THE MODEL WORLD AT YOUR FINGERTIPS

MECCANO MAGAZINE

THE MODEL WORLD AT YOUR FINGERTIPS

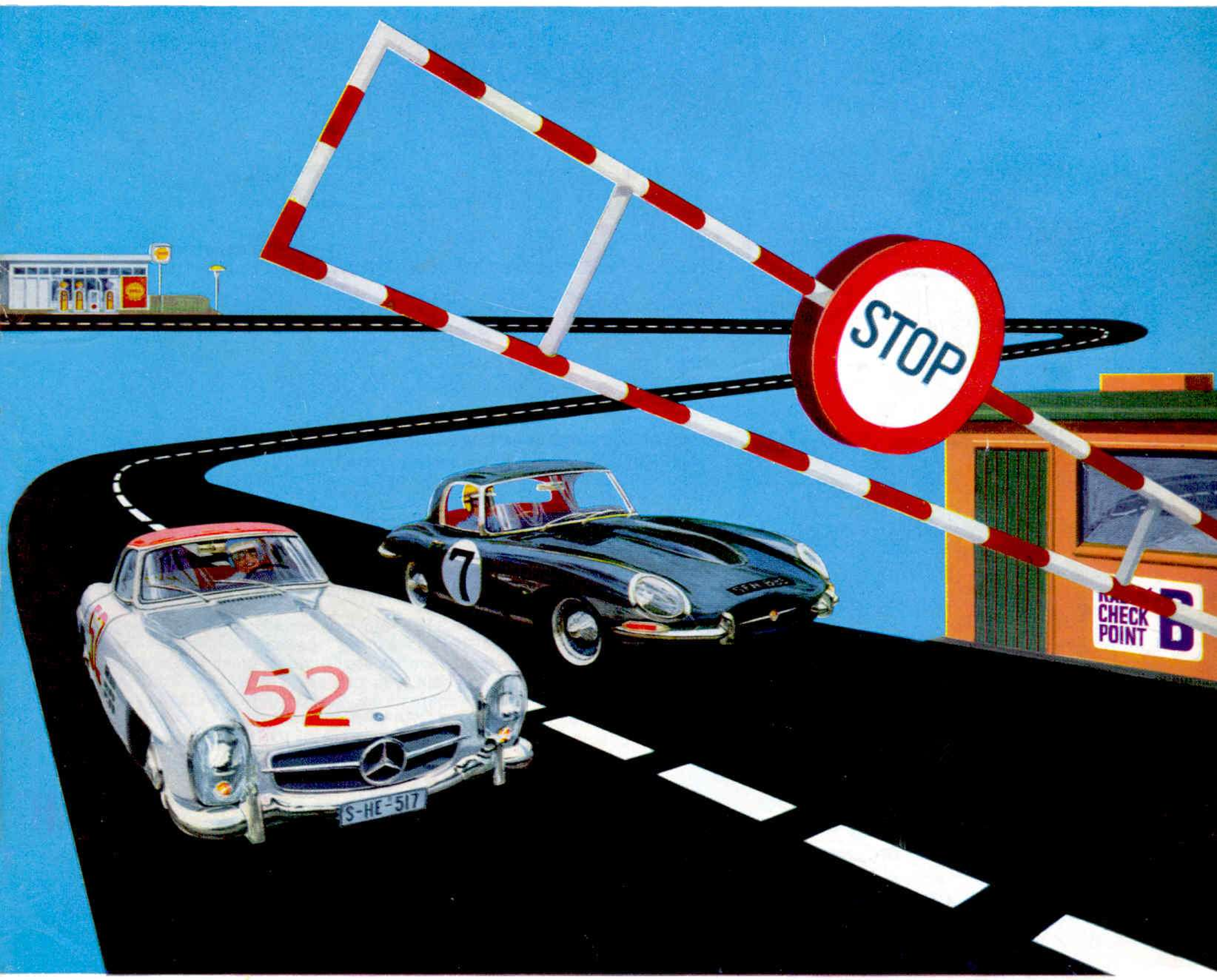
250 FREE FORD ZODIACS TO BE WON!

'FURY' SCALE PLAN

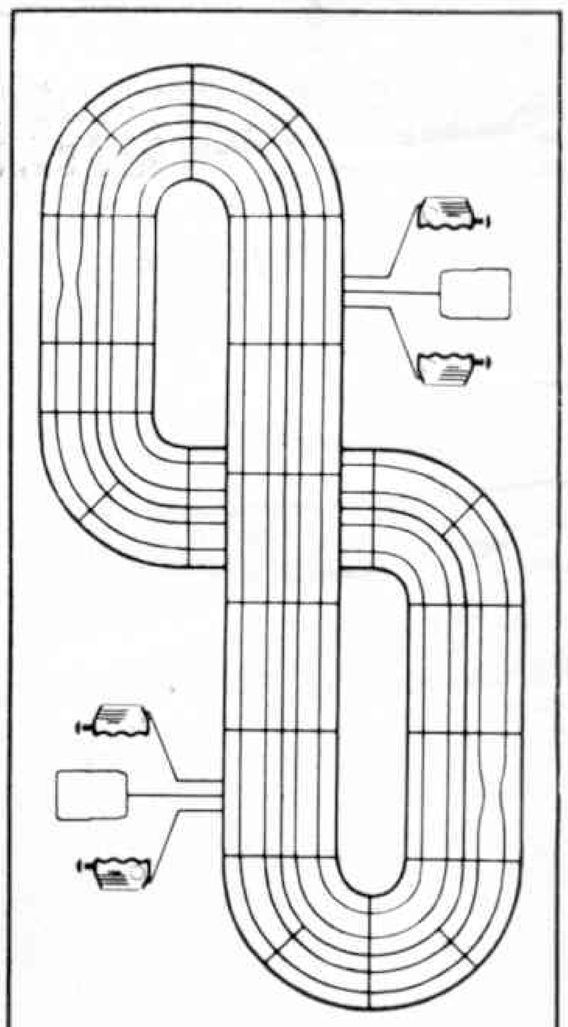
COLLECTING PLASTICS

DECEMBER 1966 TWO SHILLINGS

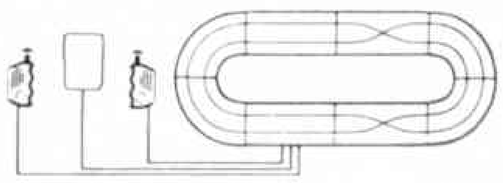
AVIATION PLASTIC MODELLING AEROMODELLING BOATS RAILWAYS RACEWAYS SCIENCE CYCLING PUZZLES COMPETITIONS



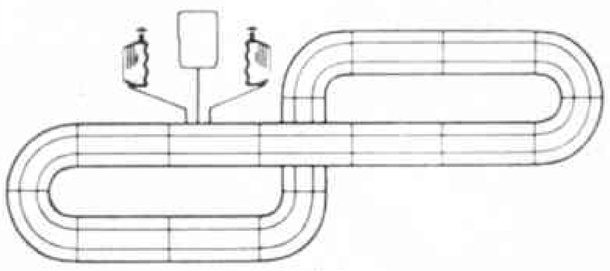
BE A CHAMPION!



