Holiday Hobbies—Special supplement

meccano magazine

July

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the practical boy's hobbies magazine

1964

IN THIS ISSUE

- Make a start with model boats
- Sixteen—and runs his own radio station

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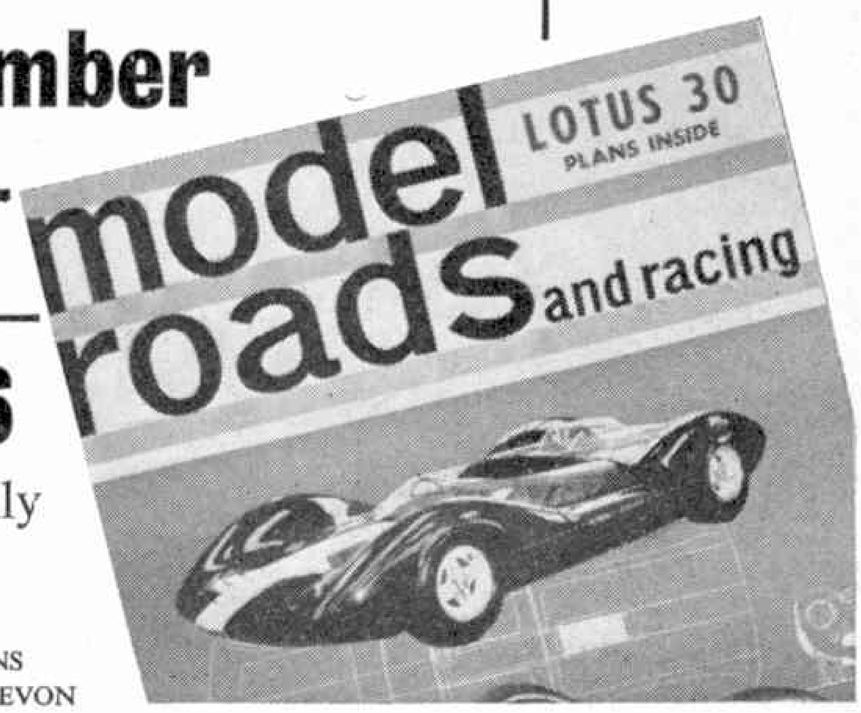

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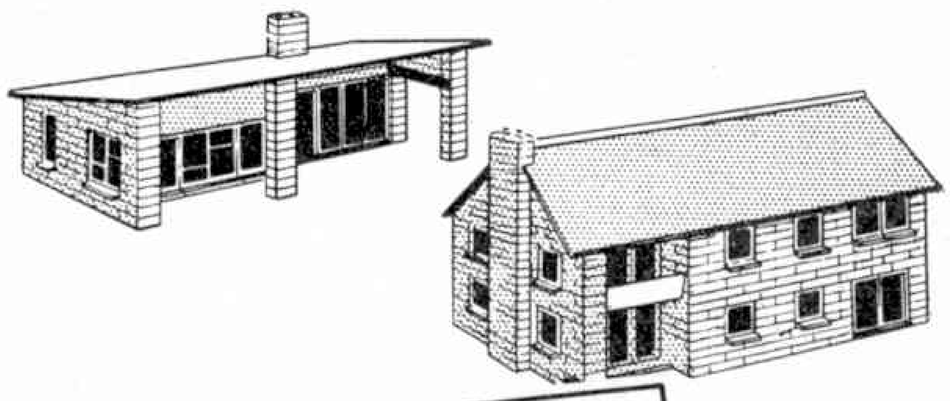

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Registered at the GPO London for transmission by Canadian National Post
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meccano magazine

July 1964 Vol. 49 No. 5 Published monthly

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NEXT MONTH

Great Summer Photo Competition
Make yourself an Episcope

Ordering the Meccano Magazine overseas

Readers overseas can order the *Meccano Magazine* from Meccano dealers or direct from the publishers. The subscription rate for 12 months is the equivalent of 20/- sterling at the current rate of exchange.

Holiday hobbies

A special *Holiday Hobbies* supplement is included in this month's Meccano Magazine. Rain or shine, rust or sun-tan—whatever your holiday weather you will find lots to do in this 8-page supplement. Archery, brewing ginger beer, making a pair of stilts—these and many other interesting ideas are packed into this exciting 'extra'. *Holiday Hobbies* is separately stapled so that you can easily take it out if you wish.

Besides John Atkinson's great aero-modelling article, and the photography feature (page 16) which is all about how to develop your own films, this issue has the usual exciting features about cars and aircraft by Jerry Ames and John W. R. Taylor.

On page 24 there is the first of a grand new series on building model boats that has been written for us by Eric Paterson. And another article which we think is particularly interesting is the one on running your own radio station by Christopher Ashton-Jones, who is himself only 16.

Next month will contain the entry form and all the details of our summer holiday photo competition. This will be a competition specially designed for young photographers. There will be lots of prizes and the best pictures will be published.

We have great plans for your summer and autumn reading and activities, so make sure you don't miss one issue. The best way of making sure that you always get your Meccano Magazine is by placing a regular order with your newsagent now.

Where was the photograph on the front cover of this month's Meccano Magazine taken? We shall send a £1 note to the senders of the first five correct answers pulled out of the mail-bag on July 1st. Send only a postcard with your answer to the Competitions Dept., Meccano Magazine, Thomas Skinner & Co. (Publishers) Ltd., St. Alphage House, Fore St., London, E.C.2. Don't forget to give your name, address, and age.

Inside the Landore Diesel Depot. The inspection pits for the locomotives can be clearly seen with modern lighting installed.

In the second of his articles on British Railways modernisation, Michael Rickett writes about the vast task of maintenance of the new diesels, and about how valuable minutes are being clipped off express schedules.

Keeping them rolling

SINCE THE passing of the steam locomotive on British Railways, and the consequent introduction of more powerful diesel locomotives, the need for new locomotive depots to house the increasing fleet of diesels—now the largest outside the United States—has become increasingly more apparent. A re-building programme has therefore been put into operation by British Railways on a number of depots, some of which are now in use in their new guise.

One such depot was built at Landore, Swansea, and opened on May 3 last year. This marked an important step forward in the Western Region's plan to change over completely from steam to diesel power. Occupying the site of a former steam locomotive shed, the new depot is laid out and equipped to cater for nearly 200 diesel locomotives, from the impressive 2,759 hp 'Giants' to the small diesel shunters, all of which form part of the rapidly growing fleet now operating in the area.

The chief feature of the new depot is the 210 ft long reinforced concrete maintenance building, containing four tracks, and capable of holding eight large diesel locomotives at one time. Each track is built over a 150 ft long inspection pit, 4 ft deep, with permanent platforms mounted on sunken floors to allow easy access to the locomotives. An overhead crane, with a lifting capacity of three tons, spans two tracks and there is a cleaning pit where underframes are scoured by hot water jets before the locomotives enter the shed.

The locomotive washing machine in the depot is unusual in its method of operation. By passing a photo-electric cell, the locomotive sets in motion a pair of vertically revolving brushes charged with detergent. It moves on to a second set of brushes, which completes the cleaning by the application of clean water. A second 'magic eye' switches off the mechanism as the clean locomotive emerges from the plant.

Holbeck is another area that has a modernised motive power depot, and is now one of the North Eastern Region's major depots, being sited west of Leeds (City) Station. As a result of modernisation, the depot now has facilities for repairing, maintaining, servicing and fuelling diesel locomotives, and it is expected that the depot will eventually look after a fleet of between 100 and 120 diesel locomotives. Machines in the shops have been re-sited so that three 200 ft long tracks have been laid on steel supports 2 ft 6 in above the floor level.

For the servicing, maintenance and repair work, centre pits below each track give access to the undersides of the locomotives, and elevated concrete platforms on both sides of the tracks enable staff to service motive units and other equipment at footplate level. The new diesel shop is of the dead-end type, and is entered from the south end of the station, over newly-constructed approach lines. Fuel oil for the locomotives is conveyed in rail tankers to the depot, where it is transferred by a 4,000-gallon-an-hour pump into three 25,000 gallon capacity storage tanks. It is then passed through pipelines to dispensers at a specially concreted and drained locomotive fuelling gallery which has a canopy type roof. Not all the new depots being built are intended for diesel locomotives. At Allerton, Liverpool, a new depot was recently built to cover the routine inspection of 27 electric locomotives, eight multiple unit electric trains, 34 two-car, and six four-car, diesel lightweight multiple unit trains, to be used on the Liverpool-Nuneaton main line electrification programme.

The new depot at Allerton, developed at a cost of £53,000, has a main shed 300 ft long and 187 ft wide, and has five roads under cover. All of these are wired to allow 25 kV electric locomotives and stock to move, unrestricted, inside them. The five shed roads have pits 270 ft in length. A feature of these is that the rails are laid on vertical concrete pillars, which enables fitters to get to all moving parts of locomotives and trains without difficulty. Each pit has lights at frequent intervals and also plug points. The depot has a carriage washing plant, and diesel fuelling facilities, while alongside the shed are five carriage cleaning platforms capable of holding from 15 to 22 coaches each. Hot and cold water is laid on, together with vacuum cleaning and battery charging

A view of the Landore Diesel Depot. Standing outside the shed can be seen three diesel locomotives—type 3 English Electric Co-Co, Western Enterprise class diesel 'Western Viscount', and type 3 Beyer Peacock (Hymek) B-B diesel locomotive.

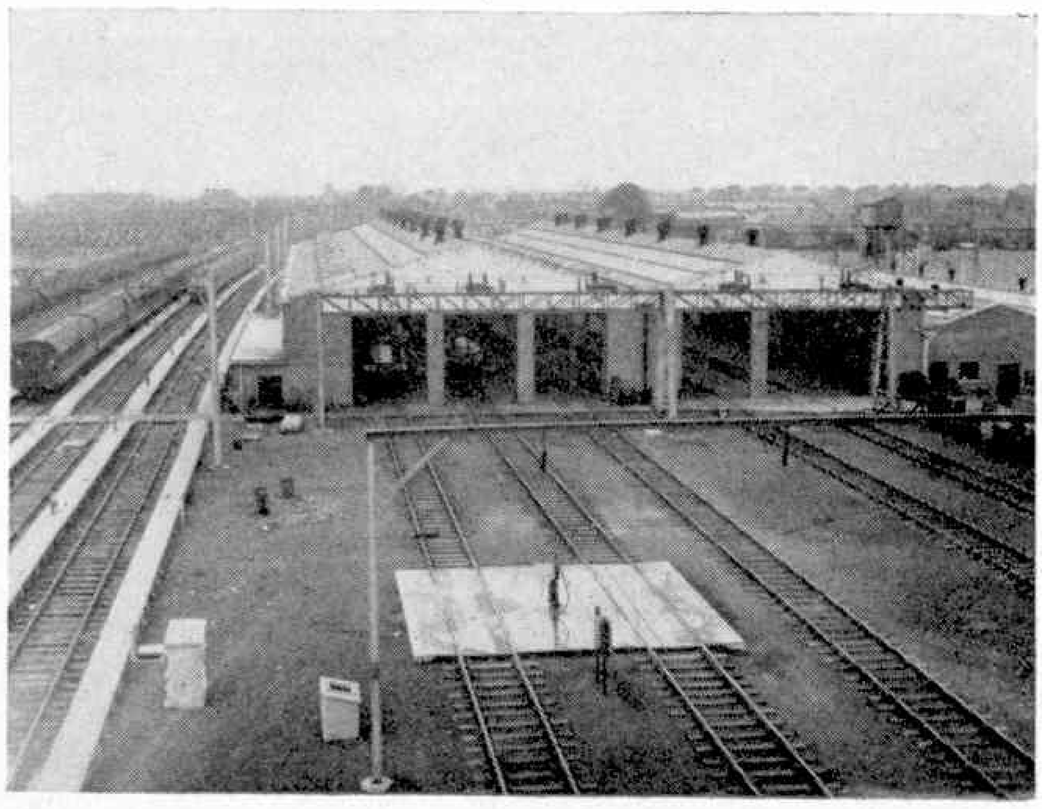
... and speeding them up

points. Lighting for the whole area outside the main shed is provided by two steel floodlighting towers. Allerton is the centre for the maintenance of 214 single track miles of overhead line equipment on the new electric line between Liverpool and Nuneaton.

Latest news concerning British Railways is the big speed-up of Western Region main line passenger services which began in June, when the region introduced the first-ever annual timetable published by British Railways. The publicised edition of the new timetable appeared in an entirely new easy-to-read format, to replace the present separate summer and winter issues.

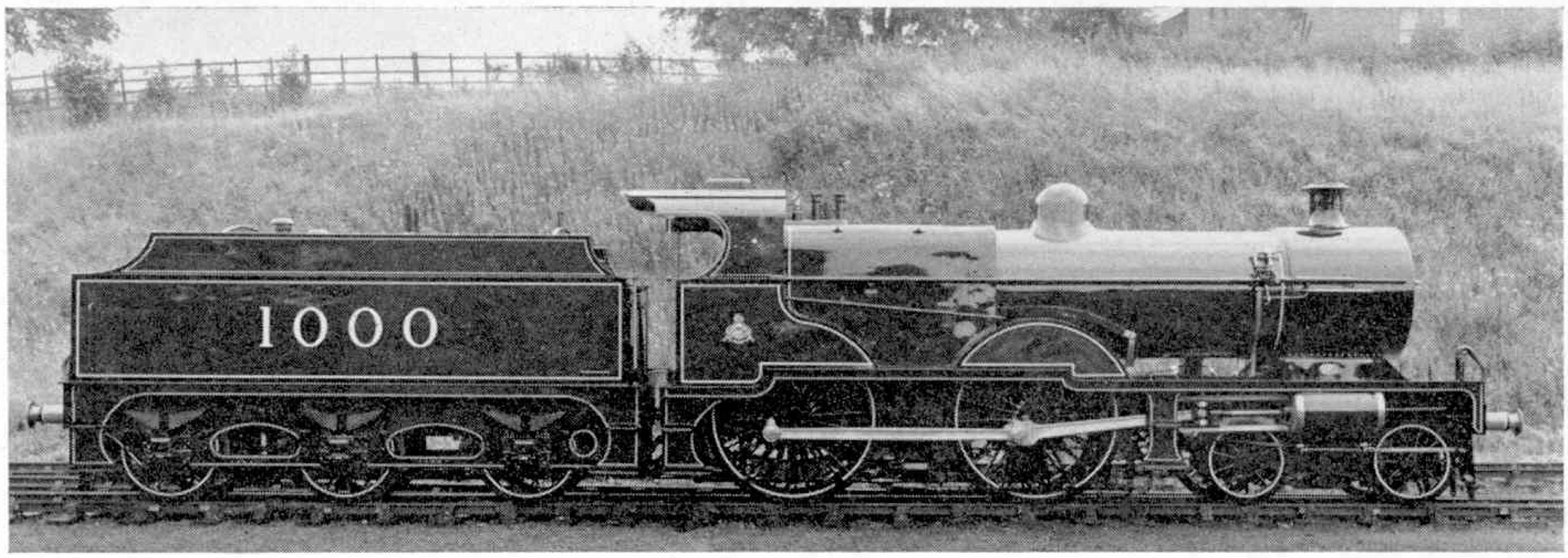
The new services started on June 15, and include the fastest ever London-Plymouth service which covers the 226-mile journey in less than four hours. The 'crack' new express for businessmen is named the 'Golden Hind'. Twelve other expresses linking London with the West Country have been speeded up by between ten and 55 minutes. In the new timetable no fewer than 30 expresses are scheduled to cover long distances at speeds averaging 65 mph. Top speed will be achieved by the train leaving Weston-super-Mare for Paddington at 16.30 hours, which will race the 41 miles from Swindon to Reading at the high average speed of 75.1 mph, necessitating a speed of 90 mph in places. This must surely be one of the fastest diesel runs on British Railways. Faster trains will also run between the West Country and the North, and from South Wales to Manchester. Like the new 'Golden Hind' service these trains have been timed especially to give there-and-back-in-a-day services for businessmen, with plenty of time at destinations for commercial dealings.

A panoramic view of Allerton Diesel-Electric Shed, Liverpool, showing, on the left, the carriage maintenance platforms, raised to a suitable height on either side of the railway lines. This depot serves the locomotives and trains that operate on the new electrified line between Liverpool and Nuneaton.



Well over half a million miles a week will be covered by passenger-carrying trains and 90 per cent of the journeys will be made by diesel-hauled trains. This high percentage indicates the progress achieved by the Western Region in modernising its motive power fleet, which now includes well over 400 main line diesel locomotives, as well as diesel shunters and diesel-powered multiple unit trains. The Western Region plans to replace steam completely by diesel traction by the end of next year. The new fastest-ever London-West Country express, the 'Golden Hind', will leave Plymouth at 07.05 hrs on Mondays and Fridays, and will arrive at Paddington at 10.55 hrs. This will allow the traveller 6½ hours in London before leaving on the return journey at 17.20. The train is booked to arrive at Plymouth at 21.15 hours. This exceptionally fast schedule includes stops at Newton Abbot, Exeter and Taunton. A standing high average speed of 67.4 mph is maintained over the 142 miles between Taunton and Paddington. The famous Blue Pullman express will in future serve the resort of Weston-super-Mare. This luxury train is to be retimed to leave Paddington at 11.45 hours, which is an hour earlier than that scheduled at the time of writing. The train is booked to arrive at Weston-super-Mare at 14.10 hours. The re-timed Pullman cuts the journey time of the existing 11.45 train from Paddington by 27 minutes on the run to Bristol, and by 39 minutes to Weston-super-Mare.

British Railways will be introducing many other speeded-up services, and they hope to improve journeys between many northern stations and the south.



The Midland Compound's 1000 now displayed in the main hall of the British Transport Museum, at Clapham.

Transport preserved

by **C. B. Martineau**

At Clapham, London, is the largest collection of rail and road relics ever assembled under one roof—an exhibition to stir the imagination of every boy.

MAGNIFICENT, AND brooding at the main entrance of the British Transport Museum at Clapham is the pride of the LNER, the fastest steam locomotive in the world, the blue-liveried Mallard. This exhibit alone is enough for any boy to travel miles to see. But Clapham has much more to offer. There are locomotives from the very earliest days of railways, and there are the ornate royal suites of Queen Adelaide, Queen Victoria, King Edward VII and Queen Alexandra.

If you are more interested in buses, you can see horse-drawn and motor buses, trams and trolleybuses.

The Museum's exhibits are displayed in six galleries. The entrance hall contains items describing the work of the Department of the Curator of Historical Relics to the British Railways Board. This was the department which, in 1958, took over the redundant bus depot in Clapham and made it into a museum.

Through the turnstiles—and by the way no one can complain of the admission rates, 2s 6d for adults and 1s 6d for children—there is the Mallard; there, too, are the royal suites, the historic locomotives including Coppernob from the Furness, the Cornwall from the old London and North-Western, with those huge 8 ft 6 in driving wheels, and there is the Midland Compound's 1000, a locomotive of as much grace as power.

The gallery leading to the first floor contains rare objects from old royal railway vehicles. In particular there is the exquisite English glass provided by the railway companies for the exclusive use of Queen Victoria. In the main gallery are paintings, oils and water-colours, the history of the railway ticket—any boy with an eye for typography will find this section a particular delight—a film theatre, and models of locomotives, rolling stock and railway shipping. There is also a kind of great-grandfather of all penny weighing machines which still works with extreme accuracy.

In the main hall, along with the locomotives and the royals, is the collection of tramcars and buses, depicting the history and development of this type of transport in Britain since it began in 1829. Restored to its full glory is the famous B type motor omnibus of the London General Omnibus Company.

The Museum is, of course, not self-supporting, and there is speculation about whether or not Dr. Beeching will close it down like other non-profitable BR enterprises. It would be a very great shame indeed if this were to happen. No one with a sense of the past would wish to disperse or shut off from public view a museum which has been open for only three years and is already one of the most celebrated in the world.

The B type motor bus of the London General Omnibus Company.

mailbag

Anything interesting . . . write about it to the editor

■ *SEAWEED DONKEYS*—The employment of pack donkeys to carry seaweed, used as fertiliser on early potato plots, is a picturesque survival from the past. On the coast of East Devon the cliff paths leading to the plots on sun-catching ledges are so steep, narrow and twisting that pack animals are the only feasible means of transport from the beach. Here the seaweed is picked at low tide, mostly in February and early March, although a break was caused last year because of the severe weather. It may be suspected that this curiosity, which has certainly persisted for more than 70 years, will not last much longer.

J. D. Ward, Minehead.

■ *ALL ONE PIECE*—The firebox, boiler and smokebox on my model of the GWR King George V, are shaped from one piece of solid wood, plastic wood being used for the chimney, safety-valve cover and steam pipes. Narrow metal bands are secured around the boiler and firebox by small nails. Wire forms the handrails and smokebox door handles. It is in O gauge.

All wheels are cut out from $\frac{1}{4}$ in wood with a fretsaw, discs of thin cardboard stuck on the insides forming the flanges. A single piece of $\frac{3}{4}$ in wood cut to shape and fixed under the running plate provides bearings for the axles of the coupled wheels. The steam chests, cylinders, slide bars and crosshead are all of wood, but coupling and connecting rods are of metal. Sand boxes are shaped from wood, with pipes represented by wire. Tin and wire are used for small parts such as lamp irons, buffers, couplings, footsteps at the back of the tender, and the regulator handle and other details on the back of the firebox inside the cab.

The basis of the bogie frame is a shaped piece of $\frac{7}{8}$ in wood; this pivots on a screw, a slot permitting some lateral movement to facilitate the negotiating of curves. The greater part of the tender is of solid wood cut and shaped, with cardboard being used for the division plates, top sides, and the representation of axle-boxes and springs. Finally, the complete model was painted in the correct GWR livery.

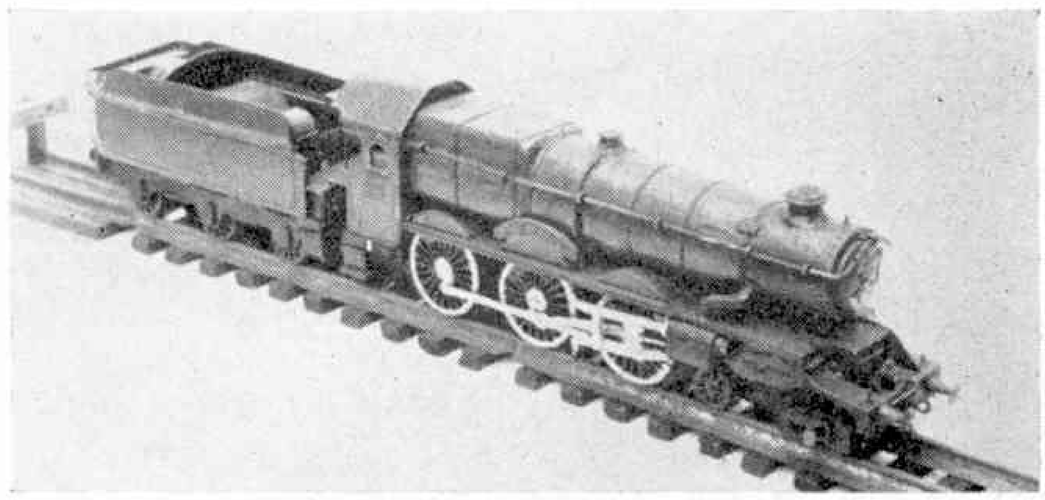
Cyril E. Wrayford, Bovey Tracey, Devon.

■ *PENNY POST*—Near the Town Hall at Kidderminster is a statue of Sir Rowland Hill, the great reformer and innovator of penny postage. He was born in 1795, in a house in Blackwell Street which was demolished some years ago to make way for road improvements.

The memorial was erected by 200,000 subscribers throughout the three Kingdoms, the colonies, and the continents of Europe and America. It was unveiled in 1881.

Had it not been for the Napoleon wars, which ruined his father, we might never have heard of Rowland Hill. To avoid the family suffering excessive hardship his father started a school which provided a living and education for the six sons and two daughters. Rowland finished his education when he was 12 and became a teacher at his father's school. In 1833, because of ill-health, he was forced to give up teaching, and in the same year conceived his plan for reforming the postal system.

In 1839, after years of fierce opposition from the Post Office and in Parliament, penny postage was finally



adopted. Hill was appointed to the Treasury in the same year, but was forced to resign with the formation of the new Cabinet in 1842.

The great reformer was not ungenerously treated by the nation. He was awarded over £13,000 from a national testimonial, £20,000 from Parliament and, on retirement, his full official salary of £2,000 a year up to the time of his death in 1879.

Leslie E. Wells, Birmingham.

■ *MEMORIAL BEACON*—On an immense elevation dominating the Derwent Valley between Whatstandwell and Ambergate, Derbyshire is a unique war memorial to the Sherwood Foresters, which is plainly seen from the heights around Matlock. This 60 ft high tower, which has a flashing beacon, stands on a hill which is 955 ft above sea level, and is higher than anything else within a circuit of several miles, forming a prominent feature of the Derbyshire landscape. An annual pilgrimage to the tower is made by the Sherwood Foresters' Association in July, and an impressive service is held there to commemorate fallen comrades.

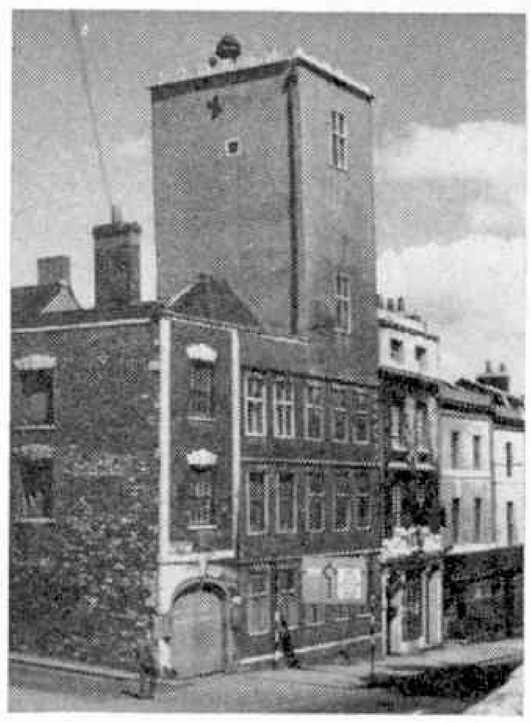
A. B. Longbottom, Ashton-on-Trent.

■ *SHOT TOWER*—The shot tower which stands on Redcliffe Hill, Bristol, is the prototype of all towers used for the manufacture of lead shot. It is due to be demolished shortly to make way for road improvements. The principle of the process for which such a tower is used, is that molten lead is allowed to drop through a sieve into water underneath.

Durings its fall the liquid lead assumes the spherical form into which it is solidified as it is cooled by the water. The patent for this process was taken out in 1782 by William Watts, a Bristol plumber, who is said to have had the idea as a result of a dream, in which he saw his wife pouring down molten lead on him from the nearby tower of the church of St. Mary Redcliff. Watts was fortunate in his original experiments that he happened to use lead containing arsenic, otherwise the lead would not have formed into shot, but into strings.

Bernard Malone, Clifton, Bristol.

Left: The Memorial Beacon, Derbyshire
Right: The Shot Tower on Redcliff Hill, Bristol



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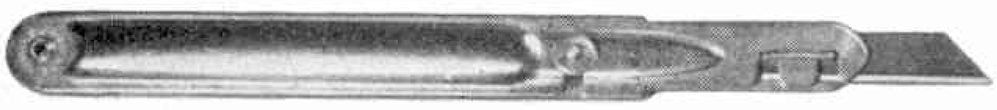

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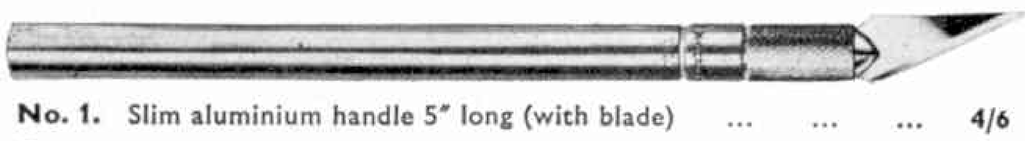
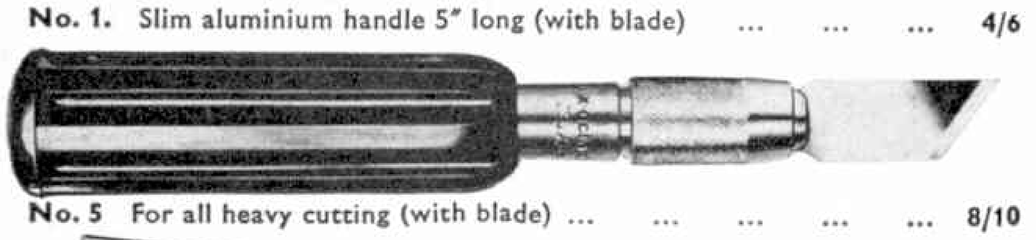


No. 1. Slim aluminium handle 5" long (with blade) 4/6



No. 5 For all heavy cutting (with blade) 8/10

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Sole concessionaires KEILKRAFT WICKFORD, ESSEX

by **John Atkinson**

You have learned how to build a control-line model and how to prepare your first flight. Now John Atkinson helps you with a more ambitious model—the Graupner Consul, which costs £4.19.6.

The Graupner Consul complete. Colour scheme we used light blue with red trim.

THE CONSUL —for free flight

THE KIT that I am writing about this month, the Graupner Consul, is a free flight or radio controlled model built chiefly of ready moulded foam plastic parts with plywood reinforcement. This one is not really a beginner's project. Although its assembly is not all that difficult, it requires some woodworking tools and, in my opinion, some previous model building experience

Last month's article contained photographs of the contents of this kit and shortly after writing it I made a start on the Consul; these notes will help you successfully to complete yours.

Before any assembly is started it is a good plan to cut out *all* the wood parts from the printed sheets. Most of these are plywood and, for this job, a fretsaw or fine coping saw is essential. Work carefully and smooth off all the contours with sandpaper or, better still, medium Garnet paper. Study the 'exploded' view included in the kit to make sure you know where everything fits and do a 'dry run' before sticking any parts together.

Do not omit this stage because, during it, you are sure to find some pieces which need slight alteration in order to make them fit snugly into place. You will also find some moulding ridges on the plastic parts which must be removed with fine sandpaper before assembly.

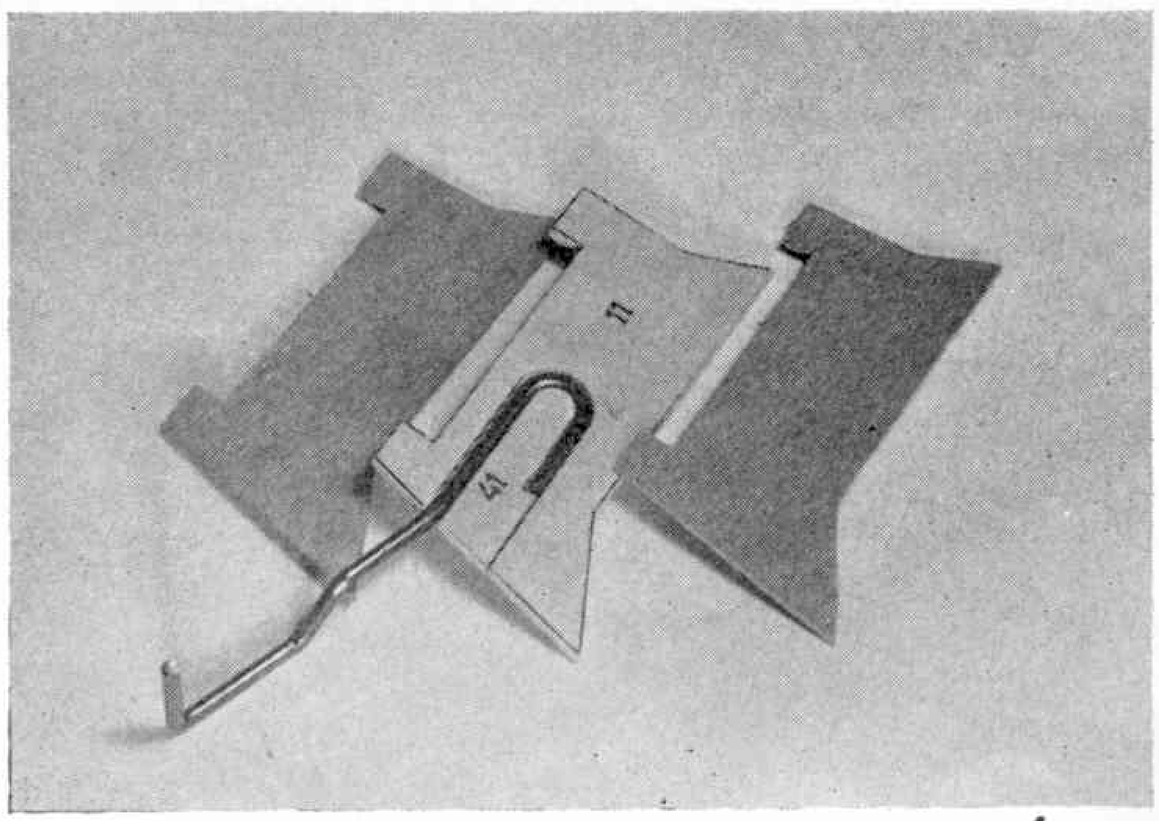
These plastic moulded components are expanded polystyrene—exactly the same stuff from which modern insulating tiles are made. The wooden reinforcing pieces used in this model are essential in order to provide adequate local strength to this very crushable material. Expanded polystyrene is very light in weight but has some limitations as a modelling medium. It is attacked

. . . or radio control

by cellulose materials such as balsa cement, contact adhesives and model dope, all of which, like diesel and glow plug engine fuel will completely destroy it.

The only usable adhesive is PVA white glue. This is sold under various trade names such as Casco 'Glue All'. Le Pages 'Sure-Grip Bondfast' and UHu 'Coll'. A tube of the latter is contained in the kit and is sufficient for the assembly of the Consul.

Do not be stingy with the glue, use lots of it. It should



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ooze out of the joints as they are made and you should rub as much of the surplus as possible back into and around the joints. This sounds, and is, a messy job, but unlike other adhesives. PVA can be washed off the hands (or clothing) quite easily with soap and water—even when it is almost dry. Parts should be held together until dry with pins or rubber bands and complete drying may take several hours, so have patience.

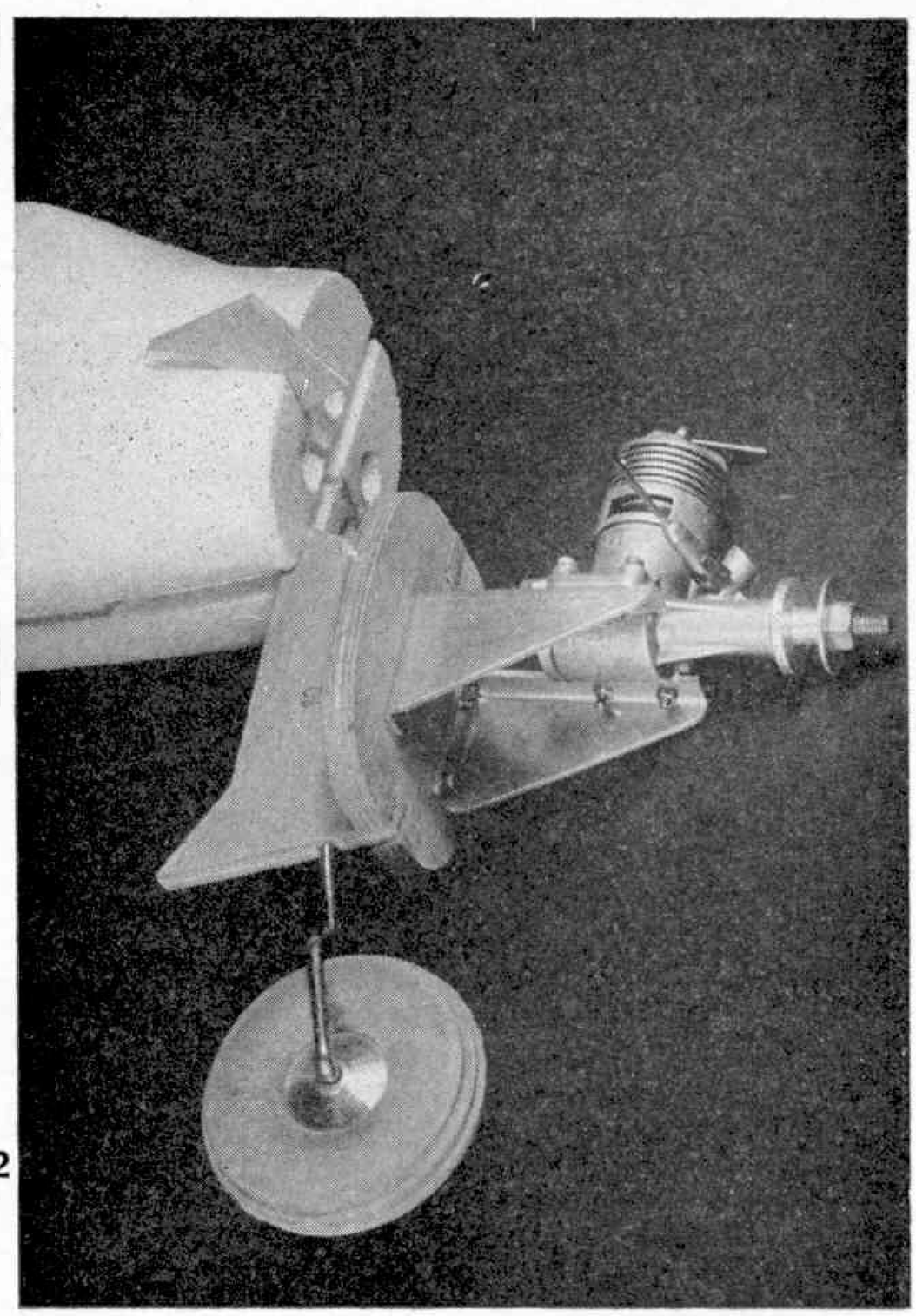
If you follow the assembly sequence given in the detailed instructions you will find that the slow drying time of the glue does not unduly delay construction. Assembly of one part is carried out while the other dries and there is thus very little waiting.

It is desirable to know in advance what type of engine you are to use because the construction of the engine mounts varies and should be decided before assembly. If you use a 'beam mounted' engine you will need a pair of special alloy mounting brackets specified, but not included in, the kit. Little more need be said about the actual construction, it is fully covered in the instruction booklet, however, the 'finishing' stages are worth mentioning since they are so important.

As I pointed out earlier, model engine fuels destroy expanded polystyrene so the parts made from this material must be completely protected by some means. There are various ways of doing this and they are all time consuming.

Despite what is said to the contrary in the instructions, it is well worthwhile covering the whole model with tissue. It not only adds considerable strength but also makes for a better and more fuel resistant finish.

