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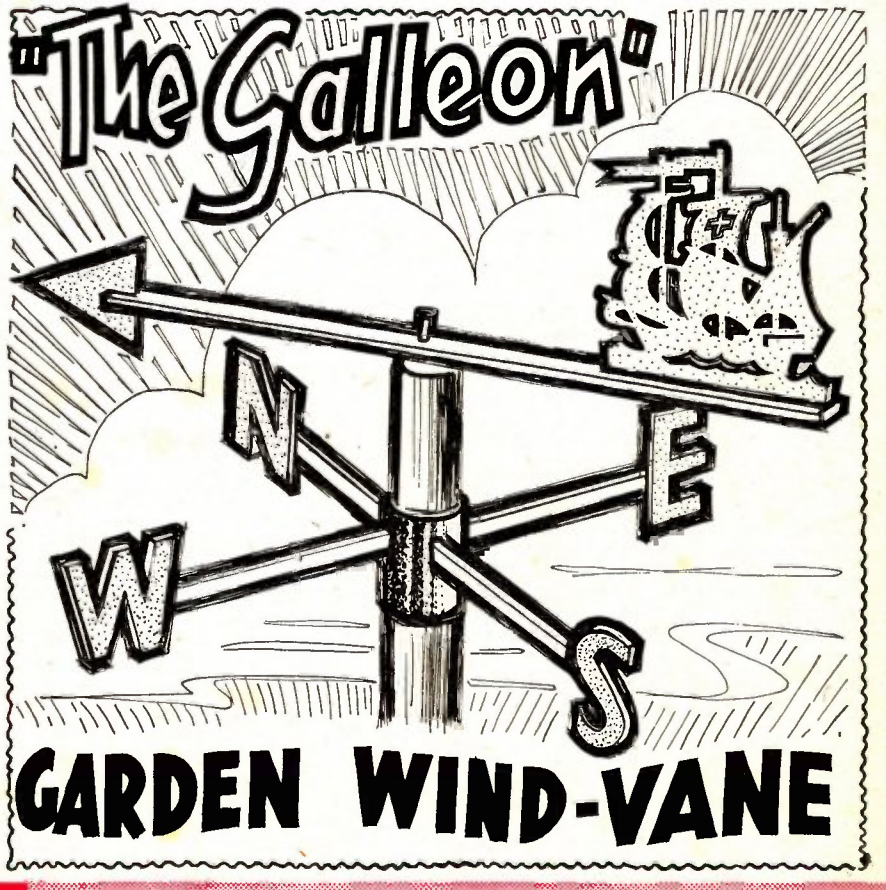


GARDEN WIND-VANE

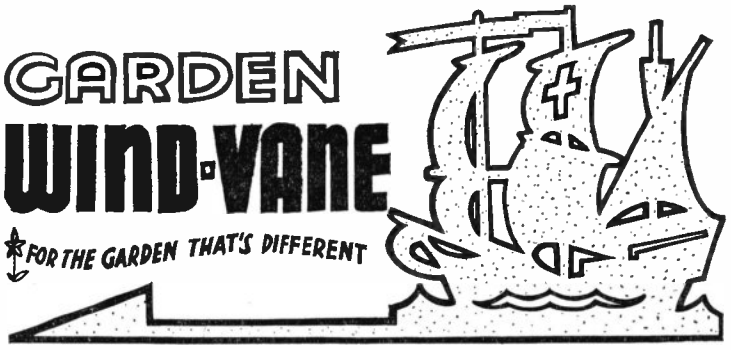
Hobbies

FOR CRAFTSMEN OF ALL AGES

6D.

GARDEN WIND-VANE

FOR THE GARDEN THAT'S DIFFERENT



An interesting project described by Neil Wainwright

IN a garden of average size a wind-vane can form a most decorative feature, and really keen gardeners know that a warning of wind changes can often be invaluable.

Two types of vane are possible, one standing on top of a fairly high pole out in the open, the second on a bracket extending from the side of a building. No special tools or equipment are needed for the making of either item, apart (possibly) from a metal-piercing saw or a fretsaw fitted with a metal-cutting blade.

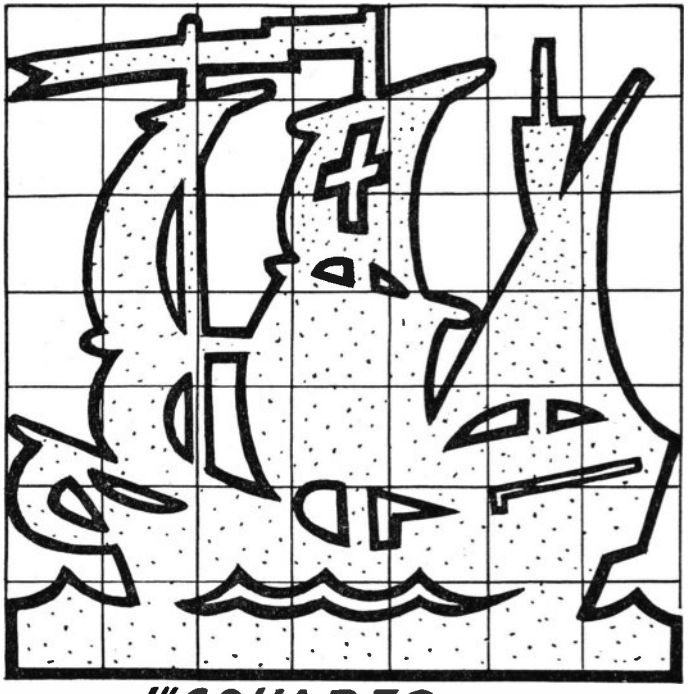
The first step is to prepare the pole, irrespective of whether it is to be short or long.

Use a larch pole

Too high a pole in a small garden tends to make it look far too 'gimcracky', and a pole 12 to 15 ft. high with a diameter at the tip of 2 in. should be sufficient for the average suburban garden. Larch will be the most durable timber, and round poles of this species can be obtained at any timber yard that specializes in material for rustic work.

At the top of the pole, in the centre of the end-grain, a stout steel spike of about ¼ in. diameter is driven, leaving 3 in. of steel projecting from the wood. If a round piece of scrap steel is not available a stout 6 in. nail can be hammered into the wood for about 3 in., then the nail head can be cut off and the top of the spike filed to a fairly sharp point. If there is any possibility of the pole splitting at the top, a broad strap of galvanized zinc can be hammered round it and screwed or nailed into place, drilling the necessary holes for the screws after the band has been shaped.

The letters indicating the points of the compass should each be cut from a 3 in. square piece of zinc or similar thin metal. These letters are mounted on four supporting arms of slightly thicker material, ½ in. wide and 18 in. long. The ends of the arms are soldered, screwed, or secured with a suitable metal adhesive at the back of the letters as shown A, while the opposite ends of the arms (which may have to be bent at right-angles) are similarly fixed to a band that can be strapped round the pole.



1" SQUARES

Waterproof glue

Although metal is by far the best material for the arms and letters, quite a satisfactory job can be made in wood, which can be of ⅜ in. or ½ in. thickness. The free ends of the supporting arms could then be glued into mortises chopped into the pole, but for this purpose it would be necessary to use a waterproof glue.

The main part of the moving vane is a thin bar of wood or metal ⅜ in. wide and 2 ft. long. In the exact centre of this a hole of ¼ in. diameter is drilled. A short length of hollow brass tube is taken and tapped through the hole in the case of a wooden bar, or sweated over the hole in the case of a metal one. The inside diameter of the tube must be such that it fits over the projecting spike on top of the pole and pivots easily on it, without too much play or fouling the letters. A sketch of the centre of this bar, from beneath, is given at B.

The indicating arrow can be made of the same material as the pivoting bar and measures about 6 in. long by 2 in. wide. Its shape can be seen on drawing C. A notch is cut in the bar, and another in the arrow-head, so that the parts may be assembled.

Galleon motif

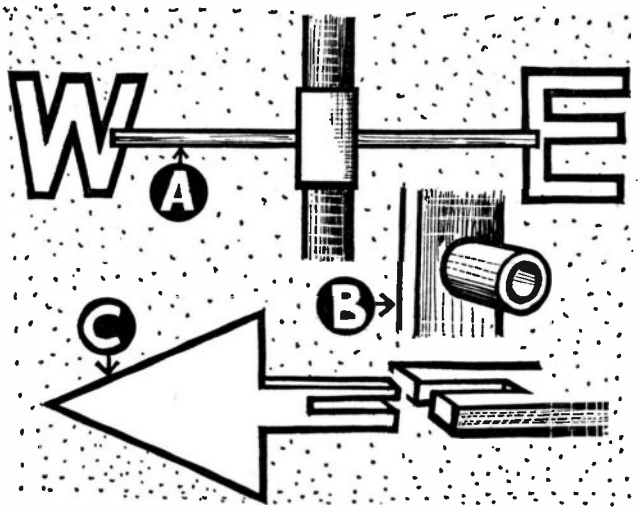
The opposite end of the bar is also notched to take the fretted vane. This needs to be cut from a piece of material about 7 in. square. The shape of the vane is immaterial but a suggested motif for a galleon is given.