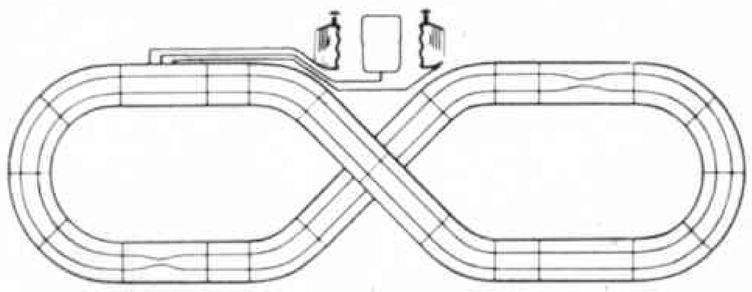
Sets B and C combine to form this 4 lane layout. 28½ ft. of figure-8 track. Area of layout 76″ × 40″.



X.100 Set A. 81/- 6 ft. of track using small radius (Inner) curves and two cross-overs. Area of layout—36″ × 15″.



X.110 Set B. 101/3 12½ ft. of figure-8 track, using small radius (Inner) curves. Area of layout—66″ × 25″.



X.120 Set C. 131/9 16 ft. of figure-8 track, using large radius (Outer) curves. Area of layout—83″ × 25″.

WITH

CHAMPION Motor racing

TRADE MARK REGISTERED

CHAMPION! That's the electrically powered racing track system! Now you can hold exciting races with two or four cars zooming round—in your own home!

CHAMPION gives you great scope to prove your driving skill. Learn how to take bends, hills and when to accelerate along the straight. In fact, develop real driving sense and skill just like a race ace!

Choose from three strongly made CHAMPION sets. Each has two realistic models of famous racing cars with articulated steering, a complete two-lane circuit and two speed controllers.

You can build up from your first set to a four-lane racing circuit of any length quite inexpensively as CHAMPION track costs less than any other make.

There's a range of low priced accessories too! Bridges, crash barriers, cars and if any car part should wear out, you can easily replace it like a real mechanic from a whole range of spare parts! And Corgi Kits and figures are ideal background settings for your CHAMPION layouts.

Race along to your local toy shop now! Go CHAMPION!

X.350 E-Type Jaguar Sports. Length 4⅛″. 20/2d. Also hard top version.

X.361 Ferrari Formula 1. Length 4⅛″. 20/2d. Also in plated finish 21/3d.

X.353 Mercedes 300 SL Hard Top. Length 4⅛″. 20/2d. Also open sports version.

X.360 BRM Formula 1. Length 4⅛″. 20/2d. Also in plated finish at 21/3d.

GRAND PRIX RACING AT YOUR FINGERTIPS!

Playcraft

TRADE MARK

See them all at your model shop!

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THE SOUTHGATE HOBBYSHOP
5 THE BROADWAY, LONDON, N.14
PALmers green 4258 Early closing Thurs.

LONDON SHOWROOM—112 High Holborn, W.C.1.
(opposite the Holborn tube station) HOLborn 6285

MANCHESTER SHOWROOM—28 Corporation Street
BLAckfriars 0229

TRI-ANG-HORNBY "OO" & "TT"
We hold stocks in great depth and normally have everything on demand. Supplies may be difficult this Christmas.

"INTER-CITY EXPRESS"	**127/9**
"FREIGHTMASTER"	**111/1**
CO-CO Diesel Electric	**55/9**
E3001 BO-BO Electric	**68/5**
4-6-0 HALL CLASS	**60/4**

MINIC OO ROADWAY & RACING
For the racing enthusiast with limited space and to go with the OO/HO railway systems. We hold the stocks of sets and track.

MODEL-LAND BUILDING KITS
British designs for British layouts. Easy to build and fully coloured.

TRIX & MINITRIX—OO & N
Two modern systems as well as service for those with old Trix.

HORNBY DUBLO 2 & 3 RAIL
We still stock NEW track and Rolling Stock. See list for range and prices.

LONE STAR OOO RAILWAYS
All shops stock both the toy and electric systems.

EGGERBAHN HOn RAILWAY
Within the limits of availability we try and hold full stocks of all items.

MINITRAINS—HOn
We stock locos and rolling stock to run on PECO HOn track.

MARKLIN AUTOMATIC RLY
We normally have complete stocks including the HAMMO 2 Rail locomotives.

FLEISCHMANN SUPER TRAINS
We hold large stocks of this superb 2 rail system but we are faced with replacement problems.

FALLER & VOLLMER KITS
These are the finest building kits from Germany and we can normally supply at all shops and by mail order.

AMAZING DEVELOPMENTS AT 112 HIGH HOLBORN

(1) NEW SHOWROOM PROVIDES THREE TIMES DISPLAY AND SERVICE SPACE.

(2) NOW BRITAIN'S LARGEST MODEL STORE WITH HUGE STOCK OF TRAINS, CARS, ETC.

(3) 80 FT SLOT RACING TRACK FOR TESTING 1/32 AND 1/24 SCALE CARS.

(4) OPEN DAILY 9-6 TUESDAY TO SATURDAY (Closed all day Monday).

NO PARKING PROBLEMS ON SATURDAY AFTERNOON

NEW GENERAL PRICE LIST — 1/-

We have produced a comprehensive general price list for all the products sold at our shops and by Mail Order. A 2/- voucher will be sent with each Price List.

NEW RAILWAY CATALOGUE Ready mid-November	**2/-**
NEW RACING CATALOGUE Ready now	**2/-**
"BEATTIE EXPRESS" 1/- Annual subscription	**10/-**

BEATTIES RACEWAY SOUTHGATE, N.14

This 84 ft, 6 lane track for 1/32nd and 1/24th scale cars has proved tremendously popular. Racers of all ages come to The SOUTHGATE RACEWAY to try out their fastest cars and test the latest controllers. The charge is 6d per session on ordinary days and 1/- on Saturdays. Clubs for 1/32nd and 1/24th scale held nightly.

