8 PAGES OF AEROMODELLING—See inside

meccano magazine

August

1s. 6d.

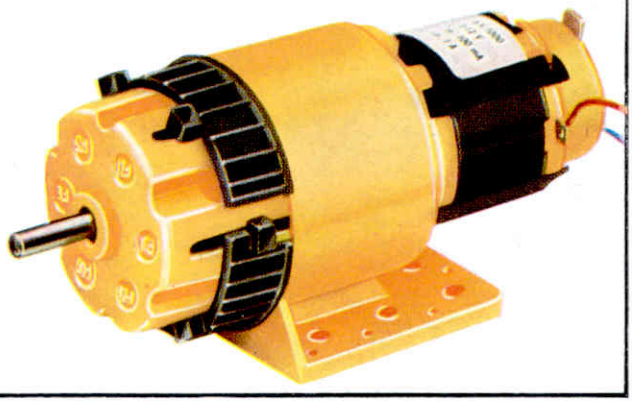
the practical boy's hobbies magazine

1965

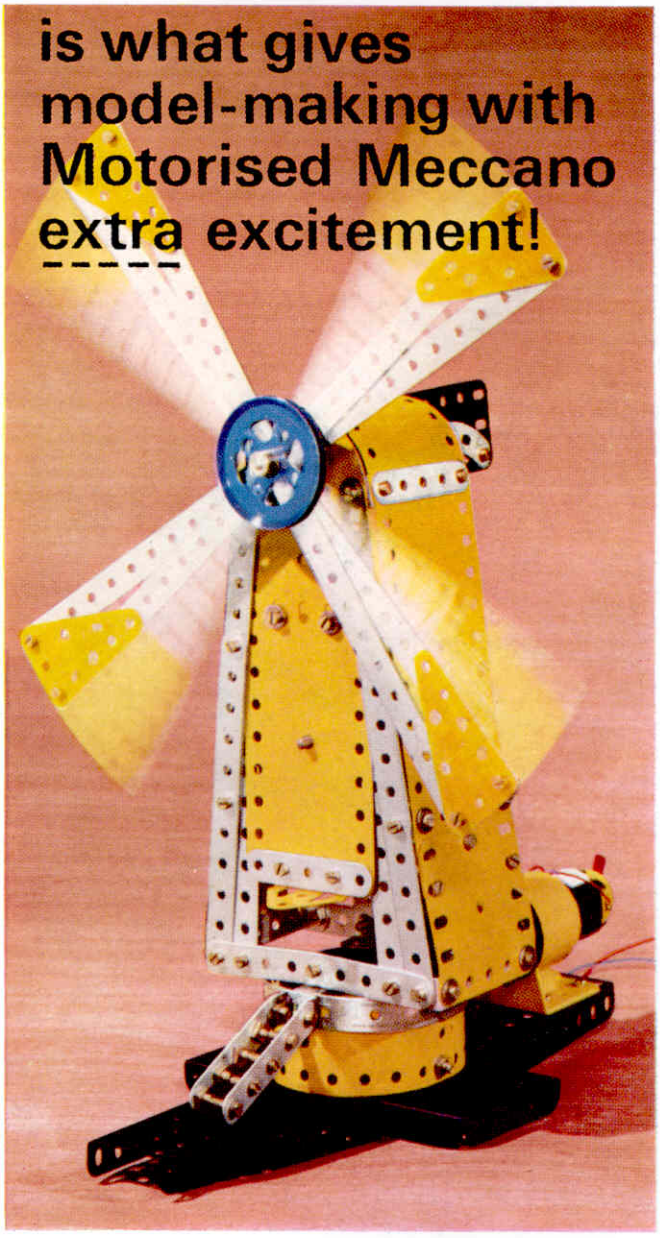
IN THIS ISSUE

- Super cut-away illustration of Moon Rocket
- Careers in the Navy

This . . .



is what gives model-making with Motorised Meccano extra excitement!



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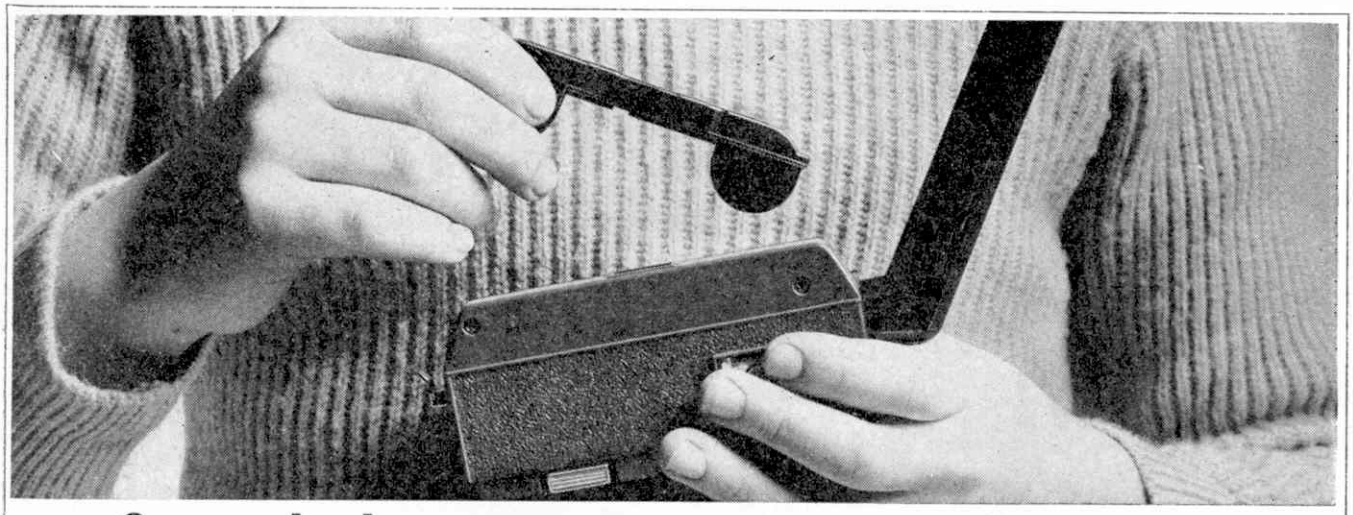
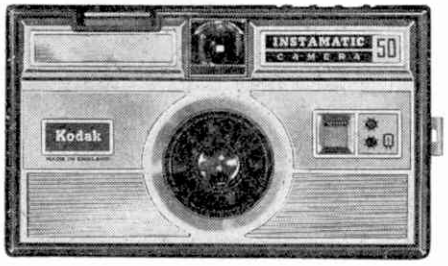


Can you load a camera in the time it takes to read this?

If it's a Kodak Instamatic camera...yes!



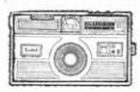
Three seconds if you're quick. Four if you're slow.

If you think we're exaggerating, try it. In fact, try it anyway. It's fun. Kodak have loaded the film into its own light-proof cartridge. You simply open the back of the camera. Drop in the cartridge. Shut the camera. And presto! You've loaded it.

The Instamatic 50 camera. This is the camera you see above. It's marvellously easy to use (even winding-on's just a matter of flicking a lever). It's small enough to slip in your pocket. You don't need to set it. And it takes magnificent black-and-white or colour pictures. Go to any camera-shop and ask to see it and load it. Then plonk down £3.0.1 and it's yours!

1. Open the back to load

2. Drop in the pre-loaded Kodapak cartridge



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cameras

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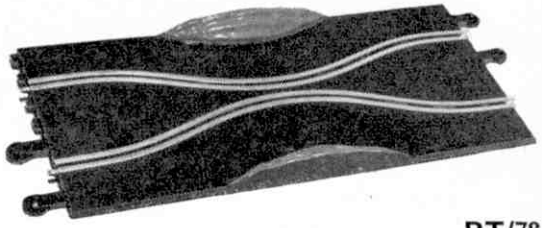

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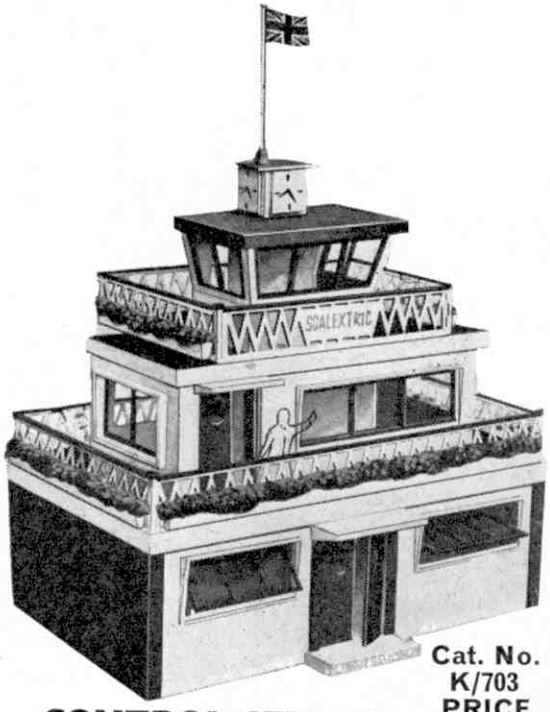

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meccano magazine
THE PRACTICAL BOY'S HOBBIES MAGAZINE

August 1965 · Vol. 50 · No. 8 · Monthly

AEROMODELLING □ RADIO □ ELECTRONICS □ CAMPING □ CYCLING □ STAMPS □ FISHING

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Contents

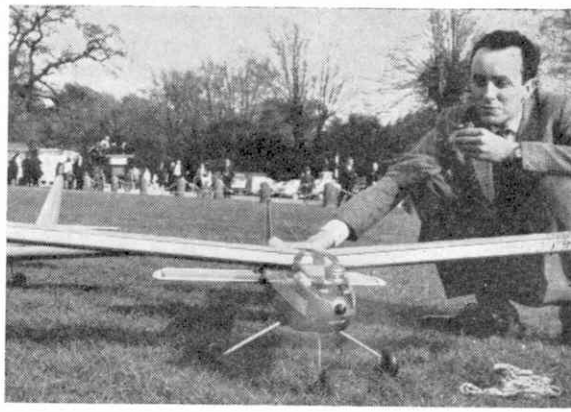
Front Cover! An artist's impression of the XV/5A in action. See Page 4 for all the exciting details of this craft.

Meccano—Triang Get-together

FOR many years, two model railway systems existed side by side. To some extent each duplicated the equipment of the other. They were both very good systems; each one had its own unique features but at the same time there were many similarities and some duplication of equipment. Well, as you all know by now, the two railways were Hornby Dublo and Triang Railways and they are now united to form the Triang Hornby line, which incorporates many of the best features of each of the two earlier systems. Not only does this amalgamation provide an unequalled potential for development and expansion, but it removes one of the newcomer's greatest headaches—which one to choose! And the happiest thing about it is that everyone wins, for the new system is undoubtedly the best in the world.

Similar problems of choice have existed in the magazine field. Our own Meccano Magazine and the newer Triang Magazine inevitably appealed to the same readers, and the choice between the two—which one to buy—must have been very difficult.

As from last month, Triang Magazine ceased publication, and this means that, as with the two railway systems, there is now one BIG monthly hobby journal—The Meccano Magazine. You can still join the Triang Club, with its colourful badge and membership card and more details of this will be found on page 23. Another unique result of this get-together is the magnificent double-page spread Picture-Story feature on the Saturn Moon Rocket on pages 24-25. These thrilling drawings have been one of the most popular features of Triang Magazine.

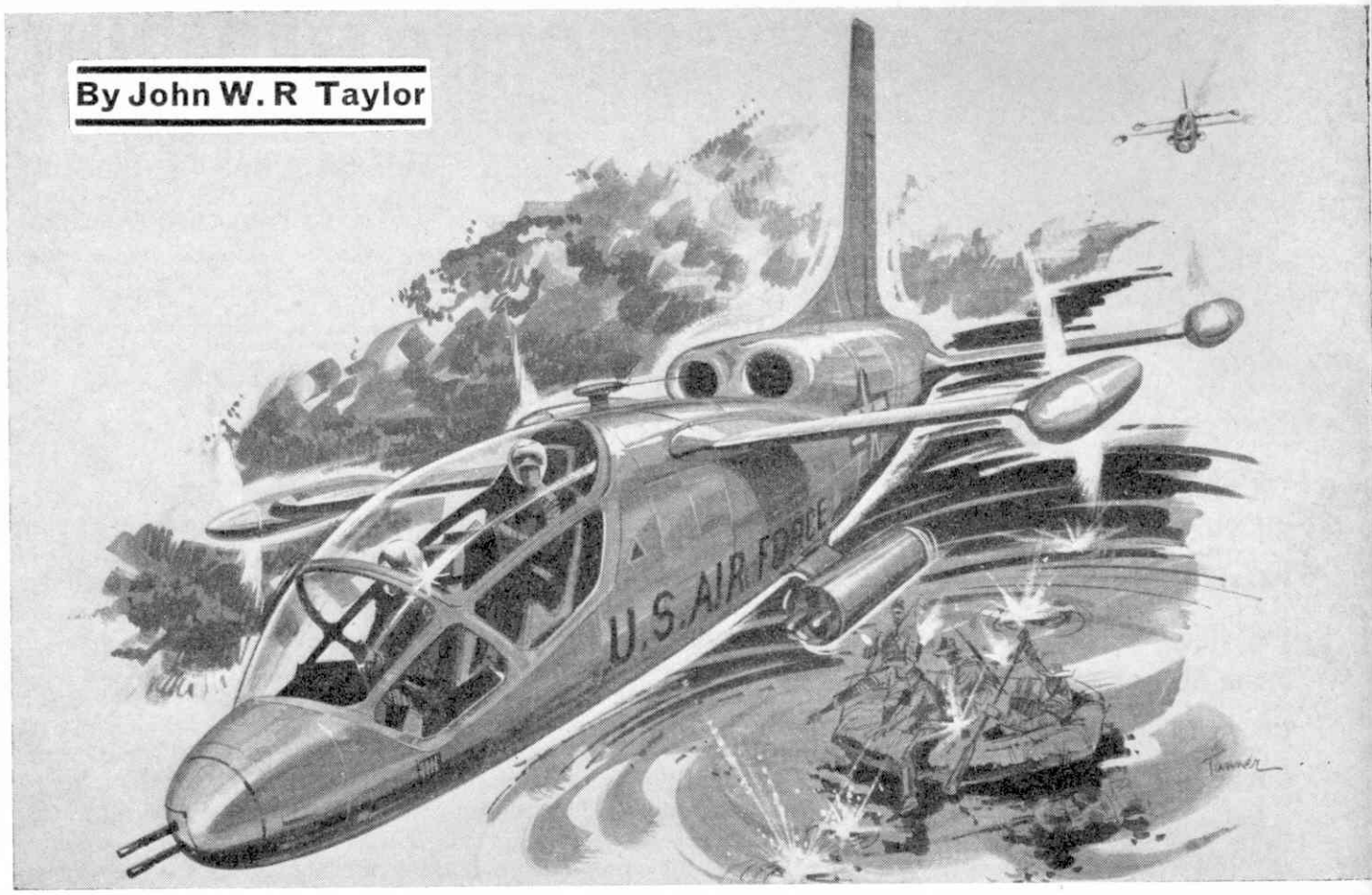


Exhibition News

Last month, I mentioned the special Model Exhibition which was taking place during the summer season at Woburn Abbey in Bedford. Here can be seen one of the radio control 'planes about to take off to give a flying display.

By the way, talking of exhibitions, next month August 24 to 28th, there is the National Model Show at the New Horticultural Hall, London, and on page 41 there is an opportunity of winning FREE tickets to the exhibition. I look forward to seeing you there on the Meccano Magazine stand!

The Editor



By John W. R Taylor

FIGHTERS OF THE FUTURE?

MOST exciting item of news in Britain's latest defence plan is that the R.A.F. will begin re-equipping its ground attack squadrons with the Hawker Siddeley P.1127 Kestrel 'jump jet' in two or three years' time. The Kestrel is the first of a new generation of combat aircraft that will combine the hitting power of today's jet fighters with the ability to take off and land vertically from small fields, beaches, roads, jungle clearings or any other reasonably flat surface about the size of a tennis court.

America's Department of Defense has admitted that the Kestrel is at least two years ahead of any vertical take-off and landing (VTOL) aircraft yet built in the United States; but U.S. designers are working hard to narrow the lead and several interesting prototypes are already flying.

Most successful so far is the 'fan-in wing' XV-5A Vertifan designed jointly by the Ryan Aeronautical Company and the General Electric engine company. This aircraft has two five-foot diameter lift-fans mounted horizontally within its wings, driven by the exhaust from two 2,658 lb. thrust General Electric P85 jet engines, mounted side-by-side above the fuselage.

By speeding up the jet exhaust and drawing in additional air from above the wings, the fans provide three times the lifting power that the jet thrust would give by itself. As a result Ryan claim that the XV-5A can take off and land vertically, hover and change from vertical to horizontal flight using no more power or fuel than would be used by a conventional aircraft.

Of course, the idea is not as simple as it sounds. The fans have to be very carefully built. Each has 36 main lifting blades and is driven by directing the exhaust on to a ring of smaller turbine blades around the rim. In addition, the normal control surfaces are useless during take-off, landing and slow-speed flight, when there is little airflow over them; so an additional control system has to be provided to 'steer' the aircraft and keep it 'balanced' on an even keel.

The XV-5A has a third fan in its nose to do the job done by the elevators of a conventional aircraft. If the nose begins to rise too steeply, the airflow from this fan is deflected upward by curved doors on each side, to push the nose down again. If the nose drops, the same doors can deflect the airflow downward to raise it.

The under-surface of the wing beneath each main fan is made up of 13 louvres, like the slats of a Venetian blind, at right-angles to the fuselage. These louvres are opened and closed by means of a lever in the cockpit. When the lever is raised, the louvres open and the air from the fan is deflected vertically downward to thrust the aircraft off the ground. This is the only additional control in the cockpit of the XV-5A, except for a small

thumb-wheel on the joystick which is used to close both sets of louvres together after take-off. The louvres and the curved doors under the nose-fan are also connected to the normal joystick and rudder pedals.

For take-off, the pilot raises the lever to open the louvres fully. As the XV-5A leaves the ground, fore and aft movement of the joystick operates the nose-fan doors to raise or lower the nose. Sideways movement of the joystick closes the louvres slightly on one side to right the aircraft if a wing begins to drop. Movement of the rudder pedals pivots the louvres forward on one side and rearward on the other side to turn the aircraft. Thus, the controls operate in exactly the same way and have the same effect as on a conventional aeroplane.

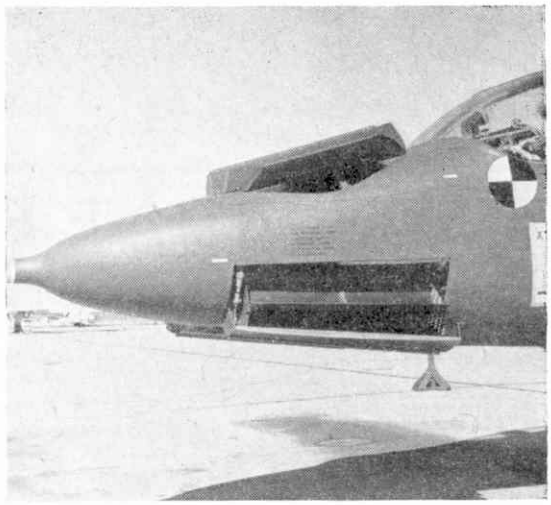
At a safe height, the pilot begins to turn the thumb-wheel, slowly closing both sets of louvres and deflecting the airflow gradually rearward in the process. The airflow continues to provide lift, but also drives the aircraft forward. When a speed of about 140 m.p.h. has been reached, the wings are able to produce sufficient lift to support the aircraft without the help of airflow from the fans. The pilot then closes the louvres completely and the exhaust from the engine is led out of the bottom of the fuselage through two ordinary tail-pipes, to propel the aircraft in the normal way. At the same time, the curved nose-doors close and two semi-circular doors above each wing-fan hinge downward to close the hole in the top of the wing.

In cruising flight, the XV-5A is controlled by normal ailerons, elevators and rudder. In fact, there is little to distinguish it from any other jet-plane, except that its wings are smaller than usual, as they do not need to provide sufficient lift, at comparatively low speeds, to raise it off the ground.

Two XV-5A's have been built. The first began its flight tests on May 25, 1964, and the initial series of 100 flights, totalling 42 hr. 15 min. in the air, was completed by the end of the year. Results were better than expected. The first transition from vertical to horizontal flight was made on November 5, and a speed of 450 m.p.h. was logged during the 100th flight.

Both XV-5A's were handed over to the U.S. Army for further testing on January 28 this year. If all goes well, aircraft of this type may one day provide close support for U.S. troops in combat areas, carrying bombs, rockets and other weapons for ground attack or cameras and radar for reconnaissance.

However, the XV-5A is not the only VTOL aircraft now under development in America for this kind of work. Equally interesting is the Curtiss-Wright X-19A, which began its flight trials on June 26, 1964. This aircraft has a conventional six-seat fuselage and two very small, high-mounted wings, at the front and rear of the cabin. At each wingtip is a special 'radial lift-force' propeller, mounted in such a way that it can be tilted to work as a helicopter rotor for vertical take-off and landing. The propellers are driven by two 2,200 h.p. Lycoming T55-L-5 turbines, installed in the fuselage.



Three different views of the XV-5A. These show the louvres on the under-surface of the wing and the hinged doors on the upper-wing, the air deflectors on the nose, and a shot of the aircraft in flight

After take-off, the propellers are gradually tilted forward to give forward thrust as well as lift. Curtiss-Wright claim that even when they have been tilted right down, like the propellers of an ordinary aeroplane, they continue to give quite a lot of lift. As a result, the wings can be made much smaller than usual, reducing weight and drag and giving improved performance.

As in the case of the XV-5A, the pilot's joystick and rudder pedals operate ordinary ailerons, elevators and rudder in cruising flight and a special control system used during VTOL flight. The latter involves only changing the pitch (twist) of the propeller blades. The nose is raised by making the front pair of propellers give more thrust than the rear pair. The left-hand wingtip is raised by making the left-hand propellers give more thrust than the right-hand pair. Turns are made by varying the thrust from the forward propeller on one side and the rear propeller on the other side.

The X-19A is designed to fly at up to 460 m.p.h. and to carry a 1,000 lb. payload over 500 miles. It is in an early stage of development, but their are many jobs that improved versions might be able to perform one day.

Holy Photo Fliers

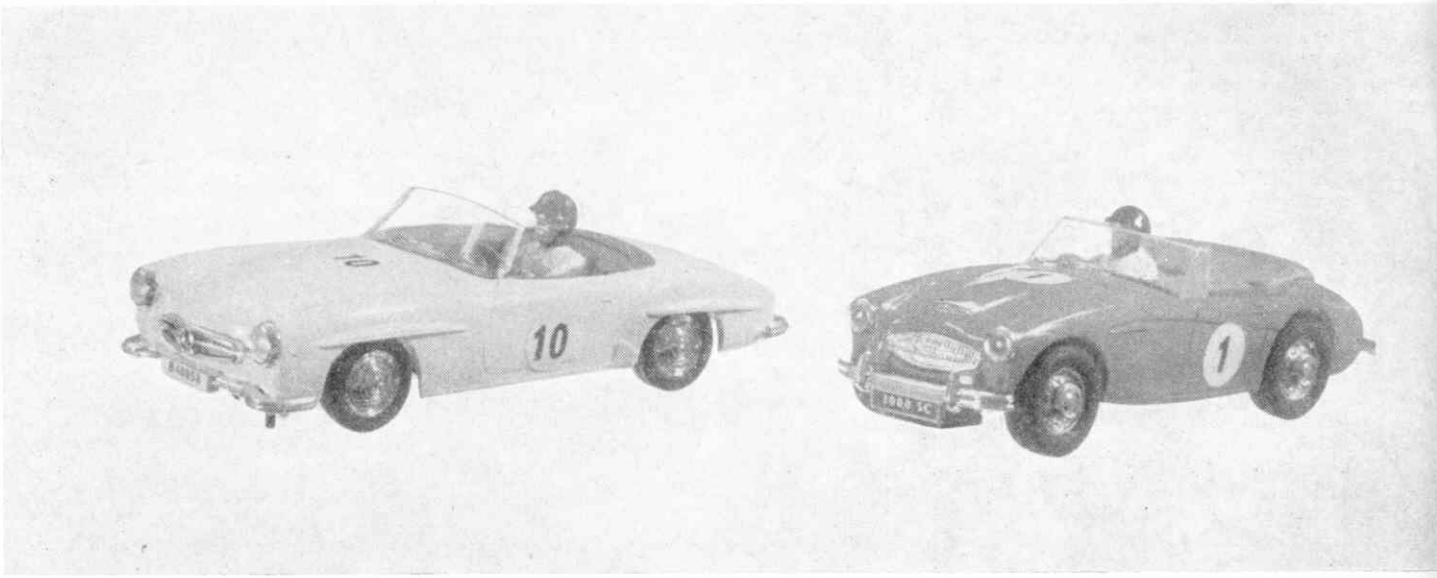
A British company, Fairey Surveys Ltd., has won a £250,000 contract to photograph and map 32 cities and towns in Saudi Arabia, against competition from American, Dutch and other British companies. The job is not without its problems. Two of the places to be photographed from the air are the Holy Cities of Mecca and Medina, and Mohammedan law decrees that no non-Moslem may travel in, over or through them. So, before it can get started, Fairey is having to train Moslem aircrew and aerial photographers to do this part of the work.

Giant bi-plane

Biggest single-engined biplane in the world is the Russian Antonov An-2 which has a span of 59 ft. 8½ in. and is powered by a 1,000 h.p. Shvetsov ASh-62 radial engine. Its roomy cabin is normally fitted out to carry 10 passengers, 14 parachutists or 1½ tons of cargo; but the Soviet airline Aeroflot uses it for an immense variety of other jobs including crop-spraying and air ambulance missions, carrying six stretcher patients.

