HOBBIES *weekly*

5th MAY 1965 VOL. 140 NUMBER 3621

'CHALLENGER' YACHT

Make it from FREE plan inside

A GRAND 21 in. MODEL

Hobbies

FOR CRAFTSMEN OF ALL AGES

6D.

Instructions for making

'CHALLENGER' YACHT

THE designing of a model yacht which *really sails* and responds to the settings and various conditions encountered on the pond is a tricky job. It is not just a question of scaling down the real thing and hoping that the model will at least stay afloat. We aimed at obtaining excellent sailing qualities — and succeeded.

This design for Hobbies yacht 'Challenger' has been thoroughly tested in all respects and the perfected prototype finally emerged as a model which would do all that was asked of it. It is 21 in. long and construction has been simplified so as to make it well within the capabilities of the average modeller. It's just the job for summer holidays at the seaside. A model of which to be proud and which can be made at a very reasonable cost.

With a hull built from one solid piece of wood, the yacht is virtually unsinkable. It can stand any amount of competition on the pond and will come unscathed through collisions and mishaps.

It is well balanced, with ample ballast and a metal keel which is not only slotted in place but secured by screws. The rigging is straightforward and presents no difficulties if the plans and instructions are carefully followed. Sails can be made from any lightweight cloth, with hems stitched by hand or machine. A machine will of course make a much neater job.

Commence construction by making the hull. This consists of a solid block measuring 21 in. by 5 in. by 2¼ in., preferably soft wood which can be shaped easily. Taking your shapes from the plan, mark out the hull lines, tracing first from the dotted lines (line of hull) on the deck plan, then from the shape shown in the side elevation. Note that only half of the deck plan is shown; it is a simple matter to trace it and turn it over for the other half.

The diagram in Fig. 1 shows the hull block marked out ready for cutting. Quite a lot of the waste wood can be cut away with a tenon saw and the rest shaped with a knife or Surform tool. Finish off with coarse and smooth glasspaper.

The hull is also hollowed out to the depth shown by the dotted lines, leaving a step for the mast. Much of the waste wood can be removed with a brace and bit, boring holes at intervals, and touching or overlapping slightly. The rest can then be removed with a gouge or chisel. After shaping, the hull should appear as in the photograph in Fig. 2.

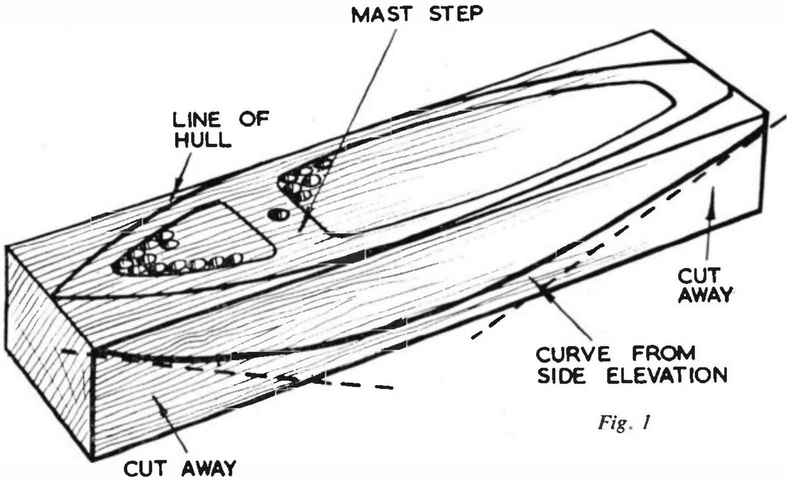


Fig. 1

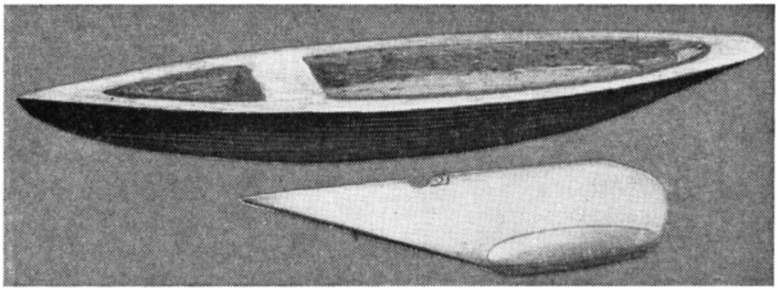


Fig. 2—The shaped hull and metal keel

The next step is to cut the keel from a sheet of metal such as aluminium. Mark out the shape shown on the design sheet and cut out with a fretsaw using a Hobbies metal cutting sawblade. Keep the saw well lubricated with water or oil when cutting. The two tabs are bent out, one on either side.

The keel is let into a cut in the hull, made with a handsaw, to the depth shown by the dotted line on the side elevation. The photograph in Fig. 3 shows the cut being made. Hold the hull

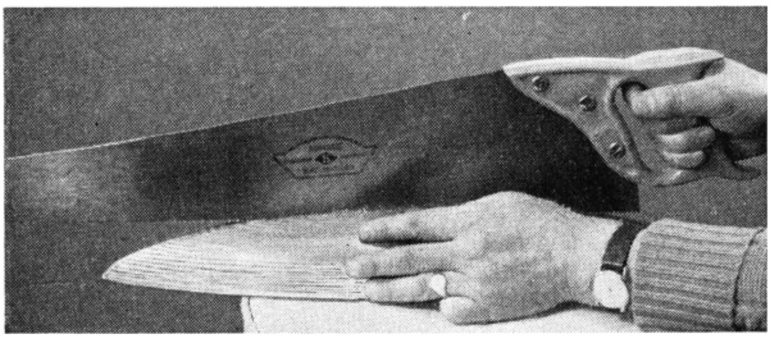


Fig. 3—Making slot for keel

steady with one hand, or clamp in a vice and cut down carefully along the centre line.

Now glue the keel in place, as shown in Fig. 4 using Cascamite 'One-Shot'. Allowing the glue to squeeze out and wipe off any excess. The tabs can be let in if desired and are secured with $\frac{3}{8}$ in. countersunk screws.

The lead weights are shown on the design sheet, and can be shaped from lead sinkers such as used in sea fishing. The exact shape is not critical.

Alternatively they can be cast from lead, melted and poured into a mould. To do this, fashion the two shapes from odd pieces of wood and lay them face downwards in a small tin or cardboard box. Pour plaster of Paris over them, allow to harden, remove and trim up. Melt the lead in an old saucepan or a tin and fill the shape. Drill two holes spaced as shown on the keel. The lead weights are secured by rivets, nails or plugs of lead turned over at the ends and hidden by hammering the lead over them.

Cut the deck from $\frac{1}{8}$ in. wood, round off the edges and glue in place on the hull. Note that it will overlap slightly all round. Secure with fine $\frac{3}{8}$ in. brass nails at about 1 in. intervals. Wipe off excess glue.

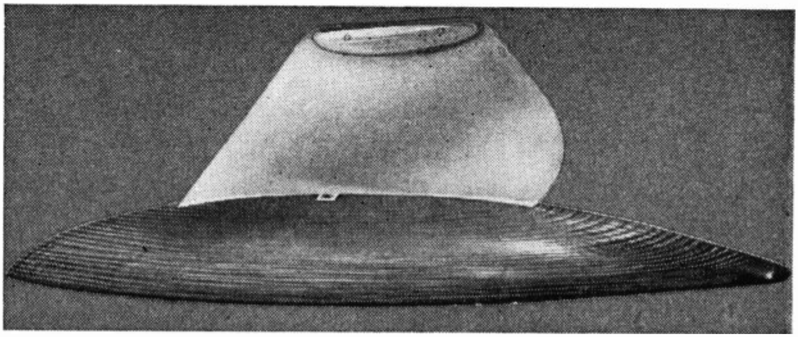


Fig. 4—Keel secured with glue and by metal tabs

Clean up and waterproof with a coat of clear Cuprinol or brush polish. Paint or varnish as desired. A good colour scheme is deck varnished, hull part varnish and part painted. The hull above the water line could be bright red or green.