SOUTHGATE SERVICE

At SOUTHGATE in addition to the RACEWAY there is our remarkable Train Shop and Pastime Showroom and, of course, the SECONDHAND SUPERMARKET where you can save money in extending your layouts. SOUTHGATE and HOLBORN are on the Piccadilly Tube and they are less than 30 mins apart.

MANCHESTER SERVICE

Mr. WARD and his friendly staff serve a wide area of Lancs and West Yorkshire. The shop is not large but the stock is exceptional and the SERVICE quite unusual. Try it.

SLOT-RACING EQUIPMENT

by SCALEXTRIC
We carry very large stocks but supplies have been restricted in favour of the export market.

by AIRFIX
Full stocks of sets and track and car kits.

by REVELL
Revell Raceway Track, cars and car kits.

by COX & MONOGRAM
All the best from America for 1/32nd and 1/24th scale.

by RACEWELL
Full range of spares.

FLEXIBLE RAILWAY TRACKS
we stock in quantity:—
PECO STREAMLINE and PECO PRODUCTS
GEM and FORMOWAY

HAMMANT & MORGAN SUPER POWER UNITS
We stock and recommend this excellent range of products.

"BIG, BIG" TRAIN SETS, LOCOS & ACCESSORIES

BEATIPOINTS FOR "BIG BIG"
Left or right hand—each 15/- available from stock.

PLASTIC MODEL KITS, HIGH QUALITY BOAT KITS
by Steingraber, Billing, etc: Full range at Holborn.

We also sell at Holborn and by post CORGIS, DINKYS, IMPEYS, SPOT ON, MATCH-BOX CARS "TOUCH TAPESTRY" and "PAINTING by NUMBERS" etc.

MAMOD LIVE STEAM MODELS

TRACTION ENGINE 107/6
Steam Roller and Steam Engines. See the full list.

POSTAGE in U.K. under 20/-, 2/-; under 40/-, 2/6; under 60/-, 3/-; over 60/-, 3/6 per parcel.

SCALEXTRIC

REGD.

Only Scalextric gives you 8 lane racing

Every Scalextric set comes packed with thrills! Right from the smallest two lane set you get fast, exciting, realistic racing and can, step by step, extend to a fabulous 8 lane circuit.

Scalextric track is flexible, positive locking, easy to connect and dismantle. It offers the largest range of track sections, including chicanes, change-overs, pit-stops etc.

When it comes to trackside accessories and range of cars Scalextric cannot be matched anywhere. Every car is precision built, a thrilling 1/32 scale masterpiece in the greatest line-up of Formula I and II, Competition, Vintage and Production models.

Now in the Scalextric range are the supercharged *'RACE-TUNED'* models, each with a *'RACE-TUNED'* motor for sensational speed, forward mounted guide flag for extra-fast cornering and super-grip tyres for giant acceleration and braking power.

Only Scalextric offers you so much in model motor racing.

Scalextric Full Colour Catalogues are obtainable from your Model Shop — Price 1/-.

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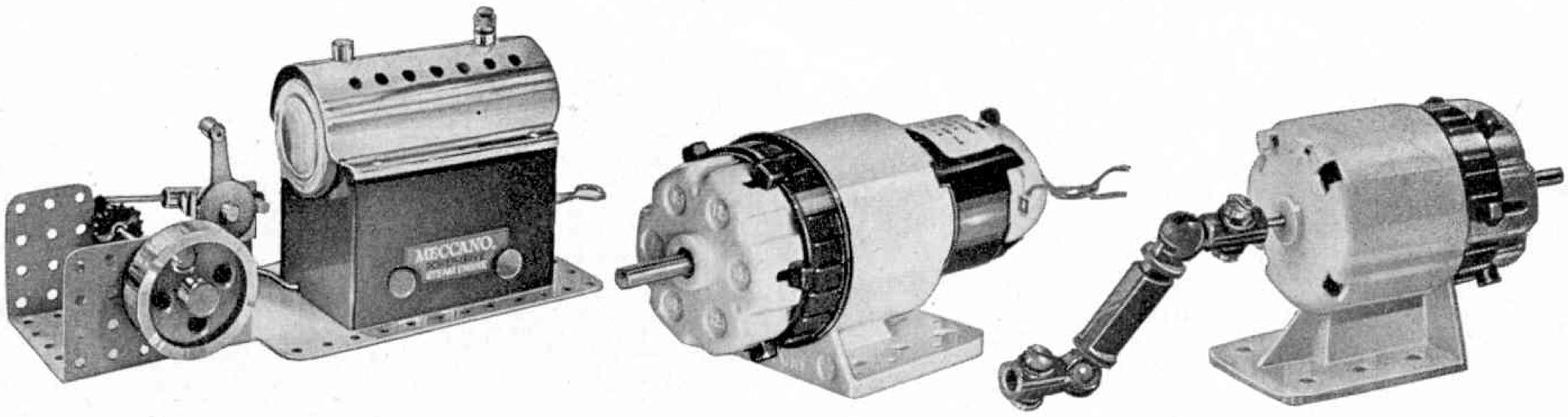
make your MECCANO models move with these New Power Units



MECCANO STEAM ENGINE

What a fabulous idea for Meccano engineers to catch on to—super-efficient *steam power* to drive off gears, chains and pulleys! Working on methylated spirits and water, the Meccano Steam Engine has a single lever that operates the fly-wheel in forward *and* reverse directions, and also controls the running speed. Clean, safe, simple to operate.

ONLY **69/3**

MECCANO 6-RATIO GEARBOX WITH ELECTRIC MOTOR

Now put 6-speed *electric* power into your Meccano models! Really powerful, sturdy and light, the motor works by 6-volt battery or 3-12 volt DC power supply. Speed range 115 r.p.m. to 2300 r.p.m. off-load at 6 volts. Forward/off/reverse switch. *The direct drive* gearbox transmission ratios are 3:1, 6:1, 12:1, 16:1, 32:1, 60:1. Gears may be changed while motor is running. Foolproof. Simple to operate. No maintenance required.

ONLY **50/-**

MECCANO 6-RATIO GEARBOX WITH UNIVERSAL COUPLING

It's that terrific 6-speed gearbox again—this time with superbly designed universal coupling that enables you to drive it from any power source, using a standard Meccano $\frac{5}{32}$" diameter spindle. Ideal power units —Meccano EMEBO and E15R Electric Motors.

