50 Electronic Kits, Free! See Inside!

meccano magazine

February

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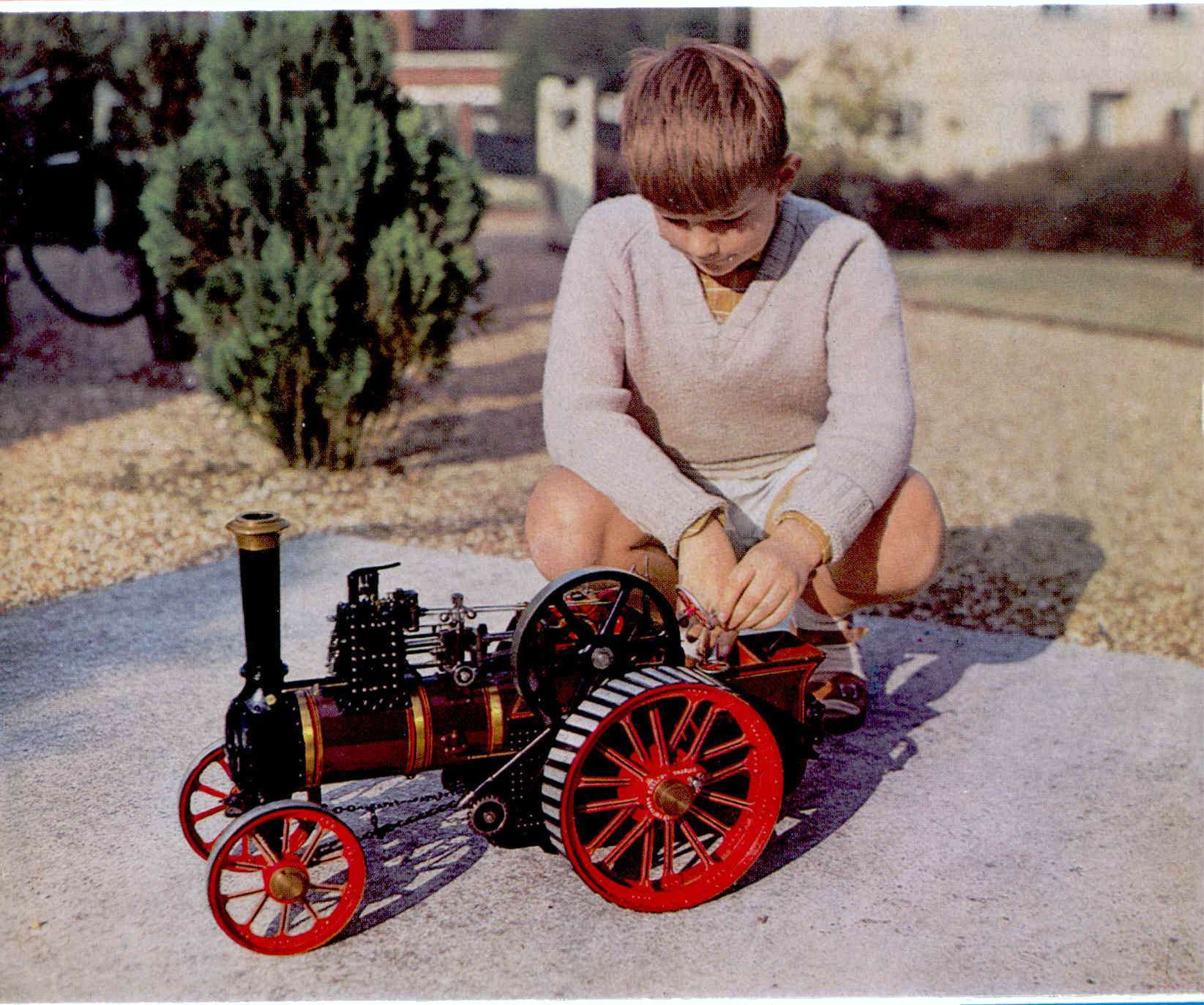


the practical boy's hobbies magazine

1965

IN THIS ISSUE

- Build a Jet Car! Plans on page 14
- Radio Controlled Boat Details

BOYS!

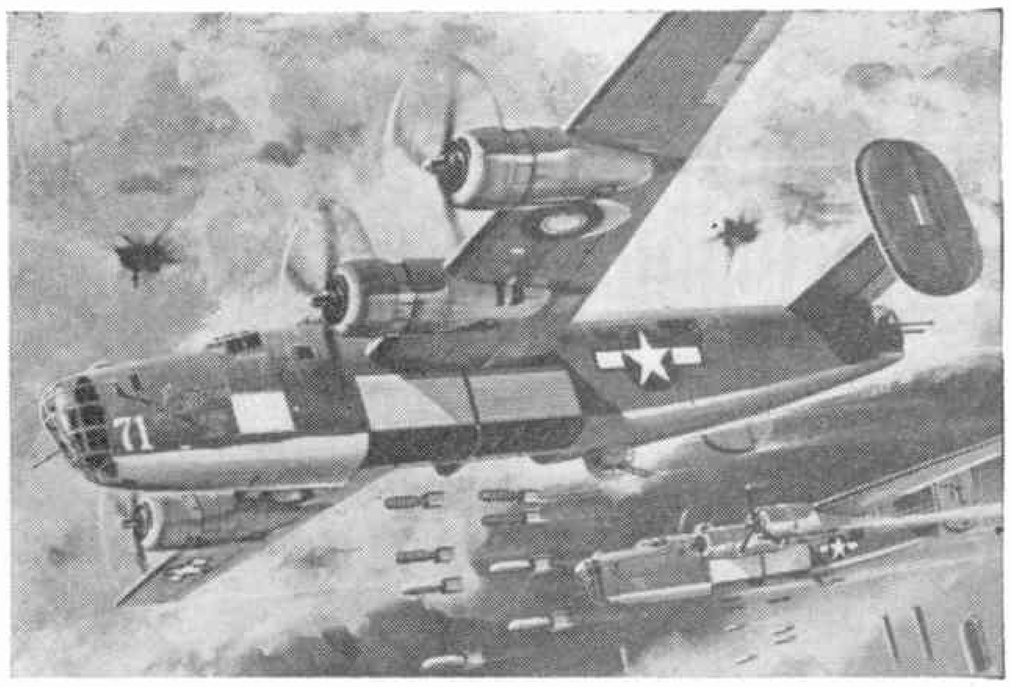
NEW LOOK **MECCANO** brings models to life!

new realism! new colours! new super sets!

4 'NEW RELEASES' are flying high in the Kit Parade

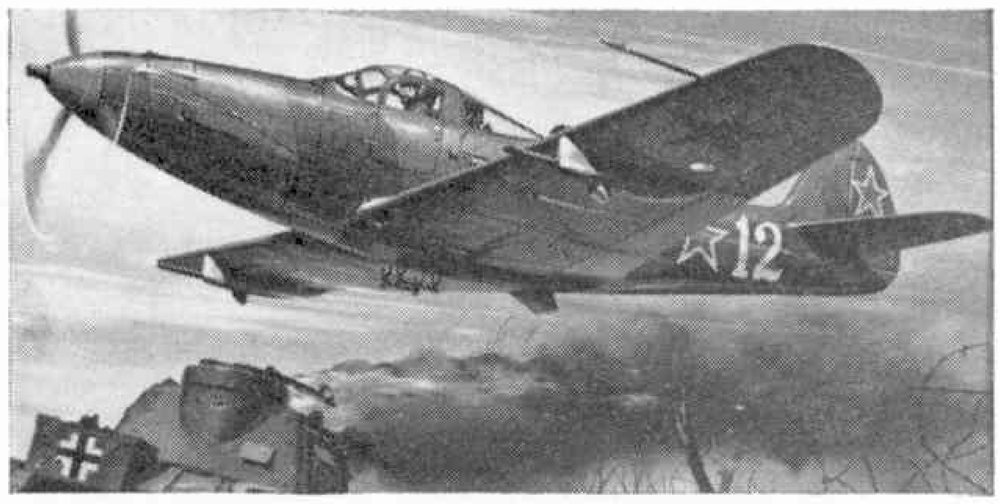
A REALLY SUPER LIBERATOR KIT 12/6

This famous bomber of World War II is just the job for keen modellers. In authentic 1/72 scale detail, this superb model has an 18¾″ wingspan. It's a big one! It's got movable control surfaces, wheels and propellers; rotating gun turrets; retractable undercarriages. And clear canopies with 4 crew figures.

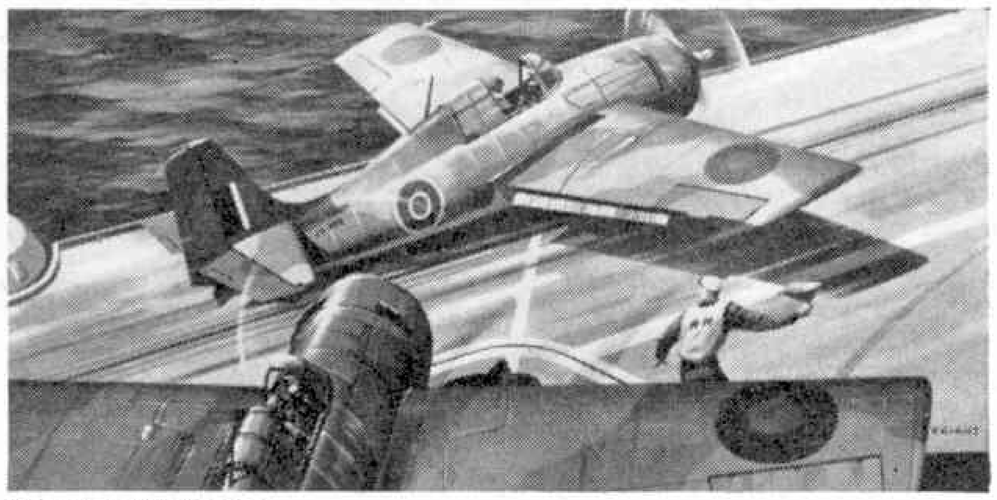


3 MORE WORLD WAR II FIGHTERS 2/11 EACH

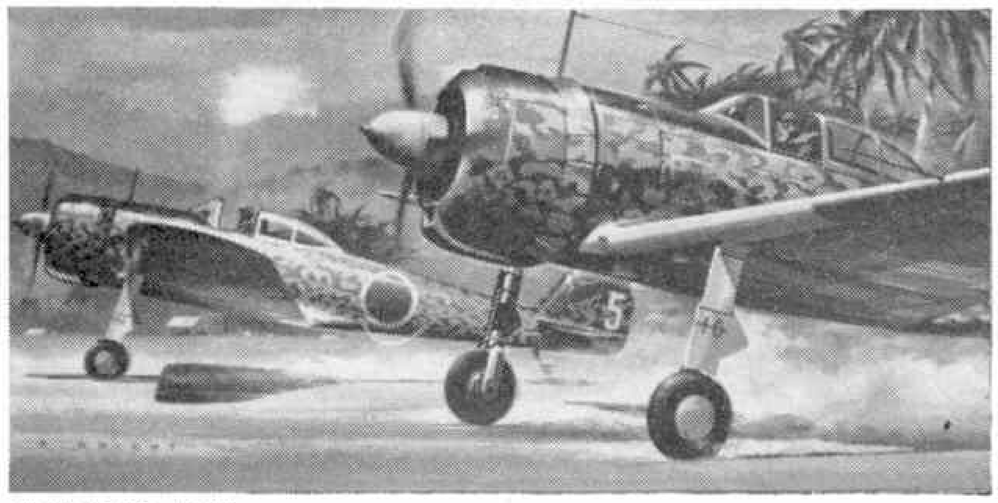
Two American and one Japanese. The new models are the Grumman Wildcat, Bell Airacobra and the Hayabusa Ki 43 (Oscar). These exciting little kits feature removable engine cowlings, detailed engines, movable propellers and wheels, and pilot figures under the clear canopies.



BELL AIRACOBRA



GRUMMAN WILDCAT



HAYABUSA KI 43

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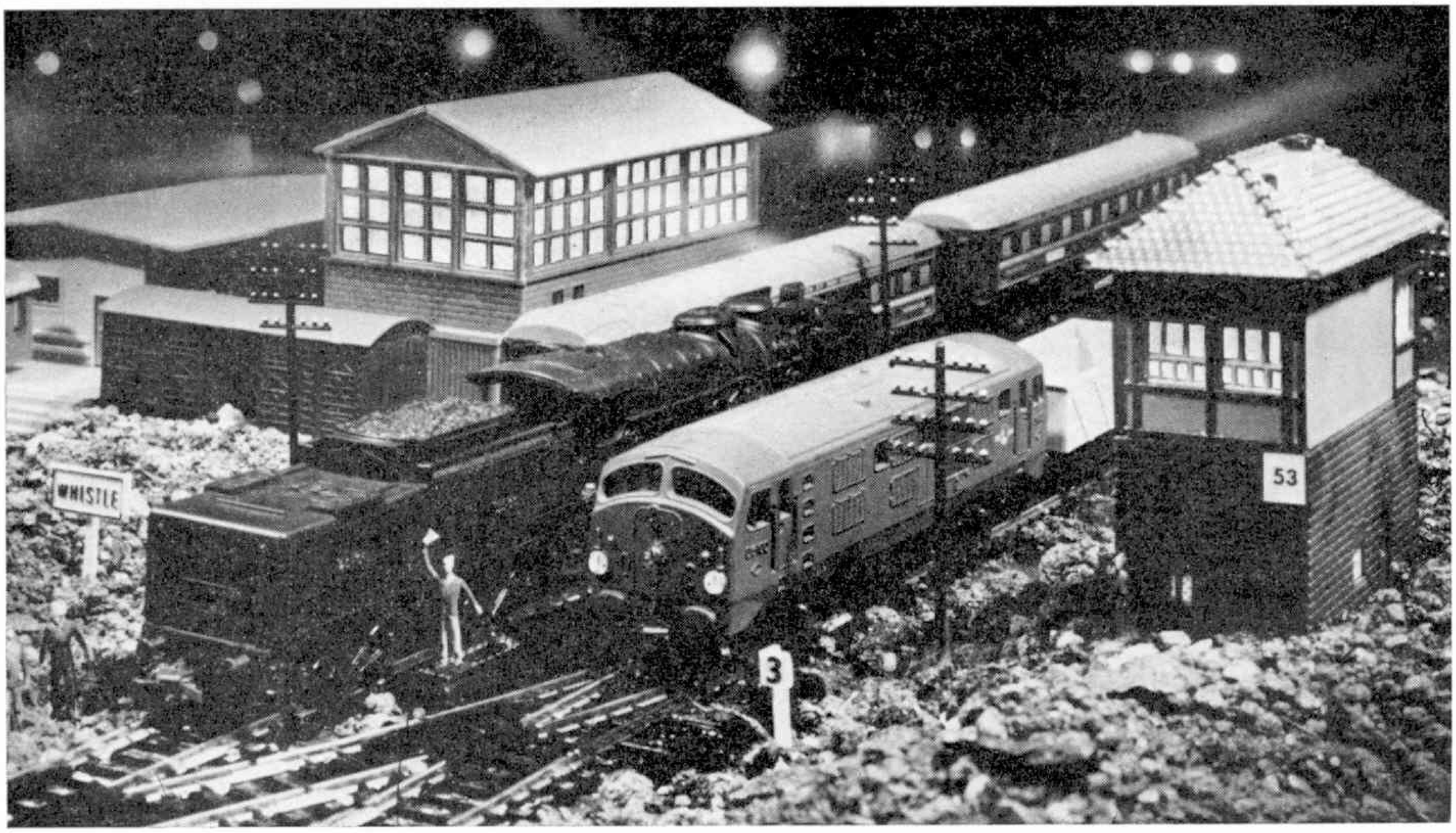

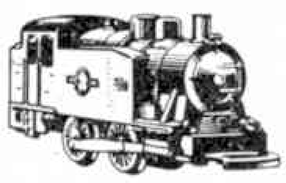

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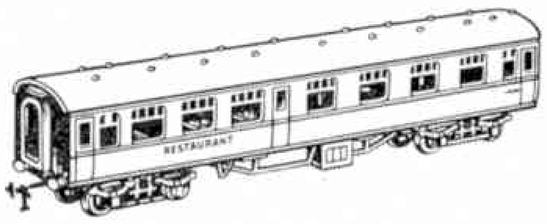

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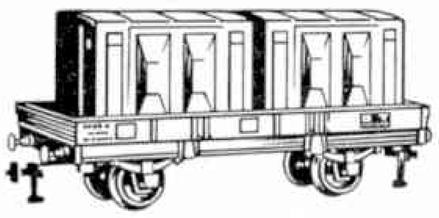

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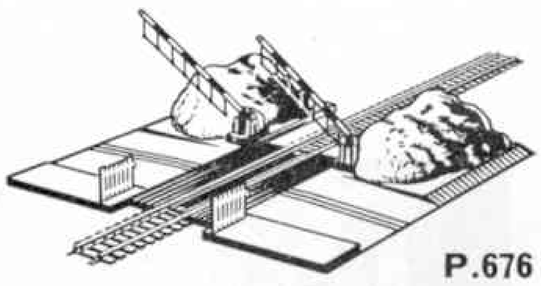

P.676

Here are just a few examples from the Playcraft Railways range :
P.831 *Tank Loco 35/-*
P.345 *B.R. Restaurant/Kitchen Car 9/-*
P.642 *Cement Wagon 5/-*
P.676 *Power operated Level Crossing 25/11*

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meccano magazine
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Editor Geoffrey Byrom; **Assistant Editor** Charles Deane; **Advertisement Manager** A. D. B. Johnson; **Head Office** Thomas Skinner & Co. (Publishers) Ltd., St. Alphage House, Fore Street, London, E.C.2. Phone: NATional 4050. Grams: Desollar, London, E.C.2; **New York** 111 Broadway, New York City, U.S.A.; **Ottawa** Suite 35, 75 Sparks Street, Ottawa, Ontario. © *Meccano Limited 1965*

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February 1965 · Vol. 50 · No. 2 · Monthly

Enter our Competition

HOW would you like to build your own transistor radio, burglar alarm, morse code buzzer or any one of over twenty exciting, useful electronic models? You would? Well, if you look on page 13 of this issue you will find a super, easy-to-enter competition the prizes for which are FIFTY Philips Electronic Kits!

The competition is absolutely FREE and is open to all readers, up to and including the age of sixteen, resident in the United Kingdom. Philips Electronic Kits make it easy for anybody to understand and build their own electrical equipment. There is no complicated soldering of components and full, easy-build wiring card instructions are included with each kit. Also, the Philips kits are completely safe as no high voltages are required to operate the instruments—all you need are torch batteries!

There are eight major awards in the competition which, apart from providing Electronic Kits as prizes, also gives the winners an opportunity of visiting one of Philips factories to see how a modern electrical factory operates. We are giving eight 1st prizes in order that no matter what your age, six or sixteen, you have the opportunity of winning. Eight 2nd prizes must also be won, as well as a host of runner-up awards.

Don't delay—turn to page 13 and enter the competition right away! Just imagine, a brand-new electronics hobby can be yours in the form of a Philips Electronic Kit, just by filling in your name and address and entering this simple competition!

M.M. Reader wins bicycle!

While on the subject of competitions, you may be interested to know that in the recent Royal Enfield Cycle competition, which appeared in Meccano Magazine, one of the winners of a brand-new bicycle was Meccano Magazine reader, Trevor Hitchman.

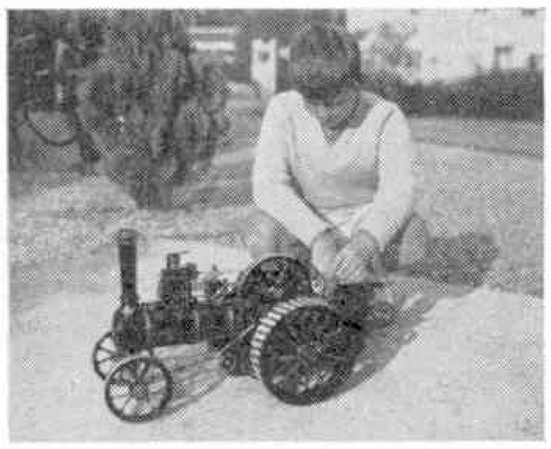
On the right is a photo of Trevor being presented with his prize by Mr. Brian Crow of Royal Enfield and Mr. R. Norton, a cycle dealer in Trevor's home town of Leamington Spa.

Congratulations, Trevor and we look forward to receiving your entry in our Philips competition.

The Editor

P.S. Last month, we published the January issue as Vol. 49, No. 11. In fact, this should have been Vol. 50, No. 1. Sorry for the slip.

Trevor Hitchman, a Meccano Magazine reader being presented with his Royal Enfield bicycle.



Front Cover: *Everything works on this $\frac{1}{8}$th scale "Burrell" Traction Engine built by Mr. E. W. Balson of Upper Bassett, Southampton. It is coal-fired and operates in the same way as the actual engine built in 1901. The model took just over three years to build and was completed in October 1952.*

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FIRST OF THE SWING-WINGS

Designed for the '70s Variable-sweep winged aircraft-America's fighters of the future....

MANY experts said that the General Dynamics and Grumman design teams were attempting the impossible when they started work on the F-111 fighter in November 1962. To try to produce one design that would meet the needs of both the U.S. Air Force and Navy was difficult enough. This particular aeroplane also had to fly at two-and-a-half times the speed of sound (1,650 m.p.h.) yet have low enough take-off and landing speeds to operate in places where there are no proper runways.

It had to be manoeuvrable enough to defend U.S. naval forces against attack by supersonic bombers, yet carry several times the weapon load and fly twice as far as any previous fighter-bomber. In fact, although officially a fighter, it had to pack the fire-power of five Flying Fortress bombers of World War II.

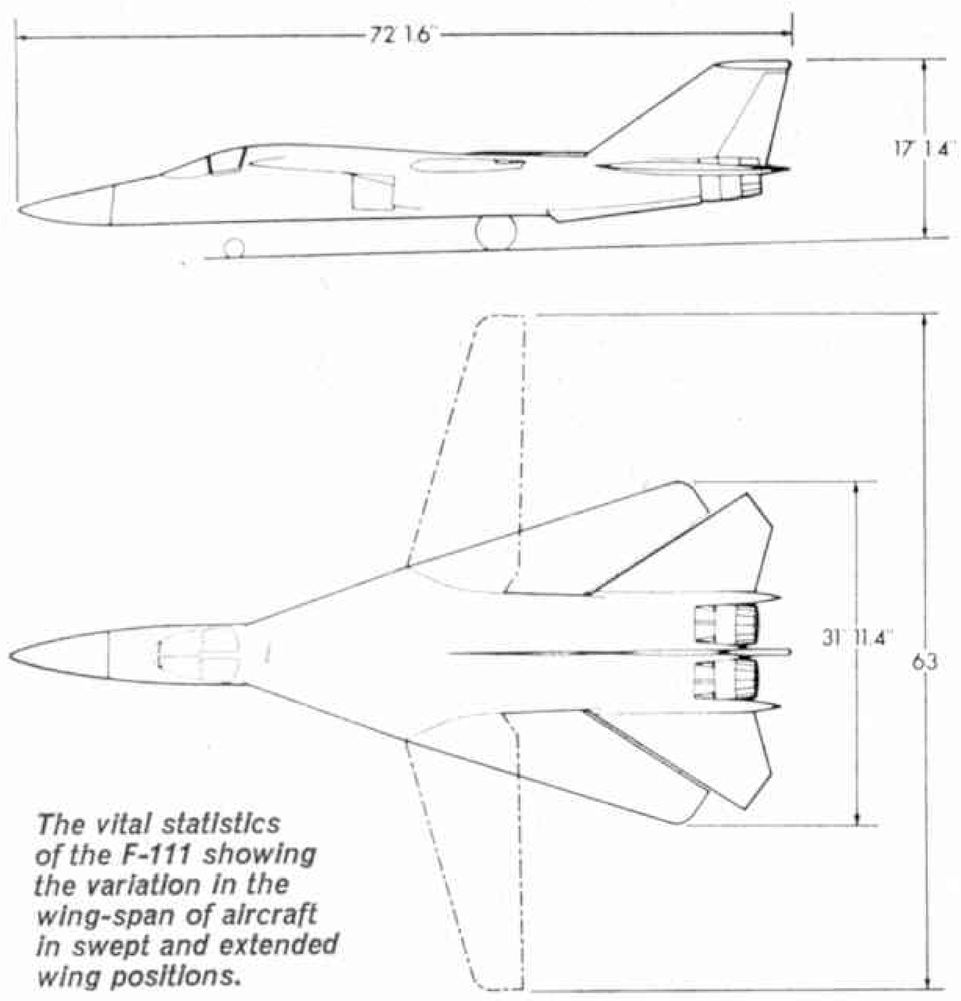
The task would have been impossible if the designers had not been able to make use of one of the brightest ideas in modern flying—the variable-sweep wing, described usually in the newspapers as the 'swing-wing'.

The Germans realised the value of such a wing 20 years ago and planned to try it out on the Messerschmitt P.1101 jet-fighter; but World War II ended before they could do so. The almost-completed prototype of the P.1101 was taken across the Atlantic, together with Messerschmitt's design drawings and eventually two aircraft with swing-wings were built in America.

One was the Bell X-5 research aircraft, based on the P.1101, which flew for the first time in June 1951. The other was the Grumman Jaguar naval fighter of 1953. Neither aircraft proved an outstanding success and it was considered by most people that the potential advantages of a swing-wing were more than offset by its added weight and complexity.

Only in England did variable-sweep research make any real progress, under the leadership of Dr. Barnes Wallis, famous as the inventor of the bombs used by the "Dam-Busters" during the war. A full-scale test rig was built by the British Aircraft Corporation to develop the special hinge bearings that would be needed by such a wing and design studies for various types of aircraft were produced, under the family name of 'Swallow'. Unfortunately, the Government would not find the money to build any of them and it was left to America to show what the swing-wing will do.

An unswept wing makes an aircraft easier to handle at low speeds than a swept wing. So, for take-off and landing, the wings of the F-111 will be extended sideways until, in the F-111A version for the U.S.A.F., they span 63 ft. In



The vital statistics of the F-111 showing the variation in the wing-span of aircraft in swept and extended wing positions.

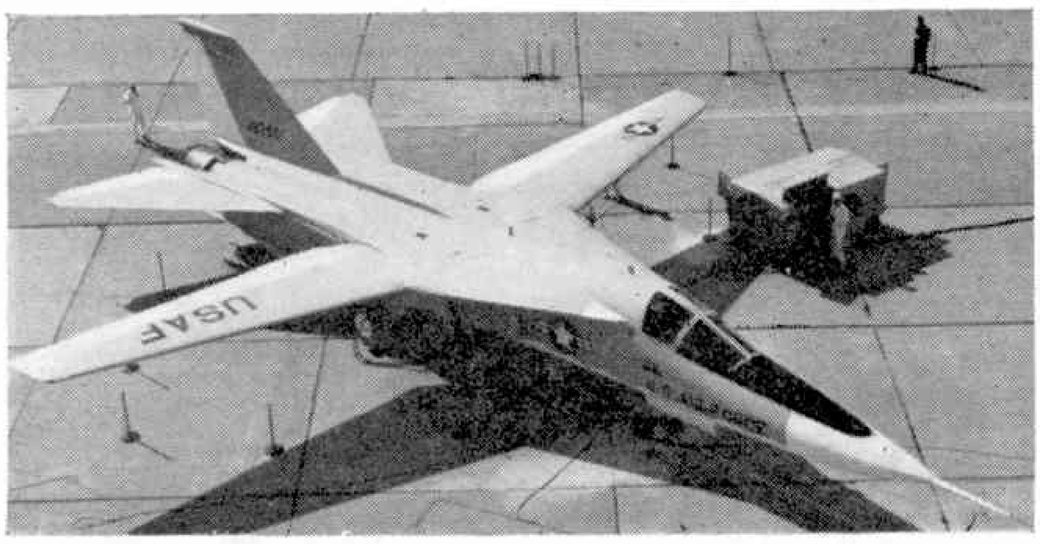
the air, the wings will be swept back until their trailing-edges are close to the leading-edges of the tailplane, giving a kind of sharply-swept delta wing shape, with a span of only 31 ft. 11½ in. Such a shape is ideal for high-speed flight and the F-111 is expected to be able to fly faster than sound at very low altitudes as well as above 60,000 ft.

Both the U.S.A.F.'s F-111A and the U.S. Navy's F-111B are side-by-side two-seaters, powered by two 19,000 lb. thrust Pratt & Whitney TF30 turbofan engines with reheat. The main differences are that the Naval version has a slightly larger wing-span and is intended primarily as an interceptor armed with Phoenix air-to-air missiles, whereas the F-111A will be used mainly in the attack role. No light-weight, the F-111A will have a maximum take-off weight of over 31 tons, which is about the same as a fully-loaded Lancaster four-engined bomber of the last war.

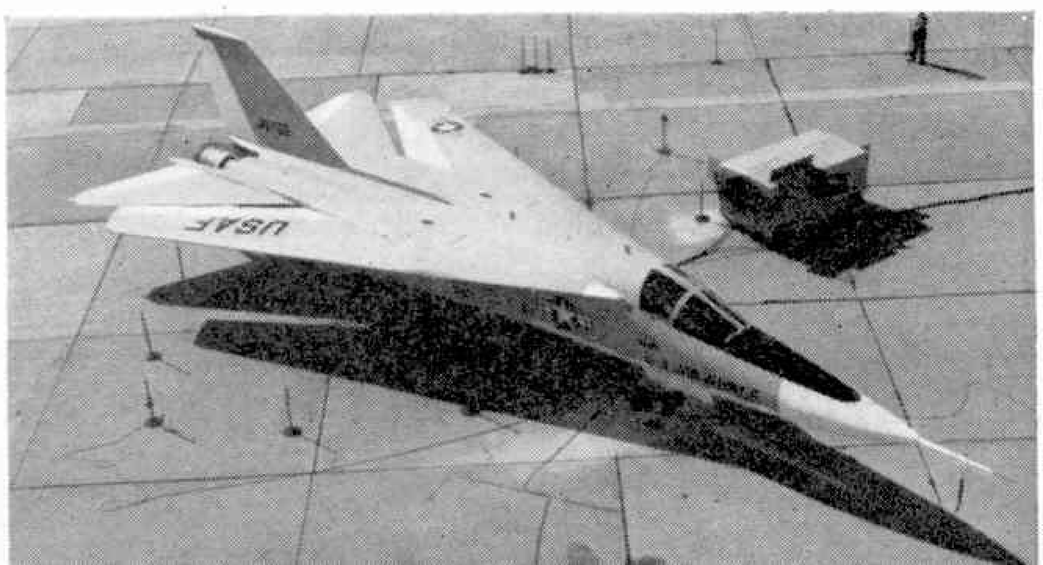
It is too early to claim that the F-111 will be a world-beater, but it certainly looks like one. The first of the development batch of 18 F-111A's currently on order was completed in October 1964 and should have flown by the time this issue of the '*M.M.*' is published. It will be followed soon by the first of five Naval F-111B's. If flight tests go well, the production programme is expected to surpass that for any post-war American combat aircraft in terms of cost and the number of aircraft involved.

The Australians do not seem to doubt that this first production-type swing-wing aircraft will be successful, as they have already ordered 24 to equip the R.A.A.F.'s attack force in the late 1960's. Nor are they alone in putting their faith in variable-sweep back, because Boeing's design for a 250-seat supersonic airliner is also based on the use of a huge swing-wing to combine an 1,800 m.p.h. cruising speed with take-off and landing speeds lower than those for many subsonic jet transports of the present day.

John W. R. Taylor



(above) The prototype aircraft wings extended for take-off.
(below) Wings are swept as shown for high-speed, supersonic flight.



Helicopter on the line

BEAR-TRAPS are the answer devised by Fairey Canada Ltd., to the Royal Canadian Navy's problem of how to land a 10-ton helicopter on the narrow, heaving deck of a destroyer in gale-force conditions.

Known officially as a helicopter haul-down system, the Bear-Trap is to be fitted initially to the St. Laurent class of destroyer escorts, each of which is being equipped with a platform to carry a Sikorsky CHSS-2 anti-submarine helicopter.

In action, the helicopter flies over the ship and lowers a line which a deck crewman retrieves and attaches to a haul-down cable within the Bear-Trap. The main cable is then hoisted up by a winch in the helicopter and fastened to the airframe, after which a winch in the ship hauls the helicopter down. As soon as the helicopter touches down, the jaws of the Bear-Trap snap shut and anchor it to the deck. A further set of cables beneath the ship's deck finally winch the Bear-Trap and helicopter into the hangar forward of the platform, straightening the aircraft automatically if it has landed off-centre.

The Fairey Bear-Trap is the only device in the world which has enabled helicopters as big as the CHSS-2 to land on small escort vessels when the ships are rolling through 30 degrees and pitching 8 degrees, with the flying platform heaving up and down 20 ft. a second, in a 50 m.p.h. gale.

Veteran in Flight

Mrs. Helen Rivet of Chicago celebrated her 80th birthday by flying to Mombasa, in Africa, on a B.O.A.C. safari tour. When presented with a cake wishing her "a happy birthday" in Swahili, sprightly Mrs. Rivet commented that there was nothing very remarkable about going on an African safari at her age. It seems she had celebrated her 70th birthday by shooting the rapids of the Green River in a raft.

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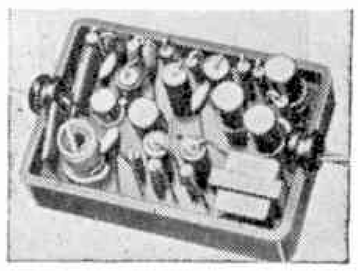

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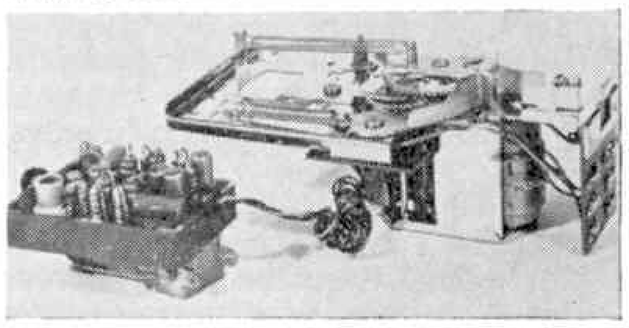

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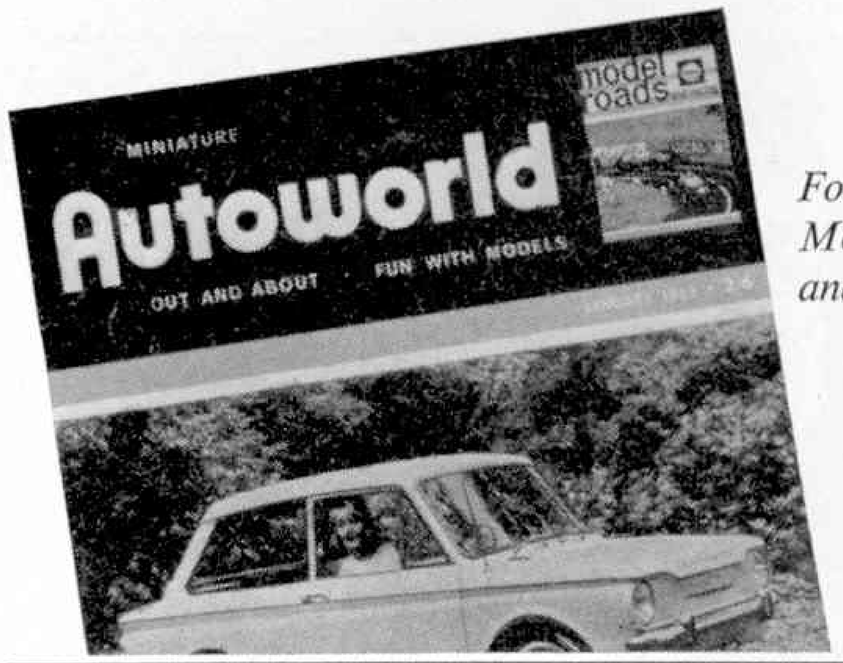

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mailbag

Anything interesting . . . write about it to the editor

SCHOOL ON A HILL—One of the most enthusiastic readers of Meccano Magazine, David Gallagher, is at school on a hill station in South India and each month, the magazine has to climb nearly 8,000 ft. to reach him. It does so in the little hill train which ascends the 8,000 ft. in a distance of about 30 miles. The photograph shows one of the Swiss-made engines, which are specially constructed for this job, with a central toothed wheel which engages a ratchet rail.

The train pushes the carriage over many bridges on the route which winds up through the hills. For, both going up and down, the engine is always at the lower end of the train.—*Rev. E. W. Gallagher, Andhra Pradesh, India.*

LEARN TO FLY—AT THE R.A.F'S EXPENSE! — Thousands of the young men who plan careers as airline pilots have to give up the idea because they just cannot afford flying lessons. But there is a way to learn and, even though it is an R.A.F. scheme, it does not mean pilots have to sign on when they have qualified.

In fact, only two-fifths of the 4,000 young men to gain a private pilot's licence through the Flying Scholarship Scheme have later joined the Royal Air Force.

The vast majority to qualify since the scheme was introduced in 1950, have used their training to get jobs as aircrew with the world's ever-increasing number of commercial airlines.

The R.A.F. does expect something for its troubles, though. To start with, you have to be a member of the Air Training Corps holding a proficiency certificate, plus the G.C.E. in three subjects, including English.

Even then, the would-be pilot has to pass an interview, medical and initiative tests before he can be considered for one of the 350 Flying Scholarships awarded every year.

Those who do satisfy the selection committee are packed off to the various private flying clubs throughout the country for a period of 28 days continuous training. During this time they spend a total of 30 hours in the air in planes ranging from Chipmunks to Pipers—and, of course, have the chance to fly solo.

All this costs exactly nothing, although a charge of five shillings a day is made to help cover board and lodging at the club. Even then, £7 for a Ministry of Aviation pilot's licence is quite a bargain.

Cadets who cannot attend the full 28-day course do fourteen days continuous training and complete the course during the following weekends.

By accepting a Flying Scholarship, the potential pilot is under no obligation to join the R.A.F. At the same time, the R.A.F. does not guarantee a place in the aircrew for those who feel they would like to repay their training costs by serving their country.

For boys who do want to fly with the R.A.F., however, but have no A.T.C. unit at their schools, there is a special scheme which started only two years ago. Under this, an additional 100 awards are made annually to boys genuinely interested in joining the R.A.F. Applicants for these Special Flying Awards need a minimum of five 'O' level G.C.E. passes, including English Language and Mathematics, compared with three under the Flying Scholarship Scheme.

But whether your ambition is to fly with the R.A.F. or pilot a commercial passenger plane, the training is certainly worthwhile.—*Keith Sharp, Radford Road, Coventry.*

A LONG COUNT-DOWN!—Strangely prophetic of the future, this rocket-like structure has stood on its launching pad, a hill on the Isle of Wight, for 650 years! A 14th century lighthouse, it stands on St. Catherine's Down 781 feet above the dangerous coastline at Blackgang Chine, the haunt of smugglers and wreckers through the centuries. How it came to be built makes strange reading.

One stormy night in A.D.1314 a ship was wrecked here and the cargo of wine was sold by the survivors to the islanders. Unfortunately, the wine was intended for a religious house in France and a complaint to Rome resulted in an islander, Walter de Godeton, being charged with receiving. He was sentenced to build this lighthouse to warn shipping and also an oratory for a priest to tend the light and say prayers for those in peril. The light shone until the Reformation when the monk was deposed and there was no warning of this terrible coast until the Trinity Board rekindled it in 1785. Today, a modern lighthouse stands on the rocks below.—*Frank Rodgers, Allestree, Derby.*

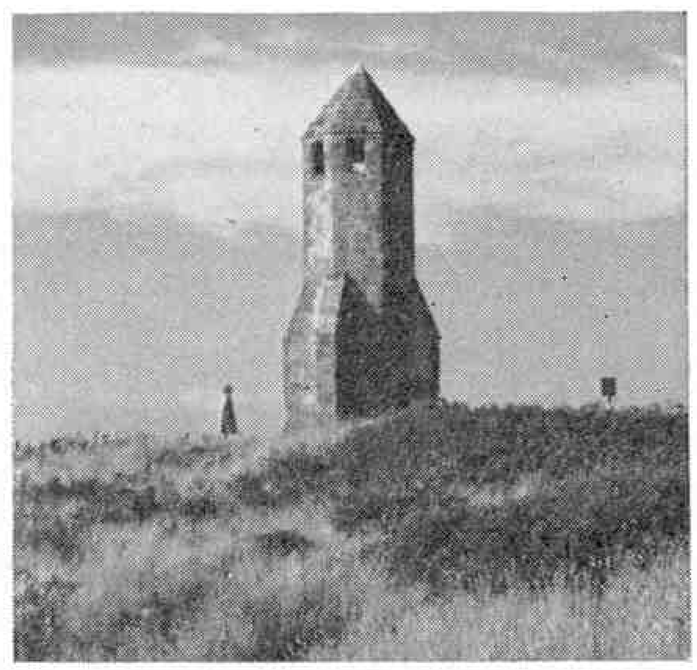
HISTORIC RUINS—Several important discoveries have been made at the site of the old South Gate at Exeter, Devon. Close beside the pavement in South Street, the square foundations of an internal Roman gate tower have been laid bare. As the position is some distance from that of the medieval South Gate, it has been suggested that the city might have been entered by a double arch. Behind this, the massive Roman Wall is now fully exposed. An interesting feature, seen in the background of the photograph, is the remains of old bakers' ovens built in the back of the wall in more recent history.

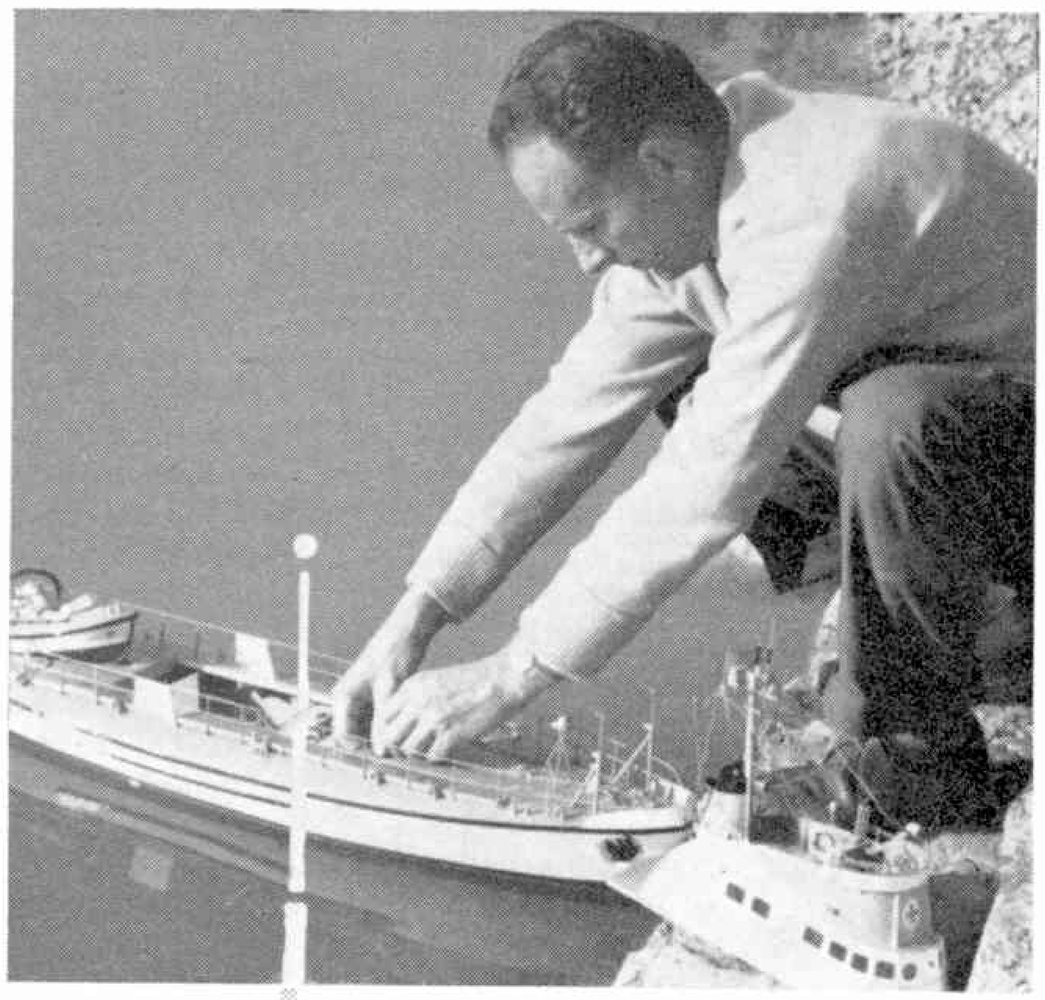
Other finds include traces of metal-working furnaces, pieces of pottery and an early Roman road.