The attachment of the tissue is best done with a Dextrine paste such as Grip-fix. Whatever you do, avoid the sloppy 'office type' gums or PVA for this job. The best tissue to use is a wet-strengthened variety such as Modelspan which you can buy in any model shop, this considerably simplifies the task of covering. Do the job in tissue sections. You will, for instance, need four pieces of tissue for the wing—one for each upper half and one for each lower half. The fuselage requires several pieces. Spread the paste thinly but completely, over the whole surface to be covered rubbing it well into the plastic. Be very careful not to wrinkle the paper as it is attached. Should a wrinkle form the tissue must be



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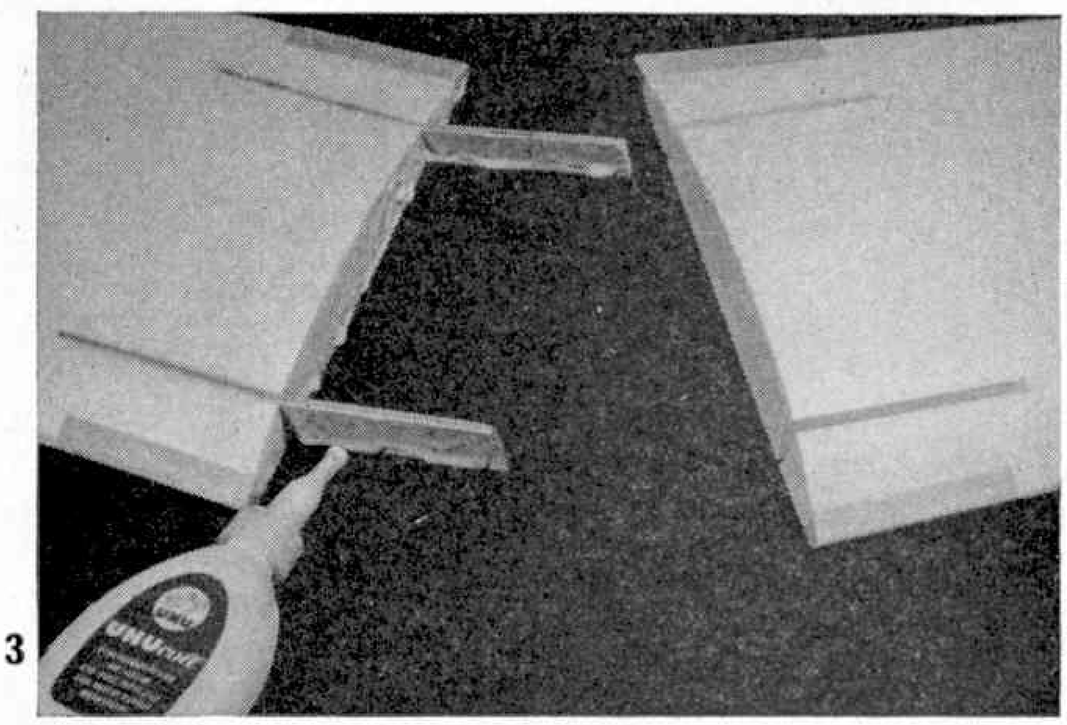

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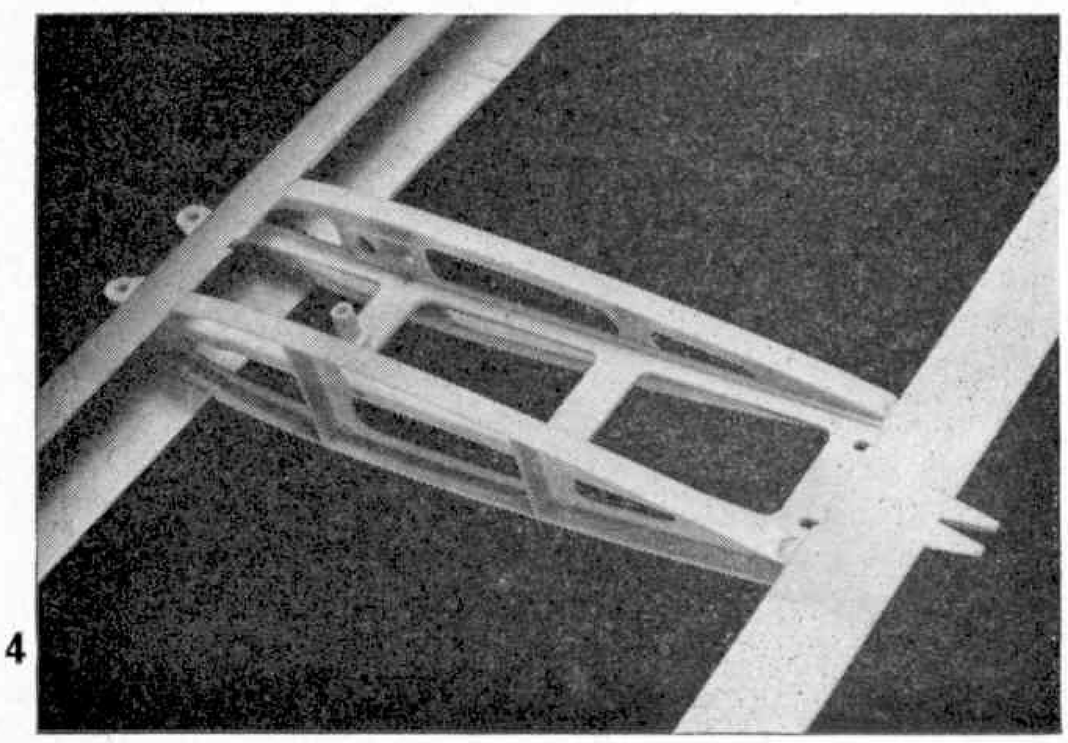


4

lifted and smoothed down again. Do not forget to overlap all the tissue joins.

Because of its effect upon the plastic, we cannot use dope of course, so we must use a water base paint to 'fill' the pores of the covering. Special fillers are available but ordinary household emulsion paint is as good as any. I used some that was left over from the spring decorating. It must be well worked into the paper with a ½ in brush and will require two coats to 'fill'.

When dry the brush marks can be removed by lightly rubbing down with No. 320 wet-or-dry abrasive paper used wet. This is quite safe since when dry, emulsion paint is waterproof. It is, of course, vital to avoid rubbing completely *through* the paint. Emulsion paint, although waterproof is, nevertheless, slightly absorbent and so it is necessary to seal the paint with polyurethane varnish. This is one of the new finishes which is available at most do-it-yourself shops as well as model shops. It is completely fuel-proof and three coats will give a highly glossy and durable surface.

The Consul is designed specially for Grundig 2 channel radio equipment but is easily adapted to any lightweight receivers which use motorized servos. Rubber driven escapements will be difficult to fit because of the solid plastic rear fuselage through which the escapement motor normally passes. Radio is not, of course, essential and the Consul makes a very stable and exciting free flying model with engines of up to 1 cc capacity.

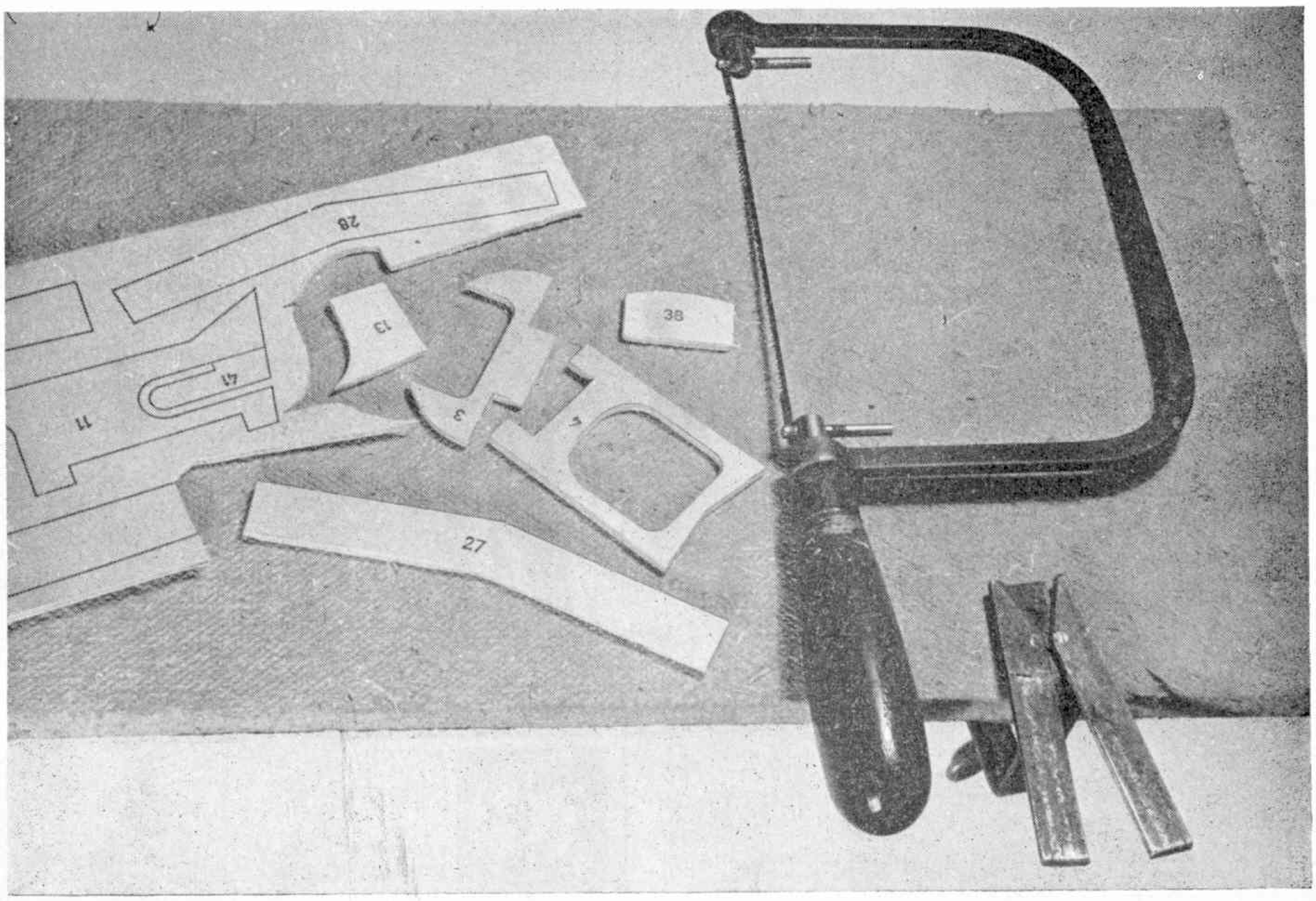
Next month I will write about the Cox Spook control line model, a very different aircraft, much more simple to construct and a great deal of fun to fly.

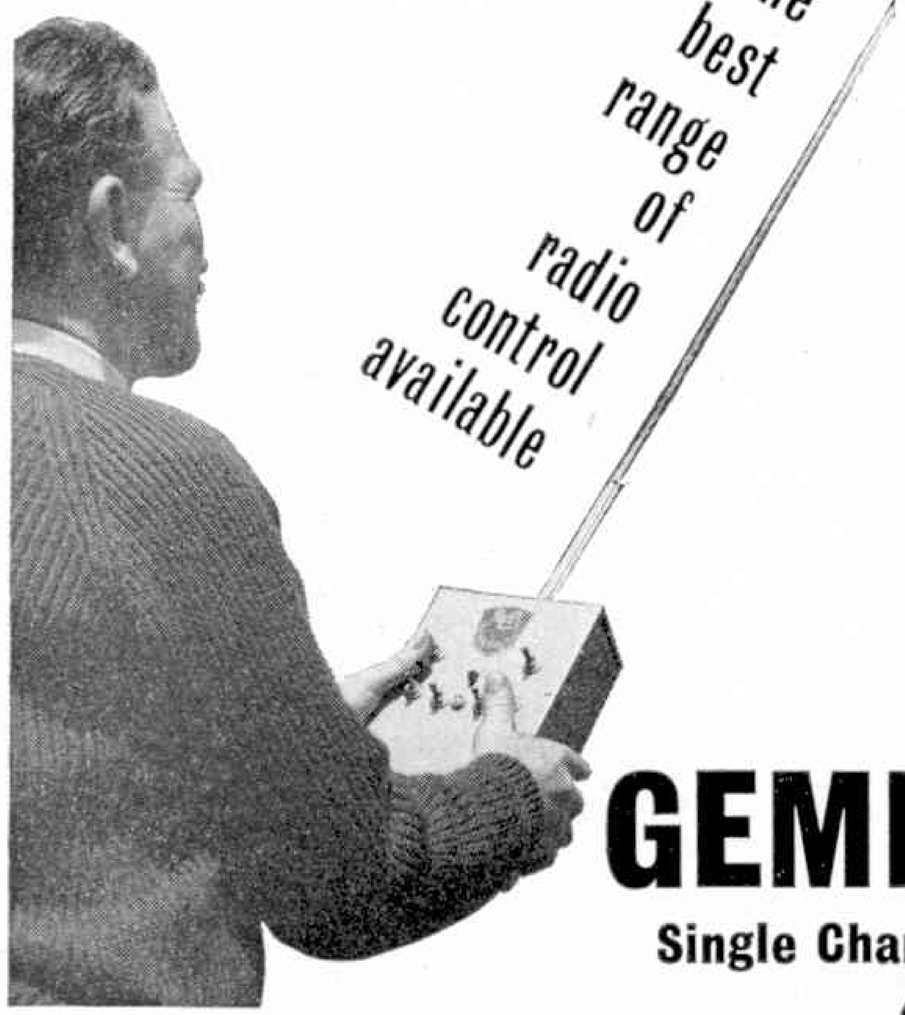
1 Pre-bent nose wheel undercarriage leg is sandwiched between ply plates and clamped until glue is dry.

2 Complete nosewheel unit is slotted into corresponding recess in fuselage nose. This highly stressed component is securely keyed to the engine mounting plate on which the engine mount brackets are bolted. Our engine is a Davies Charlton Spitfire 1 cc diesel. recessed into the plastic fuselage. Note also the ply reinforcing keels.

3 & 4 The two moulded plastic wing halves are joined by two plywood dihedral braces. Use plenty of glue and wipe off surplus after joining. Note the short balsa inserts at leading and trailing edge roots. These prevent rubber hold-down bands from damaging the soft plastic.

5 Printed plywood panels must be cut out with a fret or coping saw. A clamp-on fret table (lower right) will simplify this task.





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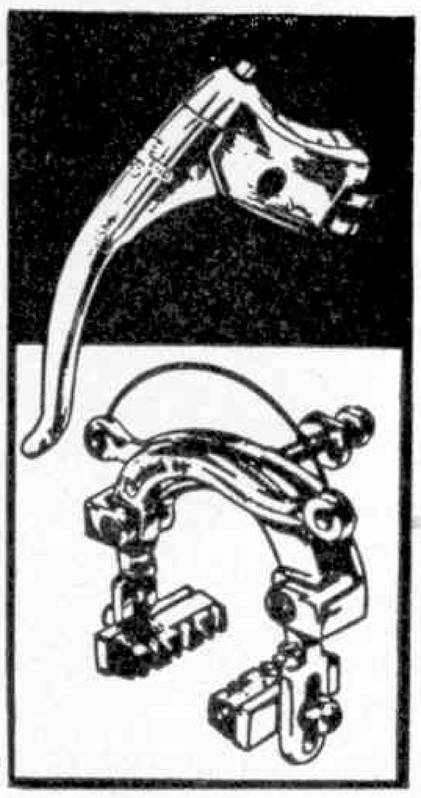

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by **John Crossman**
of The Angling Times

Do you educate your FISH

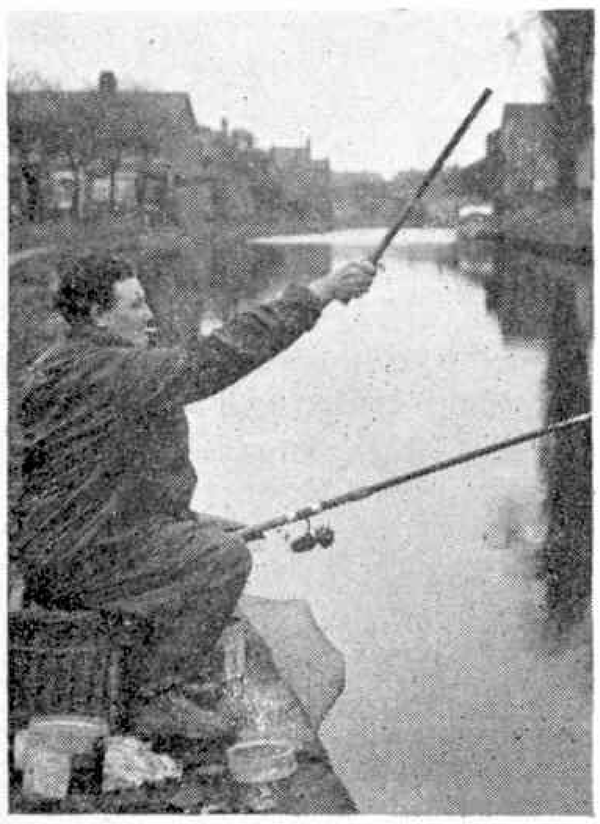
I DON'T MEAN that you should send them to school, or go down to the river with a blackboard and easel. The sort of education I mean is what anglers call groundbaiting. A simple form of groundbaiting consists of flicking samples of hookbait into the swim every few minutes. This, so to speak, educates the fish so that they are prepared to accept the angler's bait confidently. It also makes them alert for further food offerings.

And this kind of education is particularly effective on small streams where, because of the difficulty of landing a fish without alarming its companions, it is often a waste of time to groundbait very heavily in the hope that a shoal will feed for a long spell.

But even in wide and comparatively deep rivers, where heavy groundbaiting is normally successful, there are times in the summer when it is wise to employ a more subtle approach. On calm days, when the water is clear, fish are easily scared by balls of groundbait exploding over their heads. And a white carpet of groundbait on the river bed—usually attractive to fish—seems under these conditions to act as a danger signal.

In streams and canals where long casting is unnecessary it is an easy matter to throw in a sprinkling of maggots, chrysalids, or hemp. If bread flake is being used, the angler can pinch pieces from a fresh loaf and flick them with his thumb nail into the swim.

Bill Hughes, of Leigh (Lancashire), winner of the 1958 National Angling Championship, uses a catapult to get feeder maggots well out when fishing in a Northern canal.



Benny Ashurst, of Leigh (Lancashire), known as the 'King of the Northern match anglers' is seen here using a maggot flinger.

But on a wide river when fish are lying in midstream, well beyond the range of hand-thrown baits, it is difficult to groundbait without causing excessive water disturbance. This situation calls for a bamboo 'flinger' or a catapult made specially for fishing. With these aids you can fill your keep net while other anglers remain fishless.

The flinger consists of a piece of bamboo (or tube) about 2 ft 6 in long and 2 in in diameter. One end is hollow for a depth of about 2 in and the other end serves as a grip.

The angler loads the hollow end with maggots (or bait of similar size) and, by a flick of the wrist, despatches them into his swim.

With practice, an angler can flick the maggots in a compact group for a considerable distance. Accurate baiting concentrates the shoal and thus increases the likelihood of bites.

Still greater distances can be achieved by an angler using a catapult fitted with an extra-large pouch. One angler I know has made a pouch out of half a tennis ball, but I should imagine that this raps the fingers painfully now and then.

For reasons which are a mystery to me catapults and flingers are banned in some fishing contests—so check on the rules before you decide to use these baiting aids in a match.

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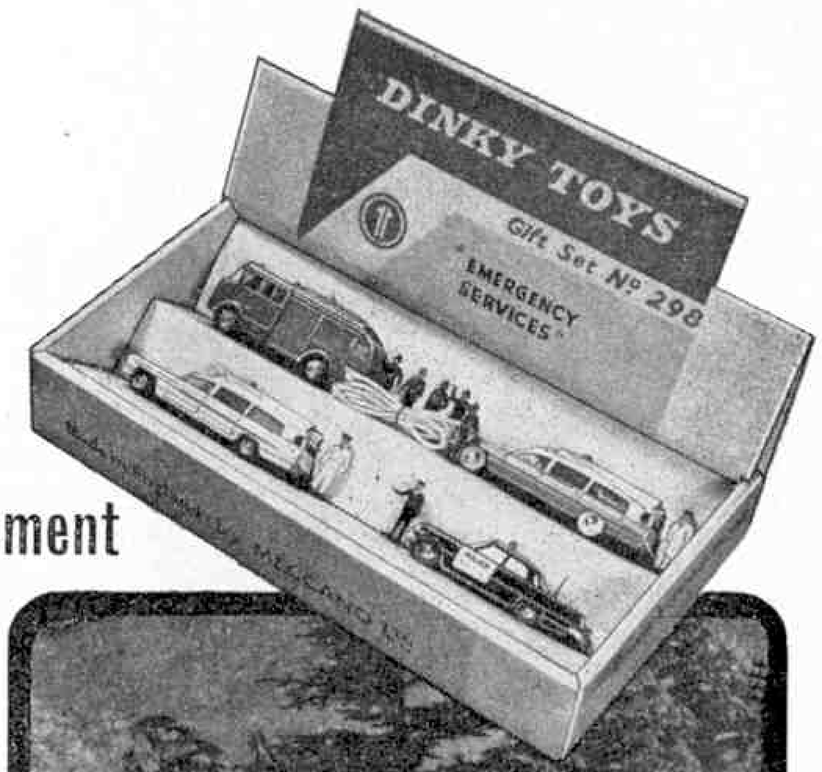

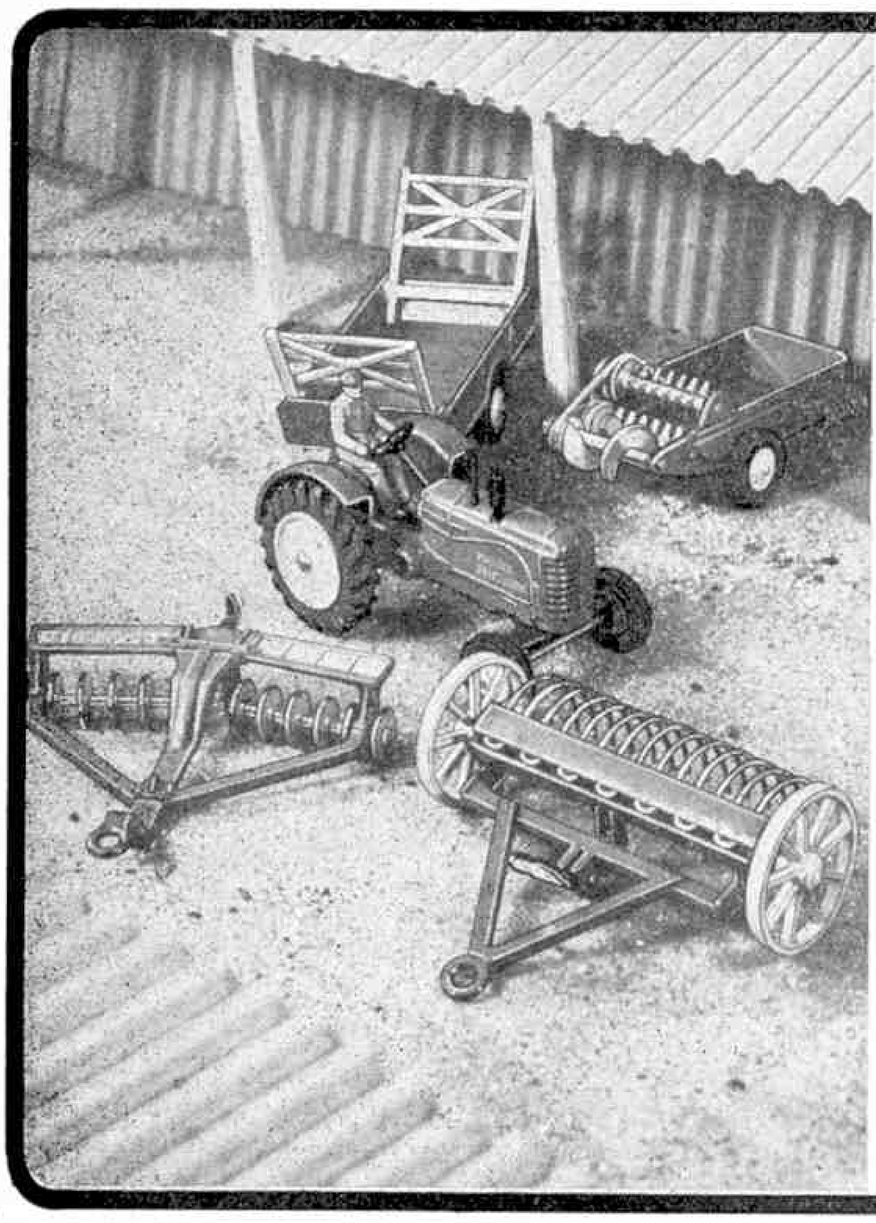

FARM EQUIPMENT SET

All the fun of the farm. All the variety of a farmer's life. You can plough, sow, carry loads, spread manure, gather in the hay.

Farm Tractor. Massey-Ferguson model, with driver. Steering wheel revolves.

Hayrake. For breaking up earth, covering seeds, etc. Discs revolve.

Halesower Harvest Trailer. With detachable fences.

Manure Spreader. Very impressive in action.

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EMERGENCY SERVICES SET

Cope with any emergency—crashes, fires, accidents. Ideal for a model airport.

Airport Fire Tender. Flashing amber light. Revolving foam turret. Bell.

Ambulances. Both Super Criterions with drivers and attendants. One has flashing beacon and opening back. Other has a stretcher case.

Police Car. Ford Fairline. Aerial.

Personnel. Extra ambulance attendants, police officer, firemen with axes, breathing apparatus etc. Hosepipe.

Set No. 298 **35/11**

HOLIDAY SET

Organise coach tours. Car trips. Run your boat to the seaside. All the fun of the holidays any time you like!

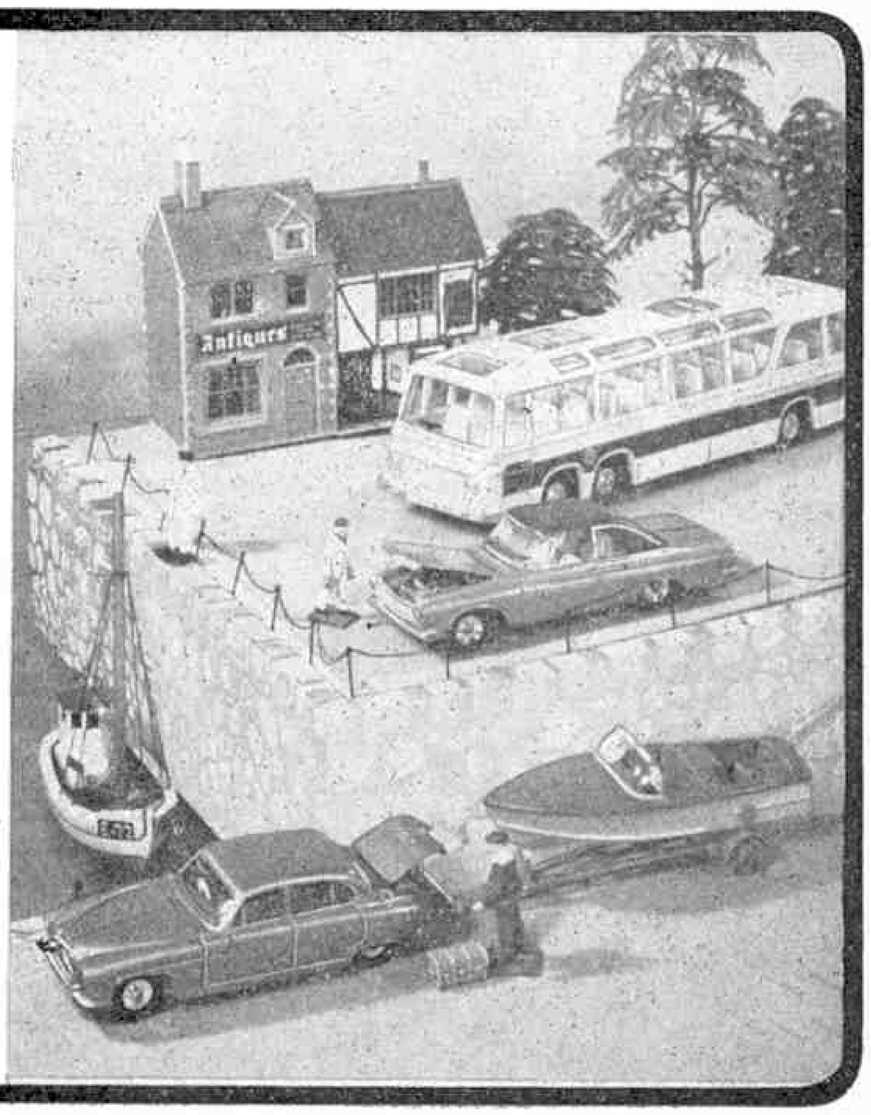
Vega Major Luxury Coach. Flashing trafficators. Prestomatic steering. Opening boot.

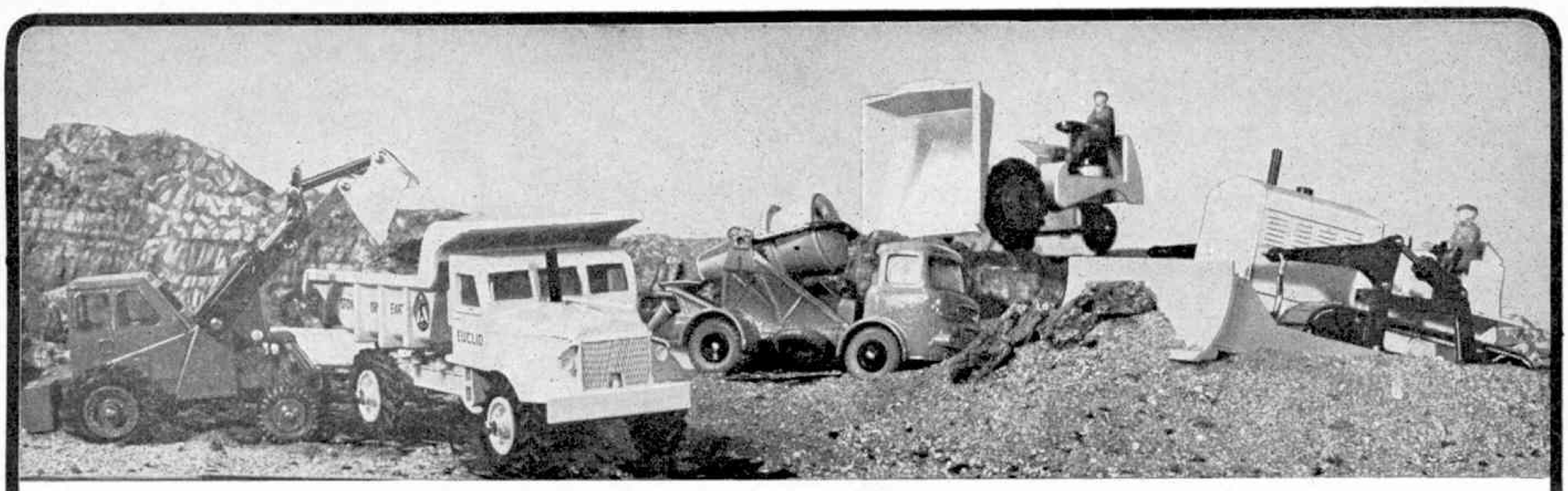
Plymouth Fury Convertible. Hood comes off, reveals fascia, steering wheel, seats. Bonnet opens to show detailed engine. Prestomatic steering.

Mark X Jaguar. Opening boot with luggage. Prestomatic steering.

Boat and Trailer. Healey sports boat. Trailer attaches to Jaguar.

Set No. 124 **35/11**





BUILDING SITE SET

Be a construction man—make motorways, rocket sites, houses. Or a demolition man—knock down old buildings. Clear ground, mix cement, carry earth.

Euclid Rear Dump Truck. Tipper works realistically.

Blow Knox Bulldozer. Caterpillar track. Driver. Shovel rises.

Albion Concrete Mixer. Concrete mixer revolves as lorry travels. Spare wheel.

Muir-Hill Dumper. Dumper tips forward. Steering wheel revolves. Driver.

Muir-Hill Mechanical Shovel. Shovel rises and tilts. Driver. Detailed engine.

Set. No. 900 **53/11**

GOODWOOD RACING SET

Hold your own race meetings.
4 cars—two red, two white.

E Type Jaguar. Hard top removes to reveal fascia, bucket type seats. Prestomatic steering.

Porsche. A detailed model of this exciting car.

MG B. Doors open and click shut. Gearbox and lever. Bucket seats. Driver. Prestomatic steering.

Austin Healey Sprite. Fascia. Gearbox. Bucket seats. Prestomatic steering.

7 Mechanics and an owner.

Set No. 121 **22/11**

MOTORWAY SERVICES SET

Arrange chases with the Motorway Police Jaguar. Tow away breakdowns. Race to accidents with ambulance & fire engine.

Police Jaguar 3.4. In Motorway white. Blue flasher. Aerial. Driver and observer. Prestomatic steering.

Fire Chief's Control Car. Nash Rambler. With beacon.

Airport Fire Tender. Amber light flashes. Foam turret revolves. Bell.

Crash Truck. Top Rank Bedford with winding towing winch.

Superior Criterion Ambulance. Back opens. Light flashes. Driver and attendant. Prestomatic steering.

Set No. 299 **35/11**

"I'd love one of these super sets for my birthday".

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"I wonder if they'll come out...?" How often have you said that immediately after taking some photographs? Do you realise that within an hour you can see the results of the pictures you have taken without having to take them to a shop and waiting a week? That's if you do your own developing. You'll find it very much cheaper, too.

BEFORE YOU start developing your own film there are one or two things you absolutely must have. The first essential item is, of course, a developing tank, costing just over 30s. You'll be able to use it for any size of roll film or 35 mm film. Another thing you'll need is a thermometer—not a medical one—but a thermometer specially calibrated for use in photography—about 6s. For a few shillings you will be able to buy an accurate measure to hold up to 20 oz of liquid. Perhaps you already have a watch or a clock with a seconds hand; if not, you'll need one.

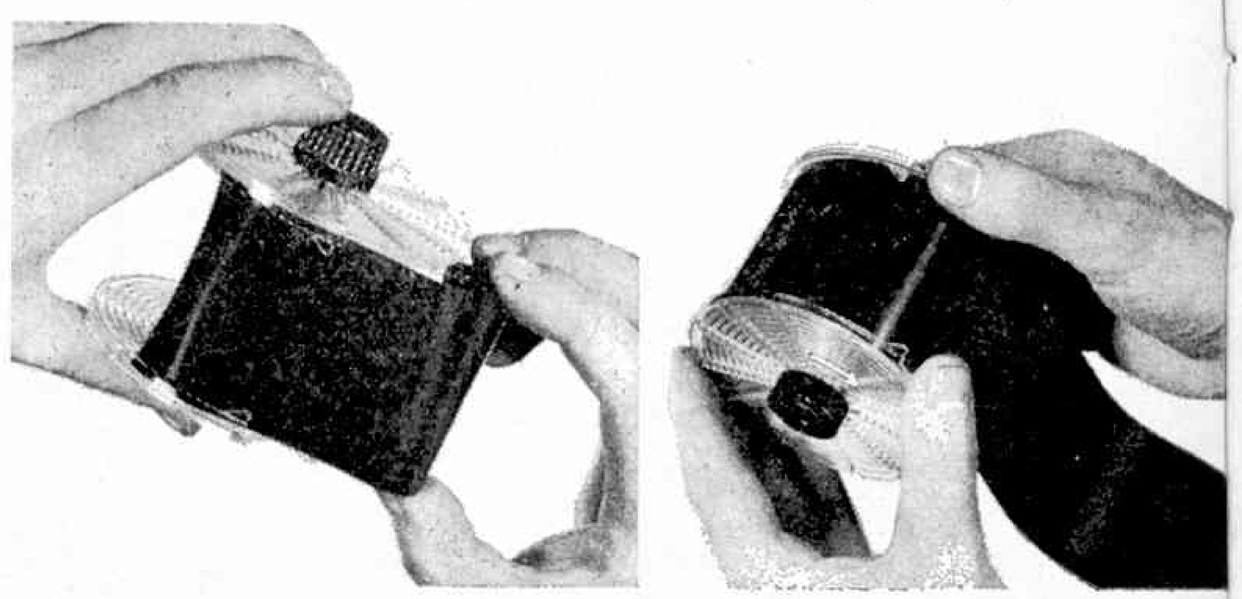
There are two special chemicals for the purpose, developer and fixer. A good developer to buy, because it can also be used for making prints, is Johnson's Universal, but if you are using a 35 mm camera and want finer grain, Unitol is the developer to buy. The fixer can be obtained either as a concentrated solution, Fix-sol, or as a powder which you mix with water. Both are easy to use, and neither is particularly dangerous. The developer, will, however stain if it is left on clothes or white wash-basins. The fixer will not do your clothes any good, either.

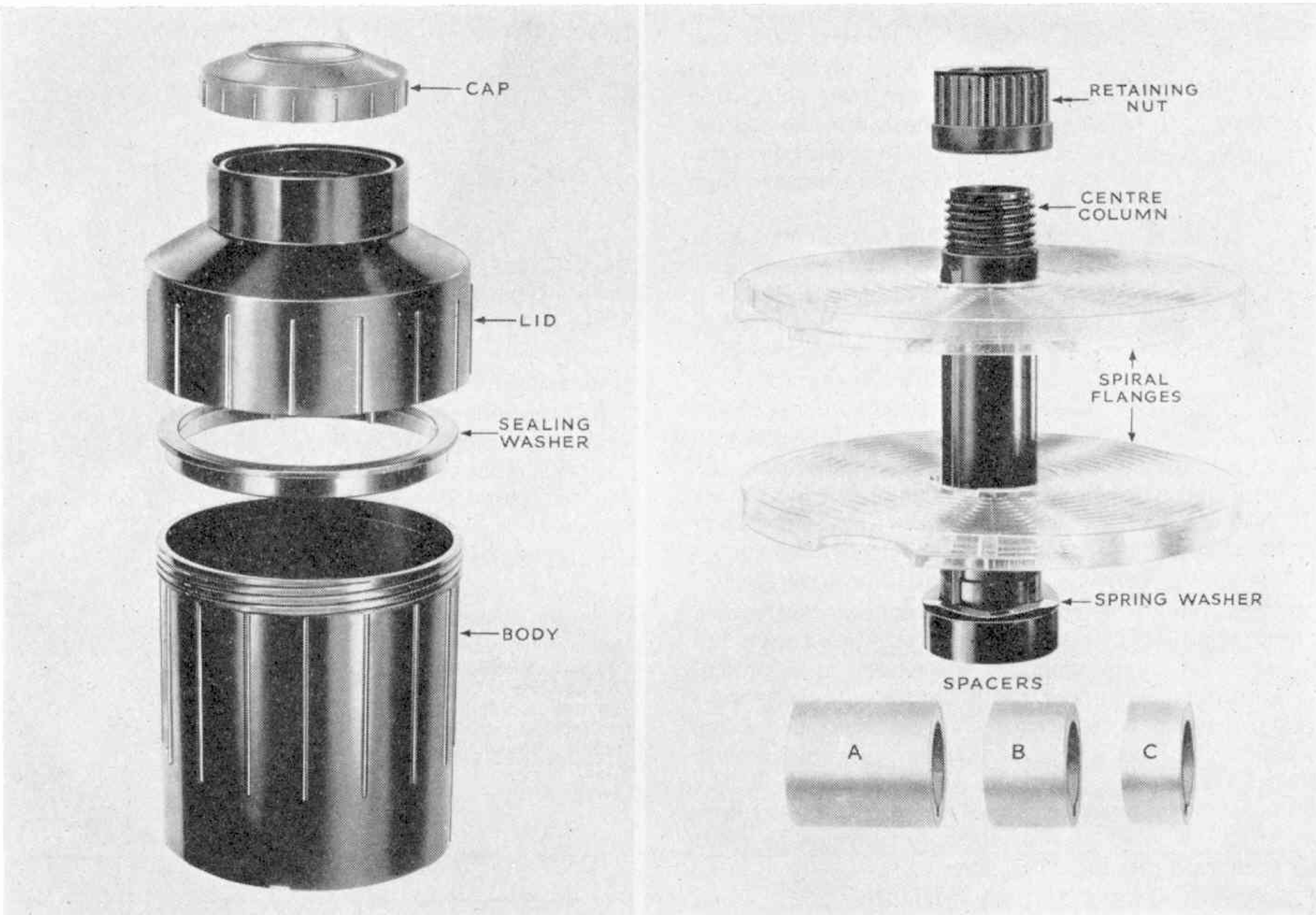
Probably the best place to work is in the kitchen sink—particularly as you will need a supply of running water.