Cut the mast from $\frac{3}{8}$ in. round rod and taper slightly towards the top. It is inserted into the deck, not glued, and is held in place by two stays of cord attached to screweyes situated slightly aft of the mast as shown in Fig. 5.

The sails are made from lightweight cloth, hemmed neatly all round, with cords sewn into the corners where required. Two rings, made of wire, are sewn in and clipped round the mast.

KIT FOR 27/6
Hobbies Kit No. 3621 for making the 'Challenger' Yacht contains all materials including metal for keel and cloth for sails. Kit price 27/6 from branches or by post (3/3 extra) from Hobbies Ltd, Dereham, Norfolk

Make small hooks from wire, sewing one into the jib sail and attaching the others to the rigging cords as shown. Make small clews as shown in Fig. 5 inserting them as indicated. Small screweyes are inserted into deck and mast where indicated. Complete the rigging as shown in Fig. 6, pivoting the boom by means of two screweyes, one in the mast and the other in the end of the boom. If one is opened out slightly it can then be slipped through the other and tightened again.

The yacht is now ready for sailing and can be tested out on the pond. With the wind at the side slacken out the mainsail until it is overhanging the deck slightly, pull in the jib sail and off she goes. Experiment with different settings of the sail and you will soon find the correct position for any circumstances.

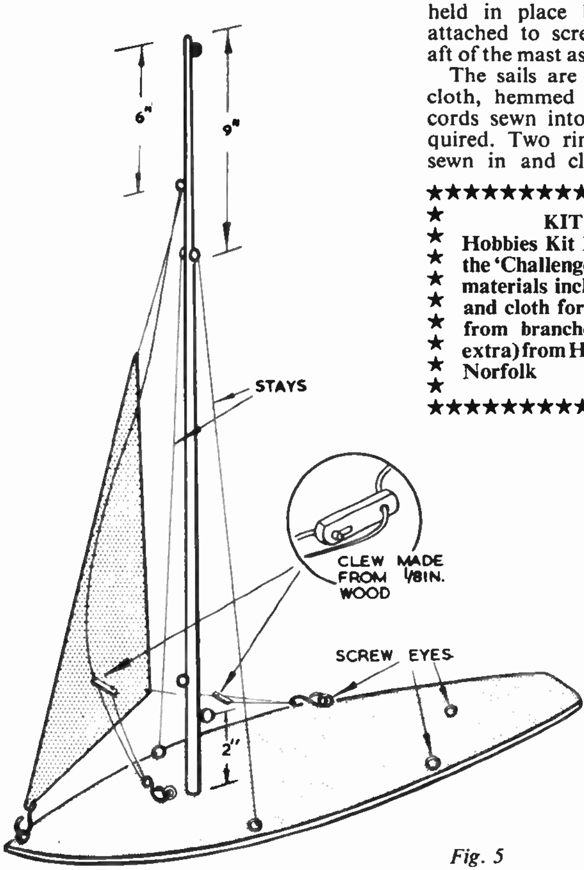


Fig. 5

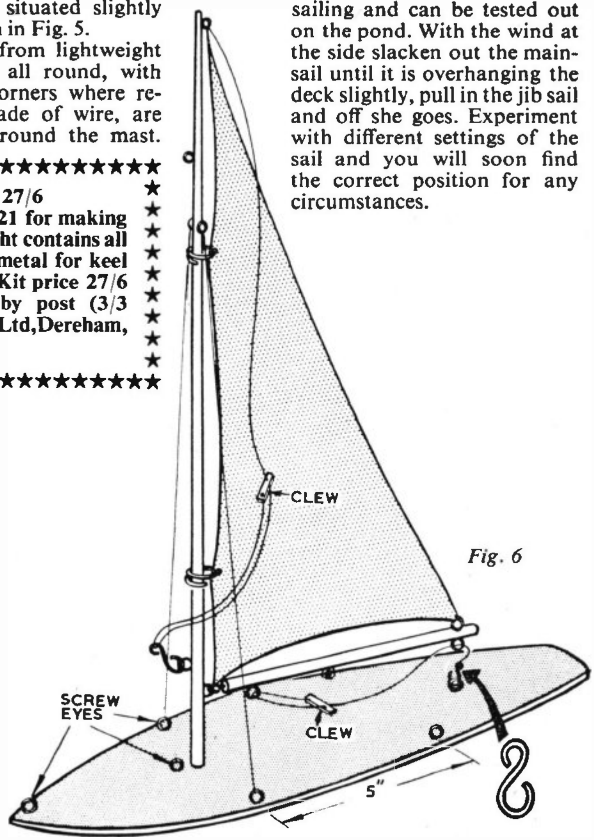


Fig. 6

BETTER RESULTS FROM FILTERS

In early summer when the leaves are the palest green we can make these appear even lighter, sparkling against dark backgrounds, by the use of appropriate filters.

A filter is a disc of coloured glass or gelatine and when placed before the lens it absorbs light from its complementary colours. Briefly, a yellow filter absorbs blue light, darkening a blue sky. It will also eliminate unwanted ultraviolet light, thus penetrating haze to some extent.

The glass filters are mostly made from mass dyed glass and it is possible to buy these at reasonable prices to fit into a lens mount matching your lens barrel. Cheaper still are Ilford gelatine filters. These are made from very thin sheets, are square and can be shaped to fit your mount. They will not bear a lot of mishandling so I find it best to store them in their envelopes between two thin sheets of card. When cutting them I place a glass disc of correct size on the gelatine, score round the circumference and cut out to shape by holding at the edges with a pair of tweezers. With care, and handling only by the edges, they last quite a long time.

There are many different makes and colours of filters but only a few are required for general purposes. Panchromatic film, such as Selochrome Pan or FP3 must be used in conjunction with filters and since we are artificially reducing the entry of light to the film we have to increase the exposure accordingly. The increased exposure time is usually quoted by the makers of the filters and referred to as the 'factor'.

Perhaps it is true to say that the YELLOW filter is the most popular and there are modifications from light-yellow to yellow-green. The light-yellow filter has a factor of 1½, that is we have to increase the normal exposure by 1½ times. Such a filter will show an improvement in the contrast of the clouds, the blue becoming a little darker and the yellow a little lighter. The contrast is not exaggerated.

A MEDIUM YELLOW filter requires twice the normal exposure to bring far more pronounced effects in the blue-yellow contrast, while a DEEP-YELLOW gives even more dramatic effects but requiring three times the exposure.

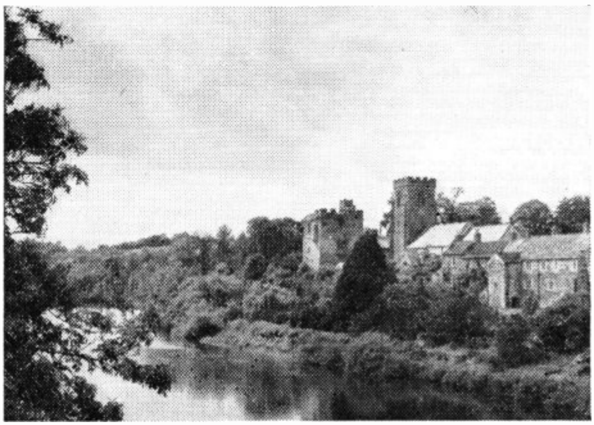
This is a view of Wensleydale with a fine cloud formation emphasized by using a pale yellow filter.

The effect of the heavy yellow filter will also be apparent in other parts of the picture. Walls show greater detail due to increased tone separation. But it is not entirely successful at the seaside where both water and sky would appear black. I mostly use the pale yellow filter because I like to work early in the day when the sunlight is inclined to be yellow. The same applies later in the day when the light is more inclined to the red end of the spectrum. At such times a deep filter would increase the contrasts out of all proportion.

The GREEN filter is also very popular for it lightens the foliage of trees, while its effect on the sky is similar to a yellow filter.