All parts of the wind-vane (including the pole) must be given an undercoat and two coats of good quality exterior grade paint.

To assist in easy pivoting the tube is packed with grease before being dropped over the spike on the pole. The latter is then erected (the butt being dropped into a hole about 2 ft. 6 in. deep), care being taken to ensure that the letters are correct as regards compass points. Check this factor with the help of a pocket compass.

If the pole is to stand in loose soil a wooden sole-plate (9 in. square by 1 in. thick) should be nailed to the bottom of the butt. That part of the pole that comes below ground level should also be given a couple of coats of wood preservative.

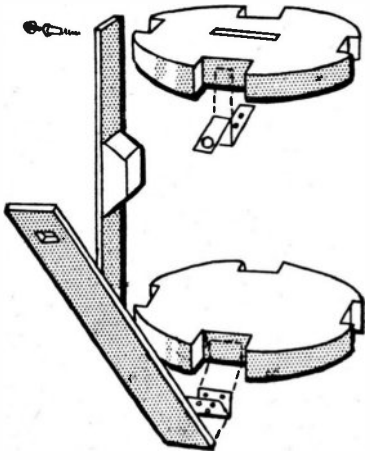
In the case of a wind-vane to be fixed to an existing building it is only necessary to reduce the pole to a suitable length and fix it (well clear of the wall) by a suitable stout metal bracket.



A project to help you save

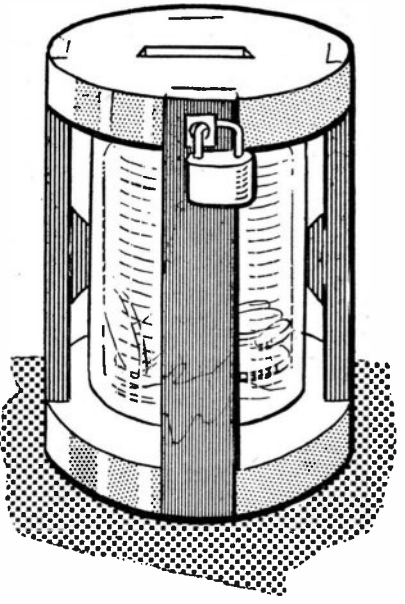
MAKE A NOVEL LANTERN JAR

A LANTERN savings jar, with its combination of glass and dark polished wood, is an attractive novelty which appeals to both children and adults. It is very simply made, the glass part being a jam-jar or similar receptacle, either clear or coloured.



The top and bottom sections of the lantern are 4 in. diameter discs of 1 in. thick wood. These are cut as shown to take the four vertical members of the lantern. These are made from lengths of 1 in. by ¼ in. wood. The exact length of these pieces depends on the height of the jar being used; it should just be able to slide in place between the upper and lower discs. A 1½ in. by ¼ in. slot is cut in the centre of the upper disc, and three of the upright sections are screwed in place, using dome-headed mirror screws if possible, for a decorative effect. For perfect security the three fixed uprights could also be glued in position to prevent youngsters from getting at the contents simply by using a screwdriver to remove one of the uprights.

The fourth vertical section is hinged at its lower end to the base of the lantern, and a hole is cut ½ in. down from its upper edge to allow the securing hasp for the padlock to pass through. If a small enough hasp is not obtainable, a ½ in. wide length of brass strip is shaped and drilled as shown and screwed to the underside of the disc. Care should be taken to see that it does not impede the passage of the jar as it is slid into place.



To prevent the jar from moving about inside its wooden framework, four blocks of wood are glued to the inside faces of the vertical strips, the thickness of the blocks depending on the jar being used. These blocks may have rounded, angled or square ends.

The woodwork is then stained and varnished, or treated with glossy wood-sealer, and any decorative transfers added. A small padlock is fitted, and the project is complete. (A.L.)

In this new series of articles our experienced contributor 'Radio Mech' will be covering the primary aspects of radio, explaining each function in detail. The information will be of particular value to beginners in this very absorbing field and readers are advised to make sure of a regular copy of this magazine in order to have the full facts for study and future reference.

1—TUNED CIRCUITS

ALL receivers have some kind of tuned circuit, so that the wanted station can be selected. A simple tuning coil is shown at A in Fig. 1, and consists of insulated wire wound with turns side by side on a tube.

The number of turns on the coil is chosen so that the coil can be tuned to the required wavelength. Coils for short waves have few turns, while those for medium and long waves have many more turns.

For an insulated tube 1½ in. in diameter, some windings are as follows:

Short Waves, 19–50 metres. 8 turns of 22 SWG wire, with turns spaced by the diameter of the wire.

Medium Waves, 200–550 metres. 70 turns of 30 SWG enamelled wire, turns side by side.

Long Waves, 1,000–2,000 metres. 240 turns of 36 SWG enamelled wire, with turns wound in 3 compact piles, each having 80 turns.

Short wave coils are often wound with bare wire, as turns are usually spaced. When turns are closely side by side, the wire must be insulated. Enamelled wire is efficient and cheap, but silk and cotton covered wire is also used. For long wave coils, there are so many turns that they are usually wound in piles, or in the spaces between insulated washers.

The tube, or coil former, can be Paxolin, ebonite, or even cardboard. Card tubes are best varnished and allowed to dry, to keep out damp.

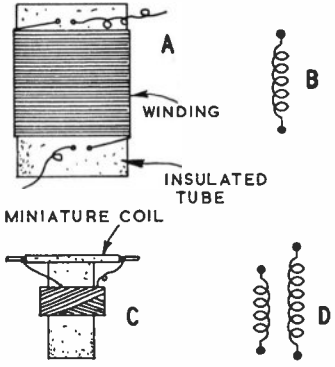


Fig. 1—Tuning coils

In Fig. 1, B is the circuit symbol for a single winding coil. Ready-made coils are often quite small, like that at C. The coil is wound by machine, and has tags for connecting purposes.

Coils often have two or more windings. The symbol for a coil with two windings is shown at D. The extra winding may be used for aerial coupling, or other purposes.

Ready-made coils often have dust cores. These are special magnetic material, and often threaded, so that they can be screwed in or out. Moving the core in this way has the same result as changing the number of turns on the winding. So by this means the coil can be adjusted to cover any particular waveband exactly — for example, to allow stations to be tuned in at the points marked on a printed scale. Coils with dust cores are very efficient. They are often wound with fine stranded wire called Litz, which improves the coil efficiency.

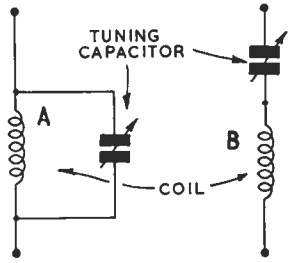


Fig. 2—Parallel and series tuned circuits

Tuned circuits

If a coil and variable capacitor are connected in parallel, as at A in Fig. 2, this forms a parallel tuned circuit. The circuit can be tuned to the chosen wavelength (or frequency) by rotating the tuning capacitor to change its value or capacity. When the parallel circuit is tuned to a radio signal of any particular frequency, it does not allow this frequency to pass. So it is called a 'rejector circuit.'

At B in Fig. 2, the capacitor and coil are in series. With this arrangement, the frequency to which the circuit is tuned is allowed to pass, but other frequencies are not. So this arrangement is termed an 'acceptor circuit.'

It is sometimes handy to calculate the wavelength to which a circuit will tune The way to do this is quite easy.

Wavelength in metres $= 1885\sqrt{L \times C}$

Here, L is the inductance of the coil in microhenrys, and C is the value of the capacitor in microfarads.

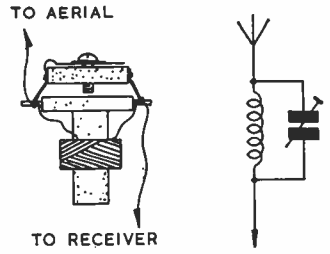


Fig. 3—Tuned circuit used as wavetrap

Wavetrap

One of the simplest uses for a tuned circuit is as a wavetrap to eliminate or reduce interference from a local station. In Fig. 3, a parallel tuned circuit is used. Since it is only necessary to adjust the circuit to the wavelength of the unwanted station, and then leave it, a variable tuning capacitor is not provided. Instead, a trimmer is connected across the coil. The trimmer is adjusted with a screwdriver.

The parallel tuned circuit prevents the unwanted signal reaching the receiver (or reduces its strength). So it is only necessary to tune in the unwanted station, and adjust the trimmer for minimum volume. For best results, a dust cored coil is used, with a short lead to the receiver.