ONLY **30/6**

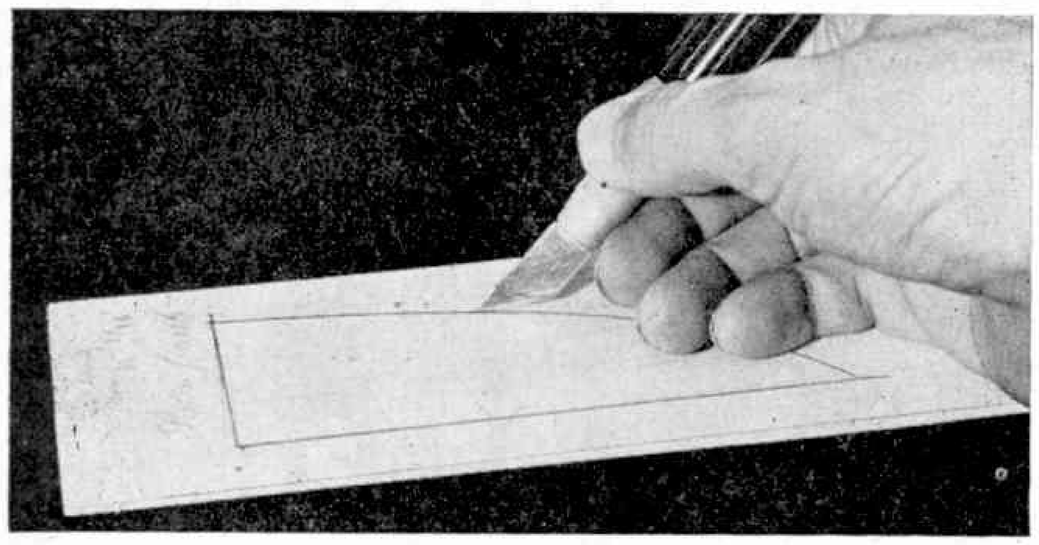
at your toy shop now—in smart 'see-through' packs!

MECCANO® POWER DRIVE SERIES

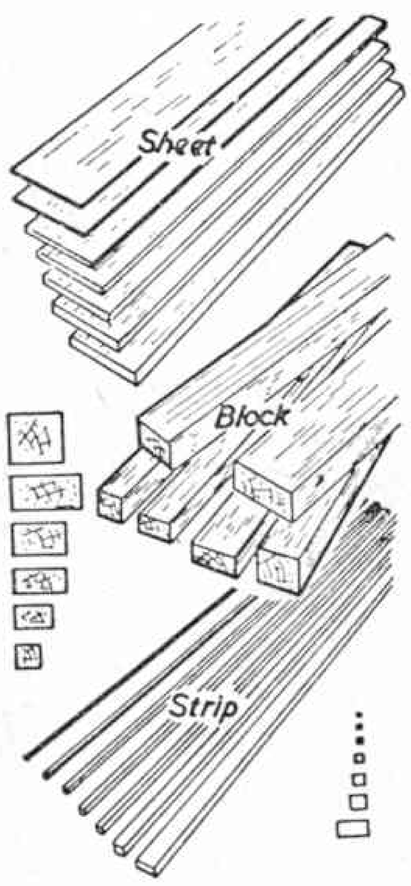
COMPLETE WITH FULL INSTRUCTIONS FOR USE

Meccano Ltd., Binns Rd., Liverpool

Solarbo BALSA



There's skill and know-how behind the production of every single piece of Solarbo Balsa—specially graded and selected for modelling use. That's why Solarbo Balsa is recognised the world over as the best you can buy. It costs no more, but gives you that little extra in quality.



BLOCK . . .

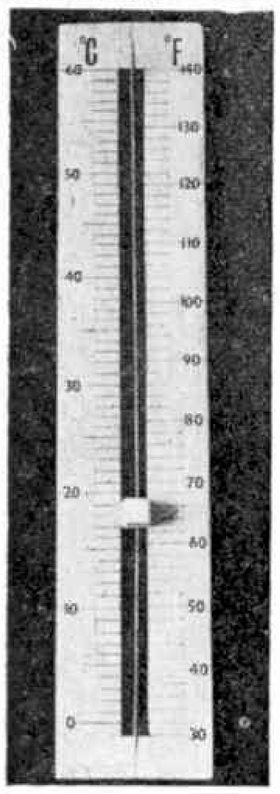
Balsa block is widely used for large carved and shaped components, being very easy to work. A 36″ length of 2″ x 2″ block weighs only 8 to 18 ounces, depending on grade. The lighter, softer grades are generally preferred. SOLARBO block is characterised by accurate cutting and top quality.

SHEET . . .

Sheet Balsawood is the basic 'stock' material for cut-out parts, planking, sheetwood covering, etc., etc. Stiffness is governed by the 'cut'. Standard sizes are 36″ long by 3″ or 4″ wide, in thicknesses from 1/32″ to ½″. SOLARBO sheet is 'satin finish', minimising need for final sanding.

STRIP . . .

Strip lengths are for making frames of all kinds, assembled easily and rapidly with quick-drying Balsa cement. Standard length is 36″ in a wide variety of square and rectangular sections from 1/16″ sq. upwards. Accurate cutting is a feature of SOLARBO strip, plus Balsa selection for maximum strength.



◀ . . . FREE PLAN

Here's a simple TEMPERATURE CONVERSION SCALE you can make from Solarbo Balsa, giving you instant conversion from °C to °F, and vice versa. For a FREE PLAN and instructions, return this coupon together with a foolscap envelope (or larger) on which you have written your name and address and put a 4d. stamp.