In order to preserve the wall and tower remains, plans for shops and flats in the immediate area have been revised. Change of plans means spending about £400; the wall would be adequately revealed to the public and dealing with it would cost £750. —*Cyril E. Wrayford, Bovey Tracey, Devon.*

Above: Old Roman ruins uncovered at Exeter

Below: Sentenced to build a lighthouse.





RADIO CONTROL

PART TWO

F.C.Judd, A.Inst.E. deals with constructing a radio-controlled boat . . .

THIS month I will deal first with building a model launch suitable for radio control and then go on to describe suitable driving and steering equipment. Why a model launch and not an aircraft? Well, in the first place, a model aircraft requires a good deal of 'flying' know-how and experience with radio control. Secondly, if you get a model aircraft up to a hundred feet or so and something goes wrong, you are likely to lose the aircraft completely or, if it crashes out of control, end up with a smashed model and probably radio receiver as well.

With a model boat there is little or no risk of losing it on the local boating pool if the radio stops working, or the propeller becomes fouled with weed. You might have to wait patiently for it to drift back, but there is, however, a very simple way of recovering a boat from the middle of a pond without waiting or paddling in for it. This I will explain when we get around to actually launching a radio-controlled boat.

Building from a kit of parts

Really keen and experienced modellers usually like to build their boats or aircraft from plans and the raw materials; some even design their own models. This is rather doing things the hard way but, on the other hand, can provide a good deal of interest and satisfaction. Nowadays there are excellent kits of parts for model aircraft, launches and ships, etc., available and of these I have chosen the Graupner kit for building a fine model of the Chris Craft Constellation.

The launch is 24½ inches long with a beam of 8 inches. (The original is a 40 foot craft with twin engines of 550 h.p. and capable of 40 knots.) My version of the finished model, built from the kit, is shown in Fig. 1. Most of the essential fittings are supplied with the kit, but I have also included such details as fend-offs (the small rope buffers that hang at the side), navigation lights and lifebelts, etc. The model is finished in blue and white with red on the underside of the hull.

There is no need here to describe the actual making of the model. Full plans and most concise instructions are included with the kit, which contains the necessary glue and decorations. The hull is prefabricated, but do pay heed to the warning about using non-cellulose glue and paint. The hull and the upper structure must be finished with oil-bound primer and paint only. Tools required—a fretsaw and a modelling knife.

The Driving Gear

Before I deal with the radio control equipment, there is the question of a suitable motor for the propeller. Any reasonably powerful electric motor will run the model at quite a good speed, so there is no need to use a diesel engine as one might for a model aircraft. The model shown in Fig. 1 was fitted with a Monoperm 2000 electric motor attached to what is called an inboard-outboard drive which also steers the boat. The complete motor and propeller assembly is called a Bongo 2. The propeller is driven by a right-angled gear system and is located within a circular integrated rudder. This part of the assembly can be turned through an arc of about 120 degrees, which is more than sufficient to steer the boat hard to port or starboard (left or right).

The photograph, Fig. 2, shows the location of the Bongo drive. The hole for the shaft is taken through the bottom of the hull about two inches in from the stern, as in Fig. 3. It is advisable to coat the shaft with a little of the special plastic glue supplied with the kit. No water must be allowed to seep up the outside of the shaft. It is also important to apply Vaseline to the inner shaft, the rotating part, for the same reason. The hole should be cut and the Bongo assembly mounted and fixed before any other part of the kit assembly is carried out.

Steering and Engine Control

The photograph of Fig. 2 also shows the location of the 'Kinematic' steering and engine control mechanism. The coupling arm between the Kinematic and the Bongo can be clearly seen. The long extension arm (A) on the Kinematic was later found to be unnecessary. A ten to fifteen degree movement either side of neutral on the Bongo rudder is quite sufficient to give full steering control, i.e., hard to port or starboard. The boat is quite fast when under way and produces a very realistic bow wave.

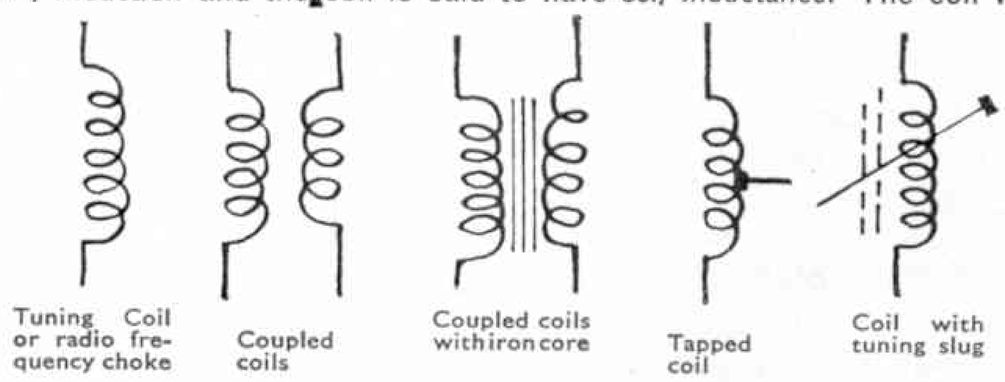
The Kinematic steering and engine control mechanism is a little difficult to explain, for it is quite complicated. It has a small built-in electric motor which operates from a separate 4½ volt battery. The motor can be directly controlled by a relay or a small power transistor in the radio control receiver.

The receiver I shall be describing uses a transistor as a means of passing current from the battery to the motor whenever a command signal is transmitted. The steering arm is

Data Panel—Inductance

Inductance is used in various ways in radio and electronics and most commonly in the form of tuning coils for radio receivers, radio frequency (r.f.) and low or audio frequency chokes and transformers. An inductance consists basically of a coil of wire and there are three ways in which it can be used.

If a magnet is plunged into a coil of wire an electric current will be generated in the coil, a phenomenon known as *Electro-Magnetic Induction*. If, on the other hand, a steady electric current is passed through a coil a magnetic field will be created around the coil. A change in current, however, will alter the strength of the field which in turn will induce in the coil a voltage tending to oppose the change being made. This is called *Self Induction* and the coil is said to have *self inductance*. The coil will



moved by a system of gears and a cam and pawl. The arm is, in turn, linked to the steering arm on the Bongo 2 drive. This turns the rudder to the left or right but each time through neutral. In other words, the Kinematic mechanism is self-neutralising. The sequence is therefore as follows: normal resting position neutral—no signal from transmitter. Long signal—rudder left, no signal—rudder restored to neutral. Second long signal—rudder right, no signal—rudder neutral. The sequence then repeats. Left or right rudder can be selected as required by going straight through the unwanted part of the sequence.

The Kinematic is also used to control the engine (electric motor) and to provide stop-start in the forward motion or stop-start in the reverse motion. The mechanism is so designed that a short transmitted signal takes the main drive gear only half way round, whereupon it promptly returns to neutral. The shaft attached to this gear carries a changeover switch that operates as the gear returns to neutral. This switch has four positions, one for each short signal given by the transmitter:

1. With the switch in the off position the motor is off.
2. Short signal—switch on—motor forward.
3. Short signal again—switch off—motor off.
4. Short signal again — switch on and polarity of motor battery reversed—motor running in reverse.

Finally, another short signal restores switch to the off position as in 1. The motor control is not affected by the longer steering signals.

Ready-to-assemble Kits

Not only have I built the model from the Graupner kit, but also the radio equipment, etc., as will be described in the next two or three articles. The finished model and its radio equipment have also been thoroughly tested too. However, it is only fair to add that radio controlled models is a rather expensive hobby. The radio equipment could, of course, be constructed from the necessary components bought separately. I venture to suggest, however, that in the long run it is much simpler and just as cheap to build from kits of parts which when assembled require no testing instruments other than a milli-amp meter. For instance, the radio control receiver, which I will describe next month, employs a printed circuit board and is simplicity itself to build and test (see Fig. 4).

On taking up radio and electronics as a hobby one cannot hope to build everything. If you cannot afford a radio control outfit now, you may at least learn something about this fascinating hobby in the hope of using the knowledge later when spending money may be a little more plentiful.

The Graupner kit for the Chris Craft Constellation launch costs 79s. 6d., while the Bongo 2 combined electric inboard-outboard drive and steering (with Monoperm 2000 motor) costs 45s. The Kinematic steering and engine control mechanism costs £3 12s. 6d.

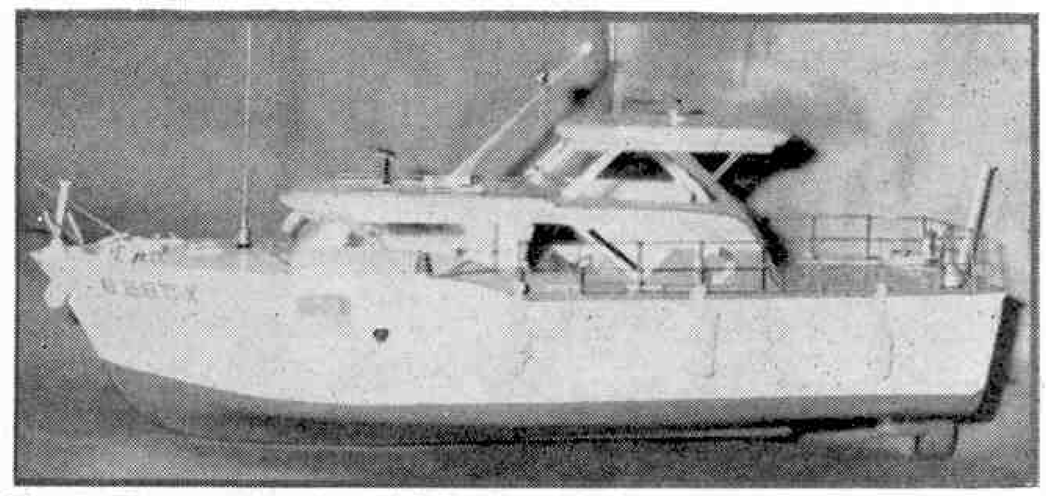


Fig. 1: The completed model Chris Craft Constellation motor launch.

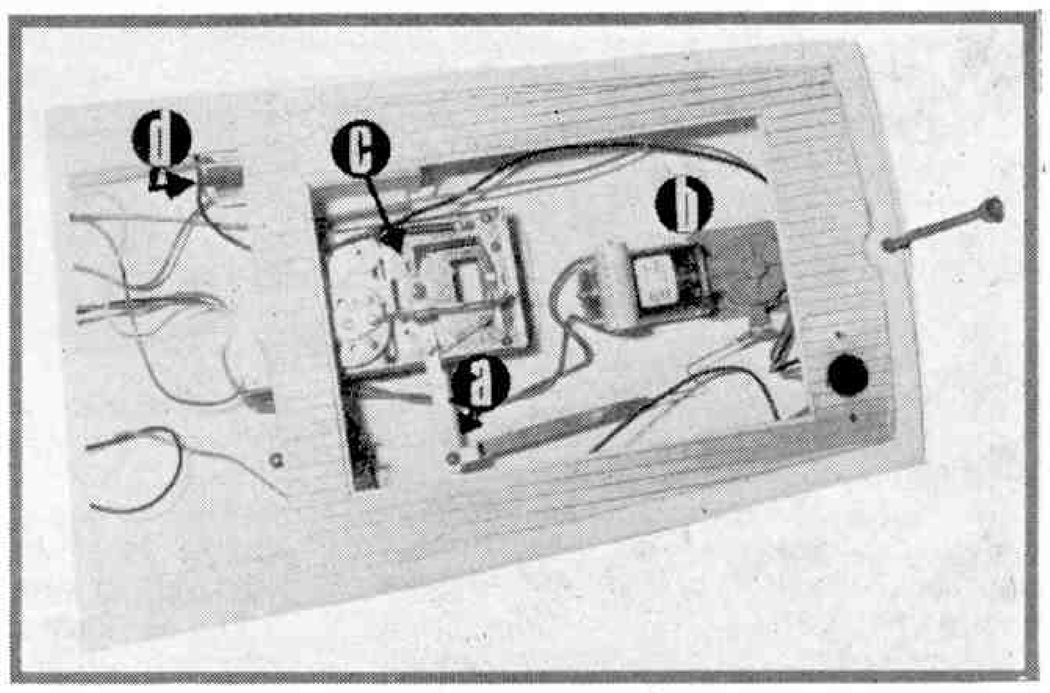


Fig. 2: (a) see text. (b) Location of the Bongo motor with integrated rudder/propeller. (c) Location of the Kinematic steering and engine control. (d) Battery (4½ volt) for Kinematic unit.

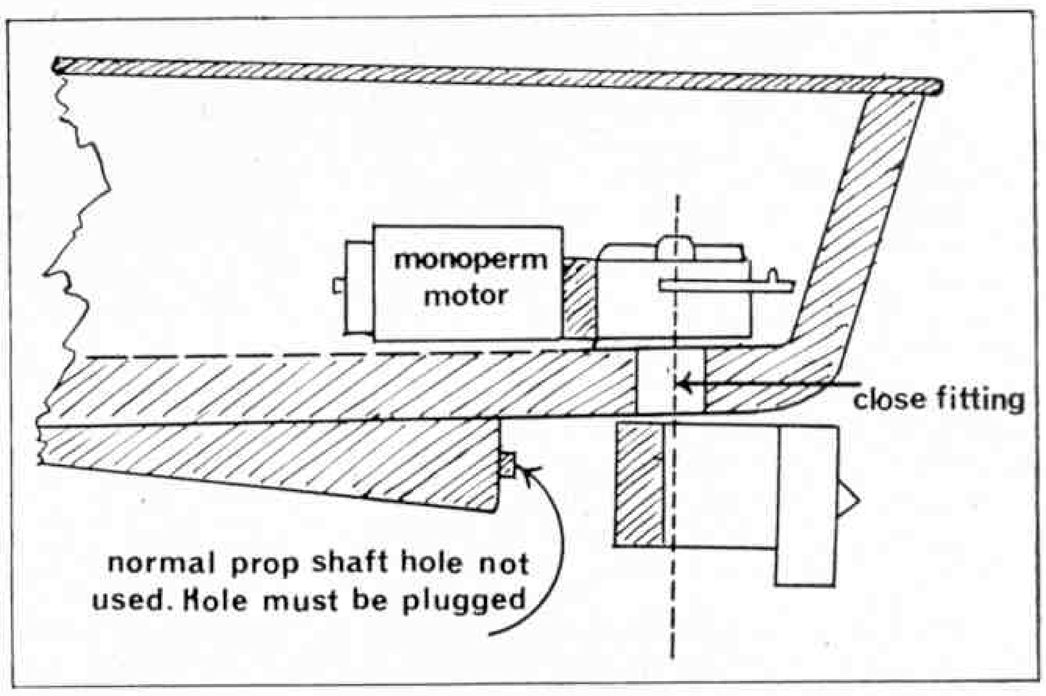


Fig. 3: How the Bongo motor and combined steering/propeller are fitted.

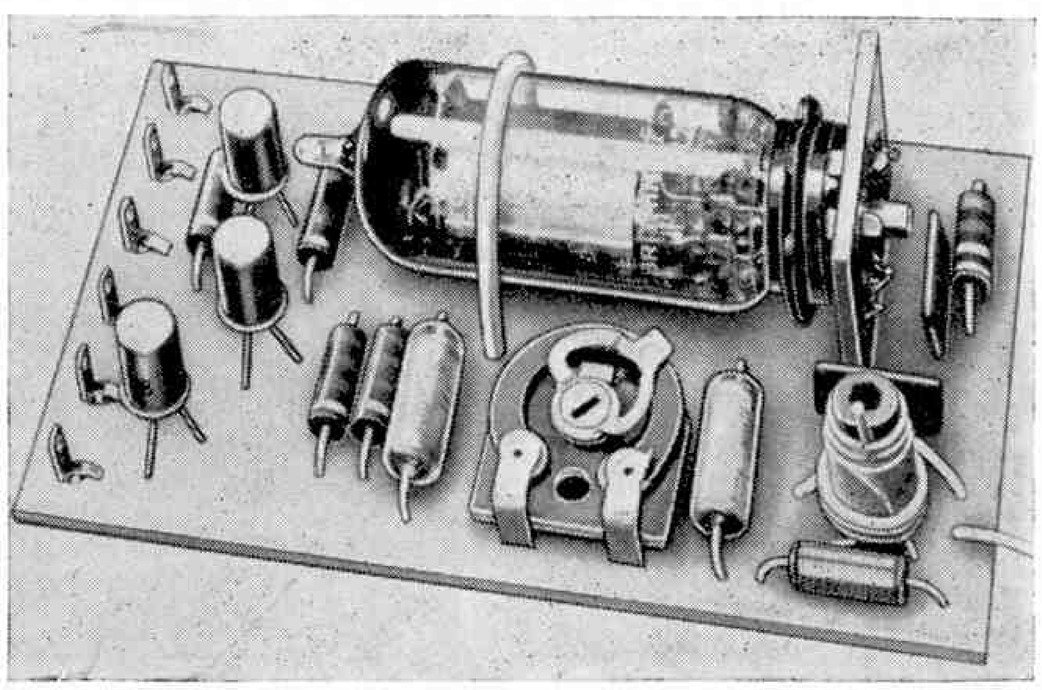
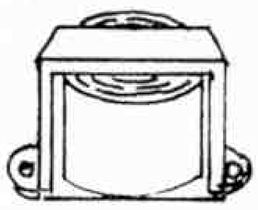


Fig. 4: The Ripmax Carrier Wave receiver Mk 2 for radio-controlled models.

have an inductance of 1 Henry (H) if the current through the coil changes at a rate of one ampere per second, the voltage appearing across the terminals being one volt.

The current change in one coil can also be induced in a second coil. The strength of the current in the second coil will depend on how closely *coupled* it is to the first. This effect is called *Mutual Inductance* and is widely used in radio receivers, amplifiers, a.c. mains power supplies etc. One of the most common applications of mutual inductance is in the transformer where the two coils, called the primary and secondary, are closely coupled to obtain the greatest possible transfer of power.

Coil circuit symbols and some typical shapes of inductive components are shown below.



Transformer low frequency

Intermediate frequency (I.F.) transformer

Tuning coil

R.F. choke

by **J. Crossman**

Choose a Quill

HAVE you ever gazed into a tackle-shop window, spotted a vividly painted float and decided to buy it simply because it seemed a jolly fine float to have in your tackle box?

As a young angler, I remember going into a shop to buy a huge, cork-bodied float that had caught my eye. Fortunately, the tackle dealer was himself an angler and before selling it to me, he asked what sort of fishing I intended doing.

'Canal fishing,' I replied.

The man produced a long peacock quill—'This is what you want,' he said. 'It will make you all the floats you need for a couple of seasons, and it will cost you only a penny. The other float is for chub fishing in a big river like the Hampshire Avon.'

He was quite right, of course, though I came out of the shop feeling that my peacock quill was not really an adequate substitute for that outsize Avon float.

The peacock quill is still the cheapest and best all round float obtainable. Two or three inches from the thin end makes an ideal canal float, and the thicker part will make floats suitable for many rivers and pools.

If, after you have started fishing, you find that too much of the quill is sticking above the water, it is a simple matter to trim it to size with a snip of the scissors. Two pieces of valve rubber will serve to attach the quill to the line.

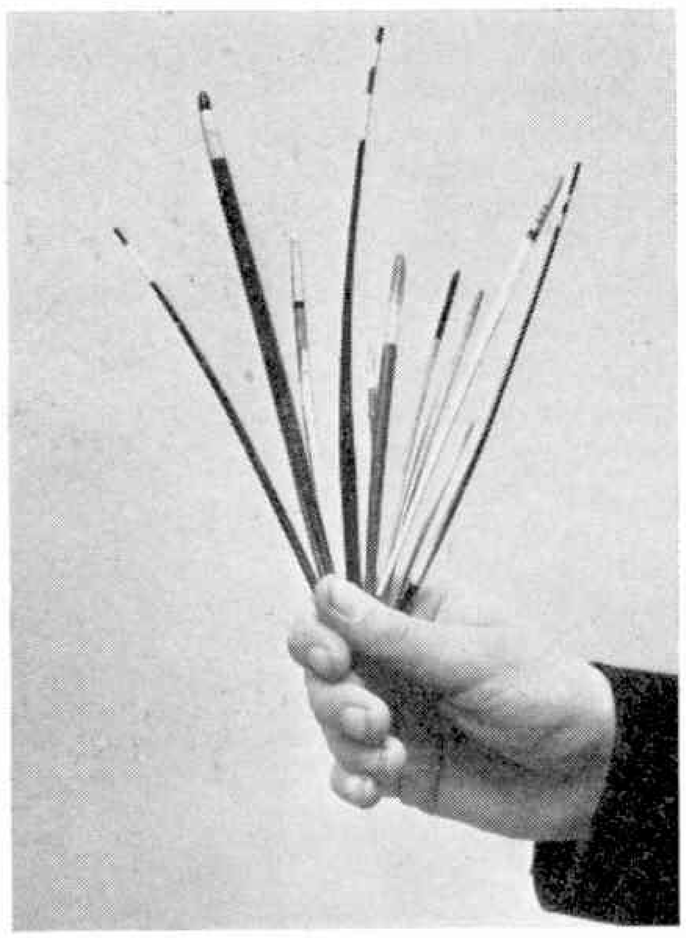
My only objection to peacock quill in its natural state is that it is conspicuously white and might scare fish. I prefer to paint all my floats a matt grey or olive green, except for the tips. These I paint in orange or white bands, separated by narrow strips of black. One or other colour scheme meets all my requirements —a white tip for dark water, orange for silvery surfaces away from the shadows of reeds or overhanging trees.

How much of the tip you paint is a matter of personal preference and eyesight, but bear in mind that when you are fishing, you will want as little of the float showing as possible. The less above water, the less resistance will be offered when a fish bites.

In calm conditions the float can be shotted down so that it is visible only as a water-level blob. On windy days, when the water is choppy, or when fishing at long range, it may help to have more of the tip showing, sacrificing sensitivity for visibility.

The more fishing I do, the more I'm convinced that a good angler equipped with simple quill floats can more than hold his own with anglers of similar ability with the widest possible range of shop-bought floats.

For running water, goose quills of various sizes are excellent. Their rather blunt tops are easy to see and provide surface buoyancy to ensure that they ride well in rough water.



Quills of all shapes and sizes! With an assortment like this, an angler can tackle any water.

The tail-end feathers of a crow make extremely delicate canal floats and an assortment of seagull and swan quills will provide a float to meet any condition of wind and water. A slender quill used upside down ('reversed' as anglers say) is exceptionally sensitive and can serve as an antenna float.

All quills have the merit of casting well and falling lightly on the water without fuss. Besides this, they have the advantage of costing next to nothing to make. A visit to a farmyard, a country walk and a stroll along the beach are all that are necessary to give you enough floats to last a lifetime!

From Floats to Bait

AN anglers' opinion poll to ascertain the popularity of various fishing baits would show that the maggot was a firm favourite. Results over the seasons would suggest that this preference is shared by the fish, too, for more coarse fish are tempted by maggots than by any other bait.

Perch, grayling and trout will seldom take a second look at a hook baited with bread, but I can think of no species of fish that is not regularly caught on maggot.

When casting, retrieving, or striking, the maggot rarely comes off the hook—a factor which is especially appreciated by contest anglers who like to keep the time spent on re-baiting to a minimum.

I think the success of the maggot is due to its being the most natural bait there is of a size which makes it suitable for angling purposes. The larvae of the blue bottle, maggots, must find their way into every kind of waterway at various times, and they are also similar in size and form to a host of water creatures and insects in their embryo stages.

A common mistake when fishing with maggot is to use too big a hook. I generally use a size 18 hook when baiting with a single maggot and sizes 16 and 14 when two or three maggots are the offering. Larger hooks may be used when baiting with a bunch of maggots for bream, chub, carp or tench.

There are times when chub especially seem to appreciate a substantial mouthful, but more often than not, fish will prefer a single maggot on a small hook to several maggots bunched like bananas on a large hook. After all, when maggots are thrown into the water they sink separately—not in clusters.

Bait your hook by nicking the point of the hook through the skin at blunt end of the maggot (the tail). Hooked this way the bait will wriggle enticingly, and the point and barb of the hook will not be impeded when you strike.

It pays to prepare maggots for fishing. Shop-bought maggots are usually packed in sawdust which is strongly tainted. Some anglers maintain that this taint is undesirable and can be detected by the fish, they therefore sieve off the sawdust and place their maggots in dry groundbait, bran, or breadcrumbs.

The maggots are then more pleasant to handle, being cleaner, and have a smell which corresponds with that of the groundbait used to attract fish to the swim. Maggots which have been scoured in this way sink more quickly than those which are greasy—and in running water quick-sinking maggots are a great advantage.

A useful sieve for separating maggots from unwanted sawdust can be made from a sheet of galvanise zinc with $\frac{1}{8}$ in. diameter holes. If left on the sieve, the maggots will crawl through, losing much of their grease in the process.

The method used for selecting gentles. Only live ones wriggle through the mesh

WHAT'S YOUR PROBLEM?

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

Secret prisoner

Q. *Who was the Man in the Iron Mask, and why did he wear it?—Hugh Wilmott, Holt, Norfolk.*

A. The true identity of the man on whom Dumas based his famous story remained a mystery for over a century. He was a political prisoner of the French in the days of Louis XIV and died in the Bastille in 1703, after 24 years in captivity. He was treated with respect by his jailers, and always wore a mask—not of iron but of black velvet. It was rumoured that he was a son of Charles II, or of Oliver Cromwell; while Voltaire suggested that he was a twin brother of the French king himself. The most likely theory, advanced in 1826, is that he was Count Mattioli, chief minister of the Duke of Mantua, in northern Italy. Having agreed to betray a vital frontier fortress, he broke his promise to the French; so he was kidnapped and imprisoned for life.

Ancient egg

Q. *Which came first, the hen or the egg?—"Alec Smart", Wolverhampton.*

A. The egg, of course; fish laid eggs in the seas long before birds appeared on earth. Then, for millions of years, reptiles laid eggs on the land. Developing the ability to lay hard-shelled eggs, which did not need attention, freed reptiles for further evolution into winged creatures; and so the birds came on the scene. The hen is a comparatively recent arrival.

Top pops

Q. *Who invented the Top Twenty, and when?—Geoffrey Pointer, Maidstone, Kent.*

A. The weekly *New Musical Express* was the first to adopt the idea, originating in America, of publishing a list of best-selling pop records. It introduced its own selection, based on figures obtained from music shops throughout the country, in November, 1952. The *Melody Maker*, which had previously published a weekly list of 20 "Top Tunes" based on the sales of sheet-music (as supplied by the Music Publishers Association), applied the same idea to records in April, 1956. In its selections, it relies on sales figures supplied by over 300 music shops, using more than 100 returns every week to compile its lists. Similar selections are also made by other papers, like the *Record Mirror* and *Record Retailer*.

Gasbag travel

Q. *Is there any future for the gas-filled airship?—S.B.S., Crawley, Sussex.*

A. Last year, the first rigid airship to be built in the United States for 30 years was constructed by the Aereon Corporation of Pennsylvania (see picture). They believe that it could be the forerunner of giant dirigibles which could transport cargoes and passengers over great distances, at less cost than other types of aircraft.

The experimental airship is a three-hulled craft 86 ft. long, 53 ft. wide and 18 ft. high. It is filled with non-inflammable helium contained in 18 plastic cells, and is driven by a two-blade rotor—similar to a helicopter's—21 ft. in diameter, mounted at the stern. Heat from the rotor's engine warms the helium and provides controlled lift. It is estimated that a similar craft 800 ft. long would have a lifting capacity of three million pounds.

Paper money

Q. *What is the average life of a £1 note?—K.B., Leicester.*

A. A £1 note lasts about 20 months before it is withdrawn from circulation. A 10s. note lasts only eight months.

Long stretch

Q. *If all the veins in the human body were placed in a line, how long would it be?—Robert Ulyatt, Ivybridge, Devon.*

A. It has been estimated that the veins and arteries of the average human body, placed end to end, would stretch for 350,000 miles—nearly 14 times the circumference of the Earth. The microscopic blood-vessels, known as capillaries, which connect the arteries with the veins are so fine that if those in the lungs were placed end to end they would reach across the Atlantic.

Popular puppets

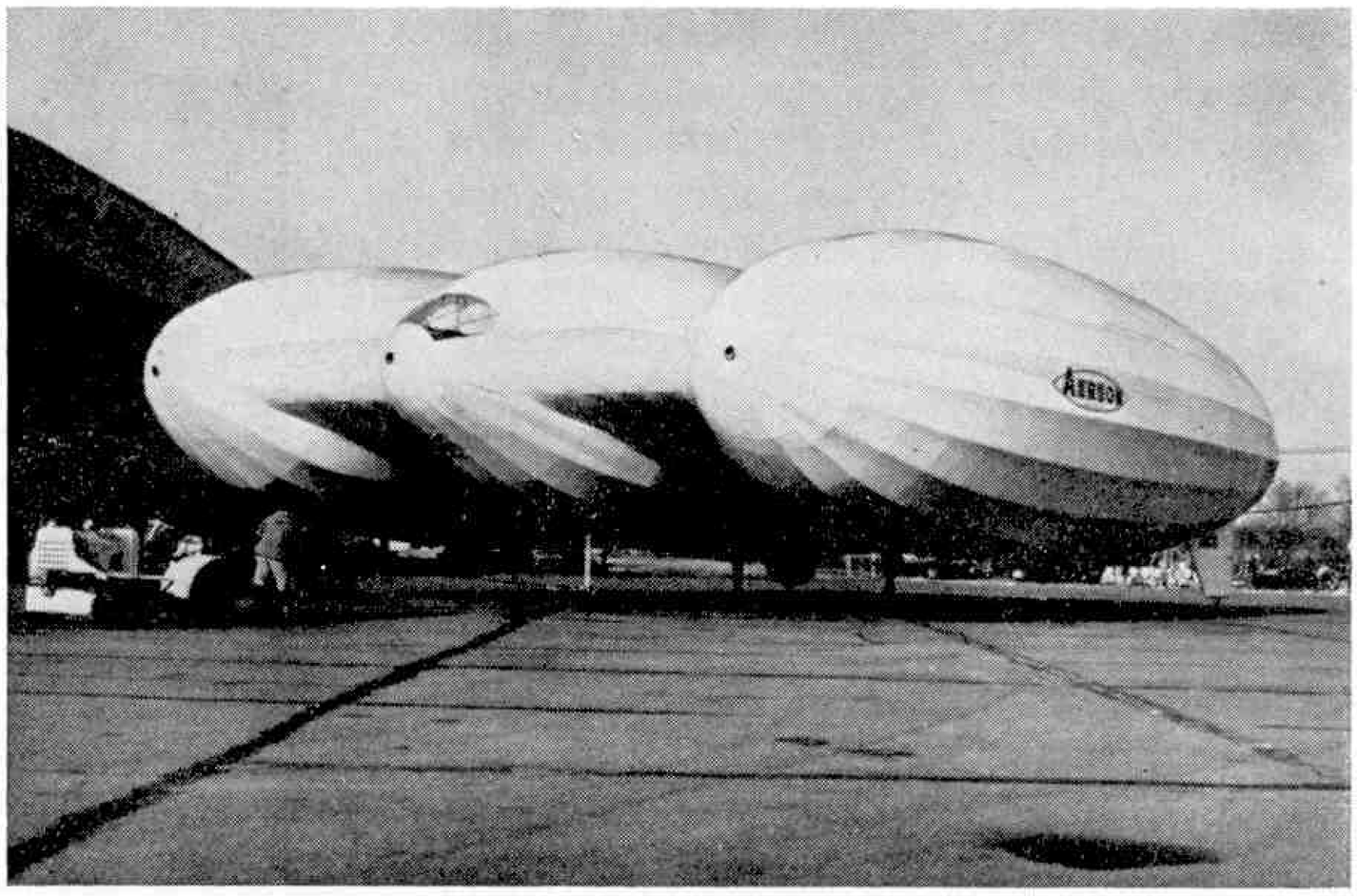
Q. *How long does it take to make the 'Stingray' films shown on TV, and how big are the puppets used?—'Goggleboxer,' Ilford Essex.*

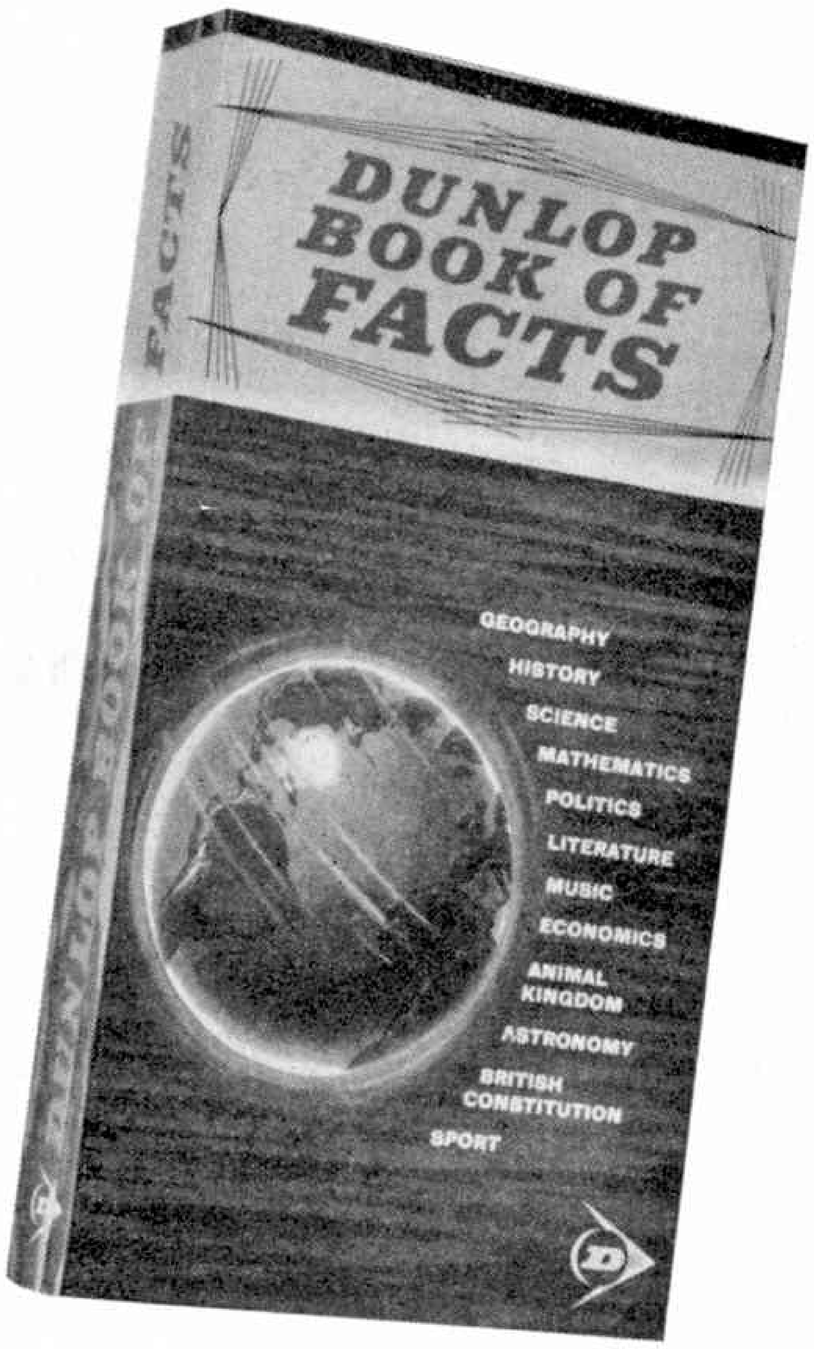
A. Each episode of the 'Stingray' films—there are to be 39 in all—takes several weeks to produce and the cost is said to be as much as that of an adventure series with live actors. The 'hero' Captain Troy Tempest, is 22 inches high and all the 'props' are about one-third life size. The series is made by A.P. Films, a company started seven years ago in an old house at Maidenhead; last year, it moved into new studios at Slough. Its head, Gerry Anderson, has produced over 250 puppet films, including the series 'Supercar' and 'Fireball XL5.'

Star lessons

Q. *Since this is the Space Age, why don't they teach more astronomy in school?—'Starwatcher', Bristol.*

A. Astronomy is to be taught in both primary and secondary schools of the London County Council, following a recent decision of the Education Committee and there are plans to equip at least one school with a planetarium. The Department of Education and Science has also offered teachers courses in astronautics as a background to developments in space.





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HIGH QUALITY TRANSISTOR AUDIO AMPLIFIER

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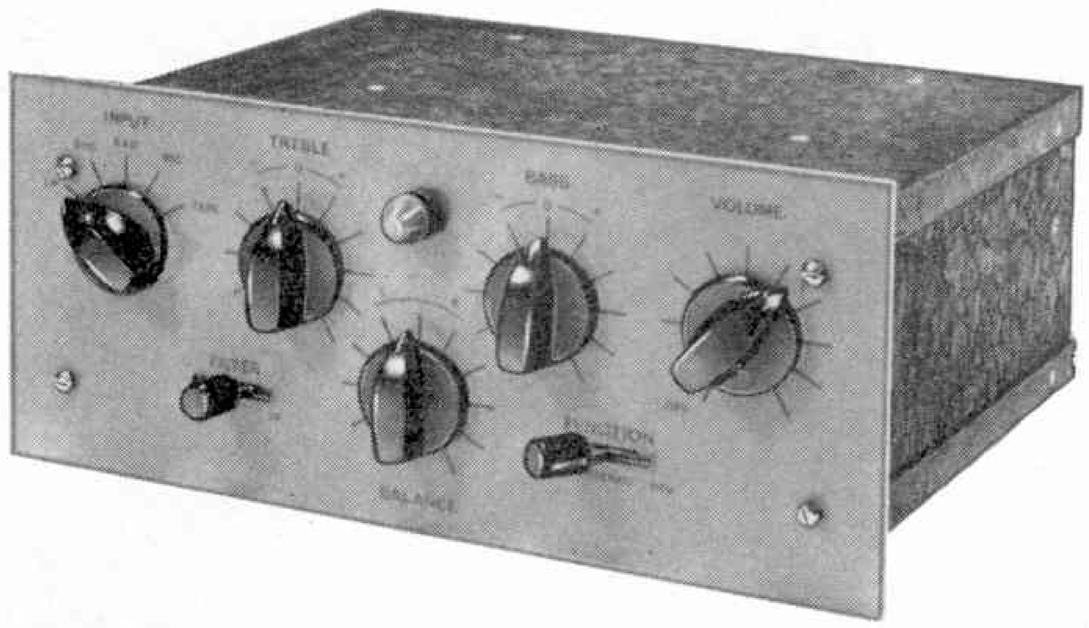
WIRELESS WORLD February issue contains comprehensive constructional drawings for a new high-quality transistor audio amplifier which marks a breakthrough in fine sound reproduction. The Mark II version of a famous amplifier originally featured in WIRELESS WORLD, it incorporates every latest refinement, eliminating the need for an output transformer. February WIRELESS WORLD provides all needed constructional information, including printed circuit wiring diagram and detailed mechanical drawings.



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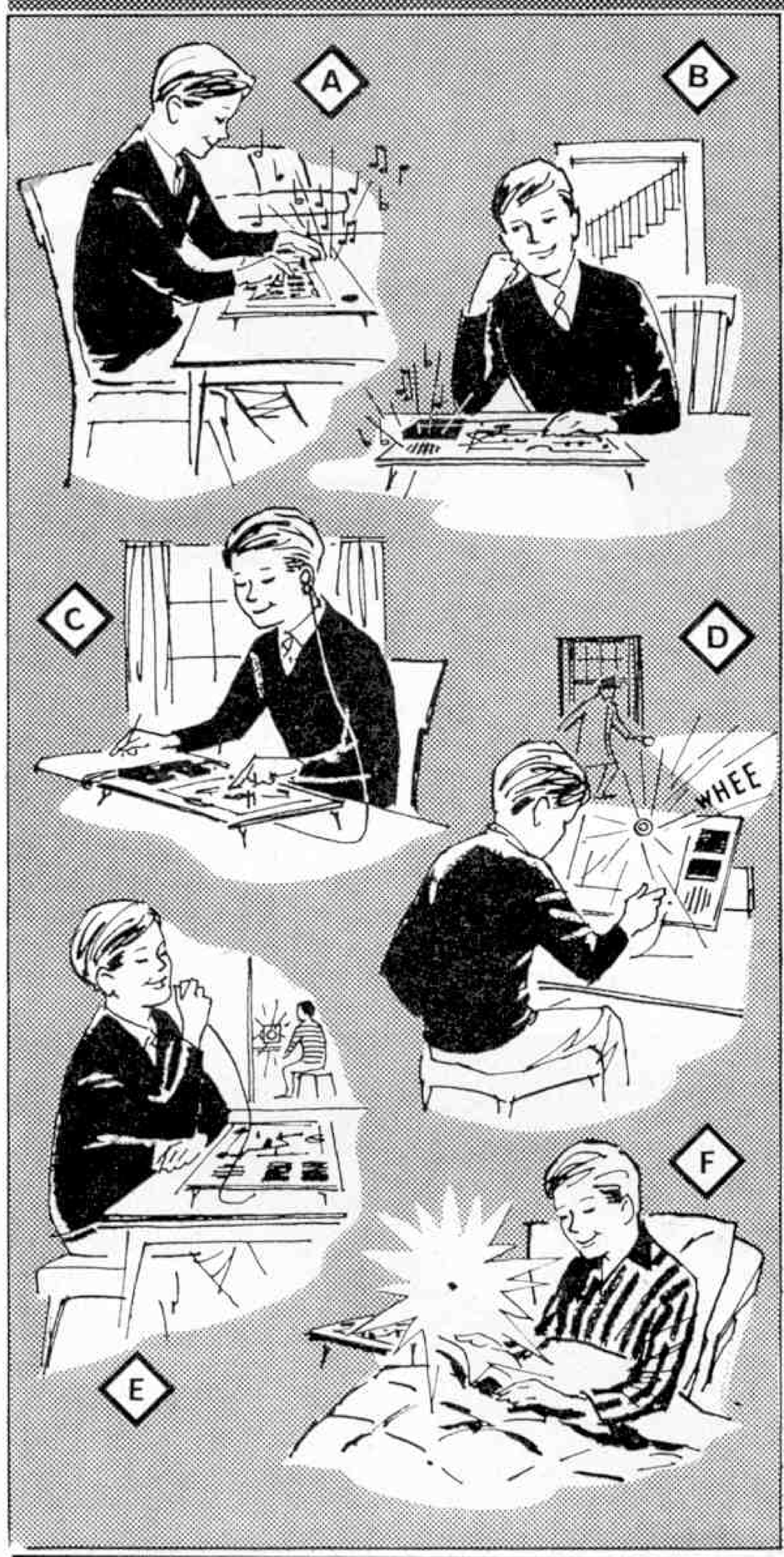

1 Morse-code trainer with earphone
2 One-transistor radio
3 Two-transistor radio
4 Burglar alarm
5 Automatic night light
6 Gramophone amplifier
7 Flashing beacon
8 Moisture indicator
9 Two-way intercom
10 Electronic organ
11 Push-pull amplifier
12 Three-transistor radio with loud-speaker
13 Bi-ampli amplifier
14 Advanced morse-code practice circuit
15 Detective's ear
16 Acoustic relay
17 Whistling pilfering alarm
18 Advanced burglar alarm
19 Time switch
20 Universal test circuit and lightmeter

BOYS AND GIRLS. All you have to do in the competition is to put the right number to each of the six pictures. For instance, if you think picture A shows the advanced morse-code practice circuit, then put number 15 under A on the coupon—and so on.

WINNERS will be those who send in all-correct entries with the most convincing and interesting supporting comment. Only entries from competitors aged 9-16 years of age and resident in the U.K. will be acceptable. The judges' decisions will be final.

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PHILIPS

'Firecrest'

Ever tried model jet car racing? Build 'Firecrest' and really go places!

Modelled especially for Meccano Magazine by Ray Malmström

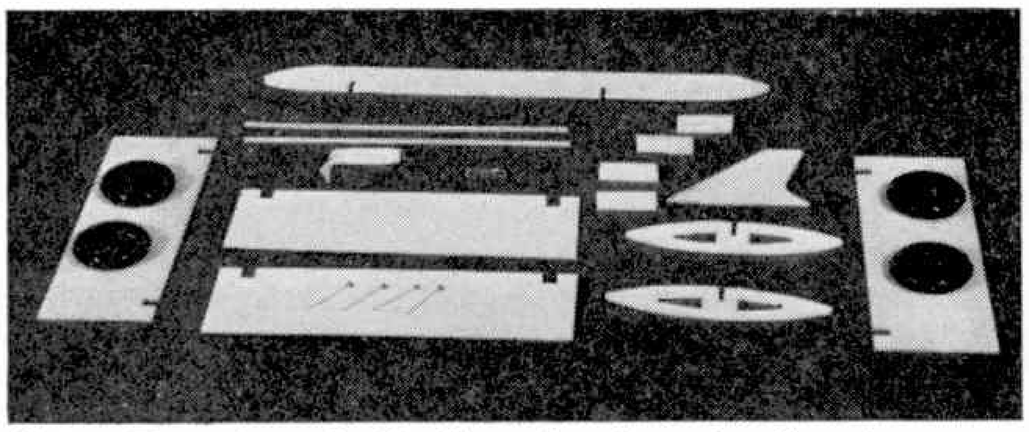
LAND speed records have been in the news lately. Donald Campbell has driven Bluebird at 403·1 m.p.h., Art Arfons pure-jet 'Green Monster' has travelled at 434·02 m.p.h., and Craig Breedlove in his jet-car 'Spirit of America' has achieved 526·26 m.p.h. With all this accent on motoring speeds, Meccano Magazine felt that you would like to step into the speed picture and enjoy some high-speed thrills with the 'Firecrest' jet car.