Because of its big wing area and the full-span slots and flaps on its wings, the An-2 can take off in under 500 ft. This enables it to bring the advantage of flying to even the most remote areas of Russia, operating on skis instead of wheels when the Arctic regions are covered with snow. Its top speed is 157 m.p.h. and it can fly for 560 miles at 124 m.p.h. with a full load.

TRACK CHAT **By Pit Man**



The Austin-Healey chases the Mercedes. Two exciting Scalextric models which you can incorporate into your model

LAST month I talked about track and buildings, with some ideas on how to lay out a Scalextric circuit. Later in this series, I shall deal in detail with the making of extra buildings and the assembly of some of the Scalextric kits, but this month, I should like to talk about the Scalextric cars.

I don't know if you have noticed, but at any real car race meeting you see the mechanics in the paddock checking and rechecking the racing cars, listening to the engines and cleaning, right up to the call for the cars to go to their positions on the starting grid. Remember this point with your own cars, look after them, inspect and service them and they will never let you down.

Other than normal wear and tear, most stoppages and slow running faults are caused by dirt and lack of maintenance. To prevent these troubles, we must pay particular attention to three parts of the car—the commutator, the rear axle assembly and the pick-ups. I shall deal with them in that order.

With the variety of Scalextric cars now available, you will find that there are several methods of dismantling them in order to reveal the motor, but as each type of assembly is very simple, we'll simply describe how to dismantle the motor.

To get at the commutator we remove the carbon brushes by squeezing together the brush springs and allowing the brushes to drop out (Diagram 1). Clean between the commutator segments using a needle or pin (Diagram 2), afterwards brushing over with methylated spirits to remove all the carbon dirt and grease. Wipe over the carbon brushes themselves and replace.

PIT STOPS WASTE TIME!

Maintenance

Remove the rear axle assembly and brush off all dirt—it is amazing how much dirt, hair and fluff is attracted to this part of the motor. I always have a packet of pipe cleaners in my kit for this sort of job; they are most useful and only cost a few coppers.

Replace the axle after greasing the bearings with vaseline and slightly oiling the felt pad, if one is fitted. When replacing the rear axle assembly, make sure that it is positioned correctly and that

the crown wheel is on the correct side of the pinion, exactly as illustrated in Diagram 3.

Whatever type of pick-ups you have on your cars, they must receive constant attention. Clean them and trim them so that they rest equally on the track rails. For those on the Formula cars, use a brush to separate the strands and never twist them; level off the ends with a pair of scissors.

As you well know, tyre surfaces and pressures are of considerable importance in motor racing and in the same way, a little time spent on the tyres of your models will pay off in extra speed, acceleration and road holding. The important thing is to ensure that you have the greatest possible area of tyre on the track.

Clean off the ridge in the centre of the rear tyres with sandpaper and the easiest way to do this is to hold the paper on the track, position the car in its slot and with your friend operating the hand controller, ease the rear tyres over the sandpaper. In no time you will have a broad flat surface, which should then be cleaned with methylated spirit. It is well worth cleaning the tyres after each race, as they soon pick up dirt and grease and become slippery, which affects the cornering.

Driving the cars

Try to imagine that it is a real car you are driving. Try not to jerk your hand controller and keep up a smooth running speed, increasing and decreasing as the variations in your circuit demand. When entering a banked bend, try it at various speeds and go back again and again until you are satisfied that you can successfully control your car around it at the highest possible speed.

If you stop suddenly on the banking, you may find that your car slews round, which necessitates repositioning with a consequent loss of time. On the other hand, if you take it too fast, you may 'run out of track' and slide over the edge.

Faults such as these can be cured by constant practice. Take each corner and bend in turn and practice until you are perfect, then go on to the next one and so on, until you can take the whole circuit confidently and at the greatest possible speeds.

Race practice

All Scalextric drivers, even the champions, come off the track at some time or another. Young Fritz Jakober, of Switzerland, came off several times in the European Scalextric Championships last year, but he still won the final. By continuous practice, however, you can cut this down to a minimum and after all, sturdy as your Scalextric cars are, falling off the table is not the best way to ensure a long life.

Put your cars away after use and if dad or your younger brother want to race, make sure you are there to supervise. Dads in particular, are inclined to get too excited and over confident, especially when friends are watching. You can't really blame them, Scalextric is an exciting sport, but your cars will never look the sleek thoroughbreds they are if they are continually being patched up with Sellotape.

I have been trying out the new Mercedes 190 SL. It really is a beauty. Apart from its performance which, as you would expect, is faultless, it is a perfectly moulded replica of the real car with chromed grille, bumpers and rims, etc. Like the other sports car in the same class, the Austin Healey 3000, it has the new type body shell moulded in one piece for easy inspection and maintenance of the engine.

SCALEX ON SHOW

One of the big attractions at the "National Model Show" to be held at the New Horticultural Hall on August 24th, 25th, 26th, 27th and 28th, is a giant Scalextric circuit. Everyone is invited to try their skill, there is no entrance fee and a prize will be given each day, except Saturday, for the fastest time. Why not bring Dad along and show him what you can do, but don't bring your car—this is strictly for "Works" cars only.

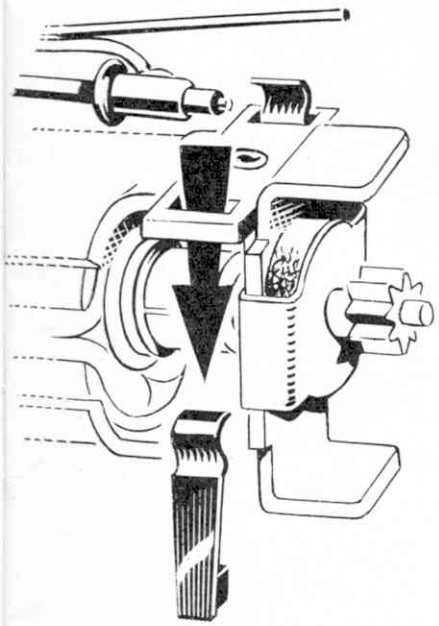


Diagram 1. This illustration shows you how to remove the brushes by squeezing them together and allowing them to drop out. The commutator is then accessible

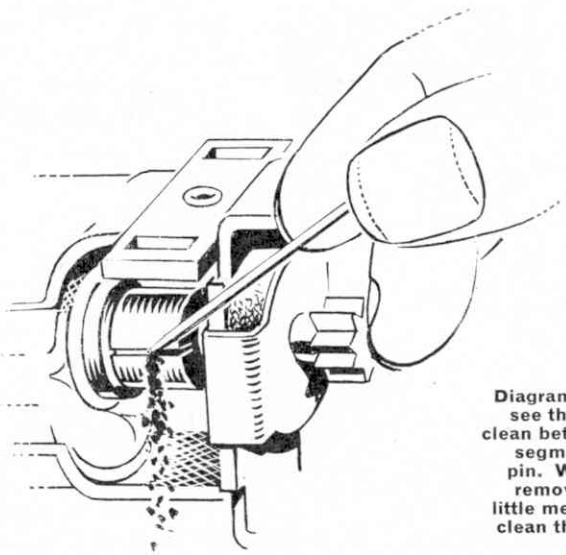


Diagram 2. Now that you can see the commutator clearly, clean between the commutator segments using a needle or pin. When the dirt has been removed, brush over with a little methylated spirits. Next clean the carbon brushes and replace them

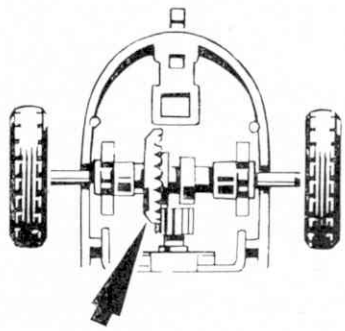
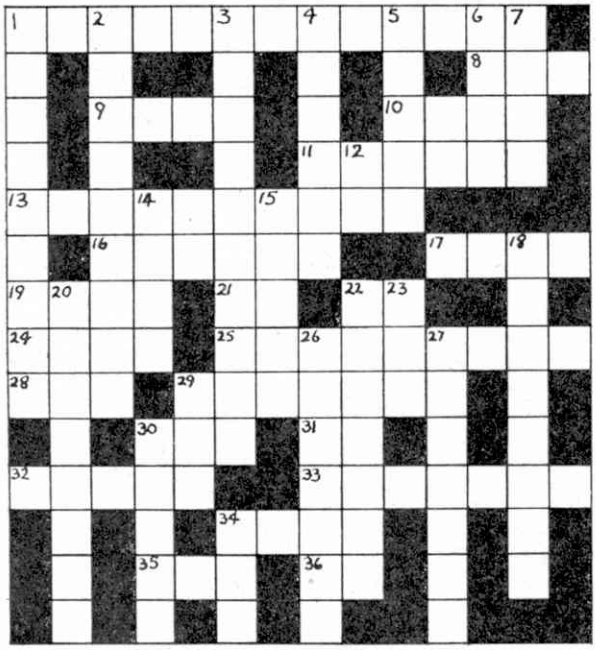


Diagram 3. When replacing the rear axle assembly, make sure that it is positioned correctly and that the crown wheel is on the correct side of the pinion

Crossword Puzzle No. 8



ACROSS

1 Guest house
8 Cereal
9 Outdoor sleeping place
10 Golden
11 . . . and waits
13 London borough
16 Tasks
17 Seen overhead
19 In the distance
21 Thanks
22 Like
24 Sensible
25 Remove
28 Small bird
29 To catch or trap
30 Obtain
31 Morning
32 Vegetable
33 Of the stomach
34 Move round
35 Colour shade
36 Preposition

DOWN

1 A meal
2 Superior
3 Not sorry
4 Spooks
5 Musical instrument
6 Bartered
7 Consumes
12 In the direction of
14 Positive
15 Pinions
18 Main road
20 Rightness
22 Firm
23 Polite form of address
26 Word formed from letters of another
27 100 years
29 Even poetic
30 German World War I plane
34 Boy's name

Puzzle Page

Turn to page 41 for answers to the puzzles on this page

TRICKY TEASERS

Can you take 45 from 45 and leave 45?

● ● ● ●

Does this mean anything to you?
TMNYCKSSPLTHBRTH
Probably not, unless you have been clever enough to spot the absence of vowels. Put some in and you will be able to make the line into a familiar proverb.

● ● ● ●

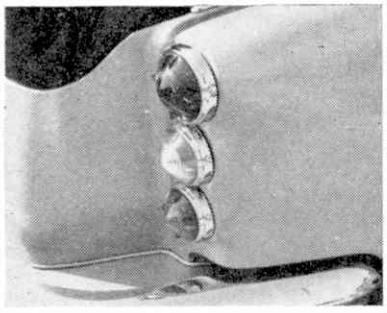
Here's an interesting problem. Suppose you have two poles, one 91 inches tall and the other 78 inches. To the top of each you tie a piece of string and fasten each end to the bottom of the *other* pole. That is, the string tied to the top of the 91 inch pole is fastened to the bottom of the 78 inch pole, and *vice versa.*
Can you say how high above the ground the two strings cross one another?

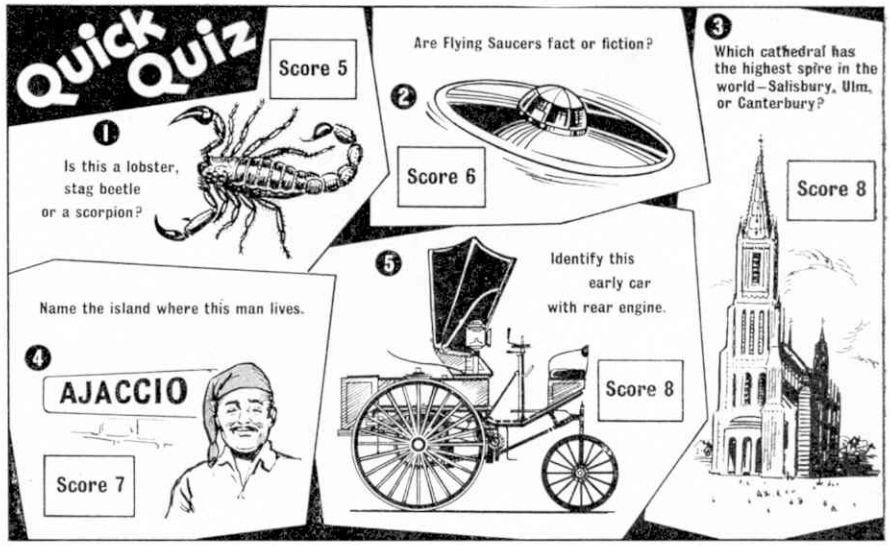
● ● ● ●

Have a crack at this teaser. You have to think of the seven-letter word which will fill all three gaps in the following sentence. In the first gap it is itself, as one complete word, but in the other two cases it is read as two words:
They called in a . . . . surgeon but he was . . . . to perform the operation because he had . . . .

Car Quiz No. 9

A large, British luxury limousine which is renowned for its silence and comfort. What is the make and capacity of this car?





SPECIAL AERO MODELLING SECTION

FLYING IS FUN

Meccano Magazine gives the beginner a guide to all sides of model aeroplane flying and building . . .

EVERY summer produces a new crop of model aircraft enthusiasts. Most of them are attracted to the hobby after watching a model flying in the local park or on the common, after which they tear off to the local model shop to spend their pocket money on the latest thing in model kits!

At this point, a lot of would-be modellers come unstuck because they haven't the slightest idea of what sort of model they *ought* to buy. Unfortunately, many retailers are unable or unwilling to offer advice on this and it's only too easy to make a poor choice. There are so many different and equally attractive kits on the market, that a wrong selection is, in fact, very likely!

Picking a suitable kit from which to build your very first model is the most important step a modeller ever takes. The model must be easy to build; the design must be tolerant of slight constructional inaccuracies, which will inevitably creep into it because of the builder's inexperience. It must be easy to fly and, above all, TOUGH to resist the knocks and minor crashes, which it will inevitably suffer while you are learning how to fly it.

An otherwise good model, which falls down on any one of these requirements, is a waste of time to the newcomer, for if his first model is unsuccessful, even to a limited degree, he may very well give up the idea of modelling aeroplanes. So, the vital thing is to *get something airborne.*

Rule 1: Avoid all scale models of full size aeroplanes.

Such models ARE attractive and experts CAN make them fly, but more would-be aero-modellers have been lost to the hobby because they started with an unsuccessful scale model, than from any other cause. After building one or two simpler models and proving to yourself that you CAN make a model that flies, THEN by all means try a scale model, but please don't start with one!

Rule 2: Choose a kit with die-cut parts

Most good kits these days are prefabricated to some extent. To have most of the parts ready cut out removes one of the newcomer's main problems and greatly improves the chances of success.

Rule 3: Read the building instructions carefully

As you read them, compare each building stage with the drawing and *mentally* build the model. It's almost as exciting as *actually* building it and the better you understand the method of assembly, the fewer difficulties you will experience when you start sticking pieces together.

The above notes apply equally to free flight and control-line models, but depending upon which types you decide to build first, there are some further points to note.

Free flight models

These can be divided into four types:

1: GLIDER.
2: RUBBER POWERED.
3: ENGINE POWERED (Diesel or Glow-plug.)
4: JETEX.

The best choice for a 'first model' is without doubt the glider. With this type the novice can learn to trim (balance and adjust) a model for flight much more easily than with any other. Since this ability is vital to success with any free flight model, it is obviously beneficial to master the art at the outset, with a type of model that will forgive the newcomer's errors and yet survive to give him another chance.

The model in the top picture refers to Rule 1. Below is a good starting kit. See Rule 2.

A glider is the answer. NO rubber motors to break, NO propellers to carve or adjust, NO expensive engines and fuel to buy; easier construction and lots of fun-while-you-learn into the bargain.

The glider should never be regarded as in any way inferior to the other types. Some of the world's most advanced flying models are gliders. Many experts build nothing else, and in its more advanced forms the glider or sailplane is a challenge worthy of any master model builder.

When you are choosing your first glider kit, don't choose one that is smaller than 30 in. wingspan. Small models are generally trickier to build and are certainly less tolerant of clumsy handling when flying.

Even a kit for a three-foot wingspan model is not very expensive, and such a model can look very imposing. Towed up rather like a kite and then released, it will stay in the air for minutes on end! You'll need your address on it!

Control line models

Many modellers have nowhere large enough to fly a free flight model and, even if they have, often *prefer* to build

Continued on page 11

KEILKRAFT

Ready-to-Fly HURRICANE

For hours of flying fun

A fine realistic model moulded in high impact plastic. Features clear plastic canopy, exhaust manifolds, four cannons, radio aerial and authentic insignia. Fitted with the very successful WEN-MAC ·049 glow-plug motor on nylon mounting and with 3 bladed nylon propeller.

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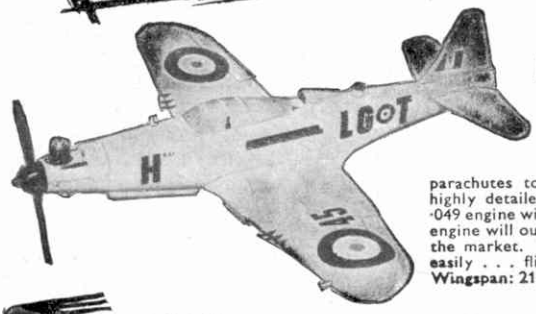

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control line models. Such a model, connected by two thin steel wires (usually between 25 and 50 ft. long) to a handle held by the flyer is invariably engine-driven. As it flies round the 'pilot' at anything up to 50 m.p.h., he can control its attitude in flight by moving the handle gently up or down. This, in turn, moves the hinged 'elevator' on the tail of the model through a very simple crank linkage and the model responds by climbing or diving in exactly the same way as does a real aeroplane.

It is possible to buy completely finished ready-to-fly, plastic control-line models, but generally speaking, they do not perform as well as a model built from a good kit. Some of them can hardly stagger into the air. There's certainly more satisfaction in building the model yourself. It's lots more fun and cheaper too!

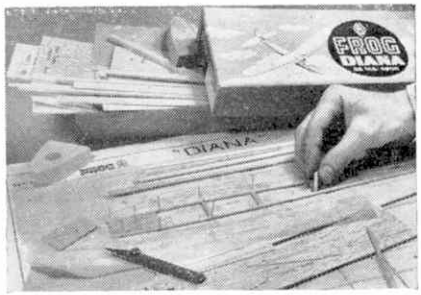
If you are not very good at tissue covering, or have never done it before, you can buy very good beginners' control line kits, which are made all from sheet balsa and therefore require no such covering.

Choosing a kit

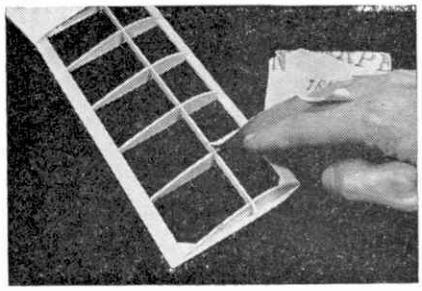
The model you choose will depend very much on which engine you intend to use and, when you go along to your model shop, you will find that the kit boxes always tell you which engine size (specified in cubic centrimetres: c.c.) is most suitable for that particular model. For instance, on the Veron Colt box (incidentally, a good beginner's subject, since the balsa parts are so extensively pre-formed) you will find this note: 'For 0·75 c.c. to 1·49 c.c. Diesels'. The smallest recommended engine (0·75 c.c.) would *just* provide enough power to fly the model, whereas a 1·49 c.c. engine would give a very lively performance! It might even be a bit *too* hot for a learner to handle, so something between the two extremes should do nicely. A 1 c.c. engine would, in fact, be just right and this is a very popular size—economical to buy and easy to operate. Unlike a free flight power model, in which a low powered engine will often simplify the initial trimming problems, a control line model that is underpowered is just as difficult to fly—perhaps even more so than one with a surplus power reserve.

This is because, without sufficient speed the model, flying round you, will have insufficient outward 'pull' to keep the control lines tight—particularly flying across the upwind leg—and slack control lines mean loss of control, very shortly followed by the inevitable crash! Many plastic, ready-to-fly models suffer from being underpowered for their weight and, consequently, are difficult to fly well.

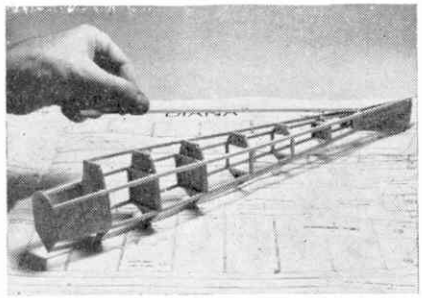
PICTURE TIPS



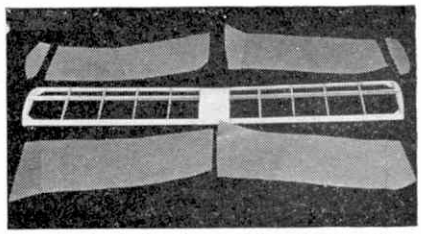
Here the fuselage is being built from strip balsa over the plan. Notice the greaseproof paper to prevent the parts from sticking to the plan



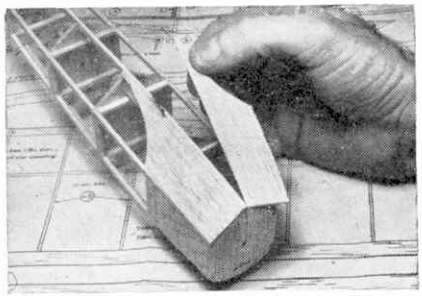
Smooth out irregularities with fine sandpaper



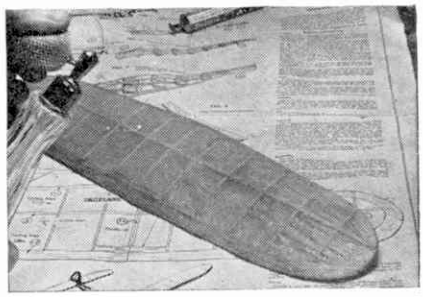
The two sides are assembled with pre-cut fuselage formers and two additional top longerons are fitted



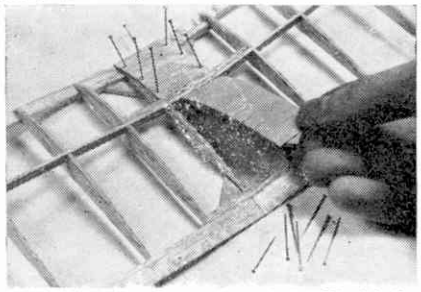
Never try to stretch the covering over two curves at the same time



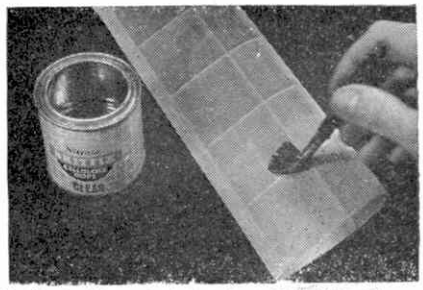
Sheet balsa parts should be "dry fitted" before finally cementing in place



Spray the tissue with water. As it dries out, it will tighten up to give a smooth surface



The centre reinforcing sheet is being fitted to the wings. Pins are used until the cement has dried



Finally give it a coat of clear dope. This strengthens the tissue

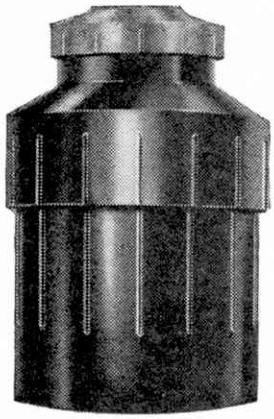
FREE FLIGHT TRIMMING

Let's say you have just completed your glider and, having applied the last lick of dope to the wing and carefully positioned the decorative transfers, you are anticipating your first exciting flight. Remember that all new, full size aeroplanes, no matter how big or small, go through lots and lots of testing on the ground before they ever venture near a runway. Even then, they don't just open the throttle and take off. No, they go through hours of taxying tests up and down the runway without ever leaving the ground and then if—and only if—everything is just right, the pilot will gently ease her off the runway for a few yards only, before carefully setting down again. Each time the 'hop' gets longer, until the test pilot is certain his aeroplane is perfect—then he makes the first real flight.

FIRST THE GROUND TESTS

1: Assemble the wing and tail to the fuselage. Most likely, rubber bands are used for these fixings and they should be tight enough to hold everything securely without being *over* tight and thus risking damage to the structure.

Continued on page 17



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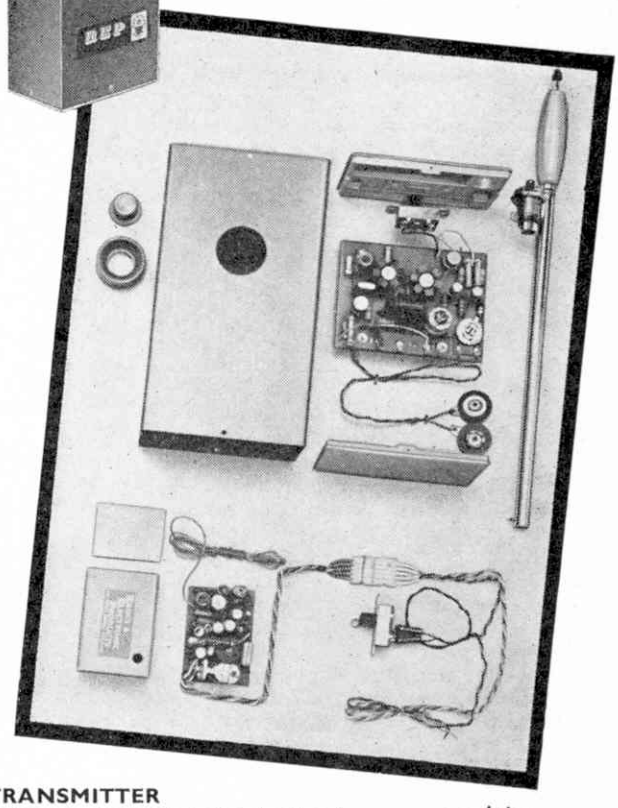

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THE TRIAD

A SPORTS-TYPE, control-line model, must possess at least three virtues—it must be easy to build, simple to fly *and* quick to repair. Triad has these three virtues in good measure. It is based on the full size midget racers that have been so popular in America, and it flies fast. You'll be impatient to clip the lines on to your Triad and start up the engine, so here are some important points in the construction. The plans and easi-build sketches give you the stage by stage procedure.