A medium wave coil and 100pF trimmer will cover the bottom of the medium wave band, and in this form it is often called a Luxemburg Filter, and is used to reduce or eliminate interference with Radio Luxemburg on 208 metres.

Wavetraps are also sometimes used with simple receivers, where a local BBC station spreads over the dial, spoiling reception of other stations. In this case, the wavetrap is tuned to the local station.

A receiver

A parallel tuned circuit used as in Fig. 4 will give good headphone reception up to a range of 50 miles or more, according to the aerial and earth employed.

The coil can be wound for medium waves, as described. If the aerial is short, it is taken to point 1, which gives best volume. But if the aerial is very long, tuning will then be very flat (or unselective). This can be cured to some extent by taking the aerial to the tapping 2. This can be roughly 30 turns from point 3, which is the earthed end of the coil.

The variable capacitor, for medium and long waves, is generally 500pF, or 0·0005μF. An air spaced capacitor is most efficient, but a solid dielectric capacitor is often used instead.

A variable capacitor has some fixed plates, and some moving plates fixed to a rotating spindle. Turning the knob rotates the moving plates, changing the extent to which they overlap the fixed plates. This alters the capacity, tuning in the wanted station.

The tuned circuit prevents the signal passing, so it goes to the crystal diode. The diode allows current to pass in one direction only, and so acts as a detector, the programme being heard in the headphones.

Crystal diodes

These may be a detector crystal with small wire whisker, or two dissimilar crystals. They are made in many types, and are also called germanium diodes, when germanium crystals are used.

Most diodes have two wires, which can be taken to connecting points in the receiver. A new or tested diode is recommended, as a surplus one may be inefficient. The diode will be almost everlasting, in this kind of circuit.

Headphones

The popular type of headset has two phones, one for each ear, with a headband. Many phones have magnets wound with fine wire, which attract a thin metal diaphragm. So the signals flowing in the magnet windings produce sound.

For best results with a crystal diode receiver, medium or high impedance phones are necessary. This means that the magnets have very many turns of wire, and probably have a resistance of 500 ohms or even more.

Personal phones are single units of very small size, which can be placed in one ear. They can easily be carried in the pocket, but are usually less convenient to use over a long period.

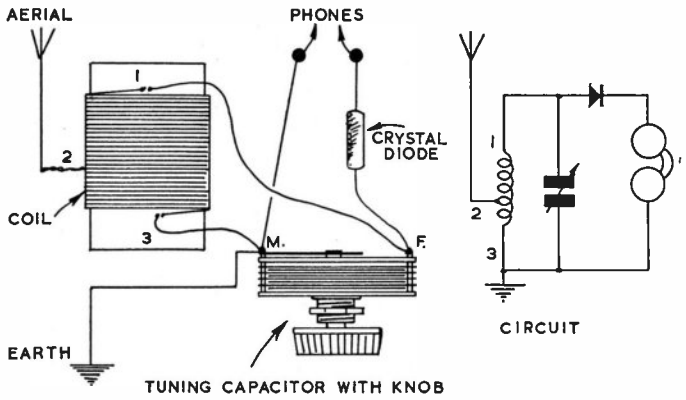


Fig. 4— Wiring plan and circuit of crystal receiver

Other tuning methods

If the capacitor is of fixed value, tuning can be carried out by altering the inductance of the coil. One way of doing this is to have a dust core, which can be screwed in or out as described.

A wavetrap for use on a particular wavelength is often made in this way. For example, the trap in Fig. 3 could use a coil with adjustable core, and a small fixed capacitor. The coil core would then be rotated, instead of adjusting the trimmer.

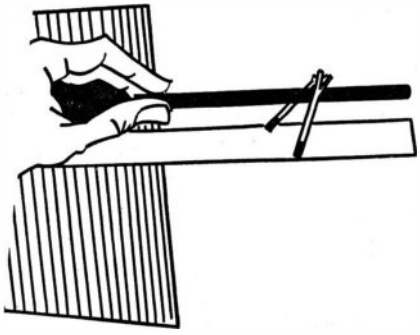
To save space, and reduce cost, it is often handy to fit the fixed capacitor in this way, and to adjust tuning by the coil core.

Next: How valves work.

MATCHES 'WALK THE PLANK'

PLAYING 'pirates' with matches is a new twist on the old stunt of making a pair of matches 'walk' along the blade of a dinner knife. With no skill and virtually no practice, you can entertain your friends by showing them how to make the matches 'walk the plank'.

With your fingernail form a slit in the 'tail' ends of two matchsticks. Then interlock the ends of the matches — utilizing these slits to fashion a V shaped arrangement like a pair of legs.



Let half of a one foot ruler project over the edge of the table while you press a fist upon the supported end of the ruler. In the same hand hold a pencil outstretched, just above the projecting ruler 'plank'.

Straddle the match 'legs' over the pencil, and lower the pencil so that the match heads touch the ruler — and the jointed part of the V shape leans slightly forward.

Press down with your fist, grip the pencil firmly and keep the pencil parallel with the ruler. Without any further deliberate efforts from you, the match legs will begin to move out along the ruler. Finally, the matches will 'take a header' off the end of the little plank!

The effect is uncanny, but easily explicable. Tiny involuntary contractions of muscles in your hand and minute tremors caused by your pulse beats, shake the pencil almost inperceptibly and provide the needed motive power for the matchstick legs. (A.E.W.)

CHEMISTRY AT HOME

Part—1

MANGANESE SULPHATE EXPERIMENTS

By L. A. Fantozzi

COMPOUNDS of manganese, Mn, occur widely as minerals and were used technologically as far back as Roman times. Their use has extended over the centuries and today some three million tons of manganese minerals are produced annually. Compounds of manganese are used in dyeing, ceramic and paint manufacture, in electric batteries and disinfectants and in the production of special steels and alloys.

Manganese sulphate, $MnSO_4.4H_2O$, is more correctly called manganous sulphate to distinguish it from manganic sulphate, $Mn_2(SO_4)_3$.

Manganous sulphate is very soluble in water, being so in about 1½ times its own weight of water at room temperature. The pink colour of the crystals is shared by a number of other manganese salts. If you heat a few crystals in a dry test tube they grow white and drops of water condense on the cooler parts of the tube. The pink colour is therefore seen to be due to water of crystallization.

A rather curious reaction takes place between manganous sulphate and potassium permanganate, $KMnO_4$. Mix a little of a solution of each in a test tube. The purple colour of the permanganate gives place to a muddy brownish-black precipitate of hydrated manganese dioxide, $MnO(OH)_2$. Potassium sulphate, K_2SO_4, and sulphuric acid, H_2SO_4, remain in solution:

$$2KMnO_4 + 3MnSO_4 + 7H_2O = 5MnO(OH)_2 + K_2SO_4 + 2H_2SO_4.$$

This may obviously be used as the basis of a puzzling conjuring trick. That is, the turning of 'wine' to 'mud' when it is merely poured out into a damp glass. Dissolve 3·5 grams of manganous sulphate in 5·6 ml. of warm water and 1·17 grams of potassium permanganate in 100 ml. of warm water. Let both solutions cool. Pour the manganous sulphate solution into a tumbler swirling it round to wet the walls. The potassium permanganate solution is put into a colourless wine bottle and will appear to be wine. Wash both tumbler and wine bottle well after the trick has been done.

There is no need to throw away the muddy liquid, for it will furnish a specimen of hydrated manganese dioxide. Filter off the latter and wash it on the filter with repeated changes of water until one wash water no longer gives a white turbidity with a solution of strontium nitrate, $Sr(NO_3)_2$. Then let the compound dry for your specimen collection.

An interesting reaction also occurs when moist manganous hydroxide, $Mn(OH)_2$, is exposed to air. To some manganous sulphate solution in a test tube add a solution of sodium hydroxide, NaOH, until a drop of the reaction mixture turns red litmus paper blue. A white precipitate of manganous hydroxide appears and sodium sulphate, Na_2SO_4, is left in solution:

$$MnSO_4 + 2NaOH = Mn(OH)_2 + Na_2SO_4.$$

Pour out the mixture into an evaporating basin and let it stand. It soon begins to turn brown due to combination with oxygen, O, from the air. Any of three compounds can be formed or mixtures of them. These are hydrated manganese dioxide:

$$2Mn(OH)_2 + O_2 = 2MnO(OH)_2,$$

partially hydrated manganic oxide, MnO(OH);

$$4Mn(OH)_2 + O_2 = 4MnO(OH) + 2H_2O,$$

and manganic hydroxide, $Mn(OH)_3$:

$$4Mn(OH)_2 + O_2 + 2H_2O = 4Mn(OH)_3.$$

The appearance of these brown hydrated oxides occurs in the preparation of some other manganese compounds and serves as a warning to speed up manipulation, otherwise undue contamination will result.

A case in point is manganous silicate. As precipitated from water glass solution it consists of a mixture of silicates, since water glass itself is a mixture of sodium silicates.