'Firecrest' is a really fast performer and with its exciting 'car of tomorrow' look, it is also a very straightforward model to build. Power comes from a Jetex 50 C jet motor, which is easy to operate and can be purchased from all model and hobby shops. No need to let Donald Campbell and his high-speed friends have all the fun. Get some balsa wood and start on 'Firecrest' and enjoy yourself, too.

The plan shows all parts full size. During your building of 'Firecrest' refer frequently to the photographs and easi-build sketches. Begin by cutting out the body and the body formers. The formers slot into place on the body and are firmly cemented in position. Add the four stub axles, checking for correct alignment.

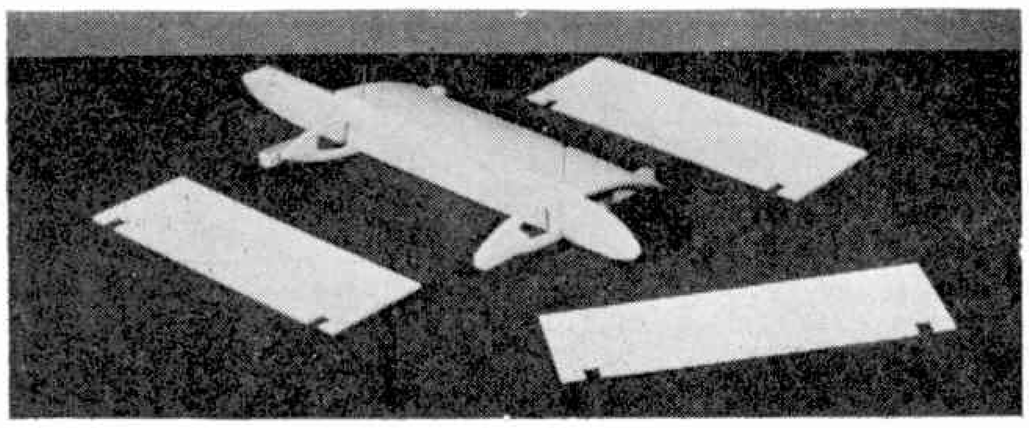
Cut four body pieces from medium (or soft) grade balsa. Cement one at a time in place (two pieces on top, two below) and hold with plenty of pins until set. The pieces can be lightly damped on the *inside* surfaces to assist curving.

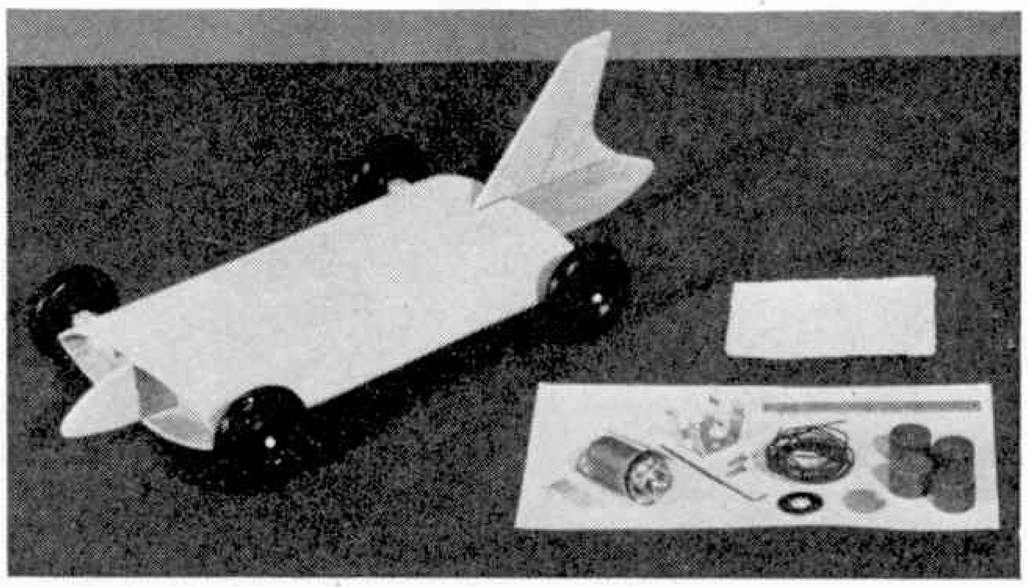
Cut out the small plywood mount and drill the two holes,



Above: The parts required for Firecrest are few and easily made.

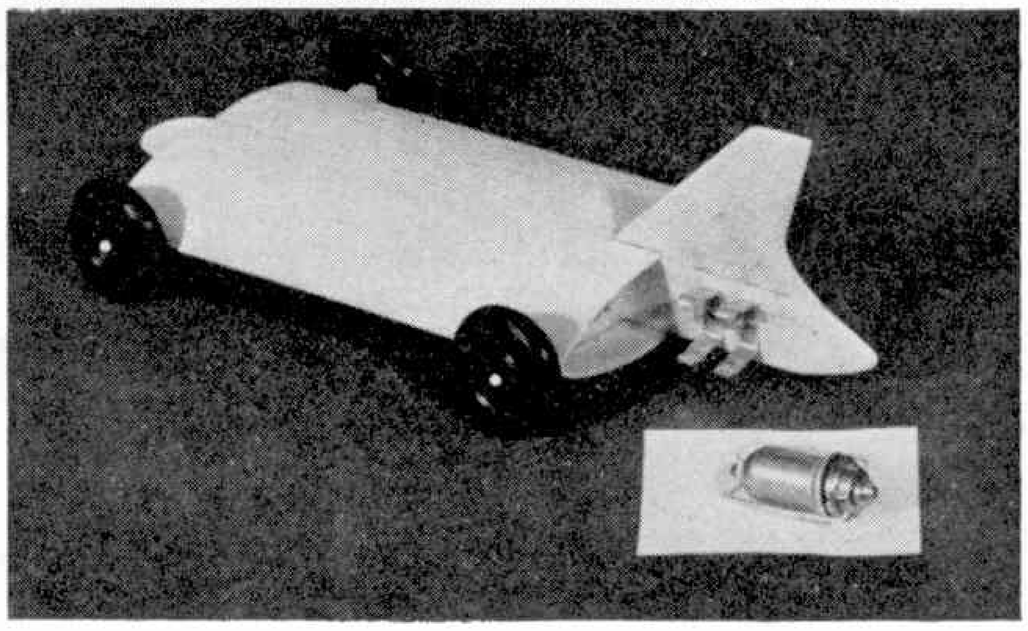
Below: Construction under way. Note panel pinned to the frame.

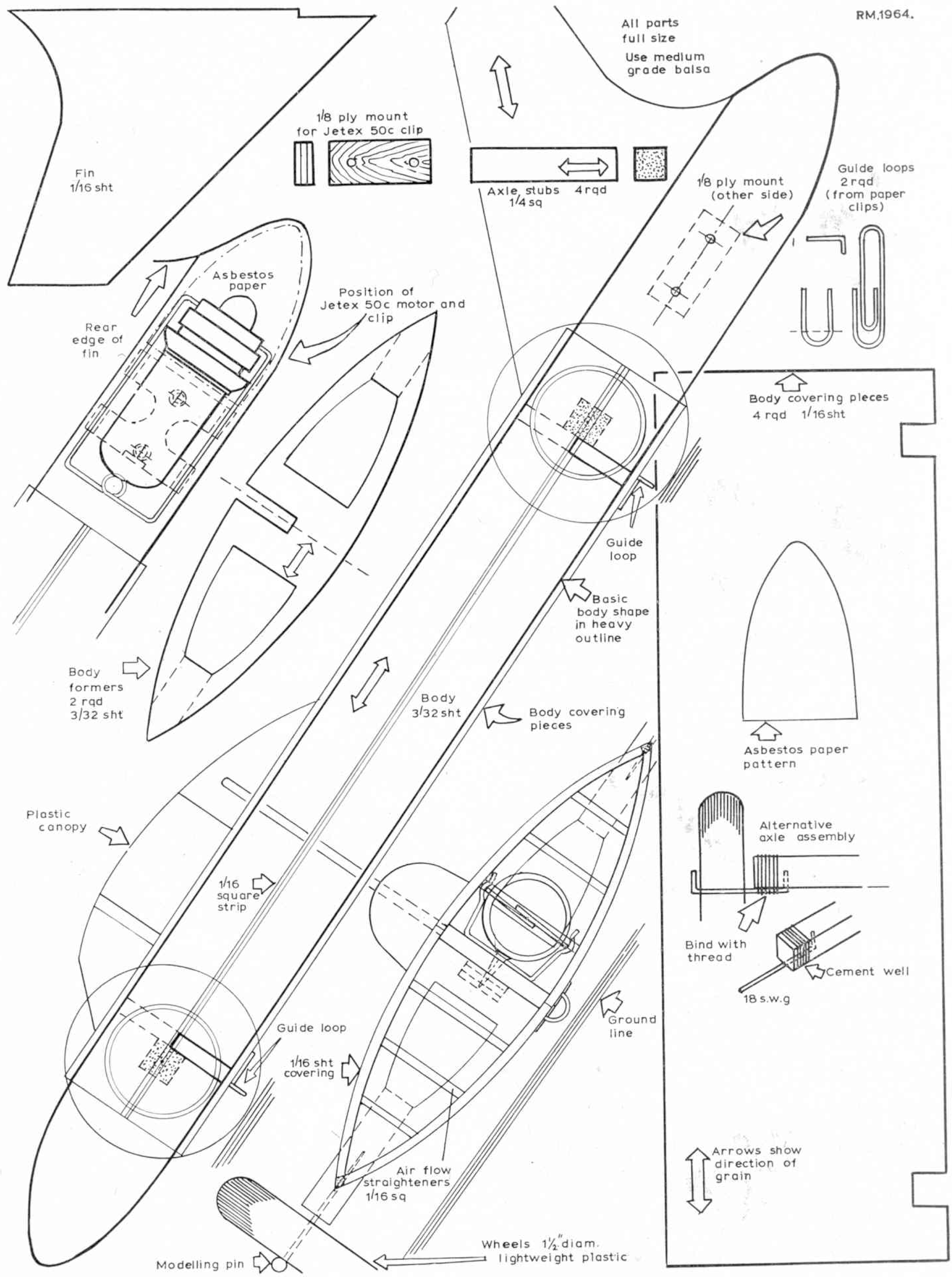




Above: Firecrest taking shape with Jetex 50C motor ready to fit.

Below: Only the asbestos panel and cockpit canopy require fitting.




RM.1964.
All parts full size
Use medium grade balsa
1/8 ply mount for Jetex 50c clip
Fin 1/16 sht
Axle stubs 4 rqd 1/4 sq
1/8 ply mount (other side)
Guide loops 2 rqd (from paper clips)
Asbestos paper
Position of Jetex 50c motor and clip
Rear edge of fin
Body covering pieces 4 rqd 1/16 sht
Guide loop
Basic body shape in heavy outline
Body formers 2 rqd 3/32 sht
Body 3/32 sht
Body covering pieces
Asbestos paper pattern
Plastic canopy
Alternative axle assembly
1/16 square strip
Bind with thread
Cement well
18 s.w.g
Ground line
Guide loop
1/16 sht covering
Air flow straighteners 1/16 sq
Arrows show direction of grain
Wheels 1½" diam. lightweight plastic
Modelling pin

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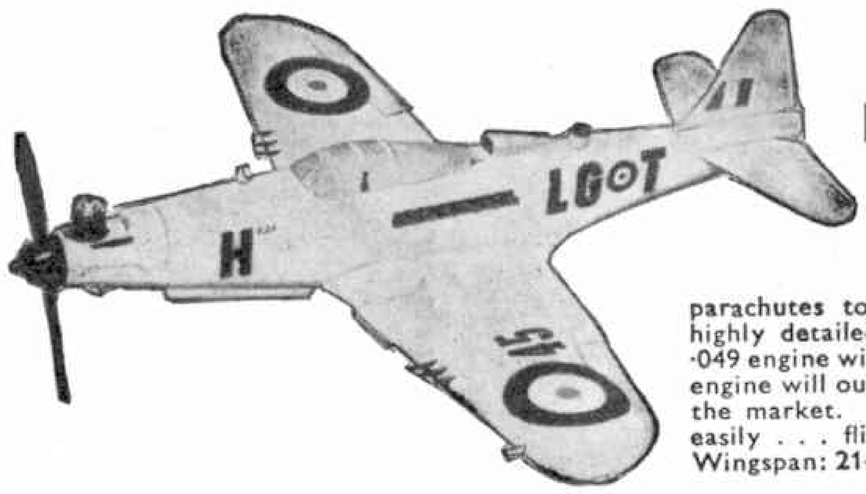

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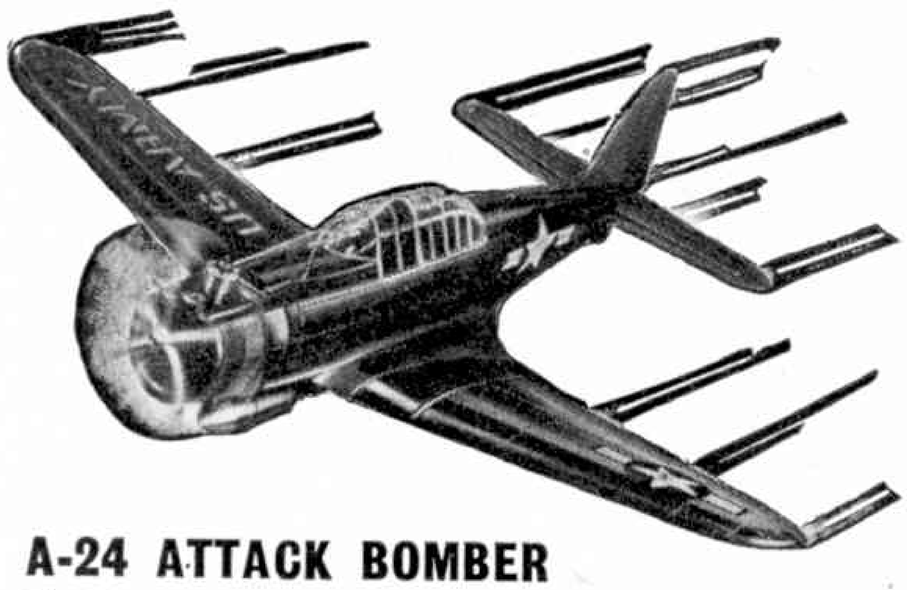

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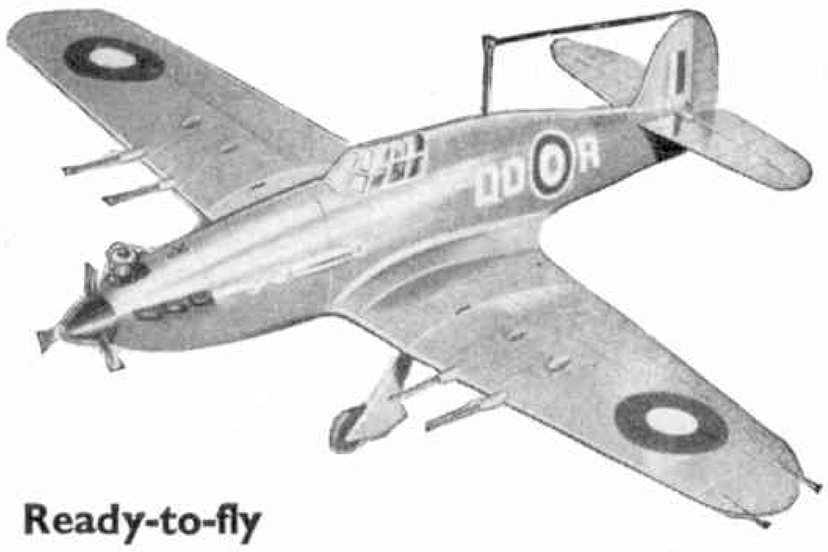

Ready-to-fly

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Complete in attractive carton with control line handle, Terylene lines, glow-plug clip, lead, battery plug and full instructions.

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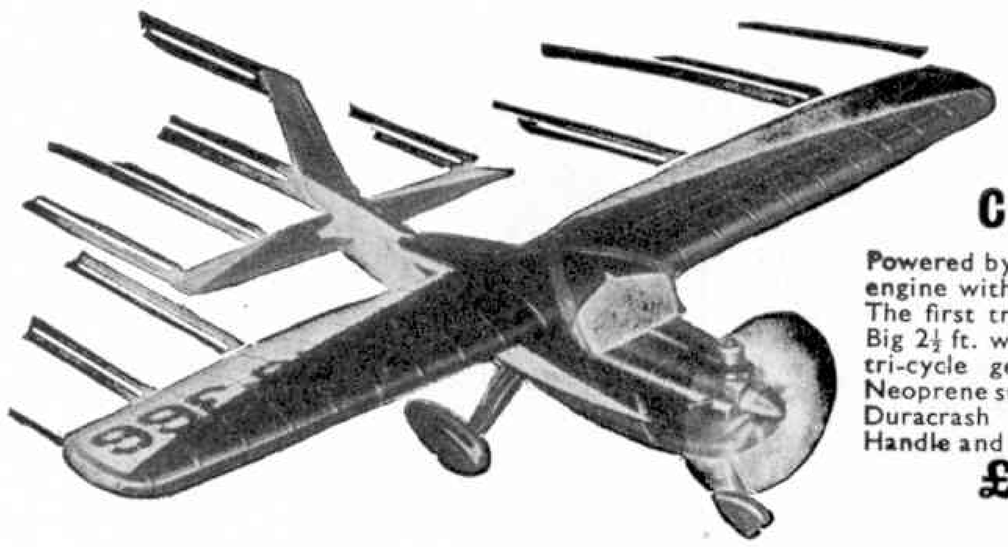

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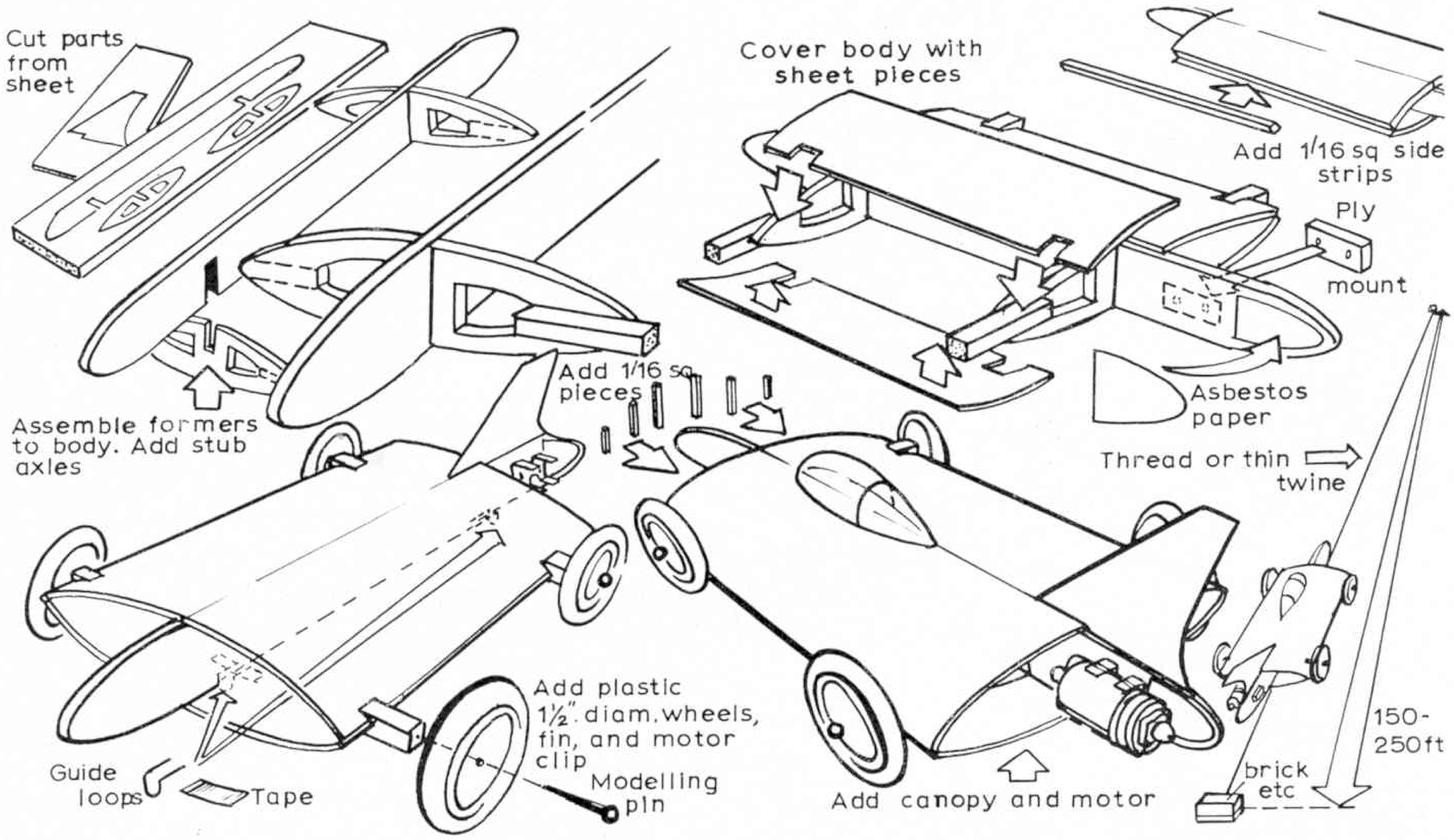


checking that they line up with the holes in the Jetex motor clip. Cement in position at the rear of the body. Add the piece of asbestos paper, included in the Jetex 50 C Motor Kit.

Purchase four lightweight plastic wheels (1½ ins. diameter) from your hobby shop. Mount them on the stub axles with modelling pins. You can use the other method shown on the plan if you wish. Modelling pins are quicker, but the second method is much stronger.

Use the ends of two paper clips, bent as shown on the plan, for the guide loops. Cement the guide loops on the underneath of the body. Reinforce with small pieces of linen or silk tape. Add the fin and air-flow straighteners.

The cockpit canopy can be purchased from the model shop. It may be necessary to trim the canopy to the correct size before cementing it in place. Use only a little cement and avoid smearing it on the canopy. Finally, screw the Jetex Motor clip to the body, the screws (provided in the motor kit) passing through the balsa body and into the ply mount.

Give the model a coat of dope and lightly sand the surface with very fine sandpaper. You can decorate your model with coloured tissue paper. When you have decided the way in which you want to decorate your 'Firecrest', carefully cut out the tissue paper to the shapes required and dope the pieces in position. Our original 'Firecrest' is decorated in red and black and looks quite impressive. A little extra time and effort spent in decorating your model to your own taste is well worth while.

Materials required

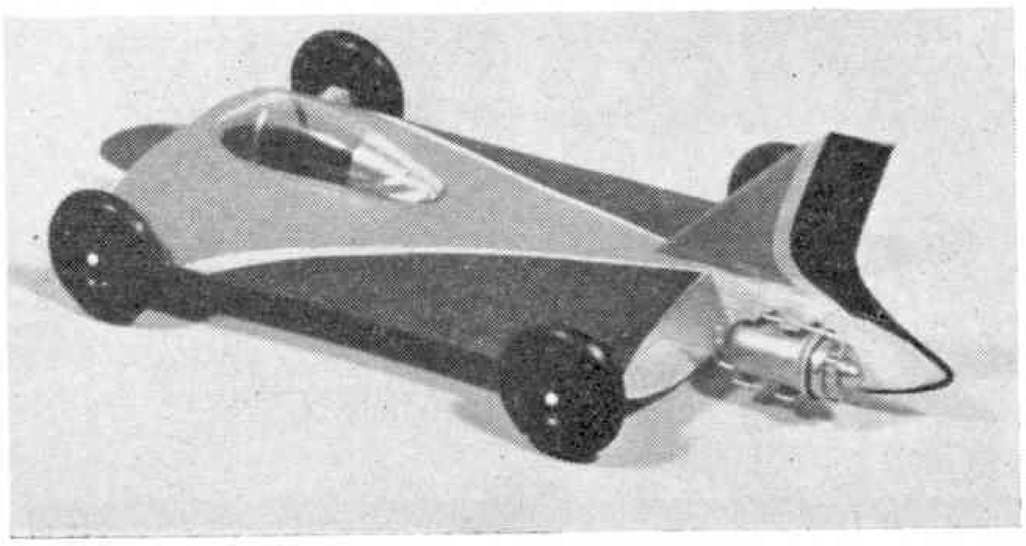
1 sheet $\frac{1}{32}$ in. by 3 in. by 12 in. balsawood.
1 sheet $\frac{1}{16}$ in. by 3 in. by 36 in. balsawood.
1 strip $\frac{1}{4}$ in. by $\frac{1}{4}$ in. by 10 in. balsawood.
2 strips $\frac{1}{16}$ in. by $\frac{1}{16}$ in. by 24 in. balsawood.
1 small piece $\frac{1}{8}$ in. plywood.
4 modelling pins (or 10 in. length M. Wire 18 s.w.g.)
4 1½ in. diam. lightweight plastic wheels.
1 small size cockpit canopy.
2 paper clips.
1 small piece tape (linen or silk).
Coloured tissue as required.
Small tube of balsawood cement.
Small bottle of clear dope.
1 Jetex 50 C Motor outfit (9s. 11d.).

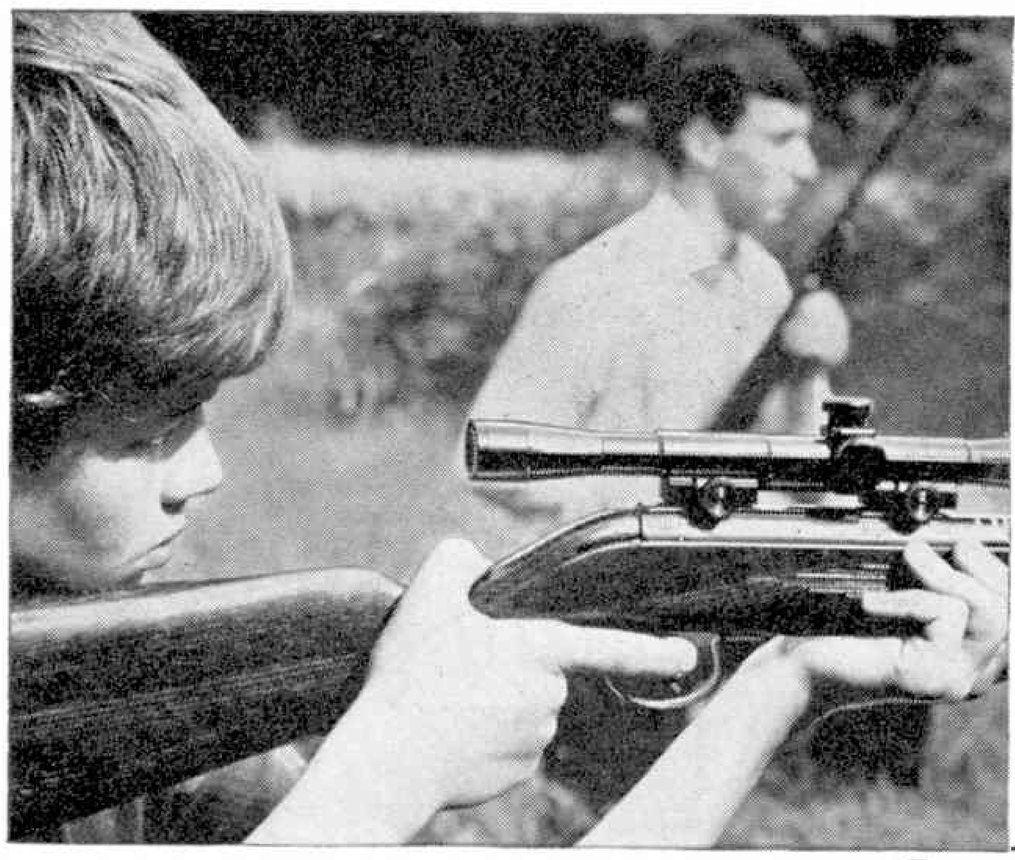
Operating Instructions

'Firecrest' will only run successfully over a hard smooth surface. The model runs along a thread line. This line should be 150–250 ft. in length and it is passed through the guide loops on the bottom of the car. The ends are tied to heavy objects, e.g. bricks, and the line is kept taut. Two friends can hold the end of the line if this is more convenient. Load the Jetex 50 C motor in accordance with the instructions given with the motor. Check that the course is clear and then light the igniter wick with a piece of smouldering balsa wood or string. Never use a match.

When the Jetex 50 C motor fires, allow 'Firecrest' to move off and gather speed on its own and avoid pushing. The Jetex 50 C motor will take either one or two charges. For distances of 150 ft. approximately one charge will be sufficient. Two charges will take 'Firecrest' over a really long distance—250 ft. or more. If you have enough space you can let your model run 'free'. Get your friends to build a 'Firecrest' and enjoy some 'high-speed' motor racing.

Power unit in position, canopy in place and decoration completed.





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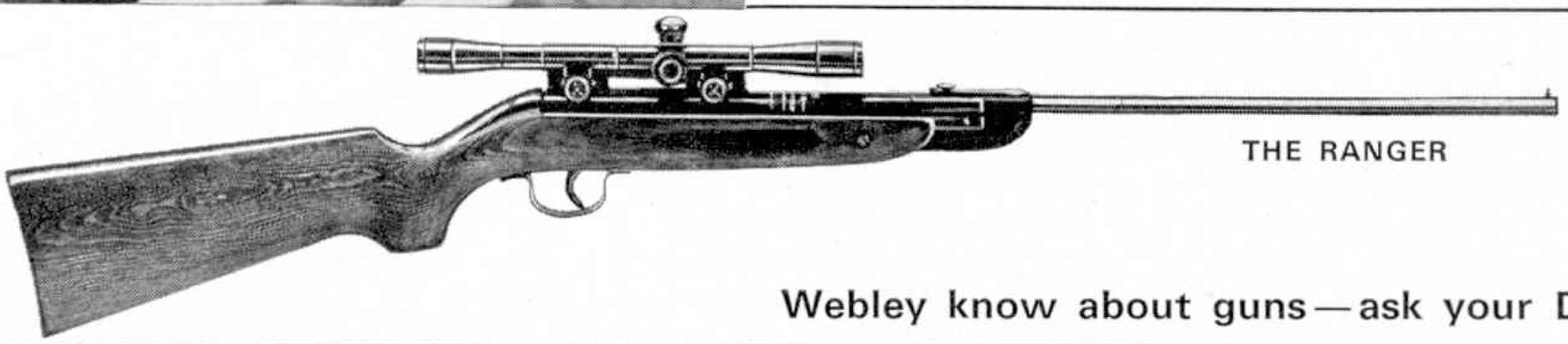

THE RANGER

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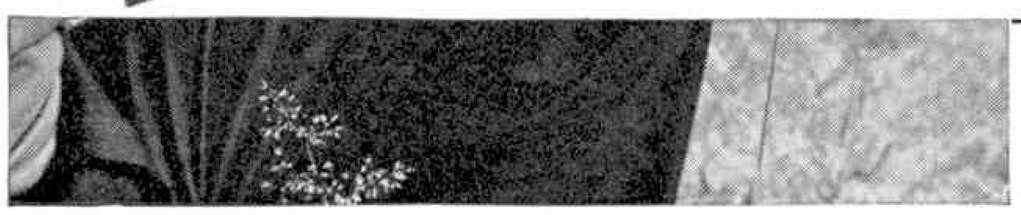

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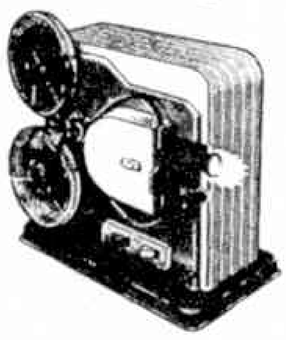

This projector is a **must** for all at a price that cannot be equalled.

Supplied with 1 spare bulb and 6 leak proof batteries at the phenomenally low price of **£6.0.0**

- It is perfectly safe to use, even for children.
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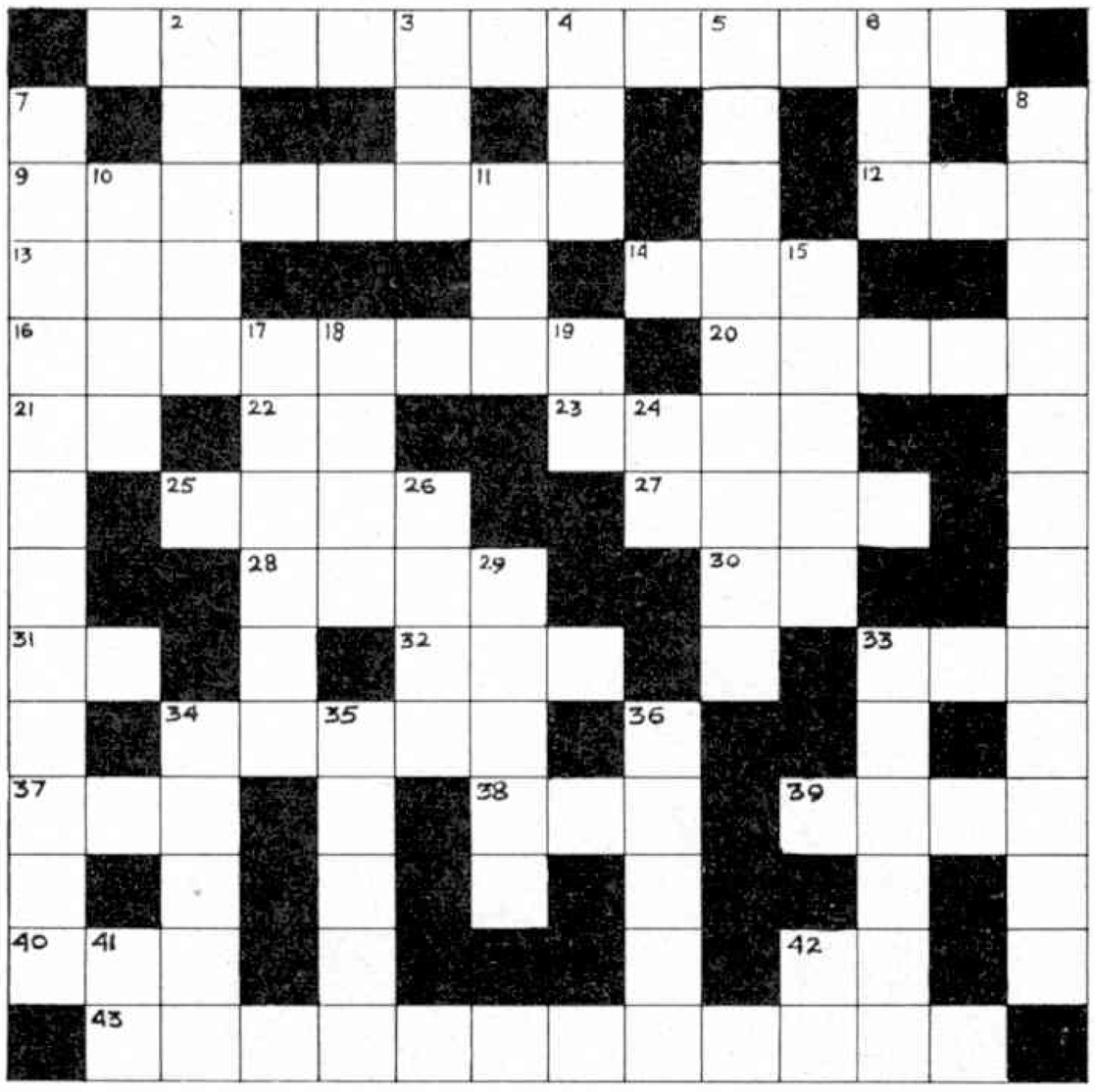
- Can show any standard 8 mm. film.
- Very economical battery consumption.
- Fast rewind.
- Light and easy to carry.
- Still pictures.
- Easily focused lens.

Puzzle Page

Crossword Puzzle No. 3



Across

1 With purpose
9 Land of our dreams
12 A proper case, this
13 Grief
14 Make a little go a long way
16 Money rather distant
20 Make amends
21 Off, in reverse
22 Article definitely used in 18th century
23 Truth affirmed
25 Sacred bull of the Egyptians
27 Row
28 Hard as nails
30 Abbreviation used by Queen Victoria
31 ———it yourself
32 The 'old boys'
33 Found in material
34 Seen in waters
37 High hill
38 By way of
39 Three's company
40 A noise that annoys
42 Where Egypt is (abbrev.)
43 The Army's second string

Down

2 Senior, in years
3 Airline (abbrev.)
4 Latin American city
5 What parrots often are
6 Good place for experimenting
7 Something new in the land
8 Great, according to Dickens
10 It's lent
11 Spanish caballero
15 Very rare
17 A machine operator
18 Inheritor
19 Allez!
24 Preposition
26 An amount
29 Sensitive part
33 Small portion
34 Suppose
35 Hits the high notes
36 Many close shaves with this
41 Pronoun
42 Artistic to a degree (abbrev.)

Turn to page 35 for answers to the puzzles on this page

Tricky Teasers

How can you make up a sentence which contains the word 'that' written five times consecutively?

★ ★ ★

Here is a proportion problem which may give many of you something to think about! A man of 35 has a son aged 5—therefore he is seven times as old as his son. Five years later, the man is 40 and the son 10. That's only four times as old. Five years later, he is 45 and his son 15—three times as old. Fifteen years later, he is 60 and the son 30—only TWICE as old! Puzzling, isn't it?

★ ★ ★

Can you add vowels to the following row of letters to make a well-known proverb?

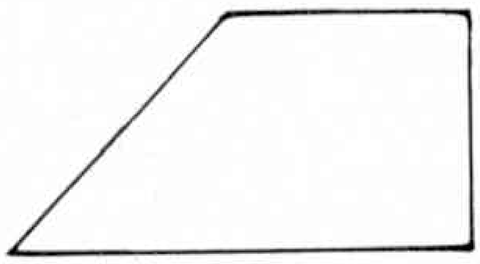
LSTSDSNSTMNDD

★ ★ ★

3 R's, 3 E's, 2 G's and C O N . Can you arrange those letters to make the name of a shopkeeper?

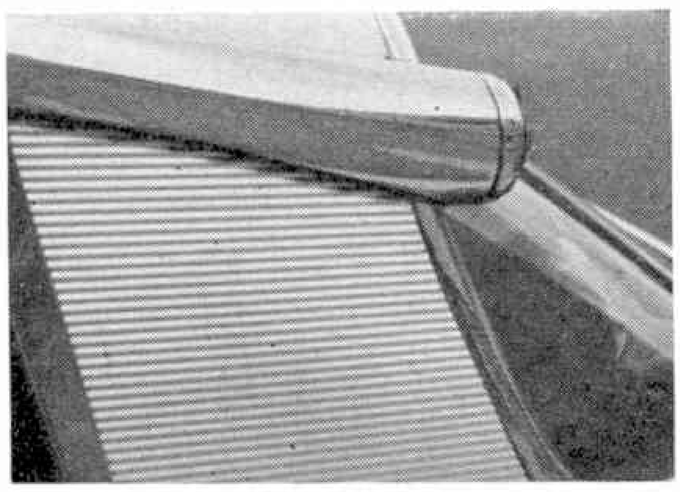
★ ★ ★

In his will, a farmer left his land to be divided between his four sons. The area of his farm was 800 acres and he stipulated in the will that each of the sons should have a 200 acre plot of the same shape. This was the shape of the farm. How was it divided? Answer on page 35.



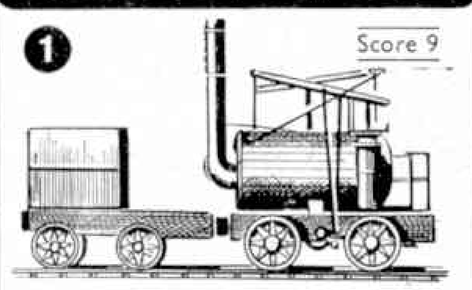
Car Quiz No. 5

Futuristic in design with hydraulic suspension and front wheel drive. What is its name and from where does it come?



QUICK QUIZ

1 Score 9



Here is one of the first-ever railway engines. Can you A. Name it. B. State the year it was built.

2 Score 10

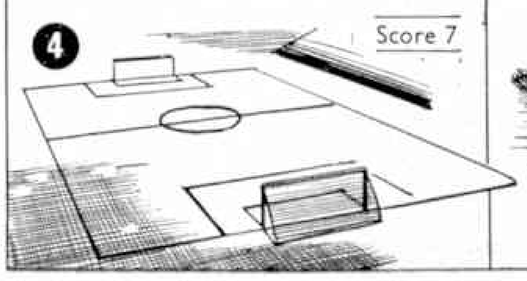
In what country is this famous building to be found?

3 Score 8

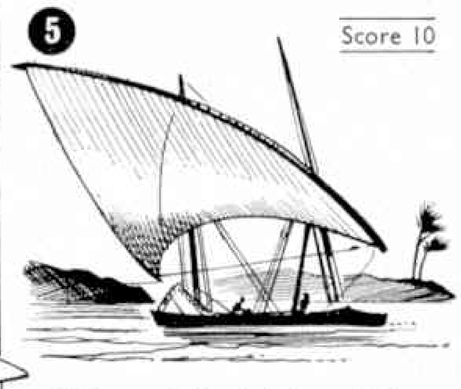
Of what nationality was the first man to develop ski-ing as a popular Alpine sport. A. Swiss B. English C. Norwegian.

What is the distance between goalposts on a full-size soccer pitch? A. 120 yds. B. 130 yds. C. 150 yds.

4 Score 7



5 Score 10



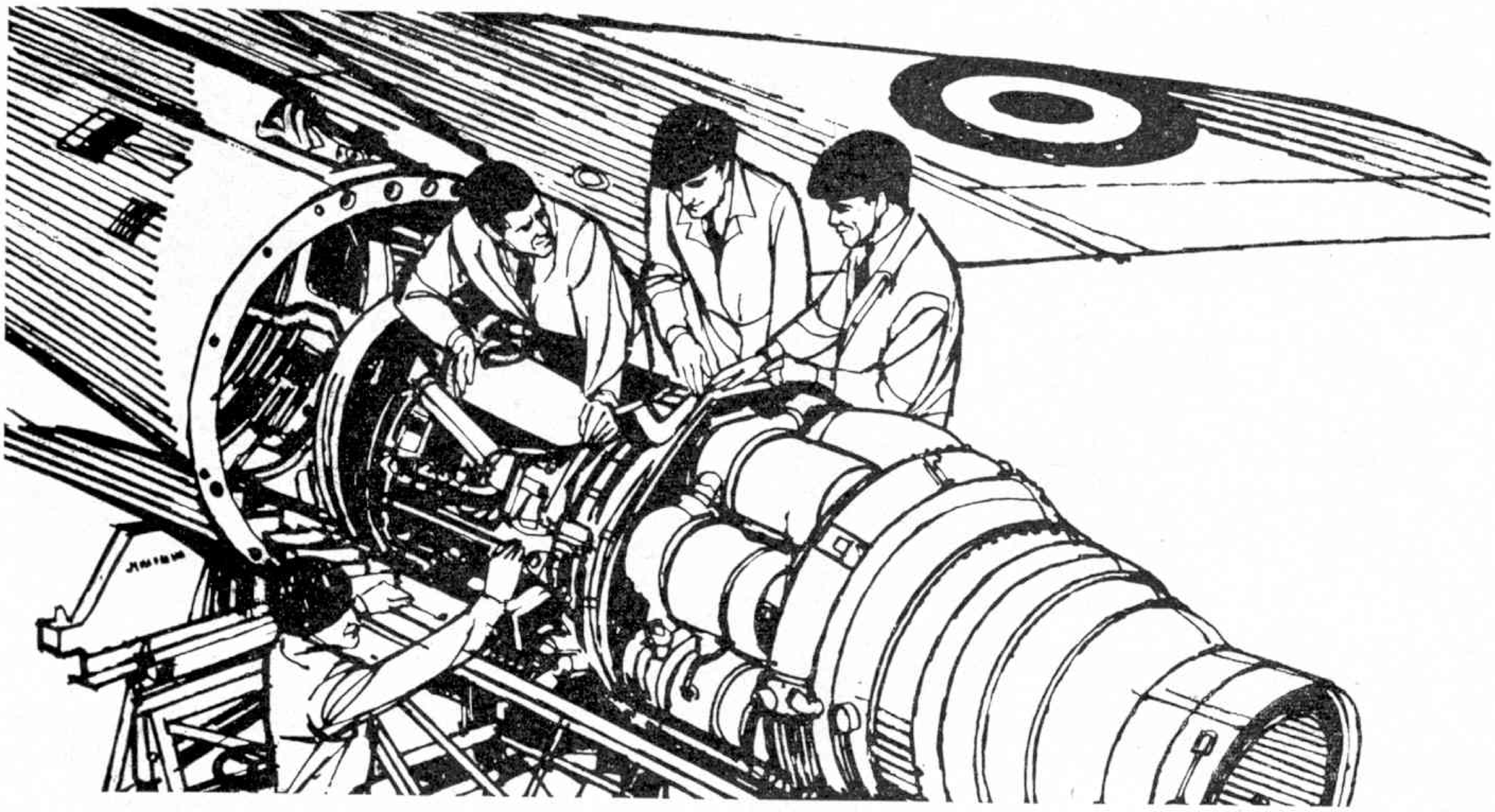
This boat used in Egypt is A. Sampan B. Dhow C. Felucca.