Some subjects could be improved by using an ORANGE filter. When the skies are weak, as on a spring day, this filter will make a marked contrast in the weakest of skies. On days when there is good natural contrast between clouds and sky the orange filter will produce dramatic results. White buildings will stand out brilliantly against a dark sky and there will be an improvement in stonework.

There is a peculiar feature about this filter in that while it would render green clothing in dark tones, plant life is often rendered lighter. This is explained by the fact that chlorophyll is present in plant life and it possesses the quality of reflecting infra-red rays or heat rays of the sun. Consequently, grass or foliage appears much lighter although the phenomenon varies as the chlorophyll becomes weaker during the progress of the summer. The orange filter is also used for showing detail of wood grains in furniture.



A pale yellow filter will also help contrast and produce some cloud effect in weak skies as this picture of West Tanfield shows.

In practice I would recommend that you begin with a pale yellow, a yellow-green and an orange filter which will be sufficient for nearly all landscape work. But a filter will not correct processing faults. Correct, adjusted exposure is essential and there is no margin for error in development. If you overdevelop your films the sky portion may be just as bald as though a filter had never been used.

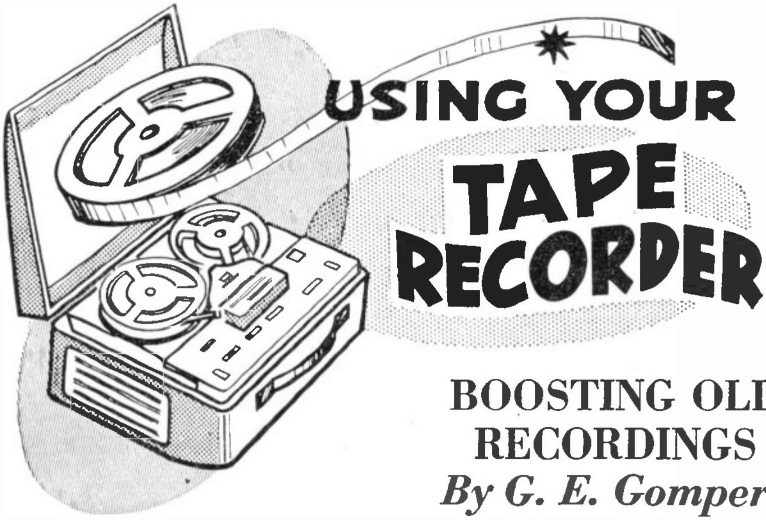
There are other filters of course and if you care to experiment the following will be of interest.

A RED filter makes dramatic contrast and by adjusting the exposure it is possible to make fake moonlight effects with sunlight pictures.

There is the U.V. (ultra-violet) filter mostly used for mountain photography above 6,000 ft. and which requires no increase whatever in basic exposure. It should be used alone without any other filter and is most desirable for sea pictures. This particular filter reduces ultra-violet rays, improves cloud effects and is also exceptionally good for shots taken at sea level.

It is also possible to make combinations of gelatine filters. An example would be a pale yellow and a pale blue. If Ilford HP3 film is used with these a dramatic effect results. Remember that combinations of this character should be in the nature of experiments and allowance made for adequate exposure.

There are times when the skies are cloudless and no filter will produce them, but you can collect a series of good cloud negatives of all types for incorporating with other pictures when needed. These pictures should be taken with the sun to the right, to the left and shining straight on to the clouds. In this way you can then match a cloud effect to the lighting of any picture. (S.H.L.)



BOOSTING OLD RECORDINGS

By G. E. Gompers

H.M.V. produced an excellent series entitled *Fifty Years of Great Operatic Singing*, which covered recordings made of great singers covering the years 1900 to 1950, taking up five discs, CSLP 500–504. The earlier discs (1, 2, and some of 3) must have been made from pre-electric recordings.

However, I could not listen to these wonderful recordings without a feeling of regret, thinking all the time about my own little stock of rare pre-electric recordings, which were very rarely used; and some are nearly inaudible.

When, a few years back, I acquired a tape recorder, I became all absorbed in my new interest, and my record player immediately subsided into the status of a mere audio unit.

Recently, however, I decided that my player would be more useful if adapted to direct lead. This I got my dealer to do, adapting it to fix into my mixer, rather than my mains recorder, because I still required mood music as a background to voices.

The first major job my direct lead player had to do was to record a lot of guitar music from 78 r.p.m. discs, for a party. I was so successful with this, that I decided to experiment further. I then remembered that corrugated-bound group of rare pre-electrics.

I got them out, and set to work. Most of my experimental recording is done on the rather pedestrian Grundig T.K.14 (except, of course, when speeds are involved), but I am a great believer in the process which I am in the habit of calling 'Telefunkenization'.

In audio link-up the old adage that a chain is only as strong as its weakest link is simply not true. I have found that Telefunken audio equipment is so good that regardless of the make or quality of the recorders, even the cheapest and humblest of Telefunken mixers can give a marvellous boost.

I regard the quality of the mixer as a decisive factor in the transfer of disc to tape, and much of my success of transferring these old pre-electrics is owed to the Telefunken Two-Channel Fourteen-Combination Mixer.

Of course, with the older pre-electrics there are specific problems that are rather unique to this type of disc. For example, the groove is not allowed a free run before the recording starts, as with more modern discs. This is a very convenient asset when recording from disc on to tape, because it allows the recordist to start the disc, and then release the temporary stop. With pre-electric discs the procedure is reversed The temporary stop is released, and then the stylus is gently brought bang on — but without the 'bang'! Quite honestly it is very tricky, and you never know that you have done it successfully until you have played it back. How often did I have to do it all over again!

Groove trouble again crops up at the end of the recording, because it never comes in far enough to switch the automatic stop. The disc revolves round and round, making the dickens of a row. Perhaps this sound could be a sound effect in its own right. However, it is not pleasant, but it can easily be erased with careful use of the digital counter.

Of course, very little can be done about surface noise. One recording of Marcella Zembrich was so hopeless that I abandoned all further attempts. However, with the others I found that if the boost was given with the mains volume, rather than with the mixer's, surface noise was not so apparent.

However, the overall results were highly satisfactory. One record, indeed, was almost inaudible, but was boosted on the tape to normal proportions, without any over emphasis of surface noise at all.

What this really means to me is that when I wish to hear my pre-electric rare recordings I do not have to disturb that precious little corrugated wrapped package. And I can hear them a lot better, now.

Of course, those standards that are not pre-electric I have never had any trouble from, even before I had direct lead, and had to do it by free-air.

ONE of the most interesting stamps which can figure among the treasures of any collection is the 'Penny Black' which was issued in Great Britain in 1840. Not only was this stamp the first to be issued within our kingdom, but it was also the pioneer stamp of the whole world.

Part 1.

GREAT BRITAIN

To Sir Rowland Hill, the promoter of the penny postage and other postal reforms, belongs the credit of first suggesting that the postage on a letter should be prepaid by means of an adhesive label. Not only may he be called the inventor of postage stamps, but he also sketched in rough the design which was used for the first stamp. To him, also, was entrusted the work of arranging for the issue of this novel label.

On August 17th, 1839, Parliament sanctioned the use of adhesive stamps, and immediately afterwards the Lords of the Treasury asked the public to suggest suitable designs. Nearly 3,000 drawings were submitted, but none was considered satisfactory. It was then that Hill made his rough sketch.

Many were the difficulties which Hill had to overcome, but probably the most perplexing was how to get the stamps printed. We must remember that in those early days colour-printing was a slow and tedious process, and there were very few firms who could be entrusted with the work. After much consideration, Sir Rowland went to a Fleet Street house of printers and asked them whether they could undertake the task of producing the proposed adhesive stamps. Their reply is sufficiently interesting to be given in full.