In 50 ml. of hot water dissolve about 5 grams of water glass. Stir in manganous sulphate solution until a drop of the mixture no longer turns red litmus paper blue. The buff-pink precipitate of manganous silicate is gelatinous and hence slow filtering. This brings in an additional oxidation hazard. Therefore some means of quick filtering must be adopted or it must be filtered in an inert gas. As the latter process is difficult in the home laboratory filtration under reduced pressure may be used.

Fit a Buchner funnel to a filter flask and connect it to a filter pump, as shown in Fig. 1. Use thick walled rubber tubing for the connections, tying the piece between tap and pump with string, so as to avoid the forcing off of the pump. If a filter flask is not available a wide mouthed bottle may be used, as shown in Fig. 2. Cut a filter paper to fit the inner perforated plate in the funnel, wet it and suck it tight to the plate by turning on the water tap, which will produce a partial vacuum.

Pour the precipitation mixture into the funnel and turn on the tap. When the precipitate is almost free of liquid nearly fill the funnel with boiled water (which will be free from dissolved oxygen and hence unable to oxidise the precipitate). Repeat this process several times and then nearly fill the funnel with methylated spirit.

When the methylated spirit has almost all gone through, about half fill the

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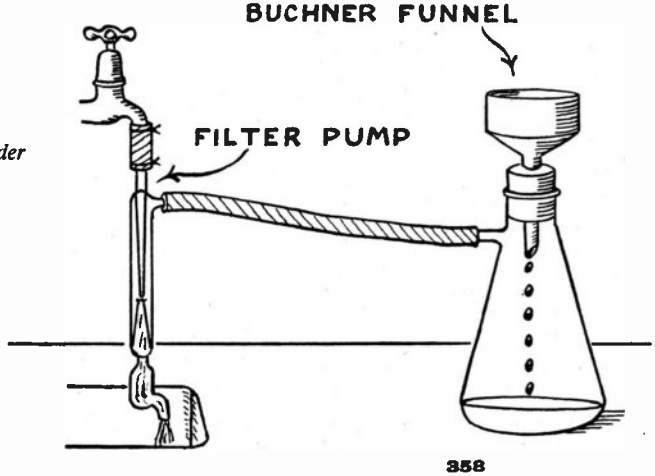
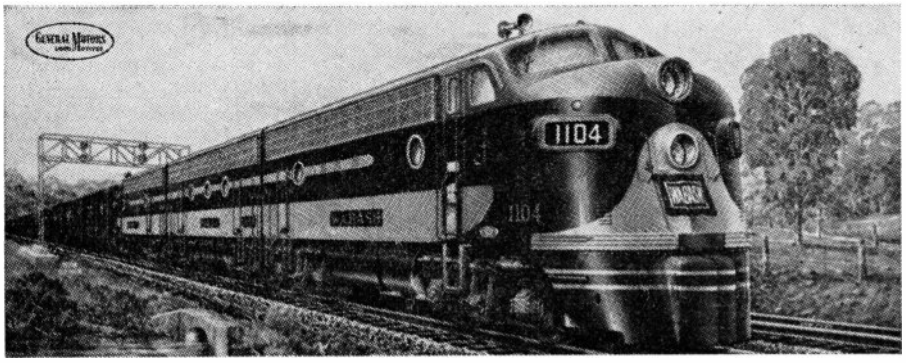


Fig. 1— Filtration under reduced pressure

THE WABASH DIESELS



Wabash Railroad 4500 h.p. diesel freight locomotive No. 1104

IN article No. 81 of our series I described the Class M.1 4–8–2 and the Class O.1 4–8–4 heavy duty freight engines of the Wabash Railroad. Our article this week deals with the fine 4,500 h.p. diesel locomotives which a few years ago superseded these two classes of steam locomotives on all the principal freight duties of the road. They were designed and built by the Electro-Motive Division of General Motors at La Grange Illinois to the order of the Wabash Railroad. The type is General Motors model F7 which consists of two lead and one booster units each equipped with one 16 cylinder V-type, 2 cycle G.M. diesel engine having a bore of 8½ in., stroke 10 in. and a unit fuel injection system. The engines are rated a full 1,500 h.p. for propulsion at 800 r.p.m. providing a total of 4,500 h.p. for the locomotive.

Each engine is directly coupled to a DC-AC generator. Alternating current powers the auxiliary equipment. Direct current is fed through control apparatus to the twelve traction motors — two per truck — geared directly to the driving axles. There are two four-wheel trucks per unit.

The full specifications of the model F7 are:

Dimensions (per unit) overall length over the couplers, lead unit 50 ft. 8 in. Overall length over couplers, booster unit 50 ft. 0 in. Maximum width over grab irons 10 ft. 8 in. Maximum height above running rail 15 ft. 0 in. Distance between truck centres 30 ft. 0 in. Truck rigid wheelbase 9 ft. 0 in. Wheels diameter 3 ft. 4 in.

Supplies (per unit). Fuel oil 1,200 gallons. Sand 16 cu. ft. Lubricating oil 200 gallons. Cooling water, lead unit 230 gallons, cooling water, booster unit 215 gallons.

Weights (per unit). Total weight fully loaded in road order approx. 230,000 lb. Car body and equipment 154,400 lb. Trucks (2) 75,600 lb. Maximum tractive effort at rim of wheel at 25 per cent adhesion, per unit. 57,500 lb. It is interesting to observe that whilst many similar diesel freight locomotives running on various other American roads are finished mostly in an all black livery, the Wabash locomotives are finished in the smart blue and silver grey of the roads diesel passenger locomotives which were also designed and built by General Motors. (A.J.R.)

● **Continued from page 358**

MANGANESE SULPHATE

funnel with ether, $(C_2H_5)_2O$ (caution, highly inflammable), and then suck the precipitate dry. By thus using solvents of progressively greater volatility the precipitate is wet for only a short time and only slight browning occurs on the surface.

If this precipitate had been filtered, washed and dried in the ordinary way extensive browning would have taken place and a considerably impure product obtained.

This water, methylated and ether washing process may also be used when it is desired to obtain a precipitate quickly in the dry state, provided the precipitate itself is not affected by the two last solvents.

Manganese metasilicate, $MnSiO_3$, occurs as the mineral rhodonite in the West Country.

Further interesting experiments with manganous sulphate will be given in a subsequent article.

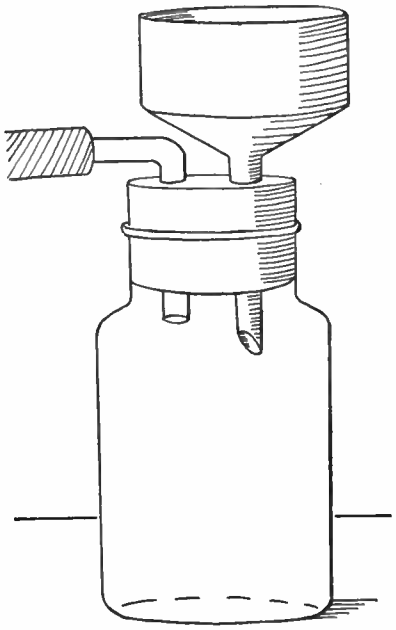


Fig. 2—An alternative to a filter flask

THE ISSUES OF AUSTRIA

MOST of you will have a larger collection of the stamps of Austria than of any other country. This is not to be wondered at because she has issued so many stamps for so little reason.

Since 1850 Austria has issued 666 ordinary surface, 60 air mail, 279 Charity, 227 postage due (9 of which go under the title of Imperial Journal stamps) 71 newspaper, 85 Austro-Hungarian Military post, besides various occupation stamps.

The charity stamps carry a premium of varying amounts. In the case of the 1964 St. Stephen's Cathedral Reconstruction fund the 3 groschen postal value carried a premium of 12 groschen and the 2 schilling a premium of 10 schilling. And the 1922 set issued to help the fund for needy musicians were sold at ten times face value! Where the premiums went to in the case of the 1950 set of three to commemorate the 30th anniversary of the Carinthian Plebiscite is not clear, yet approximately 25 per cent was charged on the postal value.

The Imperial Journal stamps are not for postal use at all, they are purchased at the P.O. for tax purposes. It is therefore not surprising that Austria's stamps are not very popular, yet among them there are some quite interesting specimens, with unusual and some very beautiful designs.

One thing is rather puzzling and that is the fact that the stamps have the name Osterreich on them yet we find a number with different currencies. The early stamps have the value expressed in kreuzer; next in so many heller. Later we find the term groschen or schillings. At first 60 kreuzer = 1 gulden, then in 1858 this was changed to 100 kreuzer = 1 gulden. In 1896 there was another change to 100 heller = 1 krone, and in 1925 100 groschen = 1 schilling.