6 Score 5

What is a bat? A. Mammal B. Bird C. Insect.

score 40 or over · excellent
35 · good
30 · fair

(for answers see page 35)



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Please send me information about R.A.F. apprenticeships

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The Royal Air Force

Buying a Camera

by **Paul Dong**

MONEY is hard to come by, but easy to get rid of and one way of disposing of it is by buying photographic equipment, either new or second-hand. Before making a purchase, you should have a notion of what you want to photograph, and this will give you some idea of the type of camera you need—reflex, miniature, plate or box.

If you are buying a new camera, made by an established reliable firm, you will be fairly safe against all the problems of faulty equipment. And if faults do show up within a certain time, you have a chance of getting them put right under the guarantee. But a word of warning here; make sure that your camera can be repaired in reasonable time if anything goes wrong. There is nothing more annoying that to pay out good money and then wait while spare parts travel halfway round the world.

Buying second-hand

Second-hand equipment compared with a new camera is quite a different proposition. There are a number of large and small reputable dealers in this country who will give a good three or six month guarantee with second-hand equipment but, of course, you have to pay for this.

Private deals however, are another story. You have more opportunity of picking up a bargain, provided you are careful, but the chances of getting a guarantee are pretty slim. The best that can usually be done with a private deal is to get the camera on seven days' approval, which will probably mean paying out the full amount as a deposit. If you do this, ask for a letter from the seller stating that he will take the item back within seven days under certain conditions and ensure the date is on it.

It is almost impossible to lay down exact prices that should be paid for second-hand equipment, but a good starting point is half the retail selling price. You can then add or subtract small amounts for age and condition.

Beware of very cheap prices. If a camera is stolen you can commit an offence by 'receiving' it, although no action may be taken against you if you can prove you bought it in good faith. However, if it is stolen, it will be returned to the true owner and it will be up to you to take action against the person you bought it from to get your money back. And there is a good chance you will not be successful.

There are always a number of cameras in circulation on which duty has not been paid and if you take a camera out of the country on holiday, you may be charged duty and tax when you bring it back through customs. For this reason alone, it is always wise to take your receipts with you when you travel abroad.

Likely trouble-spots

There are several places to look for trouble in cameras, the most important being the lens. This should be inspected for scratches, chips and, another trouble, the breaking down of cement between the glasses. As you know, a lens is made up of a number of pieces of shaped glass, some of which will be cemented together. When cameras are subjected to heat and damp, as in tropical climates, this cement can break down, causing a feathery pattern which starts round the edge and works in towards the centre. An expensive job to put right.

One or two small scratches may not affect the definition, but only a practical test will tell you. Don't accept a negative offered as evidence of quality of the lens, as it may have been taken before it was damaged, or even by another camera.

On the front and sometimes back elements of modern lenses is a very fine coating called the 'bloom'. This is usually slightly blue in colour and is there to prevent the reflection of light from the glass, therefore allowing more light to pass through the lens. This 'bloom' is easily attacked by sea water spray or the sweat from the hands, so check it by looking at the lens at an angle to the light. This will reveal imperfections.

The best way of checking a lens is by photographing a few sheets of newspaper pinned to a wall, at various distances and apertures, then printing from the negative slightly larger prints than you would normally want, i.e. 12×10 for 35 mm. negatives and 15×12 or 20×16 for others. If the image is still sharp, the lens is all right. This check will also show you the accuracy of the focusing if some of the shots are taken at large apertures, the result depending on the particular lens.

Check the mechanics

To check up the mechanics of the focusing mechanism, turn the controls and see if they feel free and smooth. Any snatching or too much looseness will indicate dirt or wear. Check the panel the lens is mounted on for sideways and forwards movement, indicating wear.

On folding cameras, check the bellows for light leaks by putting a bright bulb inside the camera in a darkened room. Also, when the camera is fully open, make sure that it is rigid. If it is loose, the stays are worn or the springs weak.

When the back of the camera is closed, it should be a good, light-tight fit. Check that it is not distorted, or loose, both of which will allow light in to fog your film. Open the back and make sure that the pressure plate is parallel with the back of the camera, not lopsided, which will show that the springs are weak.

The plate holds the film securely against the back of the camera; if the springs are weak it won't work properly and your pictures won't be sharp. The plate should be smooth to prevent scratching and the rollers in the back of the camera should be free to roll.

Check the winding knob to make sure it is not bent or damaged. Most film counter mechanisms will only work if a film is in the camera, so you will have to check this when you test the lens. The negatives should be evenly spaced on the film.

The shutter can only be accurately checked electronically, but a rough check can be made by listening to its action on all speeds. Any hesitancy on the slow speeds will indicate either dirt or wear on the springs. If the slow speeds appear to be correct, work your way upwards and you will be able to tell from the sound what the others are like. Each speed should be half the previous one. Focal plane shutters should be checked for smooth running and holes in the blinds. Make sure that the blinds are not kinked.

Flash and Exposure Meters

Next, make sure that the flash socket works. If it doesn't, the points in the shutter may be burnt or dirty. Take some flash pictures on your test film to make sure it is properly synchronised.

If an exposure meter is fitted to the camera, this can be checked against another meter. The needle should move smoothly.

If everything looks all right, give the camera and case, if fitted, a quick look over for signs of rust or damage.

The final check is the serial numbers on the lens and body, which should be put on your receipt if you buy the camera. If, however, the numbers appear to have been obliterated or altered, it's a good chance that it's stolen and you shouldn't buy it under any circumstances.

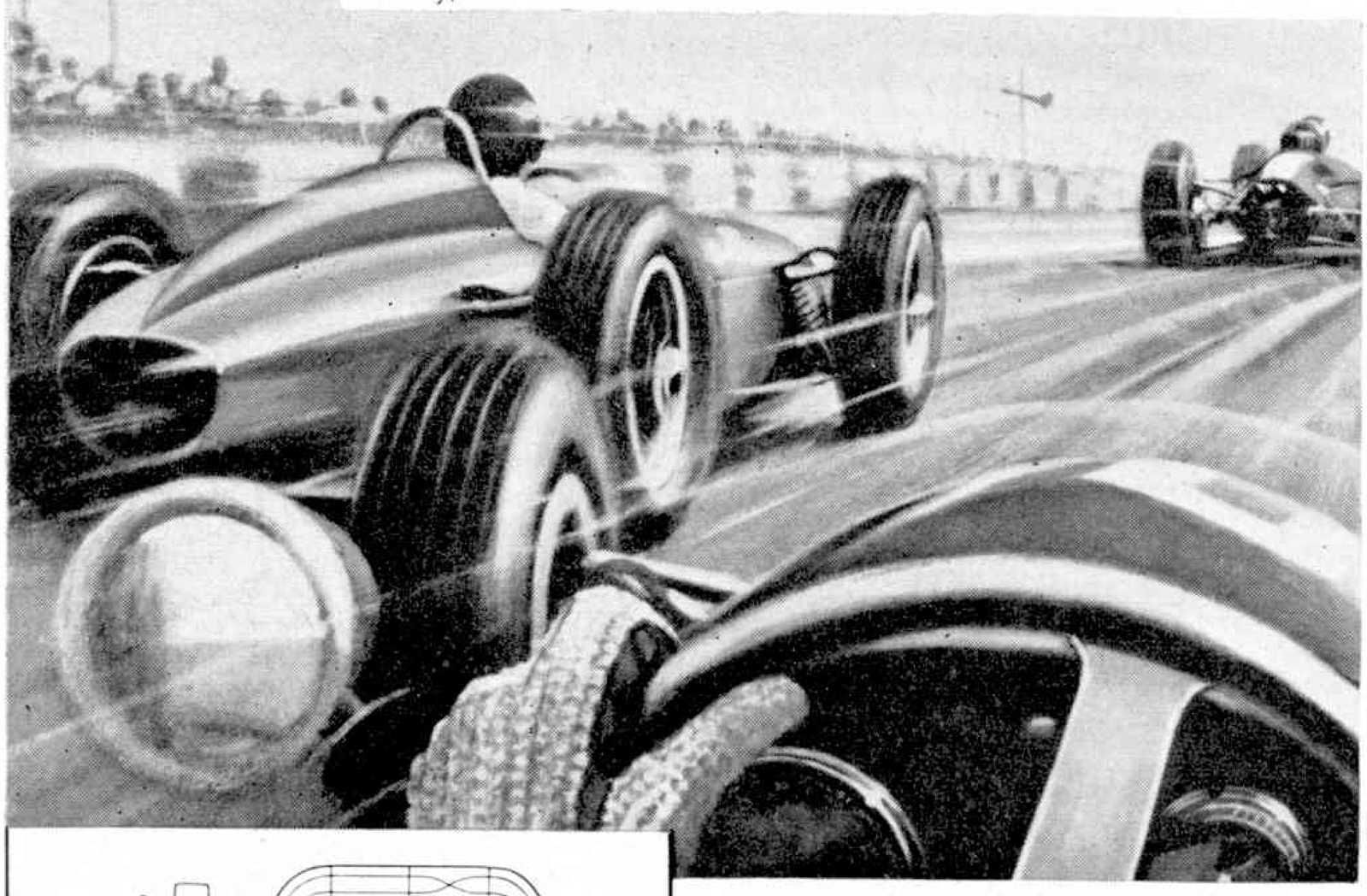
Provided you make these checks when you buy, you should be fairly safe in your purchase. But, if in doubt, take someone along who knows something about cameras. And when you buy a camera, insure it! You never know when it may be stolen or damaged. Next month, we will look at some of the points to watch when buying other items of equipment.

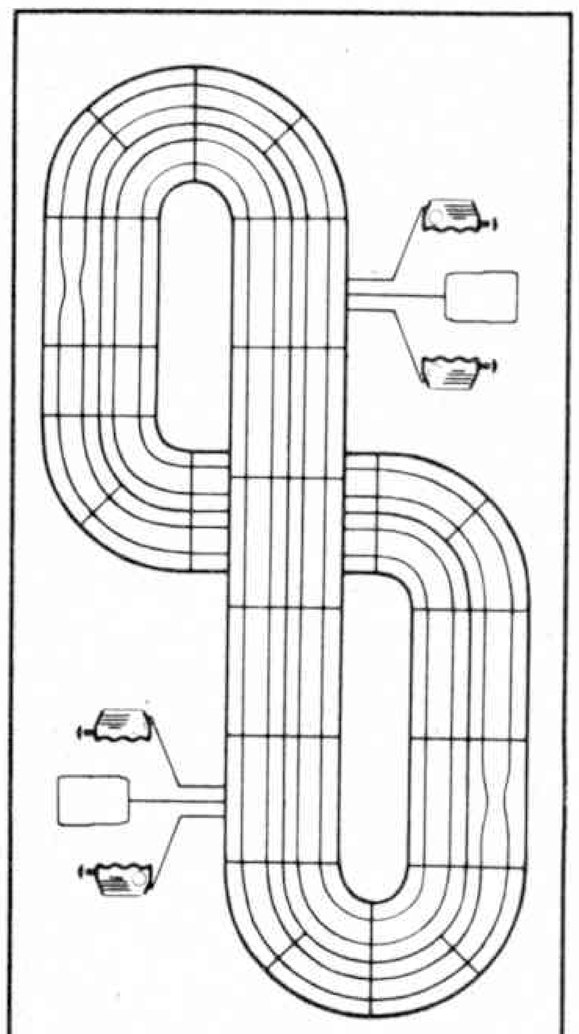
Quick Camera Check

Items to check when buying a new camera

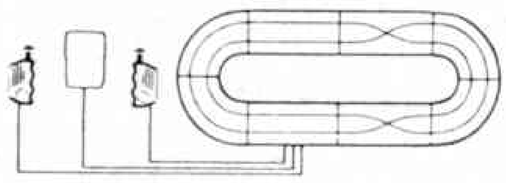
Lens clean free from chips and scratches
Focusing smooth and accurate
Bodywork not loose
Bellows not leaking or crushed
Back of camera good fit, no leaks
Winding mechanism in good order
Shutter clean and not worn
Flash synch working
Exposure meter not dirty or worn out
Generally clean and undamaged

BE A CHAMPION!

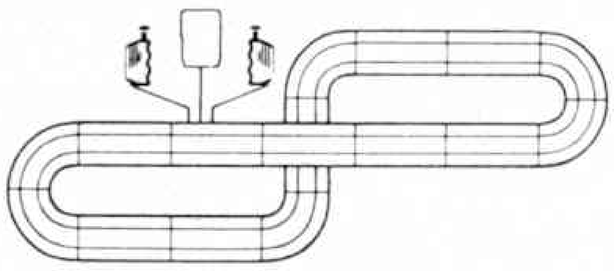




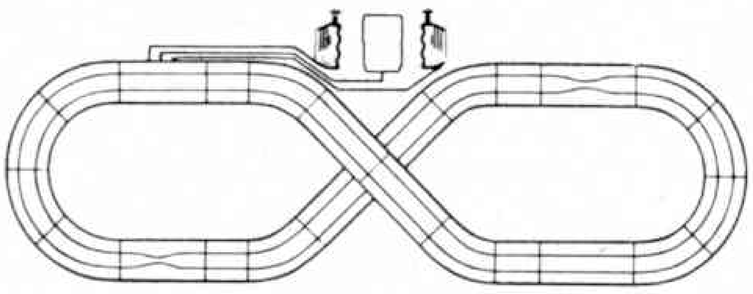
Sets B and C combine to form this 4 lane layout. 28½ ft. of figure-8 track. Area of layout 69½" x 34".



X.100 Set A. 79/11 6 ft. of track using small radius (Inner) curves and two cross-overs. Area of layout—36" x 15".



X.110 Set B. 99/11 12½ ft. of figure-8 track, using small radius (Inner) curves. Area of layout—66" x 25".



X.120 Set C. 130/- 16 ft. of figure-8 track, using large radius (Outer) curves. Area of layout—83" x 25"

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X.353 Mercedes 300 SL Hard Top. Length 4⅛". 19/11d. Also open sports version.

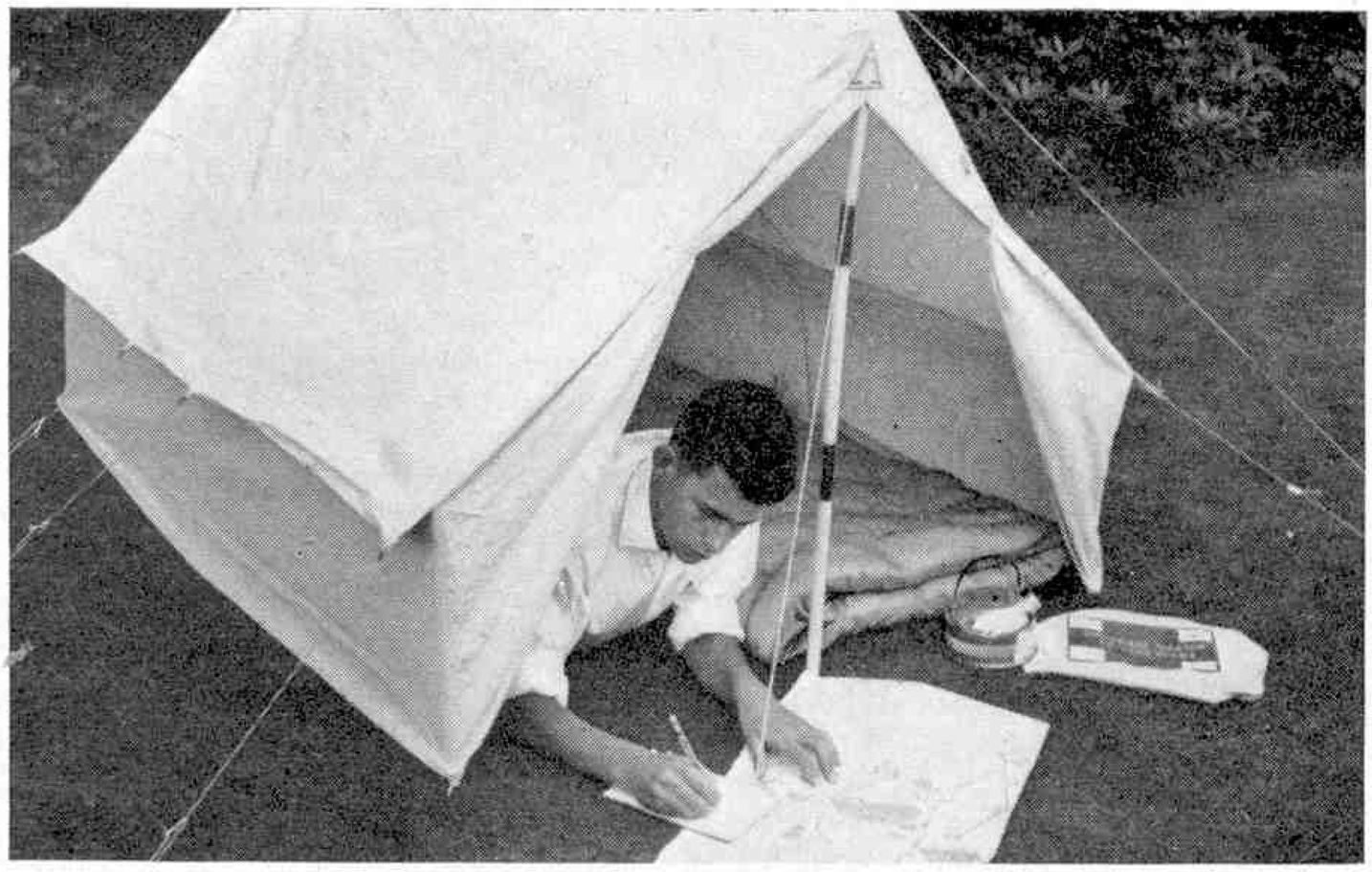
X.360 BRM Formula 1. Length 4⅛". 19/11. Also in plated finish, at 21/-

GRAND PRIX RACING AT YOUR FINGERTIPS!

Playcraft

TRADE MARK

See them all at your model shop!



What to take camping

BEFORE any expenditure is made on camping equipment, the camper should decide where he intends to camp, the length of his stay at each site and his means of transport to the original and between subsequent sites.

If you are walking to and from your base camp, you will certainly need a rucksack, but if you are cycling, the correct method of carrying gear is in pannier bags fitted to the bike. The camper who burdens his back with a pack unbalances his machine to the point of being a menace to the safety of all other road users.

When getting a rucksack it is always worth paying a little extra for a model which has a frame base. The purpose of the frame is to enable air to circulate between the body and the load. It is also essential to comfortable carriage, to fit the rucksack frame to the physique of its user. The ideal sizing is when the base of the frame hugs the owner's back just below the waist. Most rucksacks available in this country are sold for adult use and measure 15 to 17 inches across the frame base, but if this is not the right size for you, it is best not to accept the item but go from shop to shop until you do find the proper fitting.

Another important facet of travelling comfortably when carrying all your needs on your back is packing the rucksack correctly. Start by setting out all the items you think you might need, the night before you go to camp, and then break the original large pile into two small ones—essentials and 'not-sures'.

This task becomes easier as you become more experienced at camping. Follow the same process on your return from camp, this time calling the two heaps of equipment 'used' and 'unused'. For your second camp, you will pack only those goods which qualified for a place in the used pile the first time around.

A good basic selection of equipment for a weekend camp would be: tent, groundsheet, canvas water bucket, pocket primus stove, cooking outfit, matches in waterproof container, spare fuel for stove, camp cutlery, tin opener and sleeping bag. Also, a must in any camper's kit, is a first aid set. Get your local chemist to make you up a kit containing bandages, Elastoplast, etc., not forgetting anti-midge and mosquito cream.

Food for camping

When deciding what food to take with you from home, concentrate on solidly packaged or dry goods which cannot contaminate clothes or other equipment in the rucksack. Look for items in tubes; these days you can even buy butter packaged in this way. On the whole, if you are trying to keep the weight of your equipment down, it is better to look for dried food items rather than tins. Foil packets of soup cost only pence, but are an excellent addition to the camp menu. Excellent dried vegetables can also be purchased in this way.

Obviously all perishable or greasy foods, such as butters or cooking fats, should be sealed into screw top containers, and here the light weight of plastic boxes can be a real boon to the spartan camper. Traditional camping foods like porridge should also feature on the camp cook's list.

Finally, a squeezy pack of washing-up liquid should also be added to the equipment of every camping group, since it is most important, particularly when trying to cut down on the amount of washing-up necessary, that all pots, pans and plates are scrupulously clean.

When the washing-up is completed, the water should be disposed of in a grease pit. Dig a hole a little distance from the main camp, but within easy reach of the area designated as the 'kitchen'. Place pebbles, shale or broken brick at the bottom of the pit and cover the top with a 'lid' made of interlaced twigs with a final layer of straw or grass. Pour liquid rubbish into the pit after each meal is concluded, replacing the hay and straw layer and burning it each time. It is also necessary to build a special disposal pit for dirty water, because if this is simply thrown out on to the ground it will attract flies.

A trowel is an essential piece of camp equipment to bury tin cans and non-inflammable rubbish, as well as to create temporary camp toilet facilities. In lieu of plumbing, the camper will need to dig himself a shallow trench which will be daily disinfected with the sprinkling on of a powdered disinfectant. For large group camps, chloride of lime is a useful chemical for this purpose.

When digging the toilet trench, don't let your enthusiasm run away with you. Natural waste products are more speedily absorbed into the soil from a shallow excavation than a deep one. Even for a standing camp of a fortnight's duration, a hole approximately four feet long, a foot wide, and six to nine inches deep, should be quite sufficient for all occupants.

Ideas for the Cyclist

So far we have directed our remarks mainly to the Shanks' pony camper but, apart from his own basic equipment, it is worth pointing out that the cycle camper must carry first aid care not just for himself but for his machine.

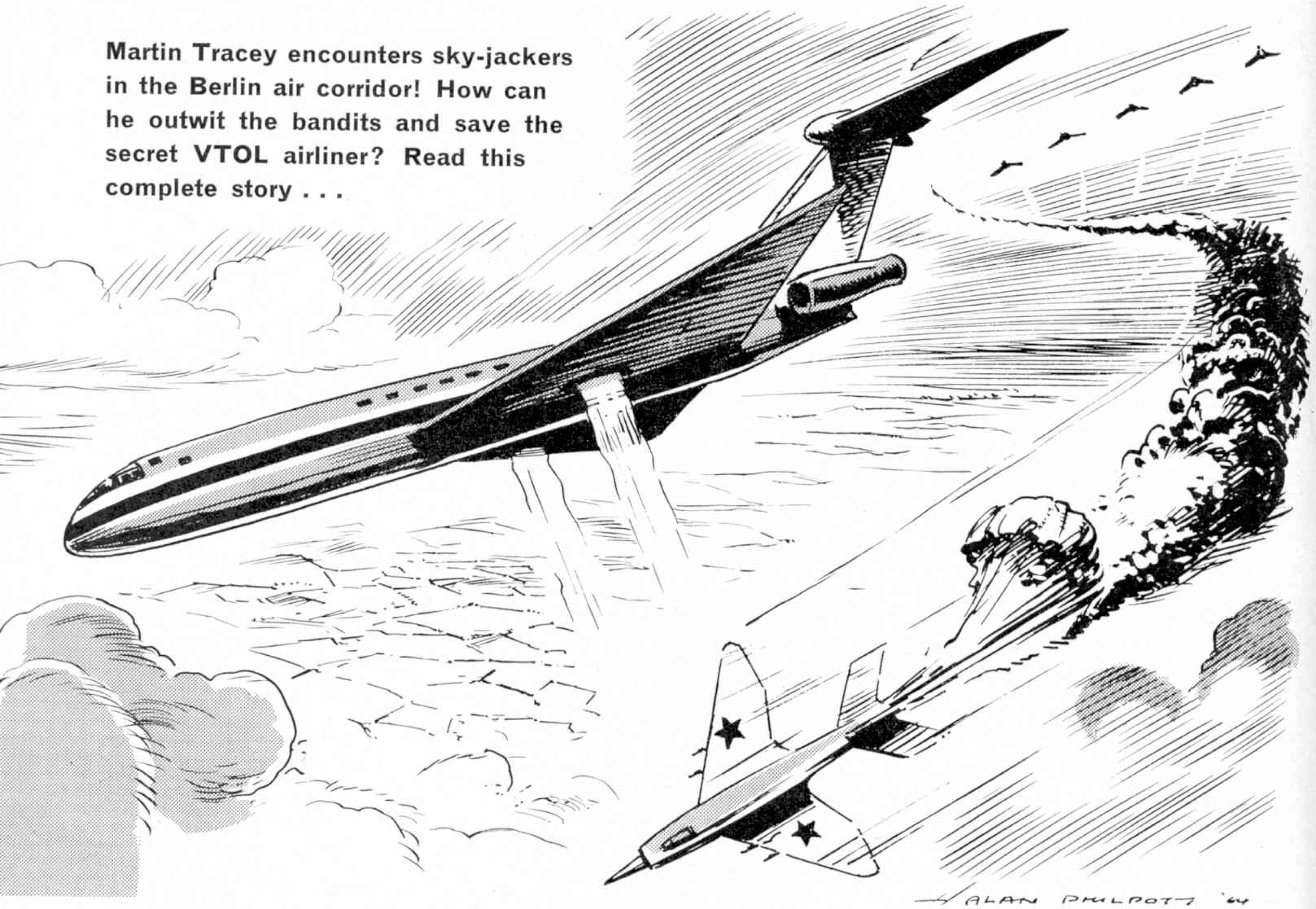
Even if you already possess an efficient repair kit for your bike, it is important to check before you set out on a cycle tour that none of the contents have perished or run out. Spanners, especially, have a habit of being left at home, unless the camper recaps carefully on their presence before setting out.

Take an ordinary spanner for wheels and pedal nuts, as well as a cone type, a tyre lever and a spanner suitable to adjust the bottom bracket of the bike. Spare bulbs for dynamo or battery lamps are also a sensible precaution. As these are breakable items, it is best to wrap them in newspaper or cotton wool and then place them in a match box.

It is also important for the cyclist camper to stow money and valuables in a safe place and trouser pockets cannot be so described while the camper is awheel. A purse inside the pack, a belt which has pockets for change, zip fastened on the outside, or a separate leather bag, such as a camera case, which the rider can take with him whenever he leaves his machine, is a much better bet.

Finally, if you are taking a camera to record your impressions of beauty spots you pass on route to camp, there is not much point in stowing the camera right at the bottom of your pack. Therefore, to avoid having to pull out all your possessions to find the camera, ensure that it is one of the last items to be stowed away! - by **Sonia Roberts**

Martin Tracey encounters sky-jackers in the Berlin air corridor! How can he outwit the bandits and save the secret VTOL airliner? Read this complete story . . .



Bandits in the Corridor

'HE'LL ram us!' Digger Ames instinctively ducked as the jet fighter snarled over the airliner's flight-deck canopy. The fighter peeled away into the clouds below and another machine repeated the manœuvre.

Martin Tracey glanced quickly to one side and saw four more aircraft flying on the same course as the airliner.

'Check our position, Digger', he grated. 'I'm certain we are well inside the corridor and those kites have no right at all to buzz us. If we're O.K., we'll whistle up some Lightnings from Cologne and clobber these jokers.'

Ames swivelled his seat round to the navigation table. His practised eyes flickered over the automatic navigator, while his hands flashed over the map of Europe on the table. It took him precisely 35 seconds to check and double-check the automatic navigator.

'We're at least 50 miles inside the corridor', he announced. 'Dead reckoning, the auto-nav and the radio beacon from Berlin all tally. If anybody's wrong round here, it's Ivan.' Digger jerked his thumb at the six fighters which had formed up in staggered line astern. They were so close that Martin and Digger could see the red stars on the fuselages and the anonymous space-helmeted pilots.

'Right. We'll call in the air force.' Martin flipped down the transmitter switch of the radio, then stopped with a frown on his face. A high-pitched spluttering crackle in the headset drowned the transmitting hum and it was obvious that speech would have been impossible. The expression on Digger's face told him that both headsets were similarly affected.

The airliner's radio was being jammed —and jammed very effectively.

'Will Morse cut through this mush?' Martin asked.

'Not in a hundred years', the lanky Australian grunted. 'We might flash out one Mayday, then the jamming would be stepped up to blot everything out long before anybody could get a fix on the signal. I reckon they've got us on toast.'

Martin scowled at the fighters and then stiffened as the pilot in the lead waved his arm.

'Cripes, he's semaphoring,' ejaculated Digger.

No reply came from Martin who was watching the Russian pilot closely. Then he realised the meaning of the signal and pressed the switch down on the receiver. Immediately, the set buzzed into life and a cold, metallic voice crackled in the headset.

'British aircraft—wave if you are receiving me,' Martin looked across at the fighters and waved at the lead pilot. 'Good. Now listen very carefully,' came the Russian's voice again. 'You must follow me to the bomber station in East Germany. My flight will box you in and if you attempt to escape, we will shoot you down.'

In a tight corner

The Russian's voice stopped and the fighters moved into a tight box round the airliner with the leader taking station a short way ahead.

Tracey compressed his lips. There were no guns on the airliners; the radio was out of action and the air corridor

to Berlin was empty. Except, of course, for the Russian fighters. This was obviously a well-planned operation to hi-jack the prototype of the world's most advanced airliner—the Stanford VTOL.

The aircraft could land or take off in its own length and even fly backwards! Its cruising speed was just below the sound barrier and exhaustive tests had shown it to be one of the safest aircraft ever made. The main reason for its safety claim was that no long approach was needed to land and the dubious control arrangements at many European airports have made the approach a major hazard for big jets.

The proving flight for the Stanford VTOL had been arranged to start from White Waltham and finish at Berlin—mainly to impress foreign aviation experts. No special arrangements had been made to fly through the neutral air corridor to Berlin because none were necessary, or so it had been thought.

But now, it looked very much as though the airliner would vanish behind the Iron Curtain. True, it would soon be released, but during its short imprisonment all its secrets would be revealed.

Martin Tracey was in one of the tightest spots of his career. If he followed the Russian orders, he would be responsible for losing the VTOL. If he tried to escape, the airliner would be shot down and the time it would take to build another prototype would enable the Russians to catch up with their own designs. Unless, somehow, he could trick six highly-skilled pilots in fast, heavily-armed fighters.

All these thoughts flashed through his brain in a few seconds but in that short time, the VTOL was boring at a steady 600 m.p.h. towards East Germany and capture! Then Tracey had an idea.

'Buckle your harness, Digger,' he said, 'I'm going to have a go.' Digger Ames knew better than to ask time-wasting questions and contented himself with fastening his seat-belt and keeping his eyes well open.

Tracey fights back

Martin flashed a quick look round at the fighters, then pushed the control column violently down and banged the throttles wide open. Even though the airliner was a huge, relatively cumbersome machine, it responded instantly. The nose dropped down and the 'plane went into a screaming power-dive that, for a second, took the Russians completely by surprise. Then the fighters snarled down after it.

'They won't open fire yet, Digger,' grinned Martin. 'They've got orders to get us back in one piece and they'll get a huge rocket if they shoot us down.' As he spoke, he pulled out of the dive as violently as he went into it, throttled right back and dropped the massive air-brakes from under the wings.

The huge aircraft shuddered under the tremendous stresses of slowing down from over 600 m.p.h. to about 200 m.p.h. As the airspeed indicator needle tumbled down the scale, Martin slammed the hover-jets into action for full reverse thrust and the 'plane literally stopped in mid-air.

The Russian fighters screamed past and were almost out of sight by the time they started to regroup. And in the few seconds it took for the fighters to return, Martin had dropped down to about 6,000 feet with the hover-jets balanced to keep the airliner just under way.

The Russian flight-commander was quick on the uptake. Digger and Martin saw the fighters lowering their flaps and wheels to reduce their speed, but the slowest they could manage without stalling was just below 200 m.p.h.—and that meant they whistled past the VTOL again.

Martin was still losing height and then he began to turn the liner in that weird, insect-like dance of the vertical take-off machine balancing on its jets. Back came the fighters and this time, the flight-commander meant business.

Flying as slowly as his machine permitted, he broke out his landing parachute. But he had overdone it. The fighter slowed down too much and fell away in a stall. A great burst of smoke came from the exhaust as the pilot desperately opened the throttle to combat the stall and the nose reared up as the power came on.

One down–five to go

For a second, it seemed as if the pilot had made it, but the parachute had spoiled the fighter's trim and the nose rolled over. The fighter spun down and exploded in a huge sheet of flame—the pilot never had time to fire his ejector seat.

'That's done it,' commented Digger sourly. 'Those Ivans will be dead narked with us now.' He was quite right. The fighters regrouped and levelled off for an obvious attack with their wheels and flaps going up.

Martin had turned the 'liner right round and had lost height till he was literally hedge-hopping at less than 60 m.p.h. The first fighter was screaming in to the attack in a slight dive on the 'liner's tail and the pilot was obviously 'dead narked' as Digger put it.

He must have been because he certainly overlooked the lack of air-space available. Flame spurted from the wing-mounted cannons and shells burst in front of the airliner as they ripped into the earth. But the recoil from four 40mm. cannons does funny things to an aircraft's stability as this jet fighter proved.

The nose dropped and the air-speed fell by 60 m.p.h. and, at treetop level, there just wasn't enough room for fancy flying. The fighter hit the ground at 600 m.p.h., ripped across a field, through a hedge and into a wall where it exploded. The pilot crashed out in his ejector seat as soon as his 'plane hit and Martin saw something that froze him to the controls.

The ejector seat and pilot soared straight up into the air intake of the third fighter. Instantly, the engine cut and the machine dropped like a stone into the fields.

Digger and Martin gazed in horror as a sheet of flame enveloped the fighter, then Martin snapped into life again. 'Looks like we've won, Digger.' He indicated the three surviving fighters regrouping some way off with the obvious intention of returning to base.

'Let's hope they can make up a good story for their C.O.,' grinned Digger. 'I wouldn't like to explain how an unarmed airliner brought down three fighters and scared three more off!'

Martin chuckled. 'That's their problem. Let us get to Berlin as fast as we can just in case they bring some of their pals back with them.'

Half-an-hour later, the Berlin radio beacon blipped a welcome and the neutral English tones of the German traffic controller came over the radio—now working properly.

'Land on runway green eight, Stanford VTOL. Welcome to Berlin and did you have a good flight?'

Martin grinned again before replying. 'Thank you, Berlin. Uneventful flight apart from a little radio trouble in the corridor. Coming in to land now. Over and out.'

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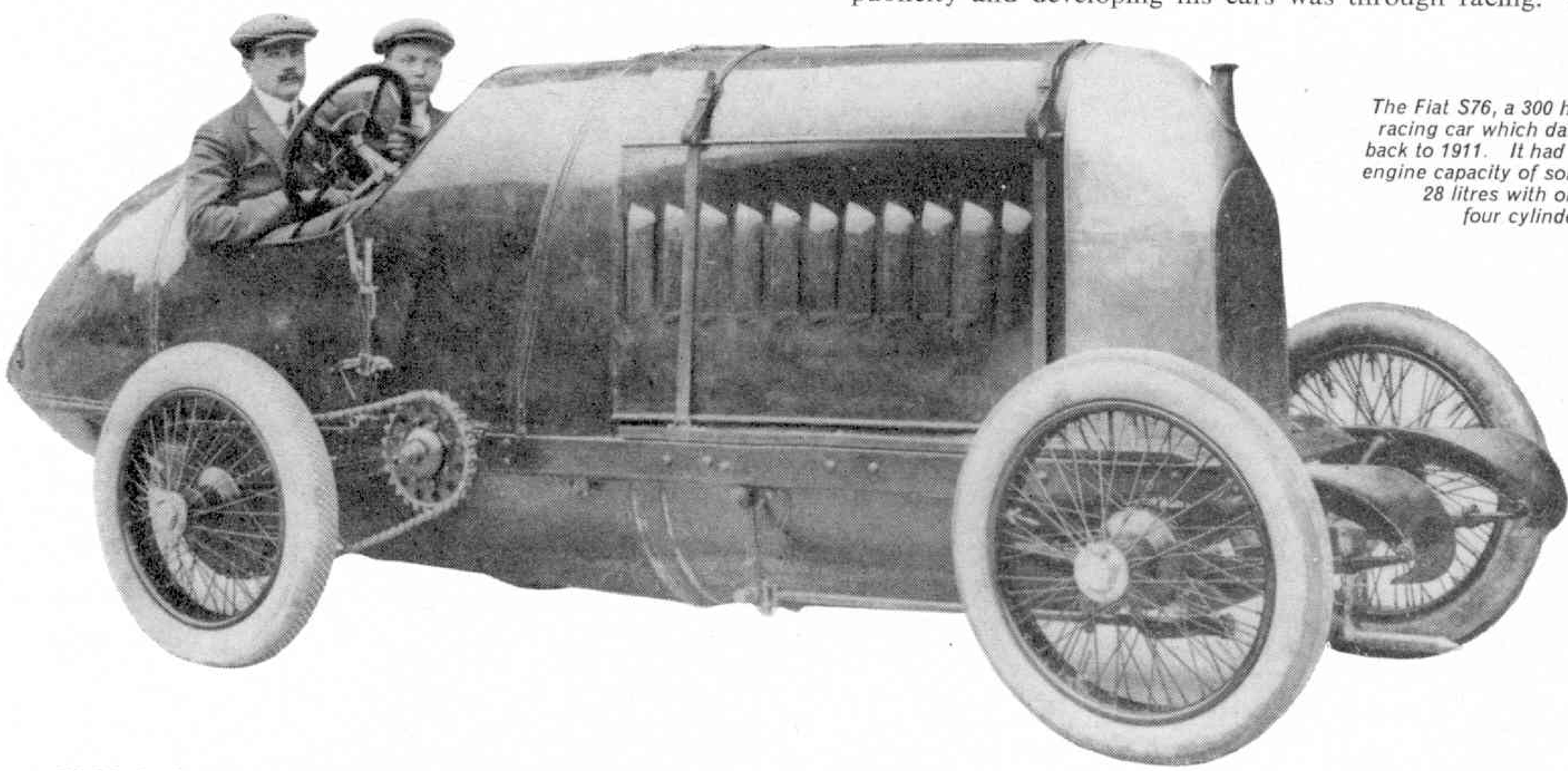
by **Jerry Ames**

The Fiat Story



The Fiat S76, a 300 h.p. racing car which dates back to 1911. It had an engine capacity of some 28 litres with only four cylinders

LONG before Ferrari became a great name in racing, Fiat gained the limelight for Italy, with victories in the big International races. Fiat, whose early successes include the French and Italian Grands Prix and the Targa Florio, once held the World's Land Speed Record, when, during the summer of 1924, a British driver, Ernest Eldridge, was timed over the kilometre at Arpajon at 146·01 miles per hour in his giant Fiat Mephistopheles. This was the last time the World's Land Speed Record was run on public roads.

Fiat retired from Grand Prix racing in 1927 and its swansong was a runaway victory in the Monza Grand Prix of that year, with the only appearance of a new, supercharged 1½ litre V-12 Grand Prix Fiat. This had an advanced engine that still gives designers food for thought.

An old oil-engine found on a scrap-heap in 1892, near Verona, Italy, led to the construction of the first Fiat motor car. Today, the giant Fiat concern, with headquarters in Turin, is one of the largest car manufacturers in Europe and from its giant production lines come ninety per cent of all cars sold in Italy.

Two wealthy, young cavalry officers, with a passion for anything mechanical, Giovanni Agnelli and Giulio Gropello, became fascinated by that old discarded engine. They transported it to the barrack workshops where, with the aid of their batman, a trained smith, they overhauled it and made it work.

Their success inspired Agnelli to become a car manufacturer and when he left the army six years later, he teamed up with two Italian noblemen, a lawyer and a banker, with the object of buying a suitable works where they could build cars. That year, they bought a flourishing bicycle factory at Turin, owned by the Ceirano brothers, and by the following spring had constructed the first prototype car, which proved an immediate success.

The summer of 1899 saw the beginnings of Italy's largest car factory, Fabrica Italiana Automobile-Torino, whose cars were known by its initials, F.I.A.T. Orders came rolling in for the first Fiat in 1899 with 3½ h.p. water-cooled, two-cylinder engine at the rear, three-speed gear box, tiller steering and chain drive. The car was moderately priced at £170.

Agnelli soon realised the quickest means of achieving publicity and developing his cars was through racing. In 1904, Fiat racing machines gained their first success when Lancia, then a test driver with Fiat, won the Coppa Florio in a 75 h.p., four-cylinder model.

The following year, Fiat introduced engines with pushrod operated inlet and exhaust valves contained in hemispherical cylinder heads. They were enormous machines with 16 litre engines.

In 1906, Fiat racing cars were among the first to use detachable wheel rims, which reduced the time needed to change tyres and that year, Wagner won the American Grand Prix in a Fiat, which later led to the cars being built under licence in the U.S.A. until 1917.

It was in 1906 that the cars were officially called Fiat. Led by the redoubtable Felice Nazzaro, Fiat won the three most important races of 1907—the Targa Florio over three laps of the rough Madonie circuit across the mountains of Sicily, where each lap measured 90 miles—the coveted French Grand Prix, regarded as the Blue Riband of motor racing, over the shorter course at Dieppe, where Nazzaro averaged the prodigious speed of 70 miles an hour for 477 miles including stops for fuel and tyres and the Kaiserpreis in the Taunus mountains, Germany.

These victories set the seal on Fiat fame and led to an

enormous demand for their production cars. Shortly before the 1914-18 war, Fiat built 28-litre monster racing cars, with 300 h.p. engines, claimed to be capable of over 140 miles an hour. In the early 1920's, one of these cars, bought for one hundred pounds and much modified by E. A. D. Eldridge, thrilled the crowds at Brooklands as it thundered round the outer circuit at more than 120 miles an hour.

After the Kaiser war, Grand Prix events were not resumed until 1921. Fiat, however, had maintained a very active racing department and Nazzaro won the 1922 French Grand Prix at Strasbourg, over 499 miles, in a new six-cylinder two-litre Fiat, at a speed of 79·2 miles an hour.

The following year, the team appeared in brand-new, two-litre cars, with straight-eight engines, using superchargers for the first time. In their early races they proved unreliable, but later in the year, Salamanno's supercharged Fiat won the Grand Prix of Europe at Monza in great style at 91 miles an hour.

Four cars were run during 1924, but engine trouble prevented them scoring and at the end of the year, Fiat announced their withdrawal from racing.

Fiat's last race

In 1927, however, Fiat made a solitary appearance with a completely new Grand Prix car—the brilliantly designed, 1½-litre, V-12 supercharged machine, developing 175 b.h.p. at 7,500 r.p.m. It won the Milan Grand Prix at Monza with ease, averaging 94·57 miles an hour in the rain, outpacing such rapid machines as 2-litre Grand Prix Alfa Romeo and Bugatti.

This victory was Fiat's last Grand Prix race, but the V-12 machine is still preserved. One of its designers, Jano, was later responsible for the famous monoposto Alfa Romeo and today he is a chief engineer of Ferrari.

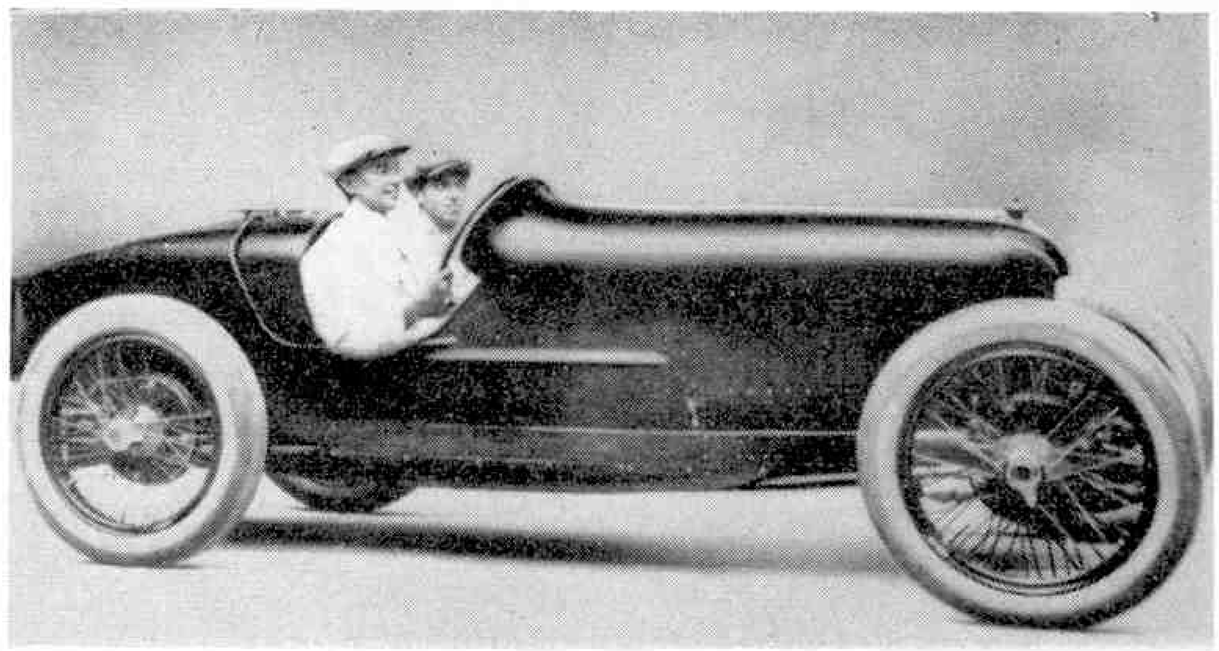
Before 1930 there were splendid large Fiats, including the '40', rated at 27 h.p., a luxury vintage vehicle for grand touring. But it is for their small, lively, highly-manœuvrable cars that Fiats are perhaps best known, an outstanding example being the Balilla, which appeared as a sports model in the 1933 Mille Miglia, when 15 finished the gruelling race.