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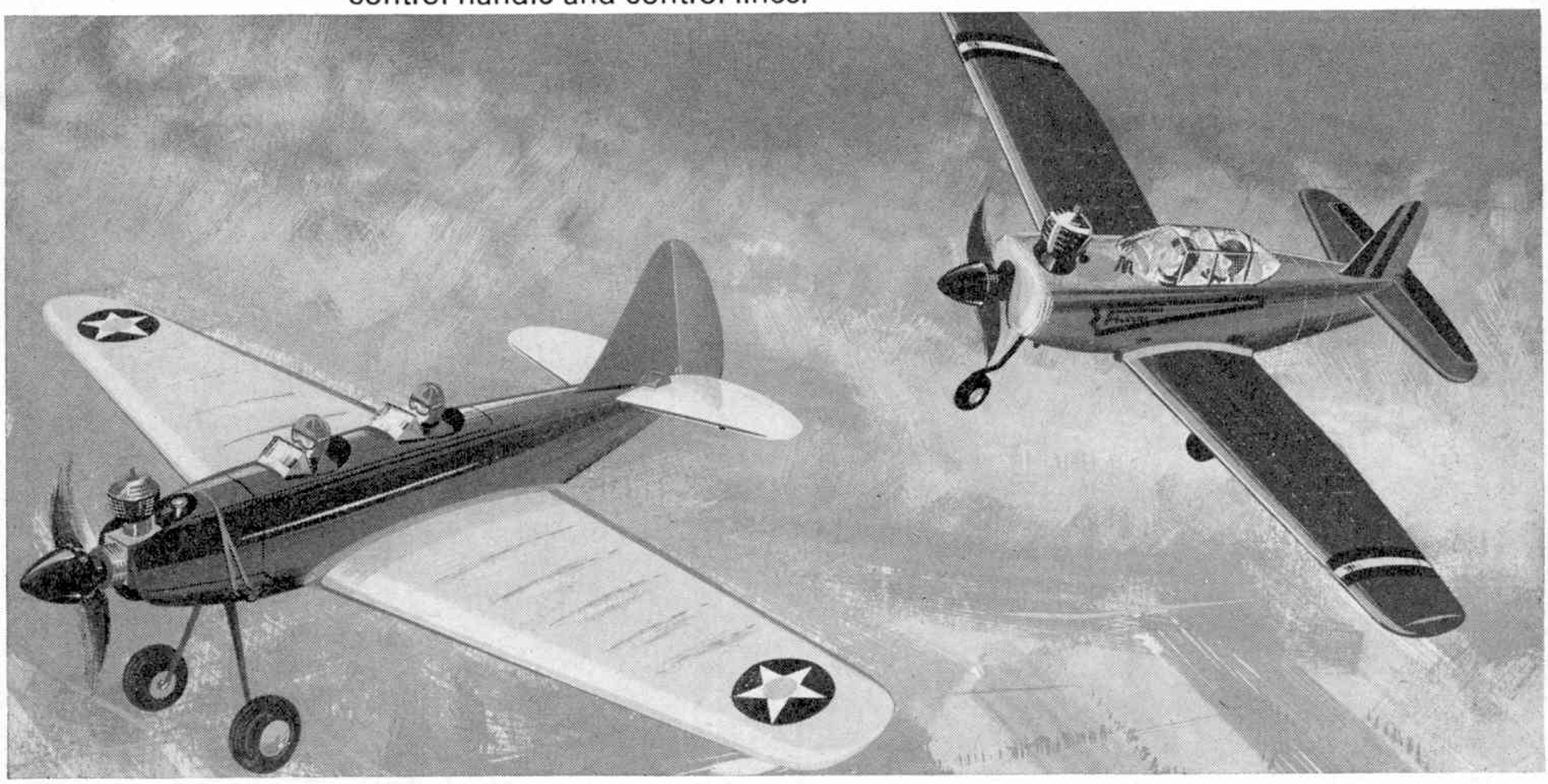
COX READY·TO·FLY SCALE CONTROL LINE MODELS

Realistic in flight, authentic in detail and easy to handle.

Each model ready for action. Packed complete, with the world famous COX easy starting dependable engine, nylon propeller, control handle and control lines.



PT 19 FLIGHT TRAINER £6.1.3
This is the ideal model to start control line flying with. 22″ wingspan with built-in 'crashproof' features. Takes the beginner from first flights to primary stunt, up to advanced manoeuvres.

FLEDGLING £4.13.10
A highly manoeuvrable low wing trainer plane for beginner or advanced pilot. 16″ wingspan with tricycle undercarriage, clear plastic canopy, plus authentic detail and markings. As well as being easy to fly, this plane can go through the most complicated manoeuvres demanded by the advanced pilot.

OTHER EXCITING COX MODELS INCLUDE:

SPITFIRE £7.12.2
Trim, fast and manoeuvrable. Scale details include cockpit interior, underwing radiator and oil cooler, wing-mounted cannon, etc. Wingspan 23″.

STUKA DIVE-BOMBER £7.12.2
23½″ wingspan action-packed scale model which drops bombs in flight... canopy opens... machine gun swivels... visible fuel gauge.

A25 CURTIS BOMBER £7.1.9
Scale detail includes underwing rockets, landing gear doors, auxiliary tanks, authentic canopy — plus the working feature of bomb dropping in flight. Wingspan 20″.

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Special working features include working ejector seat with parachute descent by pilot, retractable decklanding hook for Carrier landings, etc. Wingspan 20″.

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High performance model with rubber band reassembly feature. New combat-real finish and decoration.

See these amazing planes at your local shop or send a stamped addressed envelope for a FREE copy of the COX Ready-to-fly scale control line leaflet to:—

A. A. HALES LTD. (Dept.C7), 26 STATION CLOSE, POTTERS BAR, HERTS.
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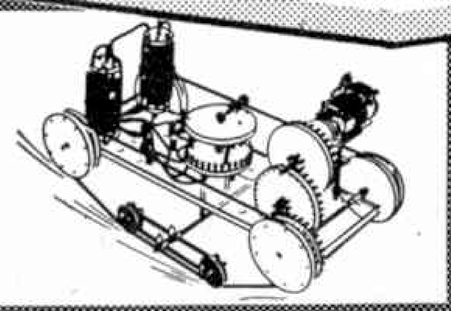
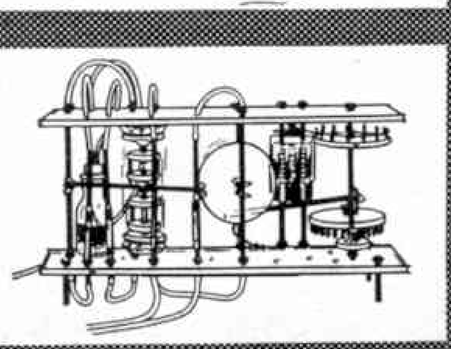
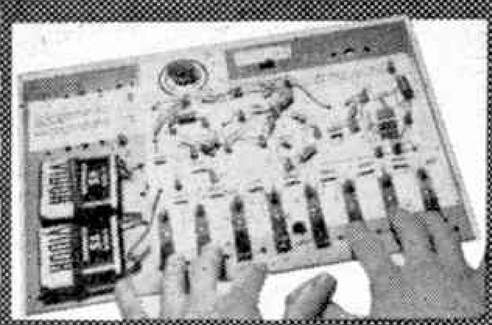
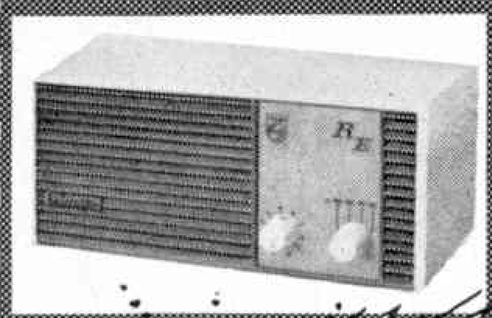
Get a Fabulous PHILIPS YOUNG ENGINEER KIT









A six-speed tank, working clocks, pumps, cars – you can build 32 mechanical marvels with Philips new ME1200 Mechanical Engineer Kit – £9.17.6.