When tracing the fuselage shape on to sheet, you may have to join a small extra strip on to the 3 in. wide sheet. Some hobby stores stock 4 in. wide $\frac{1}{4}$ in. thick sheet and then this joining will not be necessary. You will need a vice to bend the 14 or 16 s.w.g. wire for the undercarriage. Use strong thread and plenty of cement to bind the undercarriage wire to the $\frac{1}{4}$ in. thick plywood engine mount. The engine mount should be drilled to take the engine you intend to use, before assembling the mount to the fuselage. The holes on the plan fit the American Cox 049 cu. in. Medallion glo-plug engine. Other engines (diesel and glo-plug) from 1 cc.-1·5 cc. are suitable. They should, of course, be fitted with a silencer.

When sandpapering the wing to correct section, take care to leave the centre section as shown in the sketches. The centre part will then fit snugly into the cutout in the fuselage. The fuselage and wing can be doped, two coats clear dope, sanding lightly between coats, and painted and colour trimmed before assembly.

Assemble the wing to the fuselage *before* fixing the bell-crank in place on the engine mount. It is advisable to fit the control-rod and lead-out wire to the bell-crank before assembling this unit to the engine mount. Great care must be taken to see that the bolt holding the bell-crank assembly is a *tight* screw fit in the hole in the engine mount. The whole weight of the model plus centrifugal effect is taken on this bolt when the model is flying, check that all the controls move freely. Paint must not be allowed to clog or stiffen the tape hinges.

Control Lines must be Precise

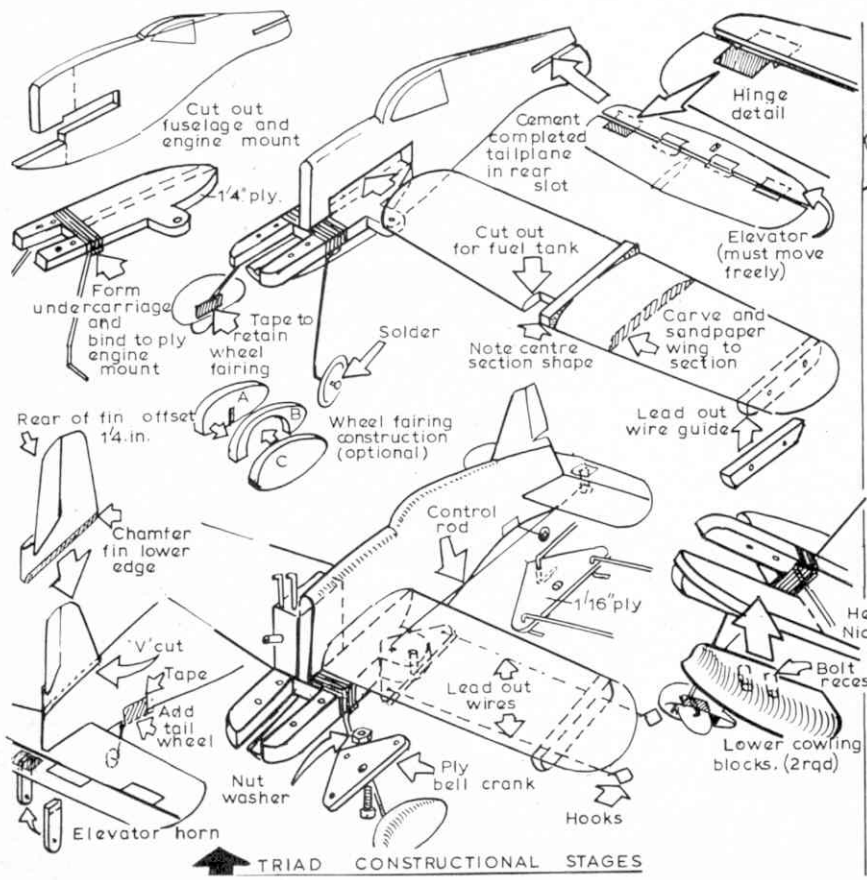
When connecting the control-rod to the elevator horn, check that the hooks formed on the ends of the lead-out wires are level with each other when the elevator is level (at neutral) with the tailplane. Adjustment can be made to the elevator-horn before the cement holding it in position finally hardens. This is important. Also, see that the fin has rear portion turned to the right by a quarter-of-an-inch (model viewed from rear).

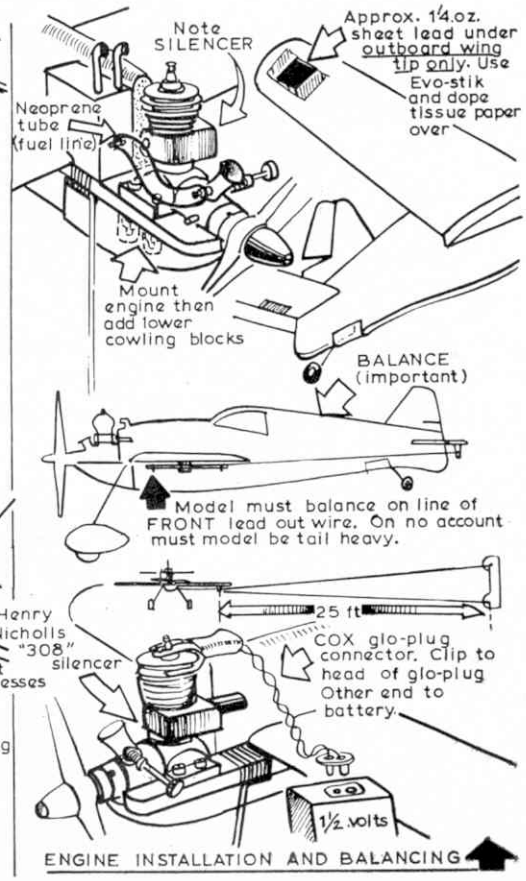
The wheel fairings are optional. If you will be flying from short grass they are best omitted. If your take-off will be from concrete, the wheel spats can be fitted to improve Triad's looks. Lightly cement the lower cowling blocks in place and sandpaper them into smooth nose contours, then remove them and drill out the engine bolt recesses. Do not finally cement them in place until you have bolted in the engine.

The fuel-tank shown can be purchased at your model shop (cost 3s. 6d. approximately). It is held in position with Evo-Stik contact adhesive. One of the two vertical pipes maintain a pressure feed to the engine, by air pressure, while the model is airborne. Connect the tank to the engine with a small length of neoprene tubing.

When your Triad is completed and before bolting on the engine, give the entire model a coat of fuel-proof dope. This prevents the fuel from softening the cement. With a 1 cc. engine, fly your Triad on 25 feet approximately of strong nylon thread lines. You can use a 30 foot line with engines of greater power.

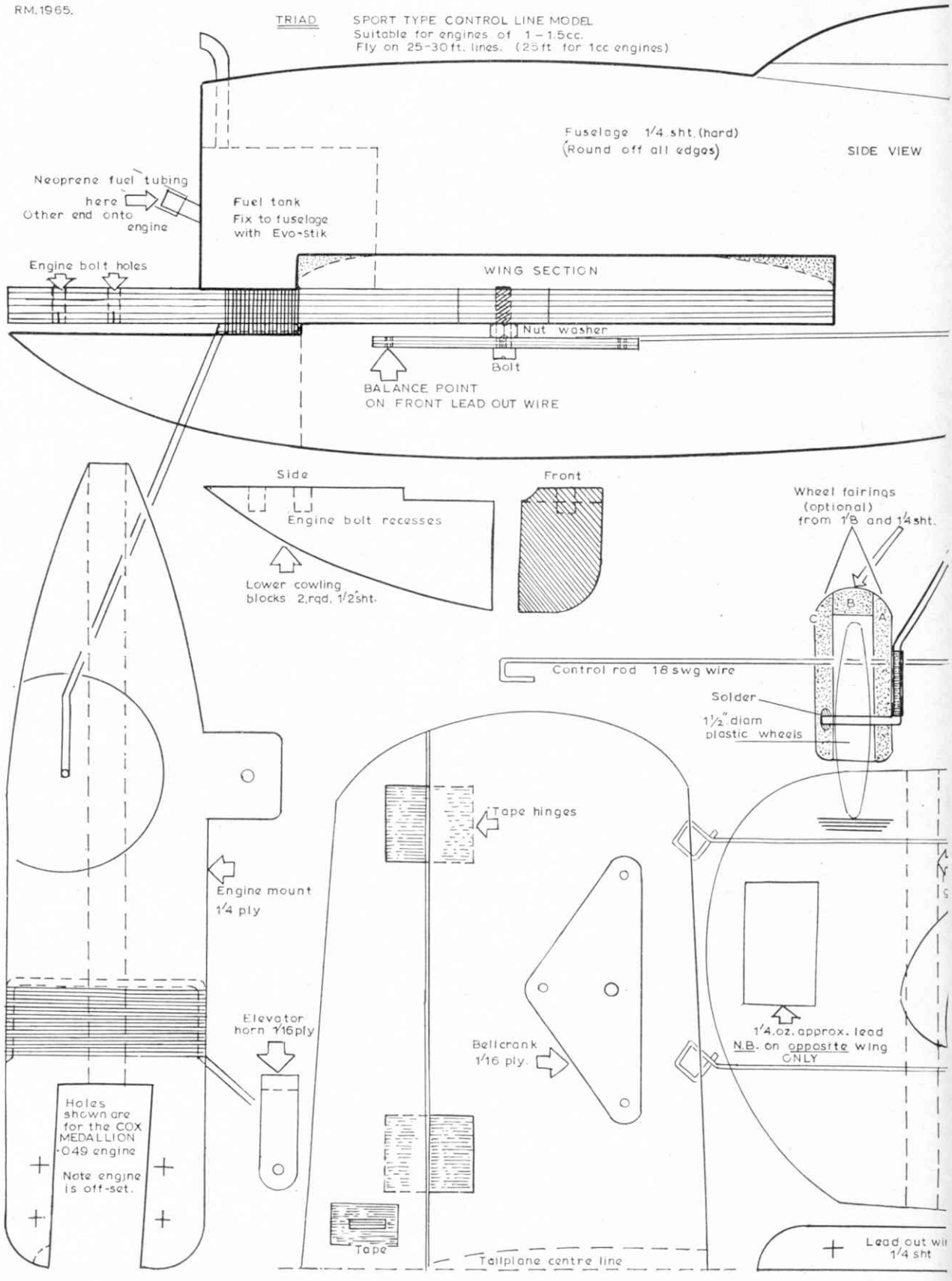
- 1 sheet 3 in. by 12 in. by $\frac{1}{4}$ in. balsawood (hard grade)
- 1 sheet 3 in. by 36 in. by $\frac{1}{4}$ in. balsawood (medium grade)
- 1 sheet 3 in. by 10 in. by $\frac{1}{8}$ in. balsawood (medium grade)
- 1 sheet 3 in. by 10 in. by $\frac{3}{32}$ in. balsawood (medium grade)
- 1 length 18 in. long 14 or 16 s.w.g. wire
- 1 length 12 in. long 20 s.w.g. wire
- 1 piece 3 in. by 6 in. by $\frac{1}{4}$ in. balsawood
- 1 piece 3 in. by 7 in. by $\frac{1}{4}$ in. plywood
- 1 piece 3 in. square by $\frac{1}{16}$ in. plywood
- 1 nut and bolt (6BA approx.)
- 1 18 in. length of 1 in. wide linen tape
- 1 pair $1\frac{1}{2}$ in. diam. K.K. plastic wheels
- 1 $\frac{3}{4}$ in. diam. plastic wheel
- 1 pressure type fuel tank
- Short length cored solder
- 1 tube balsa cement
- 1 bottle clear dope
- Bottles of Humbrol 1 hour enamel (colours as desired)
- 1 bottle hot fuel-proofer dope
- 1 reel strong thread
- 1 1-1·5 c.c. diesel or glo-plug engine with suitable propeller
- 1 silencer





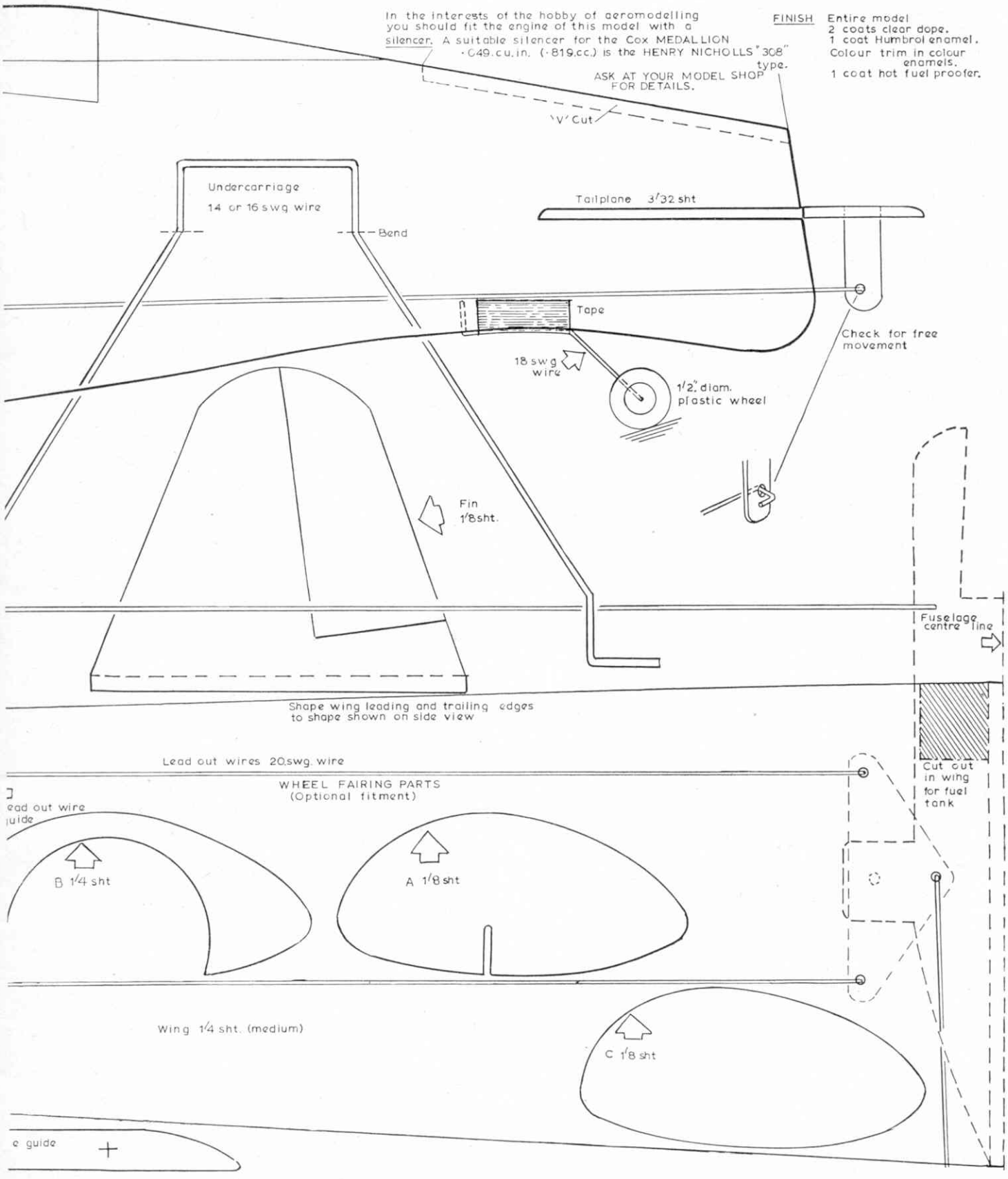
PLANS FOR

In order to use these plans cut out and pin down



TRIAD

to their best advantage,
on to cardboard



2: Carefully check that the wing and tail are 'square' to the fuselage and to each other by sighting along the fuselage from the tail end. You will be able to spot immediately if the tail is higher at one tip than the other and, if it is, you must insert packing under one side to correct the fault. Always cement such packing either to the tail or to the fuselage, so that it will not be accidentally lost, should the tail knock off after a heavy landing. At the same time, make sure the fin and rudder are quite straight fore and aft, with no offset at all to right or left.

3: Now look at the model from above and check that the wing and tail are at right angles to the fuselage and not 'askew'. If you're not certain, check by measuring the distance from each wingtip to the rear end of the fuselage. Both sides should be equal. A piece of string or length of strip balsa is useful for this purpose.

4: Now once more sight down the fuselage from the tail and make certain that there are no warps or twists in either the wing or the tail. Any distortion of this kind will certainly affect the flying performance and, if severe, may even make the model impossible to trim successfully. Some warps can be cured by holding the offending surface for a few seconds in the steam of a boiling kettle, twisting it a little *past* the straightened position. Take it out of the steam jet as soon as possible and hold (in the corrected shape) until the tissue cools.

5: Next check the plan and note where the CG (Centre of Gravity) position is to be located. This is the point at which the model should balance. It usually falls about a third of the way from the front (Leading Edge) of the wing, or on the main spar. Support the model at the CG by a fingertip under each wing—quite close to the fuselage. The fuselage should remain horizontal. If the nose or tail drop—even slightly—restore the balance by adding a little lead or plasticene to the 'light' end.

This completes the 'ground checks' and, for the next stage, we need a nice calm day. It is impossible to flight trim a model in any but calm conditions, so have a little patience. Select a spot with fairly long, soft grass and gently launch the model directly *into* the breeze. Don't *throw* it, but release it smoothly at, as near as you can judge, its true gliding speed. Never point the nose *up*, but aim it slightly down at an imaginary spot on the ground about 25 ft. ahead. Your model should glide to earth smoothly, turning neither to right nor left. Should it dive, add a little weight to the tail. A stall (sharp climb followed by a steep dive) means that the tail is too heavy—so add more weight to the nose.

Continue this stage-by-stage process until the model glides smoothly.

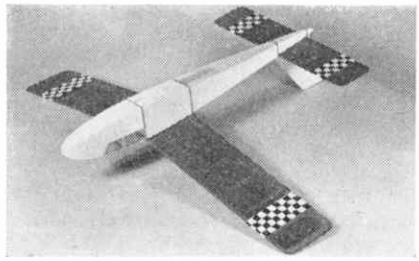
All the trimming steps described above apply equally to all free flight models—glider, power, rubber or Jetex.

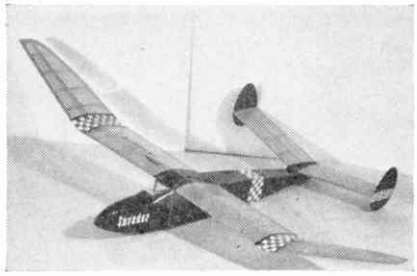
All these models, except perhaps the smaller Jetex powered ones, are often fitted with a device called, rather grandly, a dethermaliser! This is simply a way of untrimming the model after a certain, predetermined length of time—usually set by a short lighted fuse, just before launch. This 'untrimming' is necessary because the model may enter a 'thermal' (a rapidly rising column of warm air) which will carry it upwards, out of sight in a very short time, unless the dethermaliser has been set to upset the flight trim sufficiently to bring the model down faster than the thermal is rising!

LANDING

To do this safely and without risk of damaging the model as a result of *too* rapid a descent, is the aim. The dethermalising device usually depends on the tailplane's being allowed to tip up very sharply at the trailing edge after a fuse burns through a small retaining rubber band. This brings the model straight down like a descending lift, with the wings level and the nose slightly raised, thus the landing is a real 'pancake' one with very little forward speed.

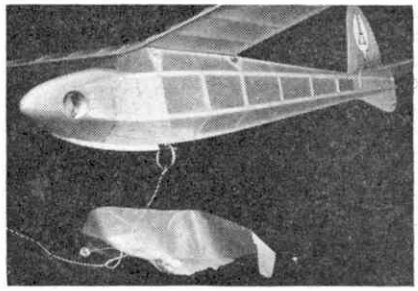
Just in case the fuse goes out, or you forget to light it, it is a wise precaution to dope a little address label to your model, so that, should it fly away, its finder will be able either to bring it back or write to you to tell you of its whereabouts. Sometimes quite small models fly for many miles after being caught in a thermal, so remember that label!





(Above) note the address label on the underside of this model. (Below) An Invader 40" wingspan glider

Flying your glider from a towline is tremendous fun! You will need a helper to launch the model for you and, to start with, a 50 ft. towline is recommended. Nylon fishing line makes an excellent towline and this may be kept neatly wound on a simple fishing line 'gate'. Better still, there are special glider winches on which the line is stored safely wound round a drum or reel which is highly geared to a winding handle for rapid reeling-in. To the 'glider-end' of the towline should be fastened a small curtain ring which slips over the wire towhook beneath the model. Just ahead of the ring, about six inches down the line, you should attach a strip of silk or nylon rather like a flag or pennant. This will clearly show you when the tow leaves the model and also assist in taking the tow ring quickly and 'cleanly' away from the towhook after release.



FLYING

Reel out the line into wind and have your assistant hold the model, with towline attached, above his head and with the nose pointing slightly *up*. When you, at the winch end, are ready to tow up, give a hand signal and walk quickly into wind. The launcher should walk forward as well letting the model rise out of his hand; *he should never throw it*. You should now walk faster until the model is climbing steeply on the end of the line. If it veers sharply to one side or the other, stop walking and slacken off the line immediately. If your earlier trimming has been done properly, you will find that the model will probably straighten out and you can resume towing, without releasing the model. It's rather like playing a fish on a line and you will quickly learn when to let the line go slack and when to increase the towing speed.

When the glider is almost overhead, slacken off the line or walk towards the model and the silk pennant will drag the ring off the towhook, leaving the model high in the sky and in free flight—it's terrifically thrilling just to see it hanging there in the sky, defying gravity for a few minutes and then lazily circling back to a gentle landing. The size of the gliding circle can be governed by *very slightly* altering the rudder and, to

prevent the model from turning on the tow-up, you should aim it just a little 'out' of wind, so that the slight side-wind keeps it straight.

The more advanced models have mechanical devices to keep the rudder straight on the line and allow it to assume a preset turn position when the towline drops away.

MODEL ENGINES

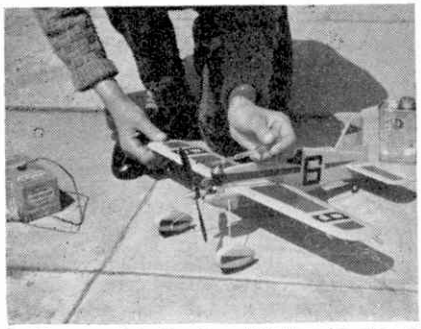
Operating miniature aero engines is great fun and not at all difficult.

There are two distinct styles currently in use. They are:

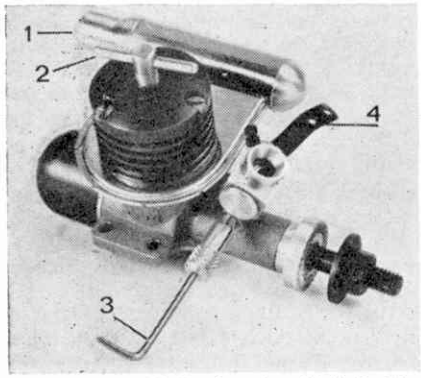
1: Glow-Plug engines.

2: Diesel (or more correctly compression-ignition) engines.

Both are equally suitable for beginners' models, but their operating techniques vary considerably. They all work on the 'two-stroke' principle and are basically similar in operation to motor-cycle two-stroke engines. But, whereas motor-cycle and car engines use a sparking plug to ignite the petrol in the cylinder, our Glow-Plug engines have, in their cylinder heads a glowing element like a little electric fire, which is heated for starting by connecting it to a 1·5 volt battery. Then, when the propeller is sharply flicked over, the engine will 'fire' and, as soon as it is running smoothly, the battery is disconnected, whereupon the element will continue to glow, due to the heat generated by the continually exploding fuel in the cylinder.



Fuelling-up. Note the 1½ volt battery for starting the engine



Typical 1cc model diesel engine. (A.M.10. fitted with silencer.) **1** *silencer;* **2** *compression screw;* **3** *needle valve;* **4** *throttle lever (R/C motors only)*

A diesel engine fires the special fuel merely by the heat generated as the piston compresses the fuel vapour in the cylinder. The faster this compression takes place, the greater the heat generated, so you can see that it is essential, when starting a diesel, to flick over the propeller very quickly, so as to provide enough heat, by fast compression, to ignite the fuel vapour. Some model engines are fitted with 'spring recoil starters', which, though simple, are most effective in helping the newcomer to acquire the new technique of 'starting'. Model diesel engines have a 'contra piston' in the top of the cylinder. This second piston can be moved up and down inside the cylinder by means of a 'compression screw' which protrudes through the cylinder head. By turning the compression screw in a clockwise direction, the compression in the cylinder is increased and this, in turn, increases the speed of the engine. Too much compression, however, will make the engine run 'hard' and it will slow down. This can be very damaging and should be avoided. Misfiring is usually due to too little compression.

All Glow-Plug and diesel engines have a needle valve. This regulates the amount of fuel mixture allowed to enter the engine. Adjusting the needle valve for the correct setting needs practice, but a suggested best position is always given in the instruction sheet supplied with the engine. If it is opened too far, it will allow too much fuel to pass and 'flood' the engine, making it impossible to start until the surplus fuel has been extracted.