Its high-revving 995 cc. engine took it to 85 miles an hour in standard sports form, although it could be made to exceed 100 miles an hour at the risk of crankshaft trouble. The Balilla was later enlarged to 1089 cc., which became the Fiat 1100, a model with us today in up-to-date form. A post-war surprise was the 1952 V-8, capable of more than 120 miles an hour, its handsome coupé body inspired partly by the experimental Fiat gas turbine car.

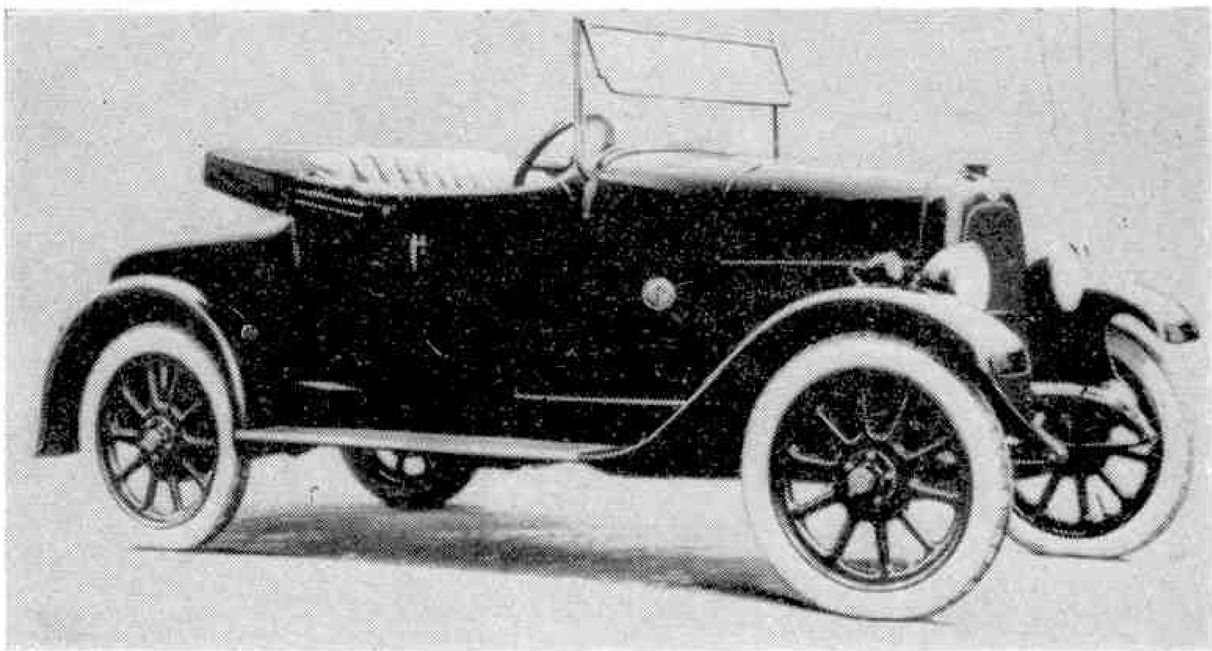
A startling small car innovation was the '500' with 570 cc. engine, affectionately known as the 'Mouse'. When introduced in 1937, it set a trend that has continued.

Its post-war counterpart, the '600', was later joined by the lowest-priced big production car in the world, the Fiat 500. Big production of small cars is the life-blood of Fiat's present great plant at Turin, still controlled by the Agnelli family. But bigger models are by no means neglected, one of the most successful being the 1500, a lively 93 miles an hour family saloon with good road-holding and brakes, also the six-cylinder 2300 available as saloon, estate car or 120 miles an hour sporting coupé.

This year, Fiat have introduced a very lively 850 with all-independent suspension, a top speed of just over 75 miles an hour and fuel consumption in the region of 40 m.p.g. Like all Fiats, it has exceptionally good road-holding and handling. Expected in the future is a Fiat 1100 with front wheel drive, a model that could add further fame to the name Fiat.

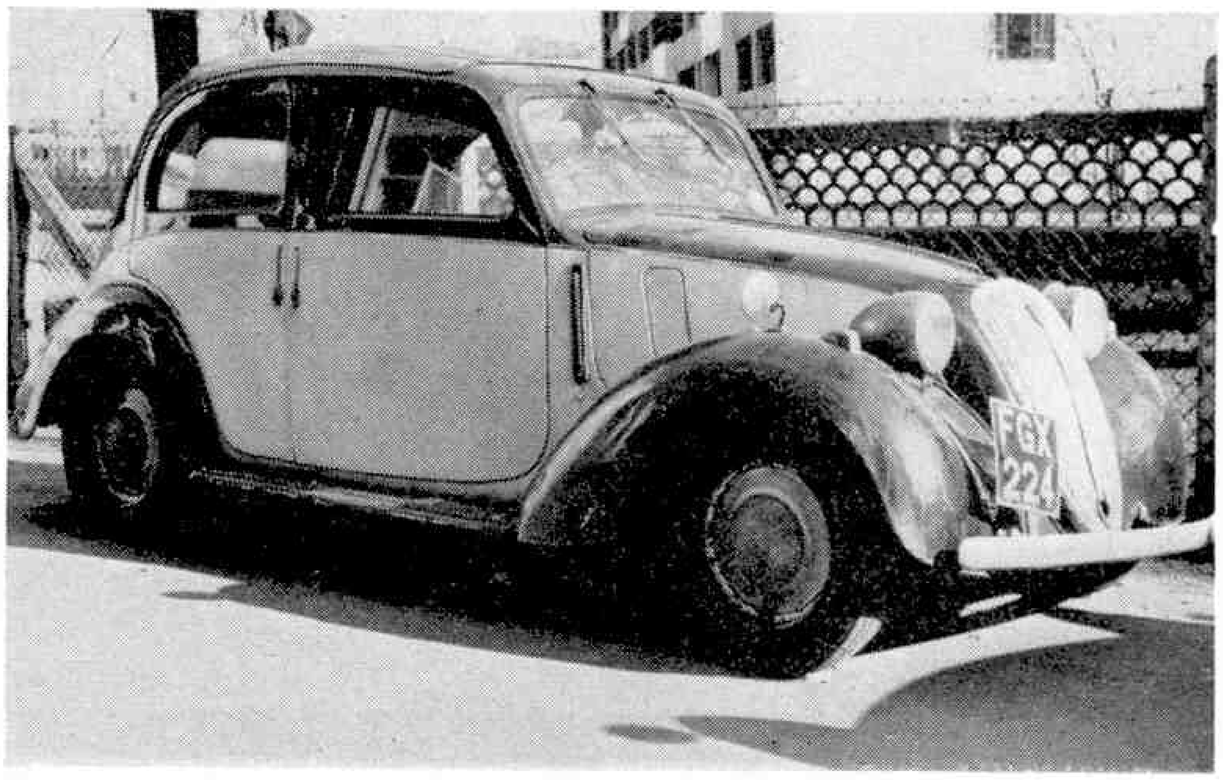


The winner of the 1922 'Grand Prix de France' the Fiat Tipo 804

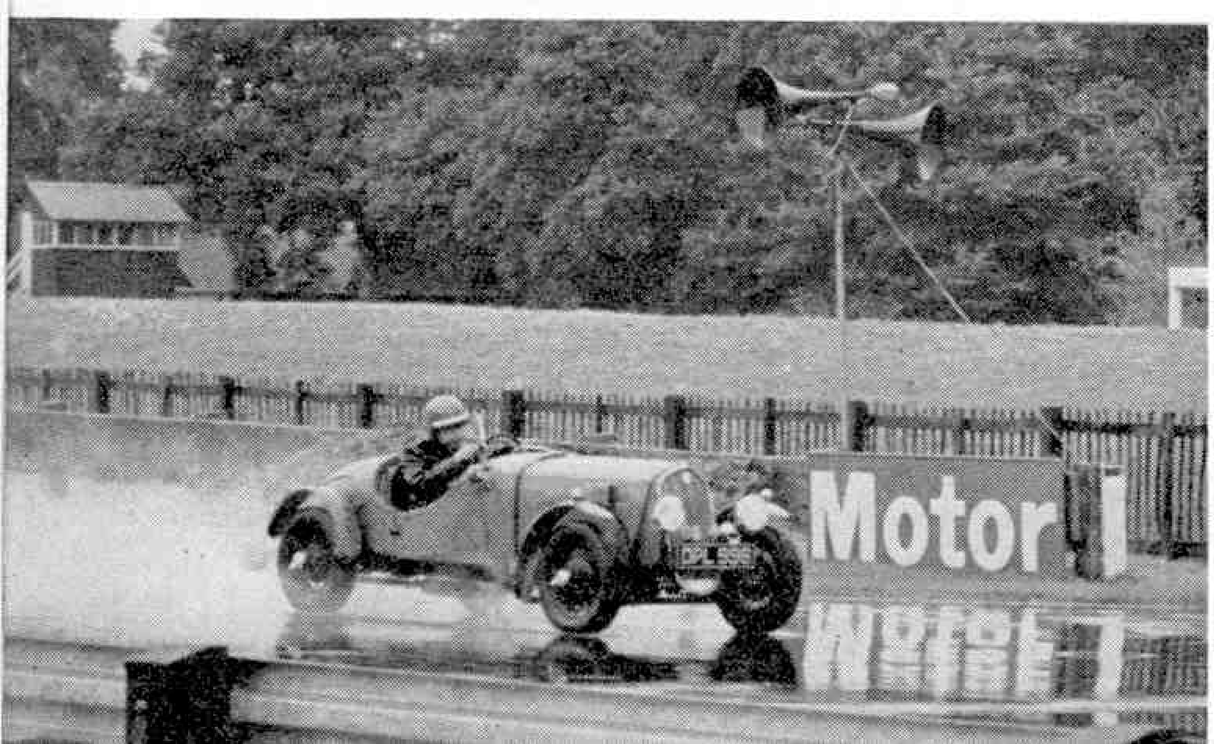


Above: The 1924 Fiat model 501 (4-cylinder 10-15 h.p.) Spyder.

Below: One of the first Fiat 1100s, the 1937 tipo 508C Balilla



The 1935 Fiat Balilla averaged 56.02 m.p.h. in a recent commemoration run



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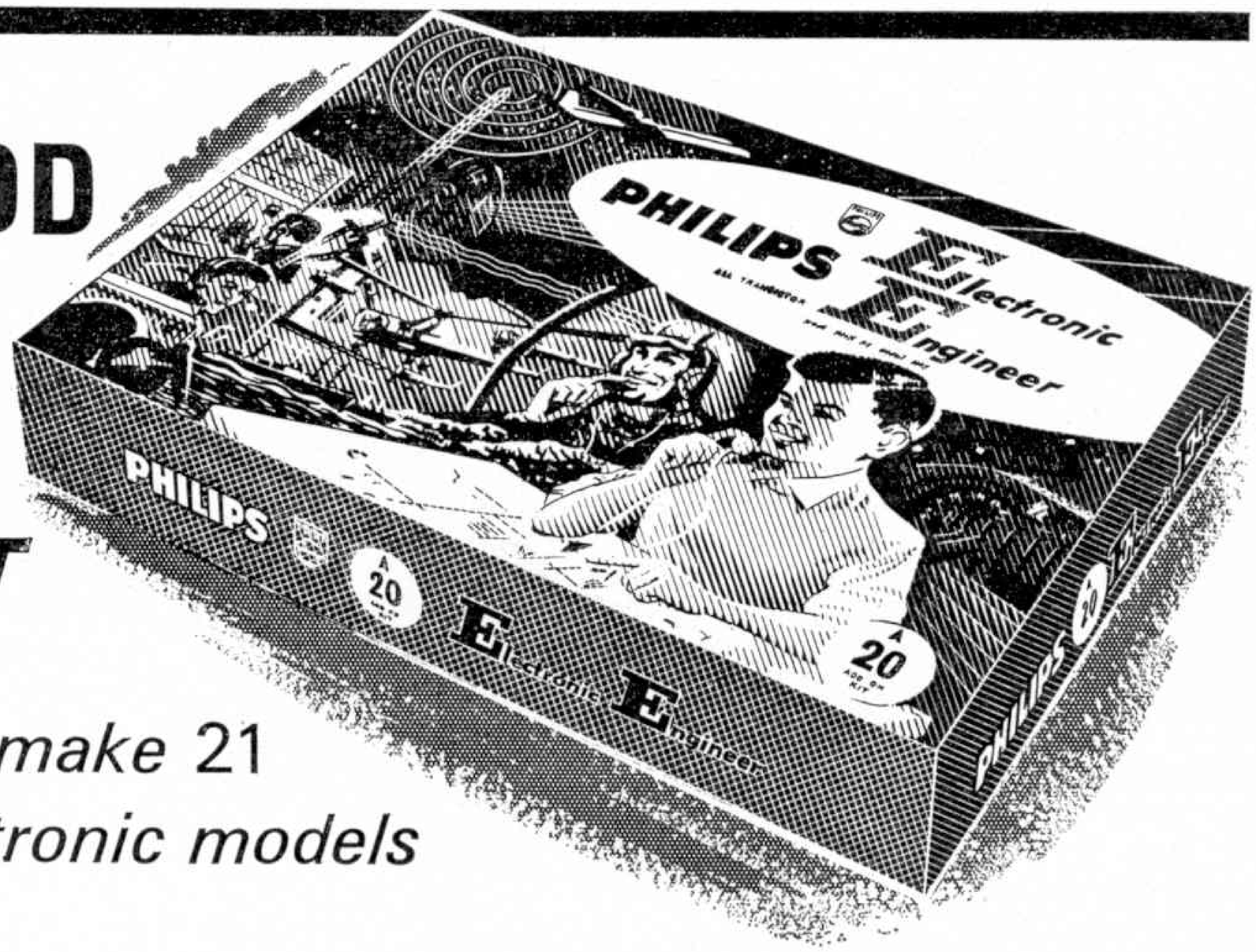

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(EK04)

STOP WITH SAFETY!

YOU can only cycle confidently if you have good brakes. They are also vitally necessary if you are to cycle *safely*. Just *having* brakes is not good enough—they must work, and work well. This means they must be correctly adjusted, properly lubricated and not have worn brake blocks.

Adjustment on the rod brakes fitted to most roadster bikes, is usually by means of a short clamping bolt where a rod passes inside a tube. With the bolt loosened, the length of the operating rod above the stirrup can be lengthened or shortened to adjust the brake block clearance.

The guides in which the brake shoes move can be raised or lowered as necessary. Make sure that they do not jam at any point and keep them oiled or lightly greased. All the pivot points, of course, need oiling to keep the brakes operating smoothly and easily.

Fitting new brake blocks is a simple enough job. The old shoes can be removed by undoing the locking nut. Lever out the old block with a screwdriver. Take great care that the new brake blocks are of the correct size and type and ensure they are fitted the right way round. The best way is to hold the shoe in its correct position and then hold the brake block so that the camber follows the shape of the rim. Then take the two on to the bench and tap the block into the shoe with a small hammer.

The other point to watch is that the closed end of the shoe faces the direction of travel of the wheel. The pull of the wheel will then tend to force the blocks harder into the shoes. If fitted the other way round, the first time the brake is applied, the blocks will be dragged out of the shoes.

Cable Brake Care

Maintenance with cable brakes poses one or two different problems. Brake block replacement, however, is much the same. Additionally, the blocks must be carefully aligned so they pull exactly on to the rim. If they are tilted, they could either wear the tyre or foul the spokes of the wheel.

Pivot points need lubrication, of course, and so do cables. The best way to tackle the cable is to take it off the brake completely. Pull the inner wire out and then either trickle oil down the inside of the outer cover or apply a light grease to the inner before reassembling.

If the inner wire shows any signs of unravelling or if there are any broken strands, replace it. Sometimes, if the nipple pulls off the end, it is worth resoldering it.

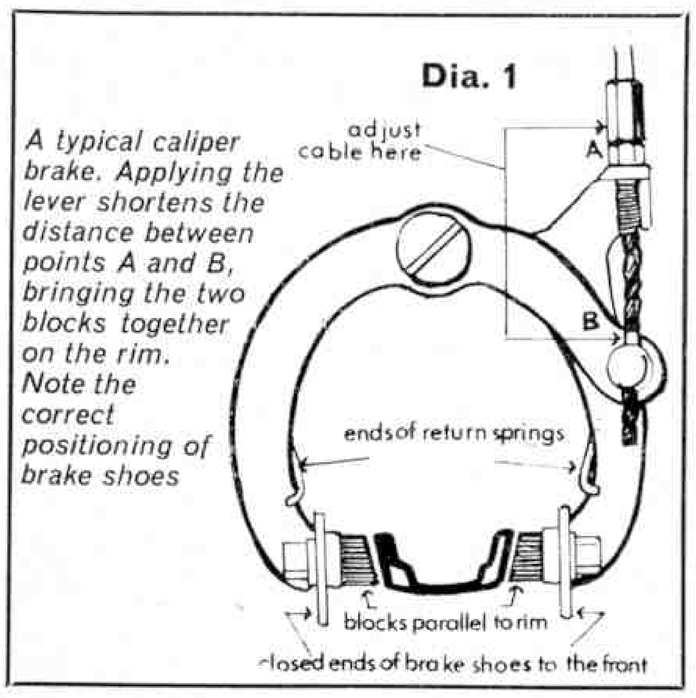
The best way to do the job is to fill the nipple with solder then re-heat it and push the cable through. Let the solder cool and then splay the ends of the wires. Finally, seal the end with a blob of solder and file smooth.

Adjustment of cable brakes is simple. The main adjustment is made as shown in the heading shot. Hold the blocks just clear of the rim against the pressure of the return spring. Pull the wire through tight and then tighten the clamping nut. There is often a screw adjuster on the brake lever on the handlebar for finer setting. Sometimes a screw adjuster is fitted as shown at A in diagram 1.

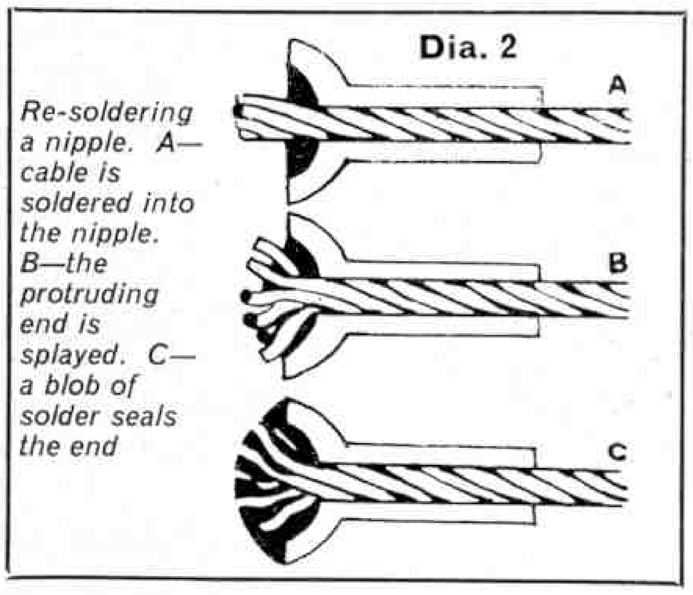
A most annoying fault is a brake which squeals when it is applied. There are several possible reasons for this. Vibration can be the cause, and the cure is to tighten the pivot nuts. Faulty brake block alignment is another possibility. Hard rubber blocks, used in conjunction with an alloy wheel rim can be responsible for a lot of noise as also can rubber accumulating on the rim.

If either wheel locks as soon as the brake is applied or more particularly if the front brake "snatches", the most likely cause of the trouble is a slightly buckled wheel. Some work with a spoke key will probably restore smoothness to the braking.

One other type of cycle brake not dealt with is the hub brake. These are rather specialised and will be dealt with in a separate issue.



A typical caliper brake. Applying the lever shortens the distance between points A and B, bringing the two blocks together on the rim. Note the correct positioning of brake shoes



Re-soldering a nipple. A—cable is soldered into the nipple. B—the protruding end is splayed. C—a blob of solder seals the end

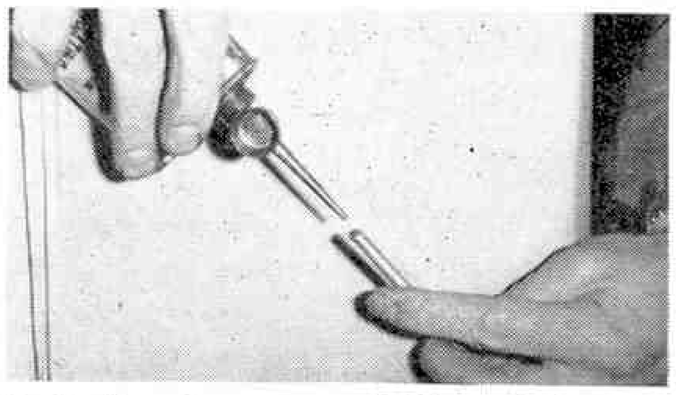


Fig. 5—Here is one way of oiling a brake cable. The inner wire is removed and oil trickled down inside the outer cover.

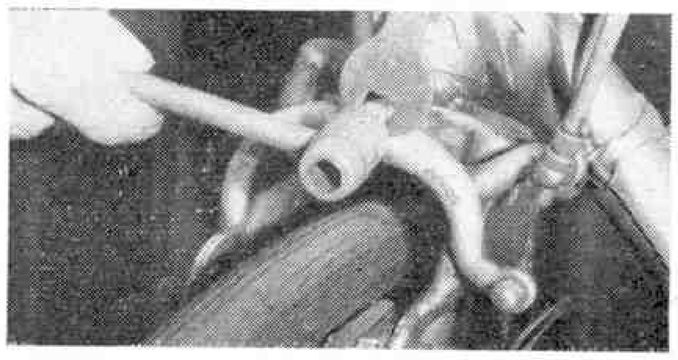


Fig. 1—Correct adjustment of the centre pivot nuts is important. If they are loose, the brake will 'snatch' or vibrate. If too tight the brake will jam.

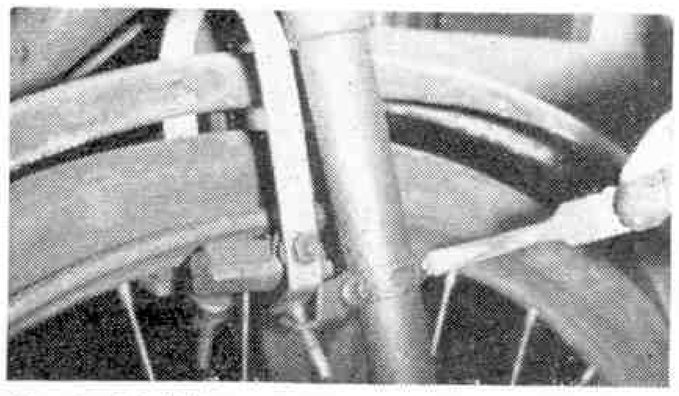


Fig. 2—Stability with the stirrup type rod and lever brake depends on guides clamped to the forks. These must be tightly fixed and correctly adjusted so that the brakes move easily.

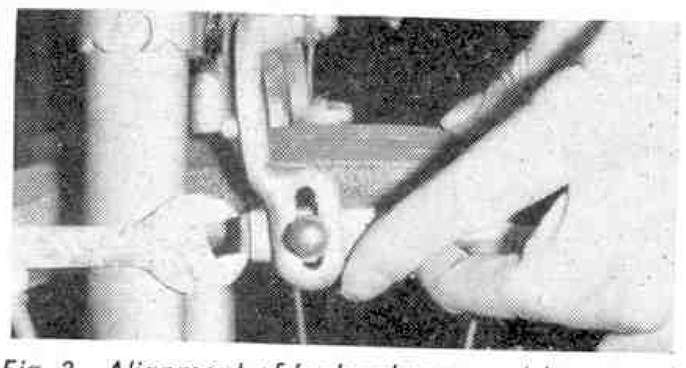


Fig. 3—Alignment of brake shoes must be correct. If one end tilts, it could wear the tyre. Worse it might miss the rim altogether and foul the spokes. A nasty accident could result.

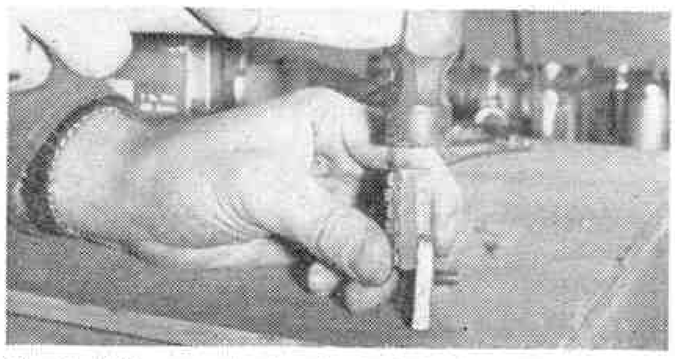
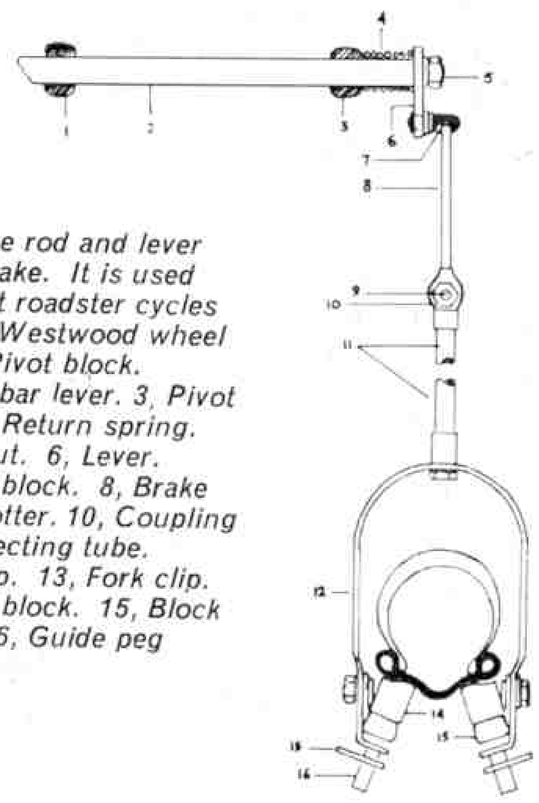


Fig. 4—When replacing brake blocks it is important to obtain the right shape and size. They will fit tightly in the shoes and gentle tapping with a hammer is usually the best way to get them fitted

Dia. 3.

This is the rod and lever stirrup brake. It is used with most roadster cycles and with Westwood wheel rims 1, Pivot block. 2, Handlebar lever. 3, Pivot block. 4, Return spring. 5, Lock nut. 6, Lever. 7, Swivel block. 8, Brake rod. 9, Cotter. 10, Coupling 11, Connecting tube. 12, Stirrup. 13, Fork clip. 14, Brake block. 15, Block holder. 16, Guide peg



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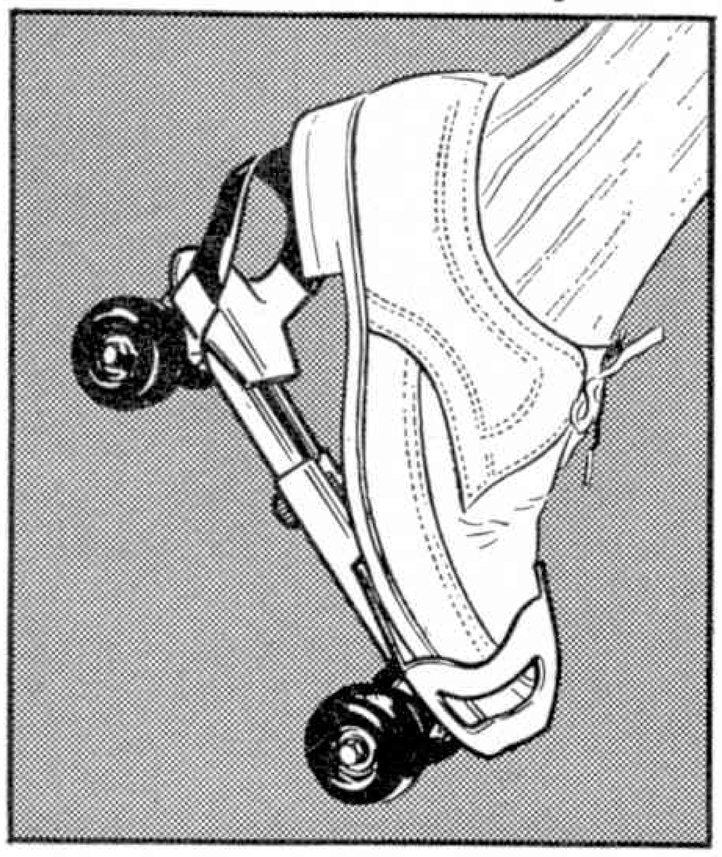

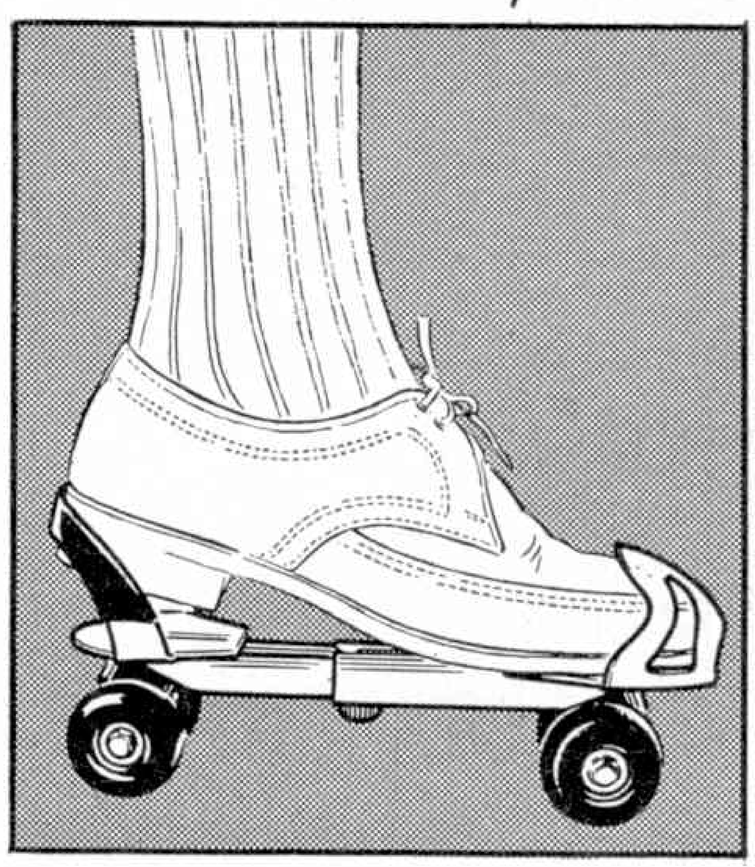

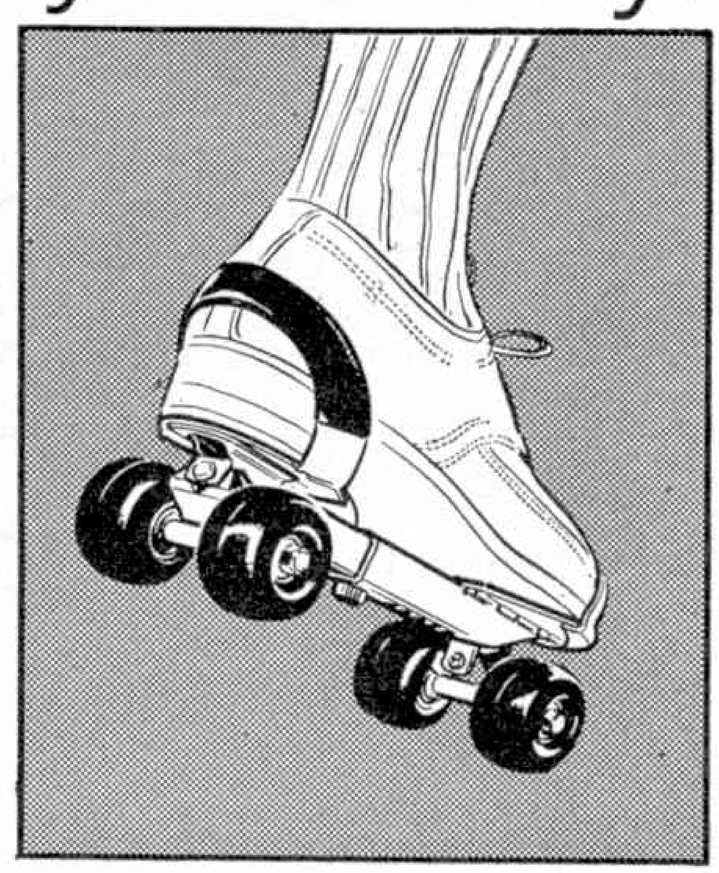

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MECCANO

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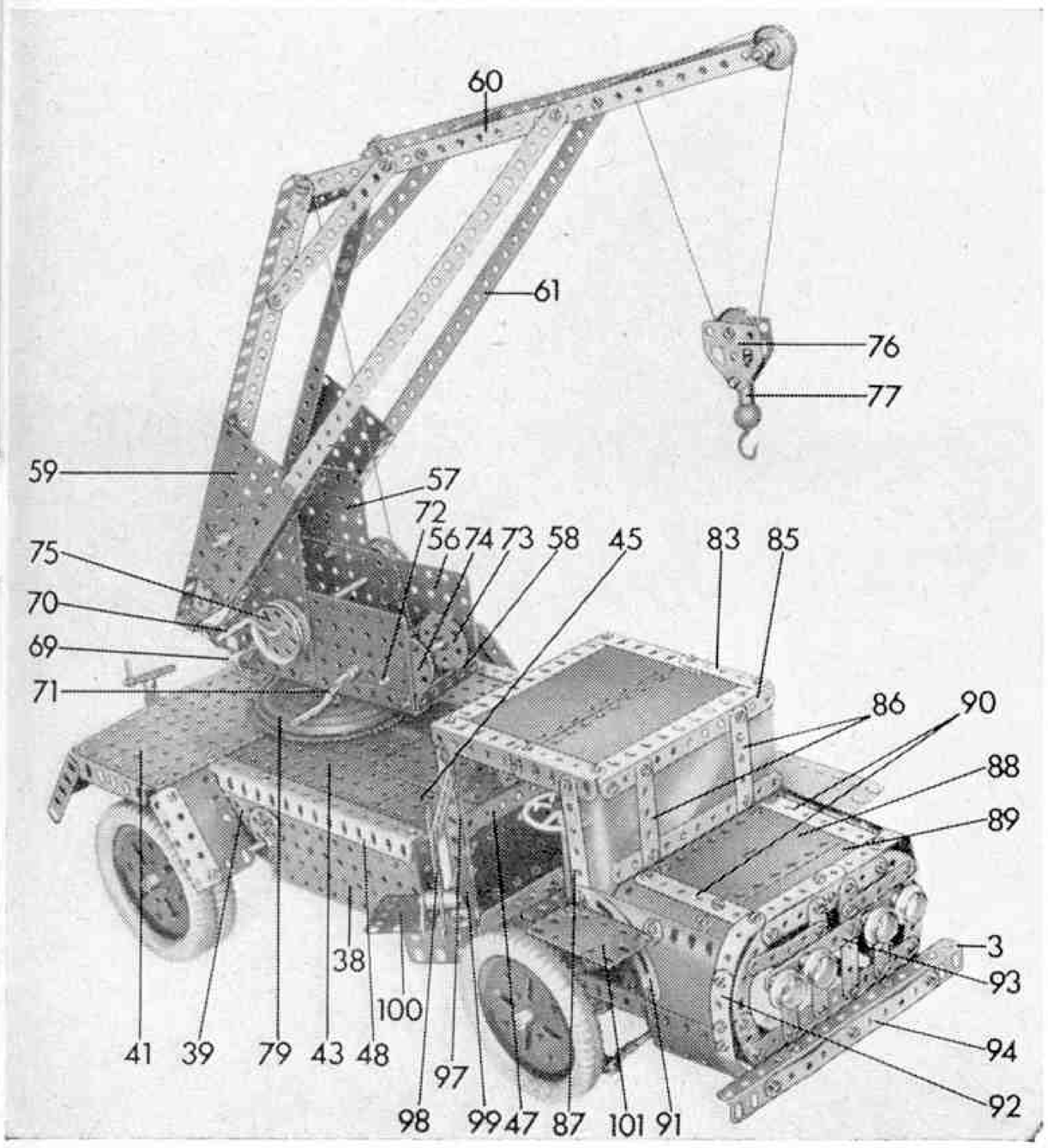
A Breakdown Service Crane

IN the course of my duties as Meccano model-building correspondent for the 'M.M.' I see many different types of models. Many of these are good, but, once in a while, an outstanding example comes to my notice. The Breakdown Crane described here, I feel, falls into this category. It was designed and built entirely by Peter ('Teddy') leConte, of West Kirby, Cheshire and I should like to congratulate him on his obvious mechanical ability.

Experienced builders may notice a few sections of the model where construction could be improved. I do not deny that these exist, but Peter was only 14 when he built it, which is adequate reason for accepting any irregularities. They are certainly not important enough to let an otherwise excellent machine slip by unnoticed.

This large Breakdown Service Crane was built by fourteen-year old Peter ('Teddy') leConte of West Kirby—see text.



To help construction, I have described the model in individual sections, as follows:

Chassis and Steering Gear

Two compound 16½ in. angle girders 1 and 2 are each built up from a 12½ in. Angle Girder and a 5½ in. Angle Girder, overlapped three holes. The compound girders are connected by a 7½ in. Angle Girder 3, a 'U' section channel girder 4, built up from two 3½ in. Angle Girders, two 3½ in. Strips 5 and 6, and a 5½ in. Angle Girder 7. Bolted to each compound girder 1 and 2, but spaced from it by a Collar on a ½ in. Bolt, is a 5½ in. Angle Girder 8, pointing outwards as shown, and fixed at its other end to a 5½ in.×2½ in. Flanged Plate 9.

Four 1 in. Triangular Plates are attached, in two sets of two, to the channel girder 4 by 1⅛ in. Bolts. Between each pair, a Coupling 10, carrying a 1½ in. Rod 11, is fixed by another 1⅛ in. Bolt, Washers being used as spacers. To the top of each girder 1 and 2 a Double Bracket is bolted, directly above the channel girder, and a Small Fork Piece is attached inside its lugs by a ¾ in. Bolt. A 1 in. Rod, with another Small Fork Piece 12 mounted in its other end, is fixed in the boss of the first Fork Piece, then yet another Small Fork Piece 13 is secured on the free end of Rod 11. A Collar is held by Set Screws between the arms of Fork Pieces 12 and 13.

A 1½ in. Rod 14, carrying a free-running Face Plate, is fixed in the transverse bore of a Coupling 15, after which a 1 in. Rod is slipped through each of the Collars in Fork Pieces 12 and 13, and into the longitudinal bore of the Coupling, a Washer being used as a spacer in each case. Grub Screws hold the 1 in. Rods tight in the Coupling, but note that the Set Screws holding the Collars in the Fork Pieces must not grip the Rods. A Collar holds the upper Fork Piece in place, while a Crank 16 holds the lower Fork Piece.

The Cranks are each extended by a 1½ in. Strip, to one of which a Rod and Strip Connector, on a 2½ in. Rod 17, is lock-nutted. The other is connected to a similar 2½ in. Rod by means of a Pivot Bolt through a Collar in a Small Fork Piece fixed on the Rod. On the other end of the Rods is fixed a Small Fork Piece with a Collar held between its arms. Two arrangements having been built, both Collars are then lock-nutted together, along with a 4½ in. Strip 18, by a ⅜ in. Bolt.

A 1 in.×½ in. Double Bracket, on its side, is bolted through the first hole of one of its lugs to the top of Strip 5, Bolt 19 holding it in place. A 3½ in. Rod 20 is journalled in the second holes of this Double Bracket, being held in position by a Collar beneath Strip 6 and a ½ in. Pinion above the Double Bracket. Connected to the Double Bracket by a 2 in. Strip, bolted through the first hole in its upper lug, is a Channel Bearing, also on its side. Mounted in the Channel Bearing is a 1½ in. Rod 21, held by a ½ in. Pinion 22 beneath Strip 6 and another ½ in. Pinion above the Channel Bearing, and a 2 in. Rod 23, held by a Collar

above the Channel Bearing and a 57-tooth Gear 24 beneath Strip 6. Pinion 22 meshes with Gear 24, and the two Pinions above the Double Bracket and Channel Bearing mesh with each other. Strip 18 is secured to Gear 24, as shown, and a $2\frac{1}{2}$ in. Steering Wheel is fixed on top of Rod 20.

Differential and Rear Axle

Two $2\frac{1}{2}$ in.×1 in. Double Angle Strips 25 are bolted between two Face Plates 26 and 27, the bosses of which point outwards. Two $2\frac{1}{2}$ in.×$\frac{1}{2}$ in. Double Angle Strips connected by an eight-hole Bush Wheel 28, are then fixed to the outside of each Face Plate. A $\frac{7}{8}$ in. Bevel Gear 29 and a Collar are mounted on a $4\frac{1}{2}$ in. Rod 30, journalled in Face Plate 26 and Bush Wheel 28, that is fitted part-way into the longitudinal bore of a Coupling 31. Fitted part-way into the other end of the Coupling is a 5 in. Rod that carries another $\frac{3}{8}$ in. Bevel Gear 32 and a 60-tooth Gear 33. The Gear is spaced from Face Plate 27 by two Washers, and from Bevel Gear 32 by three Washers.

Fixed through diametrically opposite holes to the Gear 33, but spaced from it by four Washers on $\frac{3}{8}$ in. Bolts, are two 1 in.×$\frac{1}{2}$ in. Angle Brackets 34. Secured in the end holes of these Angle Brackets, and screwed in the centre transverse tapped bore of Coupling 31, is a 2 in. Screwed Rod on which a further two $\frac{3}{8}$ in. Bevel Gears 35 are loosely mounted. These Bevels are in constant mesh with Bevel Gears 29 and 32.

At this stage, the complete rear-axle assembly is fixed to compound angle girders 1 and 2 by two leaf-spring constructions 36, each formed from one $7\frac{1}{2}$ in., one $5\frac{1}{2}$ in. one $4\frac{1}{2}$ in., one $3\frac{1}{2}$ in., one $2\frac{1}{2}$ in. Strip and one $1\frac{1}{2}$ in. Angle Girder 37. Angle Girder 37 is bolted to Angle Girder 8.

The wheel arrangement is single-front and twin rear, making six in all, and each wheel is composed of a 3 in. Pulley with Motor Tyre. Both pairs of rear wheels are secured, tightly, on the respective Axle Rods, but the front wheels are free to turn on Rods 14, being held by Collars.

Body

It is best to build this part of the model separately, and join it to the chassis later. Each side is similarly built. A $5\frac{1}{2}$ in.×$2\frac{1}{2}$ in. Flanged Plate 38, to which is bolted a $1\frac{1}{2}$ in. Corner Bracket 39, is extended along one edge by a $7\frac{1}{2}$ in. Angle Girder 48. The sides are then connected by six $5\frac{1}{2}$ in.×$3\frac{1}{2}$ in. Flat Plates 40, 41, 42, 43, 44 and 45, and a $7\frac{1}{2}$ in. Flat Girder 46. A $5\frac{1}{2}$ in. Angle Girder 47 is bolted beneath Flat Plates 44 and 45 at the front of the body. This is later bolted to the Angle Girders supporting the cab roof.

Rear mudguards are formed by attaching a compound $8\frac{1}{2}$ in. flexible plate 49, obtained from two $5\frac{1}{2}$ in.×$1\frac{1}{2}$ in. Flexible Plates, to Plates 40 and 41, and edging each of them with one $3\frac{1}{2}$ in. and two $2\frac{1}{2}$ in. Angle Girders.