When you have taken your film out of the camera you will have to load it into the developing tank. If you are using a normal orthochromatic film this can be done in the kitchen in darkness but using a red safe-light, which gives just sufficient illumination by which to work. If, however, you are using a panchromatic film (HP3, FP3, or one of the Panatomic range) you must work by touch in total darkness which is a rather more tricky procedure. Under no circumstances must any natural light touch the exposed film at this stage, otherwise the emulsion on the film surface will be partially or completely fogged. The type of film you are using should be carefully checked before developing You will find full instructions on how to do it supplied with the tank. But make sure you have room to move and that you are certain you know where everything is.

Once the film is in the tank and the lid firmly screwed on you can safely bring it out into the light. The next job is to mix your developing solution.

Loading the film into the tank's plastic spiral



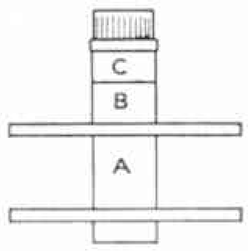
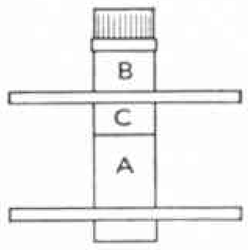
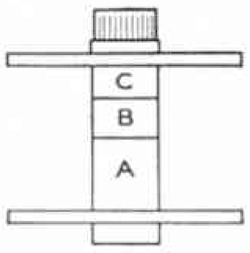


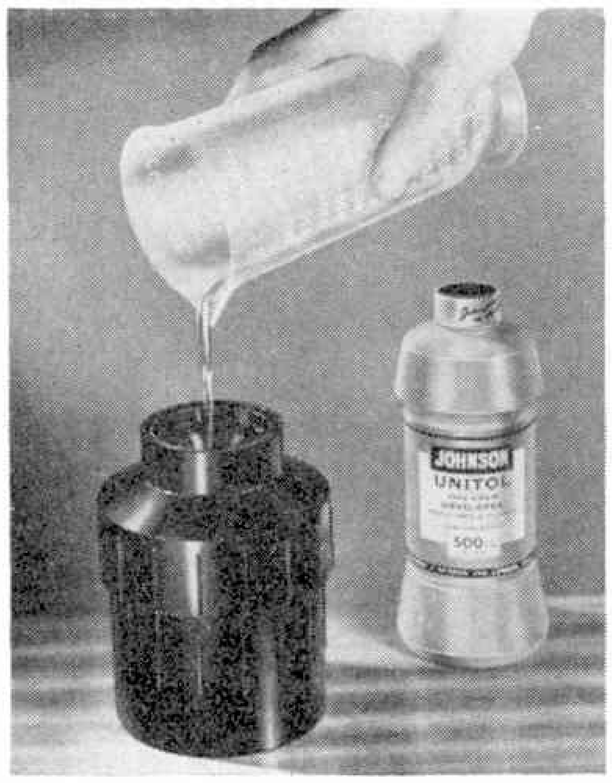
An 'exploded' view of the Johnson Universal Developing Tank

As films are of different sizes and widths it is obvious that differing amounts of developing solution are needed to ensure that the film is at all times completely immersed in the tank. The table at the foot of this page shows the amounts of developer needed for the three most common sizes of roll film. Since you cannot see what is going on while the film is inside the tank you will have to rely on the time and temperature method to ensure that the film is properly developed—but not over-developed. Different types and sizes of films require different lengths of development time, according to the speed of the film emulsion and the concentration of the developer. One of the great advantages of using Unitol developer is that, as its name implies, its use is based on one unit (or ounce) of developer to a certain number of ounces of water, according to the size of the film, in order to give the necessary total immersion when in the tank. Complete instructions, both as to the amount of solution required and as to the length of time needed for development, are given in a table supplied with each bottle of developer. These instructions apply to all the well-known types of film.

Take the temperature of the diluted developer solution, carefully note the time and then pour the solution into the tank. But just don't leave it there. You'll have to give the liquid a certain amount of agitation from time to time to make sure the film is evenly developed. If you don't do this the film will develop in patches and even may be 'under-done'. With the Johnson Universal developing tank you can put a cap on top which makes it completely water-tight and you can turn it upside down (not too fast like a cocktail shaker) but gently and firmly about once every half minute. When the correct time has elapsed you can pour the developing solution away. Don't try and keep it unless you are going to do another film immediately afterwards as it loses strength and in any case you have only used a very diluted solution. Next give the film a brief rinse by holding the tank under the tap, filling it up with water which you then proceed to empty again. Don't take the lid off at this stage.

The amount of solution required for various sized films

35 mm Film 828 Roll Film	No 127 Roll Film	No 120 or 620 Roll Film
		
Solution required - 300 c.c.s or 10½ ounces	Solution required - 400 c.c.s or 14 ounces	Solution required - 500 c.c.s or 17 ounces



Filling the tank

Now to fix the film. As far as possible you should try to see that your fixing solution is the same temperature as the developer and that you have enough solution to cover the film in the tank. Pour the fixer in and leave the film in the solution for about ten minutes. Once again regular, steady agitation is advised in order to ensure that the film gets properly fixed all over. At this stage you can take the lid of the tank off and lift out the spiral film holder and take your first look at your film. The first few frames will tell you whether you have done the job correctly.

The next thing is to wash all the chemicals off the film. Do this by allowing a steady stream of water to run into the centre of the spiral and up between the layers of film. A word of warning here, don't run icy cold water onto a film that has been developed in developer and fixing solution at about 65°F. If you do, you may slightly shrivel the surface which will give bad prints. If the water from the tap is very cold indeed, empty the tank and refill it with water at a moderate temperature about 65°F changing it, about ten times.

Finally the film has to be hung up to dry. Attach a clip to one end and allow it to unroll from the spiral and then attach a clip to the other end. With a very clean plastic sponge or a piece of cotton-wool (preferably of the fluffless variety) carefully wipe the film down once to remove water droplets and hang it up to dry in a dust free room ready to print when dry.

A success! the thrill of seeing your correctly developed film and knowing that you will be able to get sparkling prints from the negatives.

Next month I shall tell you about that next stage, making the prints, which for most people is the most rewarding part of photography, because it is at this stage that you see your finished photographs.

Summer Holiday
Photo-competition

Another Meccano Magazine 'Extra'

Take your pictures this summer holiday and win a grand prize in Meccano Magazine's own competition—your competition. There will be three main sections in which to compete: people, places, and pets.

Whatever your age and camera experience, you will be in the running for a prize. The judges will take your age into account.

Do not miss the August issue of Meccano Magazine. You will need the entry forms

by **Bill Oakley**

All set to go!

The gear, tackle and trim, the clothes and the tools you'll need, when you go cycling are described in this month's article. All the prices mentioned are those current at Halfords' shops.

WET AND windy . . . . An English summer is frequently both of these, and few things are less comfortable than cycling in rain-soaked trousers, with gusts, that seem gale force, whipping at your hair. If you are going very far—not just to the shops and back—you need the right clothes.

For protection against the worst of the weather you need an anorak. A good shower-proof one may be bought for £2 3s. I said trousers or jeans are not comfortable in the rain. If anything they are even worse in hot weather, so wear shorts. In cold weather, of course, wear a sweater under the anorak.

You will need a good waterproof cape, and one of these may be obtained for less than 10s. Leggings, at 16s, and a sou'wester, 6s 6d complete your personal waterproofing.

Some manufacturers provide the necessary tools with the bike, but if you have no tools the ones you absolutely must have are: a combination spanner to fit all nuts, 1s 3d; a small screwdriver 6d; cone spanner 1s; tyre levers 1s 6d; a nipple key for the spokes 1s 5d; puncture repair outfit 1s 9d. The puncture outfit should be wrapped in a rag to prevent rattling.

Into your saddlebag (which will cost anything from about 15s to £1 10s) goes everything you require for your day out.

Do not carry luggage on your back like a walker. Let the bicycle be the beast of burden, leaving your body free to enjoy the exercise.

There are two good ways of getting to know where to stay. One is the Cyclists' Touring Club Handbook, price 3s 6d to members only. It contains hundreds of addresses in all parts of the British Isles with details of their accommodation and charges. Up to 18 years of age you may join the club for as little as 7s 6d. Entry forms and full information from: Cyclists' Touring Club, 3 Craven Hill, London, W.2.

The other way is to join the Youth Hostels Association (8 St. Stephen's Hill, St. Albans, Hertfordshire) and stay at youth hostels where you will meet lots of other cyclists and walkers. Subscription rates are: under 16, 5s; 16 to 21, 10s; over 21, 15s; all including a free copy of the handbook containing addresses and details of 267 hostels in England and Wales.

Happy photographers use Johnson chemicals & accessories!

Develop your own films with Johnson Unitol . . . It's concentrated so all you do is add water. Put your film into the Johnson Universal Developing Tank and pour in the developer solution. Every minute or so, you agitate the film. Then after the correct time, you pour out the developer. Next the tank is filled with water to rinse the film, then emptied. Fix and wash again. It's easy! Comes with full instructions. 250 cc 4/3. 500 cc 8/-.

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FOR CONFIDENCE IN PHOTOGRAPHY

by **John W. R. Taylor**

ROBOT helicopter is latest Sub-killer

1

IF YOU HAVE ever tried to build a flying model helicopter, you will know that it is not easy. So, just imagine how much more difficult it would be if your model had to be capable of flying under radio control by day or night, in all weathers, carrying two heavy torpedoes. This was the problem that confronted the Gyrodyne Company of America when the US Navy asked them to design a small robot helicopter that could be carried by destroyers and used to attack enemy submarines.

Of course, the result is hardly a model, but it is controlled in much the same way as a radio-controlled model aeroplane. To prove that the idea would work, Gyrodyne began, in April 1958, by fitting a simple radio-control system to one of their XRON-1 Rotorcycle one-man helicopters. The advantage of this, as well as saving money, was that a pilot could be carried to take over if anything went wrong with the radio. In fact, it worked well and in December of that year Gyrodyne was given a contract for a genuine torpedo-carrying drone (pilotless) helicopter. This was known originally as the DSN-1, but has since been redesignated QH-50A.

Gyrodyne were able to save a great deal of time and money by fitting the QH-50A with a standard XRON-1 power and rotor system, consisting of a 72 hp Porsche engine driving two 20 ft diameter two-blade rotors, turning in opposite directions. The steel-tube fuselage and skid undercarriage were new, and a more advanced electronic control system was used, including channels for arming and releasing a Mk 44 torpedo, which homes automatically on the noise made by an enemy ship or submarine.

For the first landings at sea, on board the USS *Mitscher* on July 1, 1960, a safety pilot was carried. The seat was then removed and the electronic equipment relocated so that the QH-50A could be tested in pilotless form at the Naval Air Test Center, Patuxent River, Maryland. Again, all went according to plan, and on December 7, 1960, a QH-50A made the first-ever pilotless helicopter flight from a ship, the USS *Hazelwood*. In all, 38 flights were made from a wooden platform on this destroyer, including 22 dummy anti-submarine attacks.

Nine QH-50A's were built, followed by three twin-engined QH-50B's which were flown only in piloted form to test equipment that would be fitted to the helicopter in front-line service. However, the US Navy was so confident that the QH-50A would be successful that it ordered an initial batch of 10 fully-operational QH-50C's before the 'A' started its trials on the *Hazelwood*.

Compared with the earlier versions, the QH-50C is far more powerful, with a 270 hp Boeing T50 shaft-turbine engine, and has a much more advanced control system. The engine is mounted at the front of the aircraft to balance the weight of the electronic gear and tail structure. This appeared to leave no room for a safety pilot to be carried during initial flight tests in April 1961; but Gyrodyne overcame this problem by seating him at the rear, in place of the tail unit, and flying the aircraft backwards!

By January 25, 1962, the QH-50C was ready to begin its pilotless flying. Less than a year later, on January 7, 1963, the little drone became a combat-ready weapon of the US Navy. It joined its ship, the USS *Buck*, in a most impressive manner, being flown out under radio control from San Clemente Island, California, to where the vessel was waiting at sea.

The DASH (Drone Anti-Submarine Helicopter) weapon system, for which the QH-50C was designed, was intended originally as part of a modernisation programme to extend by about 10 years the useful life of 140 World War II destroyers. However, the little drone has proved so successful that it will now equip also several new anti-submarine warships.

Two are carried by each ship, inside a small hangar at the edge of a wooden flight deck. In action, a QH-50C

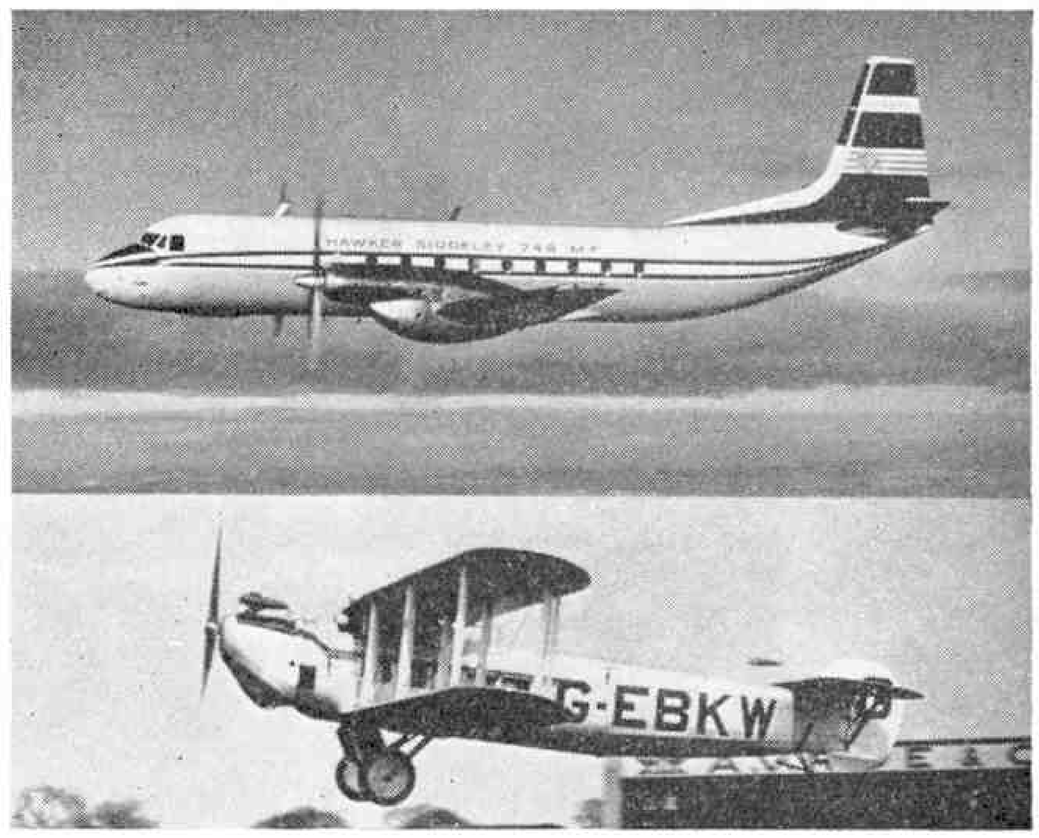
would be prepared for flight as soon as an enemy submarine was detected by the ship's long-range sonar. The take-off is controlled by a deck officer using a transmitter fitted with a joystick and knobs to steer the helicopter and adjust its altitude. As soon as the drone has been picked up by the ship's radar, control is passed to a member of the crew in the vessel's Combat Information Center (CIC). He steers the drone until it is over the target, the position of which is given precisely by the sonar, and then releases one or both torpedoes.

When the deck officer sights the returning QH-50C, he resumes control and brings it in to land. To make this part of the job easier when the ship is rolling and pitching in heavy seas, the helicopter can be made to lower a cable which is then attached to a winch on the landing deck, after which it can be wound down like a kite.

It may seem a waste of time to produce a radio-controlled aircraft for this sort of work instead of using an ordinary piloted helicopter like the British Westland Wasp. However, the QH-50C is very small and simple and does not require the service of a highly-trained pilot to fly it. The destroyer's captain would have no hesitation in launching a drone in weather conditions that would be dangerous for a human crew. And, of course, if an enemy gun or missile managed to shoot down the drone, no lives would be lost. In any case, it would not offer an easy target, for even the low-powered QH-50A had a speed of 78 mph and a tiny drone, flying low over the sea, would be difficult to detect and even harder to hit. So, Gyrodyne have given the US Navy an invaluable new weapon for use against the missile-launching submarine, which is itself the most elusive and feared war machine of our present age.

New Andover

The Hawker Siddeley 748MF, of which about 31 are on order for RAF Transport Command, will be known as the 'Andover'—a name last given to a biplane airliner built by Avro in 1925. The photographs on this page show how great has been the advance in design in 40 years. The original Andover was made of wood and fabric, spanned 68 ft, had a 650 hp Rolls-Royce Condor piston-engine, weighed 10,685 lb fully loaded and carried 12 passengers at a cruising speed of 90 mph. The new Andover is all-metal, spans 98 ft, has two 3,245 hp Rolls-Royce Dart turboprops, weighs 50,000 lb and carries 52 troops or 24 stretcher patients, plus attendants, at 280 mph. The prototype flew for the first time on December 21, 1963.



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The Middle ages—by air

A flashback to swashbuckling medieval times is provided by special conducted-tour flights which are being operated by BOAC this Summer, from Los Angeles. Each 51-day, eight-country tour will take its lucky passengers round more than 30 castles, fortresses and manor houses in Europe, from Edinburgh Castle to the walled, medieval city of Dubrovnik, Yugoslavia. Candlelight meals, as served to knights of old, will be included at some of the ancient buildings.

Wings forward

We have become accustomed to seeing aeroplanes with sweptback wings. Germany's new HFB 320 Hansa business-plane now promises to start a new fashion, as its wings sweep *forward* at an angle of 15 degrees. By adopting this unusual design feature, the builders, Hamburger Flugzeugbau GmbH, have been able to mount the wings behind the four-to-nine seat passenger cabin. This means that the spars do not have to pass through the cabin and also gives the occupants a better view downward in flight. The Hansa spans 47 ft 4 in, has a loaded weight of 18,100 lb and is powered by two 2 850 lb thrust General Electric CJ610 turbojets. It will cruise for 1,840 miles at 507 mph. The prototype flew for the first time on April 21 this year.

2

1 The Gyrodyne torpedo-carrying pilotless helicopter.

2 Swept-forward wings are a distinctive feature of the new German HFB 320 Hansa business plane.

3 The new Hawker-Siddeley Andover (top) military freighter, is currently in production for RAF Transport Command as a tactical transport. The original Andover of 1925 is pictured below.

On the Move

SHIPPING
AIRWAYS
ROAD AND TRACK
RAILWAYS
SPACE TRAVEL

Racing... by day and night

by **Jerry Ames**

ONCE EACH YEAR, the sleepy cathedral town of Le Mans, 140 miles west of Paris, is stirred by the noise and bustle of sports cars. For miles around there is not a room to be had in any hotel, while the cafes and restaurants edging the Place de la Republique in the heart of Le Mans, are virtually taken over by the motor racing fraternity who pour in from all over the world. The British contingent alone numbers 25,000, and the main square and market place is jammed with every conceivable make of car, from eye catching Bentley, Ferrari, Jaguar or Aston Martin, to sporting Mini, Renault and Simca. Over mid-morning coffee and aperitifs world famous drivers, team managers and mechanics discuss their chances, sometimes spreading rumours to confuse the opposition.

The Le Mans 24 Hours Race for prototype sports cars and thinly disguised touring machines, is unique and packed with drama from beginning to end. By 3.45 pm on race day, a Saturday afternoon in mid-June, every stand in front of the pits is crammed to bursting point, wherever possible around the 8·36 miles circuit, spectators are four and five deep; a quarter of a million flock to Le Mans every year, millions more, who cannot be there sit with their eyes glued to the television, not daring to miss the famous Le Mans start and excitement of the opening laps.

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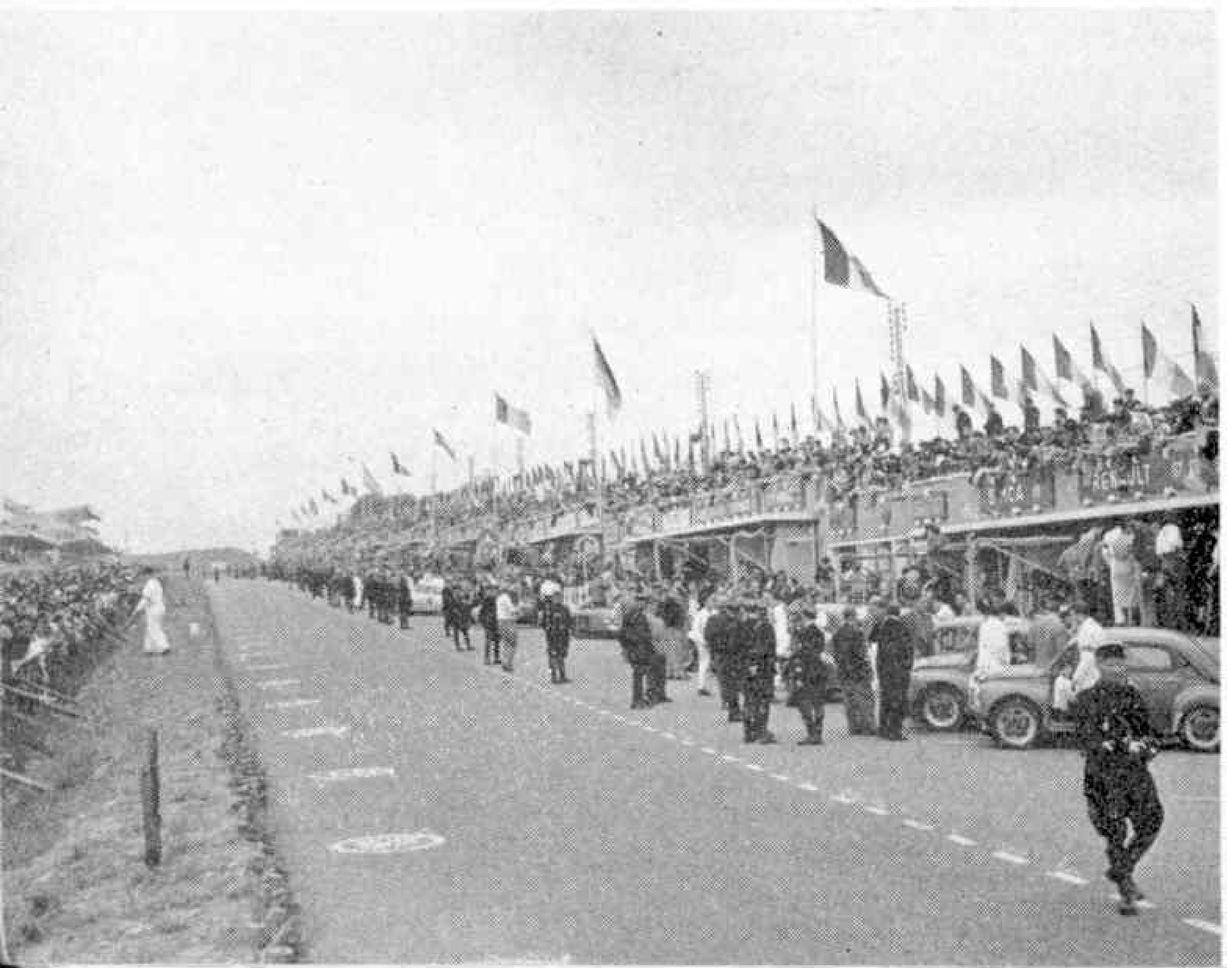

That start

Promptly at 4.0 pm, the starter's flag sends drivers running across the road to their cars lined up in front of the pits; doors are hurriedly wrenched open as drivers hurl themselves into seats, there is a whirring of starters, a splutter and roar of engines, followed by a slamming of car doors as driver after driver elbows his way through the world's fastest moving traffic jam. Some of the big, powerful cars take to the grass in their frantic endeavours to avoid being hemmed in by the screaming pack of small cars, for at Le Mans there is a difference of 80 mph between the fastest and slowest cars and much ground can be lost during the opening laps by powerful machines unable to thread their way past small cars whose maximum may be no more than 100 mph. Overtaking is always a problem at Le Mans, particularly during the opening laps; another danger is the wide discrepancy between the skill and experience of competitors.

Thunder straight

Along the 3½ miles tree lined, Mulsanne Straight with its gentle curve before the end, the big fellows thunder past the deserted tables outside the famous Cafe de l'Hippodrome at speeds of more than 180 mph, cutting around to 150 mph for the curve and drifting right across the road if it is clear; then braking hard, they come down to bottom gear for the sharp Mulsanne corner, taken at less than 40 mph. In these days of high speeds, this is where the signalling stations have been set up, because

2

drivers of faster cars shooting past the pits at more than 150 mph are too busy to read signals.

The record lap in the first 24 Hours Race at Le Mans, of 1923, was 66·6 mph, set up by Capt. John Duff in a 3 litre Bentley; this year during the pre-race practice weekend, Scarfiotti in the latest V-12 Ferrari put in a lap at 134 mph; not only do the cars develop nearly four times the amount of power, but the roads are smoother, wider and re-surfaced to encourage high speeds. They can also be very dangerous in the wet, pools of water collect to cause aquaplaning, as Fords discovered, when both their brand new 200 mph coupes went off the road at speed and were extensively damaged.

The Le Mans 24 Hours Race originated from a discussion in 1922 between three men, Georges Durand, Charles Faroux and Emile Coquille and the first race in 1923 was for catalogued production cars with touring bodywork, fully equipped with wings, running boards, hood, lamps, mirror and horn; at night the pits area and one or two corners were illuminated by acetylene lamps. Only one British entry, a privately entered 3 litre Bentley, figured in that first race, won by a French Chenard-Walker, at an average of 57·2 mph over rough roads that were breaking up before the end of the race; the Bentley finished fourth.

Bentley record

W. O. Bentley was there, but only out of curiosity, having little faith in the race or the possibility of seeing any cars finish. However long before nightfall he became fired with enthusiasm and was to become one of its staunchest supporters, his cars winning in 1924 and then each year from 1927 to 1930; five Le Mans victories. No manufacturer equalled this record until the post-war Jaguar appeared, winning the race five times with 'C' and 'D' type models, between 1951 and 1957. The 1953 winning Jaguar was the first to be equipped with disc brakes.

In 1955, the motoring world was stunned by an appalling tragedy when Pierre Levegh's 300 SLR Mercedes crashed at speed, its engine tearing out of the chassis to kill and injure many spectators. This tragedy led to a tightening up of regulations affecting motor racing throughout the world and some roads at Le Mans were altered in the interests of safety

Le Mans last year saw the first appearance of a gas turbine car, the Rover-BRM; strictly speaking it was a high speed demonstration run as the car was not classed as a competitor. This year with completely new, attractive coupe body, the Rover-BRM will take part in the race, competing in the 2 litre class. It marks the first occasion a gas turbine car has ever been raced and there is every likelihood of this car, with its handsome coupe body, going into production afterwards.

So after more than 40 years, Le Mans still fulfils its original function, helping to develop the touring and sporting cars of tomorrow. This year's Le Mans race takes place on June 20 and 21, when all eyes will be on the thrilling battle between the V-12 Ferrari and the new machines Fords have developed to challenge their supremacy, but world-wide interest will again be focused on the intriguing futuristic Rover-BRM gas turbine car, to be driven by Graham Hill and Richie Ginther.

Fiat 850

An important new model, not for Le Mans, is the Fiat 850, powered by 843 cc ohv engine with sealed water cooling, at the rear. This additional model, following the general lines of the 600D, has all-independent suspension, a first rate four speed, all-synchromesh gearbox and better seating for four adults.

Driving the car in Italy, I found the Super model with 8·8 to 1 compression ratio would cruise easily at 70 mph, while maximum is 77 mph; it will accelerate from standstill to 50 mph in 21 secs and has a fuel consumption in the region of 44 mpg. The Fiat 850 proved to have excellent handling over the typical twisty roads, one finds in the hills of Northern Italy; price of the new Fiat 850 will be announced later and you will be able to see it at the Earls Court Motor Show later this year.

1 A few minutes before the start. Cars are lined up in front of the pits. Drivers will stand in their white circles, ready to dash at the fall of the flag.

2 Tony Rolt makes an early morning pit stop in his C type Jaguar.

3 The famous D type Jaguar developed largely for Le Mans.

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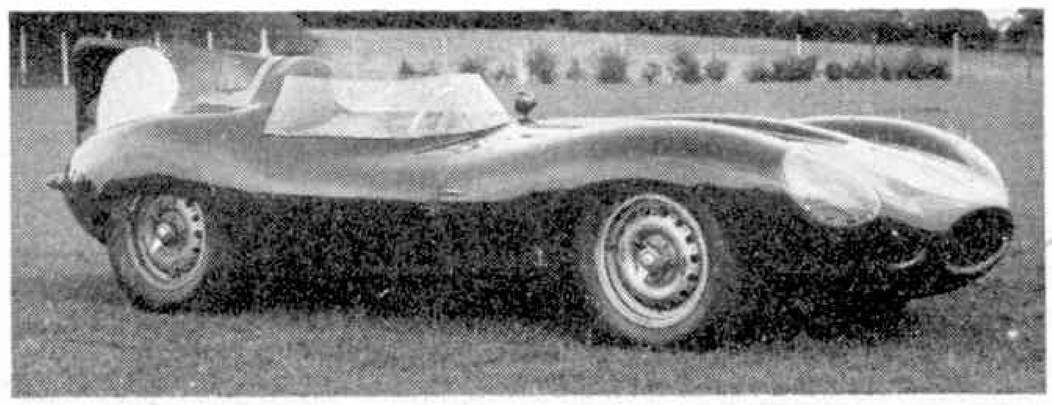
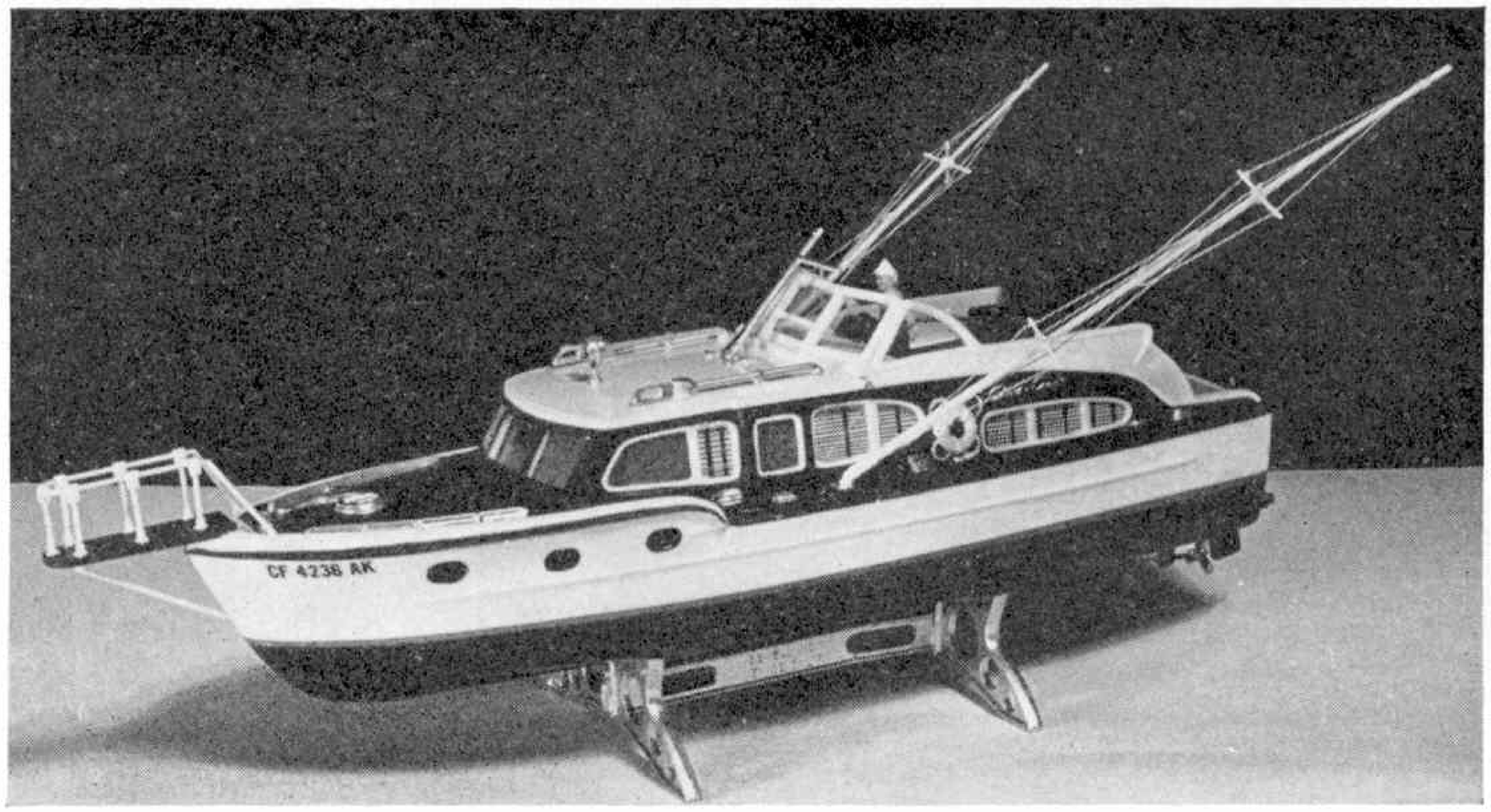


by **Eric Paterson**



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Getting under way with model boats

THE BRITISH, so we are told, have an in-bred love of the sea and all things nautical. To judge by the increasing congestion around our coasts resulting from the continuing small boat ownership explosion—there is a lot of truth in the statement!

But full size boats are not cheap and even if we could all afford one of our own, most of us would still be faced with the problem of transporting it to the water. Just imagine all those Bank Holiday traffic jams with every car towing a boat trailer!

None of these discouraging facts, however, daunt the real marine enthusiast, many thousands of whom find an outlet for their seagoing aspirations through building and sailing model boats of all shapes and sizes.

Undoubtedly the most popular approach to the model boat building business is by way of a good kit, many of which are quite inexpensive. There are dozens to choose from, but to begin with you should pick one of the semi-prefabricated ones. Several manufacturers produce these and fairly representative is the *Keil Kraft* Ee-Ze-Bilt series, which cost 13s 8d each—less motor.

Ee-Ze-Bilt models average about 16 in long and are of all balsa construction. There is no carving of any kind to do, the designs eliminate all block wood parts and consist entirely of sheet balsa.

All the parts are die-cut and merely require pressing out of their respective sheets, after which assembly can begin without further delay.

Some care is needed when separating the die-cut pieces from the surrounding wood. It is often best to break away the waste wood from the parts rather than vice versa and this technique is quickly acquired.

Do not worry too much if you accidentally split one or two pieces. Just remember to repair the fracture with balsa cement before proceeding further. Never use PVA white glue on a model boat. This adhesive is not fully waterproof and should be avoided. After removal from their panels, all the parts should be 'cleaned up' with the piece of sandpaper supplied with the kit.

Assembly of Ee-Ze-Bilt kits is quite straightforward, so much so in fact that a full size plan is not required. The clear, stage-by-stage perspective sketches printed in the instruction leaflet are completely adequate.

Except for the *Cresta*, all the Ee-Ze-Bilt range of kits come complete with metal propeller, shaft, and stern tube assembly ready to accept any of the economically priced 3 to 4·5 volt electric motors. A wide range of these is handled by *RipMax Limited.*

Alternatively, you can buy a completely assembled motor, stern tube, and very efficient propeller all lined-up and ready to install. The *Elmic Thrust Pak* is one of these and costs 16s 3d complete.

The Ee-Ze-Bilt *Cresta* is, unlike the rest of the series, designed to use an electric outboard motor. For this, the makers recommend the *Elmic Sprite*, which is surprisingly realistic and is geared just like the real ones!

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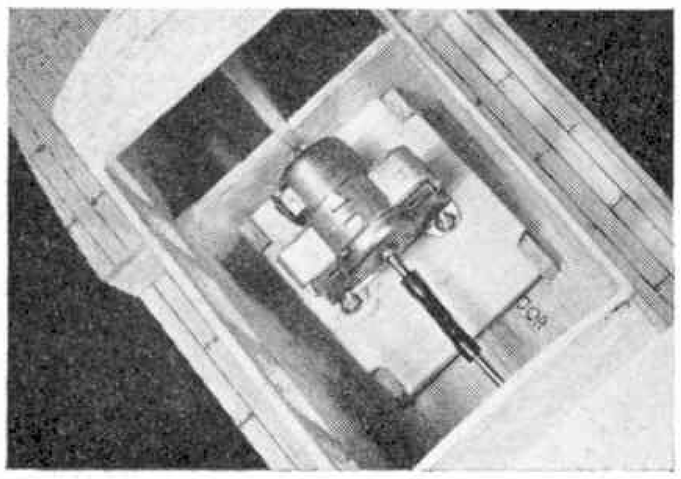

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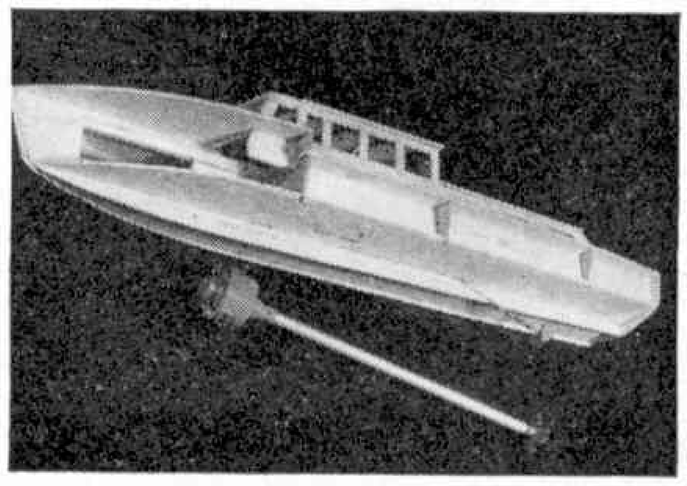

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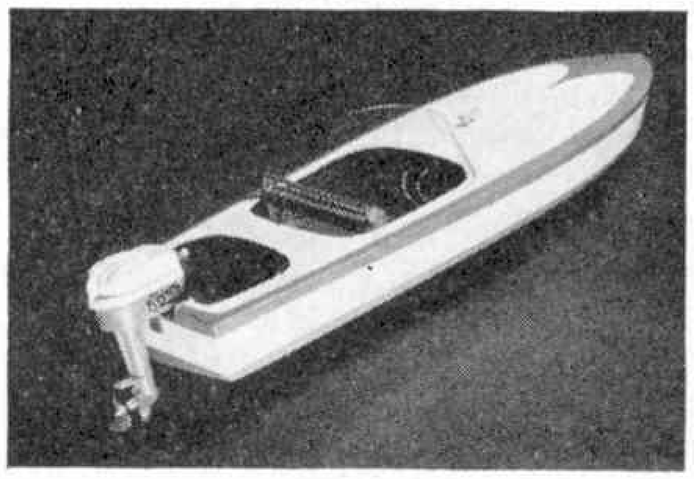


Because of the disproportionately high battery weight which it must carry, the *Cresta* powered with the *Sprite* will not 'plane' as its prototype does. Any small weight economies that can be made, either in the battery or the hull, will be visibly reflected in increased performance. The *Sprite* outboard costs 21s and, although this may sound expensive, it is worth remembering that it is only a minute's job to swap the entire unit from one hull to another. Thus you can have a whole fleet of outboard motor boats and yet require only one motor!