Many newcomers find the Glow-Plug engine easier to handle than a diesel, because it only has one control to adjust —the needle valve. The diesel, on the other hand, requires two adjustments to be made in order to achieve smooth running—the needle valve and the compression screw. Against this, of course, the Glow-Plug engine needs batteries to start it and these *must* be good ones, since flat batteries will not provide sufficient power to make the element glow. The glow plugs themselves burn out occasionally, too, and the expense of both these items *can* make the Glow-Plug engine rather more expensive to operate than a diesel. So, you see, each type has its advantages and each its drawbacks—take your pick!

As stated earlier, a 1 c.c. engine is a good a size as any to start with. Perhaps, for free flight, a slightly smaller engine could be considered — say — 0·8 c.c. Remember though, that, generally speaking, the smaller you go, the more temperamental the engine becomes.

Silencers

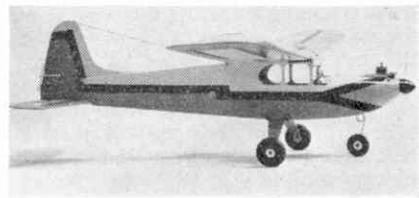
Your local model shop will tell you whether there are any model flying clubs in your area and it is a very good idea to contact them. They will know of local flying fields and of any regulations governing their use. For instance, it is almost certain that you will be required to fit an efficient silencer to your engine and this fact should be taken into consideration when making your engine choice. For most current models, special silencers are available, but in the model shops there are still one or two older engines, for which the manufacturers do not provide silencers.

Perhaps 'silencers' is a misnomer. A more correct term would be 'mufflers' since the effect is not to make the engine inaudible (this would be almost impossible) but to reduce the often offensive noise to a tolerable level.

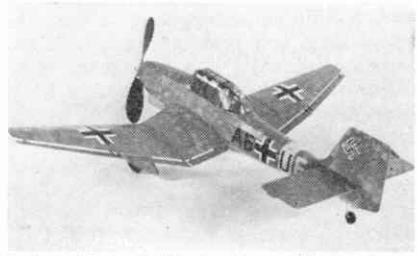
The official body to which it is wise to belong, is the 'S.M.A.E.' There are various classes of membership and your local club will probably be affiliated to the Society as well. They will be able to tell you all about it. Alternatively, you may write direct to The Society of Model Aeronautical Engineers Ltd., 10a Electric Avenue, Brixton, for details. Membership entitles you to Third Party Insurance cover up to a maximum of £50,000 and, if you are competition-minded, there are SMAE model contests all through the season. The highlight of the competition year is, of course, the British National Championships held over two days at Whitsuntide. Hundreds of modellers of all ages attend and all types of models are to be seen there.

Fly carefully

In our enthusiasm to get airborne, we must not forget that power-driven models *can* be dangerous if flown without care and common sense. Dangerous to other people and, sometimes, even dangerous to the modeller himself. For instance, it is surprising how many modellers—particularly newcomers—fly control-line models directly beneath high tension overhead electric power cables. It only needs the model to climb a little to bring several thousand volts searing down the steel control lines to *you*. It is not necessary for a model actually to *touch* a power line—so great is the power being



The 48" Mini-Super complete



Junkers 87 by KeilKraft. The mottle finish was achieved with an aerosol using a cardboard "mask" as stencil

carried that it can jump across an air gap to your model and it is very dangerous indeed. So, just choose your spot carefully. Never fly anywhere *near* overhead lines.

RADIO CONTROL

THE ambition of many modellers is to own a radio-controlled model. Like the other branches of the hobby, radio-controlled modelling is a world wide interest. This year, the R/C World Championships are to be held in Sweden and teams from all over the world will compete with complicated and very expensive models. The manœuvres that they will carry out would in many cases astound even 'full size' pilots and their models will be worth several hundred pounds EACH!

Machines such as these are obviously far beyond the reach of a beginner and even if he had one, he would be unable to handle the complicated controls.

Fortunately, it is possible to build and fly a radio-controlled model far more cheaply. The transmitter and receiver of the simplest kind of 'single channel' outfit will cost you about £16 and a good kit for a model specially designed for radio control can be bought for a further £4 or so.

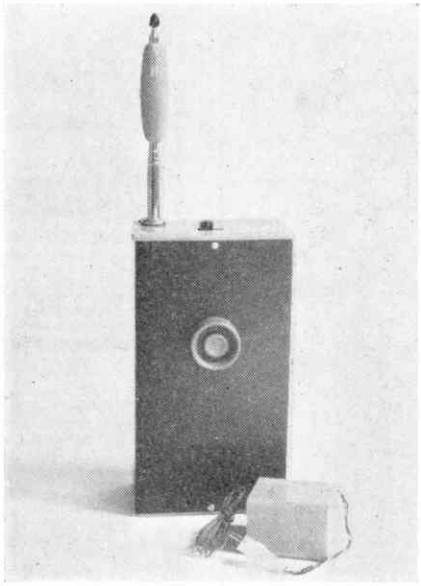
Such a model will be around 4 ft. wingspan and it will require an engine of about 2·5 c.c. This will cost another £4 approximately and a silencer or muffler will be needed.

The basic construction of such a model will be virtually identical to the smaller glider, rubber and power kits described earlier. Far from being more complex, the increased size of the various components frequently makes for easier assembly as a result of the smaller, more delicate pieces being omitted.

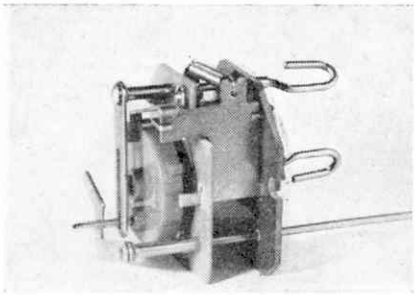
Aeromodelling is really international. This is Shiro Miyawaki, a school-teacher in Japan, who is showing off two of his very original R/C and free-flight designs

When it comes to covering the framework, specially made tissue is the most widely used material for all models up to about 3 or 4 ft. wingspan. Above this, the model is sufficiently large to carry the extra weight incurred by silk or nylon covering. Again the technique of covering with these materials is basically similar to tissue covering, but some practise is generally needed before a really expert job can be produced every time. The additional strength conferred by fabric, together with its resistance to puncture damage by reeds, bush twigs and tree branches, will repay its extra cost and reduce the amount of time you spend doing tedious covering repairs.

The basic single channel radio outfit will enable you to steer your model left and right. As a further refinement, this basic unit can be developed to incorporate a means of altering the engine speed in flight and many such units also provide for a limited degree of elevator control. This latter refinement is not recommended to the newcomer, as it *does* complicate both equipment installation and control.



The R.E.P. Gemini receiver and transmitter. Note the single button on the transmitter and the telescopic aerial



The Elmic "Compact" escapement which is used with the radio receiver inside the model

The modern transmitter is small and quite simple, all transistor and hand-held. It is fitted with a telescopic aerial and usually has one press button which is depressed to transmit the radio signal to the model. When the button is released, the signal is automatically switched off.

Basically all one has to do is keep fresh batteries supplied. In the model, the little receiver, which will probably weigh only a couple of ounces, responds to the transmitted signal by allowing current from a 3 or 4·5 volt battery to flow through an electro-magnet, which in turn, pulls in an armature, allowing a simple escapement to turn through a part revolution. This escapement is driven by a thin rubber motor.

The escapement is linked to the rudder and this surface, of course, now turns the model and continues to do so until the transmitter button is released, whereupon, with no radio signal being transmitted, the receiver 'switches off' the current to the escapement, thus allowing the rudder to return to 'neutral' and the model to resume straight flight.

There are other types of control systems. Some models are fittted with electric driven 'servos' which do away with the need for a rubber powered escapement. These, however, are nearly always more expensive and also heavier. They also generally require a receiver to be equipped with a 'relay'. This is a further complication which can be the cause of some baffling problems which the beginner would do well to avoid.

The golden rule is KEEP IT SIMPLE! Build and fly some free flight models to learn trimming technique before you venture into the more advanced field of radio control. And, when you do go into R/C, start with single or, at the most, two channel, to learn about the basic techniques involved. Later on, with the confidence given by this solid groundwork, you will be able safely to take the big step into multi-channel radio with all its limitless horizons.

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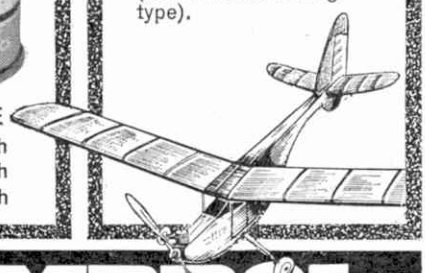

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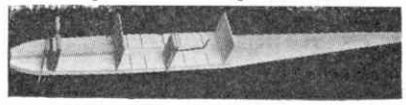

ENGINES

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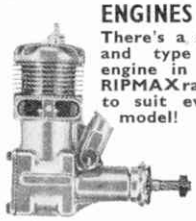

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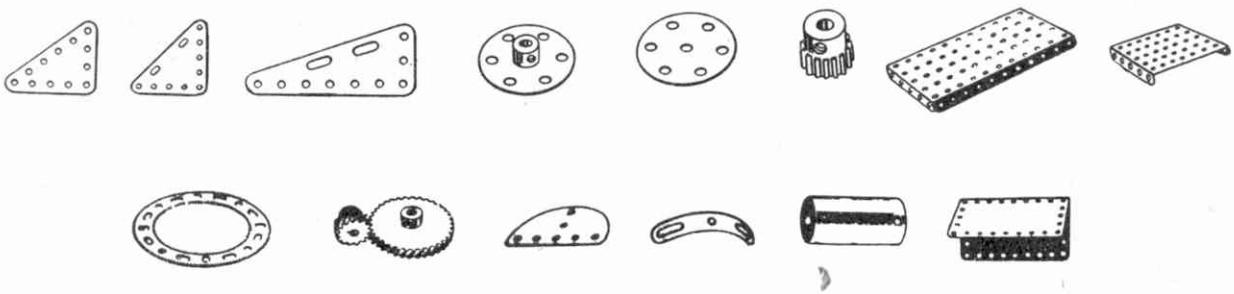

Dealers who specialise in Meccano spare parts

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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Tri-ang Club

AN ANNOUNCEMENT

Tri-ang Magazine ceased publication last month but those who have been collecting Tri-ang Club Coupons to join the Tri-ang club, and who still need one more coupon to complete the three necessary for membership will find another coupon printed below.

Applicants will receive, in addition to their Club badge and personal membership card, a free copy of the Tri-ang Club Bulletin until present supplies are exhausted. All applications for membership must be made on the official form: (see July issue of Tri-ang Magazine).

TRI-ANG CLUB
COUPON No. 13

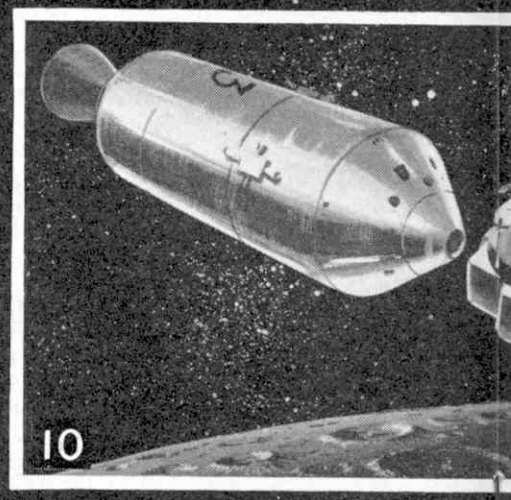
THE SATURN C.5.

Man's greatest adventure will be the landing on the Moon in 1970, by the American Apollo astronauts.

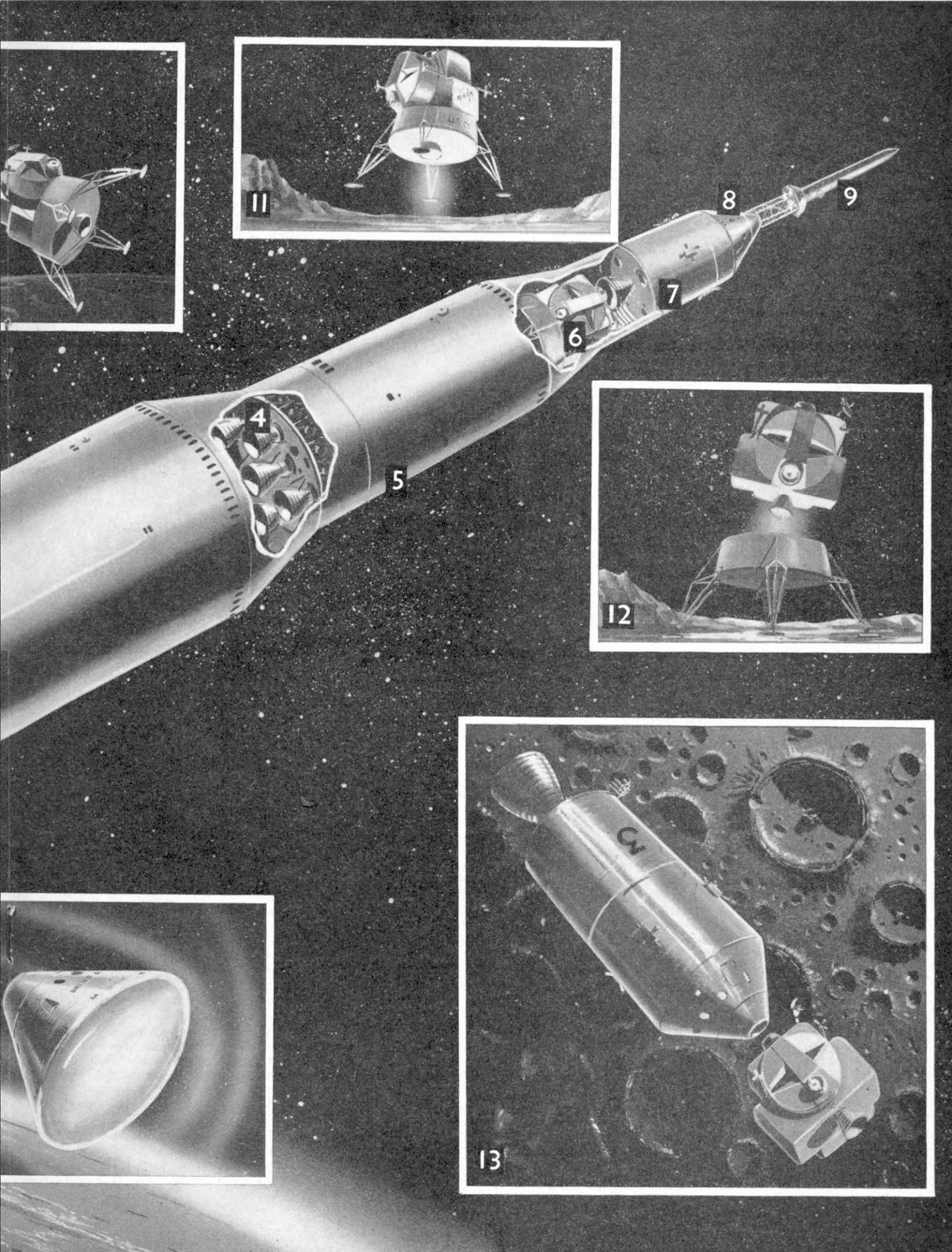
This giant 362 foot tall booster rocket powered by a series of rocket motors totalling over 7,500,000 lbs. of thrust, will place the third stage containing all the equipment for landing and return to Earth, in orbit around the Moon.

Our picture story shows how this will be done.

1 5—F.1. Rocket engines, total thrust—7,500,000 lbs.
2 Aerodynamic fins.
3 Fuel cells.
4 5—J.2. Rocket engines to power second stage.
5 Second stage.
6 L.E.M. (Landing Excursion Module) stowed in container.
7 Service Module.
8 Command Module.
9 Escape tower (normally at the height shown this would have been ejected).
10 Over the Moon's surface the L.E.M. has been detached from the container and is about to connect with the service module.
11 The L.E.M. about to land on the surface of the moon.
12 The astronauts having finished their exploration, start the return to the waiting service module orbiting the Moon, leaving behind the landing platform.
13 About to link up with the service module high over the Moon's surface. When the crew have transfered from the L.E.M. to the service module, the L.E.M. will be left behind and the journey back to Earth will be done in the service module.
14 The Command Module has now been disconnected from the Service Module, and the journey through the Earth's atmosphere is accomplished in the way shown in the picture, coming down gently to the ground by parachute.



GORDON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Could there really be such a thing as a ghost plane? Martin Tracy investigates this strange problem with amazing results . . .

Ghost Flier

'GHOSTS? No, I don't believe in ghosts,' Martin Tracey grinned with genuine amusement at the grizzled Air Marshal sitting opposite him, but his grin died as he realised that the older man was in earnest. 'I'm sorry, sir,' he apologised. 'I wasn't being disrespectful. Please go on.'

The Air Marshal, placated by the apology, continued. 'I've been in the service since 1917,' he said, 'and I am not given to fanciful ideas, yet in the past year I have become involved in something that has me worried.' He left his desk and walked across to the office window, gazing out at the rain-swept tarmac.

'Until two years ago, this has always been a fighter station,' he said. 'It was shut down as an operational base in 1963, but maintained as an advanced training school for NATO crews. We have a mixed bag of nationalities, all of whom settle down well together. But trouble started last year when units of the new Luftwaffe came along.

'Solo trainee pilots began to complain of being buzzed and all German crews did the same. *But only when they were on their own.* When a Royal Air Force instructor is in the aircraft, there are never any incidents.'

He waved Tracey to silence as he opened his mouth to speak.

'I know what you have in mind,' said the Air Marshal irritably. 'The Germans aren't playing some silly game, nor are they silly schoolboy types being panicked into a sort of "flying saucer" scare. I have studied their reports and talked to enough of them to *know* they are telling the truth.

'The incidents have been checked and counter-checked. In every single case we have known precisely the whereabouts of every aircraft in the area at the time and our training machine has been on the radar every second it was in the air. It has been quite impossible for an unidentified aircraft to approach within ten miles of the trainer without our knowing. Also, there has never been an intruder logged on the radar.'

The Air Marshal stopped talking and looked at Martin Tracey. 'What I want you to do, Tracey, is to see if you can get to the bottom of this. I want you to find an unknown biplane that buzzes aircraft crewed by Luftwaffe fliers. A biplane that has never been seen by any other aircrew and has never been picked up on radar and, furthermore, a biplane that can keep up with aircraft capable of 1,000 m.p.h.!'

Later that day, Tracey sat deep in thought at the bar of the local hotel, while Digger Ames read carefully through a file of reports. After half-an-hour, Digger closed the file and put it on the table.

'This is a rum do and no mistake,' he commented. 'All those Jerries seem to be on the ball, but this ghost 'plane is a lot of eyewash. It can't happen. It's impossible. I don't believe it!'

Martin Tracey grunted.

'Exactly my sentiments, Digger,' he replied. 'The only trouble is that all those Luftwaffe blokes can't be wrong and the Air Marshal reckons there must be something in it. All that worries me is that there is no positive way for us to check. According to the A-M, the ghost never bothers our people, even if Germans are in the kite—so, if the ghost is a ghost, we cannot possibly ever see it. If it isn't a ghost, how is it that nobody except Luftwaffe men ever sees it? And why doesn't radar pick it up?'

Over dinner, the two men thrashed the problem over and put up a dozen theories, each of which was easily demolished. Eventually, they decided to forget the whole thing until they could return to the aerodrome next morning to talk to some of the Luftwaffe crews who had reported sighting the strange aircraft. As they had expected, the Germans were competent, skilled men, not likely to make mistakes or be swayed by yarns.

The sitings of the ghost varied, but they were all within ten miles of the station, well in range of the radar. The radar operators were skilled men and it was impossible for all the sets to have developed faults in such a highly selective manner.

Tracey and Ames were walking slowly back to the mess, puzzling over the problem, when the Air Marshal came to meet them. One look at his face told the two what had happened.

'Another one,' grated the A-M. 'Barely five miles from the station, a super-Lightning involved with a two-man German crew, radar blank, no other aircraft reported for over 50 miles around and the Lightning was flying at 60,000

feet at about 700 m.p.h. Yet a biplane buzzed it so thoroughly that the crew were on the point of rejecting!'

'Honestly, sir,' replied Tracey. 'I'm as baffled as you are. All we can do is fly over the area—something I am sure your people have done a hundred times. But it will be better than hanging around here trying to think of the answer.' The A-M. instantly agreed.

'Good,' he snapped. 'I was sure you would say something like that, so I ordered a Piper Cub to be ready for you. It's at dispersal now.' The three men walked over to the tiny aeroplane and Tracey climbed in, followed by Digger. An aircraftsman swung the propeller and the little engine purred happily into life. Swinging into the wind, Tracey opened the throttle and the Piper bounced across the tarmac. At about 50 miles-an-hour, the aircraft lurched into the air and climbed at a speed that seemed ludicrous to the pair used to jets that howled vertically upwards at over the speed of sound. But there were compensations. The Piper was a proper aeroplane—not a guided missile and the two men were able to really enjoy flying.

The aircraft was flying happily at a 1,000 feet, it would never reach the 60,000 feet mark of the super-Lightning and its speed was only a sixth of the jet. But it was much better for spotting than a jet-fighter would ever be and Tracey and Ames were able to scan the sky completely and thoroughly. Constant communication with the station confirmed their visual check—theirs was the only aircraft for many miles around. After half-an-hour, Tracey tired of the search.

'We'll never see anything, Digger,' he scowled. 'Let's go back home.' He pushed the rudder bar over and skidded the Cub gleefully round in a flat turn at which Digger Ames smiled happily.

'Tell you what, Martin,' he said, 'let's take our time over this. We can have a flip in this kite—it's a nice change and the Air Force is paying for the petrol.'

Nothing loth, Martin Tracey set a course over the bleak, glorious Highlands. For mile after mile, the Cub droned over the hills, valleys and moors with the best scenery in the world unfolding a few hundred feet below them.

Suddenly, Digger Ames jerked violently forward in his seat. 'Down there, Martin!' he rasped. 'There's a 'plane! Look! See it?'

Tracey banked and followed the direction of Digger's jabbing finger. Sure enough, he saw an aircraft on a level piece of ground. It seemed to be undamaged but it had a curious, still air of permanence about it. Martin Tracey throttled right back and lost more height, until he was as low as was safely possible.

'Digger,' he gasped, 'it's a biplane. I don't know what type, but it's an old one and there's something wrong with it. I saw the pilot clearly enough, but he didn't even move as we went over. Do you think it is the ghost machine crash-landed?'

Digger Ames shrugged his shoulders. 'Dunno,' he replied. 'There's something funny going on here—I don't like it. Look, I've fixed the position. That kite isn't moving from here for some time. Let's get back to base and bring a rescue team out here to check.'

Tracey nodded agreement and turned back to the station. A few brief sentences to the Air Marshal and two helicopters were chugging their way back to the biplane. Side-slipping in, the machines landed and the crews tumbled out—one crew being composed of six heavily armed members of the R.A.F. Regiment.

As the men cautiously approached the biplane, they could see it had been there a very long time. The fabric was tatty and heavily worn in places and the tyres on the weird fixed undercarriage had rotted away. In the cockpit, the pilot sat impassivley still, waiting . . .

Martin Tracey was the first man to stand close to the machine and peer at the pilot—then he recoiled with horror. Under the tattered flying helmet and old-fashioned goggles, there was only a skull. The hands resting on the control column were fleshless bones and a closer look showed that the pilot was, in fact, a skeleton clad in a leather flying suit that had withstood the weather of years.

Digger Ames had been looking more closely at the aircraft. 'It's a Sopwith Camel,' he said, astounded. 'It went out of service in 1918 when the Pup was delivered to squadrons. Look, here's the serial number.'

He pointed at the tailplane where a number could still be read. A closer inspection showed that the machine's undercarriage had jammed in a small gulley which, while causing no material damage, had effectively prevented the Camel from moving forwards.

'But why didn't the pilot *do* something?' marvelled Digger. 'He could have had a go at fixing the engine; he could have started walking—he could have tried to get back somehow or the other.' His stream of queries was cut short by the medical officer.

'There is a very simple answer to all your questions,' he commented grimly. He pointed down inside the cockpit and the horror-stricken Digger realised what he meant. The skeleton's legs were broken just above the ankles.

'Yes,' continued the M.O. 'When he landed—for what reason we shall never know—his aircraft jammed into this gulley and the shock threw the pilot forward. His feet were jammed against the rudder bar and his legs snapped like sticks. He had no radio and he couldn't leave the aircraft. All he could do was sit there, hoping somebody would spot him. And nobody did—until 38 years later.'

The group of men round the Camel stood still for seconds, each one of them trying to imagine the predicament of the unknown pilot sitting helplessly in his stranded 'plane waiting, waiting, waiting . . . The M.O. broke the spell.

'Come on,' he said to two orderlies. 'Lift him out and we'll get him back to base for identification and burial.' Carefully, the medical crew lifted the remains of the pilot from the Camel and, a few minutes later, the helicopters lifted off, leaving the old biplane standing where it had been since 1917.

A week later, Digger Ames walked into the bar of the Royal Aero Club where Martin Tracey was reading a letter.

'Well, Digger,' he said, 'I've heard from the Air Marshal. That pilot was Lieutenant Wilkinson of the R.F.C., who was reported missing after a routine patrol on May 17th, 1917. A search was made but, after three days, it was called off and the pilot was reported missing—presumed killed.

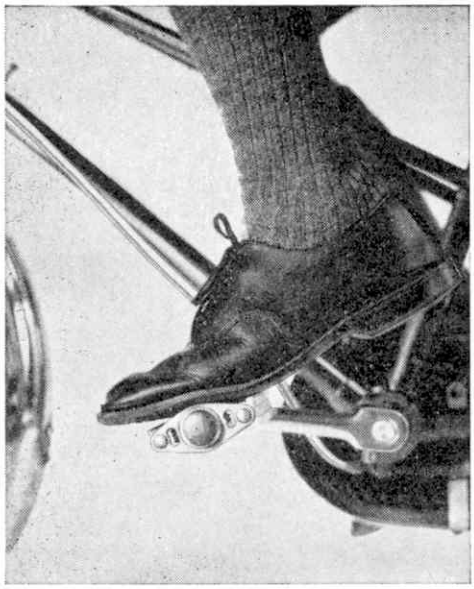
'Now, here's the really odd point. According to the A-M., who has been digging round a lot in the past few days, there were quite a few intruder flights from Ju 88's, Dornier 17's and other German fighter-bombers on the station during the war and one of these intruders was brought down by a Mosquito. The pilot of the Junkers baled out and he swore he was attacked by a Gladiator before the Mossy jumped him.