Two Couplings 50 are fixed to Flanged Plate 9 by $\frac{1}{2}$ in. Bolts, held in their longitudinal bores by Grub Screws, but are each spaced from it by two Washers. Beneath each Coupling, as shown, a 1 in.×1 in. Angle Bracket is bolted. This serves as a guide for a $3\frac{1}{2}$ in. Screwed Rod 51, mounted in the end transverse tapped bore of the Coupling. A Double Arm Crank carrying a Threaded Pin is fixed on the top of the Rod, which is extended, via a Coupling 52, by a 2 in. Rod on which a $\frac{3}{4}$ in. Flanged Wheel is secured.

A fuel tank 53 is built up from a Cylinder and two $1\frac{1}{8}$ in. Flanged Wheels, one of which is fixed to Flanged Plate 38 by a 1 in.×1 in. Angle Bracket. The filling tube is obtained by screwing a Threaded Pin, carrying a Collar, into a Threaded Boss, and attaching it to the Cylinder with a Spring Clip inside.

An 8 in. Rod, fitted with a Worm 54, is mounted in Flanged Plates 38 and held in position by a 1 in. Bush Wheel 55 (Elektrikit Part No. 518) and a Collar.

Winch

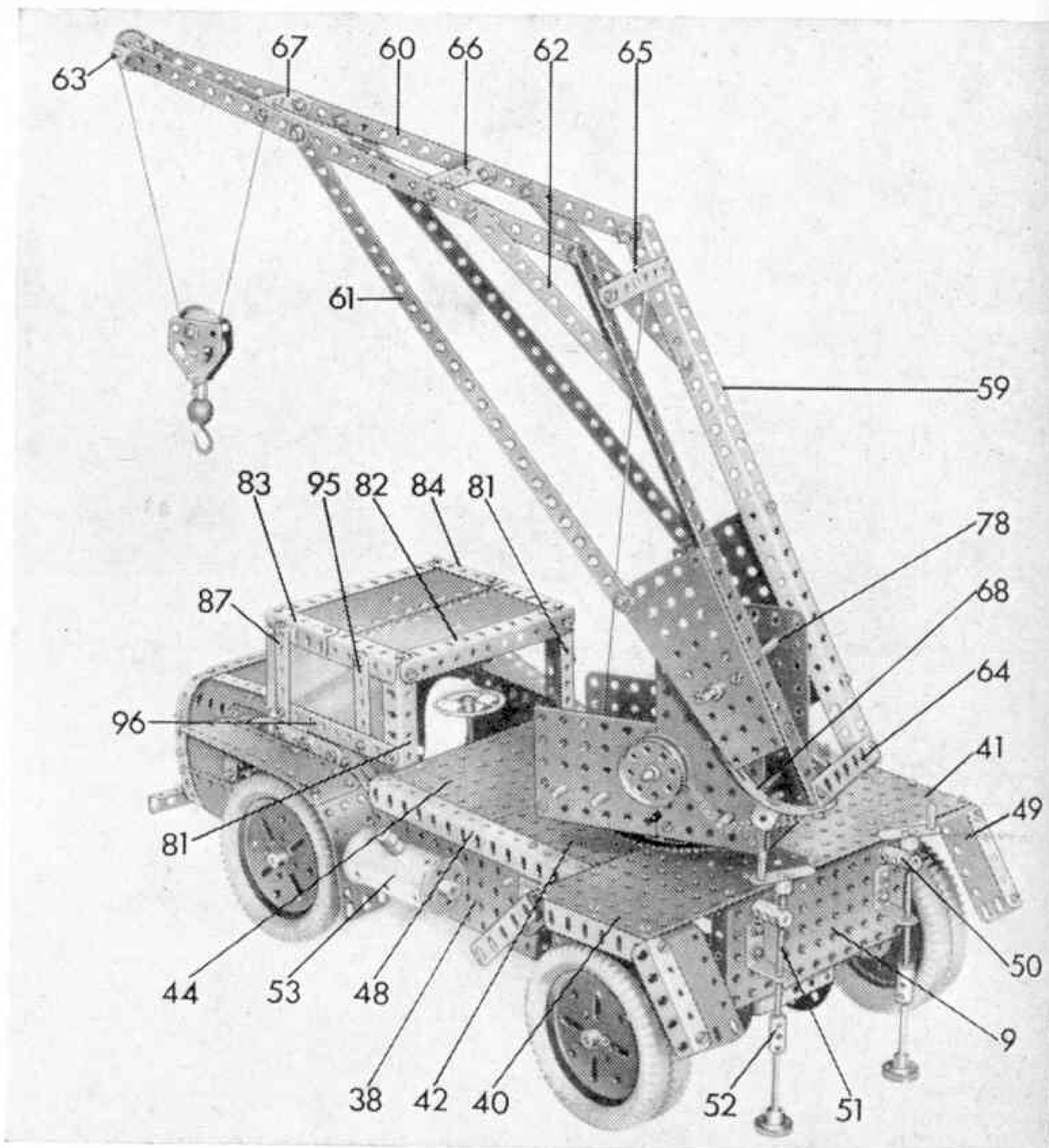
Two $5\frac{1}{2}$ in.×$2\frac{1}{2}$ in. Flat Plates 56, extended by two $4\frac{1}{2}$ in.×$2\frac{1}{2}$ in. Flat Plates 57, are bolted to a $5\frac{1}{2}$ in.×$2\frac{1}{2}$ in. Flanged Plate 58. The jib itself is built up from two Flanged Sector Plates, each extended by a $12\frac{1}{2}$ in. Angle Girder 59 and a $12\frac{1}{2}$ in. Strip 60. Another $12\frac{1}{2}$ in. Strip 61 is bolted to Girder 59 and Strip 60, with a $5\frac{1}{2}$ in. Strip 62 being used as a bracer. A $1\frac{1}{2}$ in. Rod 63, carrying a 1 in. loose Pulley and six Washers, is journalled in the end holes of Strips 61, Collars holding it in place. Both sides of the jib are joined by a $3\frac{1}{2}$ in. Angle Girder 64, a $3\frac{1}{2}$ in. Strip 65, a $2\frac{1}{2}$ in.×$\frac{1}{2}$ in. Double Angle Strip 66 and a $1\frac{1}{2}$ in.×$\frac{1}{2}$ in. Double Angle Strip 67. A Formed Slotted Strip 68, to which a Double Bracket is bolted, connects each Flanged Sector Plate to Angle Girders 64.

Mounted in Plates 56 are a $5\frac{1}{2}$ in. Rod 69, held by Spring Clips, a $5\frac{1}{2}$ in. Crank Handle 70 on which two Bush Wheels, two $1\frac{1}{2}$ in. Pulleys and a Ratchet Wheel are secured, a $3\frac{1}{2}$ in. Crank Handle 71 held by a Collar and a 50-tooth Gear, this just inside the right-hand Plate, and a $3\frac{1}{2}$ in., and a $3\frac{1}{2}$ in. Rod 72 carrying a $\frac{3}{4}$ in. Pinion and two Bush Wheels 73 and 74. Gear 72 and the Pinion are in constant mesh. A Pawl on a Pivot Bolt engages with the Ratchet Wheel which is hidden by $1\frac{1}{2}$ in. Pulley 75.

A hook is built up from two Flat Trunnions 76, spaced by two $\frac{1}{2}$ in. and one 1 in. Pulleys, all without bosses on a $\frac{3}{4}$ in. Bolt. Mounted in the apex holes of the Flat Trunnions is a 1 in. Rod carrying a Strip Coupling 77, to which a Large Hook is fixed.

Lengths of Sprocket Chain are tied to Crank Handle 70 between both $1\frac{1}{2}$ in. Pulleys, and the adjacent Bush Wheels,

The model viewed from behind. Note the construction of the crane jib.



and are also tied to the ends of Angle Girder 64. A long length of Cord is secured between the Bush Wheels on Rod 73, is threaded through the centre holes of Strip 65 and Angle Strips 66 and 67, is passed round the Pulley on Rod 63 and round the 1 in. Pulley in the hook and, finally, is tied to Angle Strip 67.

Bolted to the inside of each Flanged Sector Plate is a Bush Wheel and in these is journalled a 5 in. Rod 78, held by Collars, which serves as the jib pivot.

Flanged Plate 58 is bolted to a Ball Thrust Race Flange Disc 79, the same Bolts fixing an eight-hole Bush Wheel beneath the Disc. The rest of a Ball Thrust Race is positioned, and the whole is held in place by a 2 in. Rod fixed in the Bush Wheel journalled in a Double Bent Strip bolted to Flat Girder 46, and held in place, beneath, by a 3 in. Gear 80. This Gear meshes with Worm 54.

Two 5½ in. Angle Girders 81 are connected by another 5½ in. Angle Girder 82. Bolted to this are two 5 in. compound angle girders 83 and 84 each made up of a 3½ in. and a 2½ in. Angle Girder which, in turn, are connected by a further 5½ in. Angle Girder 85. The resultant space is filled in by two 5½ in.×2½ in. Flexible Plates. Bolted to Girder 85 are two 3 in. Strips 86, joined one hole from their ends by a 5½ in. Strip. Another 3 in. Strip 87 is bolted to compound angle girders 83 and 84.

The windscreen and left-hand side window, built up from two 5½ in.×2½ in. and a 2½ in.×1½ in. Transparent Plastic Plate, are fixed to these Strips, to Strips 86 and to the left-hand side Angle Girder 81.

The bonnet-top is formed from a 5½ in.×2½ in. Flexible Plate 88 and a 5½ in.×2½ in. Plastic Plate 89, overlaid by two 3½ in. Strips 90. It is joined to Strips 86 by Angle Brackets. Each bonnet-side is composed of a 2½ in.×2½ in. Plastic Plate, a 2½ in.×2½ in. Plastic Plate and a Flexible Gusset Plate, the last overlaid by a 3 in. Stepped Curved Strip 91 and bolted, along with an Angle Bracket, to Strip 87. The front of the whole bonnet is edged by a compound 12½ in. strip 92, made from three 3 in. Strips, two 2 in. Strips and a 2½ in. Strip. At the front, each side is connected to Angle Girders 1 and 2 respectively by a 1 in.×1 in. Angle Bracket bolted to a Reversed Angle Bracket.

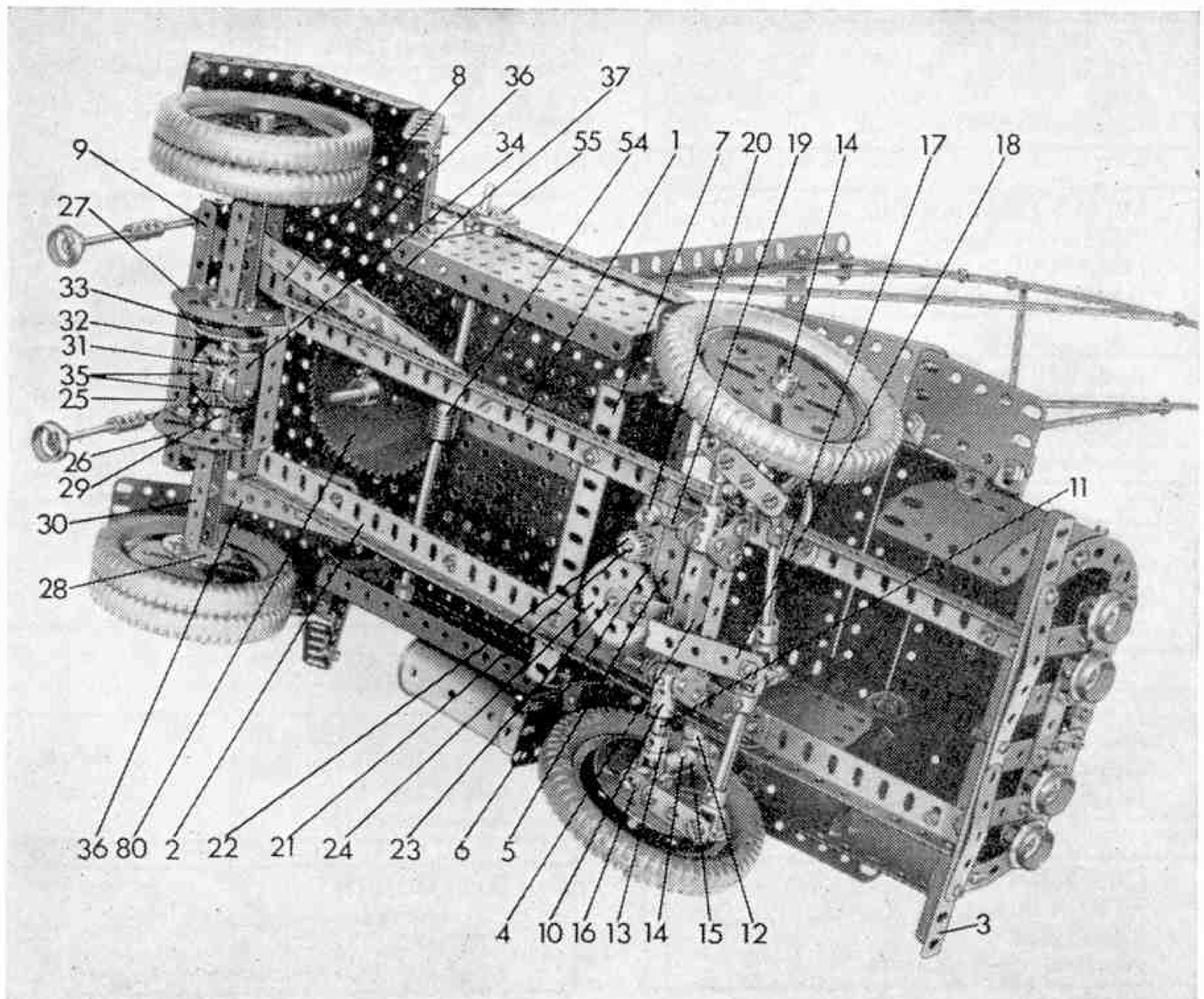
Working in order from the right-hand side of the model to the left, the radiator grille is edged by a 1½ in. Strip, a 2½ in. Stepped Curved Strip, two 2½ in. Strips overlaid two holes, another 2½ in. Stepped Curved Strip and another 1½ in. Strip. Along the lower edge is a 5½ in. Strip. The grille-work itself comprises two 3 in. Strips, running from top to bottom, crossed by a compound 4½ in. strip 93, built up from another two 3 in. Strips, two 2 in. Strips, and two 2½ in. Narrow Strips. Fixed to compound strip 93 by ½ in. Bolts are four ¾ in. Flanged Wheels to serve as headlamps, while a bumper is formed by bolting a 5½ in. Strip 94, bent as shown, to Angle Girder 3.

The left-hand side of the cab is completed by bolting a 2½ in. Strip 95 to compound girder 83, and then connecting this to Angle Girder 81 and Strip 87, with a 4½ in. Strip 96. Also bolted to Angle Girder 81 is another Flexible Gusset Plate, edged by a 3 in. Curved Stepped Strip, joined to Curved Strip 91 by a 2½ in. Strip. Two 5½ in.×1½ in. Plastic Plates form the left-hand mudguard, which is fixed to the side by Angle Brackets.

At the right of the cab an opening door is built up from a compound 5½ in. strip 97, obtained from a 2½ in. and a 3½ in. Strip, to which a further two 3½ in. Strips, connected by a 3 in. Strip 98, are bolted, and a Flexible Gusset Plate 99, edged by a 3 in. Stepped Curved Strip. The door is fixed to Angle Girder 81 by two Hinges. A working door handle is supplied by a Pawl with boss and a Crank secured on a ⅜ in. Bolt.

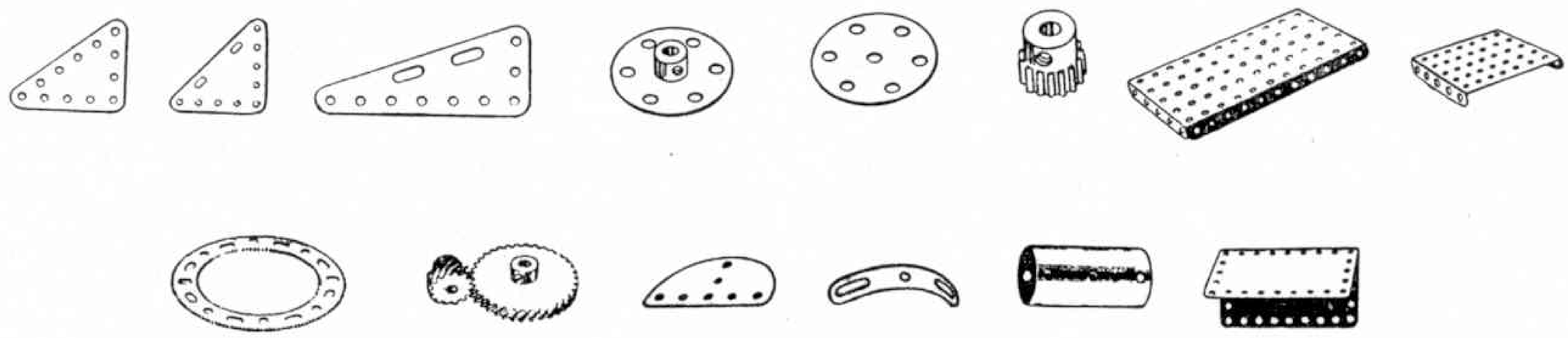
A 5½ in.×1½ in. Plastic Plate 100, curved as shown, is fixed to the door by Angle Brackets, to represent part of the mudguard, the remainder of which is obtained from a 2½ in.×1½ in. Plastic Plate 101, mounted on the side of the bonnet by means of Angle Brackets.— **Spanner**

An underneath view of the model showing the chassis, steering arrangement and differential.



Parts required:

4 of No. 1	5 of No. 24	4 of No. 109
2 of No. 1b	1 of No. 24a	5 of No. 111
7 of No. 2	3 of No. 24b	8 of No. 111a
4 of No. 2a	1 of No. 25	8 of No. 111c
10 of No. 3	3 of No. 26	6 of No. 111d
12 of No. 4	1 of No. 27	2 of No. 114
8 of No. 5	3 of No. 27a	3 of No. 115
5 of No. 6	1 of No. 27b	9 of No. 116a
4 of No. 6a	4 of No. 30	2 of No. 125
4 of No. 8	1 of No. 32	2 of No. 126a
3 of No. 8b	4 of No. 35	2 of No. 133
10 of No. 9	260 of No. 37a	6 of No. 142b
5 of No. 9b	230 of No. 37b	1 of No. 147
2 of No. 9c	52 of No. 38	1 of No. 147a
6 of No. 9d	1 of No. 40	2 of No. 147b
2 of No. 9f	1 of No. 45	1 of No. 148
4 of No. 11	2 of No. 46	1 of No. 160
1 of No. 11a	1 of No. 48	1 of No. 168
11 of No. 12	5 of No. 48a	1 of No. 173a
5 of No. 12a	4 of No. 52	1 of No. 185
2 of No. 12b	6 of No. 52a	4 of No. 189
1 of No. 13a	2 of No. 53a	3 of No. 190
2 of No. 15	2 of No. 54	1 of No. 191
2 of No. 15a	1 of No. 57b	3 of No. 192
2 of No. 16	26 of No. 59	1 of No. 193
1 of No. 16a	3 of No. 62	2 of No. 193e
5 of No. 17	2 of No. 62b	4 of No. 194
6 of No. 18a	9 of No. 63	2 of No. 194a
7 of No. 18b	1 of No. 63b	1 of No. 194c
6 of No. 19b	2 of No. 70	3 of No. 194d
1 of No. 19h	4 of No. 77	4 of No. 201
1 of No. 19s	2 of No. 80a	1 of No. 212
2 of No. 20	1 of No. 81	2 of No. 215
6 of No. 20b	4 of No. 89a	1 of No. 216
2 of No. 21	2 of No. 90a	2 of No. 235
2 of No. 22a	1 of No. 94	1 of No. 518
2 of No. 23	1 of No. 103k	



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.

C. G. MARSHALL
Maxwell Road
BEACONSFIELD
Telephone: 1092

BATESON'S SPORTS DEPOT LTD.
58 Abingdon Street
BLACKPOOL
Telephone: 24061

TETT'S THE IRONMONGERS
402 Wimborne Road
Winton, BOURNEMOUTH
Telephone: Winton 309

H. SALANSON & CO. LTD.
83-85 Fairfax Street
BRISTOL 1
Telephone: 2-6185

BARRETT'S LTD.
2 St. George's Street
CANTERBURY
Telephone: 6161

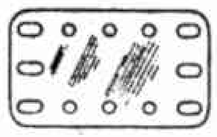
GORDON EASTON & CO.
40 Lowther Street
CARLISLE
Telephone: 22947

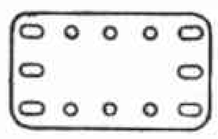
R. M. HILL & SONS
36/40 Castle Street
CARLISLE
Telephone 21621 and 21122

W. PAINE & CO. LTD.
168 High Street
CHATHAM, Also at Strood and Grays
Telephone: 45215

DOLL'S HOSPITAL (YOUNGSTERS)
55 Hallgate
DONCASTER
Telephone: 2831

FLETCHERS (Sports) LTD.
20-24 King Street
GLOUCESTER
Telephone: 22974





THE GUILDFORD
DOLL'S HOSPITAL LTD.
13 Swan Lane, GUILDFORD
Telephone: 61331

WILMANS
Arcade
HITCHIN
Telephone: 4250

THE MODEL SHOP
179 Ferensway
HULL
Telephone: 29199

LUCAS'S (Hobbies) LTD.
7 Tarleton Street
LIVERPOOL 1
Telephone: Royal 7562

H. A. BLUNT & SONS LTD.
133 The Broadway, Mill Hill
LONDON N.W.7
Telephone: Mill Hill 2877

JEREMY
16 Princes Arcade, Piccadilly
LONDON, S.W.1
Telephone: Regent 1846

F. T. B. LAWSON LTD.
New George Street
City Centre, PLYMOUTH
Telephone: 65363

LANE'S TOY SHOP
75 High Street
ROCHESTER
Telephone: Chatham 41870

WILTONS SPORTS AND GAMES
Corner Canal and Queen Street
SALISBURY
Telephone: 2984

JOHN W. BAGNALL LTD.
18, Salter Street,
STAFFORD
Telephone: 3420

LESLIE BROWN
Super Toy and Model Store
95 High Street, Stockton-on-Tees
Telephone: 67616

L. A. RICHARDS LTD.
92 The Broadway,
Wimbledon, S.W.19.
Telephone: LIBerty 1155

OVERSEAS DEALERS

AUSTRALIA

Jack Stanbridge's Hobby Shop
54a Canning Highway
Victoria Park, PERTH, W. Aust.
Telephone: 6-1668

NORTH SHORE HOBBY CENTRE
8 Post Office Street
Pymble (SYDNEY) N.S.W.

Walther & Stevenson Pty. Ltd.
395 George Street
SYDNEY and Branches
Telephone: BX 3566

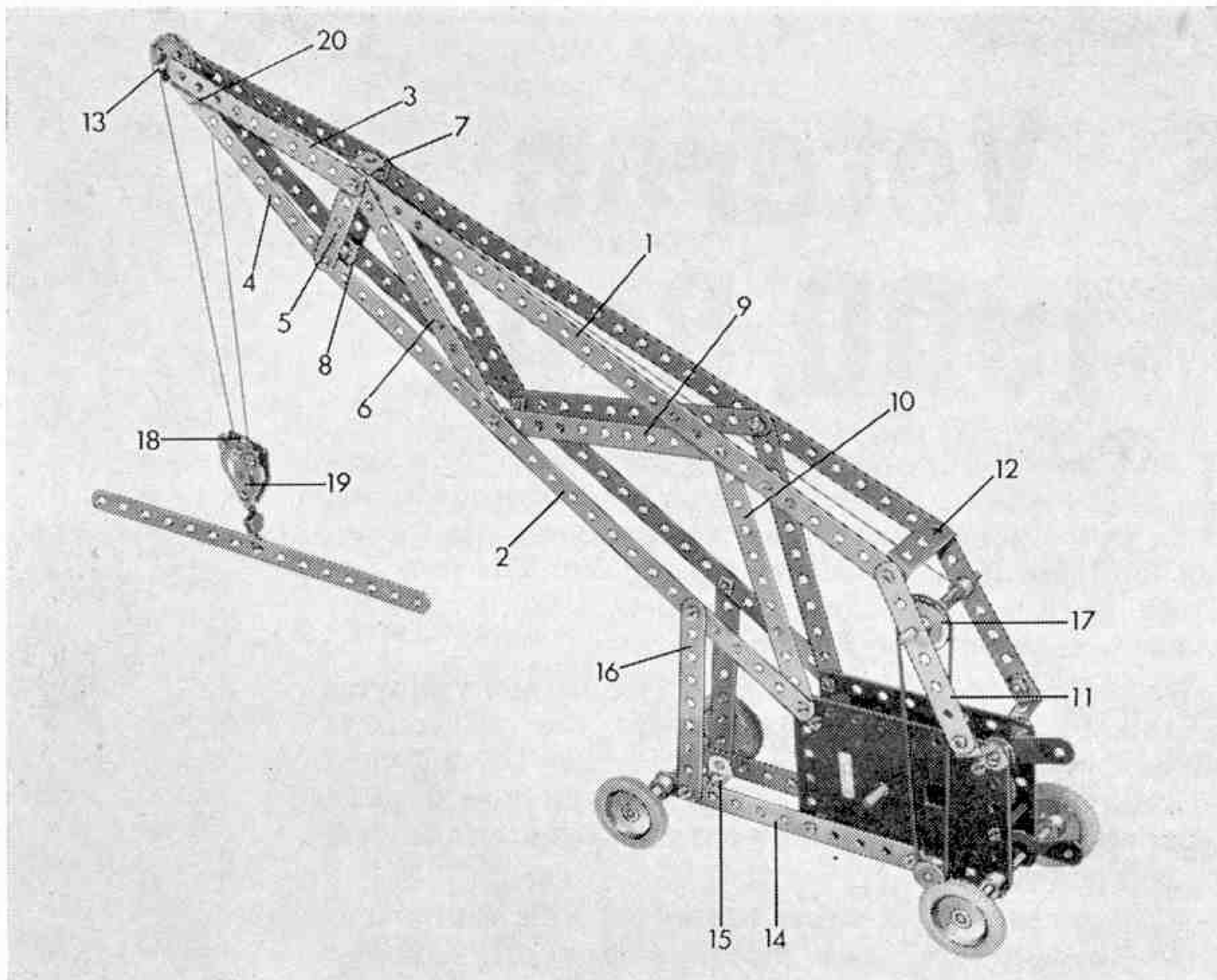
NEW ZEALAND

JACKSON CYCLES LTD.
99 Karangahape Road
AUCKLAND C.2
Telephone: 30-281

BUNKERS LTD.
P.O. Box 58
HASTINGS
Telephone: 84-263 (Mail orders welcomed)

by **Spanner**

Mobile Crane for the younger builder



This simple, but effective, working Mobile Crane, powered by a Meccano No. 1 Clockwork Motor, has been designed specially for younger model-builders

ON page 31 of this issue, I have given full instructions for a large and fairly complicated Mobile Crane. This is a very interesting model for advanced builders to tackle, with a large number of parts at their disposal, but I do not want to forget the younger age group, who may not have the parts—or the experience—to attempt such a complex structure. Therefore, I intend to describe here a simple Mobile Crane which no one should experience difficulty in building.

The crane hoist is operated by a No. 1 Clockwork Motor.

Although it is an easy model to construct, it is packed with what, in the toy-making world, is called 'play-value'. In fact, you can have 'loads' of fun with it.

The jib

This part of the model is particularly strong, thanks to the cross-bracing used in its construction. Each side is built separately as follows: Two 12½ in. Strips 1 and 2 are extended to a point by two 5½ in. Strips 3 and 4, a ⅜ in. Bolt being used to connect each pair of Strips. The Bolt joining Strips 1 and 3 also holds a 2½ in. Strip 5, a 5½ in. Strip 6 and a Double Bracket 7 in place, while the Bolt joining Strips 2 and 4 secures the other end of Strip 5 and another Double Bracket 8. At its other end, Strip 6 is bolted, together with another 5½ in. Strip 9, to Strip 2. Strip 9, in turn, is bolted, together with a further 5½ in. Strip 10, to Strip 1. Strip 1, at its other end, is extended by a 3½ in. Strip 11, at the same time bolting a 1½ in. × ½ in. Double Angle Strip 12 in position.

Each side of the jib can now be joined by means of Double Brackets 7 and 8, and Double Angle Strip 12. A 1 in. Rod 13, carrying a 1 in. loose Pulley, is then journalled in the end of the jib, being held in place by Spring Clips.

Chassis and motor

Two 5½ in. Strips 14 are bolted to the side plates of a No. 1 Clockwork Motor, being spaced from them by a Washer on the shank of each Bolt. These Strips are connected through their second holes by a compound 1 in. × ½ in. double bracket 15, built up from a 1 in. × ½ in. and a ½ in. × ½ in. Angle Bracket, the same bolts fixing two 4½ in. Strips 16 in position. Two 3½ in. Rods, carrying a 1 in. fixed Pulley with Tyre at each end, are journalled as shown, Collars holding them in place.

Connecting jib to chassis

Strips 2 and 10 are bolted to the upper forward corner of the Motor side plates, and Strips 11 are joined to their upper rear corner by ½ in. × ½ in. Reversed Angle Brackets, as illustrated. A 2½ in. Rod, carrying a 1 in. fixed Pulley 17, a Cord Anchoring Spring and a Collar, is now mounted in Strips 11. A 10 in. Driving Band connects Pulley 17 to a ½ in. Pulley on the Motor Shaft.

Load hook

A ½ in. loose Pulley 18, free on a ½ in. Bolt, is journalled between two Flat Trunnions 19, which are connected by three ⅜ in. Bolts. Fixed by Cord to the Bolt in the apex hole of these Flat Trunnions is a current-style Loaded Hook. If, however, you possess the older type of Hook, this can be mounted directly on the Bolt.

To complete the model, a long length of Cord is tied to the Cord Anchoring Spring on the 2½ in. Rod, is passed around the Pulley on Rod 13, then around Pulley 18, and finally tied to a ½ in. Bolt 20 fixed in Strips 4.

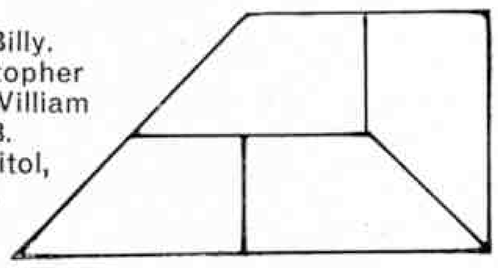
Parts required:

4 of No. 1	1 of No. 18b	1 of No. 48
12 of No. 2	5 of No. 22	1 of No. 57c
2 of No. 2a	1 of No. 22a	5 of No. 59
2 of No. 3	1 of No. 23	2 of No. 111a
2 of No. 5	1 of No. 23a	7 of No. 111c
2 of No. 11	2 of No. 35	2 of No. 125
1 of No. 12	39 of No. 37a	2 of No. 126a
1 of No. 12b	21 of No. 37b	4 of No. 142c
2 of No. 16	4 of No. 38	1 of No. 176
1 of No. 16a	1 of No. 40	1 of No. 186b

Answers to Puzzles on page 19

Quick Quiz

1. The Puffing Billy. Built by Christopher Blackett and William Hedley in 1813.
2. America (Capitol, Washington).
3. English
4. 130 yds.
5. Felucca.
6. Mammal.



Farmer's will:

Tricky Teasers

5 Thats:—He said, that that 'that' that that teacher had quoted during the last lesson was grammatically incorrect.

Well-known proverb: Least said, soonest mended.

Shopkeeper: Greengrocer.

Car Quiz No. 5:

Citroen DS19, made in France.

	D	E	L	I	B	E	R	A	T	E	L	Y
N		L			E		I		A		A	E
E	L	D	O	R	A	D	O		L		B	O	X
W	O	E				O		E	K	E			P
F	A	R	T	H	I	N	G		A	T	O	N	E
O	N		Y	E			O	A	T	H			C
U		A	P	I	S			T	I	E	R		T
N			I	R	O	N			V	R			A
D	O		S		M	E	N		E		M	A	T
L		O	T	T	E	R		R			O		I
A	L	P		E		V	I	A		T	R	I	O
N		I		N		E		Z			S		N
D	I	N		O				O		M	E		S
	T	E	R	R	I	T	O	R	I	A	L	S	

by **Spanner**

Veteran 1900 Benz

LAST month I gave full building instructions for a large and complicated model, based on the 1905 Rolls-Royce. Here we feature a much simpler construction again following the lines of an actual veteran car, but this time one which is even older than the Rolls—a 1900 Benz. The model is powered by an Emebo Motor.

On the real-life vehicle the hood is collapsible, whereas on the Meccano version it is rigid. Also, you will see from the accompanying illustrations that we have left the hood ribs of the model uncovered. This has been done to assist description, but if you build it yourselves, you can use cloth or paper to complete it.

It is interesting to compare this model with last month's Rolls-Royce, as the two machines show the immense advances in motor car design during the five years from the Benz to the Rolls. Whereas the latter looks distinctly like an orthodox car, the former is a definite 'horseless carriage'—a horse-drawn vehicle, minus the horses!

Bodywork

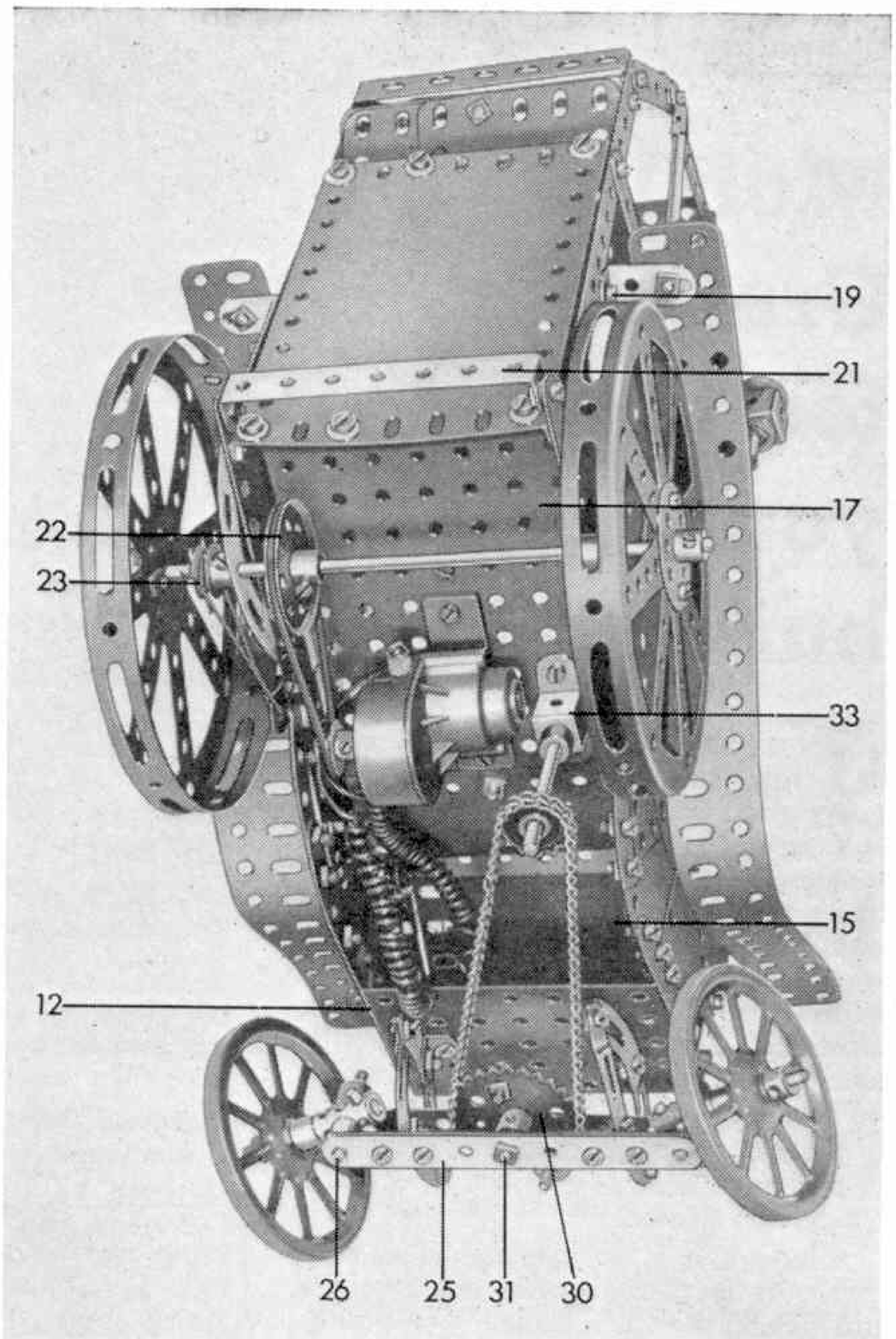
When building each side of the model, it is best to first form the basic Strip outline, and add the Plates, Angle Brackets, etc., later. A Corner Gusset 1, a 1½ in. Strip 2, and a 3½ in. Strip 3 are bolted to a 3½ in.×2½ in. Flanged Plate 4. Attached to the top hole of the Corner Gusset is a 3½ in.×½ in. Double Angle Strip 5. The 3½ in. Strip 3 is then extended by two 2½ in. Curved Strips 6, overlapped two holes which, in turn, are extended by a 4½ in. Strip 7 and a 7½ in. Strip 8. The top outline consists, as shown, of a 2½ in. Stepped Curved Strip 9, two 2½ in. Curved Strips, another 2½ in. Stepped Curved Strip and a 2½ in. Strip 10.

At this point, the Plates can be added. Three 2½ in.×1½ in. Flexible Plates 11 are fixed in place at the front, followed by a 5½ in.×2½ in. and a 2½ in.×1½ in. Flexible Plate, bolted to 4½ in. Strip 7. The 2½ in.×1½ in. Plate is extended by a 3½ in.×1½ in. Triangular Flexible Plate.

Attached to the 3½ in.×2½ in. Flanged Plate is another 3½ in.×2½ in. Flanged Plate 12. A 3½ in.×2½ in. Flexible Plate 13 is bolted to a 3½ in.×½ in. Double Angle Strip fixed to the sides by Bolts 14 that also secure Angle Brackets to which is fastened a 3½ in.×2½ in. Plastic Plate 15. Angle Brackets, held by Bolts 16, also support the Plastic Plate 15 and a 5½ in.×3½ in. Flat Plate 17. Two 3½ in.×2½ in. Flanged Plates 18, at right angles to each other, are secured to the sides by Bolts 19, the upright Plate being fixed to the Flat Plate 17 by Angle Brackets. Two 4½ in.×2½ in. Plastic Plates, overlapped three holes, are bolted to a 3½ in.×½ in. Double Angle Strip 20. The back, consisting of two 5½ in.×2½ in. Flexible Plates, overlapped three holes, is attached to a 3½ in.×½ in. Double Angle Strip and two Angle Brackets as shown. Another 3½ in.×½ in. Double Angle Strip 21 forms the rear bumper.

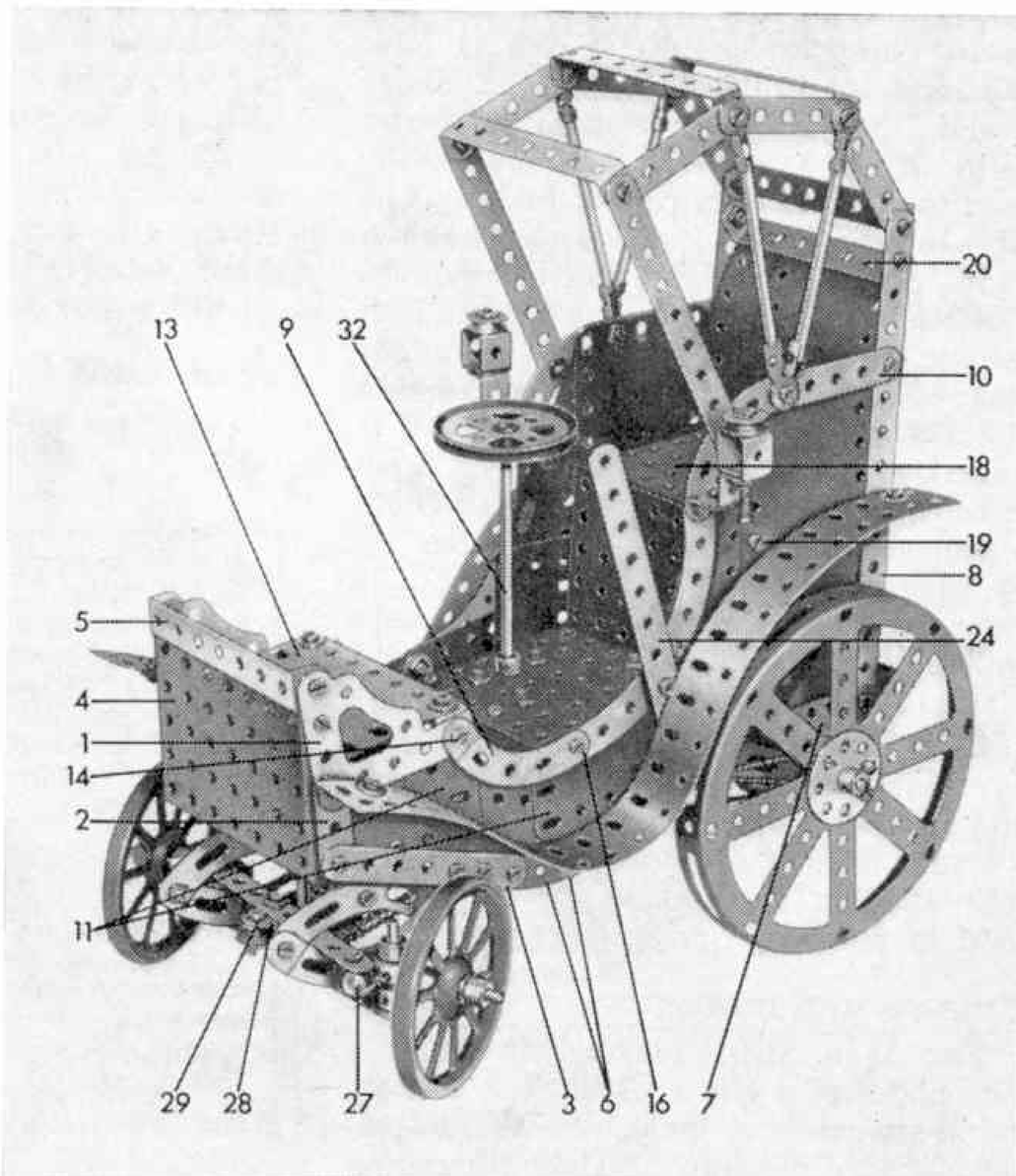
The supporting framework for the hood is clearly seen in the photograph and needs no explanation.

Two 3 in. Curved Strips, bolted to the 4½ in. Strip 7, form bearings for the rear axle, which is a 6½ in. Rod, carrying



An underneath view of the model, showing the Motor drive and steering.

This model veteran car, the 1900 Benz, follows the lines of the real vehicle.



a $1\frac{1}{2}$ in. Pulley 22 and a $\frac{1}{2}$ in. Pulley 23. Two Hub Discs, each bolted to a Bush Wheel, are mounted on the Rod to serve as rear wheels.

An Emebo Motor is secured to Flat Plate 17 and a 6 in. Driving Band connects a $\frac{1}{2}$ in. Pulley on its output shaft to $1\frac{1}{2}$ in. Pulley 22. A $5\frac{1}{2}$ in. Strip 24 is lock-nutted to the left-hand side of the model to represent a brake handle. The brake itself is a length of Cord passed around $\frac{1}{2}$ in. Pulley 23, and through the bottom hole in the $5\frac{1}{2}$ in. Strip.

Steering Mechanism

Two pairs of 3 in. Stepped Curved Strips, each pair bolted together at both ends, are attached by Angle Brackets to the $3\frac{1}{2}$ in.$\times 2\frac{1}{2}$ in. Flanged Plate 12. A $4\frac{1}{2}$ in. Strip 25, with a Crank at each end, is fixed to a $2\frac{1}{2}\times\frac{1}{2}$ in. Double Angle Strip which, in turn, is secured to the bottom Curved Strips. A $1\frac{1}{2}$ in. Rod 26, carrying a loose Coupling, is mounted in the boss of each Crank, being held in place by a Collar. Another $1\frac{1}{2}$ in. Rod, carrying a 3 in. Spoked Wheel, is secured in the Coupling. The spoked wheel is free to turn on the Rod and is held in position by a Collar. Two 1 in. Rods 27, each with a Collar secured to its end, are fastened in the Couplings. The Collars are then connected together by two $2\frac{1}{2}$ in. Strips with a 1 in. Triangular Plate 28 bolted in the centre. A $\frac{1}{2}$ in. Bolt 29 is fixed in the apex hole of the 1 in. Triangular Plate, and its shank placed in the slot of a 2 in. Slotted Strip bolted to a $1\frac{1}{2}$ in. Sprocket Wheel 30 that is mounted on a Long Threaded Pin.