Eventually, of course, you will want to tackle something a bit bigger and more powerful. A very popular 'second model' is the *Veron* Police Patrol Launch.

This model is built basically on the same principles as the Ee-Ze-Bilt range but introduces thin plywood for the hull skinning and other highly stressed parts. One or two blocks of balsa are also used to add strength and simplify the reproduction of some more complex curves. Despite these more advanced techniques the Police Launch is not at all difficult to build, all the many parts being beautifully die-cut from excellent quality material, making up into a most attractive scale model. The kit costs 49s 6d.

With a 27 in overall length, small diesel engines of between 1cc and 2 cc may be used for power and these enormously enhance the performance. Remember, when buying such an engine that it must be water-cooled and preferably equipped with a silencer. Most Local Authorities insist on the use of silencers with any model engines operated on their lakes and ponds.

A good example of a specially designed model marine diesel engine meeting all these requirements is the *E.D. Seagull* of 1 cc capacity which costs £4 4s.

An electric motor can of course be used in the Police Launch if desired, but battery costs for a motor large enough to give a really good performance are likely to be high if the boat is operated for any length of time. Miniature re-chargeable accumulators are highly recommended for such purposes. It should be noted that the Police Launch is an ideal subject for conversion to simple radio control employing one of the latest all-transistor lightweight outfits.

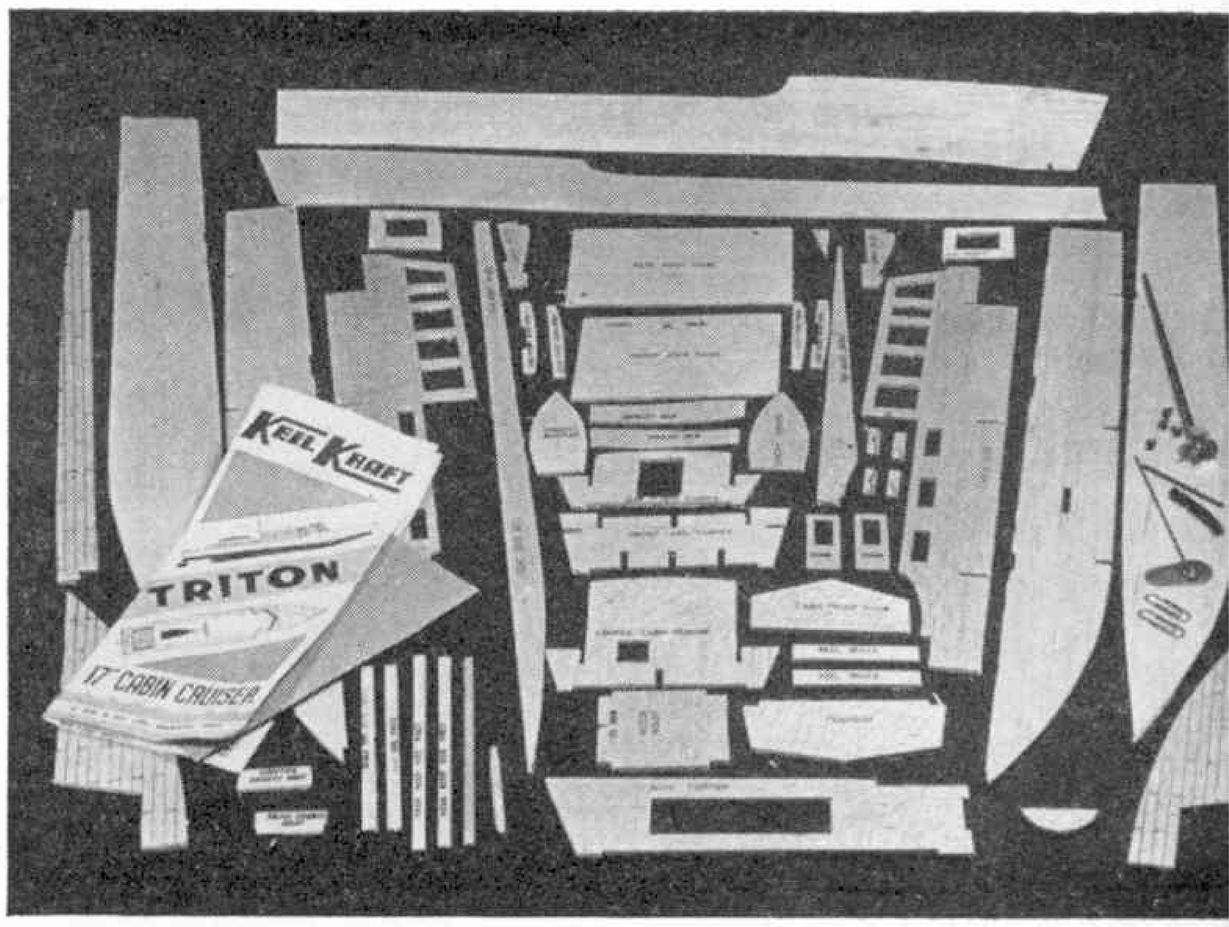
At the other end of the price and size scale, many of the small plastic scale model boat kits can be obtained complete with electric motors. These are most attractive when assembled, but generally speaking most of them are disappointing in operation, being on the heavy side and rather sluggish.

They have the advantage of highly detailed plastic moulded parts which, unlike wood, require no surfacing or waterproofing. All the builder's efforts can be concentrated on accurate assembly and a really good decorative paint job.

Cellulose dopes must never, of course, be used with polystyrene kits as these substances destroy the plastic parts. Always use one of the recommended plastic enamels.

Finally, do not forget the many excellent fittings and accessories which do so much to dress up a well made boat. Several manufacturers produce some really attractive ranges of deck fittings in metallised plastic, white metal or plated brass, depending on price.

Most comprehensive selections of these accessories are produced by *RipMax Ltd.*, Yeoman Ship Fittings distributed by *Alan Hales Ltd.*, Mersey Marine fittings—distributed by *Keil Kraft* and the *Web Model Fitting Co.* of 204 (R) High Road, Wood Green, London, N22.



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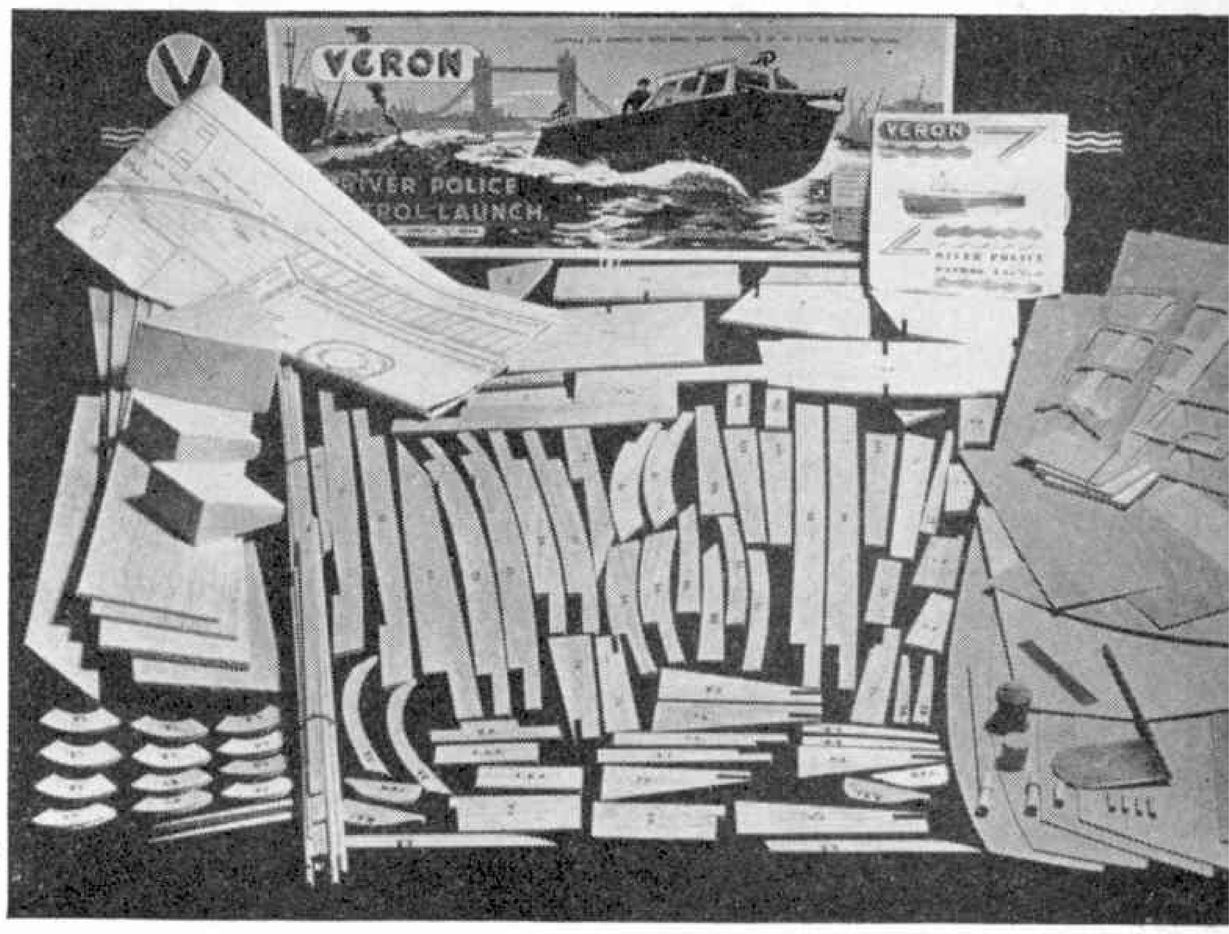

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1 The completed plastic kit of the Revell *Marlin* sports fishing cruiser makes an unusual and attractive working model. Measuring approx. 8 in long and powered with a small electric motor, the complete kit costs 13s 6d (including motor).

2 Inexpensive Kako electric motor makes an ideal power plant for the *Triton*. This photograph looking down into the 'engine room' shows the flexible plastic drive tube connecting the motor shaft to the propeller shaft.

3 Side and bottom balsa skins are left off the *Triton* to reveal simple yet strong basic structure. Seen below the hull is the Elmic *Thrust-Pak*—a one piece motor and propeller assembly which is very suitable for this type of craft. It costs 16s 3d.

4 Outboard motor boats such as the Keil Kraft *Cresta* perform well with the ingenious Elmic 'Sprite' electric outboard motor. A perfect working miniature of the real thing, this unit costs 21s.

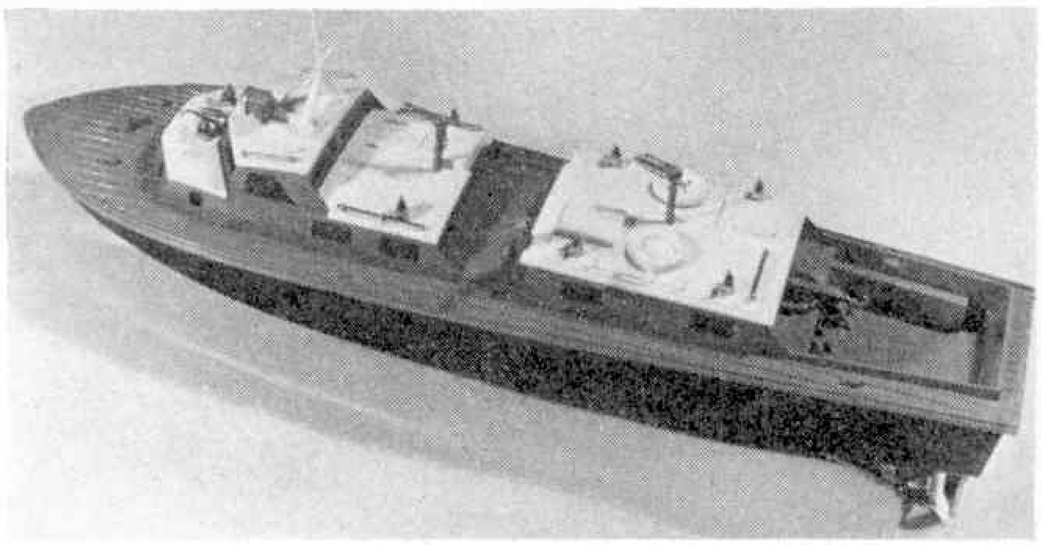
5 Part of the all-balsa Keil Kraft Ee-Ze-Bilt *Triton* cabin cruiser. As shown, less motor this kit costs 13s 8d.

6 More advanced, and introducing many plywood parts the *Veron* River Police Patrol Launch measuring 27 in overall, is nevertheless, of fairly straightforward construction because of the accurate die-cutting of the many balsa and ply pieces. It costs 49s 6d and may be electric or diesel powered.

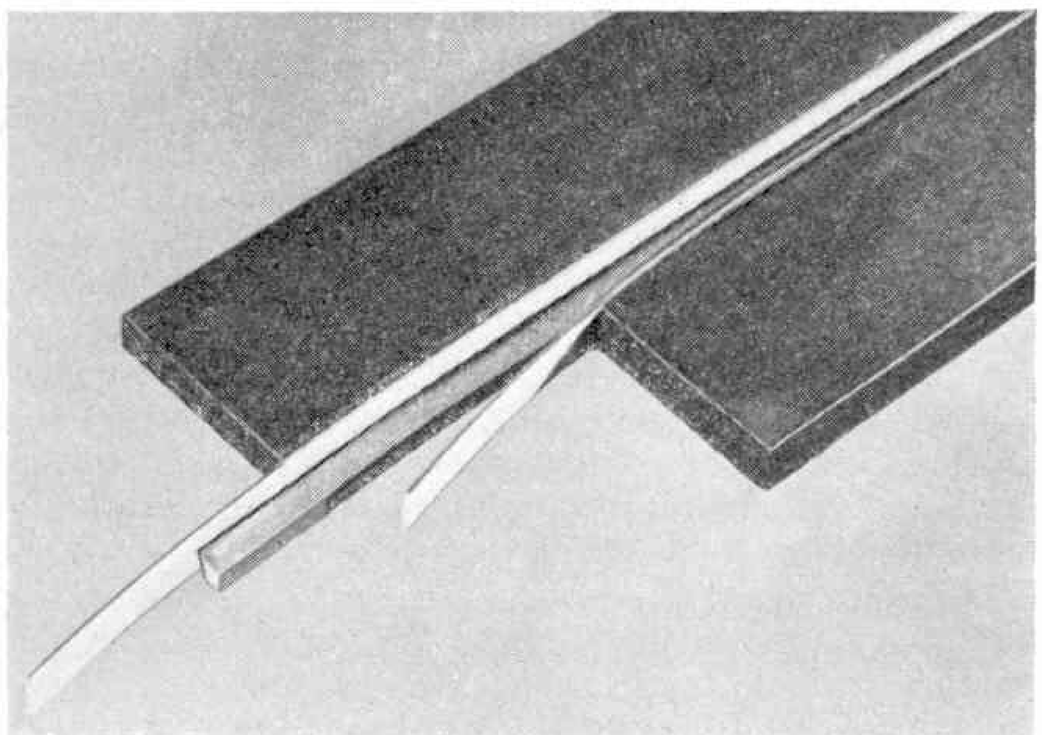
window SHOPPING

kits and models on the market

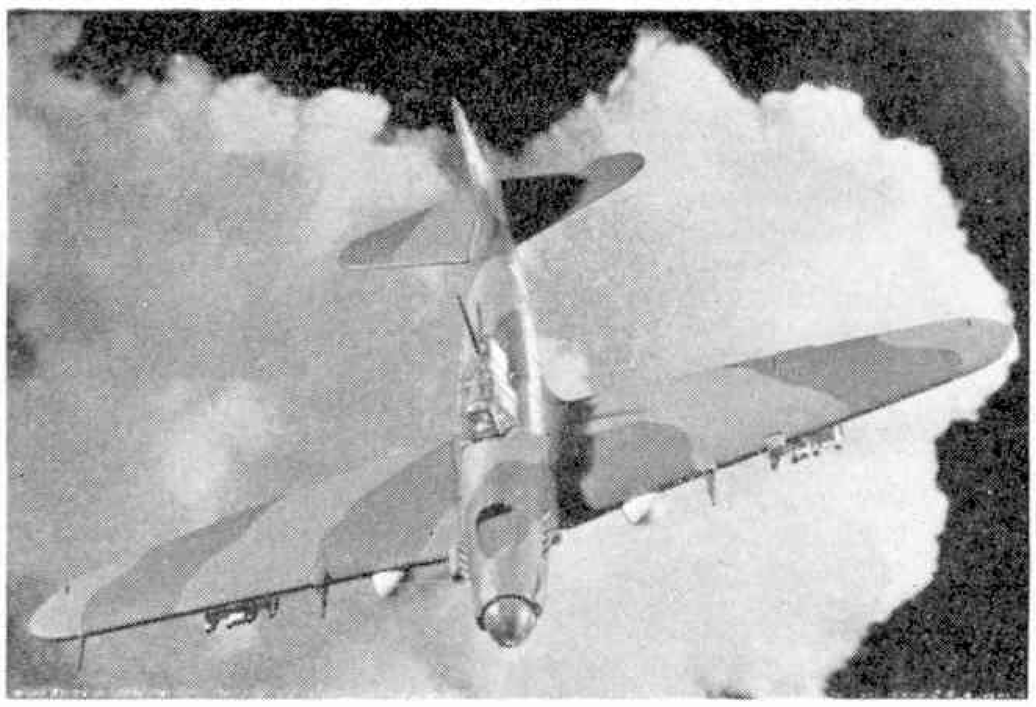
This new book on vertical flight aircraft brings together the many and varied types of machine designed to take off and land vertically. These range from the familiar helicopter to the variations on the convertiplane theme, tilting rotor, tilting wind, ducted fan and deflected thrust aircraft. In all more than 80 machines are described. The background and development history of each type is described, its potential and service record outlined and variants surveyed. The book is illustrated with 300 photographs of the prototypes and later variants of each of the aircraft described. Published by Temple Press, price **£1 5s.**



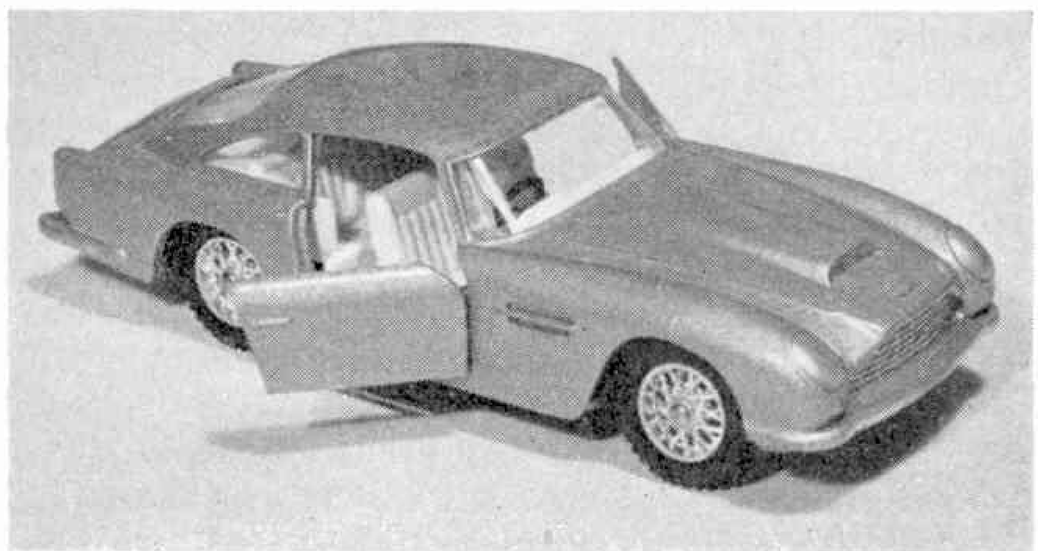
Sure to be popular on ponds and lakes all over the country this summer is the Vosper RAF crash rescue tender scale model from Victory Industries Ltd., makers of the famous VIP raceway. This twin-screw 16¼ in model faithfully reproduces the RAF prototype in every detail, and has exceptional stability in the water. It is powered by the Mighty Midget motor which uses four baby torch cells. The instruction sheet with the model is extremely easy to follow, and gives simple maintenance hints. Price **£2 19s 11d.**



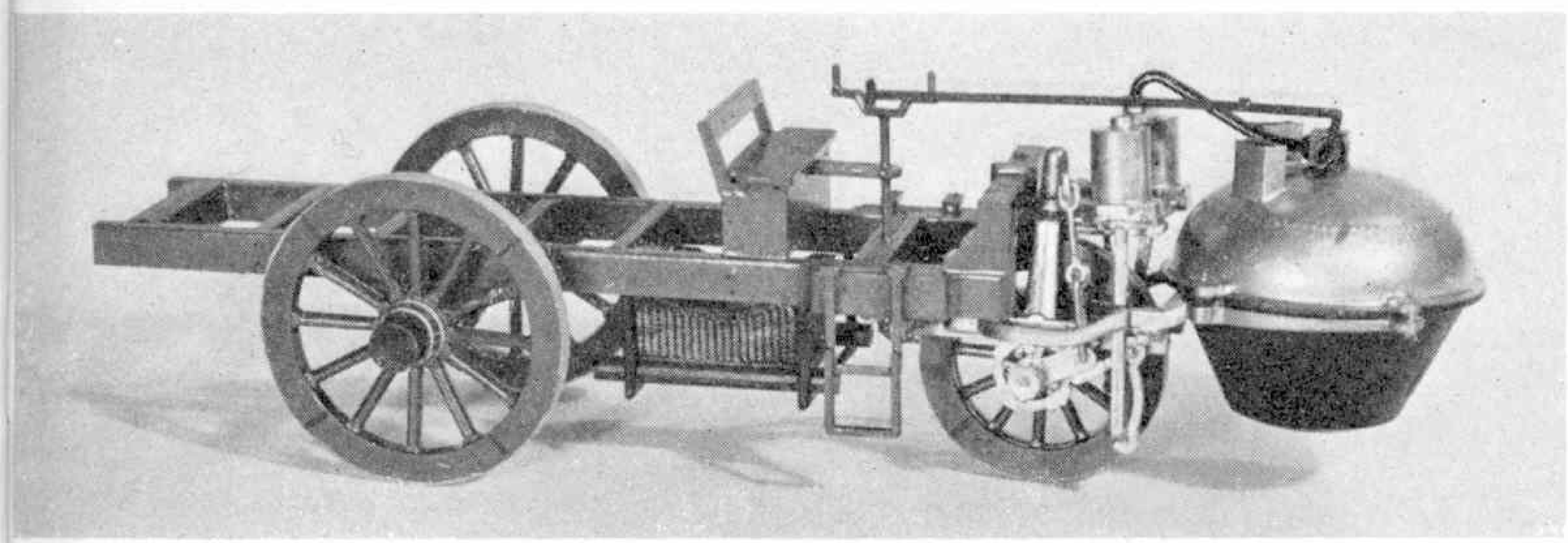
Flexible model roadway is now being produced by Peco. It can be bent to any radius, obviating the need for set sections of straights and curves. It can be also formed into hills and bridges. Supplied in kit form, the price per yard is **7s 6d.**



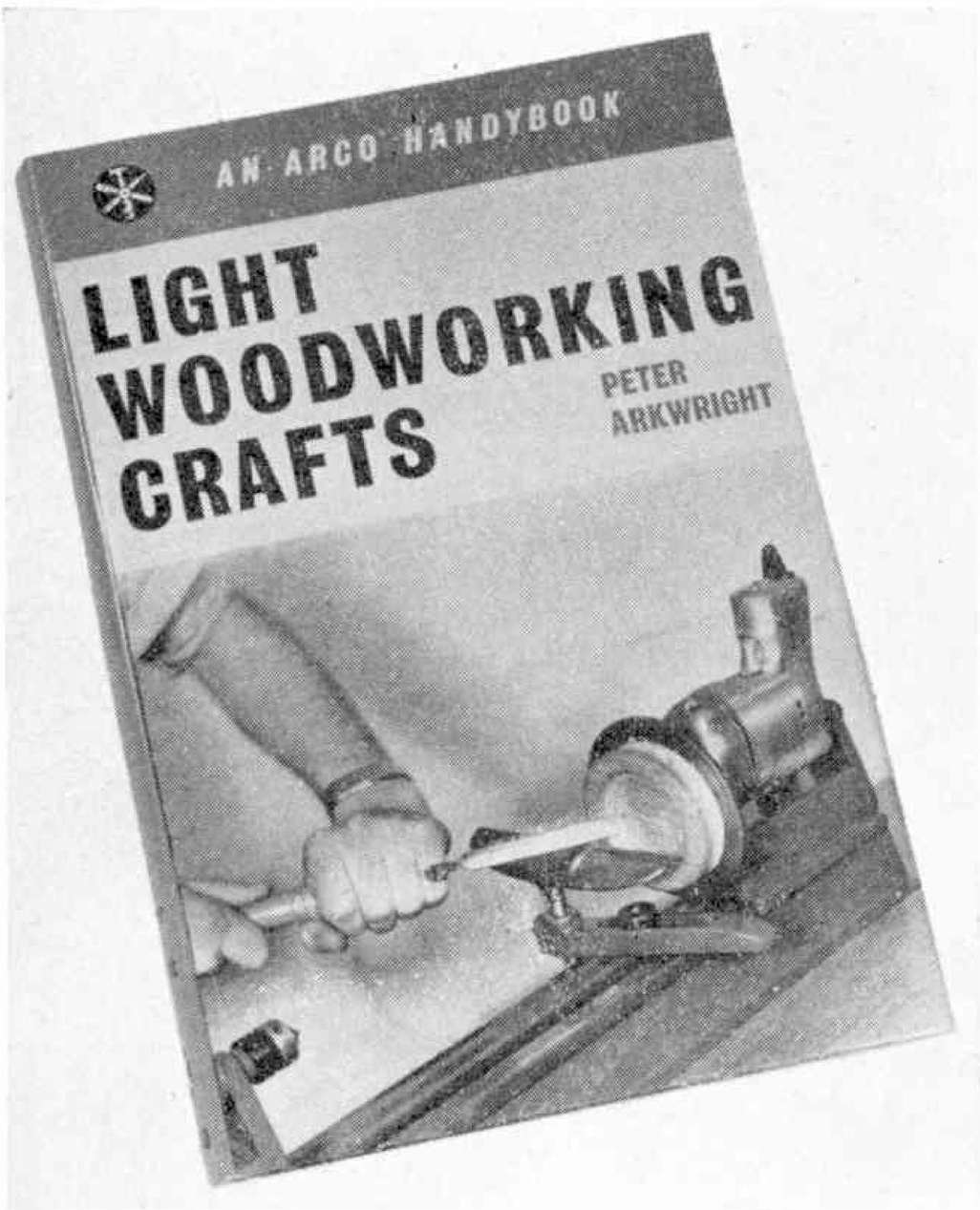
Russia's most famous World War II aircraft, the Ilyushin Stormovik, is new from Airfix. The kit makes a 1/72 scale model and comprises 60 parts. The Stormovik, which first appeared in 1941, had a crew of two, pilot and gunner, a maximum speed of 260 mph, and two 23 mm cannon. The aircraft was used for ground attack and close support. Price **3s.**



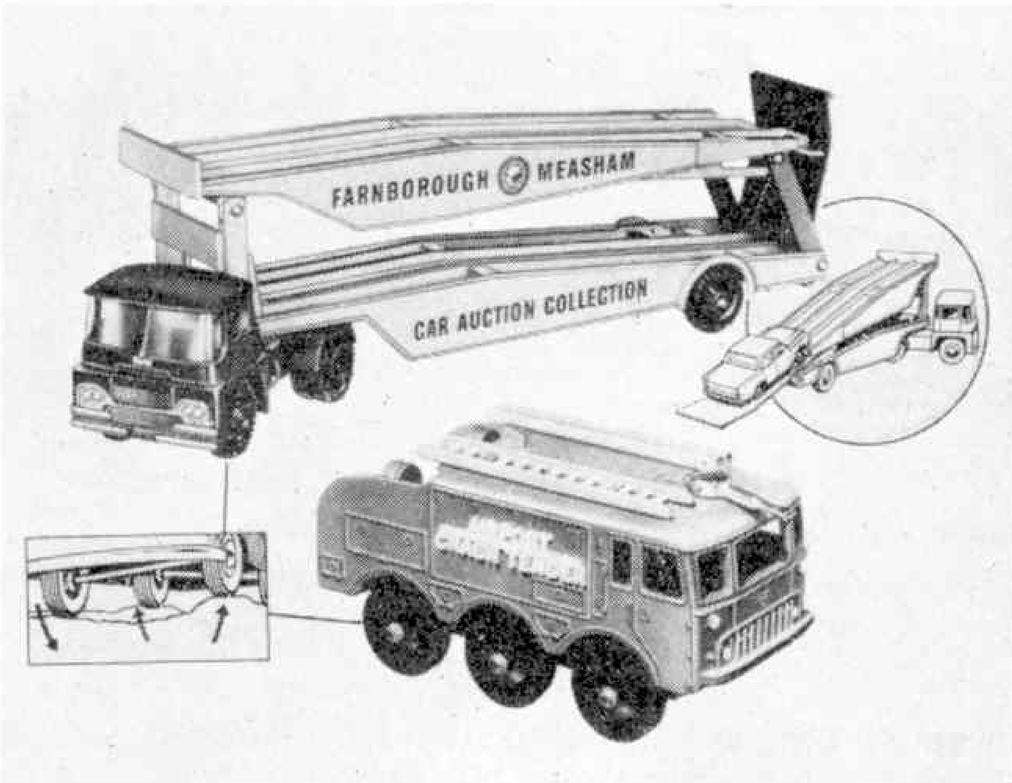
From France comes a new model of an English car, the Aston Martin Vantage. It is a finely detailed model with wire wheels and opening doors. It is produced by Solido. Price **10s 3d.**



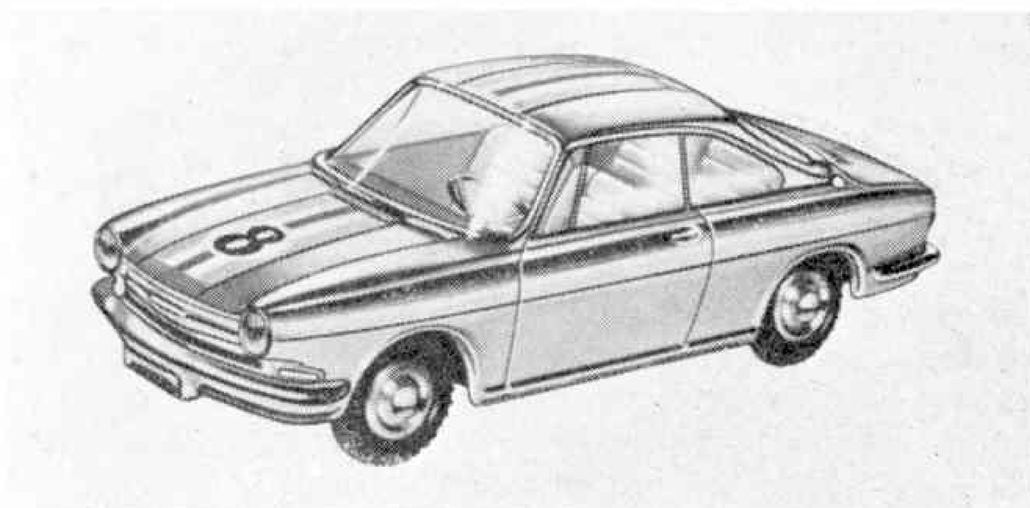
A kit with a difference is one of the French Teuf-Teuf series now available in this country. It is a model of the Le Fardier De Cugnot 1769 (steam car). Well detailed and extremely attractive to all those interested in the history of motoring, the kit is priced at **16s 9d.**



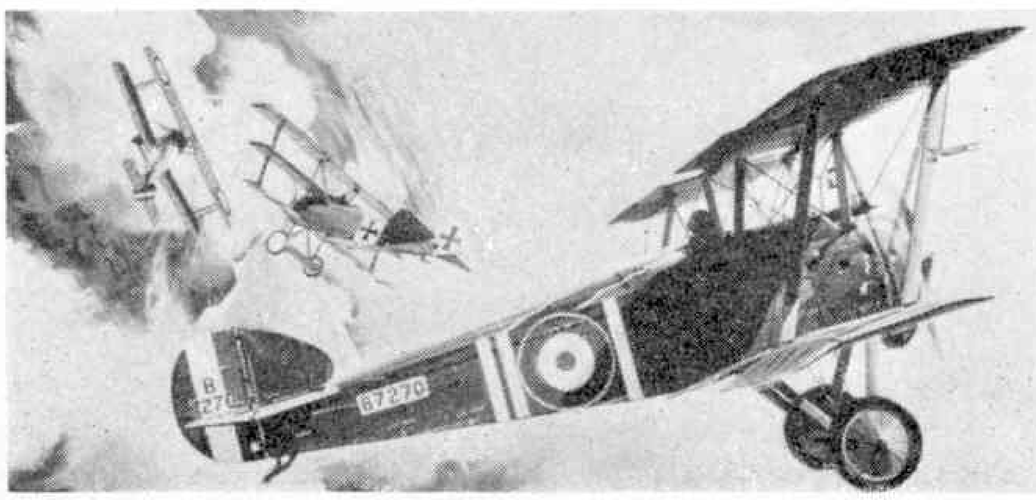
Peter Arkwright's book, *Light woodworking crafts,* has chapters on nearly all the crafts, including balsa wood modelling, fretsaw marquetry, incising, laminated woodware, matchstick mosaic, water line ship modelling, and whittling. Tools and materials needed for each craft are considered at the beginning of each chapter. There are a number of illustrations and diagrams. Published by Arco Publications, price **18s.**



New 'Matchbox' models from Lesney Products Limited are a fire-fighting crash tender, and a car transporter. The crash tender is finished in authentic fire service red, with roof-mounted hoses and ladder, and name-plates on both sides. It has a brass-plated swivelling foam nozzle and all independent spring suspension. Price **1s 11d.**
The car transporter is a model of the Guy 'Warrior' cab/tractor unit. It has glazed windows and spring suspension. The folding ramp gives access to top deck. The model's overall length is $8\frac{1}{2}$ in. Price **7s 6d.**



A scale replica of the sleek Bertone-bodied Simca 1000 coupe is introduced in the Corgi range. The real car is a luxury version of the standard Simca, with modified engine for improved performance. The model is in competition trim, with a brightly plated finish, racing number and bonnet and roof flash. Among its other features are spring suspension, seats and steering wheel. Price **4s 3d.**



Continuing their series of World War I aircraft kits, Revell introduce the Spad XIII, the Albatros DIII, and perhaps the most famous of all, the Sopwith Camel (illustrated). The model Sopwith is a replica of the one flown by Captain Roy Brown when he shot down Baron von Richthofen in April, 1918. The colours are of 209 Squadron, RFC. Special features include detailed pilot figure, and rotating wheels and propeller. Price **2s.**

FIRESIDE FUN

Why are elephants always grey?
Because people are always telling such stupid jokes about them.

* * *

Johnny's parent knew that their son was no genius, so when term after term, his school report said he was 'trying', they thought that at least he was making the most of his small resources. They changed their minds, however, when he came home one term with a report which said, 'This year your son has been more trying than ever'.

* * *

Two Irishmen were shipwrecked on a Pacific island. Being Irishmen, of course, they started fighting.
Two Scotsmen were shipwrecked and formed a Burns society.
Two Englishmen were shipwrecked, but they ignored each other because they had not been introduced.

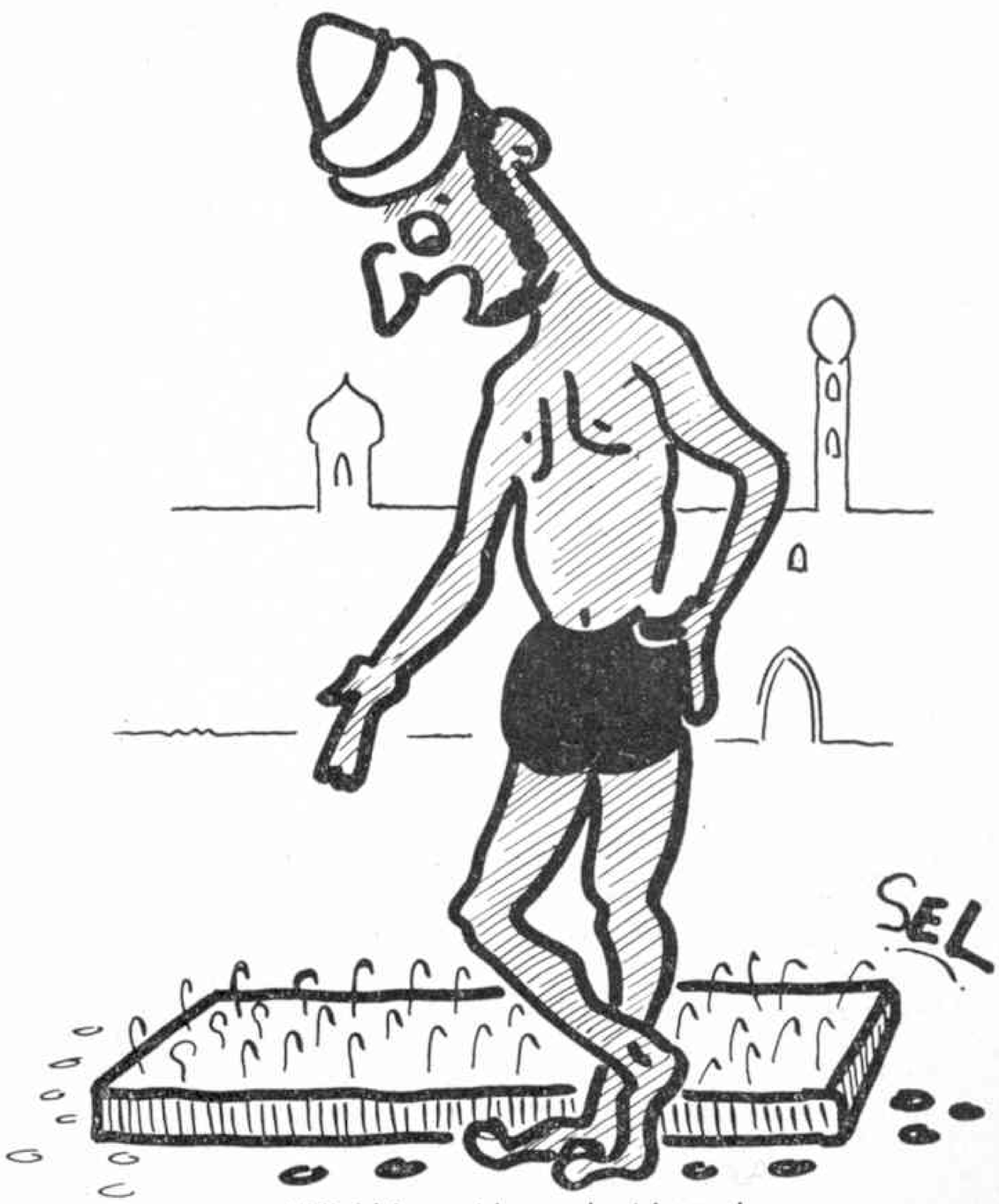
* * *

There was a man who bought a very fast car, but was disappointed because traffic in England was so thick that he was never really able to let it go. He went to Ireland where he thought the roads would be quieter. He was right, and pretty soon he was driving at 100 mph. Suddenly, an old horse-drawn cart bearing two men emerged from a gateway and lurched into the road right in the car's path. The road was muddy so quick braking would have meant a terrible skid. The motorist went frantically down through his gears, but he was still doing 60 mph with the cart only 50 ft ahead. Desperately he swung the steering wheel and the car screamed through the gateway from which the cart had come. He raced across the field and through another gate half a mile further on. Said one of the men in the cart to the other:
'Paddy, me boy, we only got out of that field just in time.'