Or build a burglar alarm, morse code trainer, electronic organ, detective's 'ear' and many other fabulous working models with Philips Electronic Engineer Kits EE8 (8 models) – £5.4.6. EE20 (21 models) – £8.9.6 (or add kit A20 to the EE8 – makes 13 extra models, costs £3.9.6).

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'Come in Red Leader' Build an exciting two-way wire-connected intercom set with Philips Interphone Engineer Kit. IE2000 – £6.19.6.

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All you have to do is to pass 5 G.C.E. subjects at 'O' level, followed by 2 at 'A' level, and you must include English Language, Maths and a Science subject at either 'O' or 'A' level. Then, when you are 18, you could commence your course of training to be an airline pilot with BOAC or BEA.

Here is some information for Dad. The BOAC/BEA Joint Pilot Training Committee pay for the training, and grants are available from your Local Education Authority. The initial training course lasts approximately 18 months.

This is a wonderful opportunity and is well worth thinking about. You could enjoy the challenging life of an airline pilot, a high salary and an excellent pension scheme to make it all worthwhile.

Start preparing for those vital G.C.E. subjects now.

For further details and advice, please write to the Pilot Career Information Officer, (D7), The College of Air Training, Hamble, Southampton.

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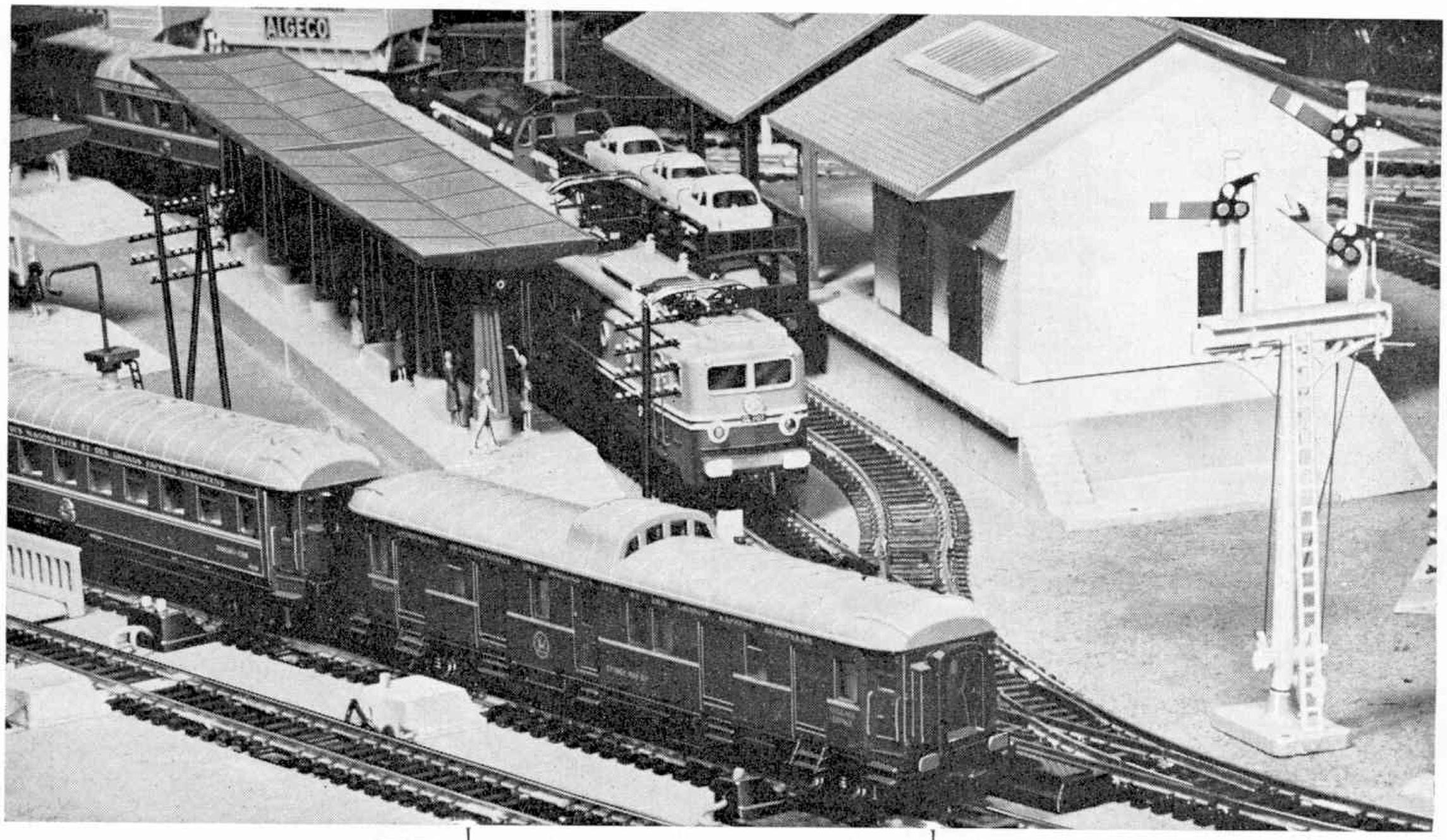
Build that big layout for a small outlay — today.



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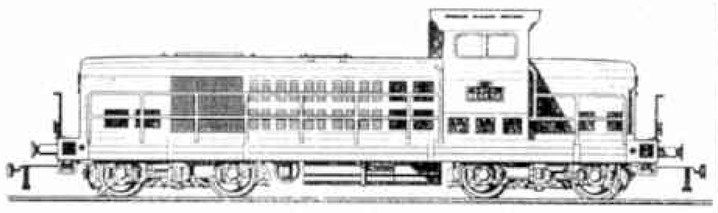

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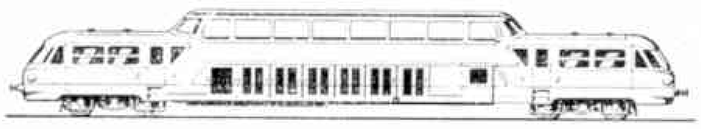

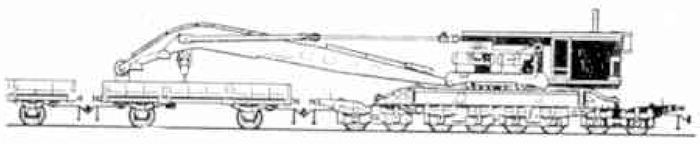

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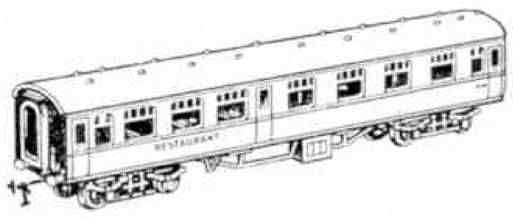

P.335.