One thing which did not change very rapidly, however, was the ruler. Emperor Francis Joseph I succeeded to the throne in 1848, two years before stamps were issued, and as he remained on the throne until he died in 1916 that meant that he reigned for 68 years, so that practically all the portraits that appear on the early stamps are of him. One set issued in 1908 to commemorate the 60th anniversary of his reign does show other members of the House of Hapsburg-Lothringen while the next issue of 1910 had the same design, but the dates 1830–1910 were introduced as this set commemorated the 80th birthday of Francis Joseph I.

1 *2* *3*

(1) 1947 60 groschen Friedrich Amerling, famous portrait painter. (2) 1934 Chancellor Dollfuss, 24 groschen. (3) 1958 commemorating 3rd Austrian Choir Festival, design from 12th Century manuscript. 1 schilling 50 groschen

There are two points of interest worth looking for in connection with the earlier stamps. Sometimes the background of the figures is white, sometimes it is made up of a machined design, and on other occasions the figures themselves are white and sometimes coloured. Then you will find that in some stamps the values are in kreuzers and in others in hellers.

Another difference is that in 1901 Austria introduced shiny bars. In those early days the authorities were always very frightened that someone might rub off the postmark and use a stamp a second time so these bars were printed on the stamp and if it was washed then the bars would disappear. This will serve as a caution to readers that they must not soak these stamps in water if they want to remove paper off the back. Just place them face upright on damp blotting paper and then the shiny bars will not be spoiled.

The next ruler after Francis Joseph I was Charles I but he reigned for only two years and then a Republic was proclaimed. Of course, it took a year or two to prepare the new Republican stamps and until they were ready the old ones were overprinted 'Deutsch Osterreich' Then followed some very uninspiring designs—Posthorns, Republican Arms, a figure symbolizing New Republic and a view of Parliament Buildings for the higher values — 2 kronen and upwards. The Republican Arms, the Pincers and Hammer, and the Ear of Corn came in the next issue and then the rather more appreciated set of various views.

It was the introduction of the human element in 1934 that brought more interest in the Austrian stamps but after 1950 issue followed issue so rapidly that unless one has a very long purse it is impossible to keep pace. The first of what one might call the 'non-royal' portraits to appear on Austrian stamps was that of Chancellor Dolfuss. He was born in 1892 of peasant stock, and rose to become the youngest Chancellor in Europe. In 1933 he dissolved the Nazi Party but on the 25th July he was murdered by the Nazis.

Following the absorption of Austria into the German Reich in 1938 her stamps were gradually superseded by those of Germany, but stamps were again issued in 1945 when the country was liberated. It would take too long to mention all the stamps issued; that is the duty of a catalogue. The only thing one can do is pick the most interesting.

A set of famous Austrians appeared in 1947 showing portraits of men such as Franz Schubert, Franz Grillparzer, Anton Bruckner, and Friedrich Amerling and then for Christmas 1948 there was a very suitable design, a Star in the Heavens and the portraits of the two

people responsible for that beautiful carol 'Silent Night, Holy Night' — the curate Josef Mohr who wrote the words and the organist Franz Xavier Gruber who composed the music. Two more famous Austrian Musicians appeared in 1949, Johann Strauss the elder and Johann Strauss the younger (1949 was the 50th anniversary of the death of the younger and the 100th anniversary of the death of the elder).

Johann Strauss the elder was the son of an innkeeper. When he was 21 he formed his own orchestra and he played at the court celebrations held in honour of the coronation of Queen Victoria in 1838. He composed over 150 waltzes and about 100 other dances. His son started as a bank clerk, but secretly took lessons in the violin and by the end of 1844 he also was conducting an orchestra. As a composer he was even more famous than his father, having over 500 compositions to his credit, including the 'Blue Danube'.

To give some idea of the tremendous variety of portraits that appear on Austrian stamps here are a few: The actor Girardi, the sewing-machine inventor Madersperger, the architect Erlach, the railway engineer Ghega, the painter Schwind, the anatomist Rokitansky, the inventor Auer-Welsbach, the historian Redlich and the surgeon Eiselberg.

Now you cannot hope to collect all the stamps that have been issued by Austria, and neither can you hope to mount all those that you have got in the correct chronological order. Even if you could it would not make a very attractive display. But what you should hope to do is to find out something about each of the stamps that you have got. It would be quite a good idea to keep all the portrait stamps together and the views, and so on and remember that you can find out something of the lives of the more important people in any good encyclopaedia.

CANADA'S PHILATELIC PROGRAMME

THE provincial flowers of New Brunswick and Nova Scotia are the subject of stamps from Canada during February. British Columbia and Manitoba will have their floral emblems honoured on stamps which will appear 28th April. Prince Edward Island's official flower will be featured on the fifth floral stamp to be issued in 1965. It will go on sale 4th August. The floral emblem series began earlier this year, when stamps honouring Ontario and Quebec appeared. Before the centennial year of 1967, all ten provinces and the Northern Territories will have their official flowers shown on stamps.

Canada will issue a stamp on 3rd March to call attention to the fact that 1965 is the International Year of Co-operation. The Postmaster General has pointed out that the United Nations is sponsoring this special year, and many member nations will produce stamps with a related theme.

Two Christmas stamps have been included in the 1965 programme. They will be of the three and five cent denomination and will be released to the public on 13th October. This is prior to the time when the first overseas deadline dates for Christmas mail are reached.

The 8th September will be the release date for a stamp honouring the Inter-Parliamentary Conference to be held in Canada for the first time (9–17th September) The Inter-Parliamentary Union, which dates from 1889, is composed of delegates from 73 national groups.

The centennial of the proclamation making Ottawa the national capital will be commemorated with a stamp which will go on sale 30th June. This is a continuation of the Post Office Department's plan to focus attention on events which led up to Confederation.

Canada's achievements in space research will be the subject of a stamp which is scheduled for release in the spring.

A new 8 cent regular was issued by Canada on 18th November. It is the first 8 cent stamp Canada has produced since 16th September, 1946. It is the 'child of necessity' in that a stamp of this denomination became mandatory when Canada increased the rate of Air Mail to the United States on 15th July, 1946. The central feature of the design is a modern inter-city jet aircraft taking off from a Canadian terminal.

HUNGARY

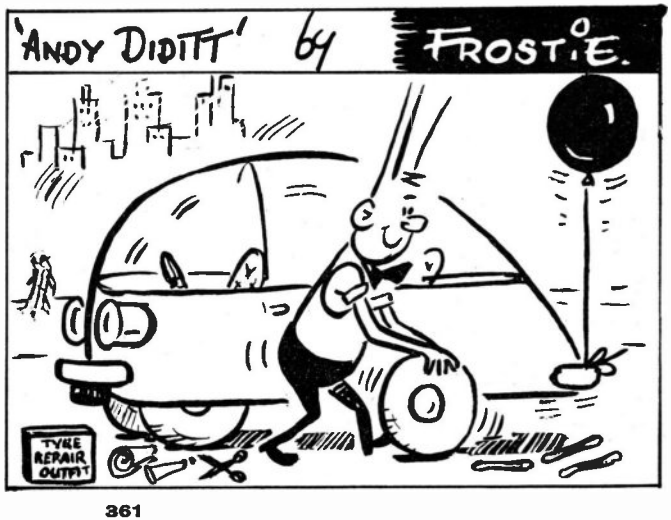
THE much talked of pictorial set from Hungary marking the opening of the reconstructed Elizabeth Bridge appeared last November. The set

Elizabeth Bridge

depicts the new bridge (seen here) and the remaining 6 bridges in Budapest which are to be improved soon.

LUXEMBOURG

The 'Caritas' set issued last December showed 3 views of the City of Luxembourg as seen by children of the primary schools.



GRADING YOUR NEGATIVES

IT is only by matching the negative with the correct grade of printing paper that we can hope to produce the best picture. The little accessory we are to describe will help you considerably in selecting the best paper for every negative.

There are usually four grades of paper, — soft, normal, hard and extra hard — and these are specially made to match the negatives, which vary considerably. The papers differ because they have either a large or smaller range of grey tones. Thus a soft grade will print out about 10 or 11 different shades of grey to black while the hard grades may only have four tones.

Again, different manufacturers have different standards and a normal grade in one make may be equal to soft in another. Consequently, if we use a hard grade of paper with a hard negative there is nothing in the paper scale to accommodate the middle tones, which are denser than usual. The picture is then bright and harsh, sometimes called soot and whitewash. A softer paper would compensate the harsh negative, giving a truer rendering of the middle tones to produce a better print.