'Apart from the fact that the Gladiator was taken out of service after the 1940 Norwegian campaign, it was definitely established that no biplane was based within a hundred miles of the station apart from a Tiger Moth used by the C.O. and that certainly wasn't flying that night.

Perhaps what the Jerry pilot thought was a Gladiator was that old Camel pilot still carrying on his own war? At any rate, since his remains were buried, the Luftwaffe crews have not reported any more buzzing.'

Digger smiled lightly, but there was no humour in his smile. 'What do you think, now?' he asked. 'Was it a ghost 'plane or . . .?' He stopped speaking and looked enquiringly at Martin Tracey.

'Dunno, Dig,' replied Tracey. 'I'm not prepared to offer a firm opinion one way or the other. All I do know is that I shall be glad to get back to ordinary flying as soon as possible.'



right . . .

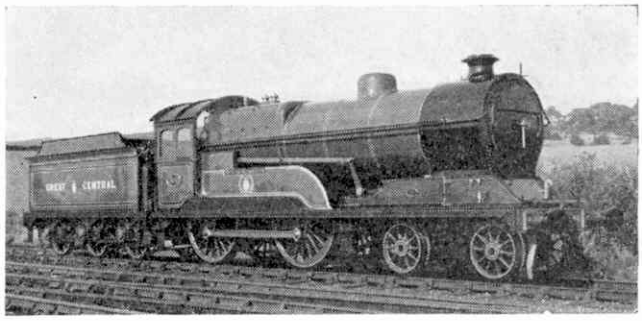
or wrong?

If you've entered for the National Cycling Proficiency Test, you'll know that the lower picture shows a wrong method of pedalling—dangerously wrong. The cyclist is not in full control, and risks catching his toe behind the front wheel when cornering. The top picture shows the correct method—ball of the foot on the pedal, feet parallel, and a steady, 'ankling' action.

Published in the interests of safe cycling by the makers of the world's **safest** *tyres.*

DUNLOP

Spend a day in the past



It's all change at Clapham if you'd like to travel back in time. Because, here, at the Museum of British Transport—you can see history on wheels. Such giants of yesterday as 'Butler Henderson'—shown above—which once held iron sway over the old Great Central tracks. Vehicles, too, of lesser pedigree . . . bone-shaking horse buses—trams which screeched like raucous birds. And, there are aristocratic things—sumptuous saloons created for Queens—a railway Director's mother-of-pearl pass. Even grim relics—notices threatening stone throwers with transportation.

Yes, a visit to this exhibition is a fascinating experience—a marvellous idea for a Saturday or during the holidays.

It's open 10.00—17.30 Mondays to Saturdays (including Bank Holiday Monday)

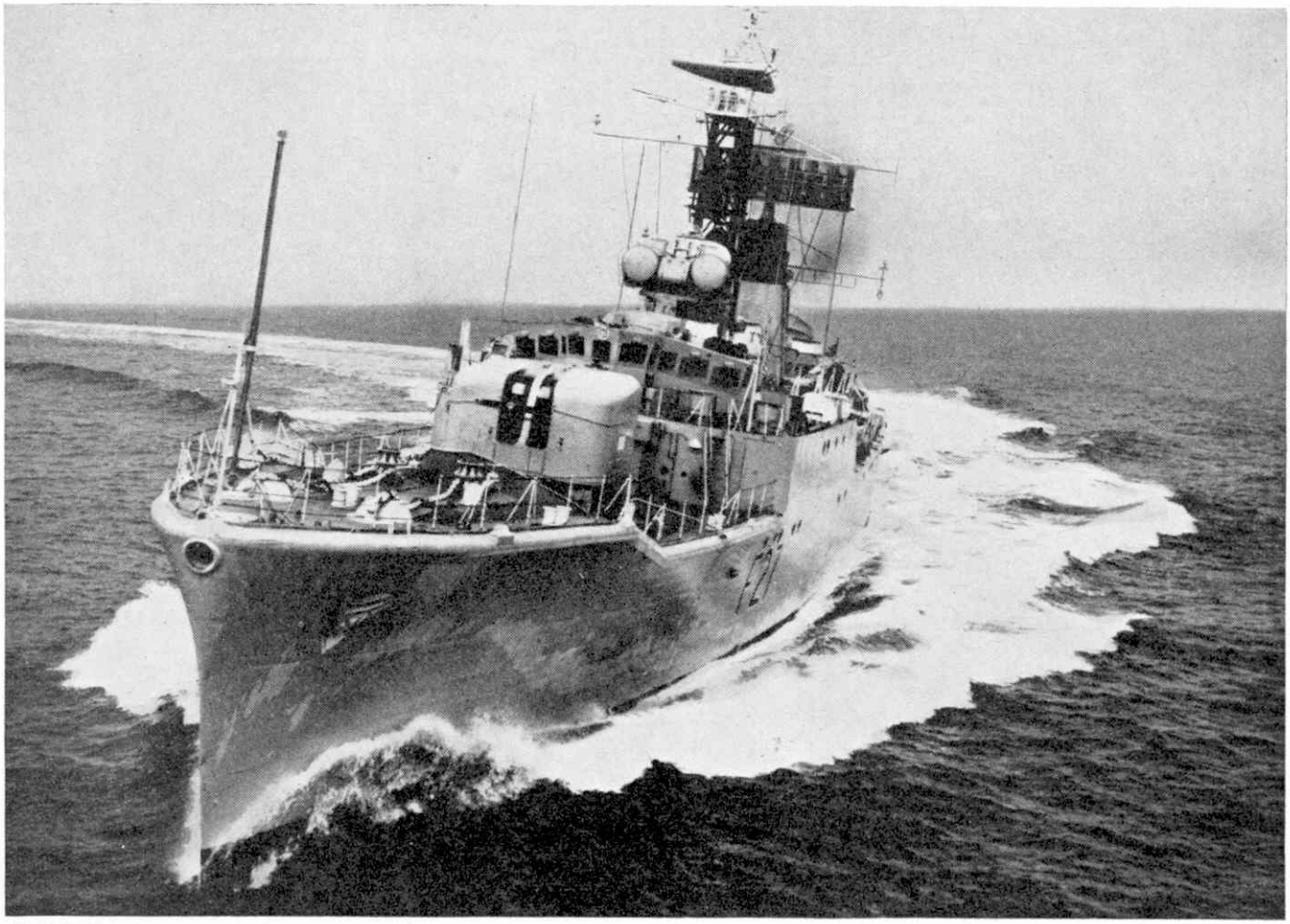
It costs 1s 6d for boys and girls under 15 years; 2s 6d for adults. Reductions for school parties.

It's easy to get to: *By Underground:* Northern line to Clapham Common. *By Bus:* 35, 37, 45, 88, 118, 137, 155, 181, 189 and *by Green Line:* 711, 712, 713, to Clapham Common station *or by British Rail:* Clapham (South London Line), Clapham Junction, or Balham, then by bus.

Visit also: The Railway Museum, York. The Great Western Railway Museum, Swindon.

Museum of British Transport
Clapham High Street, London, SW4

Does this photograph give you a feeling of pride and excitement?



H.M.S. Lynx

Then read on...

You're the kind of man we want to talk to – about the Royal Navy.

What does it offer you?

Action, excitement and adventure. World-wide travel. Sport in plenty. Fresh air. Wide-open spaces. Good food. Fine company. And up to 6 weeks' paid holiday a year. All this is yours in the Royal Navy.

Now read some facts that may surprise you. Today's Royal Navy offers you a real career. Can give you a good, solid trade. Pays well too. For example, as a married Petty Officer you can be earning over £1,100 a year. Moreover, from the moment you join, you can add another £4 a week to the value of your pay packet because you live 'all found' in the Royal Navy.

What about promotion? In the Royal Navy there isn't the fierce competition you face in civilian life. So you can really get on. How quickly depends on you – but the opportunities are there. For instance, today nearly one officer in three begins life as a rating!

Does your present job match up to this? If it doesn't (and few jobs do) find out more about the Royal Navy *now*. Post the coupon for the free booklet. Then read it–and judge for yourself. *You can apply as early as 15.*

Trades: You can train as a Seaman, Engineering Mechanic, Electrical Mechanic, Radio Operator, Artificer, Mechanician, Cook, Writer, Steward, Stores Accountant, Sick Berth Attendant, Naval Airman (ground duties), Naval Air Mechanic – or become a soldier/sailor in the Royal Marines.

Royal Navy

Royal Naval Careers Service,
Dept. QP204/A, Old Admiralty Building,
Whitehall, London, S.W.1.

Please send me, entirely without obligation, a free copy of the new 52-page booklet 'The Royal Navy as a Career'.

NAME_____

ADDRESS_____

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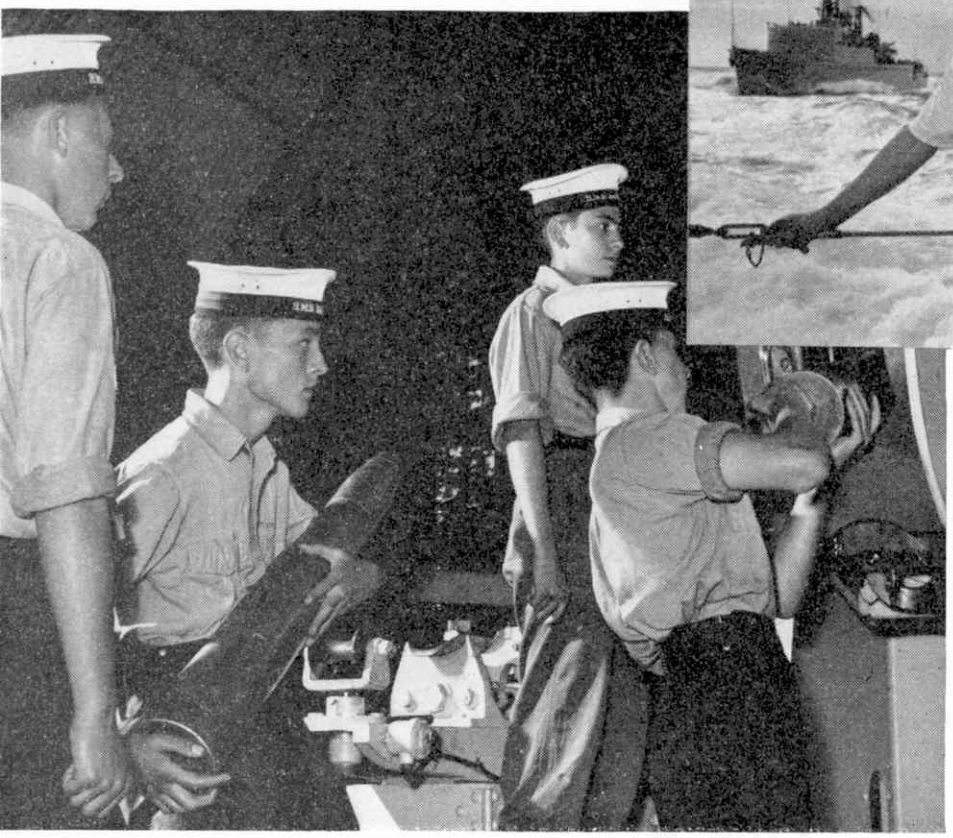
Date of birth_____

LIFE IN THE ROYAL



Here you can see a selection of illustrations showing various aspects of life in the Navy. Recruits are trained at H.M.S. Ganges or H.M.S. St. Vincent and these pictures show instruction in Gun Drill and Anchor Drill, an Air Acquaintance Course at Culdrose, a visit to the Pool of London and a general view "At Sea".

NAVY

Careers

WHAT is life really like in the Royal Navy and how do I become a sailor?' are questions asked by many young boys interested in careers at sea. In this article we hope to be able to answer many of the questions which readers will ask about the Royal Navy.

For instance: 'How old do I have to be before I can join the Royal Navy?' The answer 'Any boy, providing he is physically fit and can pass a selection test for arithmetic, spelling and intelligence, can join the Royal Navy as a Junior Seaman at the age of fifteen'.

'What does a boy seaman do?' you ask. He enters a Junior Seaman's training school—H.M.S. Ganges or H.M.S. St. Vincent—where he is taught one of the many trades open to him in the Royal Navy. During this period of training, he also learns to become a sailor in the sense that he learns the Royal Navy's own language. Port and starboard instead of left and right; deck and bulkhead instead of floor and wall and many other words and sayings used on board ship.

A hard life

Life is not easy at the Royal Navy training schools or 'ships' as they are called, but it is always interesting. Feet are on the deck at 0615 hours and lights out is at 2200 hours. In between, there are swimming lessons, rifle and small arms drill, 'square bashing', plus the normal 'trade' lessons which teach the recruit a job. The full list can be seen in the panels on these pages. Scholarships and cadetships are also available for boys between the ages of 15 and 19½ to become Officers in the Royal Navy.

Unfortunately, it isn't possible for us to give you all the information you need about careers in the Royal Navy, although the photographs will give you some idea of the interesting life that Junior Seamen lead. It would take a book twice the size of Meccano Magazine to tell you all about travelling to foreign lands, serving on board some of the finest and fastest ships in the world, as well as the many different skills required to fly and service jet aircraft, maintain giant steam turbines, even cook a meal for the thousands of men in a crew of a giant aircraft carrier.

Why don't you write to the Navy for more information? The address is found on page 29.

ENTRY TO THE ROYAL NAVY

Officer Entry

Age Limits at Entry	Method of Entry	Other Information
15–17½	Scholarship	Awarded to boys who obtain five 'O' levels in the G.C.E.—Enquiries should be made when the boy is about 14 years of age. **NOTE:** Reserved Cadetships are awarded to boys who just fail to gain a Scholarship.
17–19½	Cadet (General List)	Five passes in the G.C.E. to include English Language, Maths, and Physics. Two of the passes must be at 'A' level.
17–19½	Royal Marines	C.S.C. Exam. but from Sept., 1965, five G.C.E. passes to include two at 'A' level.
17½–25	Electrical	Untrained Entry—At least four G.C.E. passes to include English Language at 'O' level and Maths. or Physics at 'A' level.
17–23	Seaman Officer	Five G.C.E.s to include English Language and Maths.
17–26	Pilot or Observer	Five G.C.E.s to include English Language and Maths.

For full information concerning the above write to: Officer Entry Section, Old Admiralty Building, Whitehall, London, S.W.1.

Ratings Entry

Age Limits at Entry	Rating, Rank or Branch in Which Entered	Training, Nature of Service, Qualifications, etc.
15–16	Seaman Engineering Mechanic Electrical Mechanic Naval Airman Naval Air Mechanic Supply & Secretariat (Cooks and Stores)	Entered as Juniors. Basic training at H.M.S. GANGES or H.M.S. ST. VINCENT. Some Seaman entries are transferred to the Communications Branch for training as Radio Operators.
16–28	Seaman Engineering Mechanic Electrical Mechanic Naval Airman Communications Sick Berth Attendants Supply and Secretariat (Writers, Stores Assistants. Cooks and Stewards)	Basic training at H.M.S. RALEIGH in Cornwall. Most Naval Airmen are trained as Aircraft Handlers; a few are required as Photographers. Safety Equipment ratings or Meteorological Observers. Sick Berth Attendants receive professional nursing training at R.N. Hospital, Haslar, near Portsmouth.
		ALL THE ABOVE must pass medical examination and selection test (Intelligence, Arithmetic, Spelling and in some cases Mechanical Aptitude).
17½–23	Mechanician Apprentice	Direct entry for specialisation in Radio Electrical and Weapon maintenance. Must have standard of education equivalent in capacity for G.C.E. at 'O' level in Maths. and English. Medical and Selection Tests at Careers Offices and further selection tests at Portsmouth.
15½–17½	Artificer Apprentice	Four years training at special establishments to become the most skilled tradesman in the Navy. Serve as Artificers in one of following categories:— Engine Room, Electrical (Air) Radio Electrical (Air), Radio Electrical, Control (Weapons) or Shipwright. Must pass preliminary educational examination or gain exemption by holding two G.C.E.s at 'O' level in Maths. and a science subject. Medical examination and aptitude test at Portsmouth. Three entries per annum.

MECCANO
DINKY TOYS AND TRIANG-HORNBY

by Spanner

A Magnificent Meccanograph

ONE of the most fascinating gadgets that can be built in Meccano is the Meccanograph—an ingenious pattern-producing machine.

Credit for designing the original model is due to Mr. Andreas Konkoly of Budapest, Hungary, and building instructions are given below. However, before starting, I must stress that when I refer to 'above' and 'below', I am assuming that the model is in an upright position.

Framework

A rectangle is built up from two 9½ in. Angle Girders 1, connected three holes from each end by two 5½ in. Angle Girders 2 and 3, Girder 2 being fixed in place by Rod Sockets. Mounted in each of these is a 1½ in. Rod 4 carrying two Collars. At one end the rectangle is further strengthened by a 5½ in. Flat Girder 5, to both ends of which an Angle Bracket 6 and a ½ in. Reversed Angle Bracket are bolted. The Reversed Angle Brackets are joined by a 4½ in. by ½ in. Double Angle Strip 7.

To the opposite ends of Girders 1 are bolted a 3½ in. Strip 8 and a 3 in. Strip 9. Strips 9 are joined, via Angle Brackets, by a 5½ in. Strip 10. A 2½ in. Flat Girder is fixed to the side flange of Girder 1 and to Angle Bracket 6, then is connected to Strips 8 and 9 by a 9½ in. Angle Girder 11. Angle Girders 11, at each side, are joined by two 5½ in. Angle Girders 12.

Also fixed to Girders 11 is a 5½ in. Strip 13 held by 1⅛ in. Bolts each carrying two Collars and a 1 in. fixed Pulley with Tyre, while the 2½ in. Flat Girders are joined via Angle Brackets, by a 5½ in. Angle Girder 14. This Girder is attached to the Angle Brackets also by 1⅛ in. Bolts carrying two Collars and a 1 in. fixed Pulley with Tyre.

Revolving Table and Gearbox

It is best to build the revolving table and its corresponding gearbox separately. A frame is obtained from two 3½ in. Angle Girders 15, connected by a 4½in. by 2½ in. Flat Plate. Two 2½ in. by ½ in. Double Angle Strips bolted one to each Angle Girder 15, are joined by a 4½ in. Strip 16, a Washer spacing the Strip from the lug of each Double Angle Strip. Also bolted to the Double Angle Strips are Angle Brackets which are joined, in turn, by another 4½ in. Strip 17.

Journalled in a six-hole Bush Wheel, bolted to the underside of the Plate to act as a bearing and in Strips 16 and 17, is a 3½ in. Rod 18, held in place by a six-hole Bush Wheel above the Plate and by a 3½ in. Gear Wheel 19 beneath Strip 16. This Gear has been removed in one of the accompanying illustrations. Mounted on the Rod, between the lower Bush Wheel and Strip 17 are, in order, a 50-teeth Gear 20, a Collar, a Washer, another Collar, a 60-teeth Gear 21 and a 57-teeth Gear 22. Also mounted on the Rod, but between Strips 17 and 16, are two Washers, a 2½ in. Gear 23 and another Washer.

Journalled in the Flat Plate and Strip 17 is a 2½ in. Rod which carries, from top to bottom, a Washer, a ¾ in. Pinion 24, a Washer, a Coupling 25, mounted through its centre transverse bore, another Washer, a 7/16 in. Pinion 26 and a ½ in. Pinion 27. Pinion 24 is in mesh with Gear 20, Pinion 26 with Gear 21 and Pinion 27 with Gear 22.

A 1½ in. Rod carrying a ½ in. Pinion 28 and a Washer above Strip 17 and another ½ in. Pinion 29 between the Strips, is journalled in Strips 16 and 17. Pinion 28 is meshed with Pinion 27 and Pinion 29 with Gear 23.

Also journalled in Strips 16 and 17 is a 2 in. Rod. This carries a Collar, a ½ in. Pinion 30 and a Washer above Strip 17, and two Washers and a ½ in. Pinion 31 beneath Strip 16. Pinion 30 meshes with Pinion 28 and Pinion 31 with Gear 19.

Mounted in the longitudinal bore of Coupling 25 and in the Double Angle Strip bolted to one Angle Girder 15 is a 2½ in. Rod that carries a ¾ in. Contrate Wheel 32, in mesh with Pinion 24 and a six-hole Bush Wheel 33. The Rod is secured by two Collars, fixed one each side of the Double Angle Strip.

The whole assembly is positioned in the main framework on two 8 in. Rods mounted in Girders 2 and 3 and held by Collars.

Additional Gearing

A 5 in. Rod, on which a ½ in. Helical Gear 34 and a Worm 35 are mounted, is journalled in Strips 8 being held in place by a Collar and a Crank. A 1⅛ in. Bolt, supporting a loose Coupling is fixed to the arm of the Crank to act as a handle. The Worm is in mesh with a 57-teeth Gear 36 on a 4 in. Rod mounted in Strips 10 and 13. Also secured on this Rod are a 50-teeth Gear 37, two Collars, and a ¾ in. Pinion 38, this last unmeshed at present.

Another 4 in. Rod is journalled in Strips 10 and 13. On this is mounted, in order from top to bottom, a Single Throw Eccentric 39, a Washer, a ⅞ in. Bevel Gear 40, a Collar, a Coupling 41, another Collar, a 50-teeth Gear 42 (unmeshed at present), two Washers, a ¾ in. Pinion and a third Collar. Gear 37 meshes with Pinion 43.

Yet a third Rod, a 4½ in., is journalled in Strips 10 and 13. On this is secured a Face Plate 44, a 1½ in. Helical Gear 45, two Washers, three Washers and a 50-teeth Gear 46. Helical Gear 45 meshes with Helical Gear 34.

A 1½ in. Rod is mounted in the longitudinal bore of Coupling 41 and in the apex hole of a Trunnion 45, bolted to Angle Girder 3. Fixed on the Rod is an eight-hole Bush Wheel 47, a Collar, three Washers and a ⅞ in. Bevel Gear 48. This last meshes with Bevel Gear 40, while Bush Wheel 47 is connected to Bush Wheel 33 by two ¾ in. Bolts, fixed in diametrically opposite holes of Bush Wheel 33 with their shanks projecting through corresponding holes in Bush Wheel 47.

The arm of Eccentric 39 is extended two holes by a 2 in. Strip, through the end hole of which a Threaded Pin is fixed. The shank of the Pin, in turn, is passed through the circular hole in one lug of an Angle Bracket, attached to Angle Girder 3 by Bolt 49.

At the other end of the model, a 5 in. Rod 50 is journalled as shown, being held

in place by a Collar and a 50-teeth Gear 51 with a Washer acting as a spacer. Two Face Plates 52 with three ¾ in. Bolts passed through them, are also fixed on the Rod to serve as a cam working against the pen arm.

The pen arm itself, is an 11½ in. Rod held in a Handrail Coupling 53 fixed to a 4½ in. Rod mounted in two 1½ in. Flat Girders bolted to Angle Girders 1 and 11. A Collar above the upper Flat Girder prevents the Rod from falling through. Loose, on the 11½ in. Rod is a Coupling 54 that carries a Long Threaded Pin 55, a Handrail Support 56 and a Threaded Pin 57. Secured on Pin 57 is a Small Fork Piece in which a ball-point pen is clamped by a ½ in. Bolt. A 2 in. Rod is fixed in Handrail Support 56 and a Cone Pulley is added to act as a weight.

Two Handrail Supports 58 are attached to Face Plate 44, and in these a 2½ in. Rod is mounted. Fixed on this Rod is a four-hole Collar, Part No. 140y, in which a Threaded Pin 59 is mounted. Another four-hole Collar is added to Long Threaded Pin 55 then a 7½ in. Strip 60 is slipped over Pins 55 and 59.

The pin arm is kept in contact with the cam by a Driving Band wrapped round one of the Rods 4 and round the 11½ in. Rod, being prevented from sliding by two Collars. The actual revolving table is a disc made of wood or another suitable material, bolted to the Bush Wheel at the top of Rod 18.

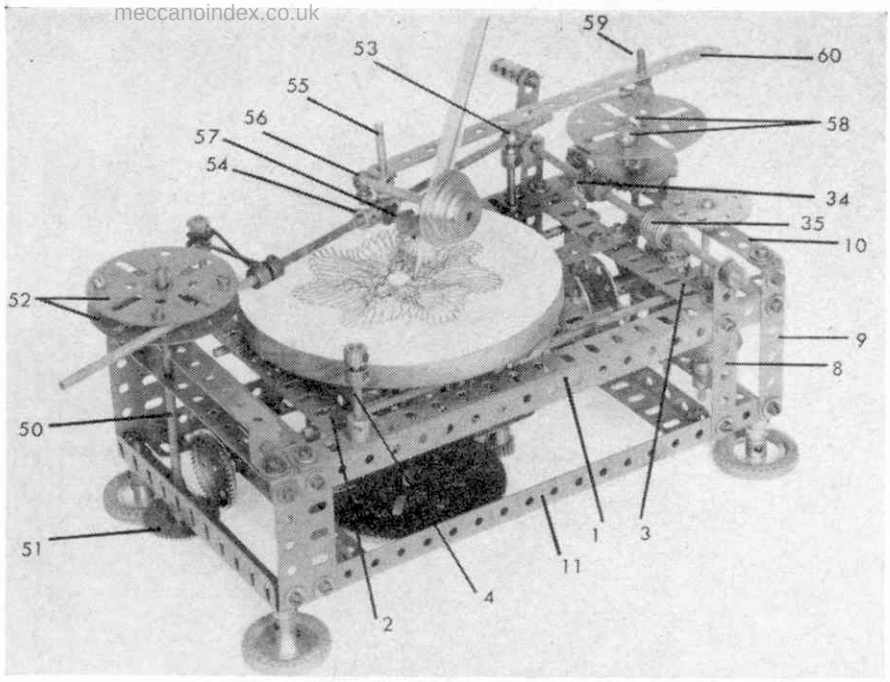
Finally, an 8 in. Rod 61, with a 1½ in. Contrate Wheel at each end is mounted in Girders 12, Washers being used as spacers so that the Contrates mesh with Gears 46 and 51.