69 Fleet Street,
London.
December 3rd, 1839

Sir,

We have given the subject you mentioned yesterday afternoon all the attention the time would allow, and beg to say as the result that we would engrave steel dies of the size you gave us, containing work of any conceivable value as to cost and quality, transfer them to any number of plates that could possibly be wanted, and print them in any numbers per day, at a charge of eightpence per thousand stamps, exclusive of paper, which, we understand, would be supplied us; and, assuming that the numbers wanted would be very large, we have only named a fair price for the printing, and have considered the plates and dies, which ought to be very costly in the first instance, as given in without charge. You are probably aware that, having prepared the original die, we could insure perfect 'facsimiles' of it for a century.

We are sir, very respectfully,
Perkins, Bacon, and Petch.

The firm was entrusted with the printing; instructions were also given them to elaborate the rough sketch made by Hill. They called upon a then noted engraver, Frederick Heath, to complete the design which has since become world-famous. He engraved the head and the lettering, but the beautiful curves forming the background of the stamp were 'engine-turned' by means of a Rose engine, a contrivance consisting of a series of moving wheels which produced curved lines in geometric pattern.

The stamp proved a great success, thanks to the energies of Hill and the assistance of the printers; but it had one great fault — it was printed with a fast ink, which enabled dishonest people to wash out the obliterations and use the cleaned copies a second time. As a result the black specimens were superseded in less than nine months by red ones printed with a fugitive ink. The short life of the first stamp has, of course, much to do with its present high value.

The dies used for the black impressions were employed for the red pennies, so that the two stamps are identical in all respects but colour. Gradually, as years passed along, slight changes were introduced. First, the small check letters in the lower angles were substituted by large letters, then perforated edges were provided, whilst in 1854 the whole of the dies were re-engraved. Stamps printed from the old and the new plates may be distinguished fairly easily. In die 1, the nose is straight, there is little shading around the eye, and the lobe of the ear terminates with an upward curl. In die 2, the nose is slightly rounded, the eye is surrounded by much shading, and the lobe of the ear finishes without any upward curl.

The black and red penny stamps were line engraved. The only other stamps printed in this style were the twopenny blue, issued concurrently with the penny black; the halfpenny rose; and the three-halfpenny red rose, both issued on 1st October, 1870.

It seems somewhat remarkable, in these days when we have various different stamps of values lower than a shilling, that in the early years the country was able to carry on its postal arrangements with but a penny and a twopenny stamp. That there was need for specimens of higher value seems certain, as the inland registration fee was a shilling, and the postal rates abroad were surprisingly high.

In 1847 the letter rate for the United States was lowered to a shilling, and for France to tenpence; consequently, the time seemed appropriate for introducing

Examples of Victorian stamps

three new stamps — a shilling, a tenpenny, a sixpenny, and a little later a ninepenny was issued. Stamps of this period are very popular with collectors and even a slightly damaged specimen will fetch a good price.

Though the line-engraved stamps had proved extremely satisfactory, there were certain high officials who claimed that these labels were by no means proof against dishonest practices. It was partly to please these dissentients that the new values bore the familiar head of Queen Victoria in cameo relief. The innovation was almost if not a complete bar to forgery, also to the removal of obliterations by people of questionable character; but it made printing a slow and expensive process. Hitherto a sheet of stamps had been printed by one movement of the machine, but every embossed stamp needed a separate pressing. There were twenty-four stamps of these new values on a sheet, which meant that instead of one action completing the sheet, twenty-four actions were required.

Some of these old stamps are to be found with the impression of another partly overlapping; this is due to the fact that the machines were fed by hand, and unless the workman placed the paper in exact position one stamp was bound to fall partly on to its neighbour.

One curious feature of the tenpenny and shilling stamps must be mentioned. Into the paper on which these adhesives were printed was introduced a number of silk threads in such a way that each stamp bore two portions of the thread. The silken lines ran either horizontally or vertically across each specimen, and made counterfeiting an almost impossible task. The sixpenny value was provided with a watermark as a safeguard.

The cameo stamps gained but little popularity, and were current less than ten years. Of the sixpenny specimen, we know that 6,659,920 copies were printed, and of these 2,941,640 were destroyed after their withdrawal, probably about as many copies as are sold of our current threepenny stamps on an ordinary week-day.

(R.L.C.)

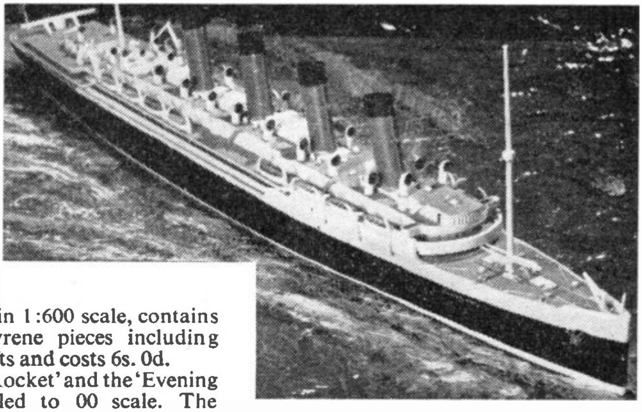
THE MESSENGERS

THE MESSENGERS impressed many with their first record 'I'm Stealin' Back' released last year. Like so many other folk groups they have found it necessary to make changes.

'Following beat groups on stage with just acoustic guitars we found we were dying a death', they say. 'So we just had to become amplified. It has helped us enormously and widened our appeal without us forsaking folk music. On records, too, we have to compromise. Authentic folk is just not commercial.'

Their latest folk-flavoured disc is *When did you leave heaven* (Columbia).

FAMOUS SHIP MODELS FROM AIRFIX



The 'Mauretania'

NEW constant scale construction kits by Airfix, are the warship H.M.S. 'Suffolk', the famous Cunarder 'Mauretania', and two locomotives—the first and last in the age of steam — Stephenson's 'Rocket' and 'Evening Star' the last steam locomotive to be built in Britain.

Specialist in warships will welcome the 'Suffolk' kit which assembles into a model a foot long. There are 128 pieces in the 1:600 scale ship. The price is 4s. 6d. and other naval vessels in this series are H.M.S. 'Devonshire' and H.M.S. 'Tiger'.

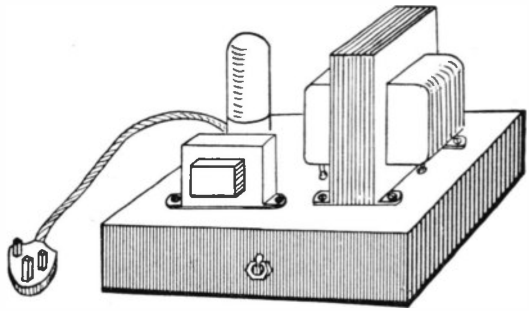
The world famous four-funnelled Cunarder 'Mauretania' which won the Blue Riband of the Atlantic in 1907, joins the S.S. 'France', R.M.S. 'Queen Elizabeth' and S.S. 'Canberra'. The Airfix 'Mauretania', in 1:600 scale, contains 139 grey polystyrene pieces including cranes and life rafts and costs 6s. 0d.

Stephenson's 'Rocket' and the 'Evening Star' are modelled to 00 scale. The 'Rocket' kit of 47 pieces includes a crew of two dressed in the style of the 1830's, and the engine may be assembled with fully-operating valve gear. The kit costs 2s. 0d.

'Evening Star' is a superb model of the 1960-built freight engine which is still in service at Cardiff. Selling for only 6s. 0d., the 11 in. long model includes intricate, fully-operating valve gear. Six of the ten driving wheels are unflanged to enable the loco to negotiate tight radius curves.

RADIO FOR BEGINNERS BY 'RADIO MECH'

5 — MAKING A POWER PACK



THE circuit of a power pack to work from AC mains was shown in Fig. 15. This power supply will be suitable for amplifiers, radio tuners, and other equipment. It will deliver 6·3V for the valve heaters, and 250 V high tension up to 60 milliamperes. This will be sufficient for most mains equipment of average size.