What about the two Scottish counterfeiters? They worked diligently for months at their illicit craft, until they produced a wonderful work of art, their first banknote.
'Hamish,' said one of them, 'perhaps we have been a wee bit greedy. Maybe we should have made it a £1 note. Don't you think people might be suspicious of an £18 note?'
'Not a bit,' said his partner in crime. 'We'll take it to the village shop. Old Jock'll change it without thinking.' So they went to Jock's shop and asked him to change their £18 note.
But Jock was not so simple as they had hoped.
'Of course I'll change it, boy,' he said. 'And how would you like your money? Three sixes, or two nines?'

* * *

That was an odd SOS call we heard on the radio recently. It was for someone called Pharoah, who was asked to go to the British Museum, where his mummy was seriously ill.



'Allah' I must have slept heavy!

MECCANO AND ITS ANCILLARIES

THIS MONTH

meccano magazine

LOOKS AT

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Flying aeroplanes in Meccano

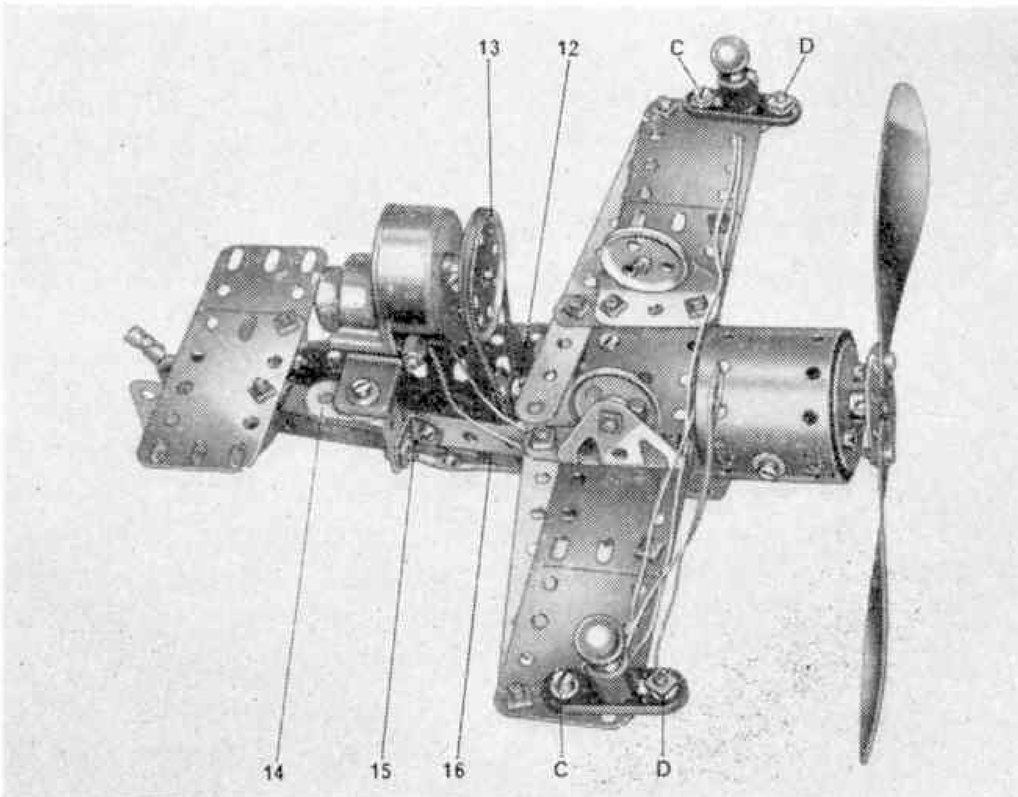
by **Spanner**

ONE OF the greatest boons to Meccano model-building in recent years has been the introduction of Elektrikit. Using only a few of the miniature electrical components contained in the Kit we are able to increase the scope of standard parts enormously. Thanks mainly to the Commutator, for example, it has been possible to produce the novel aeroplane roundabout pictured this month, the drive for which is actually supplied by one of the aeroplanes attached to it.

The aircraft in question is fitted with an Emebo Motor coupled-up to a propeller, built from two Propeller Blades, part No. 41. When the current is switched on, the propeller revolves and does its job so well that it drives the whole model, slowly, at first, but with ever-increasing speed until finally it travels at a pretty fair pace.

It is best to begin construction with the main tower framework. Four upright 12½ in Angle Girders 1 are joined at the base by four 5½ in Strips 2, and connected to the top by four 2½ in Strips 3 with 12½ in Strips being used as bracers. Four of the bolts securing the 2½ in Strips also hold Fishplates and these support two 4½ in by 2½ in Flat Plates 4 and two Flanged Sector Plates 5. A 2½ in by 1½ in Flanged Plate, to which is secured a 2 in Pulley Wheel 6, is bolted to the Flanged Sector Plate and

An underneath view of the drive aircraft showing the Emebo Motor.



a 5 in Rod is fixed in the boss of the Pulley. A pair of compound 34½ in strips each consisting of three 12½ in Strips 7 overlapped three holes at each joint, are connected together by a 1½ in by ½ in Double Angle Strip, a 1½ in Strip and two 5½ in Strips 8, the two last being attached to the Strips by Angle Brackets. After the 'planes have been built, two 2½ in by ½ in Double Angle Strips 9, supported by 3½ in Strips 11, are bolted to the Strips at their balance points which are off-centre owing to the different weights of the two aircraft. To the lugs are secured a Bush Wheel and a 6-hole Wheel Disc 10. Although any suitable aircraft can be used, the two we have built are based on model number 2·1 in the current 2/3 Instructions Manual with, of course, a few slight modifications. The wings are built up from a 5½ in by 1½ in Flexible Plate extended at each end by a 2½ in by 1½ in Red Plastic Plate and edged at the rear by two 5½ in Strips.

The fuselage consists of a further two 5½ in Strips 16, each of which is extended at the front by a 2½ in by ½ in Double Angle Strip and at the rear by a 5½ in Strip. A U-section Curved Plate and a 2½ in by 2½ in Red Plastic Plate are bolted between the two Strips, as also is a 2½ in by 1½ in Transparent Plastic Plate, which forms the cockpit-cover. Between the rear lugs of the Double Angle Strips is bolted a 1½ in Strip, while an 8-hole Wheel Disc is fixed to their forward lugs. The engine cowl, a 5½ in by 1½ in Flexible Plate, is then bolted in place. An 8-hole Bush Wheel, with two Propeller Blades bolted to it, is secured to a 4½ in Rod which is then journalled in the Wheel Disc and the 1½ in Strip, being held in place by a Collar.

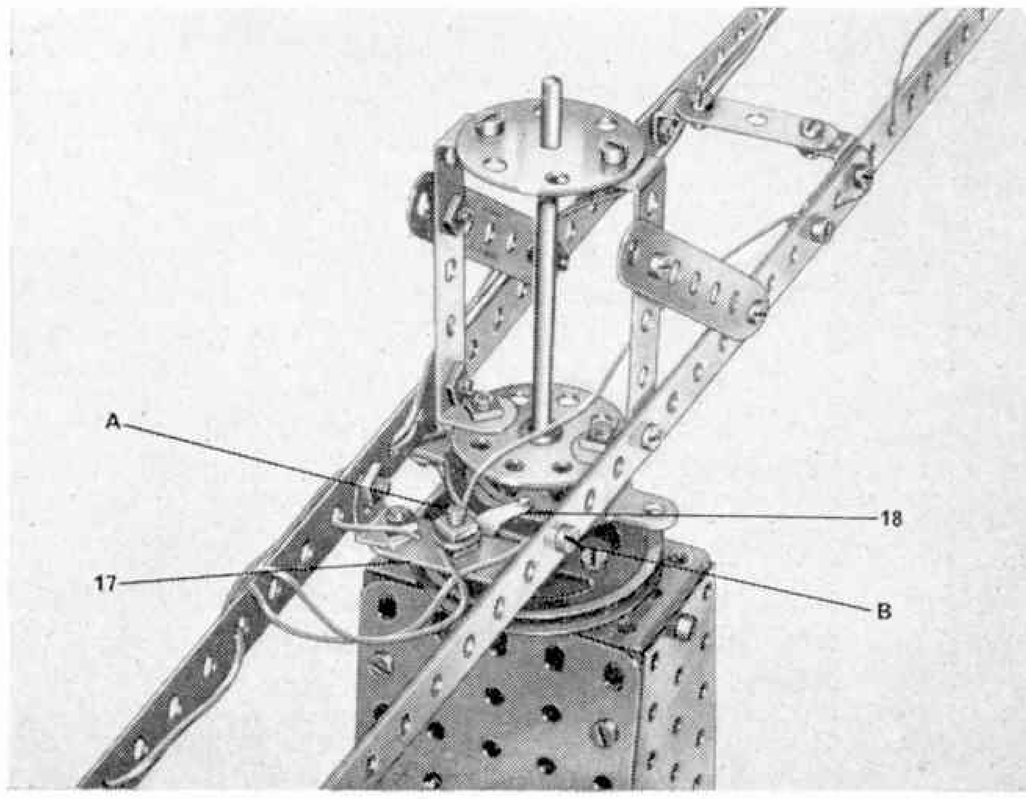
Two Flat Trunnions held between two 2½ in Stepped Curved Strips form the tail fin, a Rod and Strip Connector the tail skid, and two 2½ in by 1½ in Flexible Plates, which are attached to the fuselage by Angle Brackets, the tailplane. To each wing-tip is fixed an Elektrikit Lamp Holder, complete with Lamp, while two Trunnions are bolted beneath the wing, the rear bolts also holding Fishplates in position. These Fishplates in turn are bolted to the 5½ in Strips forming the trailing edge of the wing. A 1 in loose Pulley is locknutted through the apex hole of each Trunnion, thus making an undercarriage.

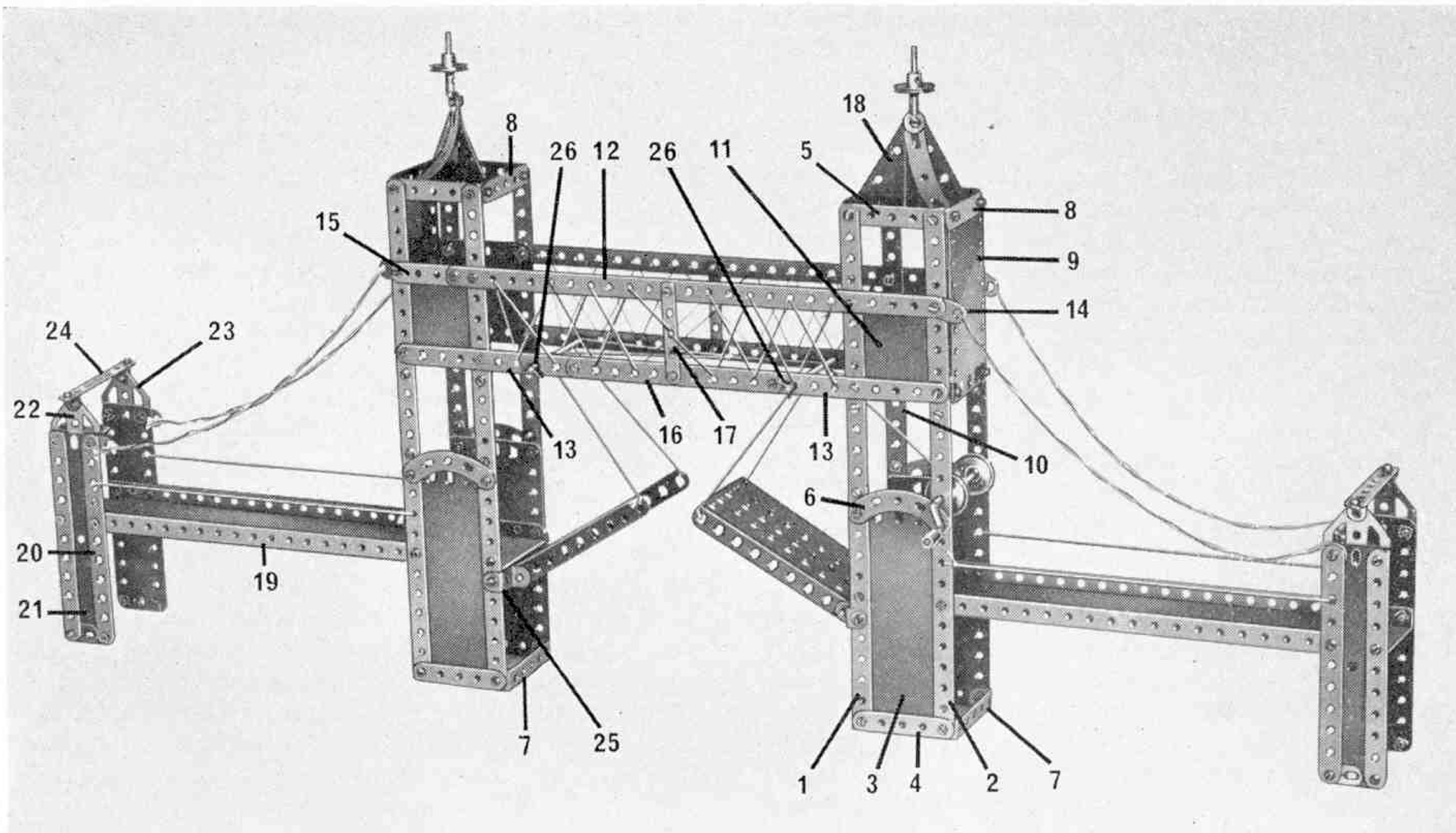
Both aircraft are similarly constructed up to this point. Now, however, only one of them has a 1 in by 1 in Angle Bracket 14 fixed to each fuselage 5½ in Strip by a ½ in by ½ in Angle Bracket 15. An Emebo Motor carrying a 1½ in Pulley 13 is bolted across Angle Brackets 14 and a Driving Band is run from the Pulley round a ½ in Pulley 12 fixed on the 4½ in Rod carrying the propeller. To achieve the fast speed required, incidentally, the Propeller Blades must be twisted. This must be done also on the model without motor to ensure that the pressure of air keeps the propeller revolving once it has been started by a slight tap from the operator's finger. It is essential that the tap be given before the 'planes start moving around the tower at speed. And here let me give a word of warning. As speed increases, keep well clear and control the aircraft by the starting switch only, which must be placed at least two yards from the tower.

Returning now to the tower a Flat Commutator is secured to the Rod fixed in the boss of the 2 in Pulley Wheel 6. Two lengths of wire are taken from the power source and are passed up inside the tower. One is connected to one of the bolts holding the 2 in Pulley and the other to the lug of the Flat Commutator. A 1½ in Insulating Strip 17 is attached to the Strip 7 by Angle Brackets, and, in the centre of the Strip, a 1 in Wiper Arm 18, which makes contact with the Flat Commutator, is bolted. The Motor wires are lengthened and connected to the Bolt A and the earth Bolt B. At this point the 'planes are connected to the Strip 8 by Cord after which the Bolts C are connected together by covered wire, while another length of wire connects one of the Bolts C to the Strip 8. The Bolts D are then connected by covered wire, and, from one of them, a length of wire is taken to the Bolt A. Both aircraft are similarly wired. There are several important points to watch. Firstly, oil all moving parts but *do not* allow any oil on the Commutator. Next, make quite sure that Bolt B touches the bare metal, and lastly ensure that the model is operated in a suitable clear area, greater than the length of the revolving arm. As speed increases, centrifugal force causes the aircraft to swing outwards and upwards, thus increasing their radius of operation.

Parts required.—10 of No. 1; 14 of No. 2; 2 of No. 3; 8 of No. 5; 3 of No. 6a; 4 of No. 8; 12 of No. 10; 18 of No. 12; 2 of No. 12a; 1 of No. 15; 2 of No. 15a; 1 of No. 204; 1 of No. 21; 4 of No. 220; 1 of No. 23a; 3 of No. 24; 1 of No. 24a; 2 of No. 24c; 165 of No. 37a; 147 of No. 37b; 23 of No. 38; 4 of No. 41; 1 of No. 48; 6 of No. 48a; 1 of No. 51; 2 of No. 53a; 2 of No. 54; 2 of No. 59; 4 of No. 90a; 12 of No. 111c; 4 of No. 216; 4 of No. 126a; 1 of No. 186a; 8 of No. 188; 4 of No. 189; 2 of No. 193; 2 of No. 194a; 2 of No. 199; 2 of No. 212; 1 Emebo Motor. Electrikit Parts: 1 of No. 503; 1 of No. 531; 4 of No. 539; 1 of No. 540c; 1 of No. 540R; 1 of No. 540J; 1 of No. 540V; 1 of No. 551; 1 of No. 558.

The tower-top showing bearings, commutator and wiring arrangement.





Build Tower Bridge

by **Spanner**

OVER THE years we have featured many Meccano bridges in the Meccano Magazine, but continued demand proves that constructions of this type are among the most popular of model-building subjects. Here we have a bascule bridge, reminiscent of London's famous Tower Bridge, and although the model is not built from any particular Outfit, it is fairly easy to make and does not use a great number of parts.

It is best to start with the towers, or, more specifically, the right-hand tower in the above illustration. Two 12½ in Strips 1 and 2 are bolted to a 5½ in by 2½ in Flexible Plate 3, two of the bolts also holding a 2½ in Strip 4 in position. They are further connected by a 2½ in by ½ in Double Angle Strip 5 at the top and a Stepped Curved Strip 6 lower down. A 2½ in by 2½ in Transparent Plastic Plate 10 is bolted in place as shown. Another side is similarly built and the two are then joined at the bottom by 2½ in by ½ in Double Angle Strips 7 and, at the top, by 2½ in Strips 8, attached to a 4½ in by 2½ in Flexible Plate 9 which, in turn, is fixed to Strips 2 by Angle Brackets. Two 2½ in by 2½ in Flexible Plates 11 are fitted, at the same time bolting a 12½ in Strip 12, a 5½ in. Strip 13 and an Obtuse Angle Bracket 14 in place.

In the case of the left-hand tower, virtually the same construction is followed, the only difference being that a 2½ in Strip 15 is substituted for the 12½ in Strip 12. The towers are joined by bolting the Strip 12 to the left hand tower and by connecting the two 5½ in Strips 13 with a further 5½ in Strip 16. A 2½ in Narrow Strip 17 serves as a bracer between the two sets of Strips as also does Meccano Cord, threaded as shown in the illustration to represent Girders.

Both tower tops are similarly constructed. Two 2½ in by 1½ in Triangular Flexible Plates 18 are bolted together to form a large triangle, through the apex hole of which two Formed Slotted Strips, one each side of the triangle and a Rod and Strip Connector are bolted. This Rod and Strip Connector holds a 1½ in Rod carrying a 1in fixed Pulley.

Next, two 12½ in Angle Girders 19 are fixed to each tower, and at the ends are bolted two 3½ in Strips 20 together with a 5½ in by 1½ in Flexible Plate 21. A Fishplate should be fixed at the bottom to help support. At the top of one set of Strips 20, a Trunnion 22 is fixed by Angle Brackets, one bolt also holding a Fishplate. Plaited Cord, representing cable, is secured between this Fishplate and an Obtuse Angle Bracket at the top of the tower. To Strips

Parts required.—10 of No. 1; 14 of No. 2; 2 of No. 3; 12 of No. 5; 2 of No. 6a; 4 of No. 8; 8 of No. 10; 10 of No. 12; 6 of No. 12c; 2 of No. 16; 2 of No. 17; 2 of No. 18a; 1 of No. 19g; 4 of No. 22; 8 of No. 35; 134 of No. 37a; 128 of No. 37b; 8 of No. 38; 1 of No. 40; 8 of No. 48a; 2 of No. 54; 4 of No. 90a; 6 of No. 111c; 4 of No. 125; 2 of No. 126; 2 of No. 126a; 1 of No. 176; 4 of No. 189; 4 of No. 190; 2 of No. 191; 4 of No. 192; 4 of No. 193a; 2 of No. 212; 4 of No. 215; 4 of No. 221; 2 of No. 235.

20 at the other side, a Flat Trunnion 23 is bolted instead of the Trunnion, and a 3½ in Strip 24 is then fixed between the two by means of Angle Brackets. A piece of cardboard, cut to correct size and laid on the angle Girders, serves as the roadway.

Still remaining to be fitted are the lifting spans, along with the mechanism for their operation. Two Reversed Angle Brackets 25 are bolted one each side of both towers and a 2 in Rod is journalled in each pair, being held in place by Spring Clips. These Rods, in turn, secure the lifting spans which are formed from Flanged Sector Plate. A 3½ in Crank Handle, carrying a Cord Anchoring Spring, is passed through Strips 2 on the right hand tower and is held in place by two 1 in fixed Pulleys. Two 3½ in Rods 26 are placed one in each of the Strips 13, and are held in place by Spring Clips.

Three separate pieces of Cord are attached to the Cord Anchoring Spring on the Crank Handle, and all three are passed over the right hand Rod 26. Two of the pieces are then tied to the right hand Flanged Sector Plate, while the third is taken across and after having another piece tied to it, is taken over the second Rod 26 and tied to the other Flanged Sector Plate. When the Crank Handle is turned, both sides of the bridge lift at the same time.

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by **The Editor**

Excitingly new

MANY READERS of the 'M.M' will recall how, in the issue for July 1962, I described the thrill of a trip from the North Wales Coast to Wallasey by hovercoach, across the wide estuary of the River Dee. It was a trip recorded for posterity by television cameramen and journalists from all parts of the country, and I still remember it with a thrill. I am convinced now, as I was then, that the hovercoach or hoverbus—whatever you may term it—has a place to fill in the world of transport, and it was always my hope that Meccano Limited would be able to make a miniature hovercraft which could provide youngsters and their dads with a realistic replica of one of the most exciting methods of transport this century has seen.

A young assistant at the Meccano Trade Fair displays the Hornby Hoverer.

Well, I am glad to say such a model is now being produced at the Meccano factory at Binns Road, Liverpool, and you see it illustrated here. It was first shown at the Meccano Trade Fair in London earlier this year, after it had been tested on the wide expanse of shore at New Brighton, where it was put through a gruelling test for the purpose of making an advertising film.

It is known as the Hornby Hoverer and will retail at £5 12s 6d in the United Kingdom. It is 15 in long by 9 1/16 in wide, and is 5 11/16 in high to the top of the fins. It is powered by a ·049 cu in Glo Plug engine, driving a 5 in propeller. The model travels equally well over land, sea and rocks, and moves at its best speed over water. It can be flown free and can be steered, in a circle if necessary, by means of the movable fins. For less adventurous souls it has a hook on one side so that it can be tethered by a suitable line to a central point and flown in a controlled circle. The hover height is about ½ in which gives it very fair lift.

The lower part of the Hornby Hoverer is coloured in bright yellow and carries the name of the craft, and a Union Jack, on either side. The upper portion is finished in bright red with the cockpit, across the front, neatly outlined in pale blue.

Look out for this fine new model.

Gearbox on T.V.

THOSE OF you who saw the B.B.C.'s well-known programme 'KYC 64' on Sunday, April 26, would doubtless be interested in the fact that a Meccano gearbox was used to demonstrate a car's transmission system. KYC 64 is projected on the screen as a car number plate which is actually an abbreviation of the full title 'Know Your Car 1964'.

Commentators in the programme on April 26 were John F. Miles, Manager of the High Performance Course at Brands Hatch, and Anthony Marsh. In dealing with the movement of the flywheel and its transfer of power, through the clutch and gearbox, to the differential they demonstrated the work of the gearbox with a Meccano model built specially for the programme.

By the use of weights and a miniature car they illustrated how gear ratios are changed, from top into bottom gear, to enable cars to climb gradients, and went on to compare the basic gearbox used in their illustration with the present-day refinement of synchromesh. The Meccano gearbox came through the demonstration with flying colours.

by **Linesman**

Continuing his series on scenery for model railway layouts, Linesman tells you . . .

RIVERS give your scenery that natural look

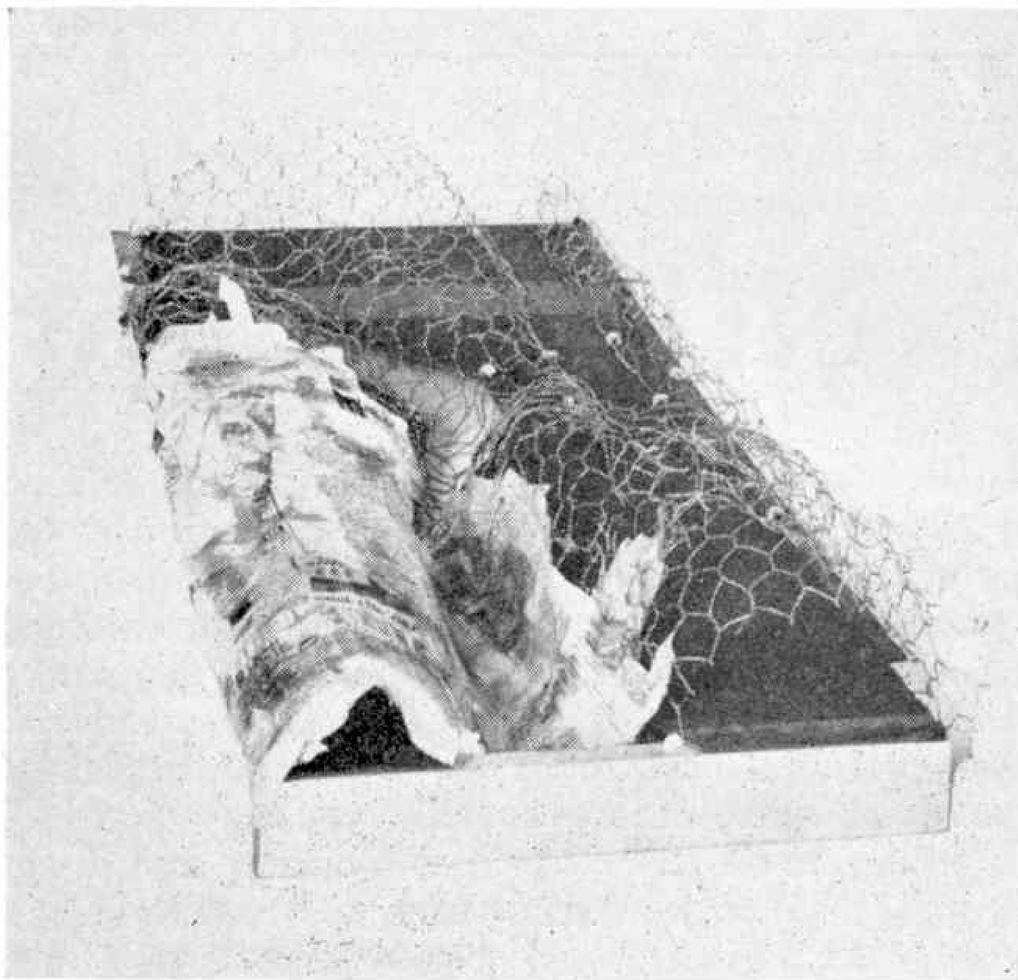
MANY HORNBY-DUBLO, and other, model railways would benefit by the addition of a river, stream or canal and it is surprising that this scenic feature is not seen more often as an adjunct to a railway layout.

Let us start with the construction of the baseboard. This does not have to be made very strongly and is, in the case of the model shown here, quite a crude affair, probably costing a shilling or two. A piece of hardboard was used for the surface of the baseboard and was strengthened by 2 in by 2 in timber down the sides and ends. The stream was sketched on the top of the hardboard, and a fret-saw used to cut out the river. Remember that rivers are nearly always irregular in shape, but the way your river bends will obviously be determined by the proximity of the railway line, and by the lie of the scenery around it. In the section of scenery illustrated in our photographs, a railway track built from Hornby-Dublo components is laid on the right, and its purpose is to supply coal and other goods for the barges that 'travel' on the river. This will allow a large selection of wagons to be used.

When the baseboard surface has been finished, the next task is to obtain a quantity of wire mesh, known commercially as chicken wire. This is available in various sizes ranging from about $\frac{1}{4}$ in mesh up to $2\frac{1}{2}$ in, or even 3 in.

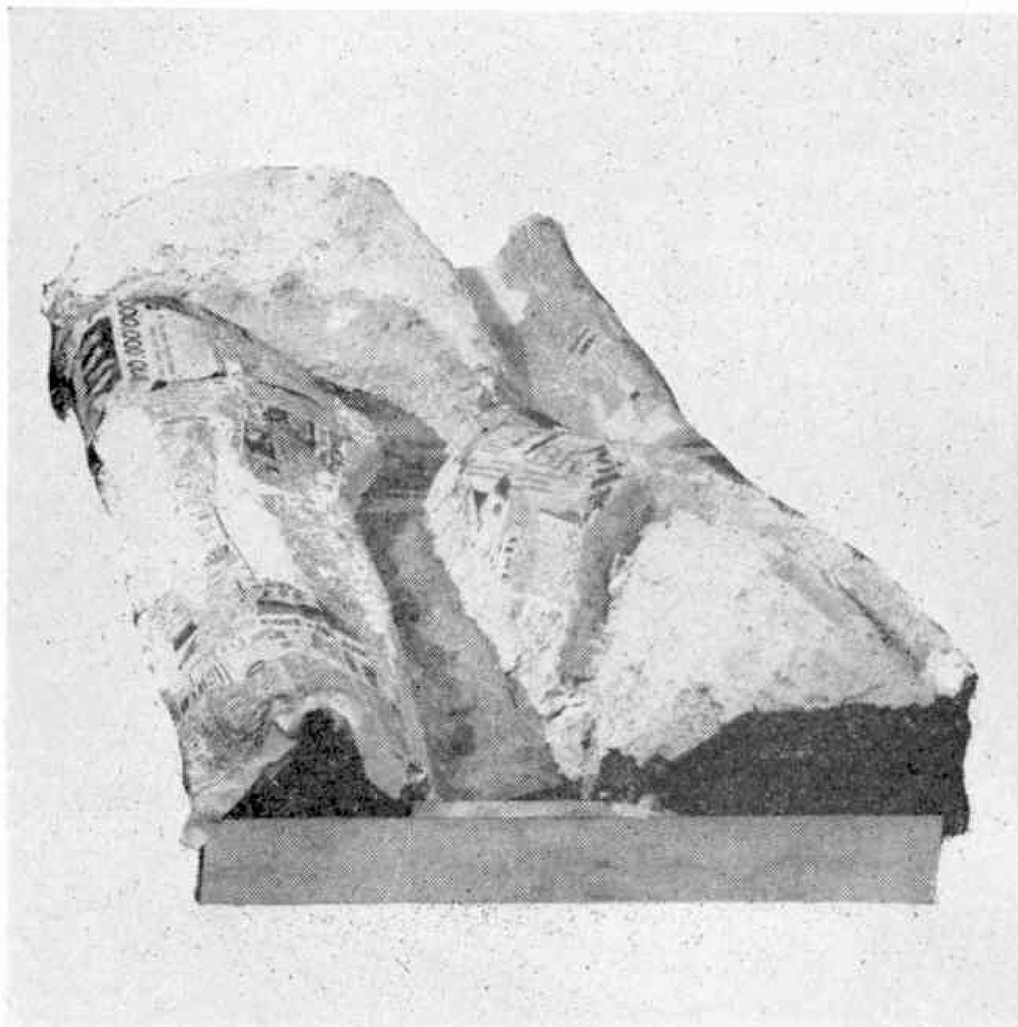
The shop from which I bought my wire mesh quoted 4s 1d a square yard for the $\frac{1}{2}$ in mesh and 2s 3d a square yard for the 1 in. I therefore chose the 1 in mesh to see if it could be used satisfactorily for the purpose. As there is no need to lay plaster straight on to the mesh, there is no great disadvantage in using the 1 in, but I would be disinclined to use any wire mesh larger than this, mainly because it would give insufficient support. With the aid of a pair of wire cutters (tin snips would be better) the sheet of mesh was cut into sections and moulded into hilly shapes by hand. Take care when moulding the mesh with your hands in case it should cut you. The river bed is made from the mesh by bending it into a concave form, so that the actual bed of the river lies below the surface of the baseboard. This is most important.

Where two pieces of the mesh require joining, twist the ends of the wire together and bend round one of the



The baseboard complete with wire mesh shaped and stapled into position. The first layer of papier-maché can be seen glued to part of the wire mesh.

This section of scenery completed and covered with papier-maché. The river bed is in position and parts of the hills have also been covered with an earth mix.



nearest strands of wire. Pin the mesh to the baseboard with staples. When the wire mesh has been bent and shaped, and finally pinned to the baseboard, it will be necessary for you to apply a layer of papier-maché. Two methods of making this compound were described in the April issue of the Meccano Magazine. In the case of the model I am describing, I chose the quicker method of building papier-maché, but for those who did not read the article I will describe it, quickly, once again. It simply consists of strips of newspaper laid on to the wire mesh, and given a coat of glue (in this case Polycell) of high density. This is repeated two or three times, so that there are three layers of Polycell and paper. You may find it a little difficult laying the first layer of paper on the wire mesh, but this can be overcome by folding the paper under the wire mesh and gluing it with Polycell. The surface dries rather quickly, and I found I was able to begin plastering within five or six hours.

To get a 'grassy' effect from plaster add sawdust and sand to the ordinary mixture. I usually find it satisfactory to have approximately five parts of plaster to two of sand and one of sawdust. The next step is to plaster the river bed, taking great care not to plaster over what will be the surface of the water.

Allow the plaster to dry before attempting anything further, after which the surface of the river can be prepared. I used a material known as Cobex. It is a transparent substance with a slightly bluish hue about it which is ideal for the surface of a river. If you find it difficult to obtain this material, I suggest you use ordinary acetate sheet which is cheaper. A further alternative would be Polyglaze, obtainable at most multiple stores. The river is cut out of one of these materials and placed in position, at a suitable height over the river bed.

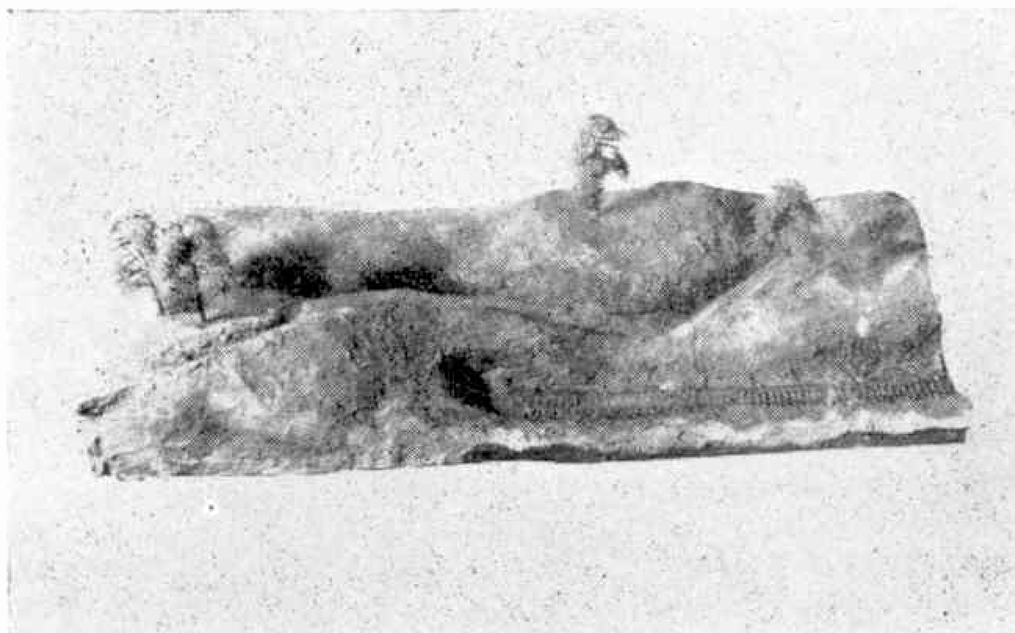
The river bed itself should be painted in browns, greens, greys and yellows. Place small boulders, weeds and other objects at the bottom of the river before painting, and before laying the acetate sheet. This is why I previously stressed the importance of not plastering to the level of the water, for any plaster above this level would cause the acetate to buckle. When the 'river' is in position, the banks can be plastered to cover up the join between the acetate and the paper, and the rest of the 'countryside' can also be coated with the same mix.

The small stream on the right of our section of scenery is built up in a similar way to the river, but you should remember that, as it is shallower, the greatest attention should be paid to the placing of stones and rock at the bottom of the stream.

The plaster must be 'filled' with a lacquer when it has dried, after which (as in the case of the river) it can be painted and allowed to dry. Two tins of clear glossy varnish—I used Humbrol—are then poured over the bed of the stream and allowed to harden. The varnish tends to find its own level and dries, as it is flowing, to give a waterlike effect. I have found this method most effective for representing small, shallow streams and rivers.

A close-up of the stream which forms a prominent part of the landscape and which flows down to join the river.

The entire section of scenery painted and finished. Trees add a further air of realism.



Now our section is virtually complete, except for painting the hills and 'planting' the trees which, in this case, are from the attractive range produced by Britains. The trees are made with bases, so that they are movable, but in this case the bases were removed, small holes were drilled in the hillside and the tree trunks affixed to the scenery with Polyfilla.

Cash sales service ends

Readers are informed that after many years of providing a limited cash sales service from their factory at Binns Road, Liverpool, Meccano Limited have found that, with their growing retail coverage, there is much less call for this facility than previously. It was therefore discontinued at the end of April. Good toy stores and shops carry most Meccano products and will always order any item not stocked by them.