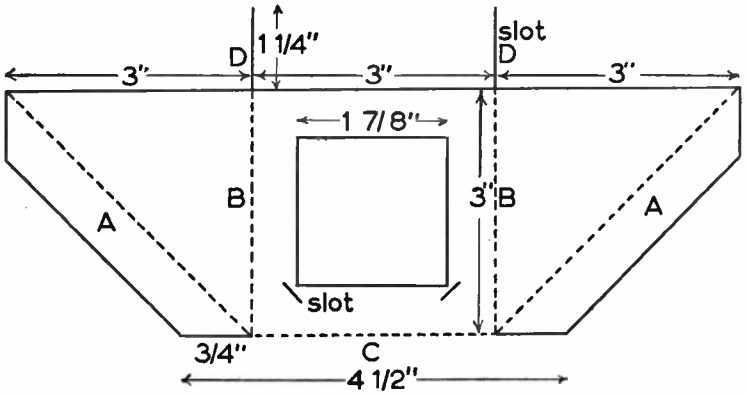
The negative material has no such grading and will produce a far greater number of tones than any paper can print. Sometimes, for reasons beyond our control, our negatives vary considerably. If development is prolonged just a little too long or the temperature of the solution higher than it should be we may produce harsh, contrasty negatives. These could be so dense that they are even unprintable on the softest grades of paper.

Over exposure can have the same effect, by using too large a stop, too slow a speed or miscalculating the exposure time. This is apart from the fact that different subjects on a roll of film may have different contrasts.

On the other hand we may get thin, lifeless looking negatives due to bad light, under-exposure or under-development but sometimes these will print on the hard grades of paper. The question thus arises as to how we can reasonably match a paper to the gradation of any negative.

The little accessory shown in the photograph and described in the diagram will help you to grade your negative easily and quickly.

The right half of this picture was made on a hard grade of paper. Note that the middle tones are completely missing



Take a piece of thin card measuring 8 in. by 11 in. marking exactly as shown in the diagram. The measurements quoted will meet the needs of 2¼ in. square negatives but you can modify the aperture in the centre to fit your own size of negative. For example, all you need do for the 35 mm. size is to reduce the size of the aperture correspondingly and move the position of the two slots.

Having marked out the shape of the accessory on the card cut through only those lines which are shown as unbroken; the dotted lines indicate where scoring is necessary.

Lift out the central piece, which makes the aperture, then ease out the shape from the top and sides. Fold the two end pieces A upwards; bend B downwards to make the sides and C forwards. We now push the two end pieces — which are at right angles to the sides — under the slots D. The slots below the aperture are for holding the negative. The whole should make a little raised desk for holding the negative at an angle of 45° to the base.

We now take another piece of cardboard, sticking a piece of clear newsprint on same. Finally, we stick the desk

portion on top of this newspaper card and we are ready to grade our negatives.

Slip a negative into the slots at the bottom of the aperture so that it lies over same and the newsprint can be seen. It is necessary to arrange the viewer so that light falls on the newsprint and reflects through the negative. We now inspect the negative and look at the *densest* part of the image, examining the appearance of the underlying printing. Note the following.

When the print appears:

(a) easily readable use hard grade paper

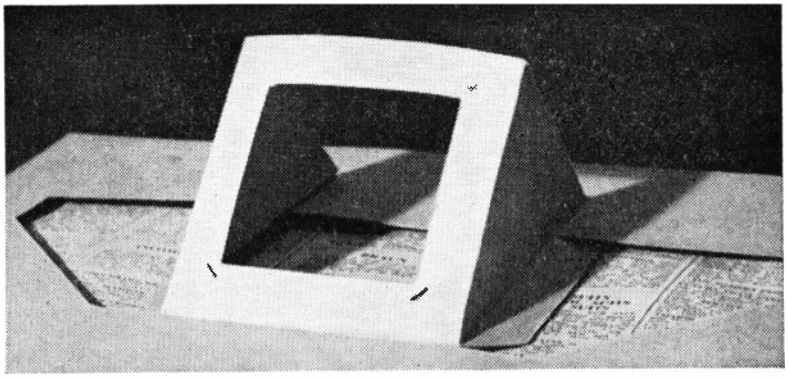
(b) only just readable use normal grade paper

(c) cannot be seen use soft grade paper.

Should there be no appreciable difference between legibility in the darkest and lightest parts of the negative it may have been over-exposed and you should then use hard or extra hard paper, although the printing time may be longer.

It is a good plan to grade a batch of negatives with the aid of this accessory before embarking on a printing session and to save time if you wish to make more prints later I would suggest that you make a note of your grading and paper required on the negative bag.

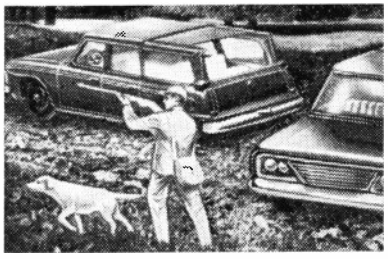
This little accessory can be quickly made at practically no cost whatever but it will enable you to judge what grade of paper to use before even attempting to make a print, so the time spent in grading your negatives is well worth while. (S.H.L.)



The completed negative grading accessory as described in the text

NEW MATCHBOX STATION WAGON

A FINE addition to the new 'Matchbox' Series (No. 42) perfectly reproduces the unique Studebaker Lark Station Wagon with a sliding roof and fully-detailed interior. Costing two shillings, this model also includes a hunter with his gun and gun-dog and is finished with the usual fine 'Matchbox' detailed specification of fully-fitted interior, spring suspension, lead-free paint and plated metal grille. Length 3 in. scale 66 to 1.



Studebaker Lark Station Wagon

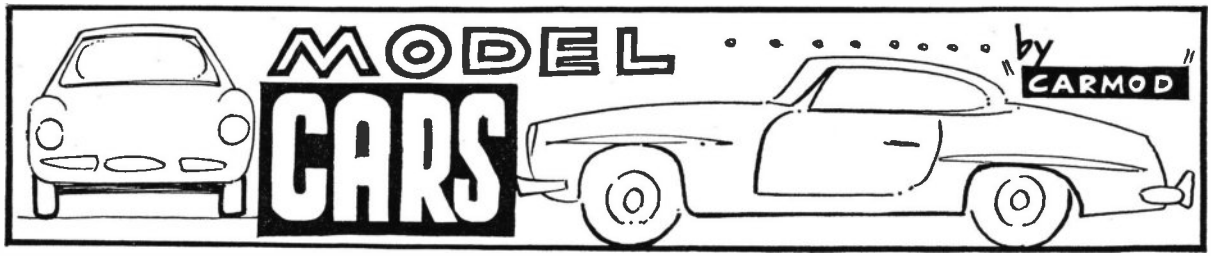
The attractive and unusual German Hatra Tractor Shovel, catalogued as new number 69 in the Matchbox Series and also costing 2s. 0d., features a fully working bucket which revolves through a full circle, and special 'balloon' tyres on wide-rim hubs.

PAUL WILLIAMS

PAUL Williams (pictured here) and the Big Roll Band is the name on the label, and *Gin House* is the number trapped between the grooves. It's a very powerful, very commercial song, put over by a group of good musicians and a young man with one of the few British voices capable of the modern coloured sound.

The number is taken from an L.P. by Nina Simone, and it's one that the Animals had been raving about to Mickie Most for some time. So Paul worked out an arrangement and tested it at some of the Big Roll Band's dates — not the least of which is London's R & B night-spot the Flamingo — and it met with such good reaction that Mickie and the band agreed on it as their next single.

Gin House is released on the Columbia label, DB7421, and was produced by Mickie Most.



UP to now we have, in this feature, been concerned with the modification of mass-produced model cars and one or two commercial and military vehicle subjects.

This time, by way of a change, I have chopped a motorcycle miniature. Inspired by television programmes of motorcycle scrambles, it is a typical competition machine of this aspect of the sport.

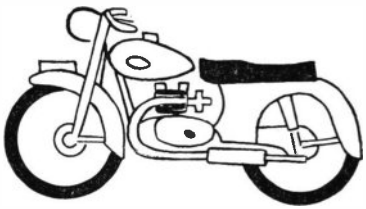
Two-wheeled transport has not been too well covered by the model manufacturers but the gaps are now starting to fill. Tekno (Denmark), A.T.C. (Japan), and Britains (G.B.) make die-cast miniatures and Revell, Airfix and Rosebud (out of production) have all made plastic kits.

For this particular modification I chose the Triumph from the excellent, but limited, series of die-castings from Britains.

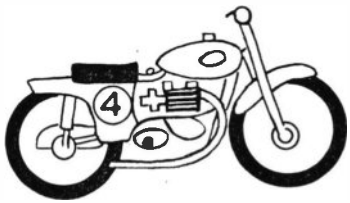
Firstly, strip the model down as follows. File off an axle end on each wheel, withdraw axles and remove wheels. Take off the saddle by gently levering the plastic from its mounting. Remove the plated engine sides (this is also done by gently levering the parts away from the centre section and frame).

Chopping can now begin. Remove handle bars by sawing flush with the front fork. Also the headlamp should be cut off flush. Saw off the number plate. The mudguards can now be reduced in size by sawing to the shapes shown. The edges of the mudguards should be smoothed and rounded with a file. The saddle mounting is filed away at the rear in order that the saddle (suitable shortened) will fit with its back end immediately over the telescopic rear suspension.