A power pack of this type can be constructed on a metal or wooden chassis. It can be made up as a separate unit, and other equipment (such as an amplifier) can be connected to it. Or it can be assembled at one end of a larger chassis, so that an amplifier or receiver can be constructed in the extra space available.

Power supply chassis

The actual size is not important, provided the components can be fitted. A suitable layout is shown in Fig. 16, and a chassis about 7 in. by 5 in. will easily be large enough.

A wooden chassis can be made by cutting two pieces of $\frac{1}{4}$ in. thick wood 2 in. wide and $4\frac{5}{8}$ in. long. Two pieces of 3-ply $\frac{3}{16}$ in. thick and 2 in. wide by 7 in. long are required for front and back, and a piece of hardboard or 3-ply 5 in. by 7 in. for the top. The pieces can be glued and held with panel pins.

A metal chassis of any required size can be purchased. These are aluminium or similar quite soft metal, which is easily drilled and cut.

The valve holder requires a large hole, which can be made with a fretsaw. Use a metal cutting fretsaw for metal. With a metal chassis, components are usually fixed with 6BA or 4BA bolts and nuts. If a wooden chassis is used, parts may be secured with nuts and bolts, or wood screws.

Place the valveholder so that its key-way is as shown in Fig. 17, so that connections will be correct.

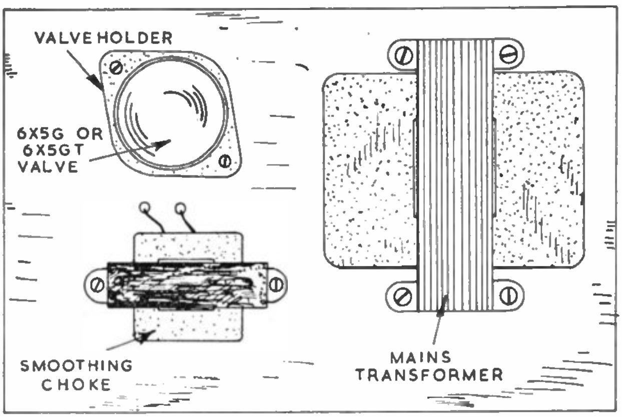


Fig. 16—Mains power pack

Mains transformer

The transformer has a primary for 200/250 V AC mains. The high tension secondary is 250/0/250V 60mA. This means that it has a centre tap, and delivers 250V each side of this, at up to 60 milliamperes. A further secondary, for valve heaters, delivers 3 amperes at 6·3V. Transformers of this rating are very easy to obtain.

The way in which the transformer is constructed depends to some extent on its price. Many inexpensive transformers have colour coded leads, which can pass down through two or three large holes in the chassis. Some transformers have tags. Others are made so that they can be bolted over a large square aperture, with the tags below the chassis.

Smoothing choke

This is a small, inexpensive component, of 60mA current rating. Many chokes have two leads, which can go through holes in the chassis. If the choke has tags, leads are soldered to them. The choke is screwed or bolted in the position in Fig. 16.

Under chassis

Fig. 17 shows all the connections. The flexible mains leads pass through a hole in the rear runner of the chassis. If the chassis is metal, a rubber grommet should be placed in the hole, to avoid cutting the insulation of the flex.

A small twin tag strip T, which has two insulated tags and one fixing bracket, is used as an anchorage for the ends of the mains leads. The two leads P go through the chassis, to the Primary of the transformer.

The transformer primary usually has several tags, for 200/250V mains. In most areas, the supply is 240V. If the supply is different, such as 230V or 250V, etc, the appropriate connection is made to the transformer.

There are three leads from the transformer high tension secondary. Lead A is from a 250V tag, and goes to tag 5 of the valveholder. B is from the second 250V point, and goes to tag 3. The third lead C is the centre-tap, and goes to HT negative.

The two leads D go to the 6·3V winding of the transformer. This winding supplies the 6X5G rectifier valve, and also other valves when required.

Smoothing capacitors

These are C1 and C2. Their positive leads are taken to the second tag strip T, while their negative leads are held by a bolt or screw. This is to keep the capacitors in position. Either capacitor can be 8μF or 16μF, and they should have a voltage rating of 450V. Leads from the tags also go through the chassis to the smoothing choke.

Capacitors can be obtained which screw on top of the chassis, with tags projecting below. Smoothing capacitors are also made with two sections in a common can or casing. These are equally satisfactory.

Wiring

For most purposes, some 22 S.W.G. tinned copper wire with a few yards of insulated sleeving, will be handy for connections inside an amplifier, power pack, or receiver. This kind of wire is very easily soldered. Use radio grade cored solder, and see that tags, etc, are clean and bright.

Cored solder must be melted on to the joint with the soldering iron, so that the flux core can take effect. It may be quite impossible to make a good soldered connection if the solder is melted on to the iron, then carried to the joint by the iron.

There is no reason why a power pack such as this should not be wired with ordinary flex. But for receivers and amplifiers, solid wire is best.

Output connections

In Fig. 17, an insulated socket is used for High Tension positive only, and this avoids any error in connecting up other equipment. Two terminals, or bolts with extra nuts, can be used for the 6·3V and High Tension negative connections. The 6·3V supply for heaters is obtained from the 6·3V terminal to HT negative. So HT negative is a common return for both HT circuit, and heaters. This is usually convenient.

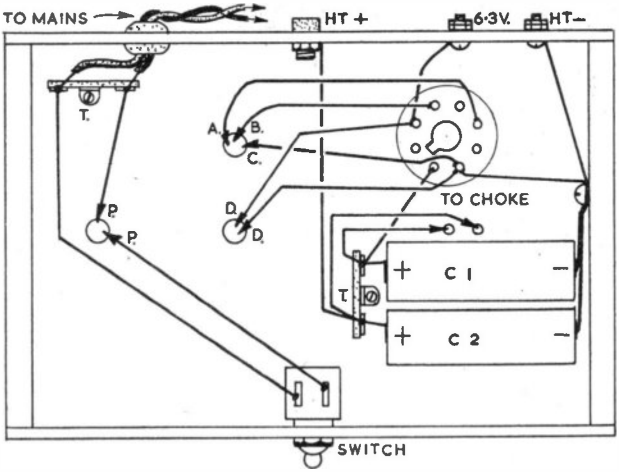


Fig. 17—Wiring underneath

Valve

The 6X5G and 6X5GT are the same electrically, though the 6X5GT has a smaller tubular glass bulb. Either EZ35 or U70 valves may be fitted instead, as these are also the same.

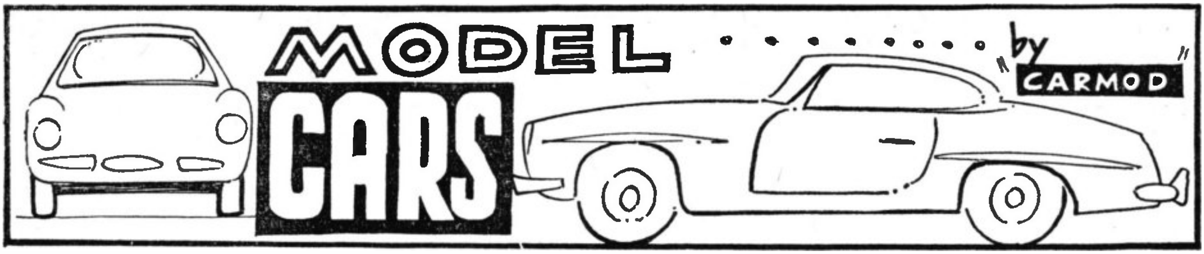
Mains connections

Current is drawn from a proper mains plug, to suit the outlet available. The mains lead should be good quality twin flex, or flexible cord.

When possible, it is a good plan to draw current from a 3-pin plug, and to use a 3-core flexible cord. This cord will have red, black, and green leads. Connect red to L on the plug, or to the fuse, with a 13A type plug (a 3 amp fuse can be inserted). Take black to the N pin, and green to the large Earth pin. At the power pack, take red to switch, black to transformer primary, and green to the High Tension negative line.