P.853. S.N.C.F. B.B. 66150 Diesel Loco, (8-wheel drive). Price 66/-

P.852. S.N.C.F. Panoramic Rail Car. Price 62/9d.

P.663. Operating Crane Wagon Set. Price 50/3d.

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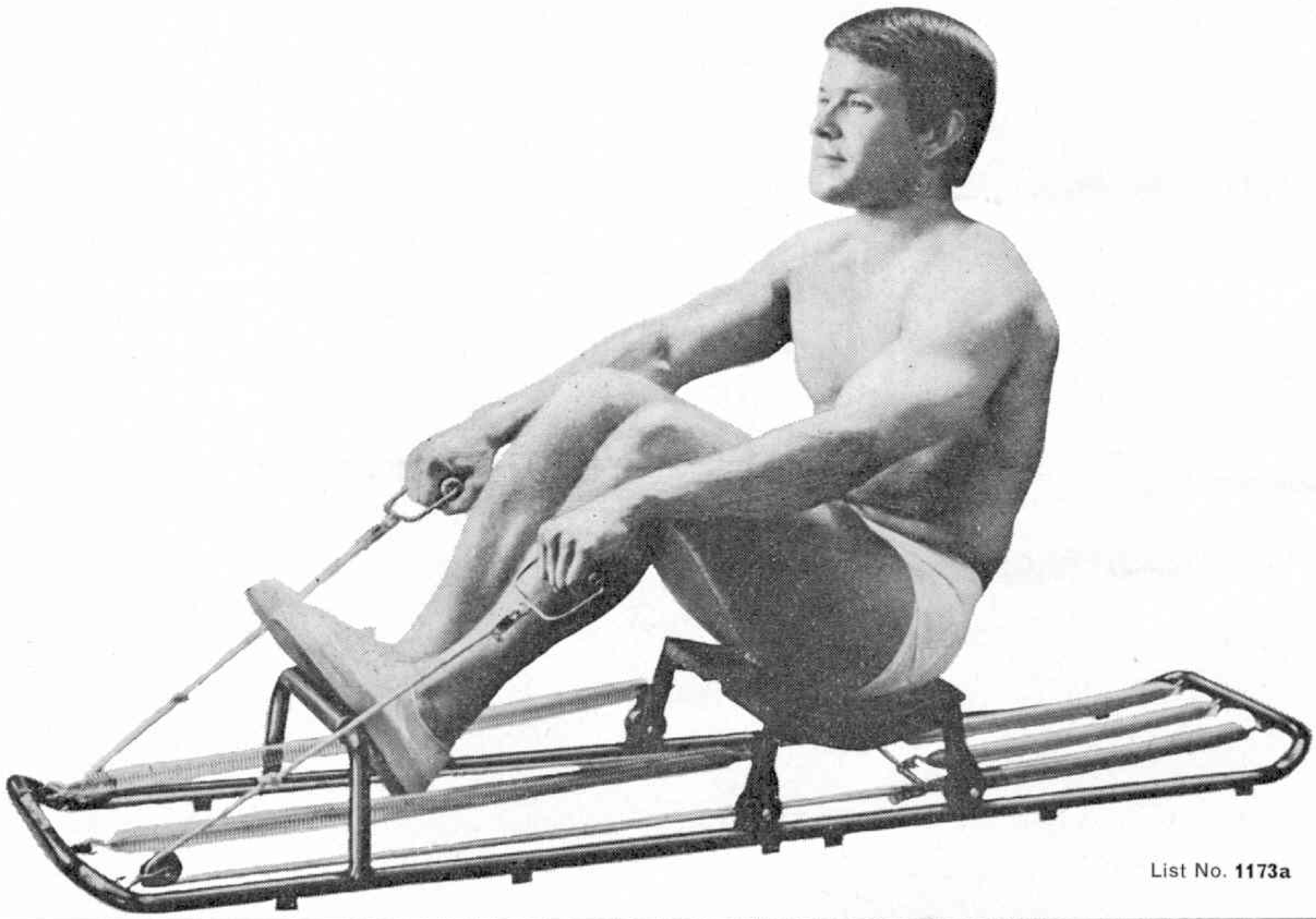

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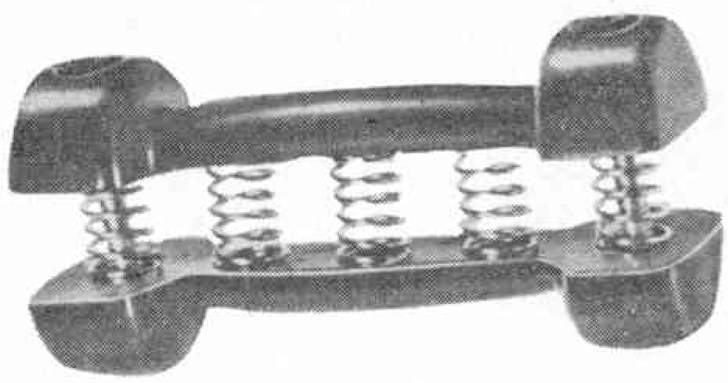

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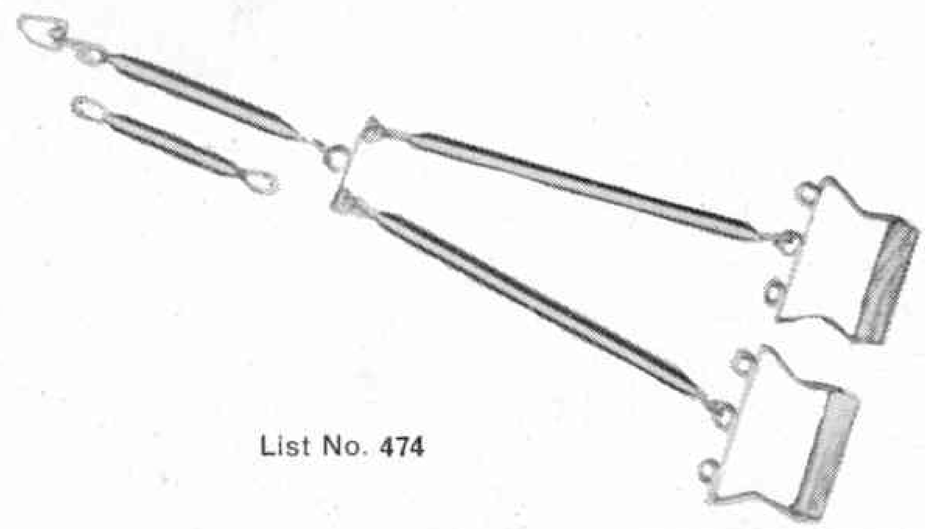