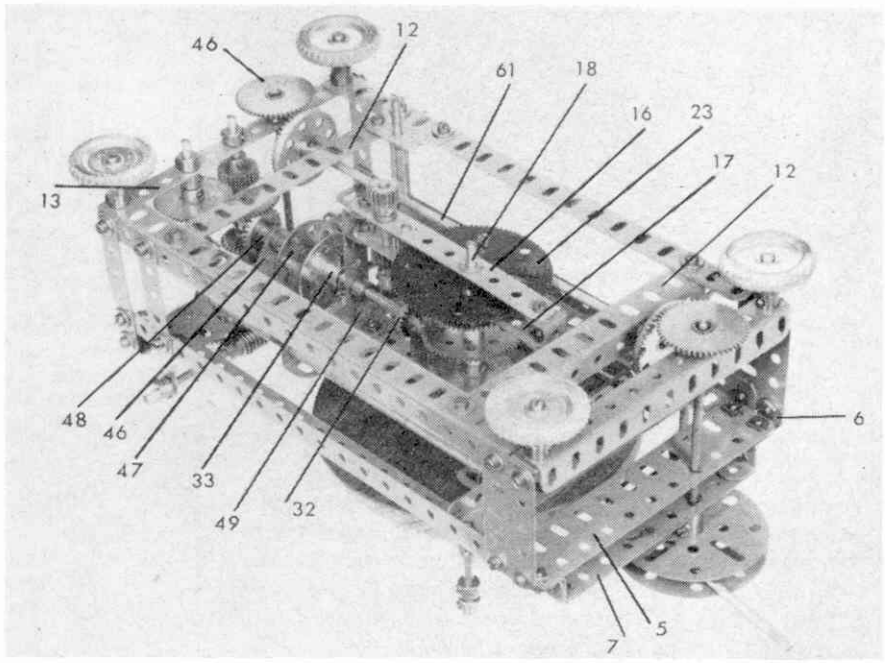
Varying the Pattern

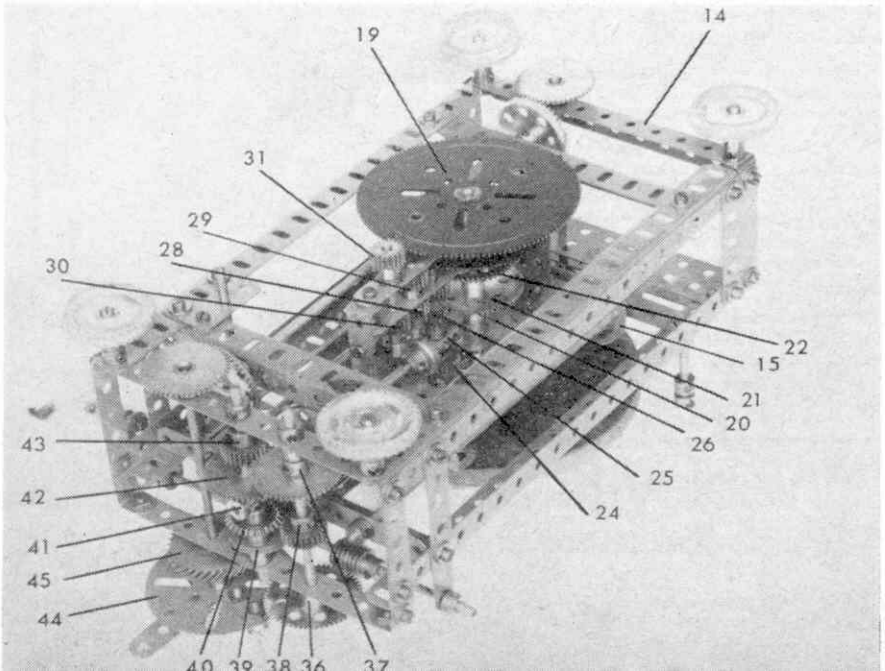
Many different patterns can be obtained in several ways. The length of Strip 60 can be altered by fitting Pin 59 in different holes or the cam can be modified by changing the number and position of the Bolts. Also, Pinion 43 can be taken out of mesh with Gear 37, while Pinion 38 is brought into mesh with Gear 42. Even the pen arm, itself, can be moved to the other side of the cam, provided that the Driving Band is transferred to the other Rod 4.

Parts Required

1 of No. 1b	2 of No. 24b	1 of No. 103
2 of No. 2	3 of No. 25	2 of No. 103f
2 of No. 2a	5 of No. 26	2 of No. 103h
2 of No. 3	1 of No. 26c	3 of No. 109
2 of No. 3a	5 of No. 27	5 of No. 111
2 of No. 6	2 of No. 27a	3 of No. 111a
4 of No. 8a	1 of No. 27b	5 of No. 111d
5 of No. 9	1 of No. 27c	3 of No. 115
2 of No. 9b	1 of No. 27d	2 of No. 115a
9 of No. 12	2 of No. 28	1 of No. 116a
1 of No. 13	1 of No. 29	1 of No. 123
3 of No. 13a	2 of No. 30	2 of No. 125
1 of No. 14	1 of No. 32	1 of No. 126
1 of No. 15	69 of No. 37a	1 of No. 130a
2 of No. 15a	56 of No. 37b	3 of No. 136
2 of No. 15b	78 of No. 38	1 of No. 136a
1 of No. 16	2 of No. 48a	2 of No. 140y
3 of No. 16a	1 of No. 48c	4 of No. 142c
2 of No. 17	1 of No. 53a	2 of No. 179
4 of No. 18a	32 of No. 59	1 of No. 186a
4 of No. 22	1 of No. 62	1 of No. 221a
1 of No. 24	4 of No. 63	1 of No. 221b







Mailbag

●**Southampton Castle.**—The Southampton Castle, newest member of the Union Castle fleet, recently made its maiden voyage—appropriately enough from Southampton. This ship has a top speed of over 25 knots, and is intended for cargo and mail only; this being the first mailship without passenger accommodation.–*A. McIntyre*, 40 *Kennedy Road, Southampton, Hants.*

●**Derelict Tunnel.**—I was very interested to see Mr. N. W. Keiffer's letter and photograph of a railway viaduct near the village of Pensfold in Somerset.

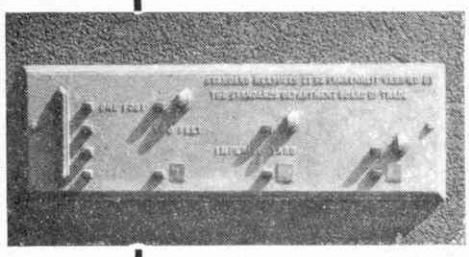
At the present time there are hundreds of miles of derelict railway in Britain and there are going to be thousands of miles in the future. It would seem that a great many of these routes could very well be converted into roads for motor traffic and in a few cases this has been done.

On May 14th the New Darlington By-Pass Motorway was opened to traffic and six miles of this uses the route of the old Merrybent railway.—*Mr. A. I. Watkinson, The Cottage, 3 Otley Road, Harrogate, Yorks.*

●**Standard Measure.**—In the case of the Wellington monument in Liverpool, there is set for public use a standard measure of one yard.

The measure gives the standard for one foot, two feet, and one yard—at 62° Fahrenheit, to take into account the expansion of warm metal and the contraction of cold.

For good measure, there are also set in the pavement beside the Liverpool Yard, a standard chain of 100 links and a standard length of 100 feet.—*Bernard Malone*, 11 *Richmond Hill, Clifton, Bristol*, 8.



Meccanomen around the World

SINCE its inception in 1901, Meccano, as a product, has grown from a few rough parts, produced by the inventor for his children, to a complete miniature constructional system, used by men and boys in almost every country throughout the world. As the popularity of Meccano grew, so also did the number of dedicated enthusiasts.

In these pages recently, we featured an ingenious walking horse and chariot. This was originally designed and built by Mr. Andreas Konkoly, of Budapest, Hungary, who has followed the Meccano hobby for many years. A keen competitor in model-building competitions, he has produced numerous complex and highly-detailed machines, that perform all sorts of amazing operations. Some of these have appeared in the 'M.M.' in the past and one example is actually featured in this issue.

Still in Europe, we have Mr. G. Servetti, of Piacenza, Italy, whose name you may have already heard, as he often wins prizes in our building contests—with very good reason. The models he turns out are always excellent.

History of Meccano Parts

Moving across the Atlantic Ocean to Burlington, Ontario, Canada, we find Mr. C. D. Rorke, who was mentioned in the January issue. This gentleman is something of an expert on Meccano matters and is, at present, preparing a comprehensive history of the entire Meccano Parts system.

Another highly knowledgeable expert on all aspects of Meccano is Mr. G. Maurice Morris, 248 Woolwich Road, Abbey Wood, London, S.E.2, who received his first Outfit in 1914. Over the years, except for a short break during World War II, he has amassed an enormous amount of information and material, not even stopping when he took up a career in electronics.

We have already mentioned the two private-circulation guides to the hobby which Mr. Morris has written but, since then, he has produced a further stereotyped work entitled 'French and Spanish Meccano Models'. The models featured are taken from postwar French Meccano Magazines and Spanish leaflets. Covering 94 pages, the actual building instructions, of course, have been translated into English. Mr. Morris, who is also working on a private-circulation Newsletter, would be delighted to hear from readers interested in any of his publications.

The above gentlemen are but a few of the dedicated enthusiasts to be found all over the world. We know of many more, ourselves, and there must be further anonymous hundreds, working away, unnoticed. Mr. Morris summed up the position with the words, '. . . most Meccanomen are "lone wolves" and prefer to enjoy the hobby in solitude'.

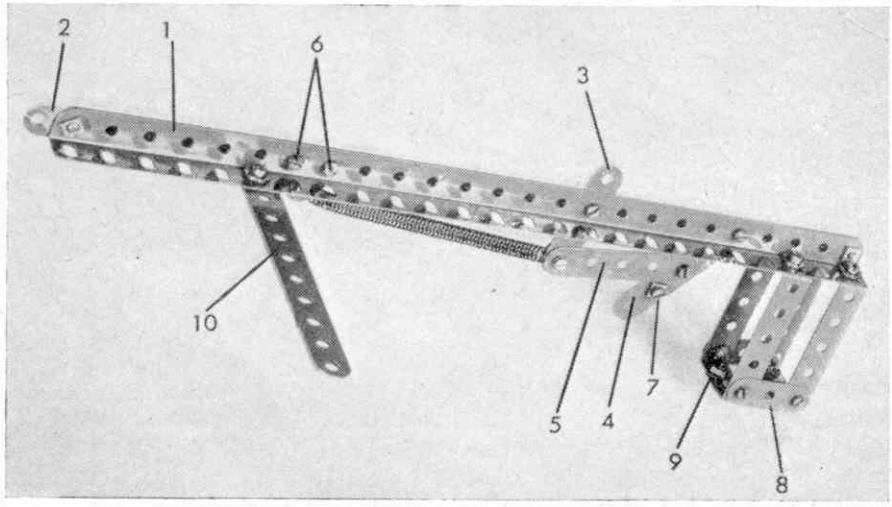
ELASTIC BAND GUN

By Spanner

GUNS of various shapes and sizes have always fascinated most mechanically-minded people. Perhaps it is a good thing that working reproductions of actual weapons cannot be produced in Meccano, but some very novel 'toy' guns can be built, that give hours of harmless fun. In the May 'M.M.', I featured a Washer-firing target pistol and now I extend the range with another simple pistol, this time using elastic bands as ammunition.

It is really very easy to build. Two 12½ in. Angle Girders 1 are joined together, but are spaced apart by a Washer at one end and by a Fishplate 2 at the other. Loosely held between the vertical flanges of these Girders on a lock-nutted Bolt, is a 2 in. Strip 3. Also lock-nutted between the Girders is a 2½ in. Strip 4.

Another 2½ in. Strip 5 is then lock-nutted between Strips 3 and 4, the respective bolts passing through the centre hole of Strip 4 and the lower end hole of Strip 3. A 1 in. Triangular Plate is fixed tightly between the Girders, being held by Bolts 6, but note that this Plate is separated from Strip 3 by a distance of seven holes. Strip 3 is connected to the Triangular Plate by a Tension Spring, to complete the trigger mechanism. A Bolt 7 is held in Strip 4 by two Nuts, one of the Nuts contacting with Strip 5 to prevent the mechanism collapsing.



A handle or 'butt' is built up from four 2½ in. by ½ in. Double Angle Strips bolted to the horizontal flanges of Girders 1. At each side the Double Angle Strips are braced by a 1½ in. Strip 8, then the sides are connected by two Fishplates 9. A very simple hand grip at the front is provided by a 5½ in. Strip 10, also bolted to Girders 1.

To load, an elastic band is 'hooked' round Fishplate 2, is stretched and slipped over Strip 3.

The details given above are for the original model pictured here, but the position of Strip 3 is really variable, being determined by the size of the elastic bands used. If it is moved, however, the 1 in. Triangular Plate must also be moved, accordingly. In addition, if the position of Strip 3 is altered then either Strip 4 must also be moved, or Strip 5 must be replaced by another Strip of suitable length.

Parts required

		7 of No. 38
		1 of No. 43
1 of No. 2	2 of No. 8	4 of No. 48a
2 of No. 5	3 of No. 10	4 of No. 48a
1 of No. 6	29 of No. 37a	1 pf No. 77
2 of No. 6a	23 of No. 37b	1 of No. 111c

triang-hornby track and trains

by Linesman

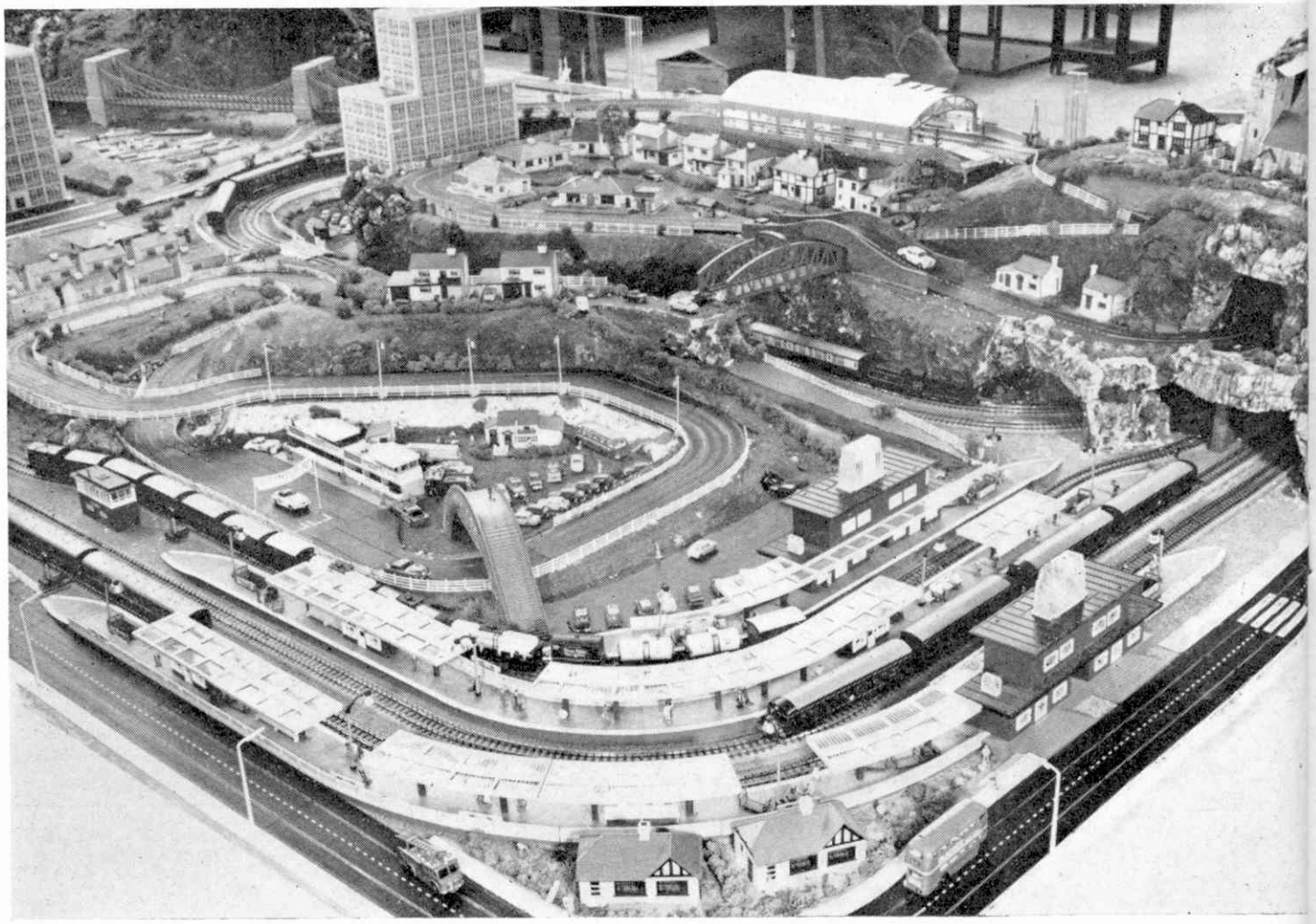
THE newly formed Triang-Hornby system is unique in the respect that it gives model railway enthusiasts the widest choice of really reliable locomotives. Over twenty-nine different popular engine types are available, twenty-five of British origin. The range has been designed to provide a suitable locomotive for every operating movement likely to be encountered in the average model railway and I would like now to give an outline of the express engines available, their duties and background Although the present day policy of B.R. is to standardise on locomotives of a particular design wherever possible, the model railway owner is happily free from such a restriction and he can, if he wishes, run a model of 'No. 123' next to a modern diesel locomotive. In this way it is not essential for enthusiasts to adhere closely to British Railways practice by providing only locomotives of the correct period for their layout.

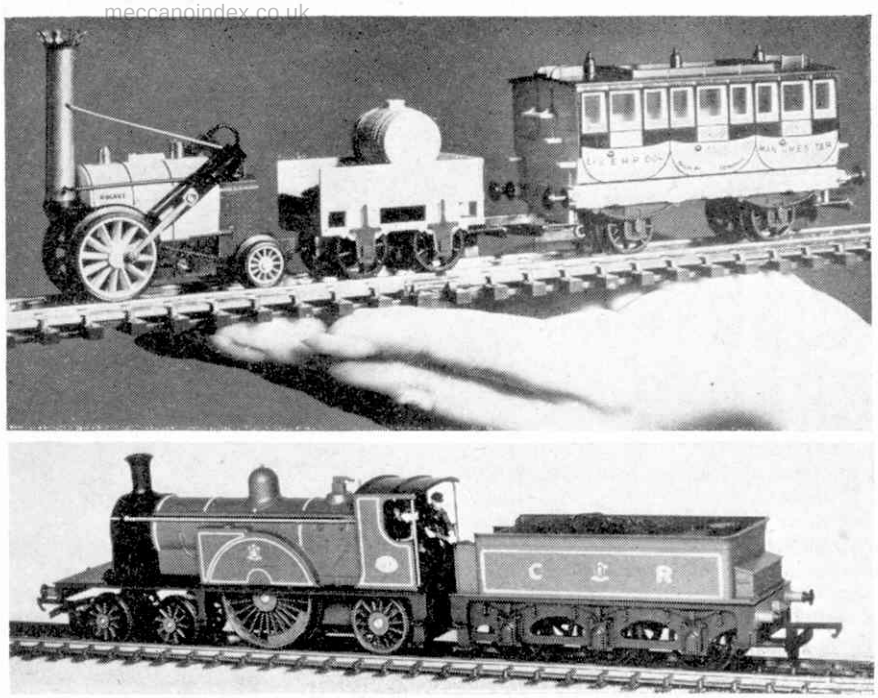
However, if a certain amount of realism is to be maintained, it is desirable to have locomotives of a particular type pulling the correct trains—an example of this would be the E3000 locomotive, which would be used for express passenger trains only and not for a local goods train or for shunting. Locomotives of a different period can therefore be run on the same layout with their appropriate trains although, in actual practice, they would not be seen running at the same time.

Locomotives of the express passenger type are, of course, the most important on real and model railways and in the Triang-Hornby range, no less than five suitable diesel and steam locomotives are included.

Admittedly, it is pleasant simply to collect engines, if for no better reason than to preserve an example of the type on your layout. However, you will often find it better, for the sake of realism, to buy over a period of time, locomotives which will form a 'stud' to give a suitable number of locomotives of each type.

The size of such a 'stud' would depend on the size of the layout, but where ten locomotives are used, it would be usual for two of these to be express passenger types—either diesel or steam, or one of each; two of the secondary passenger locomotive types and about the same number of suburban locomotives; two goods locomotives and two or three shunting locomotives.





Top: The diminutive 'Rocket' locomotive (R.346) is shown here, and the hand will give some idea of its size Bottom: The Caledonian Railway 'single' locomotive (R.553), famous for its performances in the railway race of 1895

If a catenary system is erected on the main line of the layout, the two pantograph engines in Triang-Hornby are an alternative to the two steam or diesel express passenger locomotives. One of these may be included in addition, however, but on B.R. this would only be used as a reserve.

The express passenger locomotives in Triang-Hornby provide models of engines from every region of B.R. The Southern Region is, however, particularly fortunate in being represented by two locomotives. The first is 'Sir Winston Churchill' (R.356S) which, as most readers will know, hauled the funeral train of its namesake. It is one of the 'Battle of Britain' class Pacific Locomotives which were introduced by the Southern Railway Company in 1946 and built by Mr. O. V. S. Bullied.

Like their model counterparts, the engines were noted for their power and were for many years used on important express passenger trains. They are only recently being replaced by diesel and electric locomotives and many can still be seen performing secondary duties in the West of England.

The second locomotive of the express-passenger type, suitable for Southern Region layouts, is the model of the 'West Country' Pacific Locomotive 'Barnstaple' (R.2235), which was originally a Hornby-Dublo model. Locomotives of this class are also tremendously powerful and were used until quite recently for express pasenger services. They are now, however, to be seen hauling fast goods trains and occasionally secondary passenger trains. They were built by the Southern Railway in 1945 and the model represents the rebuilt version of 1957 which has Walschaerts valve gear. The 'Battle of Britain' locomotive is fitted with smoking apparatus, locomotive crew and magnadhesion for added traction effort.

Track Tips

In any model railway system, the locomotives are only complimentary and are dependent on a reliable track. As has been mentioned in previous articles, Triang-Hornby uses the Triang Super 4 track, which is designed to allow nearly every conceivable type of formation to be built using the standard components available. Although both it and the Hornby-Dublo track system are basically identical in that similar components are used to form layouts, differences do exist which, if not taken into consideration, might cause confusion when components from the two systems are used together.

The first and most important, is to allow for the differences in rail height by using the Triang-Hornby Converter Rail wherever items of Triang Super 4 and Hornby-Dublo are to be joined. This is the first essential to consider when extending an existing layout consisting of Hornby-Dublo track. There are also further points which should be considered and it might be as well for me to first describe the more important components in the Triang Super 4 system.

The curved track is available in two different radii—14⅝ in. and 17¼ in. and two pieces of track are produced in each, the standard curve and the double curve. The larger radius track is normally used to form an additional oval outside an existing one of standard radius curved track. The double track lengths of both radii require eight pieces to form a full circle and, in the case of the standard Curved track, sixteen pieces.

Triang Super 4 Straight track is produced in four lengths, all multiples of the standard straight track R.481 which is 6⅝ in. in length. One shorter piece than this is produced, the R.482 Quarter Straight. The other two pieces are R.480 Double Straight track and R.489 Long track, which is approximately four times the length of a standard straight. The Hornby-Dublo system differs from the Triang Super 4 in that the Curved track is produced in shorter lengths which require twelve to form a circle.

The Straight track is produced in four lengths and uses as the standard straight the 8⅝ in. section. The other sizes are 5¾ in. two-thirds straight, 2⅞ in. one-third straight, and 1$\frac{5}{16}$ in. short rail. None of these are a comparable length to any of the Triang Super 4 track sections and it is therefore advisable not to use the two where the geometry of a layout depends on straights of an equal length. An example of this would be an oval of track where each side must be equal in length.

When planning an extension to an existing Hornby-Dublo layout, it is better, where track equal in length to the Hornby-Dublo system is not required, to use Triang Super 4 track for the complete extension. However, in situations where, to keep the geometry equal, track of a comparable length to Hornby-Dublo is needed, it will be found better to use the track of that system.

You will find many instances where Triang Super 4 can be used to enlarge or extend an existing layout. One of these is on our friend the oval of track, which you may wish to lengthen. This can be done by using, on each side, a converter rail, any number of Super 4 Straight Rails and another Converter Rail. This method can also be used to widen ovals, and lengthen sidings. If, however, it is necessary to make one side of an oval, already assembled from Hornby-Dublo track components, equal in length to the other, then it will be necessary to either remove the pieces of Hornby-Dublo track from one side of the oval and to add Triang Super 4 track to both, or to add Hornby-Dublo track to make the two sides equal.

Making Joints

This also applies to the Hornby-Dublo curved track, which is produced in two radii, 15 in. and 17¼ in. radius. The 15 in. radius track is available in three sizes, the first a standard 33 degree curve, the second, exactly half this in length and the third, a quarter. The large radius track has only two pieces, a 33 degree curve, and a half curve. A 45 degree 15 in. radius curve has also been produced, primarily for the 'Ready-to-Run' sets, which, although the same length as the Triang Double Curved Rail is a slightly different radius.