MECCANO SPARE PARTS DEALERS LIST CONTINUED FROM JUNE ISSUE

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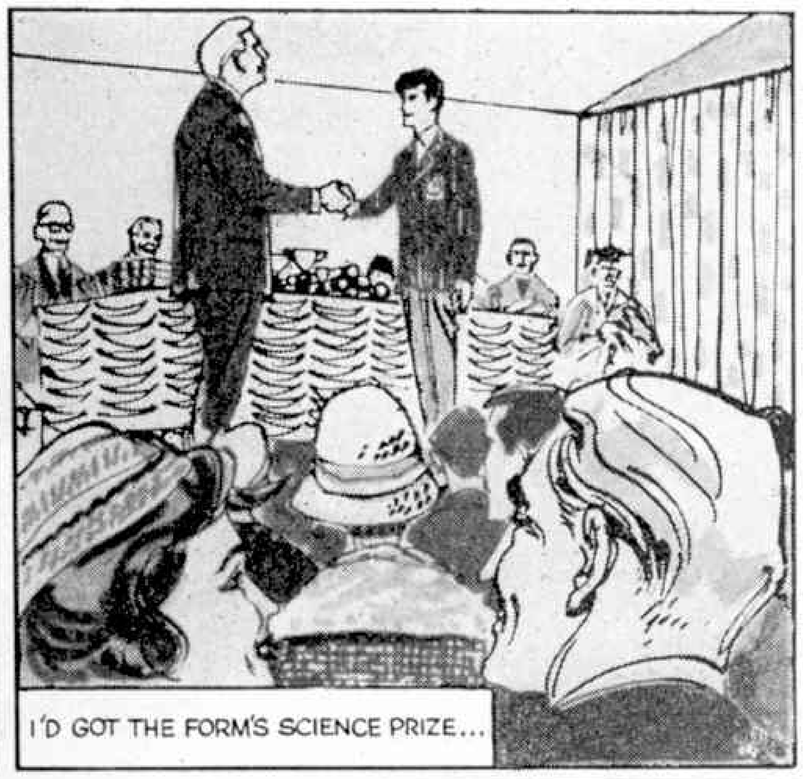
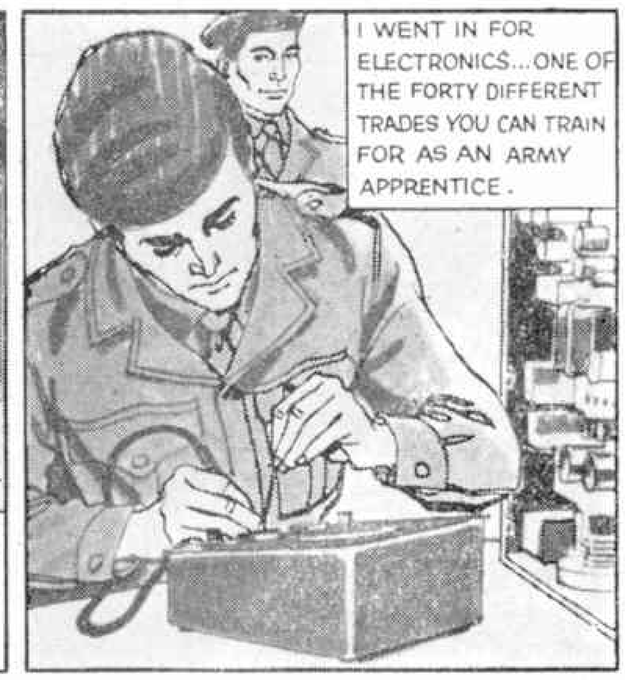
Finished with school... *now what?*





That trade I learned as an Army Apprentice brought me extra pay — *and* it's recognised by the trade unions in civilian life. If *you're* between 15 and 16½, you could join the Army Apprentices, too. Why not check up on it? Applications must be made by August 31st for the September entry.

TO: THE ARMY CAREERS DEPARTMENT, MP6 (A),
LANSDOWNE HOUSE,
BERKELEY SQUARE, LONDON, W.1.

Please send me full details of Army Apprentices without obligation.

NAME.....

ADDRESS.....

.....

..... AGE.....

QP/27/D.

Dinky Toy news
by **Chris Jelley**

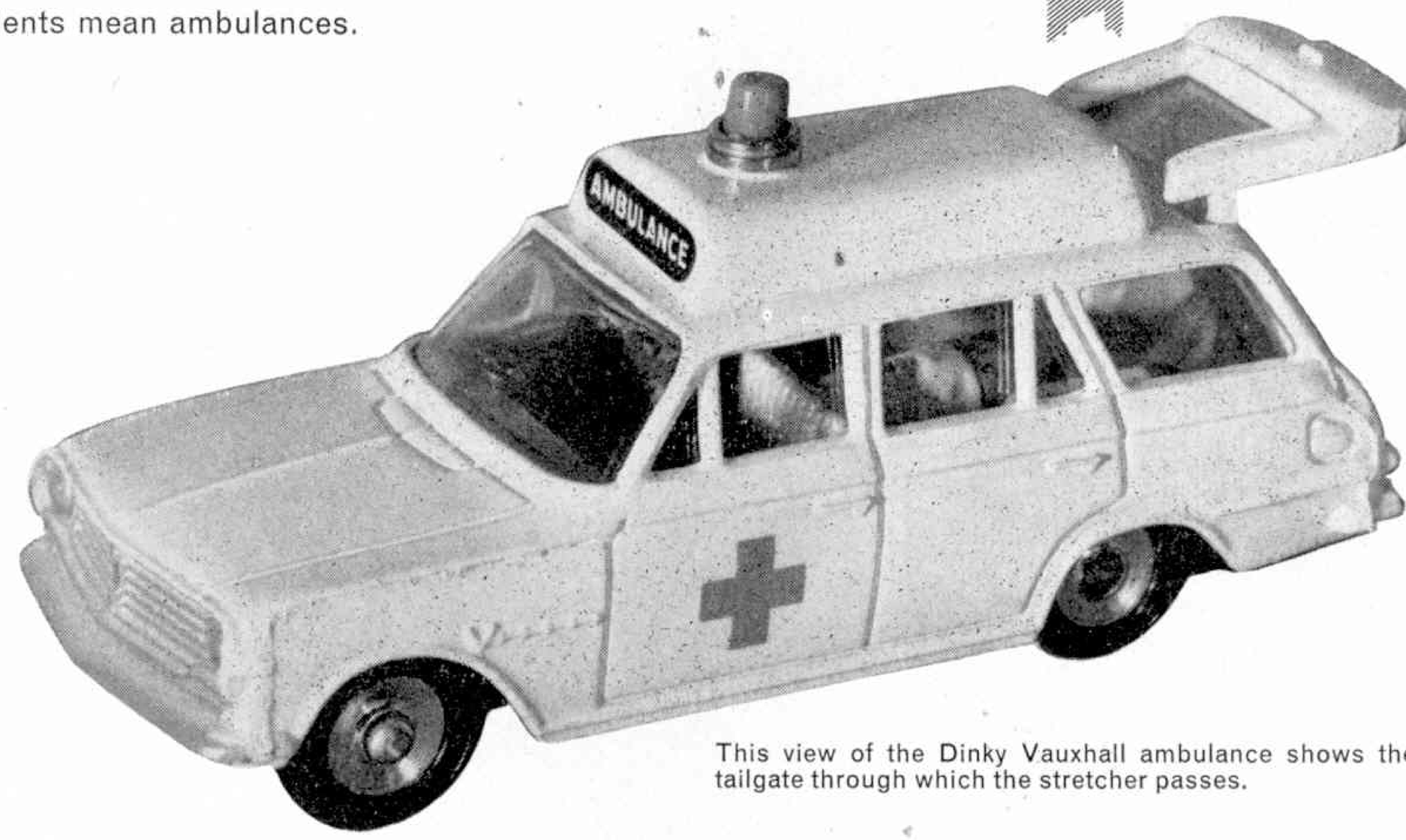
EMERGENCY

Holiday time. You are all looking forward to that wonderful last week of July when the schools break up and you start on that seemingly never-ending summer holiday.

But holidays can be deadly—as any Road Safety Officer will tell you. Everybody is on the move at the same time, making the most of their spell away from office and factory. The balmy weather coaxes out the weekend motorist, too.

The result is lethal. Traffic-jammed roads and impatient drivers make for accidents.

And accidents mean ambulances.



This view of the Dinky Vauxhall ambulance shows the lifting tailgate through which the stretcher passes.

As DINKY TOYS can be used to help in the study of road safety, as well as simply to entertain, it is necessary to have ambulances in the huge Dinky Toys fleet, and this month we have added another ambulance to our existing range. We already have No. 263 Superior Criterion Ambulance with patient and stretcher and No. 277 Super Criterion Ambulance with flashing light.

The new addition is a British one—the Vauxhall Ambulance (No. 278). As the pictures here show, this is based on the Vauxhall Estate Car, a model of which we introduced in April last year. Many modifications have been necessary. These include a raised roof, which carries a simulated blue flashing light, a new interior, uniformed driver, and a blanket-covered patient who can be lifted from his stretcher which, in turn, can be removed from the vehicle.

The colour scheme is all-over white and the vehicle carries a large red cross on both front doors. On the front panel of the stowage compartment an 'Ambulance' sign in white lettering on a black background adds the final fully-authentic touch.

Although the actual Victor estate car is produced by Vauxhalls, the ambulance version is by Martin Walter Ltd, of Folkestone. The roof compartment forms a stretcher stowage rack, and has sufficient room for two stretchers. Access is by means of the rear panel which opens downwards.

One of the best aspects of the prototype is that it is really a dual-purpose vehicle. When not in use as an ambulance, it can be transformed internally into the normal estate car version, capable of carrying a driver, his assistant and two rear-seat passengers, plus plenty of luggage or equipment. Because of this amazing versatility, coupled with the comparatively low running costs, the ambulance-cum-estate car makes an excellent vehicle for doctors in remote areas, for police forces, fire departments, large industrial estates and civil engineering contractors, besides convalescent homes and hospitals serving an extended area.

At the time of writing, only one Vauxhall Ambulance is already in service, this being with the National Coal Board at Nottingham, but others are due to go to Hospital Management Committees at Hastings and Bolton. Also, Cadburys have orders pending, and the first of this type of ambulance to be exported—to a hospital in Jerusalem—was shipped in mid-May.

A few words, now, about the technical specifications of the full-size ambulance. Power is by a 4-cylinder, ohv engine of 1,594 cc capacity that develops a maximum power output of 69 bhp at 4,800 rpm. Drive to the rear wheels goes via a three-speed-and reverse gearbox with synchromesh on all forward speeds, but an optional four-speed box is available at extra cost. Overall dimensions are: length 14 ft 5½ in; width 5 ft 4 in; height (laden) 4 ft 8 in; wheelbase 8 ft 4 in

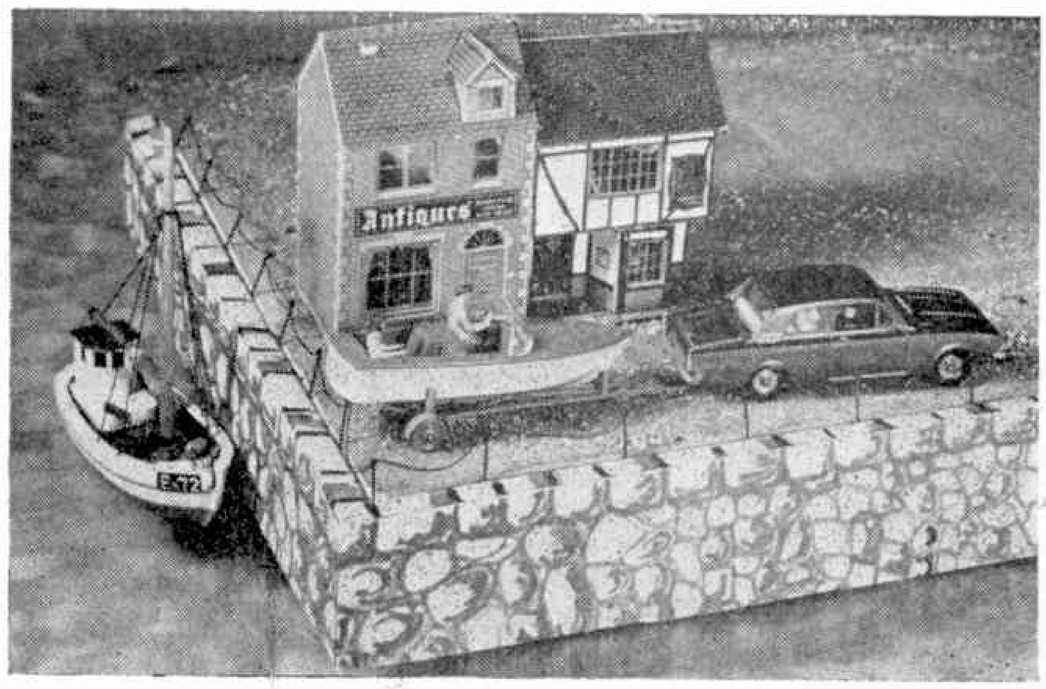
Also due in the shops soon is an exciting replica of the AA patrol van now becoming a well-known, and often relieving, sight on our roads. I hope to tell you more about this model next month.

A sport which is becoming increasingly popular all over the world is boating, and nowadays it is a common sight, during the summer months, to see boats, be they sail or engine-powered, trundling along our roads behind all types of cars. Our third new release this month enables model collectors to portray this scene on their layouts with the Fun Ahoy! set.

Although it is true to describe the complete set as a new release, the component parts are not, in themselves, new. They are the Ford Consul Corsair and the Healey Sports Boat on Trailer, numbered 130 and 796 respectively. Modifications, however, have been carried out both to the boat and the Corsair with the former now having a man at the wheel and a woman passenger in the back seat, while the Corsair also has a driver. Undoubtedly, the changes result in a lively set which lends itself to very effective and life-like scenes. Remember, too, that the boat is not just a static model—it actually floats.

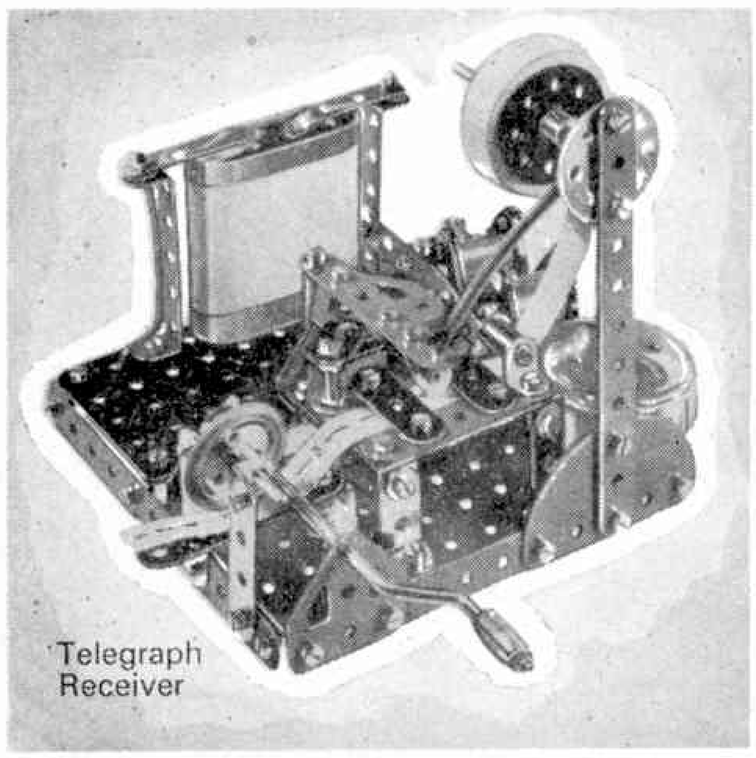
The actual Vauxhall ambulance, based on the Victor Estate car.

Latest addition to the Dinky gift series, the Fun Ahoy set, is pictured here in a very appropriate setting.

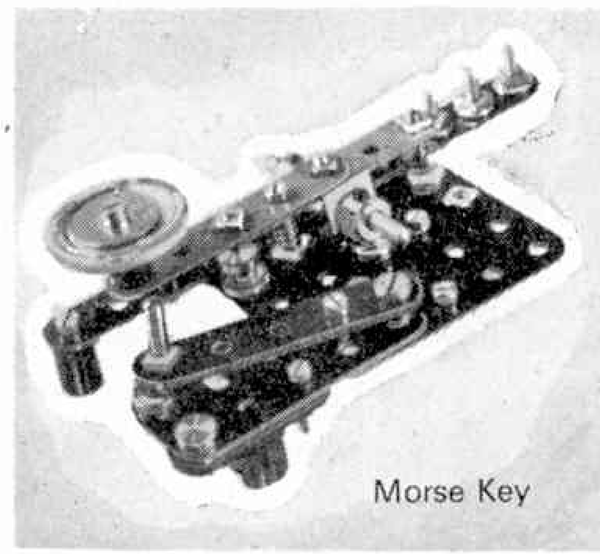


SWITCH TO Elektrikit

—ADD LIGHTS AND MOVEMENT TO MODELS

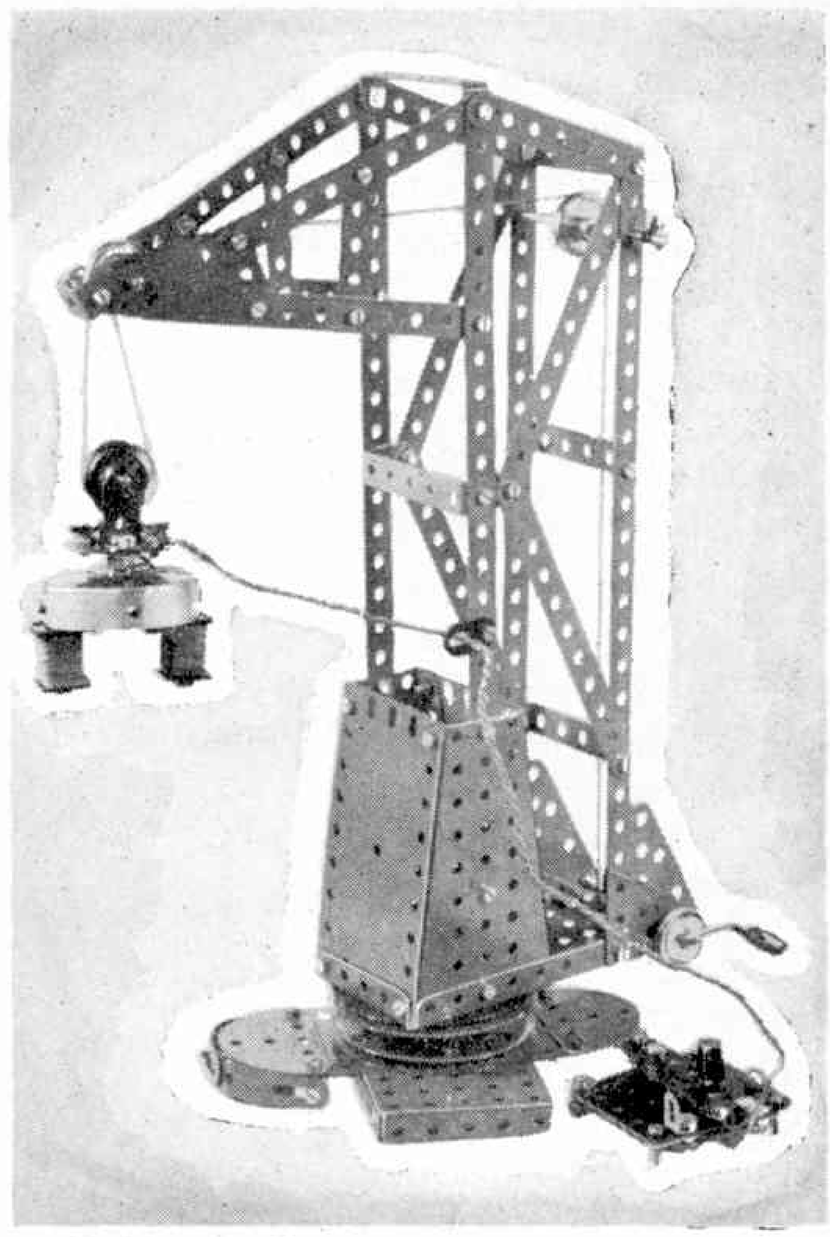


Telegraph Receiver

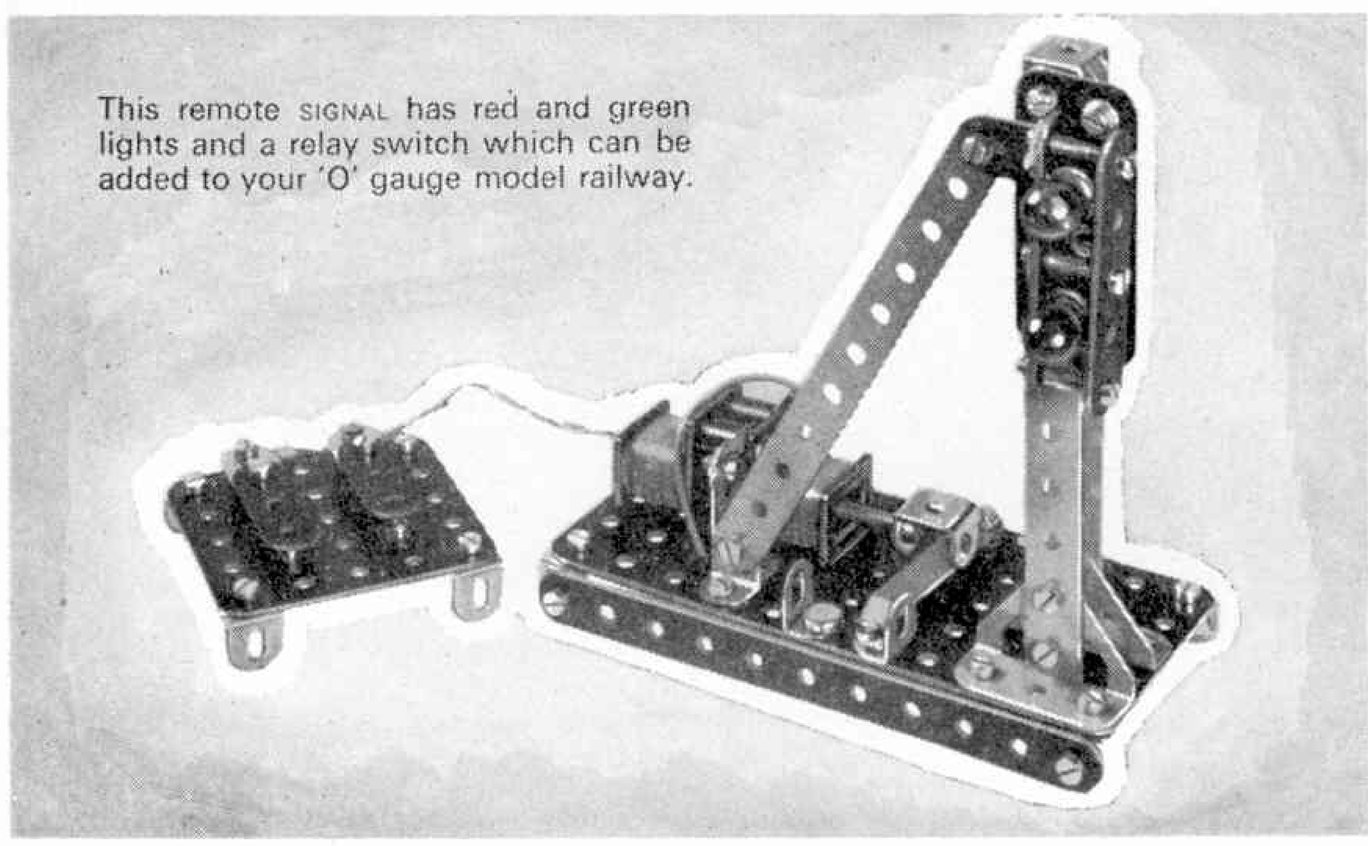


Morse Key

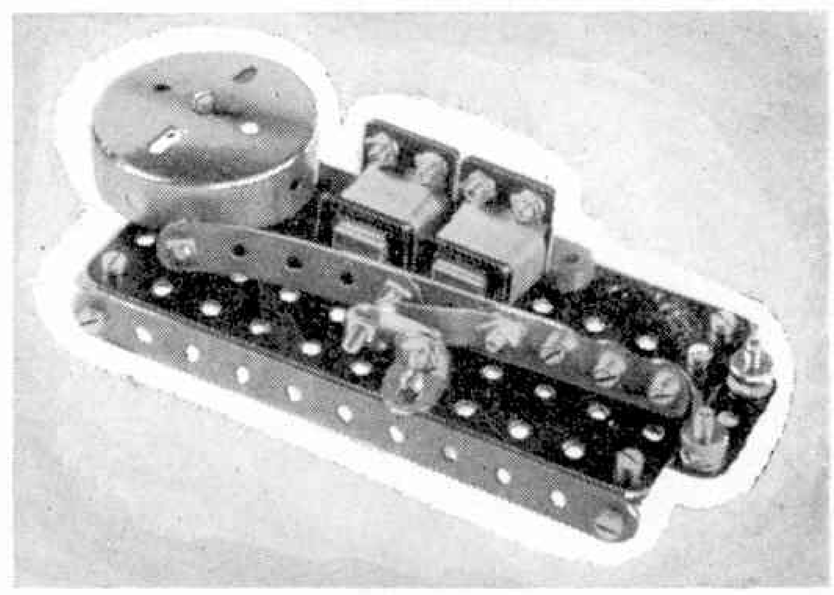
Tap out and receive secret messages from your 'agent' in another room with this TELEGRAPH RECEIVER with bell and MORSE KEY! A paper tape records the coded message which you can read afterwards.



Build a working ELECTROMAGNETIC CRANE and watch it automatically lift and carry metal objects.

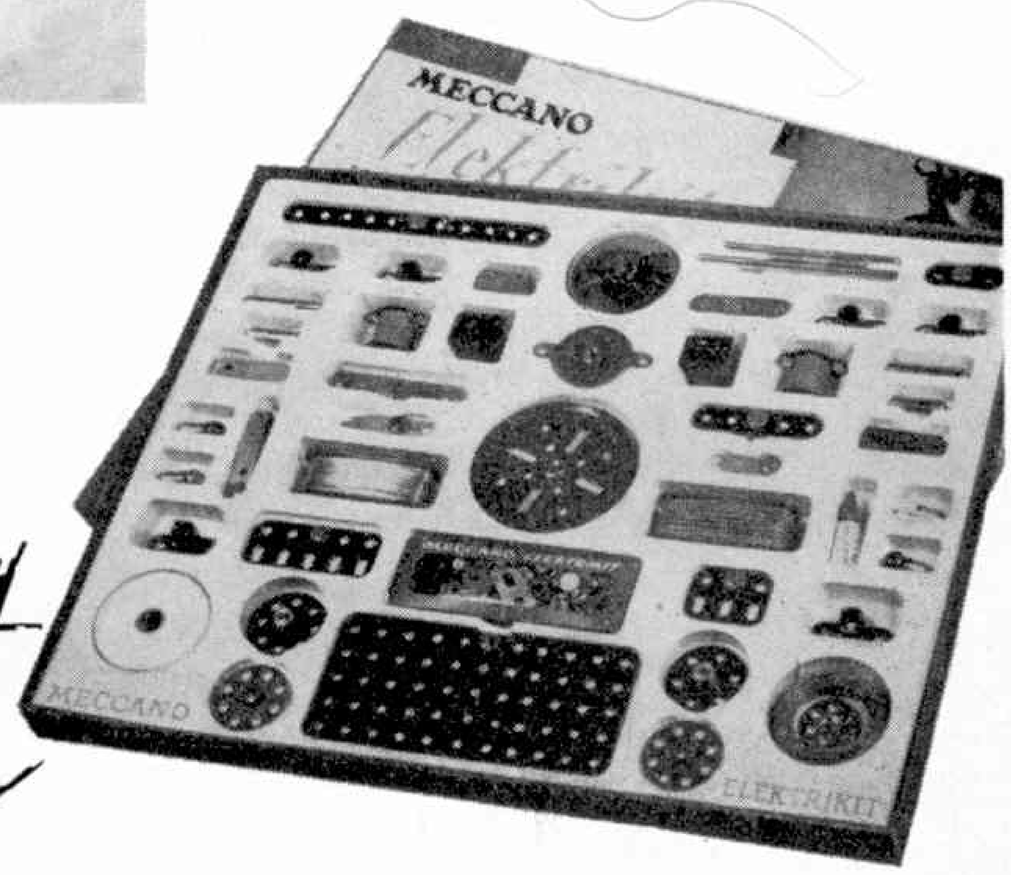


This remote SIGNAL has red and green lights and a relay switch which can be added to your 'O' gauge model railway.



Expecting a visit from friends? You can quickly and easily make this ELECTRIC BELL and fit it on your door.

Used with a No. 3 Meccano Outfit (or a larger one) and a power unit or small battery Elektrikit can make all these and dozens of other electrically operated models and motors. Free illustrated instruction book showing range of models with every kit. Only **£3.17.11.** U.K. price.



SWITCH TO MECCANO Elektrikit

Made and guaranteed by Meccano Limited

by **Christopher Ashton-Jones**

16 and runs his own radio station

Christopher Ashton-Jones, who wrote this article, is 16. He is a practical radio amateur himself, and writes enthusiastically about his hobby. Regular articles on radio and electronics with more detailed information and instructions about how to start working with radio, will be featured in Meccano Magazine later this year.

AMATEUR RADIO is an exciting and increasingly popular hobby. Throughout the world there are about 350,000 licensed radio amateurs, or 'hams' as they are called, and in the United Kingdom alone there are more than 10,000. In addition to the hams, there are thousands of people who do not operate their own transmitters but, nevertheless, enjoy the hobby by building and listening to short-wave receivers perhaps with the object of gaining knowledge and skill so that they may eventually obtain a licence to operate a transmitter. Listening alone can be a fascinating pastime since with a short-wave receiver you can hear amateur and commercial transmitters working as far away as New Zealand, South Africa or South America.

The location of an amateur transmitter can always be determined from the call sign which each station is allocated and which must be announced when it is being operated. Each country (or part of a large country) has a different prefix for its call signs for identification. For example, the prefix G is used by stations in England, GW for Wales, K or W for North America, VE for Canada and so on.

The Radio Society of Great Britain (RSGB) which has just celebrated its jubilee is the official body for amateur radio in Great Britain and was formed before commercial radio receivers covered the short wave bands. It was formed by a group of people who were fascinated by the new invention of wireless telegraphy and who experimented with the most simple apparatus. Their enthusiasm is continued by many more men and women today from all walks of life and of all ages.

Many hams, apart from operating their equipment from their homes, install apparatus in their cars—in which case they add '/M' to their call signs, indicating that they are 'mobile'. Or they may operate away from their home address, perhaps in a tent, when they add '/A' signifying 'alternative address'. They may even transmit and receive from sets installed in boats, adding '/MM'

to the call sign to announce that they are 'marine mobiles'.

To obtain a transmitting licence, a person must be over 14 years of age, of British nationality and pass examinations in both radio theory (known as the Radio Amateurs' Examination) and in the sending and receiving of morse messages at a rate of 12 words a minute. The charge for taking the technical examination is about £1 5s and for taking the morse test, 10s. The GPO grants the annual licences at the cost of £2, but anyone wishing to operate from mobile equipment also must buy a special mobile licence for another £1.

A small amateur station may be built for about £25, but the enthusiast may have a more elaborate station costing £200 or even more. Many of the transmitters used nowadays are home-built, although commercially built or ex-service equipment seems more popular for receiving. This does not mean that there are not a lot of home constructed receivers, because many amateurs build all their own apparatus, obtaining as much pleasure from this aspect of their hobby as from the actual transmitting and receiving.

The room from which an amateur station is operated is usually referred to as 'the shack' and may be anything from a bedroom to an old hut in the garden. It may be an attic or a cupboard under the stairs. It is quite common to find a ham operating equipment fitted into a desk or even into a wall cupboard.

The licence regulations restrict the ham to speaking 'about matters of a personal nature in which the licensee, or the person with whom he is in communication, has been directly concerned' and forbid the use of an amateur station for 'business, advertisements or propaganda purposes or for sending news or messages, of, or on behalf of, any social, political, religious or commercial organisation'. This still leaves plenty for the hams to carry on lengthy discussions upon. For example they can discuss technical matters and compare their equipment with their friends 'on the air'. They can talk with hams at great distances and obtain reports upon the strength and readability of their own transmissions. They may just discuss the weather, the doings of their families or any matters which are of general common interest.

For long distance working, morse is very often used, requiring less complex equipment for clear signals and also having the advantage of being more readily understood by foreign hams using international codes. Nevertheless verbal contact is very frequently used and can be perfectly satisfactory when communication conditions are good.

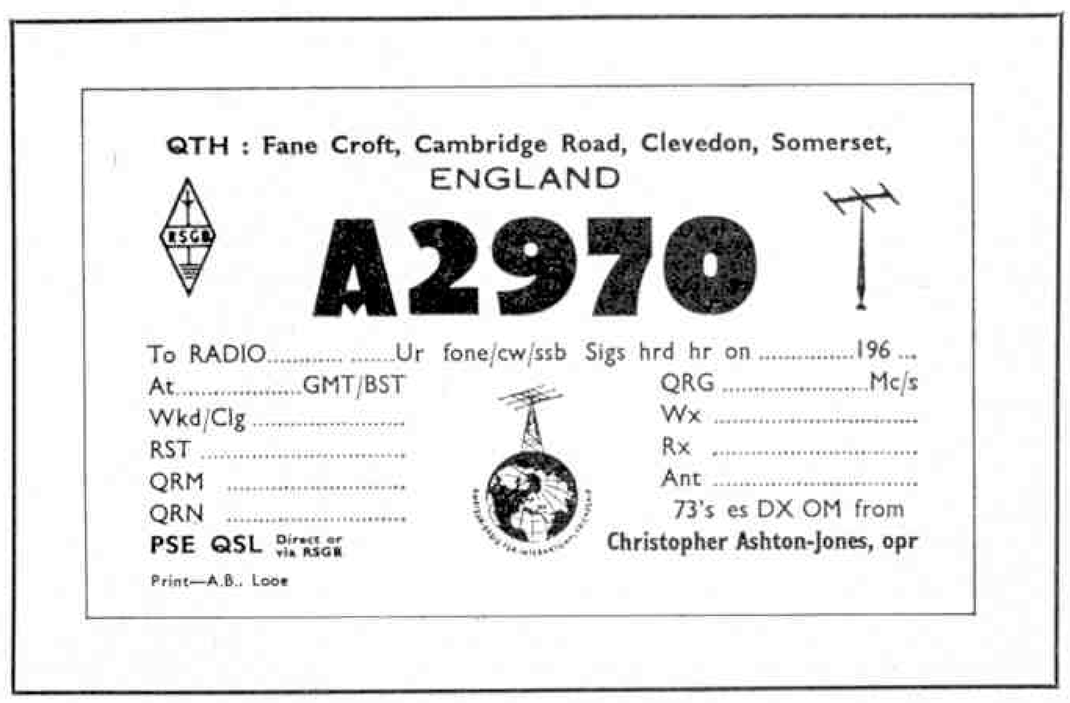
The amateur station can only work on certain internationally-agreed wave bands. The ham may operate on any of these bands and at any frequency within them unless that frequency is already in use by another ham or by a commercial station.

When one station has been in communication with another it is common practice for their operators to exchange 'QSL cards'. These printed cards give the station's call-sign and various other items of technical interest. So that they shall be readily understood in all countries, an international code is used for this information. The cards will normally show the frequency upon which the QSO (contact) took place, the time, the WX (weather conditions), the level of QRM (interference from other stations), the level of QRN (interference from static) and the details of equipment such as the make of receiver (RX) and transmitter (TX) being used and the type of aerial (ANT). Most hams collect the QSL cards from all over the world and either file them or use them for the decoration of their shacks.

Using QSL cards as evidence, certificates can be obtained to show success in the hobby. As examples, there are the 'Worked the British Empire' Certificate for those who have been in communication with at least one Commonwealth country in each of the five continents and various others dependent upon the number of different countries with which contact has been made. There are also certificates for those who are short wave listeners (SWL) only and who do not transmit. By collecting QSL cards from those hams to whom he has listened, the SWL can produce evidence to earn such certificates as the 'Heard the British Empire' for which he must have heard at least 50 countries within the Commonwealth. It should be pointed out here that the SWL who joins the Radio Society of Great Britain is allocated his own number with BRS (British Receiving Station) as the prefix if he is over 21, and A (Associate) as the prefix if he is younger.

Undoubtedly, anyone interested in amateur radio as a hobby should join the RSGB. Associate membership (for those under 21) costs 15s a year, and corporate membership £1 15s. By joining the society he receives a badge, the 80-page *RSGB Bulletin* each month, and many other advantages. Especially useful is the Society's QSL Bureau by means of which he may send and receive QSL cards world-wide at the very minimum cost. The address of the RSGB is 28 Little Russell Street, London, W.C.1.

For the beginner it is also well worth while his joining a local amateur radio club. Every large town has its club where lectures and discussions are held, competitions and visits arranged and friendly social events held. These clubs are a real part of the national and international fellowship which has been built up by radio amateurs as a result of their hobby.



Christopher Ashton-Jones' QSL card. Radio 'hams' collect cards from all over the world.

Memory knots

Q. *What is the origin of the custom of tying a knot in a handkerchief, or a piece of string around your finger, to remind you of something?—'Quidnunc', Harpenden, Herts.*

A. It goes back thousands of years to a time when primitive peoples used knotted strings to reckon and record numbers. In ancient China, knot records were kept before writing was invented. The Incas of Peru built up a complex civilisation, but had no system of recording their rich language except by knotted cords. Of varying colours, they were used to carry messages and as aids to memorising historical and other facts.

Q and answer

What's your problem?

Have you a problem—in science, history, literature or any other subject—to which you cannot find the answer?
Ask Tom Sheridan and he will do his best to answer it. If he cannot, and he thinks one of our readers might be able to help, he will print your query in this feature. Questions should be sent on postcards bearing your full name and address (but these will not be published if you put them in brackets and just add your initials or a pen name). Address them to Tom Sheridan, *Meccano Magazine*, Thomas Skinner and Co. (Publishers) Ltd., St. Alphage House, Fore Street, London, E.C.2.
You may submit as many questions as you like. We will deal with as many as possible each issue.

He made history

Q. *Who was the first person to appear on television?—T. D. Mead, Midsomer Norton, Somerset.*

A. William Taynon, of Sydenham, who in 1925 was an office boy working in the building in Soho where John Logie Baird made his early experiments. The inventor gave him half-a-crown to sit in front of the television camera, and his image was transmitted to the next room where Baird received it on his crude apparatus. Now aged 56, Mr. Taynon was recently given a silver medal in recognition of his contribution to TV history.

Happy talk

Q. *How many people speak Esperanto, and how long does it take to learn?—'Tongue-tied', Burnley.*

A. The 'language of hope' (which is what the name means) is spoken by 1,750,000 people in 80 different countries. Experts claim that it can be learned in a fifth of the time it takes to master most other languages. In Britain, where 4,000 enthusiasts belong to the British Esperanto Association, it is being taught to some 1,200 children in 26 schools. The system, using words and sounds common to all European languages, was devised 80 years ago by Dr. Ludovic Zamenhof, a Polish oculist, whose object was to promote *uno grandan rondon familian* (one great family circle) through international understanding. China is now using Esperanto extensively for propaganda purposes, and Russia has lifted the official ban which Stalin placed on it.

Bus builders

Q. *Where are AEC vehicles made, and what do the initials stand for?—T. L., Warrington, Lancs.*

A. The firm which became famous as the builders of London's buses dates back to 1912, when the Associated Equipment Company was a member of the Underground group of companies. About 30 years ago it ceased to belong to this group, but the familiar initials were kept as the product symbol. In its factory at Southall, Middlesex, it now employs over 46,000 people in the construction of many types of heavy vehicles and engines for service throughout the world.