The next article will describe a single valve amplifier which can be run from this power supply. By using a high amplification valve, enough loudspeaker volume is obtained for record playing.

Next: A gram amplifier.



1964 FORD G.T. LE MANS

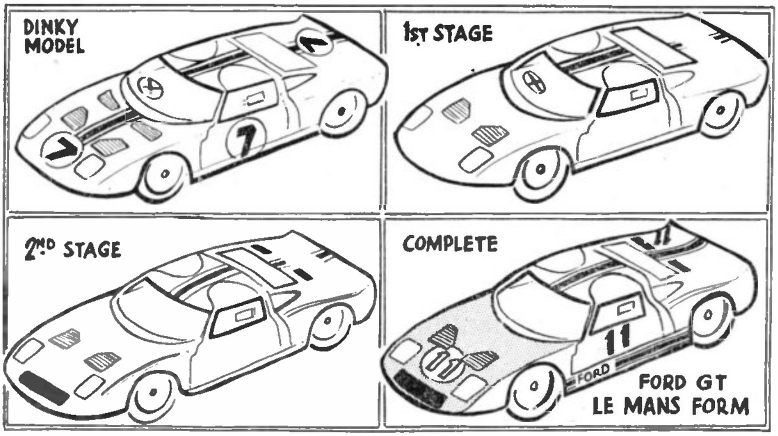
ALTHOUGH carrying the American racing colours of white and blue, the Ford G.T. was, in fact, built at Slough, Buckinghamshire by Ford's Special Projects establishment.

Visitors to the 1963 London Racing Car Show will remember the first appearance of a car called the Lola G.T. when it arrived on the second day of the Show after being hurriedly put together by designer Eric Broadley and his team in several weeks of round-the-clock effort. Great things were expected of the Lola and when two were entered for the 1963 Le Mans 24-hour race, it was thought that here was a trendsetter to threaten the might of Ferrari.

But Broadley had some real bad luck with his cars: one was seriously damaged in a road crash on its way to Le Mans and the other had a similar fate in the race itself. I remember the sad sight of these bent vehicles outside the Lola works at Bromley. However, they were rebuilt and in the winter of 1963–64 they had a number of race outings in the U.S.A. and at the Nassau Week.

For some time the eyes of the giant Ford concern had been on the Lola project and, with their own plans for a G.T. racing car in mind, approaches were made to Eric Broadley, offering him the control of the design team. A short-term contract was signed and Broadley centred himself on Slough. He has now left the project to continue his work on Lola single-seat and sports-racing cars but has left behind him a good foundation for Ford racing cars.

The Dinky model of the 1964 Ford G.T. released in January is a reasonable replica of the version of the car which raced at Sebring early in 1964, but is not in the form of the two cars at Le Mans in 1964. The general shape is right but wrong in detail.



This conversion does not involve any stripping down of the model and takes only an hour or so to complete. Before starting on the external modifications it is necessary to put in a cardboard 'lid' to the engine under the rear window. In this lid a rectangle should be cut to allow the eight carburettor mouths to project. This lid can be cemented in place on top of the rear suspension springs and on the fire-wall bulkhead behind the seats.

1st Stage. Soak the front end of the car in water until it is possible to peel off, without tearing, the triple blue stripes and front number discs. Set the stripes to one side on a piece of blotting paper to be used later. Next, scrape off the remaining number discs on the doors and at the rear of the car. With a file, remove the locating ridges on the bonnet between which the triple blue stripes have been placed. The circular ridge locations on the doors and at the rear should be filed smooth.

Smear with adhesive the ventilation slots immediately in front of the windscreen. Fill in with Plastone and smooth off. Touch in all the bare metal with matching white paint, and paint in the same colour the pillars enclosing the windscreen. Be careful not to use cellulose as I have found this creeps under the stoving enamel used by Dinky in this production and is inclined to make a

SOLDERING SMALL PARTS

I do not often suggest soldering parts in these model car articles mainly because of the variety of materials which have to be used in chopping miniatures. However, there are times when a soldered joint is important, particularly as, in future, I want to describe some larger scale 'one-off' projects.

Trying to solder small parts often results in frustration and failure due to a variety of causes, not all of which are the operator's fault. Often, if clamped in a metal vice, the cold metal carries away the heat before the joint can get warm enough for the solder to flow, or, the means of clamping these parts are in equipment that is stationary and at the critical moment one runs out of working space or is unable to get properly positioned.

One solution can be found in Plasticine which can be moulded to hold various parts to be soldered. Wooden spring-type clothes pegs can be carved and re-shaped to do special clamping jobs of a repetitive nature. The peg can then be set in the Plasticine at any desired angle.

mess of the surrounding paintwork.

2nd Stage. With a sharp pointed scribe mark in, as deeply as possible, the cooling slots in the nose and immediately behind the rear window. The locations of these slots will be seen in the illustration. It is, of course, a good thing if these slots can be made to go through the metal but I assure enthusiastic modellers that they are taking on a tedious task in attempting this 'mining' operation. Paint the exhaust pipe stubs and cooling grilles at the rear of the car with black enamel.

3rd and Final Stage. Going back to the triple stripe which had earlier been removed from the bonnet, snip off a short length and apply to the part of the hood above the rear window which had been left naked by the makers, and with the remainder fill in the gap caused by the removal of the rear racing number. The actual car had a similar triple stripe along the body under the doors, and these can be simulated by using strips cut from the transfer sheets made by Yeoman which are available in plain colours. The word 'Ford' in blue should also appear, in a gap in the stripes as shown in the illustration. This can be done by writing in with a mapping pen after scraping away a sufficient portion of the transfer (make sure this is dry before attempting scrape).

The whole of the upper surface of the bonnet should be painted in the same shade of blue as the stripes. A white disc (a Marc Europa transfer is suitable) should be applied to fit between the three cooling slots. This disc will overlap the cooling slots and the waste parts must be excised.

Racing numbers 11 or 12 are appropriate for the Le Mans version of the Ford — they should be blue, and there are such characters available in sheets made by Yeoman for model aircraft.

Amazing Electric Nose

DRESSED as a clown—or merely as yourself—you can make a brilliant appearance at a party, wearing a false nose that lights up. The 'nose' is a ping pong ball in which you have cut a 1 in. diameter hole. Draw a 1 in. diameter circle on the ball, using pencil and compasses, then cut out the round hole with a little pair of sharp scissors.

On each 'side' of the ball, about ¼ in. from the opening, bore a small hole through which a rubber band can be inserted. You can easily bore the holes using a red-hot nail (held with pliers). Fix a band to each side of the ball by looping it through a hole. passing one end through the other and then pulling outwards.

If you now put the ball over your nose and catch the loops of the bands over your ears, you will possess a grotesque false nose, like a clown's. Paint it thinly in red paint for a more startling effect.

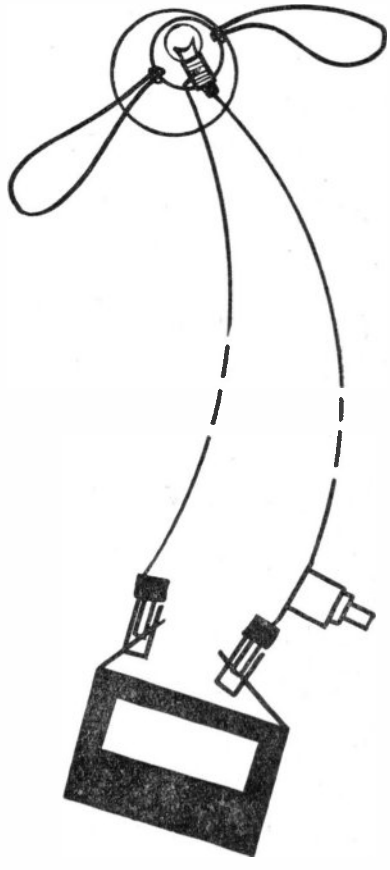
To illuminate your nose-piece you will need a 3½ volt torch bulb and a 4½ volt flat battery, together with two one yard lengths of thin insulated copper wire. Wire from an old bell or transformer will do nicely.