It must first be remembered that the Triang Super 4 curves cannot be used in conjunction with those of Hornby-Dublo and the layout must be developed accordingly using Hornby-Dublo track where curves have to equal existing ones. It is also necessary for the track converter to be inserted between Hornby-Dublo and Triang Super 4 curved track to allow the two to be joined together whenever an extension of Super 4 track is to be added to an existing Hornby-Dublo layout.

By Spanner

MECCANO ROAD GRADER

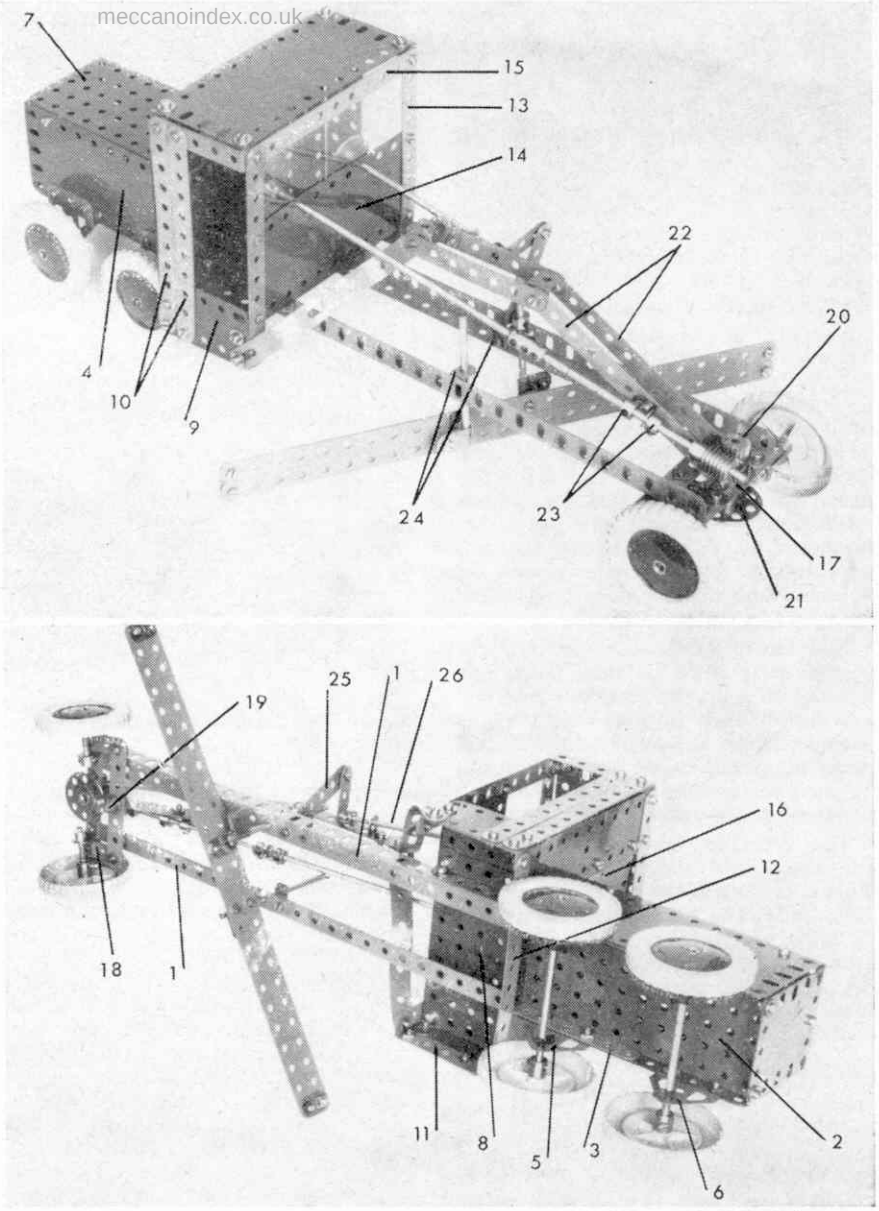
THERE are two general types of road graders, those drawn by a separate tractor and those having a built-in power unit. The latter sort are particularly fascinating with their long, almost slender-looking snout and comparatively thin grading blade fixed beneath it. This is the type on which the Meccano model, described here, has been based. It is easy to build, has an adjustable grading blade and the steering system works. Building instructions are as follows:

Two 12½ in. Angle Girders 1 are each secured to a 5½ in. by 2½ in. Flanged Plate 2 by a 5½ in. Strip 3, at the same time bolting a 5½ in. by 2½ in. Flexible Plate 4 and a Flat Trunnion 5 in position. Another Flat Trunnion 6 is added, then the Flexible Plates are connected at the top by a second 5½ in. by 2½ in. Flanged Plate 7. A 2½ in. by 2½ in. Flexible Plate is bolted between the two Flanged Plates, at the rear.

Fixed to Angle Girders 1 by Angle Brackets is a 5½ in. by 2½ in. compound flat plate 8, built up from two 4½ in. by 2½ in. Flat Plates. Attached, in turn, to each side of this by Angle Brackets is a 2½ in. by 1½ in. Flexible Plate 9 overlayed by two 5½ in. Strips 10 and underlayed, along the lower edge, by a 2½ in. by ½ in. Double Angle Strip 11. Bolted between the rear lugs of the Double Angle Strip is a 5½ in. Strip 12, at the same time fixing two 5½ in. by 1½ in. Flexible Plates in place.

A 5½ in. Strip 13 is bolted to the front lug of each Double Angle Strip and these are connected by a 5½ in. by 2½ in. Flexible Plate 14, a 5½ in. by 2½ in. Transparent Plastic Plate and another 5½ in. Strip 15, at the same time fixing Angle Brackets in place to hold the roof. The 5½ in. by 1½ in. Flexible Plates are joined by a 3½ in. Strip 16, a 5½ in. by 1½ in. Transparent Plastic Plate and a 5½ in. Strip, the Bolts securing this last Strip also holding Angle Brackets for the roof, which is a 5½ in. by 2½ in. Flexible Plate.

At the front, Girders 1 are connected by a 3½ in. Strip 17. A Double Bracket, to which a 1½ in. Strip 18 is bolted, is lock-nutted to each end of this Strip and another 3½ in. Strip, carrying a Threaded Pin 19, is lock-nutted between Strips 18. A Double Bent Strip is then bolted to Strip 17 and mounted in this is a 1½ in. Rod, held in place by a ½ in. Pinion 20 and an eight-hole Bush Wheel 21. A Fishplate bolted to this Bush Wheel engages with Threaded Pin 19.



Top: This model Road Grader can be built with the parts contained in Meccano Outfit No. 7 plus an extra two 2½ in. Road Wheels. Below is an underneath view of the model, showing the chassis and grading blade

Further 1½ in. Rods are journalled in the lugs of the Double Brackets, being held in place by 2½ in. Road Wheels and Collars. The rear wheels are also 2½ in. Road Wheels, fixed on 4½ in. Rods mounted in Flat Trunnions 5 and 6.

Bolted to the side faces of the Double Bent Strip are two 5½ in. Strips 22, each extended by a 3½ in. Strip and two Formed Slotted Strips 23, these last bolted to Flexible Plate 9. Double Brackets are used as bracers. A ½ in. by ½ in. Angle Bracket is fixed to the right-hand side Strip 22. Journalled in this and in Flexible Plate 14 is a compound 11½ in. rod, made up from a 6½ in. and a 5½ in. Rod joined by a Coupling, which is held in place by two Collars 23. A Worm at one end meshes with Pinion 20 while an eight-hole Bush Wheel acts as the steering wheel.

The scraper blade consists of two 12½ in. Strips connected by Fishplates. Two ½ in. by ½ in. Reversed Angle Brackets are bolted to the blade, one each side, and right-angled Rod and Strip Connectors are fixed to their spare lugs. A 3½ in. Rod is mounted in each of these, being journalled in Girders 1 and Reversed Angle Brackets 24, secured to the Girders. A Collar on the left-hand side Rod has a 2½ in. Strip 25 loosely fixed to it by a Bolt and this, in turn, is lock-nutted to a Crank on a 4½ in. Rod 26, mounted in Flexible Plate 14 and an Angle Bracket bolted to the left-hand side 3½ in. Strip. When a 1 in. Pulley fixed on this Rod is turned, the height of the scraper blade is altered.

Parts required

2 of No. 1	1 of No. 22	2 of No. 111c
13 of No. 2	2 of No. 24	1 of No. 115
5 of No. 3	1 of No. 26	4 of No. 125
1 of No. 5	1 of No. 32	4 of No. 126a
2 of No. 6a	4 of No. 35	6 of No. 187
2 of No. 8	104 of No. 37a	2 of No. 188
5 of No. 10	96 of No. 37b	2 of No. 189
4 of No. 11	18 of No. 38	2 of No. 190
14 of No. 12	1 of No. 45	4 of No. 192
1 of No. 14	4 of No. 48a	1 of No. 193d
1 of No. 15	2 of No. 52	1 of No. 193e
2 of No. 15a	2 of No. 53a	2 of No. 212a
1 of No. 15b	5 of No. 59	4 of No. 215
2 of No. 16	1 of No. 62	
3 of No. 18a	1 of No. 63	

ASTON-MARTIN "HARDTOP"

You can 'customise' your own Dinky Toys to add new models to your collection

MOST Dinky Toys enthusiasts take great pride in their collections, especially if they are specialised. The trouble with this type of collection however, is that the number of models which can be included is strictly limited. While there are 170 individually-listed examples in the current Dinky range, there is not a great deal of any one particular type. This can be very frustrating for serious collectors and it is unfortunate that many people do not realise that their collections can be increased without waiting for brand new additions to emerge from the factory in Liverpool. How? Simply by modifying existing toys!

The technical term for the alteration of existing models is 'customisation' and I hope to bring you a fairly regular series of articles on this fascinating subject, beginning this month with the Aston Martin D.B.5. As you may know, a Dinky model of the convertible version of this famous sports car was recently introduced into the range under Sales No. 110. This can be turned into a 'hardtop' by following the methods described below.

The materials needed are very simple and consist of a block of balsa wood, preferably soft, measuring $1\frac{3}{4}$ in. long by $1\frac{1}{4}$ in. wide by approximately $\frac{1}{2}$ in deep; lightweight tissue paper similar to the type used for model aircraft construction, a jar or tin of clear shrinking dope and a contact adhesive such as 'Evostik' or 'Bostik'. You will also require a rule, a pair of scissors, a hacksaw, a brush, a modelling knife and a coarse file.

The method of construction I have used is similar in many ways to the papier mâché type of construction used for building scenery on model railways and although the materials—newspaper and glue—are not exactly suited to this type of modelling, the method can be followed using tissue paper and shrinking dope in alternate layers. In this way, a rigid moulding can be built up which will withstand a considerable amount of rough treatment.

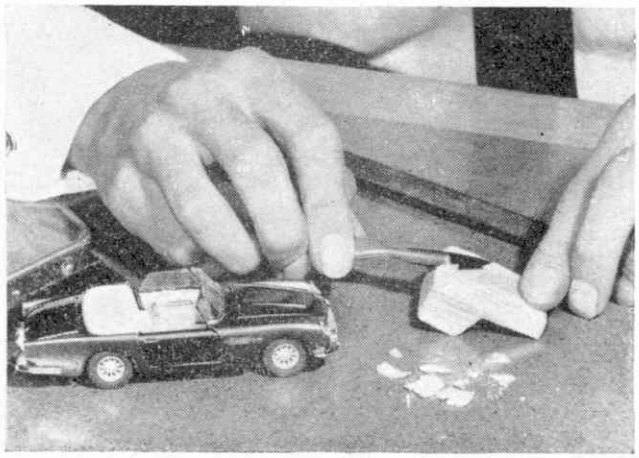
First step in the construction of the hardtop for the coupé is to build a wooden former, for which I used the piece of balsa listed above. This is carved with the modelling knife to the shape of the hardtop using photographs of the car as a guide. The back window is not included in the former, but is added in the final moulding.

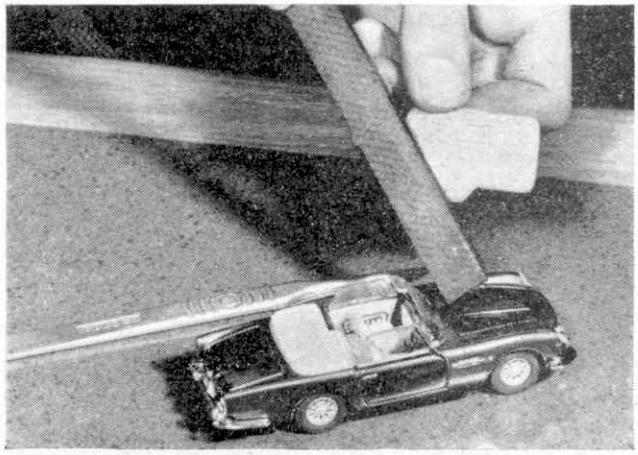
Once curves of the correct shape have been roughly formed with a modelling knife, a rough file can be used to produce the finished shape, and this will also remove any roughness in the surface of the wood that will have occurred when carving. The front of the hardtop—the part above the windscreen and side windows—is also carved out of the same piece of balsa until the correct thickness remains.

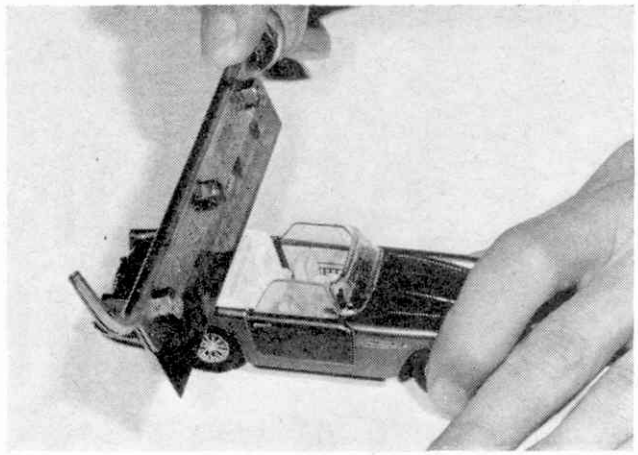
When the former is exactly the right shape—this can be tested on the Dinky model—it is rubbed over with a fine piece of sandpaper until its surface is quite smooth and even. Care should be taken with the top of the former which should not under any circumstances have any hollows since this will be reproduced in the final moulding. Unfortunately, I left a hollow in my moulding which although very slight, shows in the finished car. Accuracy should also be observed over the thickness of the balsa wood at the front end of the car near the windscreen, where it should not be more than $\frac{1}{16}$ in. Take precautions when filing not to break this piece, which is rather fragile.

It is unnecessary to shape the underneath portions of the balsa as it is only important that the surfaces to be covered are smooth and the correct contour. Once this has been done, the simulated folded hood behind the rear seat should be sawn off along the groove at the rear of the seat. I found a hacksaw useful for this operation, primarily because of

A block of balsa wood $1\frac{3}{4}$ in. long, $1\frac{1}{4}$ in. wide and $\frac{1}{2}$ in. deep is carved with a modelling knife to produce the former for the hardtop moulding. When the wood former has been roughly carved out with a modelling knife its surface can be smoothed off with a rough file, and then with fine sandpaper.







Once the surface of the balsa former is shaped, it is rubbed with wet soap and a piece of tissue paper is applied over. Small cuts are made in the tissue paper to allow it to conform to the curves on the former and it is given a coating of dope. The simulated folded hood behind the rear seats of the Dinky Toy model is then sawn off with a hacksaw and the upper edges of the sides and end of the seat are cut and filed until they are flush with the top of the side of the car

its fine toothed blade which gives a very narrow cut, as opposed to a hacksaw which gives a wide cut.

The top edges of the back and sides of the rear seat should also be reduced in height by cutting with a sharp modelling knife. A file is then used to bring the seat flush with the sides of the car. The balsa wood former can then be placed into position to check its accuracy.

The balsa former is now ready for its covering and should be rubbed with wet soap to allow the finished hardtop to be peeled off afterwards. A piece of lightweight tissue paper is spread over the former to cover all upper and side surfaces. You will find it necessary when doing this to make several small cuts in the tissue paper near the front and sides to allow it to conform to the complicated contours on this part of the hardtop.

Once the tissue paper adheres to the balsa former to your satisfaction, apply a good coat of dope and then another sheet of tissue paper. This should be repeated at least twelve times—the more layers, the stronger the finished result and it is advisable to allow the tissue paper to overlap the edges of the balsawood, so that it may be accurately trimmed to fill any slight gaps afterwards. However, do not forget to dope the overlapping sheets together, so that these also are rigid when dry.

When twelve or more layers of tissue paper and dope have been applied to the balsa former, the whole assembly should be allowed to dry for approximately 24 hours and the tissue and dope covering may then be peeled off. You will find that it is quite rigid and an exact duplicate of the shape represented by the piece of balsa which is why the initial carving process is so very important.

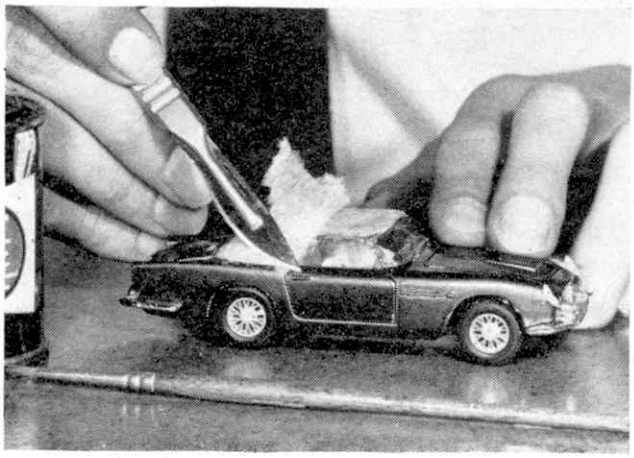
After the separation of the balsa former and moulding, the latter can be trimmed with a pair of scissors to the correct shape, by first aligning it in the space that it will eventually occupy on the car. It may then be glued into position using the contact adhesive, following the makers' instructions exactly by applying a coating to the edges of both surfaces, allowing to dry for 15 minutes and then bringing both into contact with each other.

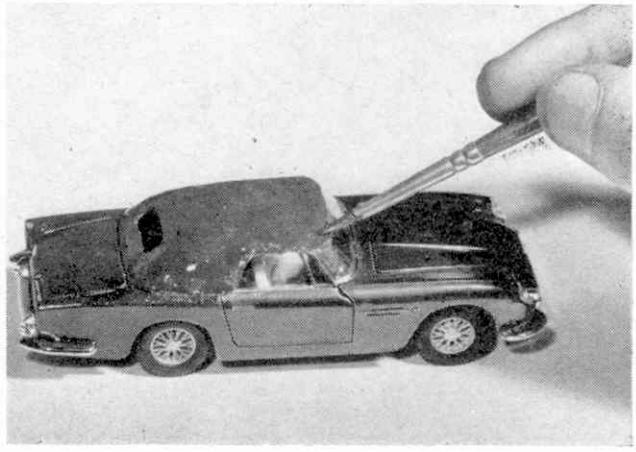
You will find that a few spaces and gaps exist between the moulding and the car. These may be filled using small pieces of tissue paper doped on to both surfaces until the gaps become unnoticeable. When both dope and glue have dried hard, the window at the rear of the hardtop can be cut out using a sharp modelling knife of the Swann Morton type. Mark the position and shape of the rear window with a pencil or ball-pen and then remove one layer at a time by making a shallow cut.

When the hardtop is in position, the cracks filled and the rear window cut out, the model can be repainted. Although the original colour of the Dinky Toy D.B.5 is attractive, you will find it necessary to repaint the entire model, since it is impossible to obtain commercially produced paint of a similar quality to that used on Dinky Toys.

I have used a maroon paint similar to that which I believe many production models of the D.B.5 were produced and I would recommend the paint of this shade produced by Humbrol, available at most good model shops. Next month, I shall once again be describing new additions to the standard Dinky Toys range.

When the twelve layers of tissue and dope have dried hard, the moulding is peeled off the former, trimmed, and glued into position on the car with an impact adhesive. Any cracks remaining are then filled with tissue paper and dope, pressed into position by the modelling knife. When the final coating of dope has dried, the entire car can be painted, in this case with maroon, giving two or more coats until the original colour is completely obscured, and the new hardtop adequately coated





Answers to puzzles on page 8.

QUICK QUIZ

1. Scorpion of Central Africa.
2. Fact. German scientists flew one in 1945.
3. Ulm Cathedral, in Germany.
4. Corsica.
5. 1888 Benz.

Score Over 25, excellent
Over 20, good

TRICKY TEASERS

9+8+7+6+5+4+3+2+1+45
1+2+3+4+5+6+7+8+9+45

8+6+4+1+9+7+5+3+2+45

Too many cooks spoil the broth.

42 inches—and you may have been baffled by the fact that we did not state how far apart the poles were to be. It is an interesting fact that where the two strings cross is the same distance above the ground whatever their distance apart.

Notable. (No table.)

Car Quiz No. 9.
Daimler 4½ litre

Would you like to visit the National Model Show

We have 100 FREE Tickets which we are giving away to Meccano Magazine readers.

All you have to do is write and claim a ticket to the address below. The senders of the first 100 letters to be pulled out of the bag on July 30th will receive their prize.

Meccano Magazine Competition, NMS 1, St. Alphage House, Fore St., London, E.C.2.

DINKY TOY WINNERS

BELOW is a list of fifty names of readers whose entries for last month's 'Silhouette' competition were the first correct answers to be selected by the Editor. If your name appears in this list, then write on a postcard to: *Silhouette Prize, Meccano Magazine, Thomas Skinner & Co. Ltd., St. Alphage House, Fore Street, London, E.C.2,* and claim your FREE Dinky Model Triumph 2000. If your name does not appear in this list, even though you entered for the competition, do not be disappointed

A. C. Beardsley, Vicarage Green, Edwalton, Nottingham. **M. Bigny,** Leighton Road, Kentish Town, London, N.W.5. **P. Blencowe,** Spital Heath, Dorking, Surrey. **R. E. Bost,** Alberta Ave., Cheam, Surrey. **M. J. Briggs,** Queensway, Bognor Regis, Sussex. **B. Bromley,** Green Meadow Road, Selly Oak, Birmingham 29. **J. P. Ellis,** Passfield Common, Liphook, Hants. **P. T. Ellis,** Bridport Road, Thornton Heath, Surrey. **M. R. Emm,** Austell Gardens, Mill Hill, London, N.W.2. **E. Farquharson,** Douglas Road, Esher, Surrey. **J. Fordyce,** Brook Street, Tonbridge, Kent. **J. Foster,** The Close, Simms Lane, Hollywood, Nr. Birmingham. **S. Gillam,** Temple Fortune Lane, London, N.W.11. **C. A. Gordon,** Somerset Road, Salisbury, Wilts. **I. Greenway,** Baugh Gardens, Downend, Bristol. **C. M. Greenwood,** Brandon Road, Watton, Nr. Thetford, Norfolk. **Robert Hirst,** Leeds Road, Dewsbury. **M. Horsley,** Warwick Street, Leamington Spa, Warwickshire. **A. Hughes,** Greenbank Drive, Ashgate, Chesterfield, Derbyshire. **C. Jelley,** Waverley Drive, Chertsey, Surrey. **J. R. Kinchen,** Fortunes Way, Bedhampton, Havant, Hants. **A. Kowalczyk,** Carlton Ave. West, North Wembley, Middx. **J. G. Llewellyn,** Larkhall Rise, Clapham, London, S.W.4. **Barry Lockwood,** Middleton Drive, Pinner, Middx. **Carl Malein,** Wood Lane, New End, Astwood Bank, Redditch, Worcs. **I. Malton,** Pettits Close, Romford, Essex. **J. McDougall,** South Park, Sevenoaks, Kent. **J. G. Mitchell,** Queensdale Road, London, W.11. **J. M. Miller,** Vicars Hill, Boldre, Lymington, Hants. **P. Mitchell,** The Ridgeway, Ruislip, Middx. **C. Payne,** Stage-Leys, Ashtead, Surrey. **R. D. Penfold,** Staunton Road, Kingston-on-Thames, Surrey. **L. Pentith,** Penn Road, Woodlands Smithy, Wolverhampton, Staffs. **M. Phelan,** Maxfield Road, Harpenden, Herts. **D. Porter,** Moffat, Dumfriesshire. **G. Priestman,** Malden Hill, New Malden, Surrey. **D. J. Rogers,** Rushyfield Crescent, Romeley, Cheshire. **D. Rowe,** Sudbury Court Drive, Harrow, Middx. **J. A. Sawyer,** Kendal Road, Bolton, Lancs. **R. P. Shaw,** Station Road, Wombourne, Wolverhampton. **F. N. Silver,** South Hill Park Gardens, Hampstead, London, N.W.3. **R. J. P. Smith,** Staney Road, Leicester. **Neil Swan,** Winchester, Hants. **Andrew Tatler,** Kendal End Road, Barnt Green, Nr. Birmingham. **R. J. Tibbitt,** Oak Tree Close, Virginia Water, Surrey. **P. Tognola,** Farnham Common, Bucks. **A. Tollady,** Acton, London, W.3. **M. R. Turner,** Whitstable, Kent. **D. Vick,** Sutton Road, Muswell Hill, London, N.10. **B. Vinicombe,** Scotland Road, Buckhurst Hill, Essex.

BUY • SELL • SWOP • BUY • SELL • SWOP • BUY • SELL • SWOP • BUY • SELL • SWOP

SALES

• Meccano Magazines, 1924-1936, state month and price. S.A.E. please. Gorst, 8 Victoria Road, Great Sankey, Warrington, Lancs.

• Br. Cols. Israel foreign, wants invited advertiser. 15 Queenshill Ave., Leeds, 17.