Long-range forecast

Q. *How far ahead can we predict the weather?—'Young Hopeful', Stevenage, Herts.*

A. The American astro-physicist Dr. Charles Abbot, at the age of 91, recently published his findings on the relation between solar radiation and the weather, which enabled him to forecast the amount of rainfall that might be expected at Nashville, Tennessee, between 1965 and 1971. Observations of the amount of energy reaching the earth from the sun over a period of 35 years led him to the conclusion that the weather tends to repeat itself at intervals of 22 years and nine months. Variations in sunspot activity which occur every 11 years, and affect atmospheric conditions, have been noted for a long time; but scientists are not yet able to explain precisely how minor changes in the sun can make such a big difference to our weather.

Whirlybird

Q. *Who designed the first helicopter?—S. G., Brixton.*

A. The principle of the 'flying propeller' was known to the ancient Chinese, who made use of it in a toy. In the 15th century, Leonardo da Vinci made working drawings of a helicopter. But it was the British aviation pioneer Sir George Cayley who drew up full-scale plans for such a machine, a model of which was successfully flown in 1843. Driven by a steam engine, it stayed up for 40 seconds. Many other designs were produced before the first manned helicopter flight was made by Louis Breguet in 1907, in a machine which remained tethered to the ground. Three years later, Igor Sikorsky led the way for further developments with a machine with two lifting rotors, revolving in opposite directions, which made for flight-stability.

Tank museum

Q. *Does there exist a club or society devoted to the study of armoured vehicles and tank warfare? Is there a standard work of reference?—L. Ansell, Arundel, Sussex.*

A. The Royal Armoured Corps Tank Museum at Bovington, Dorset, has 100 exhibits—tanks and armoured cars from 11 nations, dating back to World War I. It is open to the public, admission free, and attracted over 140,000 visitors last year. We have yet to learn of a society devoted to the subject, but Professor A. M. Low's *Tanks*, published during the last war, tells their fascinating story.

The young ones

Q. *Which county has the most teenagers?—'Eleven Plus', Wolverhampton.*

A. The 1961 Census showed that Cambridgeshire had proportionately more people in the 15-25 age group than any other county in England and Wales.

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classified ads. continued from page 46

one-tenth cat. Suit beginners, medium collectors. From ¼d. to 1s 3d. each. Stamp appreciated. R. Birch, 131 Mansfield Road, Chessington, Surrey.

• Pre-war Dinky Warships, etc. Wrenn two-rail track set. Sell, or exchange obsolete Dinkys, Tootsietoys. List with S.A.E. 42, London Road, Stanmore, Middx.

• Bargain. "M.M.s", July 1957-April 1963, complete (69), mint condition, 30/-. Also "Stamp Monthly", November 1958-October 1960, complete (23), 10/-. Murray, 1 Bankside, Enfield, Middlesex.

• "M.M.s", bound, immaculate, 1944 to 1951 inclusive. Separate or complete. Offers? Wright, 20 Heath Hurst Road, Hampstead, London, N.W.3.

• Original No. 3 Bayko Building Set by Plimpton Engineering, 27s 6d o.n.o. Wilmot, "Longrood", Wrigley's Close, Formby, Lancs.

• Commonwealth "Two Reigns" stamp collection (unmounted) Cat. value £60. Will accept £35 o.n.o., or would exchange for Hornby "00" two rail Electric Train and Accessories to above Value. Neale, Southview House, Windsor Hill, Shepton Mallet, Somerset.

• "M.M.s" 1958-1963 inclusive. Complete and in good condition. T. M. Callaghan, 7 Kirkstall Crescent, Darlington, Co. Durham.

• Brickplayer, £1; approx. 700 assorted stamps, £2, worth more; D.C. Spitfire 1 c.c. Diesel, 15/-; K.K. Radian-Frog 049 Glow, £3 o.n.o. S.A.E. for details to K. McCulloch, 20 Primrose Bank Road, Edinburgh 5.

• For Sale: Meccano Magazine, January 1955-December 1957. Good condition. Offers to: Howe, 57 Holywell Street, Oxford.

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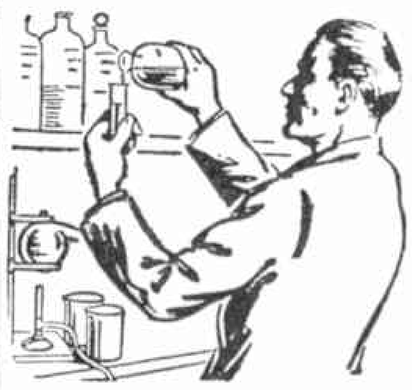

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STAMPS

Safety stamp

No, THIS has nothing to do with our own road troubles, for we are certainly not alone in this worry. But many are the methods which are being adopted throughout the world to try to reduce the fantastic number of deaths through road accidents. Although there has been a slight change in the attitude of our own postal administration towards the issue of stamps to mark certain events (they still insist that only postal and royal events should be so honoured, although they don't explain how the Shakespeare issue fits in with this rule), we still seem to be a long way from following the lead of New Zealand, who on May 1 issued a single stamp, of a quite striking design, which also featured the forthright comment 'KEEP OUR ROADS SAFE'. Even if we do not have a stamp, we can certainly echo that order and now that the holiday season is with us, when we are so likely to be on our own roads, what about keeping this stamp in mind a bit marking the lesson it is trying to teach. Does that sound like preaching? So be it, under the circumstances. (2)

The Nubian monuments

I have just commented on the various causes which postage stamps are called on to publicise. As most know already, the wonderful Nubian monuments are in danger of disappearing under the waters of the huge dam which is being constructed in Egypt to enable that country to irrigate large areas of land, at present laying waste—land which is so badly needed to help feed so many people, who are at present almost below the hunger line. Well, one or two countries are issuing postage stamps —Ghana for one—to raise funds (their own post offices will not do so badly, either) or at least to provide publicity for other funds which do exist, to help provide the means of saving these monuments.

Various plans to carry out the salvaging work have been suggested, but all will prove so costly that it will take an awful lot of stamps (rather like filling those endless booklets for trading stamps) to do the job. 'Unesco' has taken the work in hand and their emblem can be noted on the Ghana stamp which is among those illustrated this month. Other African states such as Nigeria and the Togo Republic have issued 'Unesco' stamps, with the same object, and perhaps, after all, stamp collectors will buy stamps to do their share in saving those priceless monuments. (1)

The big robbery

Collectors are still discussing the theft of stamps worth around £100,000 or more from a London stamp firm last February. The thing that is puzzling those concerned is what the thieves will do with the stamps of New Zealand which the firm who were robbed had just bought for a large sum. Actually, they valued the sheet at £6,000 and as far as is known it is the only one in existence with the value missing. A copy is illustrated. Of course, it would be easy to dispose of most of the stolen stamps for they could be fobbed off without difficulty. But the New Zealand stamps, with the value omitted, would be recognised at once. Those concerned with the robbery will of course know the danger they run if they keep these stamps, so have they been destroyed or will they turn up some day? It will be possible by secret marks to tell which were not stolen, and of course, which were. (3)

Simplicity

When the designs for the British 'Shakespeare' issue were first shown, not all who saw them, were satisfied that they were the last word in attractiveness, or that they were anything like so artistic as the postage stamps, which countries such as Austria etc. issue from time to time. The designer of the four values from 3d to 1s 6d explained recently how the willy-nilly inclusion of the royal portrait made the task of designing more difficult, and various comments in the same vein appeared in several newspapers. I suppose it is a fact that the inclusion of anything foreign to the design itself, in such a small space as that provided by a postage stamp, must complicate matters considerably, as that great artist the late Edmund Dulac, who tried his hand at stamp designing, stated. As a matter of fact, some of the most beautiful stamps ever designed are simplicity itself. Just look at the Japanese stamp which is illustrated here. Unfortunately, when it is reproduced in black and white the colours which are so perfect for the subject cannot be seen, but the delightful simplicity is nevertheless evident. Now if a panel with a portrait had to be included, the whole effect would be spoiled. (4)

We all want the royal portrait to continue as the main feature on definitive stamps, but now our Post Office has at long last come to realise how important stamps can be in the field of publicity, and how important it is, also, that their designs shall compete in attractiveness with those of other countries, then our designers must be given a free hand, and this they are not getting at the moment.

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CLASSIFIED ADVERTISEMENTS

Readers Sales and Wants

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The rates are 3d. per word, with a minimum of 3s. (cash with order). Readers' advertisements are published as soon as possible, inclusion in the first issue after receiving them, however, cannot be guaranteed.

WANTS

• Meccano obsolete parts and Instruction Books for Outfits 7, 8 and 9 (pre-1954). High prices paid. Details: M. Green, 120 Broadway, Manchester 10.

• Collector requires English, American, Canadian Coins and Tokens; also Maundy Coins. Following paid for cased sets: 1911, £10; 1927, £25; 1937, £10; 1950, £5; 1951, £10; 1953, £5; £100 for any 1887, 1893, 1902, 1911, 1927, 1937, Gold sets. D. H. Woodberry, 104 Risca Road, Rogerstone, Mon.

• Collector wants: Locomotives—Gauge "0", "1", "11", "111", from 4-4-2 and larger sizes, steam, electric, clockwork. Hornby, Bassett-Lowke, Märklin, Bing, Walker and Holzapfel. Coaches: Exley, Bassett-Lowke. Pre-war Meccano parts: No. 167a Roller Races geared 192 teeth; Super Model Leaflets. Hornby, B. & L., Märklin, Bing, Bond's pre-war catalogues. All perfect condition essential. T. van Tellingen, 509 Leverkusen-Rheindorf, Am Vogelsang 18/11, West Germany.

• Wanted: Pre-war Dinky Toys Liners—"Queen Mary", "Normandie", etc. Also the early post-war large open Racing Car, No. 23c. Westwood, 122 Poplar Ave., Bentley, Walsall, Staffs.

• Urgent: Obsolete Meccano No. 2 Clockwork Motor, good condition; also pre-war Instruction Books for Outfits 9 and 10. Any reasonable price paid. L. Morgan, 6 Belgrave Road, Leyland, Nr. Preston, Lancs.

• Part 120A, Spring Buffer, and 132, Flywheel required. Your price paid. J. R. Fenn, 20 Hambledon Vale, Epsom, Surrey.

• "Eagles" — any before July 1958, will pay reasonable price. Send details of condition etc. Collins, 29 Sylvan Road, Upper Norwood, London, S.E.19.

• Wanted: Shackleton Model, Foden Lorry (six wheels) Model preferred, but not essential. Any condition. Broom, 90 Eaton Road, Norwich, Nor 46D, Norfolk.

• Pre-war, 1928, "M.M.s" and K/L Instruction Manual. 25 Bunbreck Gdns., Wollaton, Nottingham.

• Pre-war Parts No. 119 (16), 129 (4), 150, 156, 167, 169. Also, pre-war super model leaflets 1-37, in English. Send offer with prices to: A. Santos Rein, Alarcón Lujan 8, Málaga, Spain.

• Pre-war Dinky Toys. Will exchange or buy at a reasonable price. Bentley, 117 Moor Lane, Netherton, Huddersfield.

• Meccano obsolete parts (particularly 167), Manuals, Supermodel Leaflets Magazines. Decooman, Decroylaan 15, Heverlee, Belgium.

• Wanted Britain's Lilliput "00" Centurion Tanks, Bedford 3 Ton Army Trucks and Austin. Also Britain's 1/32 obsolete Army Vehicles, Bren Gun Carrier and Beetle Lorry. Mr. J. D. Pickles, 3 Hall Bank Drive, Bradford 5, Yorkshire.

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• Pre-war Meccano, exceeds Outfit 6 (No. 7 was most comprehensive at that time), not enamelled, excellent condition, Cabinet, 6 v Electric Motor. Offers. Perry, 27 New Road, Haverfordwest, Pem.

• Tricks, Jokes, Novelties, Masks, Wigs, Beards, etc. Send 6d. stamp for free catalogue. Wrathbaron & Co. (Dept. M.2), Ravenshill, Sutton, Keighley.

• "M.M.s", Jan. 1959-Dec. 1963. Superb condition, 30/-. Also "New Musical Express", Nov. 1962 to date. Offers? Page, 23 Glenorchy Road, Sheffield 7.

• Meccano, Bayko, Matchbox toy, other oddments. S.A.E. details. Newman, 116 Darland Avenue, Gillingham, Kent.

• Outer races No. 167a, Pinion No. 167c. Offers over £10 only. Also four No. 129, two No. 149, four No. 178. Offers. S.A.E. Smith, 7 Matravers Road, Malvern, Worcs.

• "M.M.s", January 1942-November 1949 (except June 1944, October 1946, March 1949). Offers. McCarthy, 149 Beresford Avenue, Tolworth, Surrey.

• Hornby 2-rail Loco. Overhauled. Six coaches, 19 Trucks, 16 converted Points, 34 feet track. Plus controls, etc. £15 o.n.o. Lawrence, North Lodge, Warnford, Southampton.

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• Hornby "0" gauge Track, etc. S.A.E. for details. Cousins, 3 Kinver Road, Sydenham, London, S.E.26.

• Stamps and Album (cat. £5) for £1 10s. Hilton, 33 Sandringham Avenue, Leicester.

• Selling cheap: 250 Railway Photographs £2 10s; or 50 for 12/- plus postage. Blencowe, 3 Grove Road, Lydney, Glos

• Meccano Magazines. January 1957-February 1962; June 1949-December 1949; February 1950-November 1952; few others; 25/- plus postage. Waters, 18 Manor Way, Bexley, Kent.

• "M.M.s" January 1949 to June 1957. Good condition. Offers? Burton, 107 Aylesford Ave., Beckenham, Kent.

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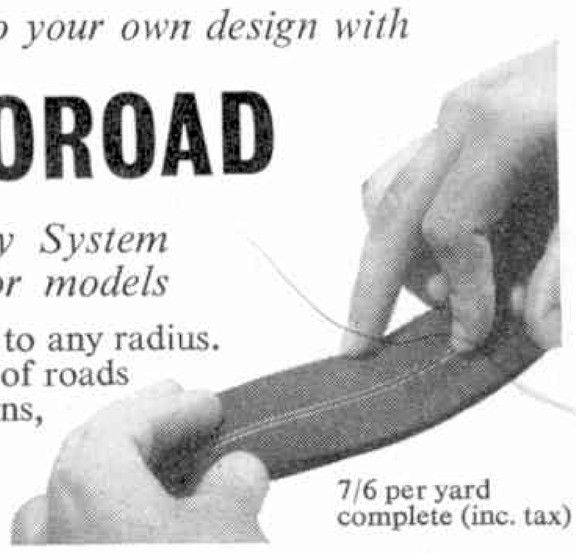

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Around the Societies

Ilford & West Essex Model Railway Club

A RESULT of this club's annual meeting, held on March 4, was that Mr. D. R. (Lofty) Ebsworth was elected president for the ensuing year. During the winter there was much re-organisation in the clubroom, and a new self-contained workshop has been constructed in addition to the workshop already in existence. This is to afford better facilities for members working in the smaller gauges. Test tracks are being constructed to enable members to test out their models. A new 7 mm narrow gauge layout, to be built by the narrow gauge section, is to be started shortly. This group won third prize in last year's model rail and road hobby show at Westminster. Lectures, film shows and visits are being arranged for the coming months, and new members are cordially invited to write to the Hon. Secretary (Mr. R. L. Riddle) of 36 Vernon Road, Seven Kings, Ilford, Essex. The clubrooms are at the rear of the down slow platform at Chadwell Heath Station, British Railways, Eastern Region.

The Tyne-Tees Locospotters Club

THE CLUB hopes to pay visits to the following locomotive works and depots on the following dates: July 4, Manchester, Longsight, Gorton, Newton Heath, Patricroft, Agecroft, Trafford Park; July 5, Hull, Dairycotes, Botanic Gardens; July 11, Leeds, Ardsley, Farnley Junction, Holbeck, Neville Hill, Stourton, Bradford (Ham St.), Manningham, Low Moor; July 12, Edinburgh, St. Margaret's, Haymarket, Dairy Road; July 18, York North, also the diesel depots and museums in that vicinity; July 19, Carlisle, Kingmoor, Upperby; July 25, Heaton, Percy Main; August 1, Tweedmouth; August 8, Barrow-in-Furness, Workington, Tebay; August 9, Glasgow, St. Rollox, Parkhead, Polmadie, Corkerhill, Eastfield; August 15, London, Camden, Stratford, Nine Elms, Feltham, Cricklewood, Stewarts Lane, Hither Green, Old Oak Common, Norwood Junction; August 22, Thornaby, West Hartlepool; August 23, Darlington.

Those interested in joining the club, and wishing to obtain further information, should apply to Mr. B. Wharton, Regional Secretary, of 37 Bevan Court, West Farm Avenue, Longbenton Estate, Newcastle-upon-Tyne 12.

Christchurch, N.Z. Meccano Club

THE MEMBERS of this club compete for three competitions every year—the Ellision Cup, the Saunders Cup and the Games Award. The Ellision Cup, open to all members, is for the most points for model-building during the year, and for attendance, and the Saunders Cup is awarded for the same achievements, but for the best junior. The runners-up in these two competitions and the winners and runners-up in the Games Competition are all presented with the club's Certificate of Merit. The cup winners receive a club certificate and are, in addition, recommended for a Medallion as well. This year, Sidney Kennedy won both awards, as stated in the May 'M.M.', and has accordingly been awarded a Meccano Merit Medallion.

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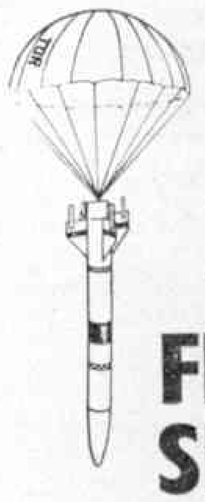

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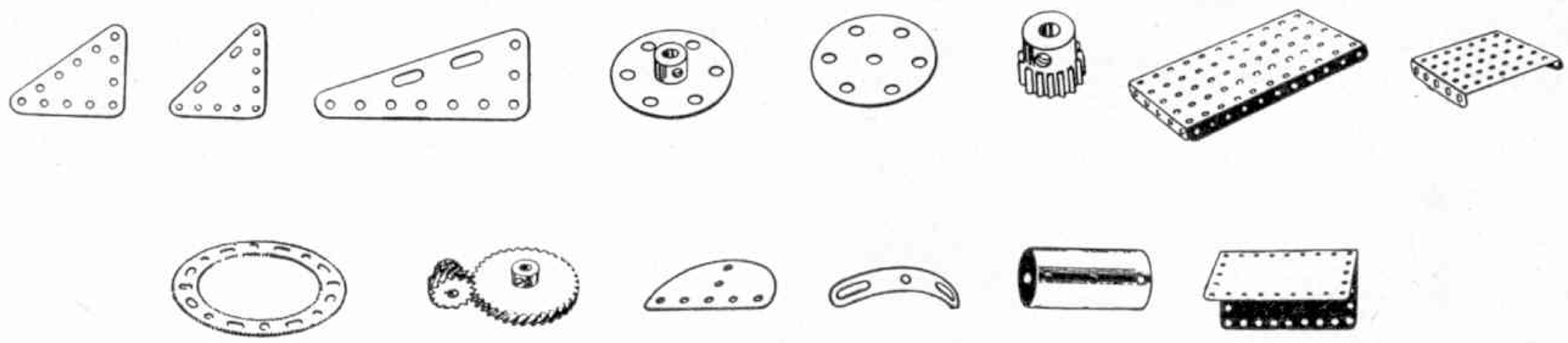

Dealers who specialise in Meccano spare parts

Listed below are some of the dealers who sell Meccano accessories and spare parts. This is intended to aid enthusiasts—and there are many of them—who constantly require additional spare parts for their Sets. All dealers can, of course, order Meccano spare parts for their customers, but those listed here are among our spare part specialists.

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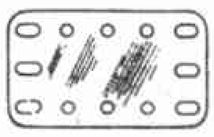

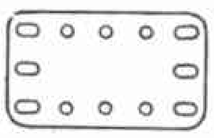

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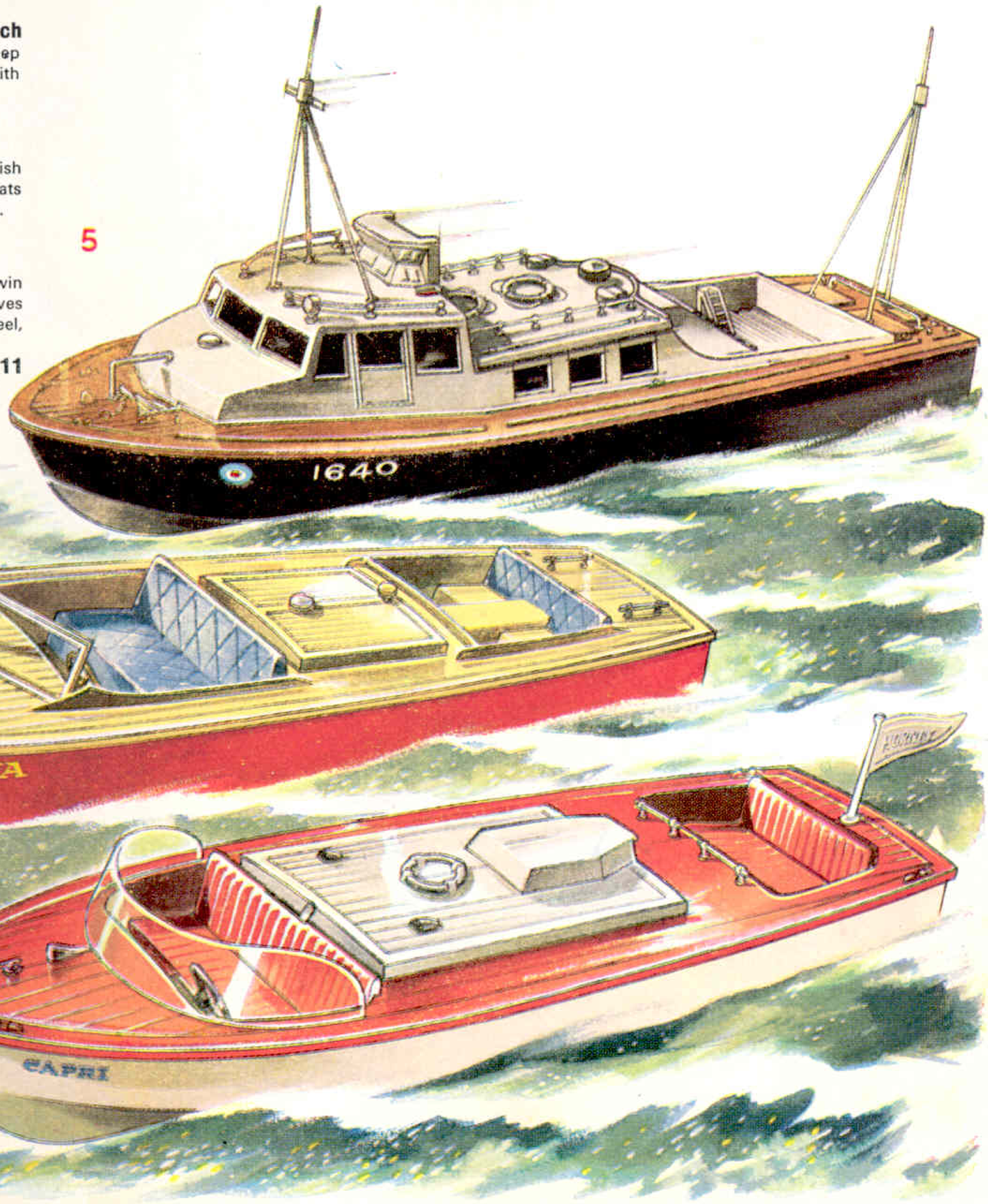

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Holiday 'Hobbies'

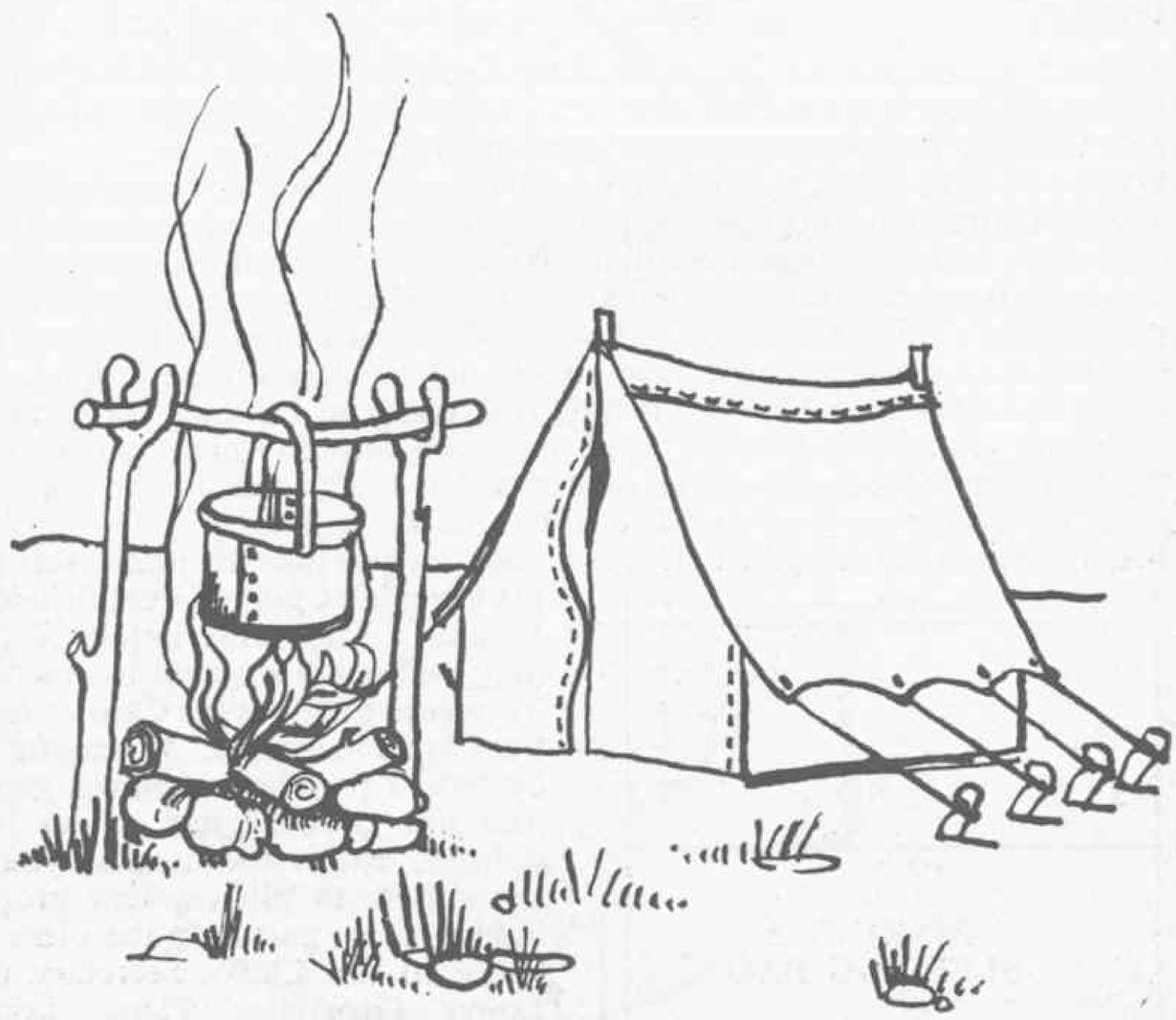
JULY 1964

meccano magazine

There are plenty of ideas for holiday pastimes here. If you want to keep this supplement separate from the rest of Meccano Magazine, you can remove it by easing up the staples in the centre pages and lifting out the supplement. Then press the staples flat again.

Away from it all

ESCAPE THE bricks and mortar, the smoke and the traffic and enjoy the country life. Go camping and learn self-reliance, know the satisfaction of being your own master and your own servant, for that matter. Enjoy the sunny days, and enjoy, too, the feeling of triumph when you and your friends curl up warm in your sleeping bags, knowing you have beaten the weather at its worst. The most important piece of equipment for a camper is the tent. One big enough for two people can cost almost any price you want to pay, but a good, waterproof ridge tent can be bought for between £2 and £3. This will almost certainly be your most expensive item. If there are two of you, of course, you will be able to cut a lot of the costs in half. For instance, a paraffin stove can be obtained for as little as £1 10s—or 15s each. You will be able to buy an adequate rucksack for as little as £1 5s. No sharing there, I'm afraid. You'll definitely need one each. Two saucepans and a frying pan can be bought from Gamages of Holborn, London, for 14s 11d. These do not have handles attached but a lifter that clips on and off is provided. A two pint kettle, that fits into your nest of saucepans, can be bought, also from Gamages, for 6s 9d. Sleeping bags range in price



from £1 10s to about £5, but it is not too difficult to make a sleeping bag, so you can cut costs here without trouble.

To make a sleeping bag (diagram below) you need two sheets of some fairly thin and strong material, about 6 ft. by 5 ft. Spread between 1½ and 2 lb. of Kapok evenly between the sheets making a kind of sandwich. Sew up the edges, and then sew it in squares like a quilt. Take care to keep the Kapok as evenly distributed as possible. Then you fold it along its length, sew up the bottom end, and about threequarters of the way up the length. The measurements given are a bit on the generous side for all but the largest boys, but some of it will be lost in the quilting, and hems. Anyway, you won't want a sleeping bag that is so tight that it stifles you.

The last of the essentials you need is a groundsheet. You might be able to improvise one of these from waterproof materials you already have at home. If not, a groundsheet should not cost much more than about 10s.

Filling your rucksack

Do not wait until the last minute before you fill your rucksack. That is the way to forget things. Give yourself plenty of time so that you have time for second thoughts. The principle to pack by is not 'what can I do with?' Rather think in terms of 'what can I possibly not do without?'

First in the rucksack must be your bedroll, including sleeping bag and extra blanket.

According to how long you are going for, you will need clean underwear and socks and warm sweaters. Take a couple of towels, soap and flannel, toothbrush.

You may like reading at nights, so besides the torch you need, it will be as well to take a candle.

Put your cooker in one of the pockets of the rucksack.

Scrounge a couple of tin or enamel plates and knife, fork and spoon from home. And try not to lose them. Don't be unnecessarily gloomy, but take a first aid kit and make sure you know how to use it. The countryside can be violently treacherous to town dwellers. For instance, if you are walking by a thorn hedge, and push back a branch as you pass, it is only too likely to lash your companion across the face. Obviously, you will try to avoid such accidents—but better be on the safe side. Iodine, bandages and sticking plaster are good things to have around.

Hang a mug, plastic or enamel, on the outside of your rucksack. Take a dozen or so large blanket pins. It will amaze you how useful you will find these. If you are cold at night you can pin shirts, sweaters, and even trousers onto your sleeping bag for extra warmth.

What about food? Most of it you can buy at village shops. You know, beans and tinned or packet soups, eggs, sausages, bacon, Spam (or something like it) . . . Need I go on?

If parents are generous, so much the better. If they are not you will have to buy it yourselves. You will find that doing your own cooking is incomparably cheaper than going to restaurants. You'll need some spuds. Scrub them and boil them in their jackets. They're delicious and the skins are good for you. A lot of fried food might upset you at first so cook in other ways whenever you can. Anyway, eat plenty of fruit.

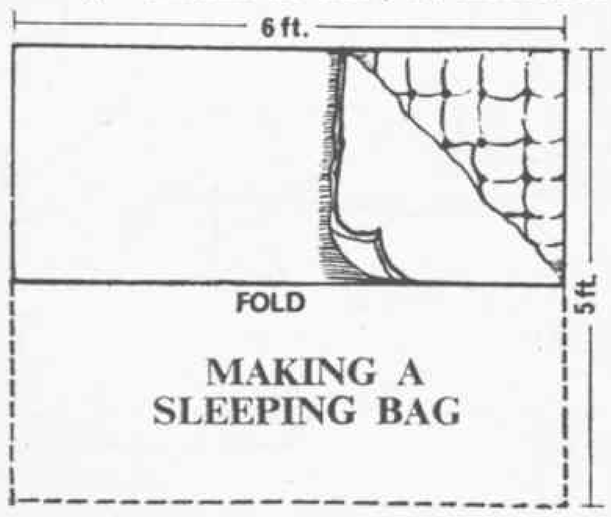
Where?

Try and go somewhere within bicycling distance. In that way you will save money on fares and you will be mobile while you are camping. You will be able to camp somewhere different every night if you wish.

When you have found a spot, call on the nearest farmer, or householder, and ask for permission to camp. Be polite. Some campers are anti-social. You are asking a favour; remember that. When you have gained permission, try and find somewhere fairly sheltered, near a hedge or a wall, or even a copse but *not* near a single large tree. A barrier will act as a windbreak. If you make yourself tired enough, you'll have a good night's sleep on the ground.

Don't make matters worse by pitching your camp on a slope. Trying to sleep when you are rolling downhill in the dark can be pretty nightmarish, and at the least, uncomfortable. And remember, it might rain in the night, and water travels downwards even after it has hit the ground.

It only remains to tell you that it is a good idea to join the junior section of the Camping Club of Great Britain and Ireland. The subscription is 7s 6d (half-a-crown if a parent is a member). You receive a list of the Club's sites and the Club's magazine. When you have become a proficient camper, you can pass the 'camping test'. This is not difficult, but it means that you will know how to pitch a tent properly, light a stove, and keep the place tidy. Write to the Club's Secretary at 11 Lower Grosvenor Place, London, S.W.1.

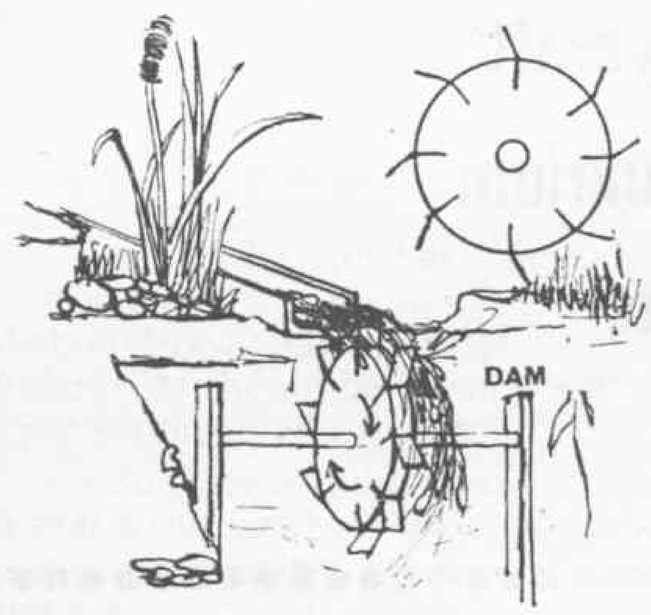


MAKING A SLEEPING BAG

ALL YOU need is a brook. Make sure that you are not disturbing anglers further downstream, and then set to work. Put the biggest rocks you can find on the bed of the brook, and fill in the holes with smaller stones and turf. If it leaks it doesn't matter much. As long as less water is allowed through than is normally flowing, you will soon create a lake behind your dam.

BUILD A DAM

not only will you have created a lake, but inevitably, a waterfall, too. When you have had your fun, you will have to dismantle the dam. Don't just kick it in, though. The best way is to take out one of the key rocks, and see the water flood through. Watch its power as it makes the opening wider, and wider, until the dam is burst completely open. From this you will get a good elementary lesson in the power that is generated by the release of pent-up natural forces.

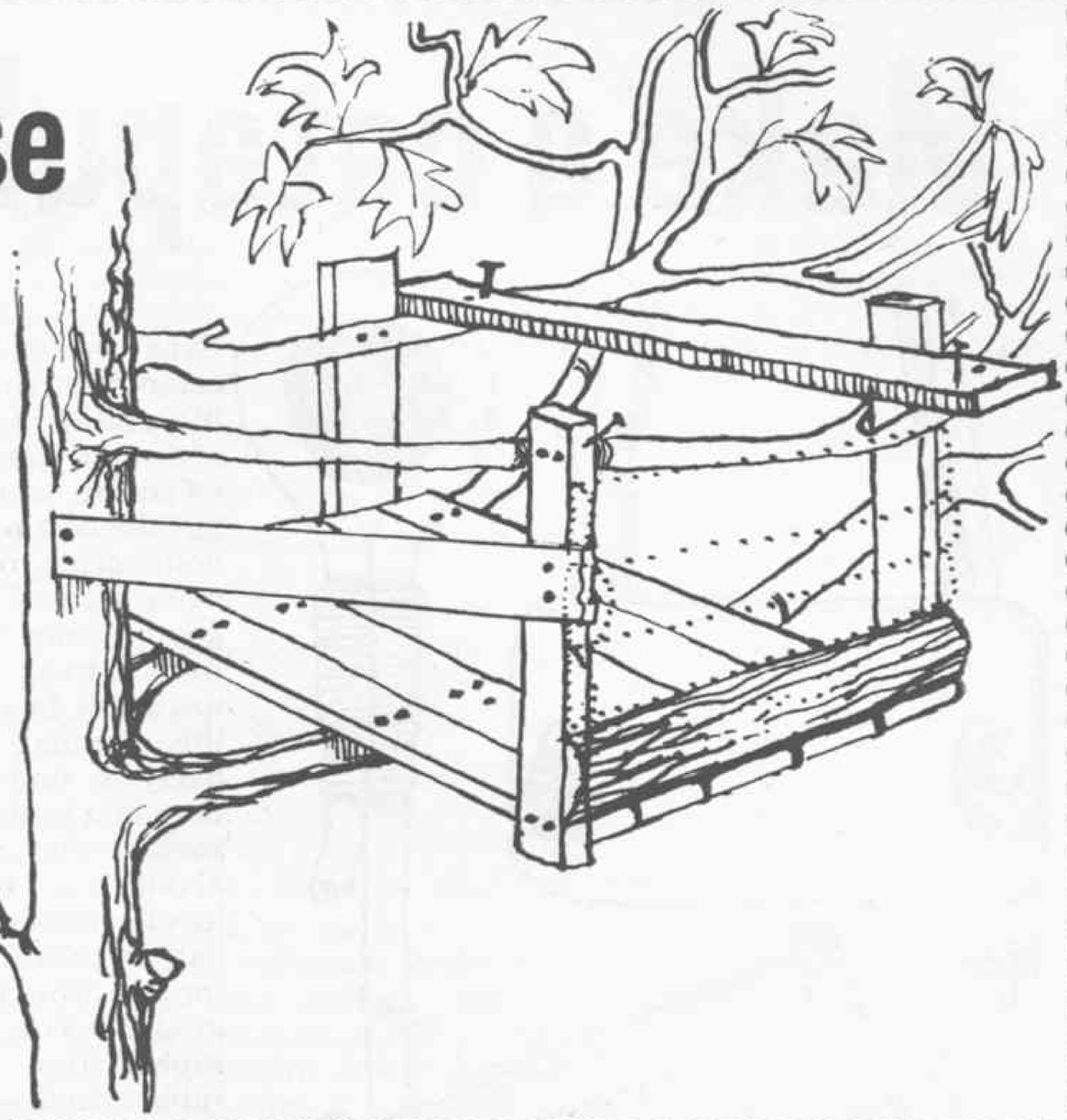


How about a water wheel?