The steering wheel is a 2 in. Pulley, secured on a $6\frac{1}{2}$ in. Rod 32, journalled in Plate 16 and a Double Bent Strip 33, and held in place by Collars. A $\frac{3}{4}$ in. Sprocket Wheel is fixed on the lower end of the Rod and connected by chain to $1\frac{1}{2}$ in. Sprocket Wheel 30.

Finishing Touches

All that now remains to be built are the headlamps and mudguards. The former are each constructed from three Double Brackets, topped by a $\frac{1}{2}$ in. Pulley, and fixed to a $\frac{1}{2}$ in. Reversed Angle Bracket by a $\frac{3}{4}$ in. Bolt with two Nuts. The Reversed Angle Bracket is bolted to the side of the model, as shown. Finally, a $12\frac{1}{2}$ in. Flat Girder, bent to shape and fixed to the side by 1 in.$\times\frac{1}{2}$ in. Angle Brackets, represents each mudguard.

Parts required

2 of No. 1b	1 of No. 20a	9 of No. 59	7 of No. 111c
1 of No. 2	1 of No. 21	2 of No. 62	1 of No. 115a
5 of No. 2a	2 of No. 23	2 of No. 63	2 of No. 118
2 of No. 3	1 of No. 23a	1 of No. 77	2 of No. 125
10 of No. 5	2 of No. 24	6 of No. 89a	1 of No. 186a
2 of No. 6a	110 of No. 37a	8 of No. 90	8 of No. 188
6 of No. 11	101 of No. 37b	4 of No. 90a	4 of No. 192
12 of No. 12	26 of No. 38	1 of No. 94	2 of No. 194b
4 of No. 12b	1 of No. 45	1 of No. 95a	2 of No. 194c
2 of No. 14	1 of No. 48a	1 of No. 96a	8 of No. 212
4 of No. 16b	9 of No. 48b	2 of No. 103b	2 of No. 224
4 of No. 18a	1 of No. 52a	2 of No. 108	1 Emebo
2 of No. 18b	4 of No. 53	2 of No. 111	Motor
2 of No. 19a	1 of No. 55a	1 of No. 111a	

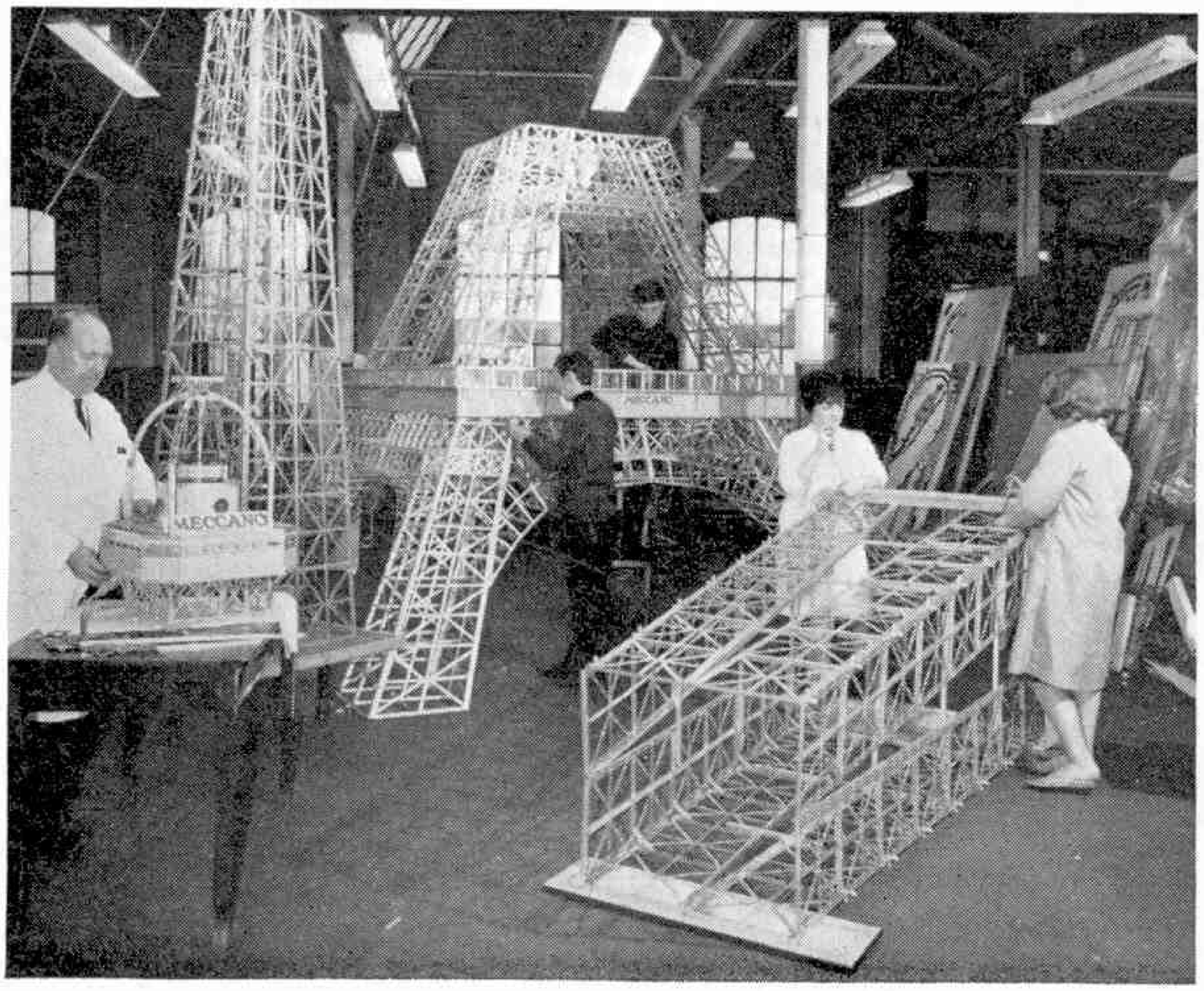
Eiffel Tower in Meccano

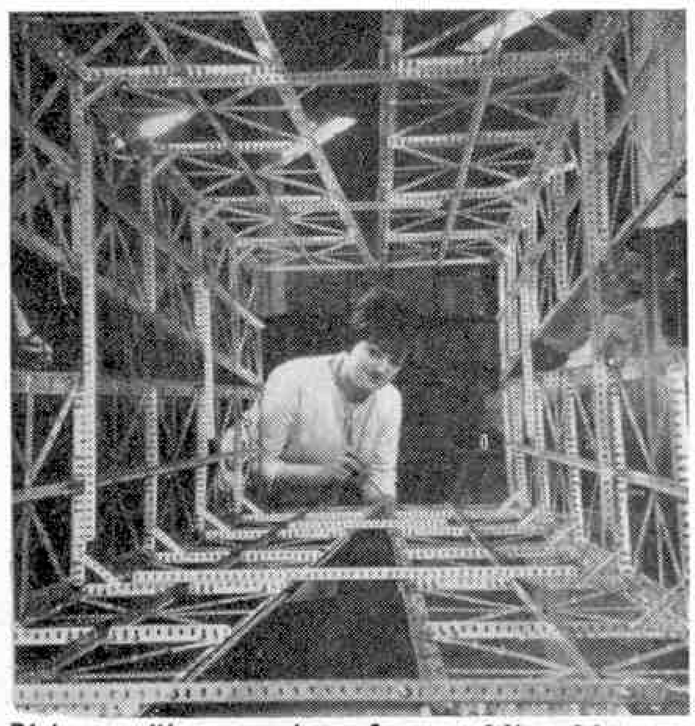
THE biggest display model ever built with Meccano—a 30-ft. high replica of the Eiffel Tower — was recently on show in Birmingham, where it created tremendous interest. Many thousands of parts (including nuts and bolts) were used in its construction, which took five model-builders something over a month to complete.

Fitted from top to bottom with gaily-coloured electric lights, it formed the centrepiece of a gigantic Christmas toy fair in the centre court of Birmingham's new covered shopping thoroughfare, the Bull Ring.

Constructed in Meccano's new true-to-life engineering colours of silver, yellow, black, red, blue and gold, it had a base 11 feet square and followed as closely as possible the engineering pattern of the actual Eiffel Tower, with such items as the curved supporting struts for the balconies faithfully reproduced.

The model consisted of four main sections which had to be subdivided for the journey by road from the Meccano Works in Liverpool to Birmingham. It was taken overnight from Binns Road and erected on the spot in about four hours.





Picture with a modern frame. Miss Maureen Munro of Liverpool is seen here in an unusual setting. She is working on one of the sections of the large Meccano model of the Eiffel Tower which was on show at the Christmas Toy Fair in the Bull Ring, Birmingham.

The individual sections of the 30-foot high Meccano model of the Eiffel Tower being assembled in the model room of the Meccano factory at Binns Road, Liverpool. This model was designed by Mr. R. Moy (extreme left) and others in the picture are Mr. Keith Roscoe (back to camera), Mr. John McCormick, Miss Maureen Munro and Miss Rita Clay.

by **Linesman**

GOODS TRAIN COMBINATIONS

THE goods train as we know it today has an ancestry that can be traced back to the latter half of the eighteenth century although, in those days, goods wagons were of a very crude nature. The end of the nineteenth century saw vast improvements in the design of goods rolling stock and it is true to say that the types introduced at that time have evolved into the present-day robust fleet of goods rolling stock.

Today, the goods train is the most important source of revenue on the railways of Britain. Without it, industry would come to a halt. Generally speaking, goods trains are divided into several distinct types—perishable, parcels, cattle, milk, mixed and so on. Mixed trains have long been the favourites of railway enthusiasts, but in actual practice these have become largely superseded by trains consisting of one particular type of freight. It is therefore important, when compiling a timetable, to adhere to British Railways' practice by adding goods trains of the correct type.

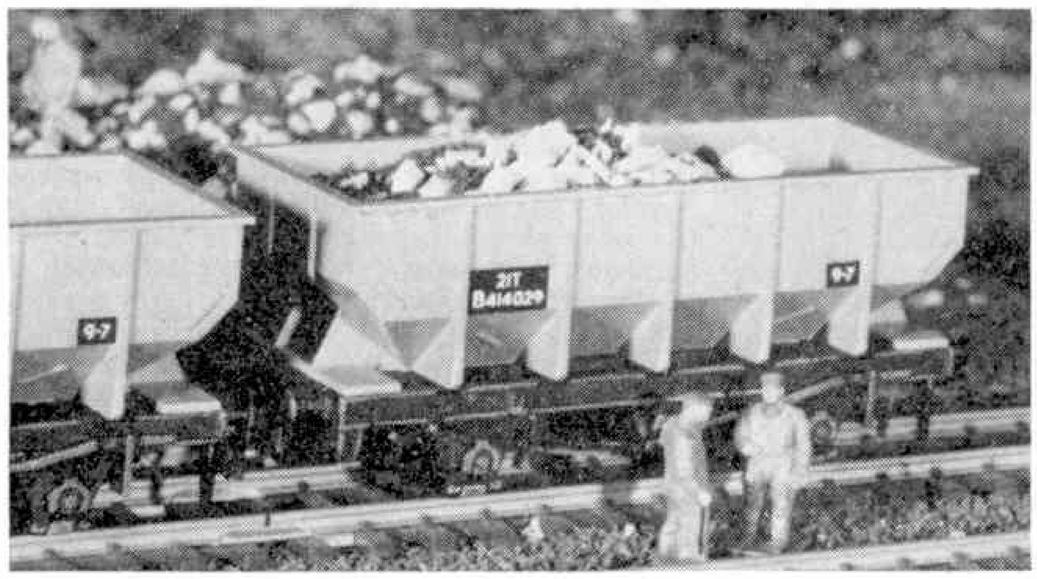
Modern goods wagons divide themselves into three or four different categories such as wagons used for mineral traffic, wagons for coal traffic and wagons for general goods. The heavy mineral traffic in many parts of the country—iron ore is a good example—demands wagons of a standard design. Such wagons are generally of the hopper type, and are represented in the Hornby-Dublo range by No. 4644 21-Ton Hopper Wagon. This type is the most widely used on British Railways, although there are small numbers of earlier wagons of varying sizes still in use.

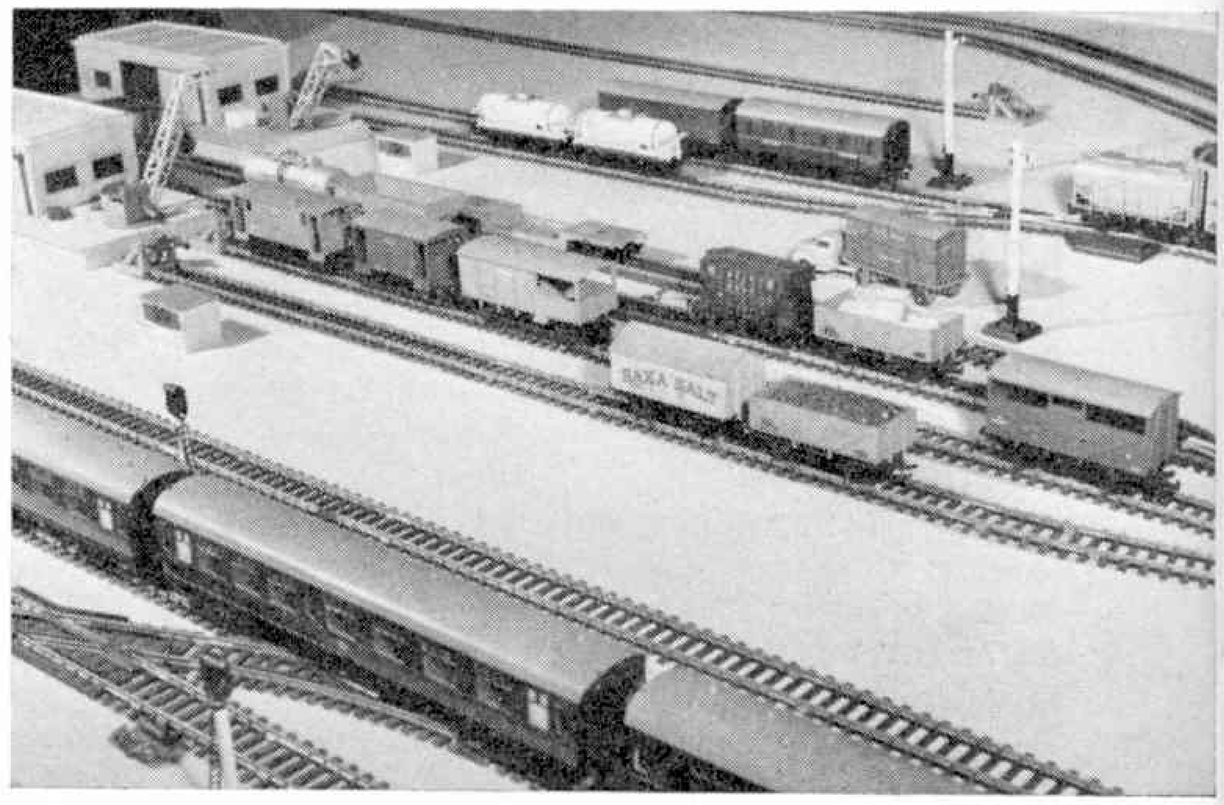
Bulk transportation

The 21-Ton Hopper Wagon is used primarily for the bulk carriage of coal; indeed, it is quite usual for a train of them to be seen in the vicinity of a locomotive depot and automatic coaling stage. The bulk transportation of coal is always done in large hopper wagons, the smaller consignments to coal merchants being carried in either wooden wagons of the 13T type or the more modern steel wagons.

The Hornby-Dublo range of rolling stock contains models of both wood and steel wagons—No. 4655 16-Ton Mineral Wagon (Steel), and No. 4635 Coal Wagon (wood). The steel mineral wagon, as its name implies, is also used for transporting minerals and, on British Railways, has largely superseded the older wooden wagon, with its long history of useful work.

Two Hornby-Dublo Hopper Wagons No. 4644 in a realistic setting





A goods yard scene showing items of Hornby-Dublo rolling stock, among them the three types of Brake Van.

Before the nationalisation of coal, it was no rare sight to see trains of wooden wagons all colourfully painted in their own distinctive liveries. A modern private-owner wagon type is included in the Hornby-Dublo range. This is the distinctive Saxa Salt Wagon No. 4665 which is attractively painted in yellow and has red lettering.

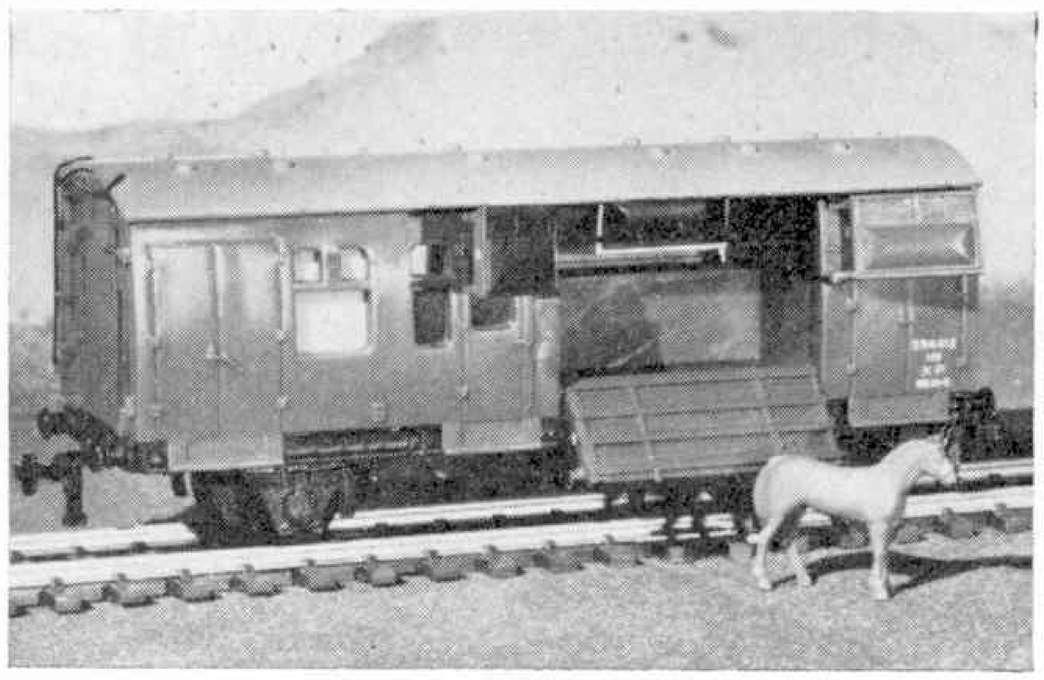
The modern British Railways' standard coal wagon is a development of the private owner wagon first designed by the now defunct Railway Clearing House. The steel mineral wagon, also first designed by the R.C.H., has a modern version fitted with vacuum brake equipment. The Hornby-Dublo model of this wagon (No. 4656) is painted in the brown oxide of the real wagon and has the correct white diagonal line on each side. Another Hornby-Dublo replica is the Coal Wagon No. 4653, filled with coal.

The general merchandise type of wagon can also be subdivided into wood and steel types—examples in the Hornby-Dublo range are No. 4640 Goods Wagon Steel Type, and No. 4670 13-Ton Standard Wagon. All manner of things may be carried in these wagons, from beer barrels and packing cases to drainpipes and agricultural machinery. The fascinating assortment of wagon loads made by Merit are ideally suited for loading open wagons. The typical small factory and private siding that is to be seen on many model railways should have one or two of these general goods wagons for the factory's produce.

A variant of the general merchandise wagon types are the wooden 'non-pool' wagons to be found in large numbers on British Railways. The 'United Glass Limited' Sand Wagon (Hornby-Dublo No. 4660) is one.

An interesting variety of wagons can be seen on almost any

The Hornby-Dublo Horse Box No. 4316 (Southern Region)



stretch of railway line; in fact, more unusual wagon types than ever have been introduced since the railways' modernisation scheme was announced. Now, complete trains of either bulk salt, cement, or grain wagons are quite a normal sight. The bulk salt and cement wagons are similar in general design and appearance, although the livery of each is different. The cement, salt and grain wagons are represented in the Hornby-Dublo range by No. 4626 Presflo Bulk Cement Wagon, No. 4627 I.C.I. 20-Ton Bulk Salt Wagon and No. 4625 20-Ton Bulk Grain Wagon. Each of these is highly detailed and is painted in its correct livery. These three wagons are usually run in complete trains, although there are instances where one or two wagons are run as part of a train. This would also apply to No. 4658 Prestwin Silo Wagon, the most unusual of all the bulk wagons.

An interesting train can result when a number of these wagons are included. I have known enthusiasts run complete trains of one particular type of wagon to add to the authentic affect. Particularly pleasing are wagons that have been weathered, especially if a number are run in a train. The three types of wagon mentioned above are a comparatively recent development resulting from the manufacturers' desire to transport their products in bulk. Large numbers of them are now running on British Railways.

The covered wagon, or van, has a history almost as long as that of the humble wagon and is also well represented in Hornby-Dublo. At one time, a fantastic variety of vans were to be seen on British Railways, but in more recent times B.R. have decided to complete the very necessary work of standardisation. The variety of vans used is still quite considerable, among them being the 12-ton ventilated van, probably the most common van in regular use. The Hornby-Dublo model, No. 4325, represents British Railways' standard version of this van, and a timetable with an extensive goods service would require a number of them. For variety, however, one or two of the more unusual vans would add interest. There is, for instance, the Gunpowder Van No. 4313, a type which formerly belonged to the Great Western Railway and one that is ideal for layouts with a quarry. But there is one important point to remember —never couple one next to a Petrol Tank Wagon!

Railways serving dock systems always have a number of the 'perishable' type of vans—among them the banana van, the 6-ton refrigerator van, the Blue Spot fish van, passenger fruit van and, of course, the ever-popular 12-ton ventilated van. These vans are often run in train loads or, alternatively, in mixed 'perishable' trains of fish, fruit, banana and a number of refrigerator and ventilated vans.

For those of you wishing to use these vehicles on your own layout, the Hornby-Dublo equivalents are No. 4300 (Fish Van), No. 4320 (Refrigerator Van) and No. 4301 (Banana Van). All had counterparts owned by the pre-nationalisation railway companies and the actual vehicles can still be seen, although their numbers are diminishing year by year as standardisation becomes more widely effective.

Colourful and numerous

Of the non-pool wagons, by far the most colourful and numerous on the railways are the petrol and other liquid tank wagons. These are all represented in the Hornby-Dublo range, and the enthusiast has a choice of eight—No. 4676 Esso Tank Wagon, No. 4678 Shell Tank Wagon, No. 4677 Mobil Tank Wagon, No. 4680 Esso Fuel Oil Tank Wagon, No. 4675 I.C.I. Chlorine Tank Wagon, No. 4679 Traffic Services Limited Wagon, No. 4685 I.C.I. Caustic Liquor Bogie Wagon and No. 4657 United Dairies' Tank Wagon.

Once again it is normal practice for tank wagons to run either in trains or to form part of mixed trains. Milk trains are usually run very early in the morning or very late in the evening and you must remember to plan accordingly when devising your timetable.

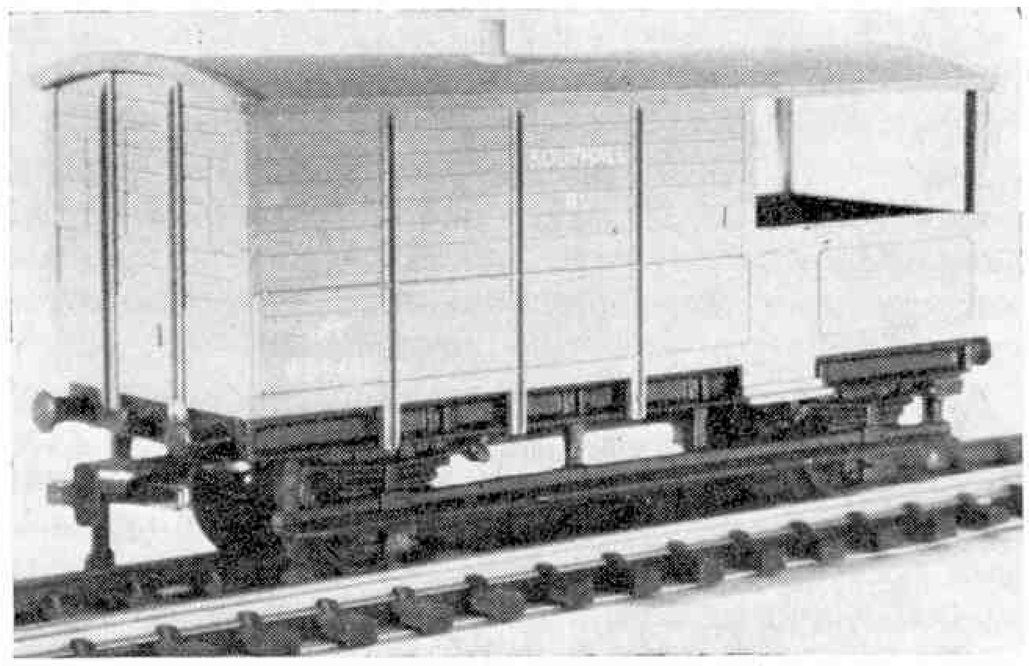
To carry the more unusual loads, a fleet of special wagons was built by British Railways. The bolster and well wagons are of this type, both well known by enthusiasts, and are usually to be seen in the precincts of any medium-sized station. The normal uses of the Bogie Bolster Wagon (Hornby-Dublo No. 4610), and the Double Bolster Wagon (Hornby-Dublo No. 4615) are to transport loads of logs or sawn planks. The transportation of large, cumbersome objects such as tractors and transformers would pose a problem to the railways if it were not for wagons of the bogie well type.

These are similar to the mammoth Welltrol that has been known to carry ships' propellers and other large and weighty objects. Machinery is dealt with in both the Hornby-Dublo range, and prototype practice, by the use of a Machine Wagon, Lowmac (Hornby-Dublo No. 4652).

The carriage of livestock was at one time the major industry of several of the smaller railways in Britain, but since the growth of road transport the carriage of livestock has become of secondary importance. Many wagons of the cattle and sheep-carrying type are still in use and are usually of a standard type. The 8-Ton Cattle Wagon (Hornby-Dublo No. 4630), is intended primarily for cattle, but sheep and other farm animals are often carried in them. Horses are still carried, although in greatly reduced numbers, by B.R., and there are two horse vans in the Hornby-Dublo range. They differ from each other in the sense that No. 4315 is a British Railways' Horsebox, finished in maroon, and No. 4316 is painted in Southern Railway green.

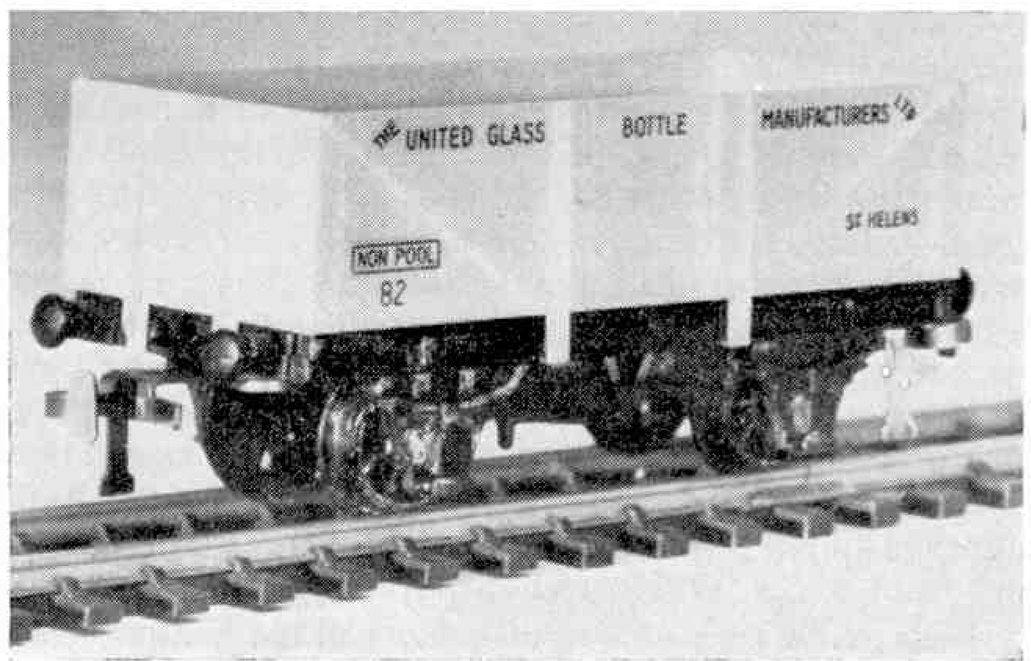
Most important

The most important vehicle on any goods train is the brake van. Without it, all manner of catastrophies would occur. There was a time before the turn of century when the guard of a goods train might work for anything approaching 16 to 18 hours and became so weary that accidents occurred far too frequently. The brake vans themselves were often unusual and distinctive—examples are the Highland Railway's 'Birdcage' vans. After nationalisation one standard type was developed, although, in point of fact, three types of vans are in common use. These are represented by the three vans in the Hornby-Dublo range—No. 4310 Goods Brake Van L.M.R., No. 4311 Goods Brake Van B.R., and No. 4312 Goods Brake Van W.R.



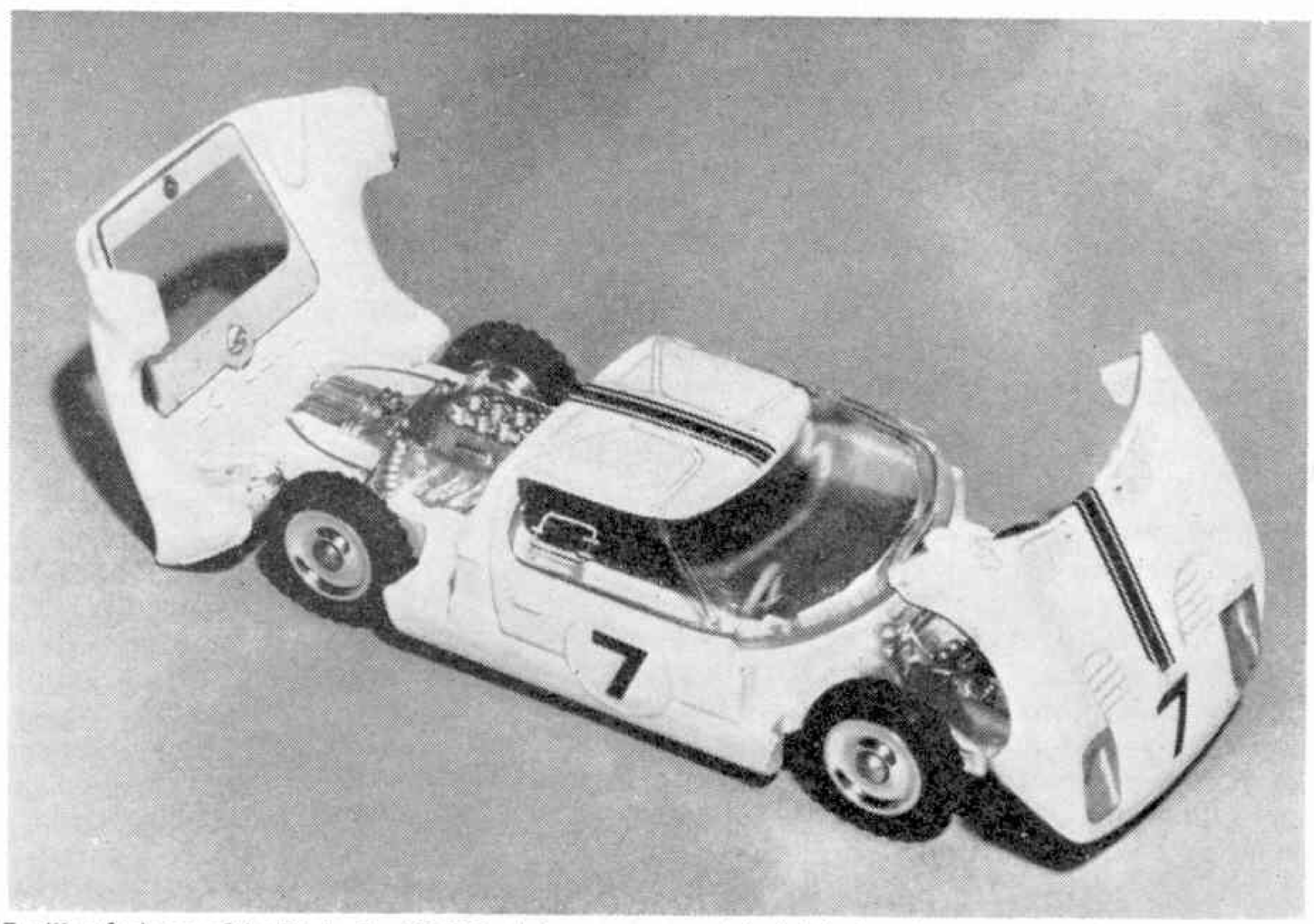
Above: A close-up of the Hornby-Dublo Western Region Brake Van No. 4312

Below: The United Glass Bottle Manufacturers' Sand Wagon No. 4660 in yellow with black lettering



by **Chris. Jelley**

The New with the Old



Exciting features of the Dinky Ford G.T. include a rear-mounted, detailed engine, wrap-round windscreen and special headlights

THINKING back over the many letters we have received recently on the subject of new models, two distinct groups stand out from the rest—sports cars and veteran cars. Why these come to mind in groups, I think, is that correspondents, when making suggestions, tend to ask simply for 'more sports cars' or 'more veterans', rather than naming any specific vehicle. If this is the case, then collectors will be specially pleased with the two models we feature here, since they are representative of both types. They are, respectively, the Ford GT (Sales No. 125) and the 1913 Morris Oxford, generally known as the 'Bull-Nose' (No. 476).

Actually, both these models were officially released last month, but, as all my space in the January 'M.M.' was taken up by details of three Dinkies made by our associated company in France, I promised to describe them in this issue. Let us deal first with the sports car.

Readers who studied the advertisement pages last month may have noticed that the Ford was listed as a 'racing car'. This title is correct because the manufacturers designed it primarily as a prospective competitor in races of sports car class, but it should not be confused with the type of racing car that would be eligible for entry in, say, Formula One events. The two are, of course, entirely different.

International

Although the actual car is undoubtedly a Ford, being produced by Ford Advanced Vehicles, Ltd., of Slough, Buckinghamshire, and using the Ford 4·7 litre, 350 h.p. Cobra engine as the power plant, it would be wrong to imagine that all the components used in its construction were of Ford manufacture. In fact, no fewer than 45 other firms—Continental and American, as well as British—supply something which is incorporated somewhere in the design. I cannot, obviously, list all these companies, but some of the better known are: Smiths Motor Accessories, Ltd., who provide most of the dashboard instruments; Joseph Lucas, Ltd., providing the body electrical equipment; Borg and Beck Co., Ltd., supplying the clutch; Ferodo, Ltd., the brake linings; Dunlop Rubber Co., the tyres; and Goodyear Tyre and Rubber Co., supplying the fuel system.

Fords of America also have a finger in the pie by providing the battery and the engine. Add to this headlamps from France and wheels from Italy and you could almost dub the vehicle the 'International British Car'! Overall dimensions are: length 13 ft. 3 in., width 5 ft. 10 in., height 3 ft. 4½ in., wheelbase 7 ft. 11 in., track 4 ft. 6 in.

In a racing sports car it is essential that the weight be kept as low as possible, and the Ford GT is particularly successful from this point of view. The complete car, less driver and fuel, weighs only 1,820 lbs. (16¼ cwt.). To fully appreciate the significance of this weight, it is necessary to compare it with that of some of the other well-known models on the road. For example, the Mercedes-Benz 230 SL, which I described last month, weighs 25½ cwt., the E-type Jaguar, 24 cwt., and the M.G.B., 17¾ cwt. Even that 'baby sports' the Austin Healey Sprite is only a little lighter than the GT at 14 cwt., as also is the M.G. Midget, so that you can see that Fords have given careful thought to overcoming the weight problem.

Intriguing model

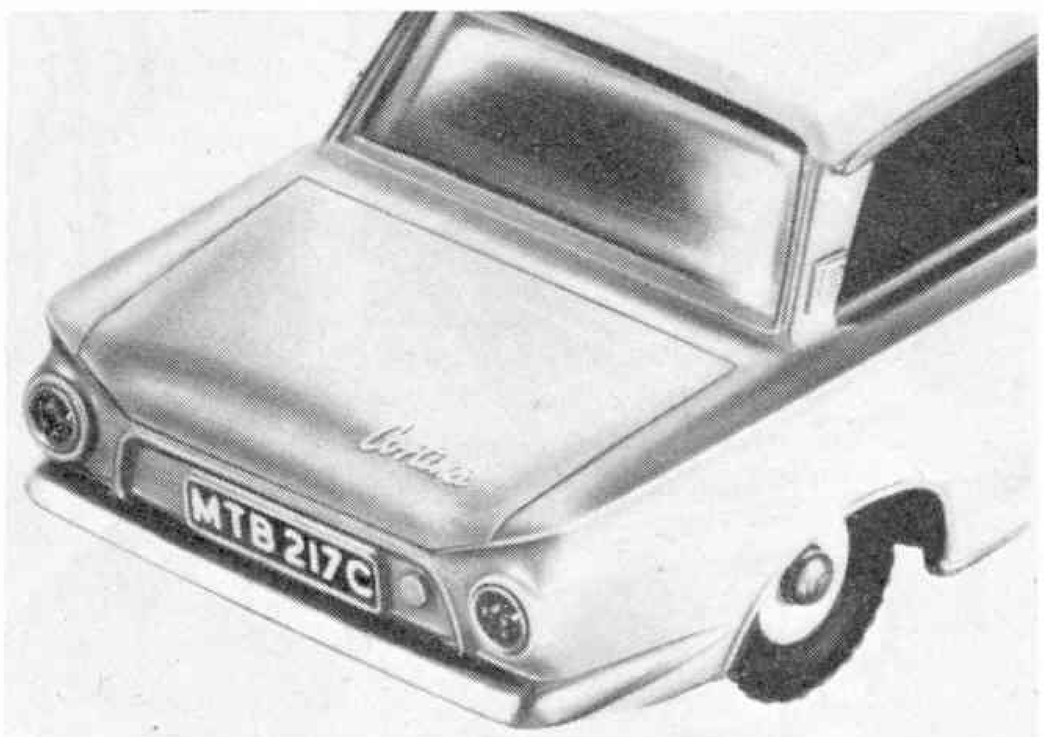
All the above has dealt with the actual car, but what of the Dinky Toy replica? Well, I must say, first of all, that this is a particularly attractive and intriguing model, closely following the lines of the original. It is finished in all over off-white gloss, with racing numbers and blue marker stripes which run from nose to tail. 'Tail', here, is the right word, because the back of the boot is 'flicked-up' rather like a duck's tail.

The rear part of the body hinges back to reveal a finely detailed engine, while the bonnet hinges forward to show a well-produced representation of the actual car's suspension and cooling systems. This is not a luggage compartment, as such. On the real-life car, the opening bonnet is purely to give easy access to the front wheels and suspension. On the model, we have represented the features that would be seen, at the expense of Prestomatic steering and four-wheel suspension. It would have ruined the authenticity, for which Dinky Toys are famous, if we had included these Dinky 'extras' *and* reproduced the details found on the prototype. Other features include wrap-around windscreen, windows, seats, steering wheel and 'special' headlamps.

Turning now from the new to the old, we have the Bull-

The picture above shows the 1913 'Bull-nose' Morris Oxford on which one of the latest Dinky releases is modelled

A great admirer of Dinky Toys is Jane Hammond of Thorpe Bay, Essex, seen standing by her father's Ford Corsair. Jane has a Dinky Corsair and knows a great deal about it, since her father, Mr. Victor Hammond, works in the Ford Styling Department. Below: This close-up of the rear of the Dinky Cortina shows how faithfully details of the 1965 car have been reproduced.

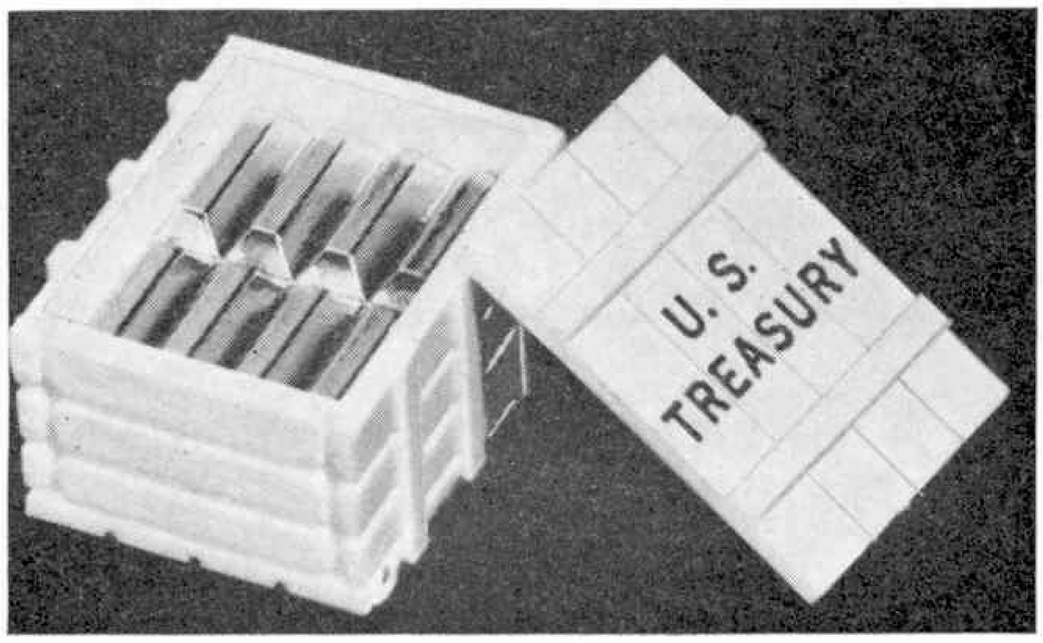


Nose Morris, which was manufactured by William Morris (the late Lord Nuffield) who died last year. I am grateful to the Central Publicity Department of the Nuffield Organisation, Birmingham, for the following information.

Planned before hand

Although the first car did not appear until April 1913, it existed, in thought, many years before. Morris, in fact, began to consider the possibility of making and marketing his own car in 1904-5, but it was not until 1910 that his garage business in Oxford was sufficiently successful to allow adequate finance for the project. In that year, therefore, spurred by the astounding success of Henry Ford, he began designing, and was able to announce—but not exhibit—his Morris Oxford light car at the 1912 Motor Show. In the car he adopted the good points of other makes, but added many of his own innovations, which included totally enclosed transmission and steel artillery wheels, as opposed to wooden or steel disc wheels.

The striking model Dinky Toy Brink's Armoured Car, not only has a driver and a guard, but contains two crates loaded with 'bullion'
A fortune in 42nd scale! Here is a 'bullion' crate from the Brink's Armoured Car with the lid removed to show the gleaming ingots inside



He was also the first manufacturer to have the main components 'made outside' by specialist engineering companies, who could produce the parts much more cheaply, thus reducing costs. When the car finally appeared, it was a huge success and has gone down in transport history.

Power was supplied by a 10 h.p. White and Poppe, four-cylinder engine of approximately 1,020 c.c. capacity, with a fuel consumption of 50–55 m.p.g. On the subject of speed, an advertising leaflet of the day reads 'Speeds range from 5 to 55 m.p.h. in top gear on average roads'.

Passenger comfort was provided for by leather-upholstered seats, pneumatic tyres and effective springing at front and rear. Throughout the whole car, careful attention was paid to strength, efficiency, reliability and comfort.

The Dinky Toys version of this famous 'oldie' makes an excellent follow-on to the Model T Ford, introduced last year. Features include detachable hood, opening boot and 'brass' radiator, lamps and windscreen frame.

Accurate chassis detail is also in evidence, together with interior fittings, spoked wheels and driver in smart period costume. The final touch is added by an attractive colour-scheme—blue chassis, red wheels, yellow body and khaki hood. In all, a very impressive model.

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Around the SOCIETIES

REGIONAL NOTES

Newtown School, Waterford

NEWTOWN SCHOOL, Waterford, Meccano Club has been affiliated to the Meccano Guild since the club's formation in 1948, and is proud of its record of continuous existence. The interest in the club naturally fluctuates somewhat as the club depends for its members on the children attending the Friends' school. These move on, and within the last three years a completely new membership has come into being.

At the present time, the liveliness of the club denotes that it is on the upgrade. Recently, a counter shaft was installed which is run by a ¼-horse power electric motor. This has proved a great boon and opens up the scope for a large variety of gearbox mechanisms, differentials and reverse gears.

Various excursions and visits to places of interest, such as the works of Irish United Industries and Waterford Glass, are envisaged. President, Mr. M. J. Wigham; Leader, Mr. R. D. Poole; Secretary, John Grubb.