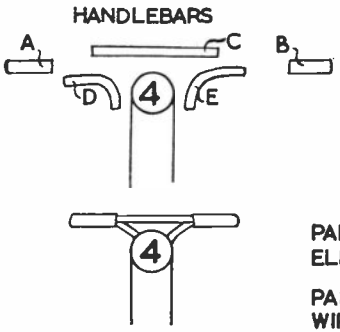
THE TRIUMPH MOTOCROSS MOTOR CYCLE

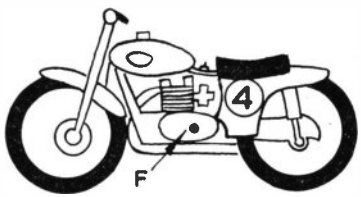


IN ORIGINAL ROADTRIM



IN COMPETITION FORM





PARTS A & B RUBBER ELECTRIC WIRE COVERING

PARTS C, D & E WIRE PAPER CLIPS

Replace the shortened saddle, using a general purpose adhesive such as Uhu.

Only the right side plated engine cover and exhaust pipe is used in this conversion, and this exhaust pipe is cut off immediately in front of the silencer. Replace the right side engine cover and exhaust pipe, again using Uhu.

Re-set footrest and stand in place and retain this by applying Plastone to the left side, shaping this material as shown at 'F'.

Replace wheels, making sure the toothed wheel at the rear is on the left side. Original axles can be used, sticking the cut ends in place with Durafix.

Attention can now be given to the 'scramble' type handlebars and this is not the formidable task it appears at first sight. The illustrations show the construction far better than it can be described in words. Use Araldite or Uhu as an adhesive. The clutch and brake levers can be cut from broom bristles and fixed into place with the same adhesive.

Colour is a matter of choice for this typical competition machine but it is suggested that the forks and telescopic rear suspension be left in the original blue. Similarly the cylinder and carburetter can be left but the side covers (both plated and Plastone) should be painted black. Leave the exhaust pipe in its plated state.

When colouring is completed, mark and paint in white the discs as shown in the illustration. Competition numbers can be worn, the Marc Europa transfers being suitable for this purpose.

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By Frank Illingworth

THIS is a completely revised and enlarged edition of the popular small book published just after the war. Designed essentially for the beginner, it contains the most up-to-date information available. Every aspect of falconry is described in detail, from the actual catching of falcons and hawks, to their training and care, and finally flying them at all manner of game.

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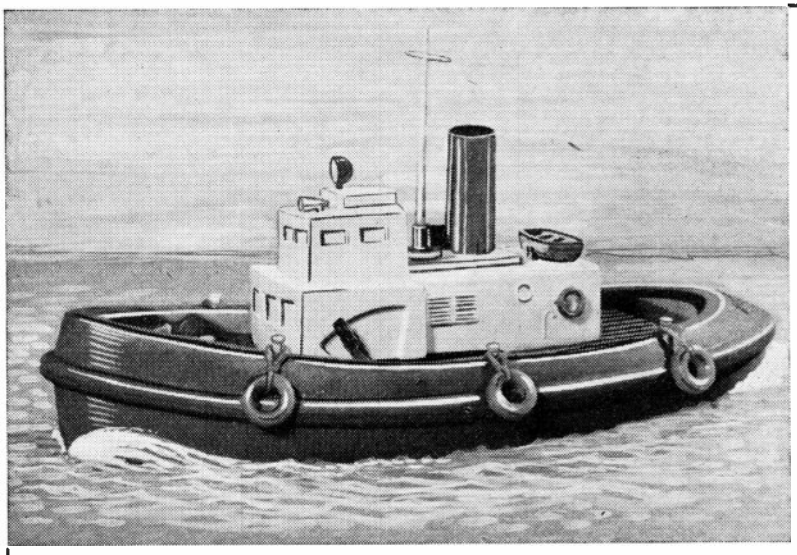

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STEP-BY-STEP ASSEMBLY

Study the diagram carefully before commencing assembly and follow the instructions step by step. All parts are a press fit and it is not necessary to use glue for fixing.

1. **Insert propeller shaft through the hole in the stern with coupling at the top.**
2. **Push motor into slots. (The contact leads on the motor should face the port side.)**
3. **Push the yellow coupling on to motor shaft.**
4. **Slip yellow grummet on to propeller shaft — smear with Vaseline and push home.**
5. **Push propeller on to shaft.**
6. **Push rudder into hole provided.**
7. **Attach leads to contact plates by twisting wires round or by soldering.**
8. **Push contact plates well into slots in battery, with tongues facing inwards.**
9. **Insert battery and switch lever as indicated in diagram on box lid. (Note that it may be necessary to prise open slightly the tongue of the contact plate, to make contact through the opening of the switch lever with the base of the battery.)**
10. **Fix the six fenders, with yellow pegs, in the positions shown.**
11. **Place the superstructure in position and fix a lifebelt to port and starboard sides and the steps to the starboard side.**
12. **Complete by adding siren, searchlight, funnel, mast and boat.**

The motor can be reversed by exchanging the positions of the contact plates. Recommended battery is Ever Ready No. HP11.

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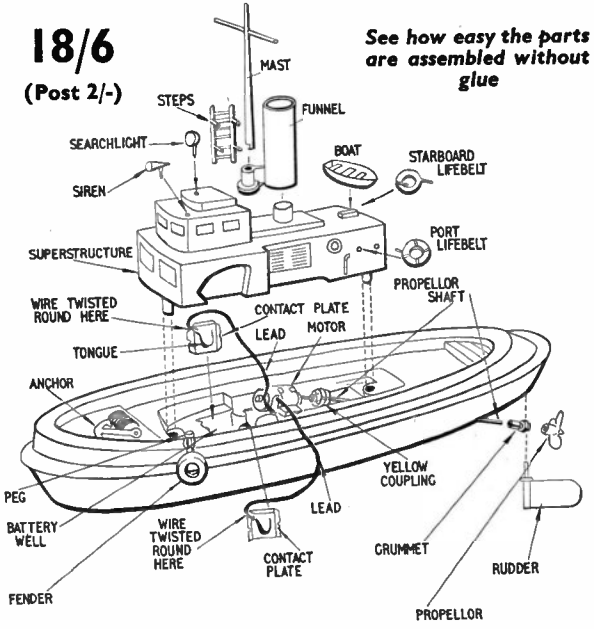

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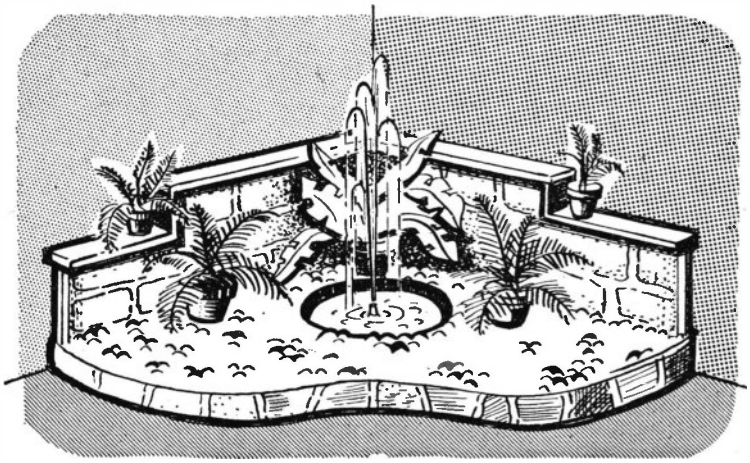


A GARDEN CORNER

AN indoor garden, with cool green potted ferns standing on a bed of white marble chips, a small pool which can include a fountain, and attractively real-looking stonework, can be a feature of even the smallest house. This type of indoor garden looks particularly well in a hall, although it need not be confined to this area of the house, of course. The size depends on the space available — even a triangle with 24 in. sides will do.

Imitation stonework

First, the 'stonework' on the wall is put in place. This can be either plastic simulated stone sheeting, which is pinned and glued in place, or the stones can be painted on the wall. The wall should be no more than 18 in. high, and stepped down at each end to give it a lightness of form. To lend a solid appearance to the wall, a 'coping' of 2 in. by ¾ in. wood is screwed to the wall.

If the stonework is painted on the wall the required area is first coated with white emulsion paint. Each stone is then drawn in outline with pencil, keeping the shapes irregular. Leave a ½ in. wide margin between the stones. They are painted in with silver grey emulsion paint to which a little sand has been added to give a rough, sandstone-like texture. A wood-strip coping is added here, too.