ONCE YOU have built a dam and a waterfall, you might want to harness the power in some way. Something you can easily make yourself is a water wheel. According to the size of the brook and the dam, cut a piece of wood into a circle, anything between 6 in and a foot in diameter. Drill a hole through the exact centre, big enough to take your axle, which might be a dowel or anything else strong enough for the wheel to turn on. Make about 12 evenly spaced saw cuts along the circumference. These cuts need only be about an inch deep. Insert in them square pieces of the lightest metal you can find. Wedge these metal squares in as tightly as possible. Bore holes near the top of the supports for the axle. Drive the supports into the ground, and watch the wheel turn.

A dam causes only a temporary disturbance of a brook's free flowing, but if you are going to build a waterwheel, your interference will be more permanent, so do make sure that no one and nothing will be upset by your activities.

Build a tree house



IF YOU ever get that mood that makes you feel you want to 'get away from it all', what could be better than a tree house. Climb up there with a good book, and pull the rope ladder up after you. We cannot give you very detailed instructions about how to build your tree house because there are as many kinds of tree houses as there are trees. However, materials are fairly cheap. Nail planks to a couple of stout branches which are about level with each other, and you already have a platform. Use slabwood for the 'walls'. Slabwood is the outside cut off the log, saw-cut on one side, and curved and bark-covered on the other. This will give your tree house an attractive, log cabin appearance.

If you have a suitable tree in your garden, you know where to ask for permission to build in it. Otherwise, you will have to receive permission from a farmer or landowner. It is better to do your building under the supervision of a grown-up. Older people are likely to be a bit more cautious than you, and will make sure that your supporting branches are really strong enough and that your platform is properly secure.

The illustration shows a stage in the building of a simply constructed tree house.

Archery

ANY BOY who has watched Robin Hood on television or at the cinema has gone home and made some sort of a bow. Maybe it was only a switch off a tree tied at both ends with a piece of string, and the arrows were not much more than twigs, but it was a bow.

Archery, however, is a great sport and is worth learning properly.

If you want to make you own bow, the wood to use is lemonwood—or degame, as it is usually called. A stave of the right size would cost you between a £1 and 25s. But unless you can work under the close supervision of a keen archer who has already made bows, we cannot recommend a do-it-yourself bow.

You can buy a bow for less than £3, even cheaper for a 4 ft bow. If there is no store near your home, write to the Archery Shop, 21 Wastdale Road, London, S.E.23, or Lillywhites of Piccadilly Circus, London, S.W.1.

Good arrows and targets can be made, and if you are keen enough to buy a bow, you can save money by actually making the other equipment.

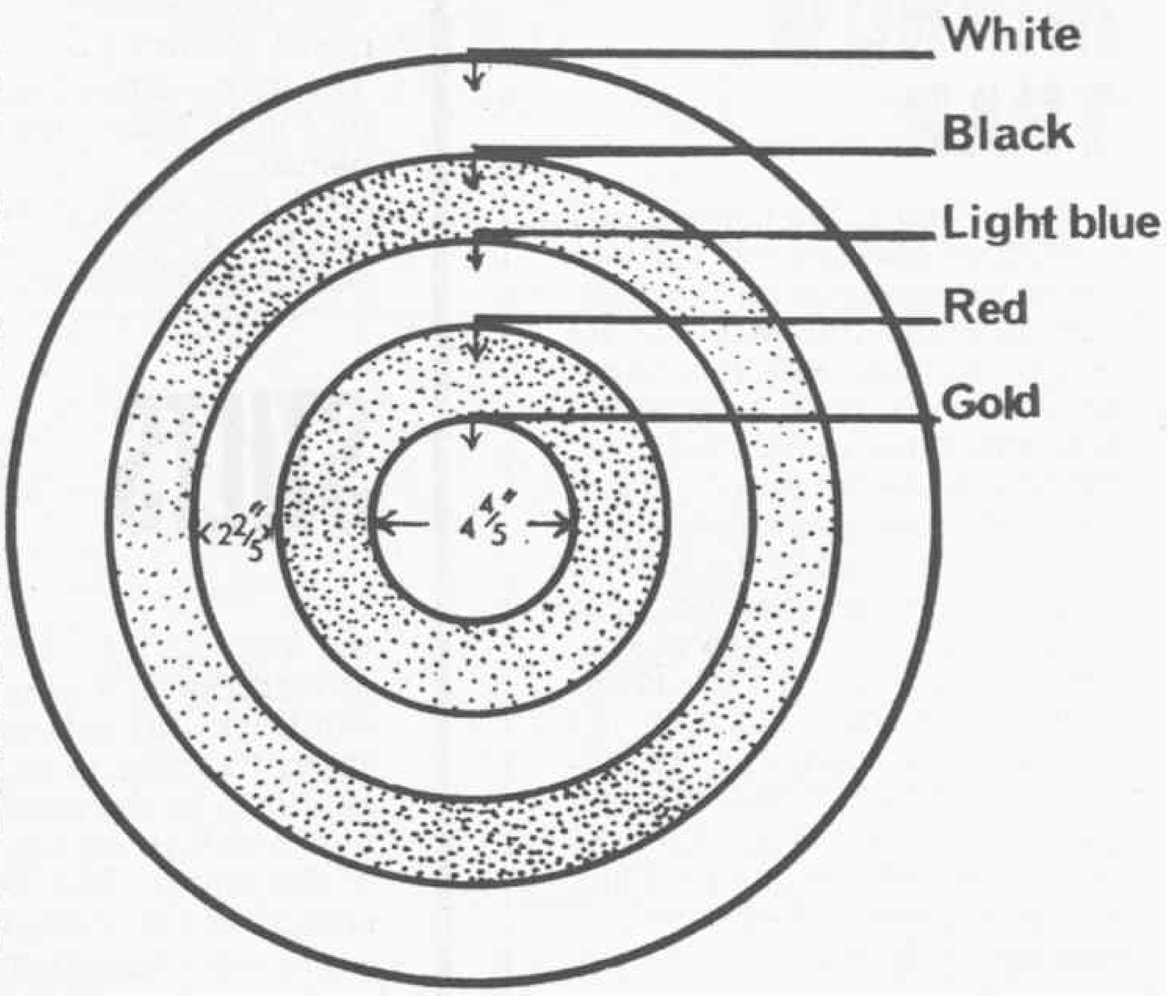
A do-it-yourself arrow kit costs £1 17s 6d. It comprises eight shafts, eight piles, 24 fletchings, eight nocks and all necessary instructions. Practice arrows can be bought for 2s 6d each, however.

Targets are easy to make. First of all make a straw rope. Take plenty of straw and press it into a bundle 2 in thick. Tie twine tightly round this bundle. Keep adding straw, increasing the length of rope, binding it tightly as you work your way along. After the first 18 in the rope's thickness should be increased from 2 in to 3 in. Now and then, curl your rope into a flat spiral. When you have made enough straw rope to make a spiral 2 ft in diameter, tie off the twine. Fasten more twine to the loop of a skewer and use this as a needle and thread, sewing the tight, flat spiral together.

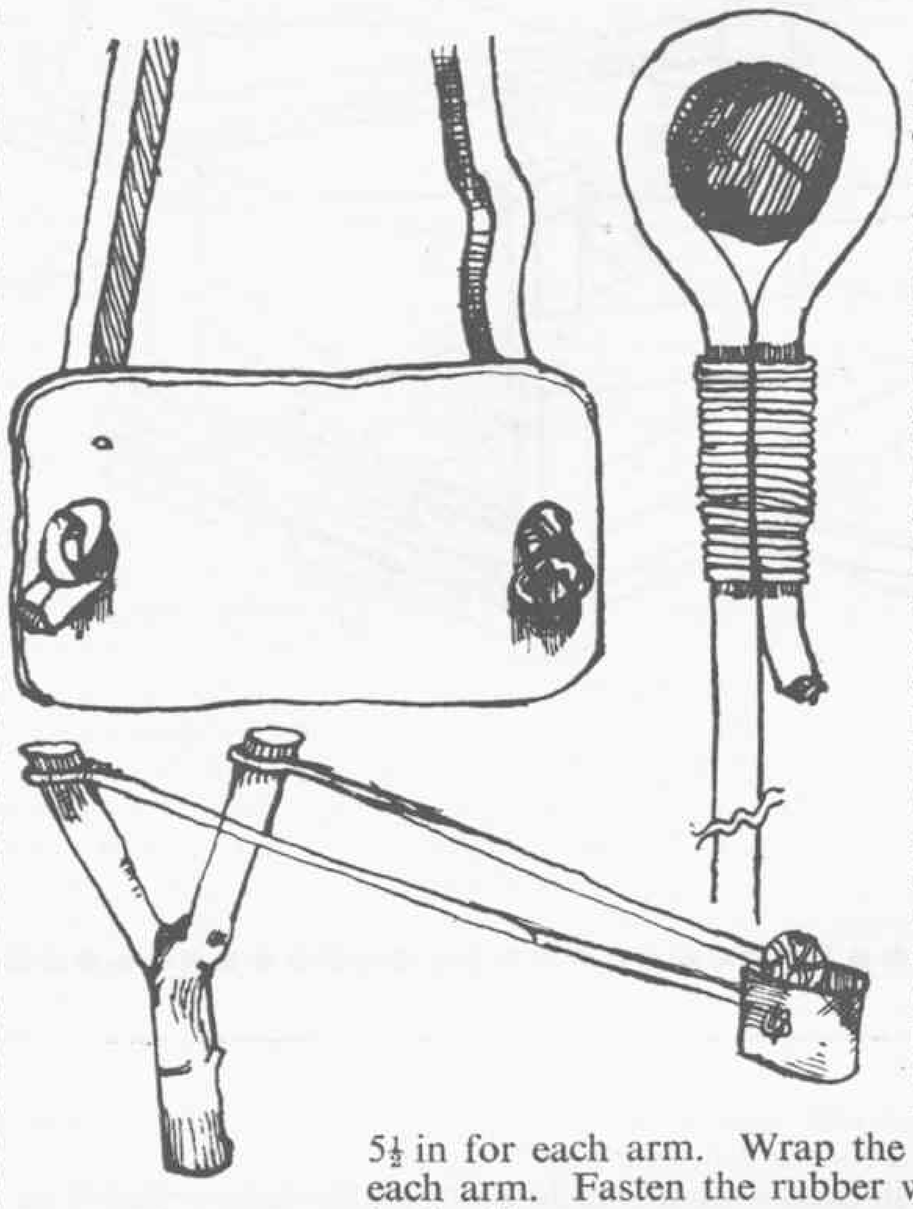
When you have made a good, firm disc, cover the surface with canvas, or some other strong material, and paint on it the circles shown on the diagram. The measurements given are for a 2 ft diameter target.

You will need a stand. It does not really matter what this is as long as it is firm. Your arrows will be broken if a gust of wind catches an insecure target which falls forward on its face. Besides target shooting, there are a number of archery games, including archery golf and archery bowls. You will think of more, but remember, a bow and arrow make a lethal weapon. Always see where you are shooting and never, *never* loose an arrow straight up into the air.

If you decide that archery is the hobby for you, you should write to Group Captain P. H. Bragg, Wyllief, Deakes Lane, Cuckfield, Sussex. Group Captain Bragg is the Secretary of the Grand National Archery Society, and will be able give you the name and address of the secretary of your local archery club.



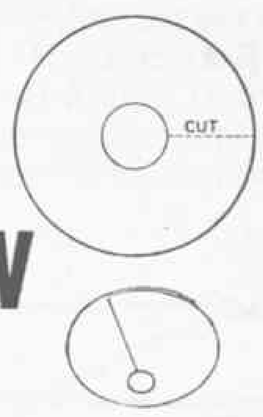
Make a catapult



EVERYONE OUGHT to have a catapult at some time in his life, and if you have not had one yet, try making one now. Of course, you can buy them, but the best one for a boy is home-made, one that he has made himself. You need a good, stout Y-shaped fork from a tree. Don't give up too easily in your search for this essential. You're more likely to find one in a tree than in a bush. Cut the twig so that the upper arms are about 3 in long, and the handle about 4 in. About half an inch from the tips of the two arms, shave a narrow groove. You need bands of rubber (no, not ordinary rubber bands–they're not half strong enough), the sort of rubber used for propelling model aircraft. It is black, square in section, and about $\frac{1}{8}$ in thick. You will need, say, $5\frac{1}{2}$ in for each arm. Wrap the bands round the grooves in each arm. Fasten the rubber with strong thread, as shown in the diagram.

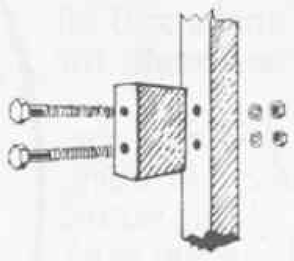
Now you need a piece of soft leather, about 4 in long by $1\frac{1}{2}$ or 2 in. wide. Make a hole at each end of this, pass the rubber through, and knot it. And be careful.

MAKE A MINNOW TRAP



YOU'LL NEED a 2lb jam jar, and a piece of cooking foil cut into the shape shown in the diagram. Perforate the foil with the tip of a small nail. Roll this round so that it becomes a cone with a hole where the point should be. Set this in the mouth of the jam jar, turn the overlapping foil down over the rim of the jar, and tie it securely, leaving a length of string about 3 ft long to use for holding the trap while it is under water. Put some bread in the jar, and make smaller perforations in the foil. Lower the trap into the water. The minnows will swim into the jar after the bread, but very few of them will find their way out.

STILTS



YOU NEED two 6 ft lengths of wood—pine will do—$1\frac{1}{2}$ by $1\frac{1}{2}$ ins for the shafts. It's better to buy them already planed although this is a little more expensive. (Note: If you buy planed wood you will find it is a little smaller than the *nominal* size, i.e. $1\frac{1}{2}$ in becomes about $1\frac{3}{8}$ in.)

The steps are two blocks of wood 4 in by 4 in by $1\frac{1}{2}$ in—again slightly less if planed.

Drill two holes in each of the two blocks of wood and drill corresponding holes in the shafts to raise the top of the step 18 in off the ground (more if you think you can still keep your balance).

Insert the bolts (6 in by $\frac{1}{4}$ in or $\frac{3}{8}$ in) as shown in the diagram so that the nuts and washers are on the outside of the shafts. Rub down the square corners of the shafts with sandpaper —this will make them easier to hold.

RIFLES ON THE RANGE

NEAR YOUR home there is a small-bore rifle club. There has to be—for there are more than 4,000 such clubs in the country. You can find out the name and address of the secretary of your nearest club from the National Small-Bore Rifle Association, 113 Southwark Street, London, S.E.1.

Junior members are encouraged to take up this exciting sport and no charge is made for the use of rifles, telescopes and other equipment. Even ammunition is sold to juniors at a reduced rate. No sport gives the youngster quite the same thrill as this with the crack of the gun, its recoil, and the sheer excitement of competition.

For, make no mistake, there is plenty of competition; club, county and national competitions, and eventually, the chance of representing your country in the Olympic Games if you are keen enough and good enough.

There is not much fun in just taking pot shots at a tree in the garden. Most boys with an air rifle soon get tired of that. Less dangerous by far, but infinitely more worthwhile is target shooting as a member of a club.

The most accurate personal weapon ever invented is the small-bore rifle. The bullets travel at a rate of 1,000 ft a second, and yet they can be shot into groups measuring no more than an inch across on a target a hundred yards away. This means precision engineering—and precision shooting.

When you join a club, the senior members will see that you get plenty of coaching. They will teach you the parts of your rifle and how to use the extra equipment. You will be taught how to hold the rifle, how to breathe correctly, how to aim and fire. And nothing in the world is more exhilarating for the young marksman than the moment when he sees for the first time the hole in the target where his shot has gone—right through the dead centre.

Although the National Small-Bore Rifle Association sets no limit on the age of junior members—an 11-year old boy has won championships—boys who are very young might need to have a father who is a member of the club he wishes to join. Most clubs will, however, admit boys of 12 years of age and above.

SPY CRAFT

To GET the best out of codes there really ought to be at least two of you, passing messages, one to the other, or trying to crack each other's ciphers. By the way, the difference between a code and a cipher is that in a code, one sign or word might stand for a word or a whole sentence. In a cipher each letter and number is represented by another letter or number.

Perhaps the simplest of all ciphers is the reversed alphabet. Write out the alphabet, then write it again, backwards underneath.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
z y x w v u t s r q p o n m l k j i h g f e d c b a

Now read this message in cipher: ivzw nvxxzml nztzarmv vevib nlmgs.

That cipher is simple to remember, but fairly common, so it can easily be spotted.
Try the sliding alphabet method.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
y z a b c d e f g h i j k l m n o p q r s t u v w x

See? You have slid your alphabet two places along—and, of course, filled in the first two spaces with the last two letters. Now read this: kcaaylm kyeyxgpc dmp npyergyj zmwq.

One of the most difficult kinds of cipher for anyone to crack is the one that uses a book for its key. Somewhere in your letter you mention a number–maybe the date–or you say you bought two dozen eggs at a shop (that would be page 24). You have arranged with your confederate which book you will be using; perhaps the May issue of Meccano Magazine. Turn to page 24. The first paragraph reads:

Grounding in the field of physics, particularly in electro-
ABCDEFG HIJ K L M NO P Q R

chemistry and electro-magnetism is given by the experi-
S T U V

ments outlined in the handbook that accompanies the
W

Merit Science Set.

Your cipher alphabet has been simply constructed by using every fresh letter as the next one in the alphabet. Here is a message in what we might call the MM/May/24 cipher: ynxnu rn khvsbv pnooges pgi.

Think of some more ciphers now. You should have plenty of ideas. Another device used by people who want to keep secrets is invisible ink. Many materials make secret inks. Milk, lemon juice, crushed potato, a mixture of onion and lemon juices—any of these, when used with a clean nib—will be invisible until heated. If you receive a letter which you suspect might contain a message in invisible ink, hold it in front of a fire, or run a hot iron over it. Then the truth will out.

ON THE ROAD

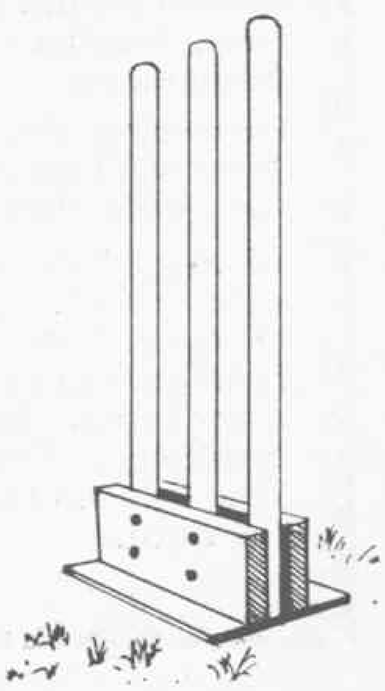
AFTER A while, a long journey, even if you're going on holiday, can become very tiring. The car may be speeding along—or what's worse—crawling along in a traffic jam, and you begin to get bored and uncomfortable. Well, here is a way of making the time pass quickly, and at the same time, learning something that world-famous rally drivers have to know. Be your father's navigator. Make use of the map and follow the route. Make an hourly note of the mileage and work out your car's average speed for the trip. Useful for the way back will be a route mileage chart, marking the distance covered between the villages and towns and cities. Estimate how much distance will be covered in the next hour or half hour, or how long it will take to reach the next town. There will be all sorts of ways in which you can help the driver.

Brew your own ginger beer

WOULD YOU like the sort of ginger beer which people say no one under the age of 40 can possibly have tasted, good, sharp and refreshing, home-made ginger beer? You will need a lemon. Peel it and cut the fruit into strips. Put this into a large bowl and pour over it ¾ lb granulated sugar, ½ oz bruised ginger, and ¼ oz cream of tartar. These ingredients are probably all waiting for you in the kitchen. If not, two or three shillings will buy the lot. Pour six pints of boiling water on your ingredients, and when it has cooled a bit, but is still just warm, add a dessert-spoonful of brewer's yeast. This last item will only cost a few coppers. Leave the bowl in a fairly warm place for a day, then strain it through muslin.
After this it is ready for bottling, and make sure you bottle it up really tight. Nothing is worse than flat ginger beer. Once it is properly bottled, it will keep for a long time—or you can drink it straightaway.
A word of warning. Ginger beer bottles have been known to explode. Don't shake the bottles, and don't try to get a good head of fizz.

CRICKET IN THE GARDEN

IF YOU have a good lawn in your garden you will want to play cricket or one of its variations, but no one will thank you for driving stumps in the grass. Here's a way of making cricket stumps that do not need to be driven into the ground. You need a couple of broom handles. These can be bought for as little as 3s each. For garden cricket you will not need full-size stumps, so out of your two broom handles cut three lengths of 2 ft. Each of these pieces should be flattened at one end. Now you need two pieces of wood 1 in by 2½ in, and about 1 ft long. Put the flattened ends of the stumps between these pieces and screw them together so that you have your three stumps standing in a base. Now screw a baseboard (this can be made of plywood or hardboard) on to the bottom of the two stump supports. These stumps will stand firm and straight and the lawn will be protected.
Now you only have to worry about the windows.



Your home aquarium

OF ALL the pets you can possibly have, the least troublesome—and the least affectionate and pet-like—are those to be found in an aquarium. Still, there is more to it than simply filling a bowl full of water and putting a few fish into it. A good aquarium can be self-supporting; i.e. vegetable and fish life will support each other. Fish breathe in oxygen and exhale carbonic acid gas. Plants absorb carbonic acid gas and give off oxygen. Extra oxygen is obtained from the surface, so don't have one of those spaceman's helmet goldfish bowls. There is not enough surface to supply much oxygen for all that volume of water. What you need is a rectangular glass tank, and these are fairly expensive. A tank measuring 2 ft by 1 ft by 1 ft would cost about £3, or perhaps a half-crown more, but this will be your only large expense. A visit to a country stream or river will give you enough sandy mud for a layer about 2 in deep over the bottom of your tank. Over that you will need clean sand. If none is available, it can be bought at a hardware store for very little money. You must wash the sand, wherever you get it from. Then put into your tank a few pebbles and one or two larger pieces of rock. Fill your tank, if possible, from a rain water barrel. If you have no supply of rain-water, the cold water tap will do, but be careful not to disturb the mud and sand at the bottom. Put your plants in when the tank is half full and see that their roots are buried in the mud. They will grow quite quickly when they have settled.

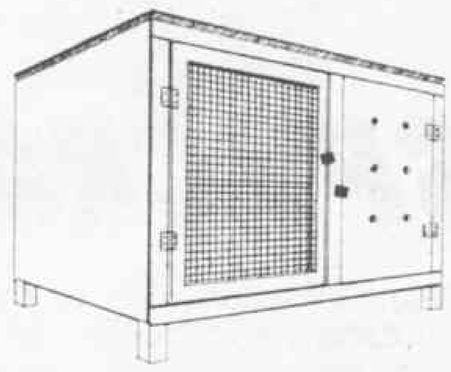
Any plants that grew in that stream where you got the mud, will do to grow in your aquarium. If you like, and if you have money to spare, you can buy plants. One of the best for making oxygen is Anacharis. It is bright green. Then there are eel grass (Vallisneria) and greater water moss (Fontinalis). There are lots of other plants, too, but you will find out these as you grow more experienced. Leave them in the tank for about a week before you put in the fish.

Here is an important point to remember. Fish have no eyelids, so bright sunlight is painful for them. See that you tank is kept in a light place that does not have direct sunlight.

Hunt round your stream for a few water snails. These will keep the sides of the tank clear when your plants start growing.

Some goldfish can be bought for as little as sixpence each. Others, which are more attractive to watch, fantails and shubunkins, cost more. Fish food can be obtained almost anywhere for a few pence. But fish die if they are fed too frequently. Twice a week is often enough. Your fish will like earthworms and any insects you catch.

BUILD A HUTCH



A HUTCH needs to be about 2 ft high (probably less is needed for guinea pigs than for rabbits), and about 2 ft from front to back. The length should be about 3 ft 6 in. It is best if the hutch can stand on short legs so that the air can circulate around it.

The corner pieces of the frame should be made of wood 1 by 1½ in thick and 2 ft 3 in long. Wood of the same thickness, but 3 ft 6 in long, should be joined, one length to the two front uprights and one to the two back uprights. They can be fixed with screws and glue, and these should be 3 in from the feet of the hutch. Now, again using 1 by 1½ in wood, join the uprights at the top in the same way.

So far you have two frames, the front and the back. Join the frames together by fixing the roof supports so that your front and back frames are 2 ft apart. The roof supports should form a rectangular frame 3 ft 6 in long and 2 ft wide. The wood you will use for this should again by 1 by 1½ in. You can make the roof frame with simple corner-halved joints as shown in the diagram.

Remember, though, that you will need wood; two lengths 3 ft 6 in long and two lengths of 2 ft.

Nail the roof frame onto the front and back frames.

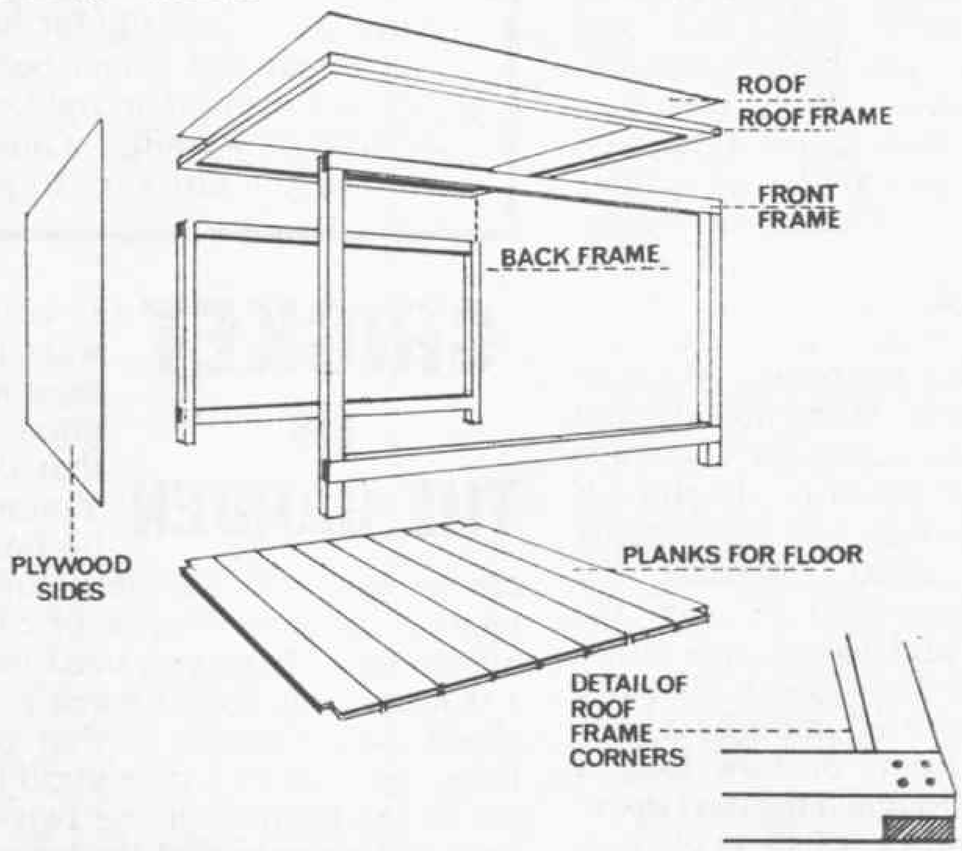
Now you must nail boards across the floor. You can use three-ply wood for the sides and back of the hutch but make sure that those floorboards and the roof are of good, strong quality.

A hutch is a two-roomed flat, with a bedroom and a day room. A partition, made of plywood if necessary, with a hole in it 8 in by 5 in for a door. is placed in the hutch with 2 ft on one side of it and 1 ft 6 in on the other.

Now each room needs a door. The two doors make up the front of the hutch. For the door of the day room, you make a frame and fill it in with wire netting. This door is hinged to the frame at the side.

Between the two doors you must fix an upright. It must fit tightly and should be nailed top and bottom. The bedroom door, for the 1 ft 6 in compartment, is made of boards in which have been bored up to half a dozen ventilation holes. This door is hinged to the other side of the frame.

The roof of the hutch should be covered with some water-proofing material.



Rabbits

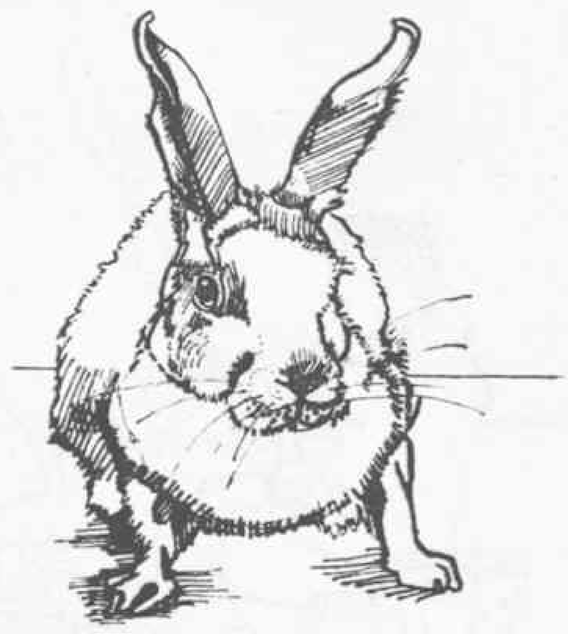
If you intend to keep rabbits, you must also read the item on this page about guinea pigs. The requirements of both pets are very similar as regards care and feeding. One point to have in mind from the outset, however, is that rabbits breed like—well—rabbits. If you are too tender-hearted to kill them, and have not bothered to find out who would be willing to buy them or have them as gifts, you will be knee-deep in rabbit by the end of the year. Be warned.

There are many different breeds of rabbits: English, French lops, Chinchillas, Flemish giant, Dutch, Himalayan, Siamese sables, Belgian hares, Angoras and Havanas, and more besides.

Rabbits need feeding twice a day, morning and evening. The food is bran mash (as with guinea pigs) and greens. See, too, that they have plenty of clean water.
You must keep their hutches clean, with clean sawdust and clean straw. Clean out droppings every day, and replace all the sawdust and straw at least once a week.
When a doe is going to have young, you should see that she gets an extra meal a day, and that she has a little extra hay or straw so that she can make for herself a soft, warm nest.

Don't pick up rabbits by their ears and let them dangle. You wouldn't like it; nor, whatever some people say, does a rabbit. It should be held by the scruff of the neck, with your other hand supporting it under its hind legs to take the weight.

Rabbits have ailments, and there certainly are definite problems with breeding. Buck rabbits can be extremely aggressive towards their own young. You should seek guidance from experts. Your local pet shop proprietor or your local newspaper will be able to tell you where to get in touch with other rabbit fanciers.



Keeping budgerigars

Among the friendliest of all pets are budgerigars. A young cock bird bought now will probably cost about £1 10s., and a cage of a large enough size can be had for the same price. You should be able to teach him to talk as long as you keep him away from other birds. Budgerigars are quite hardy, but to avoid illnesses you must clean out his cage at least once a day, and see that he always has fresh, clean water. His diet consists mainly of millet seed and plain canary seed. Food will cost you only about 1s. a week. Let him have a toy or two in his cage—especially a small mirror. Male budgerigars love to admire themselves.

Keeping guinea pigs

The cheapest and easiest of four-legged pets to keep are, without doubt, guinea pigs. According to where you live—town or country—guinea pigs cost between nothing and 5s each. The most common ones in England are the smooth-haired variety, but there are others: Peruvians (rough-haired), Himalayan (black and white like a circus pony), Agouti (buff), and others.

Guinea pigs are often known as cavies, by the way. You will need a hutch. The one we have shown you how to build on page 6 of this supplement will be ideal.

As for feeding, a bran mash once a day is all they need as long as you give them plenty of greens and clean water. You make a bran mash with, of course, bran, potato peelings, swedes, turnips, carrots, or any other clean vegetables or their peelings you have If you can turn your guinea pigs out of the hutch and onto a lawn every now and then so much the better—for them and for the lawn. Try and keep them in with some sort of barrier made of wire or boards which you can remove when the cavies are back in their hutch. They can't climb, but they run very fast.

Guinea pigs will breed two or three times a year and have litters of between two and seven. The young are easy to handle. They are born with their eyes open, and can walk within 24 hours.

When the young are nearly three weeks old, remove them into a hutch on their own, and put the father back with the mother. If you leave the father with the young he will probably kill them.

In nearly every town there is a Cavy fanciers' club, which you can join, and receive expert guidance. The name and address of the secretary will almost certainly be known at the office of your local newspaper, which reports the club's shows and championships.

And Hamsters

Sawdust is the best covering on the floor of a cage for hamsters, and a nest can be made of scraps of newspaper, rag or hay. Feed it on crushed dog biscuit (1 dessertspoonful a day) a piece of apple, or carrot or greenery. They also like nuts. Hamsters are extremely quarrelsome with each other, so keep them separate.

TIGHT LINES

THOSE OF you who are interested in angling probably already read the regular articles in Meccano Magazine by John Crossman, but those who have never started should realise that this is one of the most exciting sports of all. Or do you think it dull, sitting on some muddy river bank, waiting for a bite?

Wait until you get a bite. Just you wait until some perch or even a tiny bleak drags at your line, and experience the thrill as you pull him in. What if the bleak takes your bait and a pike takes him?

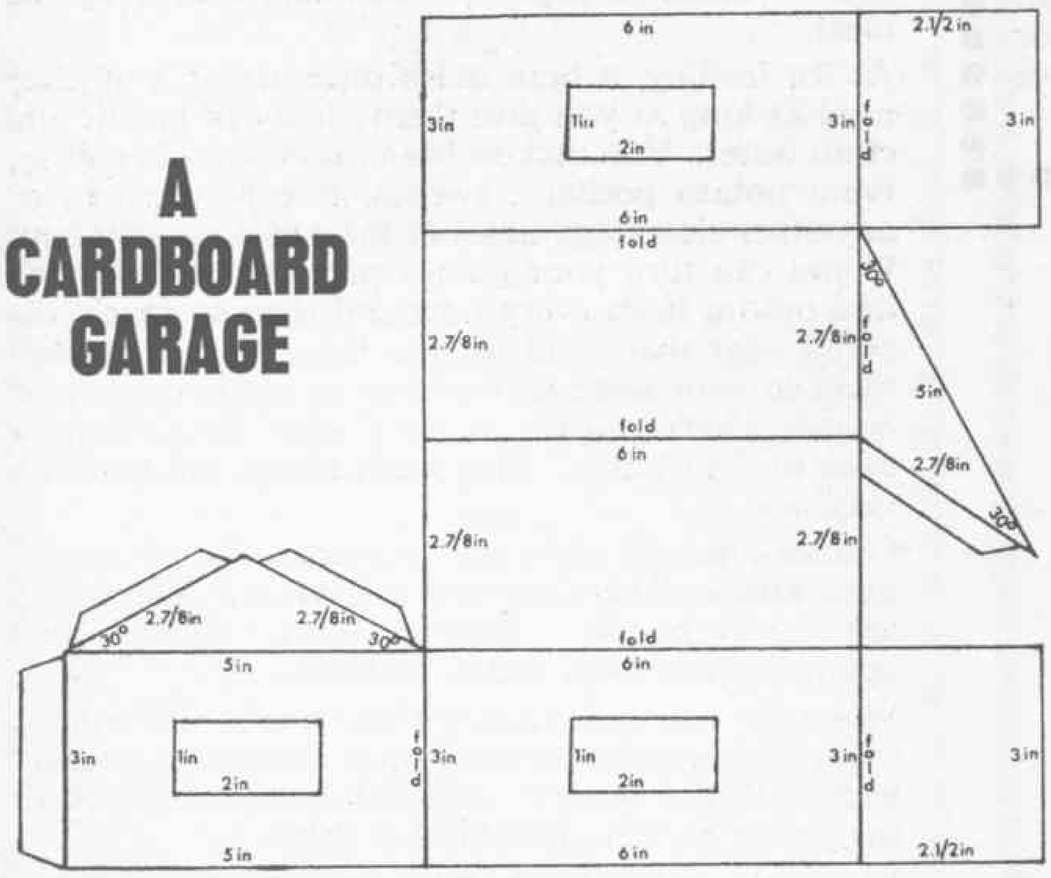
Then you will find yourself doing battle with a wily, ferocious creature that might weigh anything up to 20 or more pounds. You need a rod, of course. One of the best at a reasonable price is the Merit glass fibre rod that costs only £1 7s 6d. The makers are J. and L. Randall Ltd, of Potters Bar, Middlesex. It is a fine rod, and certainly no toy. A good reel is the Truspin fixed spool reel at 12s 11d, which was reviewed in the Window Shopping pages of the June Meccano Magazine. See your local dealer about hooks, lines and floats. They will know the best ones for local conditions.

Fishing gets you out in the country. Down by the riverside you may see some furtive water rats, perhaps even an otter or a fox. There will be a few rivals there, too, a kingfisher—a flash of blue as it dives—or a sober old heron looking for his breakfast.

Experience will teach you what bait is most suitable for which fish, but at first, of course, you will be hoping to catch any fish—even the small fry, bullheads, bleak, loach. You can use worms and maggots for almost any kind of fish. Here again you will find your local fishing tackle dealer will be a great help and he can also tell you about local fishing clubs and societies.

If you live in Wales, Scotland, Ireland, or the West of England, you may be fortunate enough to have plenty of trout water handy. But in England, generally, you will find coarse fishing, including carp, chub, dace, eel, roach, rudd, tench, barbel, pike and perch. Here is a tip from a booklet issued by K. P. Morritt Ltd, Intrepid Works, Sunningdale Road, Cheam, Surrey, who make the fixed spool reel, we mentioned earlier. When your fish is hooked, never try and lift it from the water and wind it to hand (unless it is under 1 lb) when using a fixed spool reel. The reel is designed for casting, recovering the line quickly, and playing the fish; *not* for weight lifting. Heavy fish should either be gaffed, netted out, or lifted by taking hold of the line outside the rod tip and as near to the fish as possible. The boy in the picture might be showing you how not to do it.

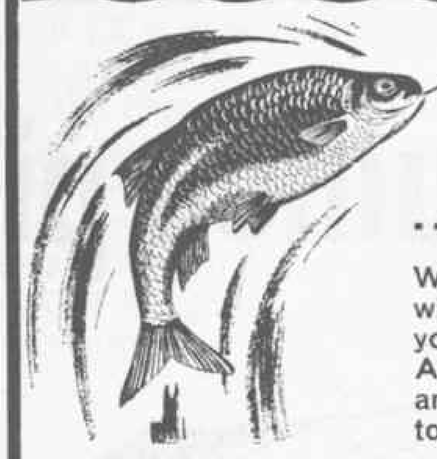
A CARDBOARD GARAGE



HERE WE have a simple two-car garage which is easy to make and requires very little in the way of materials. You need a sheet of strong cardboard measuring 15 in by 13 in, a pencil, a rule and a pair of scissors. The rule should be one of the 12 in variety, having several different angles marked on one side. If these angles are not shown, then a protractor will also be needed, or, failing this, anything that gives an angle of 30 degrees. The plan is to scale and the size to which it should be enlarged is indicated in the measurements. To build the garage, simply transcribe the plan, lightly, on to the cardboard, remembering to scale it up to the size indicated. Cut around the main outline and then fold where shown, after first cutting out the three windows shown in the plan. Obviously, all the flaps must be folded, so I have not shown this on the plan. When folding, you will find it helpful to first score along the line, down which the fold is to be made,

It only remains to stick down the flaps in their respective places with a good adhesive.

Catch more fish with INTREPID



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