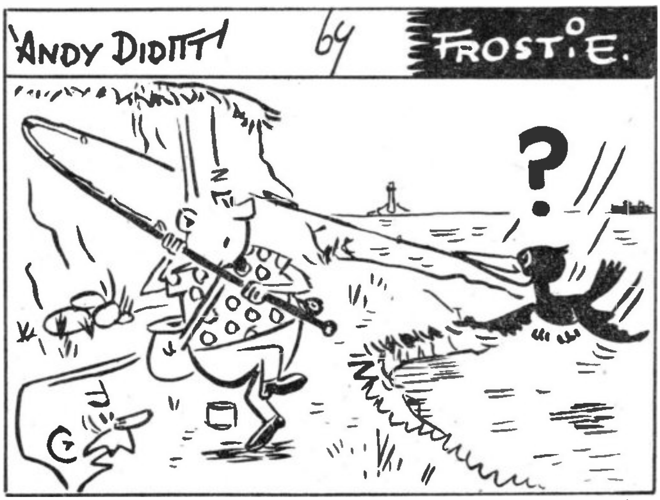
Bare the ends of the wires by scraping away some of the insulation. Join one end of each wire to a paper clip and secure the connections with Sellotape.

Then Sellotape the free end of one wire to the side of the torch bulb and employ the same method to fix the free end of the other wire to the contact point at the bulb's base. Secure these connections by binding more Sellotape around the bulb and wires.

Put on your false nose, as described, then tuck the wired bulb inside it. Take the lead wires down under your outer clothes towards a convenient pocket. Join one paper clip to a terminal of the battery and hide the battery in your pocket. Take the other paper clip in your hand and hold it inside your pocket against the other battery terminal. An electric circuit will be completed and your 'nose' will be strangely illuminated by the bulb inside it.

Alternatively you can make the battery connections permanent with Sellotape and then incorporate a cheap press switch in the circuit which you can operate from your pocket. (A.E.W.)



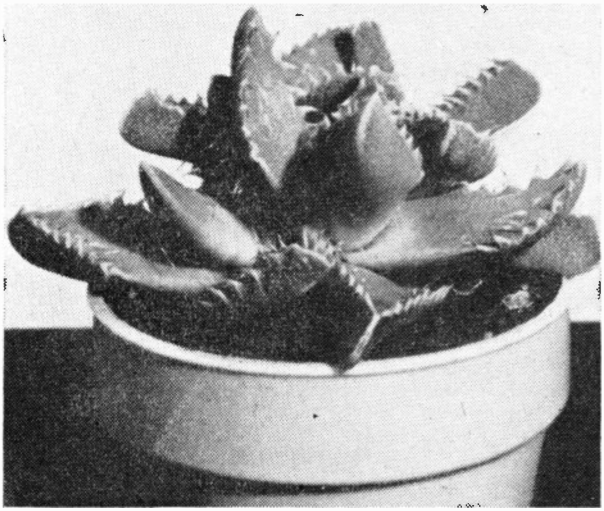


"TRY CASTING A LITTLE LOWER ANDY!"

EASY-TO-GROW CACTI

THERE is nothing quite like a small collection of cacti to give a really interesting touch to indoor gardening. Provided that suitable plants are chosen, there should be no difficulty in cultivating them successfully with the minimum amount of trouble. The cost, too, is very low, for local nurseries, seedsmen and some chainstores can supply all you need for a very small outlay.

While seed is available in packets of mixed varieties, and in some cases in individual kinds, the beginner would do better to start with plants already well-established in pots. Growing from seed demands specialized conditions which are not always obtainable, and could result in the loss of many seedlings.



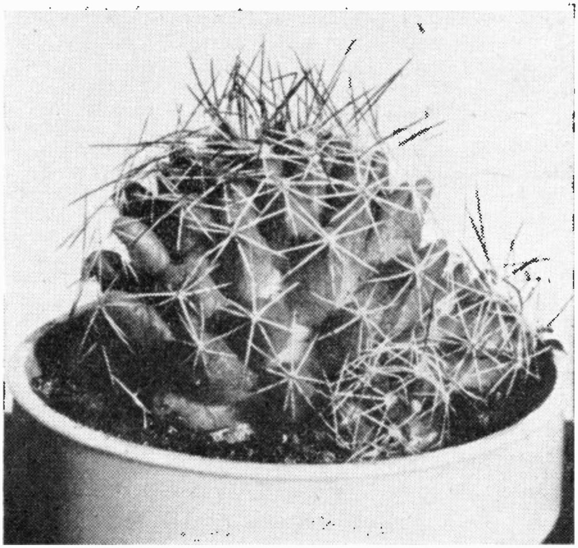
Tiger's jaw (Faucaria tigrina)

Choose your cacti carefully, avoiding any which show signs of damage. Scars, broken pads, scabs or wrinkling or discoloration indicate bad growing and handling conditions, and these plants are unlikely to recover fully. You may be able to obtain them a few pence cheaper than the perfect specimens, but they are not really worth having. Good, healthy specimens are easily recognized and can be obtained at prices varying from one to four shillings each depending upon the size and variety.

Start off with representatives of widely different kinds. Then, having obtained a basic collection which is, in itself, of considerable interest, add further varieties of the same groups until your collection becomes more extensive. Once you have started to delve into this fascinating hobby, you will be surprised at the almost limitless range of completely different plants which is to be had.

A very novel succulent is the **'Tiger's jaw'.** This is, in fact, related to the ordinary garden Mesembryanthemum and is a member of a group comprising some 2,500 species. Under the right conditions this cactus bears large yellow flowers and, in common with many other varieties, it prefers a porous soil and has an intense dislike of over-watering.

A fine variety for the beginner is **Mammillaria,** since it is relatively tolerant of variations in light, temperature and moisture. The 200 odd species available are free flowering and offer a wide choice. Mammillaria, which is a native plant of the southern U.S.A., often carries a number of small blooms at the same time and, when pollinated, fruits will form. Once again, a porous soil is advisable, and the plants should be put in a light and sunny position during the growing period.



Mammillaria deceptens with two offsets

The propagation of Mammillaria is by offsets as well as from seed, and the plant is quite prolific in bearing several offsets during a single season. Make quite sure that these offsets are well-established before attempting to separate them from the parent plant and pot them separately.

Rebutia is another flowering cactus which is common enough to be easily obtained, but sufficiently impressive to be worthy of a place in the collection. It grows wild in Bolivia and Argentina, but has been under domestic cultivation for many years although previously known as **Echinocactus**. Re-classification is something the cactus grower must become used to, as it occurs from time to time when further study reveals likenesses or differences between various species and necessitates a re-arrangement.

Rebutias seldom grow very large, and the size of the flower is often greater than that of the plant. **Rebutia miniscula** is only as large as a golf ball when fully grown, but may be almost totally hidden by flowers which occur

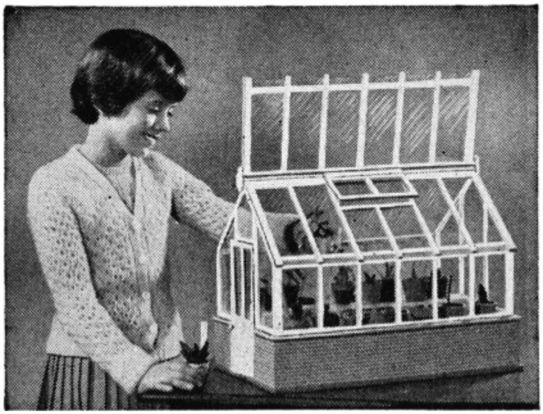
for more than a month. The colours vary from scarlet through crimson to yellow and are produced around the sides of the plant during the spring and summer.

