M.p.

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