Gauge 'O' Guild

THE ANNUAL rummage sale of the guild will take place on February 6 at Keen House, Calshot Street, London, N.1. Members bringing items to the sale are requested to hand in a duplicate list 15 minutes before the beginning of the sale, which is at 2.45 p.m. Members are also cordially invited to bring models for both running and display, at the running session which follows. All inquiries to the Hon. Secretary, Mr. H. F. Bower, of 81 The Drive, Bexley, Kent.

Locomotive Club of G.B.

THE LOCOMOTIVE Club of Great Britain will be holding, on February 28, the East Devon Rail Tour, which will almost certainly be the last steam train to the West of England. Departing from Waterloo Station at 09.02, the train will run non-stop to Yeovil Junction on a 60 m.p.h. schedule. It will then proceed to Axminster where the party will divide into two. Party A will alight at Axminster, and join a separate train to Lyme Regis, and Seaton Junction, where it is hoped to arrange for road travel between Seaton and Sidmouth so that the party can travel over the Sidmouth branch. The cost of road travel is not inclusive, however. At Sidmouth Junction they will join the main train and continue to Tipton St. Johns.

Party B will remain on the main train, and also run via Seaton Junction, Seaton, Sidmouth Junction and Tipton St. Johns, where the two parties will re-join for the rest of the tour to Exmouth, Exeter Central and Waterloo—arriving at 18.50.

A meal service of breakfast 7s. 6d., lunch 12s. 6d., and dinner 14s. 6d. will be available, and must be booked when ordering tickets, although no payment should be sent. Fares (including printed itinerary) are, adults 49s.; accompanied juniors 27s. 6d. Bookings must quote preference for party A, B, or A plus road travel. Tickets are obtainable from Mr. D. J. Littlewood, of 6 Pinkneys Road, Maidenhead, Berks., and a 4½d. foolscap s.a.e. should be enclosed for each ticket required. Acknowledgment of payment will not be sent unless an additional stamped postcard is enclosed. Cheques and postal orders should be crossed and made payable to The Locomotive Club of Great Britain.

Gindiri M.C. & H.R.C.

MUCH HARD work has been put into the Hornby layout which is now on a raised dais. The scheme consists of a double main line track, with cross-over and short siding, and a series of sidings, with loop, at one end of the layout. Operations are going on smoothly.

Members of the Meccano section have been busy working on models which appealed specially to them. The Mechanical Shovel, from the No. 8 Set, is among the models recently completed. Number of members 14; average attendance 100 per cent. President: Mr. M. B. Corrom; Leader, Mr. P. Bradford; Secretary, Daniel Babalola.

N'bury & S. London T.C.

THE NEXT Travel and Transport Exhibition to be held by the Norbury and South London Transport Club will take place on February 27 at Streatham Congregational Church Hall, Streatham High Road, London, S.W.16. The show will be open from 11 a.m. to 8 p.m., and items varying from model railways to collections of historical tickets and photographs will be on display. Refreshments will be available, and films will be shown during the afternoon and evening. Tickets cost 1s., and are obtainable in advance, from the Exhibition Manager, Mr. W. A. Mills, of 40 Manor Vale, Boston Manor Road, Brentford, Middx.

Hampton, T'don & Dist. M.R.C.

THE CONSTRUCTION of the society's large 00 layout is to be undertaken during the winter months. Meetings are held at 7.30 every other week, at St. Peter and Paul's Church Hall, Broad Street, Teddington. Enthusiasts interested in joining the society are asked to contact the Hon. Secretary, Mr. A. R. T. Banks, of 24 Sheringham Avenue, Whitton, Twickenham, Middx.

Railway C.T.S.

SHORTLY AFTER the last war, the Railway Correspondence and Travel Society was faced with a demand for visits over Continental railway installations. The society subsequently organised two or three major tours abroad each year, enabling participants to see the best of the railways visited. There are many advantages in travelling with an organisation such as this, and one is that the society has up-to-the-minute information on the whereabouts of particular classes of locomotives, and can plan itineraries accordingly. Many tourists would also have otherwise been unable to obtain permission to visit installations.

Three tours took place in 1964. The first was in May, when 30 members visited Portugal and Northern Spain, and the second during August Bank Holiday week-end, when a large party visited Normandy, returning on the "Queen Elizabeth" from Cherbourg. The third tour took place later in the year, when a party visited Yugoslavia and Hungary. Details of forthcoming tours to be organised by the society are obtainable from the Hon. Secretary, Mr. H. A. P. Browne, of 7 Bushmeadow Road, Rainham, Gillingham, Kent.

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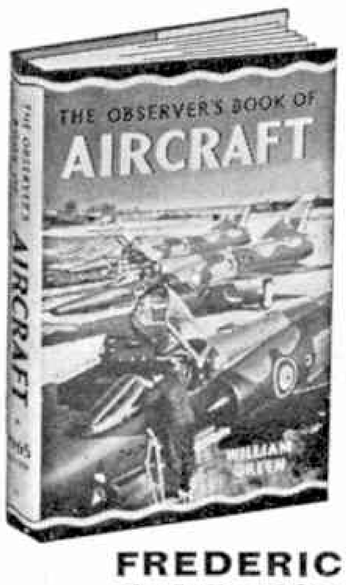

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Readers Sales and Wants

Sales

• Br. Cols. and Foreign, wants invited. Advertiser, 15 Queenshill Ave., Leeds 17.

• Dinky and other toys. S.A.E. for list. Greenhaven, Southdowns Road, Bowdon, Cheshire.

• Quantity of Dinky toys and Supertoys for sale, in original boxes, practically mint condition. Griffin, 42 Bushey Mill Crescent, Watford. Phone Watford 23605.

• 1,000 stamps (cat. £16) in loose leaf album—49s. 3d. Philatelist, 98 Waterloo Road, Mablethorpe, Lincolnshire.

• Hornby Dublo. 48 ft. 3-line Track on board 8 ft × 4 ft., all electric; 23 Circuits and Controls; 3 Engines; 23 Rolling Stock; G.P.O. Mail Coach Set; 5 Points; 5 Unhookers; 7 Isolating Switches, Lights, Signals; A3 Controller; all nearly as new. £25. Chambers, 4 Mackie Road, Tulse Hill, London, S.W.2.

• "Meccano Magazines" for sale, January 1957 to December 1961 (nine missing). 30/- o.n.o. Buchanan, Ovals, Kington, Herefordshire. S.A.E.

• Meccano Sets 1 to 5, Bayko Sets 11 to 15, both with Accessory Sets; Hornby "00", 2 and 3 rail, Track, Rolling-stock, etc.; Circuit 24 Sets and individual items. All half price. Taylor, 66 Walten Rd., E. Molesey, Surrey. MOL 1961.

• Scalextric Set, 60% of original price. Send S.A.E. for details. Crawford, "Radford", Oldfield Road, Heswall, Cheshire.

• Dublo 3-rail "Deltic" Locomotive, £2; 3-rail T.P.O. Set, £1. Clark, 64 Forehill Road, Ayr, Scotland.

• "M.M.'s", October 1958 to December 1960 (one missing), offers. C. Wright, 20 Priory Close, Bath.

• Three-rail Stock, Track, Locos., etc. Some obsolete; good condition; reasonable prices. Send S.A.E. for details. Admason, 50 Topcliffe Rd., Thirsk, Yorks.

• For Sale: Meccano No. 9 in good condition and complete with many accessories. Any reasonable price accepted. H. Westbury, 131 Perryn Road, Acton, W.3.

• Stamps, approvals, 4d. for first selection and lists. McManus, 1 Roker Terrace, Roker, Sunderland, Co. Durham.

• For Sale: Large Hornby layout, excellent condition. £5 o.n.o. J. W. Scott, Fairoak Vicarage, Eastleigh, Hampshire.

• Geared Roller Bearing 167 available. No money wanted. I will give it in exchange with sixteen rack segments No. 119 old parts. Jean Fea, 43 Rue Smolett, Nice, 06, France.

• "M.M.'s", January 1957 to December 1960. Excellent condition, 25/- complete. C. Hallam, 88 The Common, Crich, Matlock, Derbyshire.

• "M.M.'s", January 1945 to December 1955. Mint condition. Offers? E. Brown, Emiris, Bradley Lane, Rufforth, Yorks.

• Clearing over 900 quality stamps. £3 with free unmarked world catalogue and album. Advertiser, 12 Townfield Road, West Kirby, Cheshire.

• Collector's item—large selection Dinky Toys (no cars). 1945-50 models, mint condition. 86 Church Hill, Loughton, Essex.

• "Findingout" Nos. 1-68. Excellent condition. Offers? G. Logan, 55 Lever Road, Portstewart, N. Ireland.

• Pre-war Dinky Toys and others for sale. Oldsmobile, Chrysler Royal, U.S. Army Jeep, Six-wheeled Wagon, civilian type. All 12/- each. Two Jaguars £1. Railway Signal 3/-. Obsolete French Ford Veddette, 8/-. Current French Dinkys — Buick Roadmaster, Studebaker Commander, Plymouth Belvedere and Chrysler New Yorker, Tekno, Ford Taunus and current English TK Tipper; 30/- the lot. Please add 1/6 p. & p., plus stamped. addressed envelope. Lawrence Bolton, 14 Findon Road, Shepherds Bush, London, W.12.

• Solido cars 1945-1951, perfect conditions, also post-war Dinkys. Jacques Dujardin, 134 bd Pereire, Paris XVII.

• For Sale: Hornby Dublo Goods Train Set, 2 Locomotives, Transformer, Rolling Stock, Rails, miscellaneous equipment. Offers around £10 to Innes-Wilson, 27 Tufton Court, Tufton St., London, S.W.1.

• "M.M.'s" 1956-1959; 38 copies to sell en-bloc or separate. Excellent condition. The lot 25/-, o.n.o.; post paid. King, 62 Barton Rd., Luton.

• Selling rare 1924 Hornby 4-4-0, also new rails; reasonable. Wanted: "Bramham Moor", "M.M." volumes. Walker, 3 Cottesford Place, Lincoln 24086.

Wants

• Two 56-teeth Gear Wheels; 12 Channel Requests, No. 119; Four Weights, No. 66; Three Rubber Rings, No. 14. Forster, 144 Malvern Road, Billingham, Co. Durham.

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

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

• Pre-war "Frog" Flying Model Aeroplanes, Mk. IV (foreign markings); Puss-Moth; Hawker Hart; etc. Meccano "00" Aeroplane Constructor Parts, Instruction Book; obsolete Dinky toy Aeroplanes. Roberts, 28 Mumbles Road, Blackpill, Swansea.

• Wanted: "M.M.'s" Jan., Feb., Mar., 1924. Will exchange for Jan., Apr., May, 1923. Palin, 24 Staplehall Road, Bletchley, Bucks.

Continued on page 46.

by **F. E. Metcalfe**

STAMPS

The Stamp World

LAMB chops and hearts — you don't need to go to the butcher for these, but to your favourite stamp dealer, who, if he has stock, will be pleased to supply you with a nice set of eight stamps, four ordinary and four air mail, which were issued in October by Tonga. Don't expect the stamps to be cheap, for apparently the top value was sold out on the day of issue. It's the shape of the stamps which has earned them their name. Of course, it's a gimmick issue prepared for sale to collectors and although the latter are snapping them up, they are still wondering what Tonga and Sierra Leone will think up next.

I mention Sierra Leone because that is also a country which indulges in these freak issues, with, it is understood, that same party inspiring them all. Anyhow, such issues do provide lots of fun as well as lots of annoyance and there I will leave the 'lamb chops and hearts'. (1)

Zambia

While I was listening to a B.B.C. news bulletin, the country of Zambia was mentioned. At once my companion listener asked the location of Zambia. Of course, as all stamp collectors know, it is the new name for Northern Rhodesia and this is how we come to obtain a new definitive issue which was released on Independence Day, October 24. Apart from the definitive set of fourteen, there is also a special issue consisting of three stamps. These new issues, which do not cost much, give an exciting picture of the activities of the new member of the Commonwealth. The stamp selected for illustration shows President Kaunda looking at the mighty Victoria Falls. (2)

Eleanor Roosevelt

Everyone acknowledges the greatness of the late President Roosevelt, but the world is beginning to realise how great his gracious wife was also, and a number of countries are issuing postage stamps in her honour. Some of the proceeds are being devoted to charitable objects in which Mrs. Roosevelt did such great work. Israel is among the countries concerned and the single stamp issued last September has proved very popular. One is illustrated here and, as you can see, it represents the usual high standard which makes the stamps of that country so popular all over the world.

Countries including Ghana, Nigeria, etc., also issued Eleanor Roosevelt stamps and, as these sold readily, the funds they aid should have benefited greatly. Apparently stamp collectors have their uses after all! (3)

Child Welfare

It is not so long since I referred to Dutch stamps and with so many issues calling for attention, I should really pass on to others, but who could resist reference to the Child Welfare issue, of November 17, of the Netherlands? I couldn't, anyhow; hence the illustration. There were five stamps in all and when I set myself the task of selecting one, I was almost stumped, but finally I chose the highest value. All the stamps have a small premium, so here again collectors are paying for their pleasure. (4)

New Railways

While we and a few other countries—it would seem—are trying to do away with our railways and plough up the disused tracks, others are working in the opposite direction. In fact, one little country, the Protectorate of Swaziland, in South Africa, is so proud of its new railroad that it has actually issued an attractive set of four stamps to mark the opening. The Crown Agents, who handle the stamps, have released an attractive leaflet about the new issue, from which I gather that the Swaziland Railway is 137 miles long. It links Swaziland with Lourenco Marques and thus a channel through to the coast allows the protectorate to send its exports all over the world.

As justification for Swaziland's biggest venture to date, the transport of 12,000,000 long tons of iron ore to Japan has been made over the past ten years, so if they keep this up — actually they hope to expand—there will be plenty of work for the railway to do.

Tip of the month

Christmas stamps are becoming all the rage. Australia has been issuing them for several years, as has New Zealand. Now Commonwealth countries, such as Canada, Malta and Malawi are following suit. But, unfortunately, the last-named country is overdoing it, for instead of a stamp or so of low face value, the country which changed its name from Nyasaland, issued four stamps, top value 2s. 6d., plus a miniature sheet at 6s. 0d., and as this shows the trend which Malawi is to take, I would suggest it should be left with its stamps. I for one will not buy any. But Malta's Christmas issue looks like a winner and as a set can be bought for very little, that is the issue I am making my tip for this month.

By the way, don't overlook the Norfolk Island stamp, which only has a face value of 5d. and is of the same design as that for Australia.

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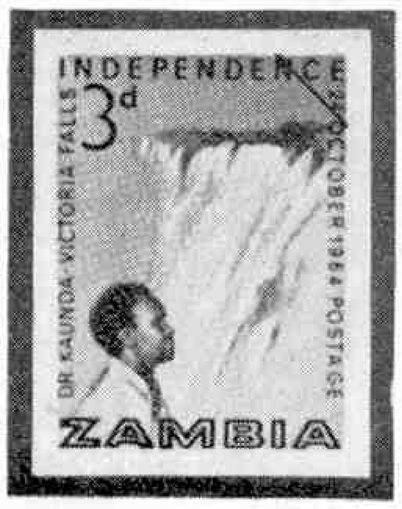

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Classified ads.–continued from page 44

• Wanted: Pen Friend anywhere in the world. Interested in Meccano and electronics; age ten or eleven. Reply to Graham Fox, 8 Sandy Lane, Bramcote Hills, Beeston, Nottingham, England.
• Any Tri-ang Series 3 Curved Track Sidewalls R90/1, and R90/2. Straight Track Sidewalls R89; also High Level Piers R74. Please write stating quantity and price. Teall, Stonehouse, Bearley, Stratford-on-Avon, Warks.
• Meccano T20 Transformer. Reasonable condition. Willmott, 37 Coverside Rd., Great Glen, Leicestershire.

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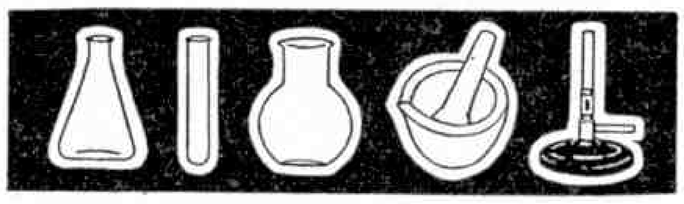

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City of Cardiff Education Committee

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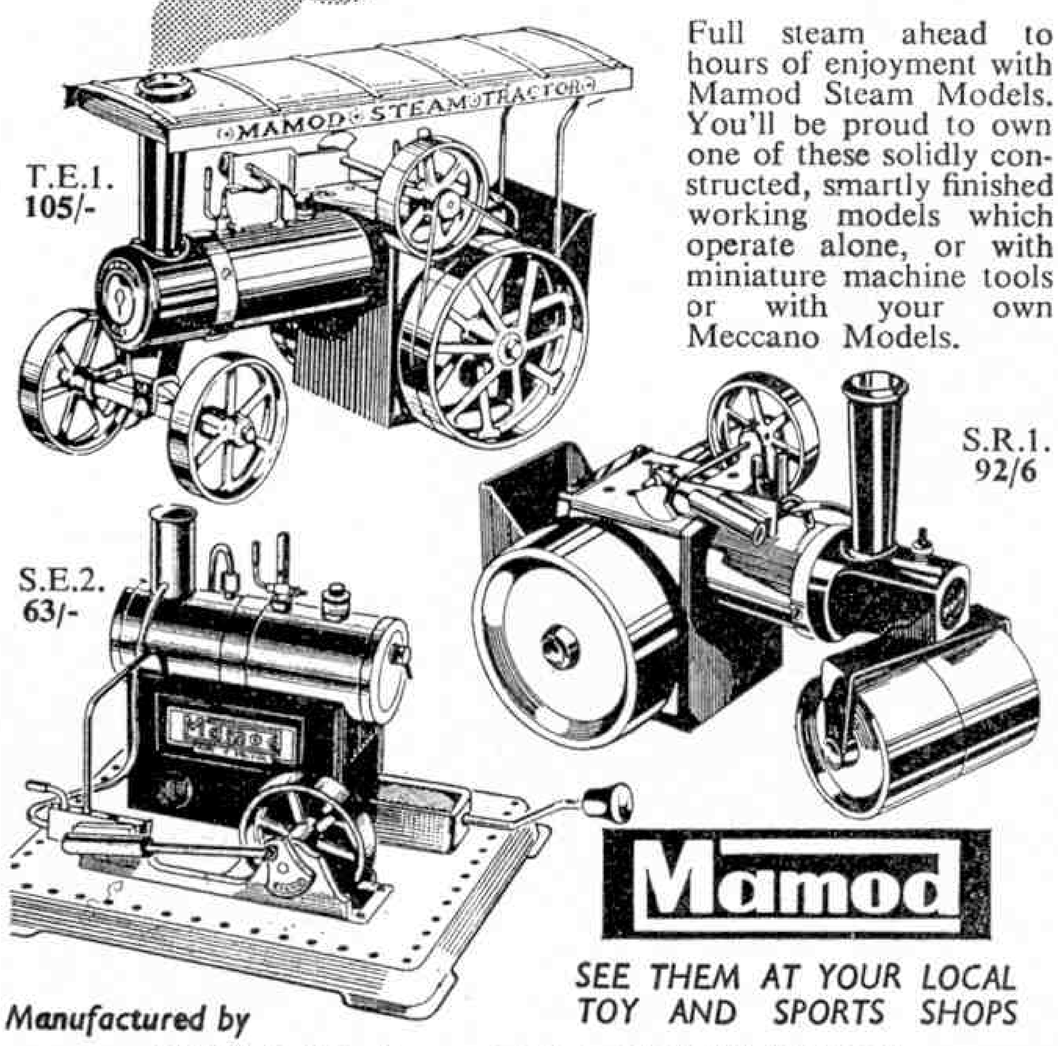
Prospectus and further information may be obtained from the Principal.

Robert E. Presswood,
Director of Education,
City Hall, Cardiff.

full steam ahead



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Classified Columns for your Sales & Wants

MECCANO MAGAZINE is the best medium for selling your old train set, stamp collection or any other item which is no longer of use to you but of possible use to others. Also, if you are short of an item for your collection, why not search for it by advertising in Meccano Magazine?

The cost is 4d. per word. (minimum 4s. 0d.) No box numbers. No trade ads.

Simply write each word of your advertisement in the spaces below (capital letters), cut out this quarter page and send it with your remittance to:— Classified Advertisement Dept., Meccano Magazine, St. Alphage House, Fore Street, London, E.C.2.

Sales/Wants *(Strike out which is not applicable)*

1	2	3
4	5	6
7	8	9
10	11	12
13	14	15
16	17	18
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If you require further words please continue on another sheet of paper.

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3—What is meant by a "MINT" stamp?
4—What country has "EIRE" on its stamps?
5—What country issued the famous "BLACK SWAN" stamp in 1854 and 100 years later in 1954?
6—Name any person (apart from the Royal Family) who has appeared on a Great Britain stamp.
7—What country has "MAGYAR POSTA" on its stamps?
8—What country NEVER puts its name on its stamps?
9—What was the former name of either (a) MALAWI? or (b) ZAMBIA?
10—What country has "SUOMI" on its stamps?
11—What country issued the world's first TRIANGULAR stamp—the "Cape Triangular" of 1853?

(The stamps illustrated give clues to the correct answers. All stamp prizes are guaranteed genuine, and free to winners. The judges' decisions are final; we cannot enter into correspondence.)

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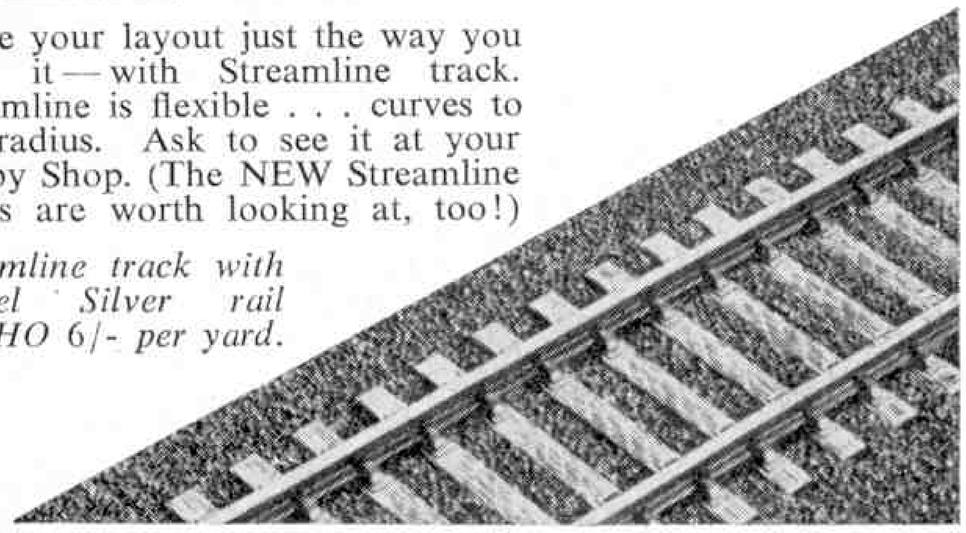

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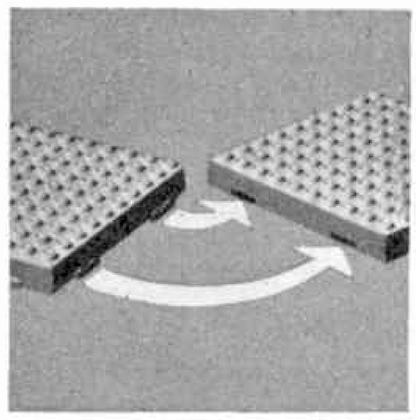
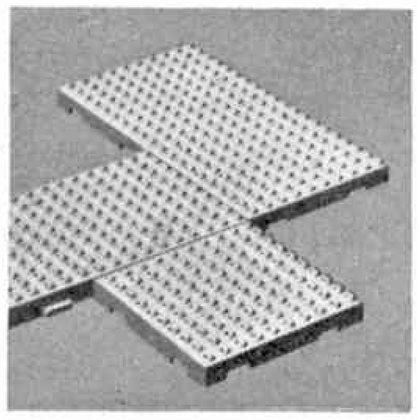
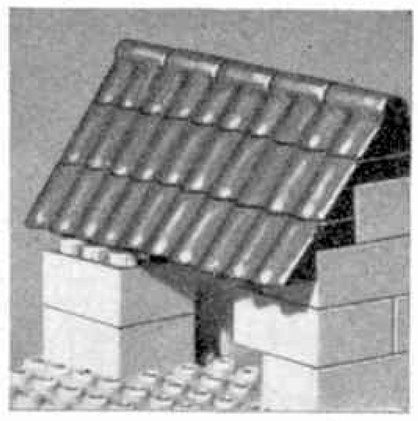


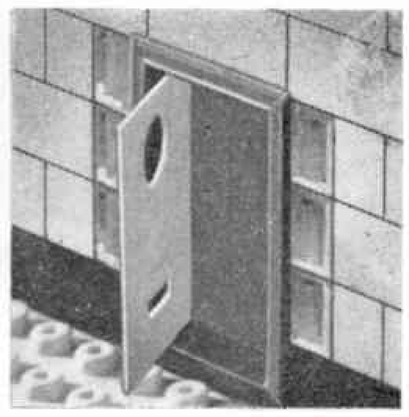


baseplates that *lock* together with special locking points — cannot fall apart



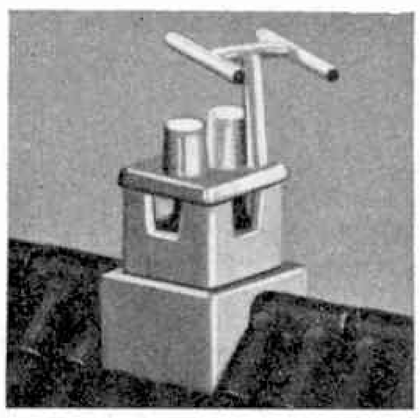
roofs that have tiles and look just like real roofs

windows that open and shut

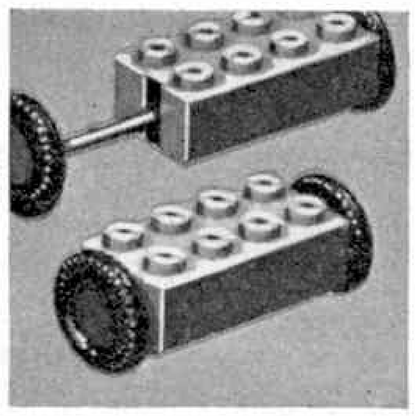


doors that are hinged to open and close

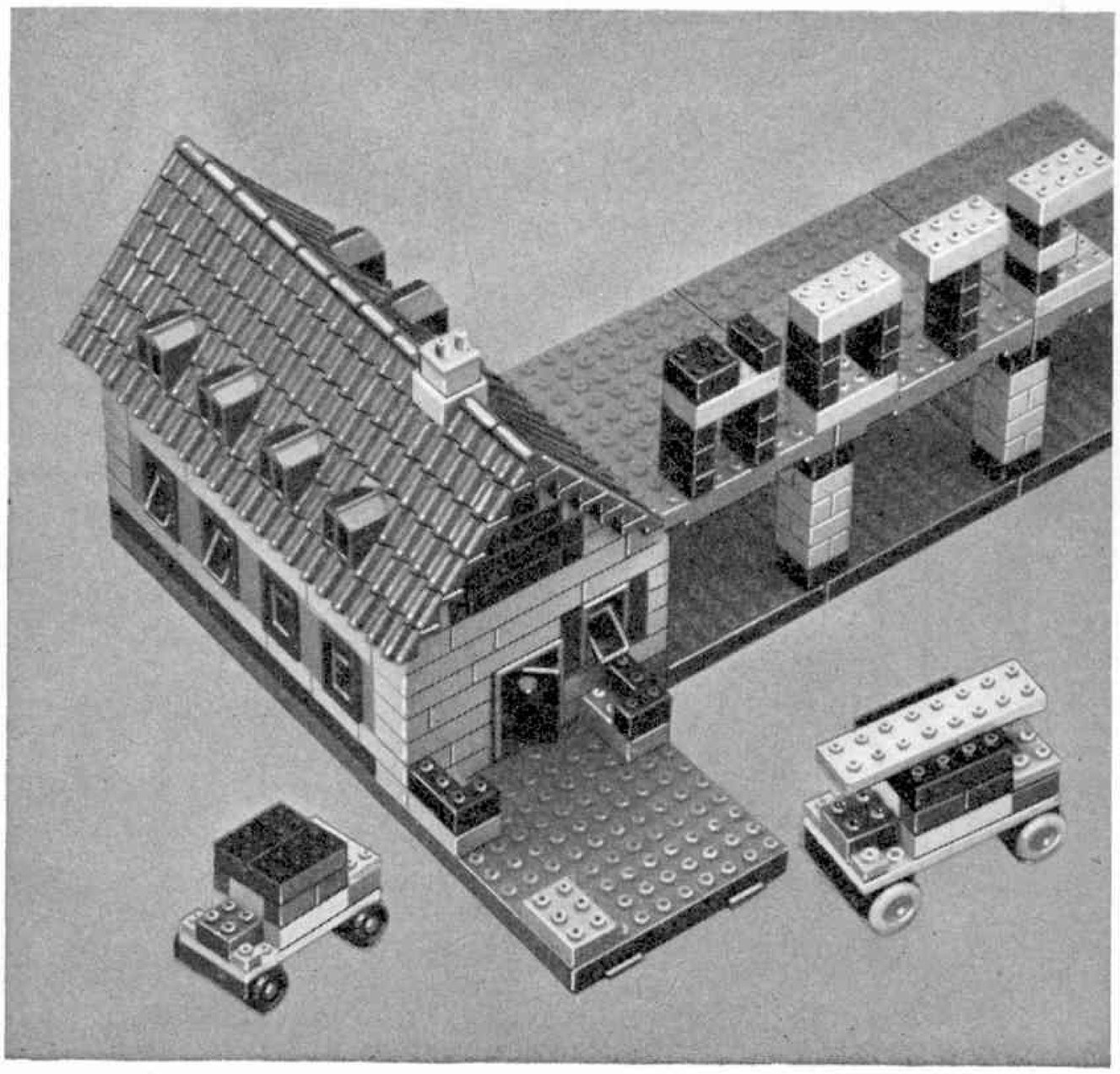
neat little bay windows with flowers in a bowl

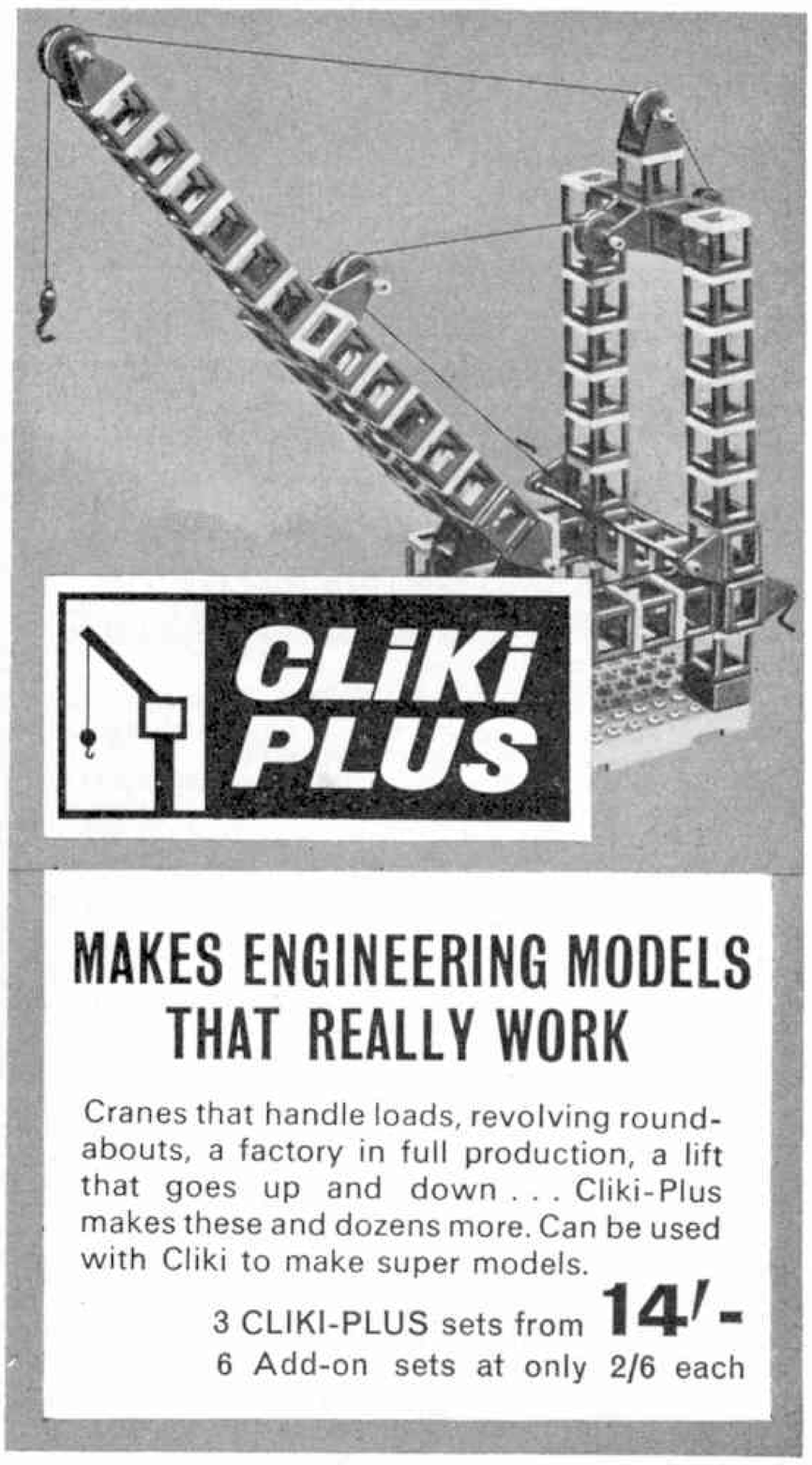


chimneys, TV aerials and many more finishing touches



with *every* set there are wheels, axles and special holed blocks for making pushalongs





MAKES ENGINEERING MODELS THAT REALLY WORK

Cranes that handle loads, revolving roundabouts, a factory in full production, a lift that goes up and down . . . Cliki-Plus makes these and dozens more. Can be used with Cliki to make super models.

3 CLIKI-PLUS sets from **14/-**
6 Add-on sets at only 2/6 each

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Another MECCANO Product.

IT'S GREAT! IT'S NEW! IT'S FROM MECCANO!

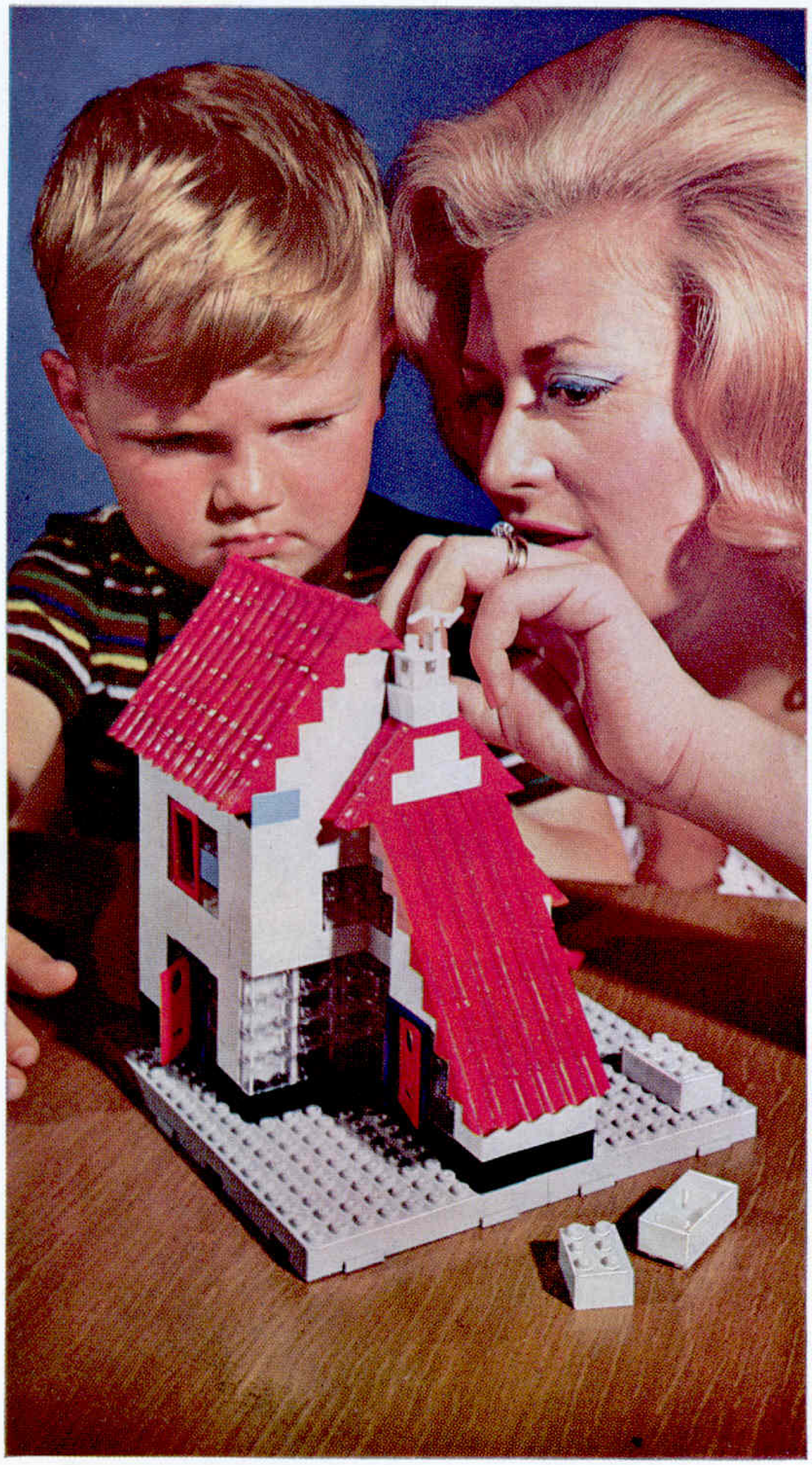
CLiKi

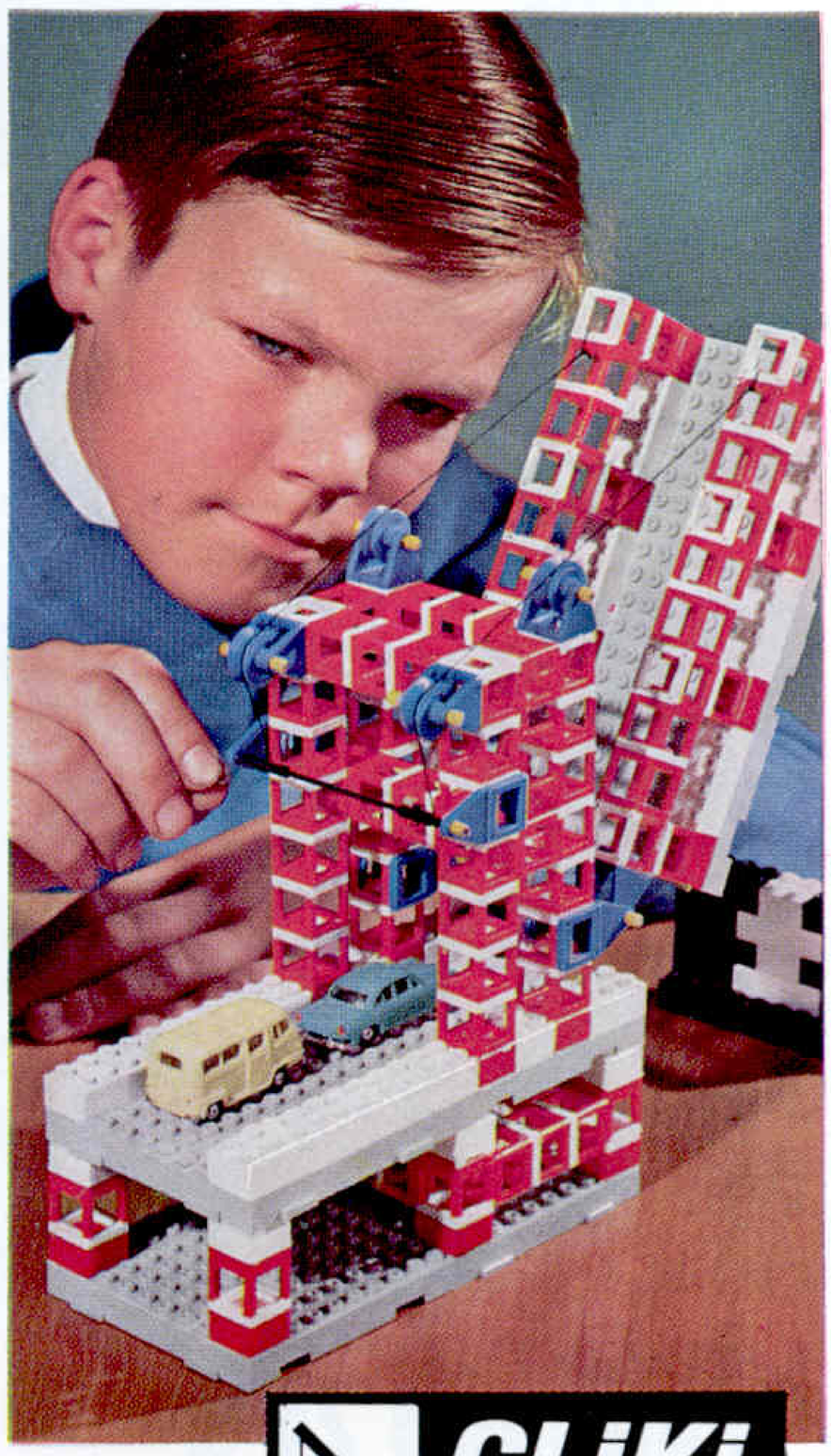
the most realistic building toy ever!

BUILDS HOUSES, HOTELS, SHOPS ETC. WITH TREMENDOUS REALISM, LIFELIKE DETAILS

- Roofs with tiles
- Opening windows
- TV aerials & chimneys
- Bay windows with flowers
- Hinged doors
- Interlocking base-plates
- Wheels and axles to make pushalongs

4 sets from only 9/11.
6 Add-On sets at only 2/6 each.





AND THIS IS CLiKi PLUS

the engineering development of *CLiKi*

Makes engineering models that really work. Factories, planes, swing bridges, roundabouts, lifts. Develops your engineering skill and imagination.

3 sets from 14/-. 6 Add-On sets at only 2/6 each

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Another MECCANO Product.

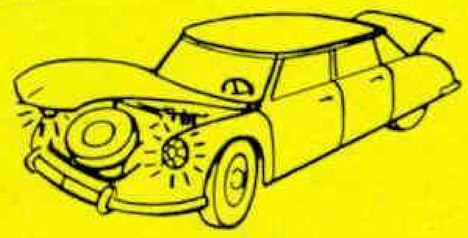
✳ THREE NEW DINKY MODELS THIS MONTH

SPECIALLY IMPORTED

From the continent

DS 19 CITROEN

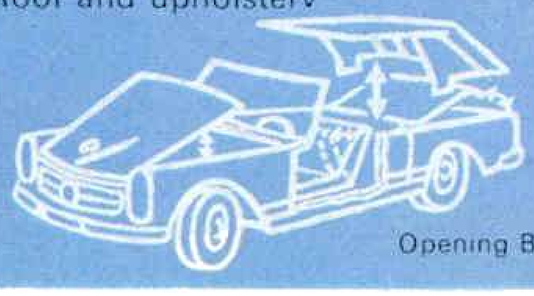
Oui, Oui, Monsieur—*the* most fabulous car in France is now here for your collection! ● Bonnet opens to show detailed engine *and spare wheel* ● Opening boot ● Prestomatic steering ● All-round suspension ● Jewelled head lights ● Windows, seats and steering wheel ● Die-cast base ● Lime Green with Off White roof and upholstery. Model No. 530. 4⅜" long. U.K. Price **9/11**



Opening Bonnet Opening Boot

MERCEDES-BENZ 230 SL

Here—with all the fittings—is the car that flashes down those German Autobahns! ● Opening bonnet and boot ● Detailed engine ● Removable hood ● Forward tipping seats ● Special headlights ● All-round suspension ● Windows and steering wheel ● Die-cast base ● Metallic Red with Cream Roof and upholstery

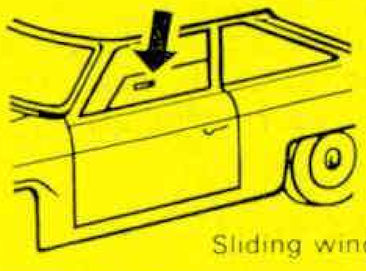


Opening Bonnet Opening Boot

Model No. 516. 3$\frac{15}{16}$" long. U.K. Price **11/6**

PANHARD 24 C

Another quick one to bother the French Gendarmes! ● Sliding windows ● Special headlights ● Prestomatic steering ● All-round suspension ● Windows, seats and steering wheel ● Dark Grey with Red upholstery and rear lights.



Sliding windows

Model No. 524. 3$\frac{15}{16}$" long. U.K. Price **7/11**

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