• Early pre-war and early post-war and obsolete French Dinky-toys and SOLIDO models. Monsieur Jean-Jacques Moreaux, 18 Bis rue de Bellefond, Paris IX°, France.

• Meccano outfit No. 10 with motors E20R and spring-motor No. 1, in luxury wooden box. Price from Eindhoven f1.425. J. Haubrich, Swammerdamstr, 4 Eindhoven, Holland.

• Astronomical Telescope and accessories, as new. Cost £8 7s. 0d., £5 or offer. Findlay, Ardvreck, Crieff, Perthshire.

• Bayko No. 3, cost 58s. M.M.'s May 1962-Feb. 1965 (two missing) plus ten, July 1945 and older. Offers to Lambert, 248 Unthank Road, Norwich.

• 'Model Engineer' almost complete from Vol. 1. Some bound, best offer over £50. Sheldon, 114 Abingdon Rd., Oxford.

• Gibbons Stamp Monthly 1957-61, Air Pictorial 1960-61. Offers. Geoffrey Butler, 187 Moseley Road, Bilston, Staffs.

• Hornby 'OO' 3-rail Transformers, Rails, etc. Offers to Marchant, 25 Plaistow Grove, Bromley, Kent.

•27 M.M.'s from 1963. 15 Dinky's, Corgi's, including car and tank transporters. Meccano (12 V. A.C.) Power Unit. Meccano Outfits: No. 4, Gears B, Mechanisms, Embo Motor, 1,000 Stamps. Offers? Wintersgill, 3 Grange Rd., Bedford.

• Collection of Dinky Toys. S.A.E. Marlow, 7 Heild Close, Newton Aycliffe, Co. Durham.

• Meccano Set No. 6, Clockwork Motor No. 1, several extras £1 15s. 0d. Jackman, 58 Winchester Rd., Andover, Hants.

• 25 pieces Scalextric Rough Rubber Track, including Chicane Paddock. Giddy, 14 Fishpond Rd., Llanrumney, Cardiff.

• Hornby Dublo three-line—little used, comprising complete Eastern Regent set with rails, etc. One Duchess Montrose loco., one Bobo loco. One A.3 and one C.3 Transformer. Extra Track—six points, one diamond crossing, sixteen straights, ten large radius and four half curves. T.P.O. set, colour light signal, foot bridge, stations, buffers, level crossing, girder bridge, numerous extra coaches, etc. Cost new £58—will accept £30. Gilligan, 139 Brampton Road, Carlisle. Telephone 24808.

•Edward Beal's West Midland 3-m/m layout for sale, separate items greatly reduced, ask lists. S.A.E. E. Beal, Rait, Perth.

• Dublo 3-rail, good condition, under half price, send for list. M. Downes, 99 Church Lane, Deal, Kent.

• Lesney Matchbox Models, Dinky Toys, Hornby 'O' Gauge Clockwork Set, accessories, S.A.E. Details: Roddick, 46A Forsyth St., Greenock, Renfrewshire.

• Meccano Magazines, 1936-1952, inclusive. Offers? C. Read, 171 Chatsworth Rd., London, N.W.2.

M.M.'s 1944, 1945, 1951, 1959-62, 'Motor Sport,' 1962-4, 'Motor Racing,' 1963-64. From 1d. each. Also magnificent Meccano set, with electric motor, must go, £15. S.A.E. Details: Barrett, 'Craigwell,' Barnet Wood Rd., Bromley, Kent.

• Obsolete Dinky Military Vehicles and Aircraft. S.A.E. for lists. K. A. Wilson, Fieldview, Weeley Heath, Clacton-on-Sea.

• Triang OO/HO Train Set, cost over £20, many extras. Bargain at £6 10s. 0d. for quick sale. Good condition. 'Rawsonville', Eastfield Rd., Dumfries.

• A selection of model vehicles and miscellaneous 'M.M.'s.' Send S.A.E. for list. D. Lees, 77 Stamperland Ave., Clarkston, Glasgow.

• Boomerangs from Australia. Throw it and it returns to you. Used and made by Australian native aborigines. Boomerang instructions, photo posted £2 2s. 0d. W. O'Keefe, 16 Gipps Street, Waverley, Sydney, N.S.W., Australia.

• Photos trains, trams, buses, from all parts of Australia. Send one shilling or fifteen cents in stamps for list, to: Ross Lawler, 36 Hurworth Street, Bowen Hills, Brisbane, Queensland, Australia.

•129 copies Meccano Magazines, dating from 1943-1958. All copies in good condition. £7 the lot, including postage. P. H. Sharp, Esq., 14 Canfield Road, Brighton, 7, Sussex.

• Mechanisms outfit 28s., Magic Motor 8s., Instruction Book (7-8) 7s., Meccano No. 7, many other pieces £8, add 3s. postage to total. R. Stone, 10415 Laurentides, Montreal—39, Canada.

• Obsolete Meccano Manuals, Magazines, Literature and Sundries. 1913-30 period. List available, enclose international postal reply coupon. Kowal, 6615 South Bell, Chicago 60636, Illinois, U.S.A.

• Meccano Parts, pre-war, box of over 100 assorted girders, strips, plates, wheels, etc., also 80 nuts, bolts and chips. Total weight of parts 3 lb., packed in box. 16s. 9d. plus postage 3s. 3d. Twenty boxes available. Money refunded if not satisfied. Electric and clockwork motors also for sale, cheap Send S.A.E. for particulars. Appleby, 10 Palace Chambers, Bridge Street, London, S.W.1.

SWOPS

• Swop Hornby 2-rail Locomotive Barnstaple for Hornby 2-rail Locomotive Cardiff Castle. Apply: P. Peace, 1 Woodhayes Rd., Wednesfield 5, Staffs.

WANTS

• Early pre-war and early post-war English Dinky Toys models. Monsieur Jean-Jacques Moreaux, 18 Bis rue de Bellefond, Paris IX°, France.

• Wanted: Pre-war O Gauge Electric or Clockwork. Robinson, 3 Dennis Parade, London, N.14.

• Pre-war Mechanical Toys, especially trains, no objection to faults if repairable. Butler-Edwards, 1 Chesham Crescent, London, S.E.20.

• Pre-war Dinky Trains and Tootsietoy Cars. Gilmour, 16 Great Lawn, Ongar, Essex.

• Model Soldiers, metal only. State price, condition, etc. Aldcroft, 23 Mersey View, Waterloo, Liverpool 22.

• Obsolete Dinky Toys, etc. Highest prices, single or collections. Pinnock, 6 Stream Farm Close, Lower Bourne, Farnham, Surrey.

• English, Canadian and American coins wanted. Top prices for crowns and cased sets. £2 for 1953 set in plastic envelope. D. H. Woodberry, 104 Risca Rd., Rogerstone, Monmouthshire.

• Pre-war M.M.'s, particularly 1916-1922, bound copies, any years, manuals, the book 'Frank Hornby—the boy who made a million,' obsolete parts. Originals only. 50 Blundell Ave., Horley, Surrey.

• Matchbox Labels and Book Matches, all countries. Will swop. Latta, 20 Hamilton Rd., Gillingham, Kent.

• Britain's Model Soldiers, metal and plastic. Details please to: Worker, Alne, York.

• Hornby 'O Gauge' catalogues 'Book of Trains.' Locos 'Eton,' 'Hunt' or 'B/L Enterprise.' Pre-war frog 'Hart,' 'Pussmoth.' Private. 'Turnpike,' Trow, Sidmouth.

• Wanted: Recently deleted Dinky Army Vehicles, particularly trucks. Paintwork irrelevant. Details airmail please to: M. Dutton, 279 High St., Carterton, New Zealand.

• Pre-war Dinky Toy Vans, Buses, Lorries, Cars, 22F Tank, 26-rail Car, 27 Tram, etc. Top prices paid. Bentley, 117 Moor Lane, Netherton, Huddersfield.

• M.M.'s, must be excellent condition, all years up to 1960. State price required. Allen, 1A Newburgh Street, Winchester, Hants.

• Geared Roller Bearing 167 and Channel Segments 119, good condition. State price. Black, 17 Strandburn Drive, Sydenham, Belfast 4, Northern Ireland.

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STAMPS news

by F.E.Metcalfe

Churchill Stamp

WE have already heard a great deal about Sir Winston Churchill's life as an author, artist and statesman, but the large number of stamps printed in his honour have still to be issued. So far, we have had sets for Great Britain, Australia, U.S.A., etc., but the omnibus issues for the colonies, have yet to appear and as these consist of enough stamps to fill a small album, the cost is making many collectors wonder if they can afford them. Also, if they do muster the cash, many are wondering if the stamps will be worth saving from an investment point of view.

The short answer to this problem is, that if you buy at current rates, one cannot go far wrong. But if any of the stamps are in short supply and prices rise steeply, my advice to collectors is to leave them alone. There will be a lot of excitement when the new stamps are released, which will probably force prices up, but this will almost certainly be a temporary increase. As a matter of fact, I would never suggest collecting stamps purely and simply as an investment, although that angle cannot be ignored, considering how much money is spent on stamps.

Designs

With so many new British stamps appearing, even non-collectors are discussing the designs and it must be admitted that opinions are generally unfavourable. As a matter of fact, I did not hear a single good word for the Great Britain Churchill stamps. Perhaps they were too orthodox, but if that was the reason, what about the set which Holland issued in May in commemoration of the Resistance during World War II?

One of these stamps, shown below, has the official description "The foreground shows the monument *Killed in Action* and the background, the monument *Destroyed Town*". Actually, I think these designs are wonderful, but who agrees with me? Three people I have spoken to do not.

"U.N." Issues

If the stamps of Cook Islands are not widely collected, the same cannot be said about the issues of the United Nations. These are collected everywhere and particularly so in the U.S.A., where letters bearing 'U.N.' stamps can be posted in special 'U.N.' post boxes in New York. As a matter of fact, I have quite a nice little collection of used, which came on letters from New York and what fine designs!

Artists from all over the world have illustrated every conceivable subject connected with the work of the 'U.N.' In fact, there are so many, I find it difficult to select a stamp to illustrate these comments. Perhaps the one issued to mark the centenary of the 'I.T.U.' is the most suitable.

Solar Eclipse

Who collects the stamps of Cook Islands, that far away little dependency of New Zealand? Quite a few people I would imagine and they had quite a treat on May 31st when a Cook Island stamp was issued to commemorate the Solar Eclipse which could be observed best from the island in the group named Manuae.

Cook Island stamps are quite attractive as a group, but New Zealand has not adopted the policy which Australia is finding so profitable with her dependencies, which is to regularly bring out a number of well-designed stamps. Perhaps this interesting "Solar" stamp will change things and more collectors will consider saving stamps from the Cook Islands and its sister dependencies, Niue and Tokalau.

G.B. Dates

Just in case you do not have them, here is a list of the rest of the British stamp releases for 1965. July 1st—Salvation Army Centenary 3d. and 1s. 0d. (Don't overlook that the U.S.A. is also marking this event with a set of stamps.) August 12th—J. Lister Centenary 4d. and 1s. 0d. September 1st—Commonwealth Arts Festival 6d. and 1s. 6d. September 13th—25th Anniversary of the Battle of Britain 4d., 9d. and 1s. 3d. October 25th—20th Anniversary United Nations 3d., 1s. 3d. There will also be a set, yet to be dated, to mark the new Post Office tower. Also, to start collecting in 1966, a pair of stamps are being issued to honour the great Bobby Burns.

Tip of the Month

The British Commonwealth is certainly undergoing a period of change and nothing illustrates this more than the stamps which are appearing with the new names. The latest issue is from Aden. The stamps of that territory have been very popular, but all have now been replaced by an issue with the title: 'South Arabian Federation'. However, I have a feeling that this set of stamps will not have a long life and it is my tip of the month, that it's well worth buying these issues at current rates.

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Sales/Wants/Swops

Strike out which is not applicable)

1	13
2	14
3	15
4	16
5	17
6	18
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9	21
10	22
11	23
12	24

If you require further words please continue on another sheet of paper.

READER ENQUIRY SERVICE (August)

A list of advertisements in this issue of MECCANO MAGAZINE is given below. If you would like further information on any of the products and services advertised, please tick in the appropriate space, fill in the coupon and return to us.

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- ☐ Malins
- ☐ National Model Show
- ☐ Morley
- ☐ Morritt
- ☐ Meccano
- ☐ Dinky Toys
- ☐ Plastic Meccano
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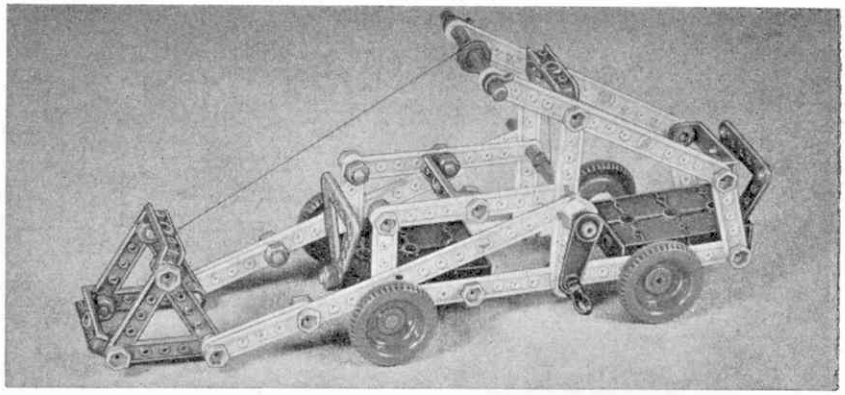

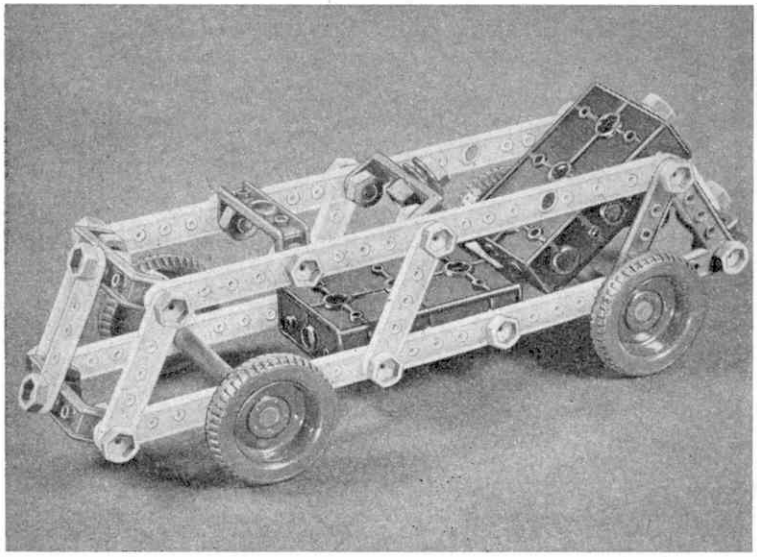

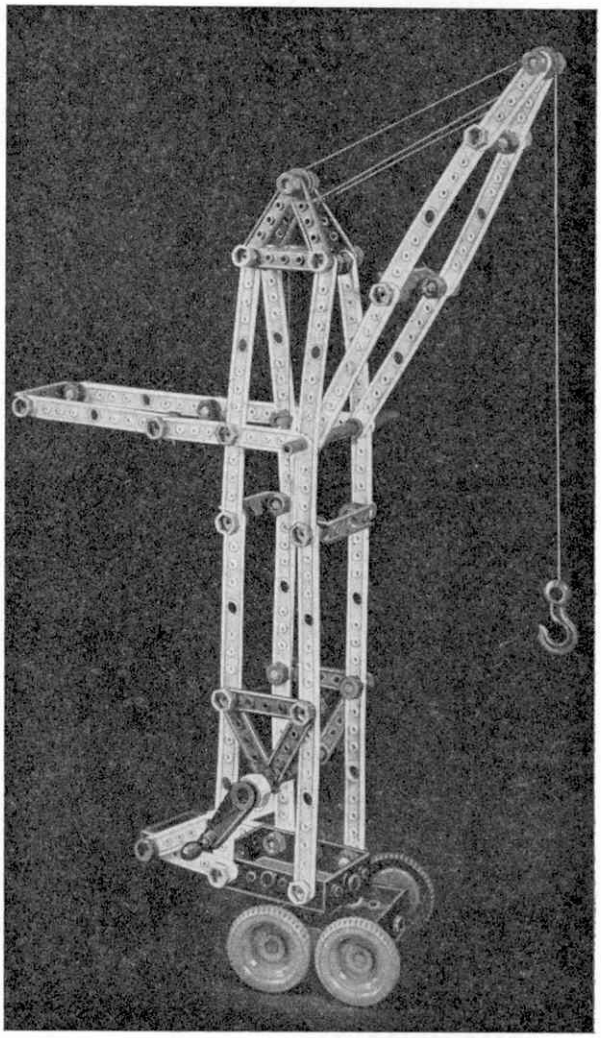

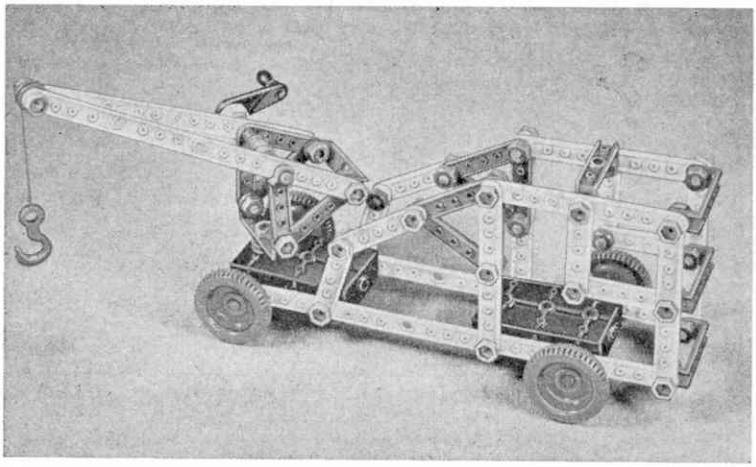

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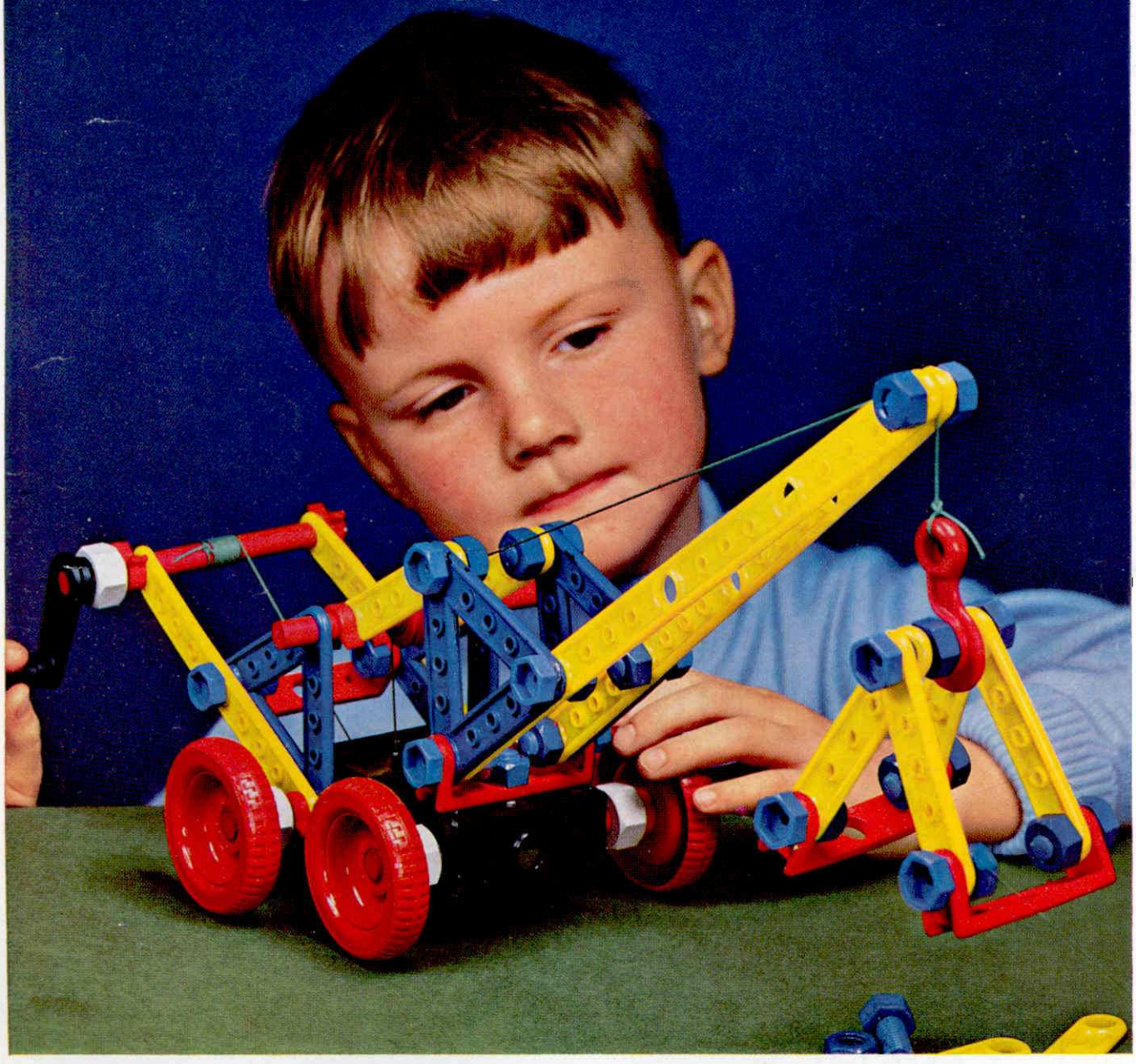

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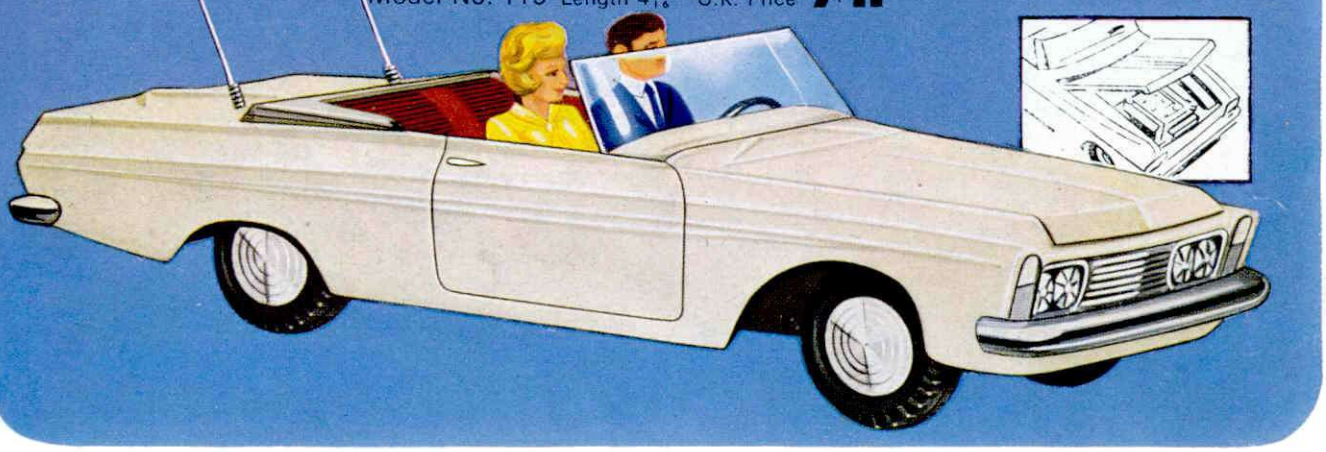
Model No. 115 Length 4 13/16" U.K. Price **7/11**



and the great

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Model No. 279
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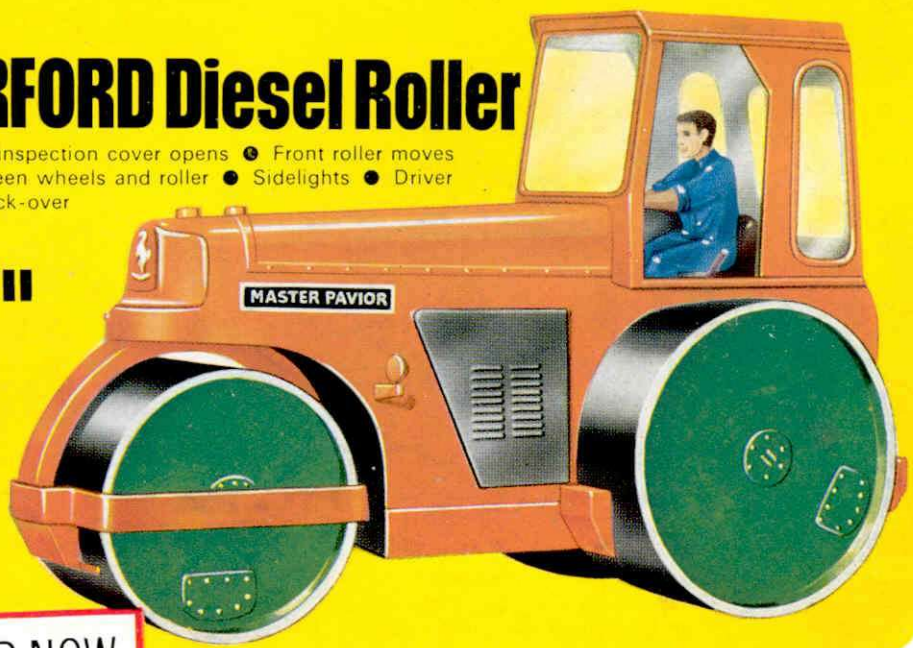

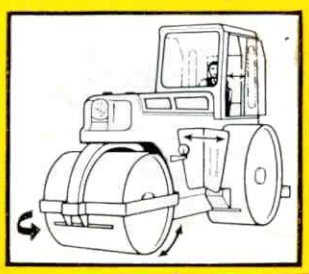

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