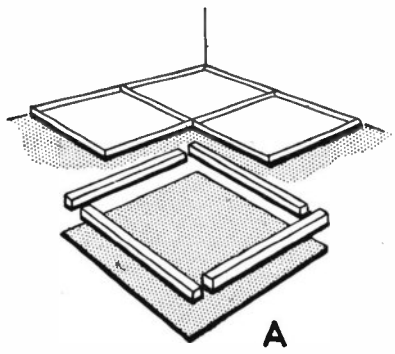
The pebbled floor of the garden can be made very simply, by edging three squares of hardboard with 1 in. square woodstrip, painting these white, and laying them in place, or by making a raised terrace as shown This is a triangle of ¾ in. thick wood, the same height as the skirting board. The curving front is a strip of hardboard 1 in. higher than the wood. It is soaked to make it pliable and nailed in position as shown.

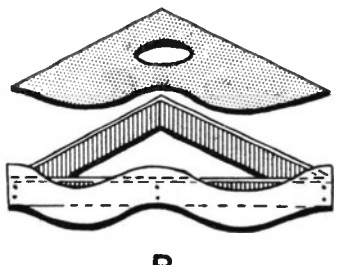
The hardboard top is cut to shape, a circle is cut in it to take a shallow bowl or tray which will form the pool, or the circular bowl supplied with indoor fountains, and the top is then pinned to the frame. The whole frame is painted white, with a stone front similar to the background wall, then laid in position.

Adding a fountain

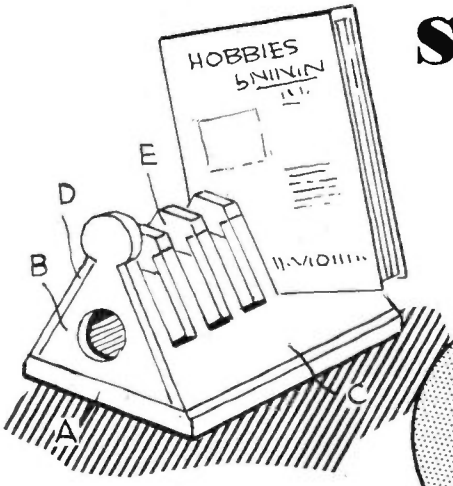
The pool or fountain is put in place, any electric leads being hidden below the raised terrace, and the hardboard covered with marble chips or white plastic 'pebbles' of the kind sold by pet stores. Pot plants, preferably of the fern family, are placed in position on the pebbles. The pots should not be decorated, but plain, and in the traditional terra-cotta colour; if they are clay pots, they should first be scrubbed spotlessly clean.

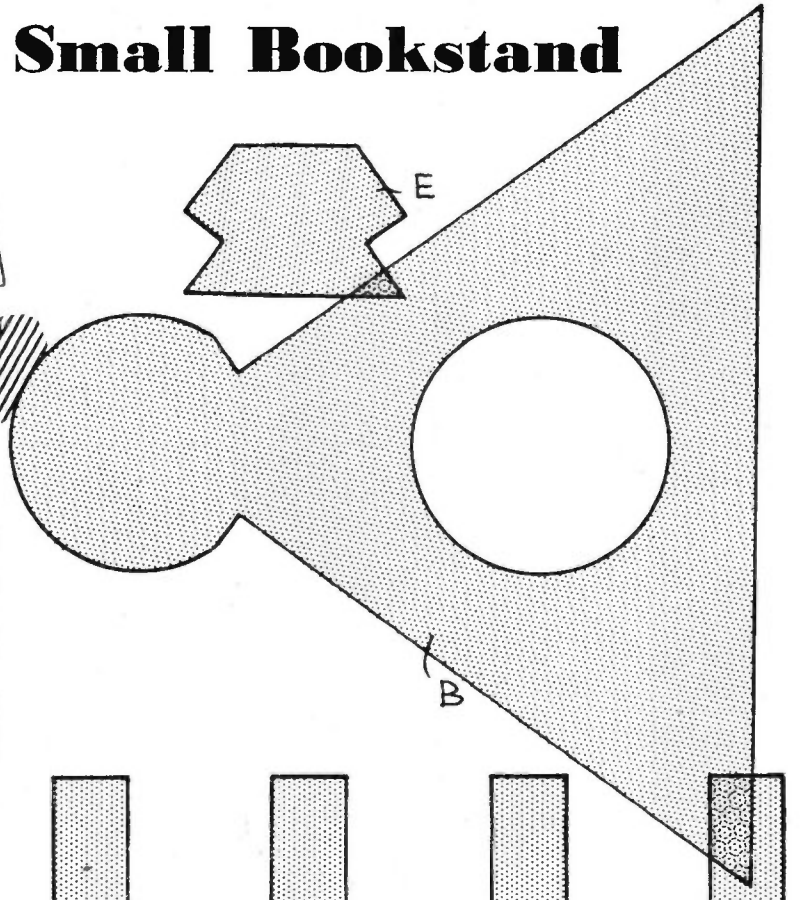
Smaller pots can be stood on the wooden coping to complete the effect, and the whole arrangement can be highlighted by a shaded lamp casting its rays from one side. (A.L.)





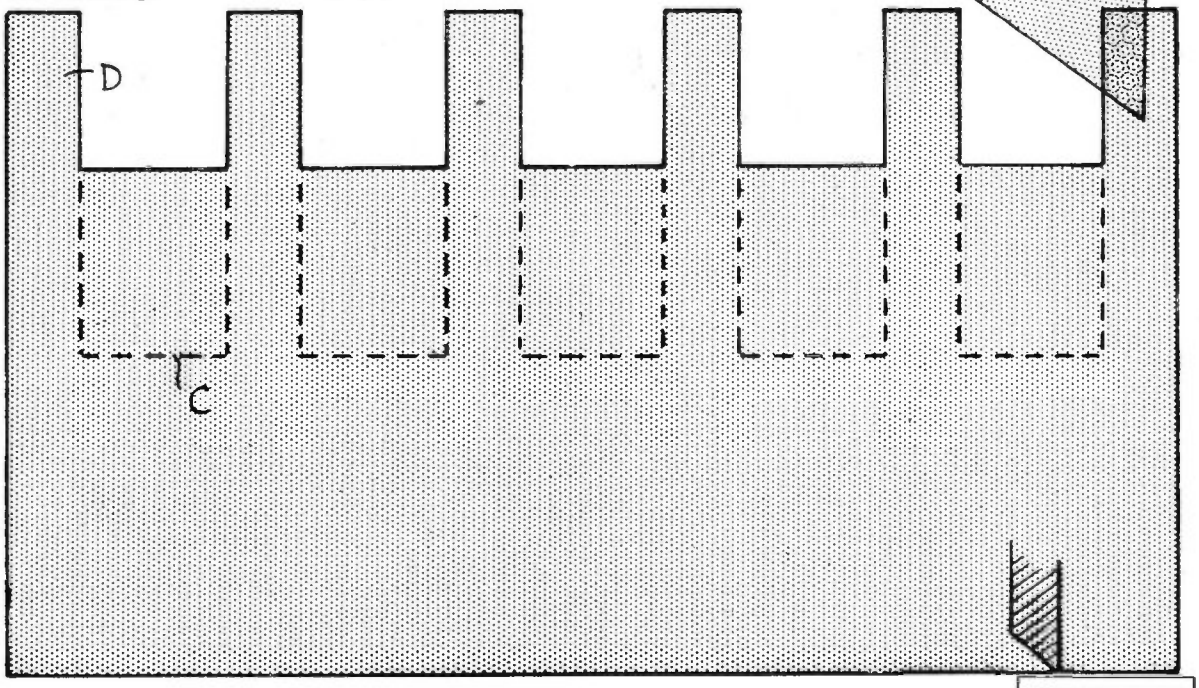
Small Bookstand





CUT the two pieces D and C from ¼ in. wood, using a fretsaw. The only difference between these two pieces is the depth of the grooves. Shape the lower edges to section and glue them to the ends B, which are both cut from ⅜ in. wood. Fix the four spacing pieces E between the pieces D and C.

The base A measures 5½ in. by 6⅛ in. by ⅜ in. and is shaped to the slope of pieces C and D. Finish off by staining and varnishing. (M.p.)



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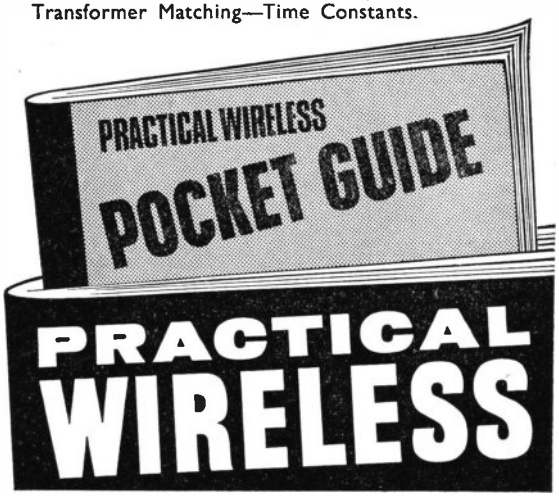

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