Cereus are among the largest of the cacti, some of them growing to immense proportions over many years. One, called the **Arizona tree cactus,** has been known to reach a height of more than sixty feet and to have a cylindrical base two or more feet across. One of the best known species for the beginner is **Cereus peruvianus,** which has a distinctive, fluted profile with fine hair-like covering to the ribs. This variety is often used as a grafting stock for other kinds of cylindrical cacti, but this information is given out of interest only. It is not suggested that the beginner should attempt grafting, as the results are somewhat unpredictable.

Although the **Opuntia** family has been left until last in this article, it merits a place in any collection. It comes in many different forms, the best-known of which are the oval, flat-pad varieties — which are the popular impression of what a cactus should look like — and many cylindrical types. Most Opuntias have sharp spines and thus need handling with care. They do not flower freely under cultivation, although some plants will occasionally throw a bloom, but their impressive appearance makes up for any deficiency in that direction.

Cacti will suffer more from excessive watering than from dryness and in winter they need practically no moisture. Give light watering, with an occasional feed of a proprietary fertilizer, from April until September, but only when the soil is dry. Taper off the watering between autumn and winter.

Every two or three years the roots will require more space and the plants should be repotted in a larger size, using the special compost available and taking care not to damage any spines as the transfer is made. Cactus compost contains a certain amount of hard filling material which keeps the soil open and adds to its porosity. Never put a cactus in an over-large pot, as most like a rather confined space.



Hobbies Miniature Greenhouse is a very popular setting for an indoor collection of cacti. Measuring 18 in. by 12 in., it is designed on the real thing, with staging, door, roof lights, and cellulose acetate 'glazing'.

For those who live in flats or otherwise have no garden and for those who cannot undertake the strain of outside gardening yet love to see things grow, this is an ideal substitute which can be easily moved from room to room if required.

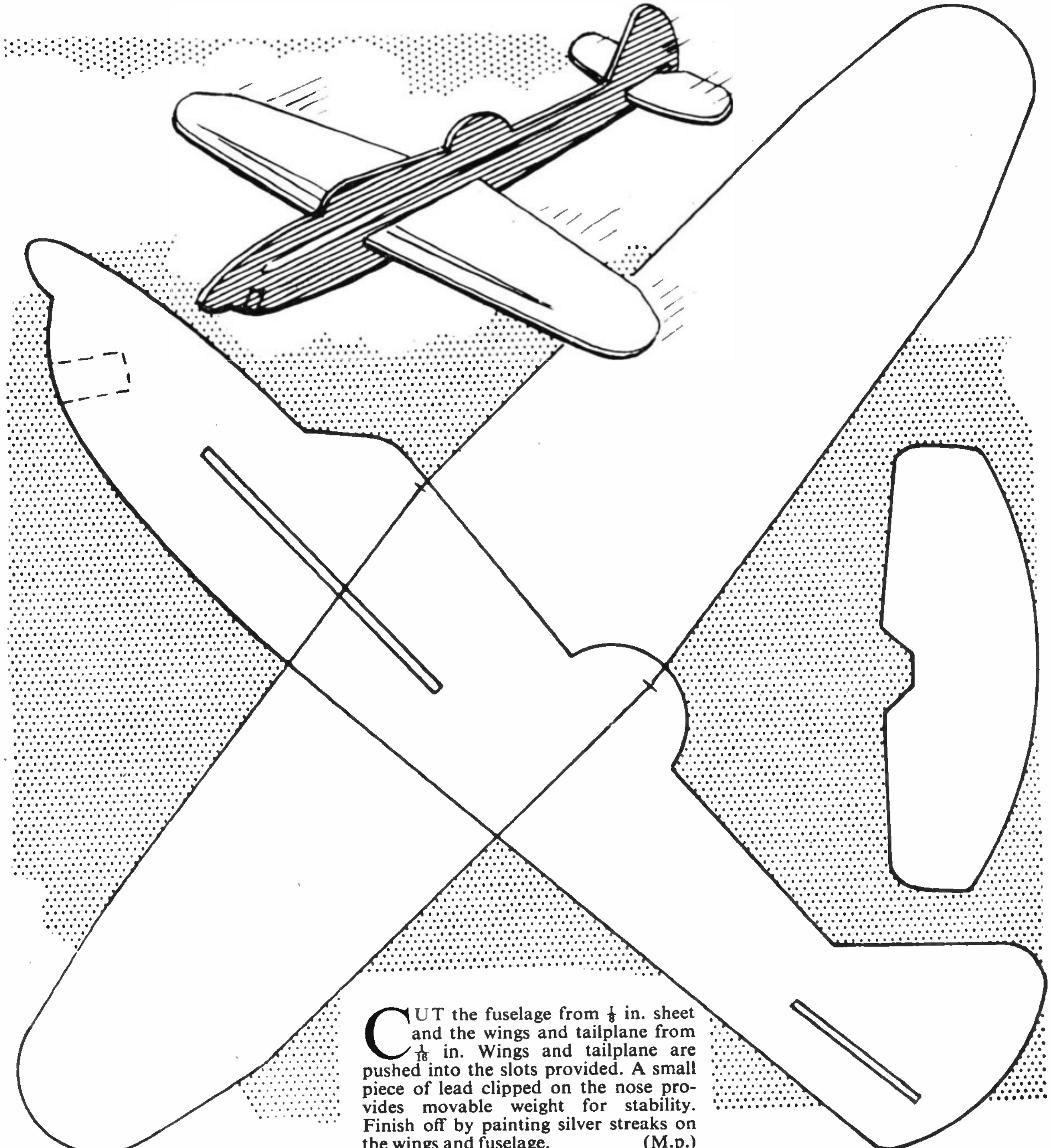
For making the greenhouse Hobbies Kit No. 3300 contains all the necessary materials plus a set of 12 pots with saucers. Price 41s. 0d. (postage 4s. extra) or from any branch or stockist.

It has been possible to mention only a few of the huge range of varieties which will be seen on sale. These are the easiest to grow, but this does not mean that other varieties cannot be cultivated quite successfully. Because cacti are relatively slow growing, some patience is needed but, as can be seen from the foregoing, they will survive quite happily with the absolute minimum of attention. (A.E.B.)

Miscellaneous Advertisements

Full size patterns

Balsa Glider 'Silver Streak'



CUT the fuselage from $\frac{1}{8}$ in. sheet and the wings and tailplane from $\frac{1}{16}$ in. Wings and tailplane are pushed into the slots provided. A small piece of lead clipped on the nose provides movable weight for stability. Finish off by painting silver streaks on the wings and fuselage. (M.p.)

Printed by BALDING + MANSELL, LTD., London and Wisbech, and Published for the Proprietors, HOBBIES LTD., by HORACE MARSHALL & SON, LTD., Distribution Centre, 8-11 St. John's Lane, Clerkenwell, E.C.1. Sole Agents for Australia and New Zealand: Gordon & Gotch (A'sia.) Ltd. For South Africa: Central News Agency Ltd. Registered for transmission by Canadian Magazine Post.

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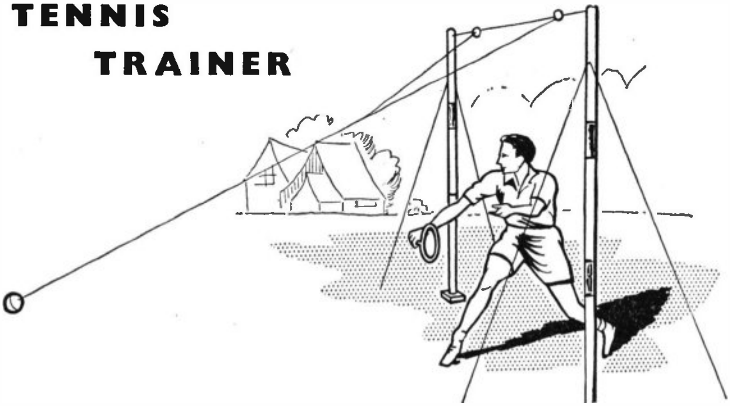

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