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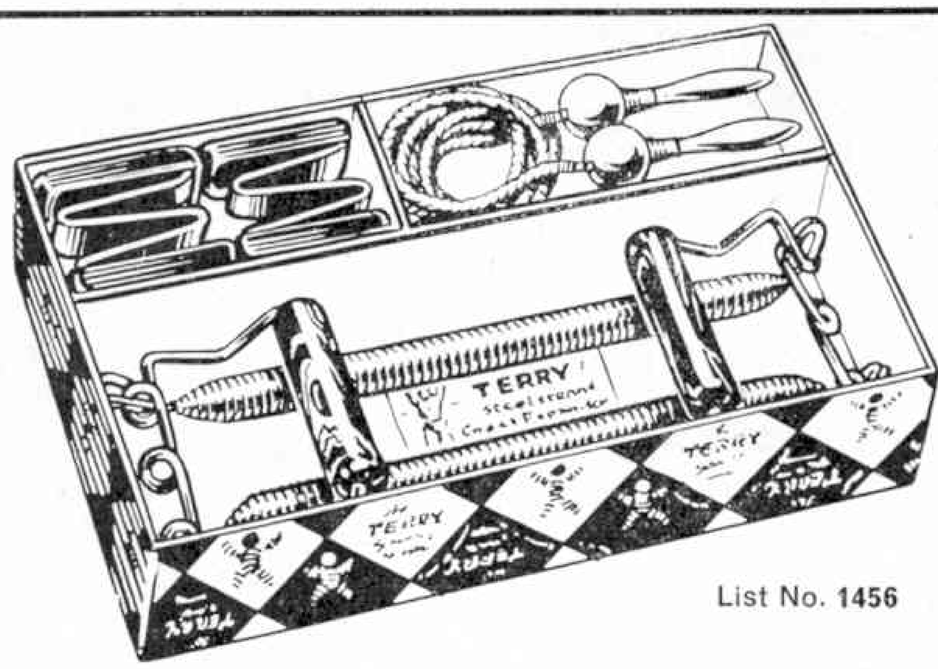

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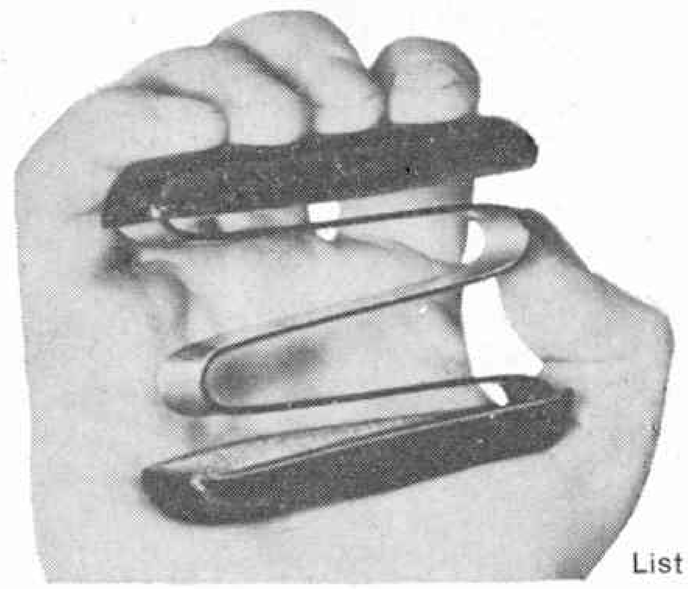

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List **474** Five-in-one combination: size 2–42/6, size 3–44/10, size 4–49/5 each.
List **1456** Junior Home Gym Kit 34/11 · List **1150** Pocket Wrist exerciser: 2/11 ea.

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THE MODEL WORLD AT YOUR FINGERTIPS

MECCANO MAGAZINE

THE MODEL WORLD AT YOUR FINGERTIPS

DECEMBER 1966 VOLUME 51 No. 12

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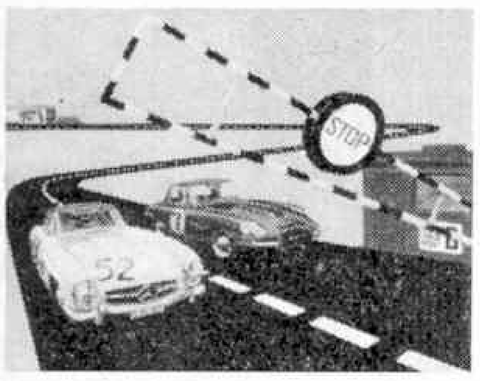

ON THE COVER: The barrier of the rally checkpoint rises, and the Jaguar and Mercedes roar away on the next stage of an exciting road rally. This is a scene from the Minic 'Checkpoint Bravo' Rally Set. Read more about Minic Rallying on page 22.

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Magazine cover dates can be so confusing. This is the December issue, but it's published in November; nevertheless we always think of it as our Christmas issue even though there's another Meccano Magazine published before December 25th! Perhaps it's the inescapable association of December and Christmas that inspires this anomaly but there are also some practical reasons. Christmas is only five weeks away and now is the time to buy all those presents (or drop hints about what presents *you* would like to receive). So, in this month's Meccano Magazine you will find a number of our features offer helpful suggestions along these lines and besides the 250 free Zodiac* cars (see page 37) you can get yourself a free three-bladed craft knife too—(details are on page 58). Next month it will be almost too late to think of buying presents but the January Meccano Magazine (out on December 17th) will include a present for all of you—read on!

Volume 52 begins in four weeks time and we are then launched into the second half of Meccano Magazine's first century. It is therefore fitting that we should mark the occasion in some way and so, by popular demand, we are giving away another big boat plan! Last January's issue with a similar offer was a sell-out and we are *still* receiving letters requesting copies that we are unable to supply. The lesson is easy—order your copy *now*!

This year our boat design will enable you to install either inboard or outboard power units and with *two* outboards—WOW!

If you're in London between December 27th and January 10th you *must* drop into Olympia where, at the Schoolboys and Girls Exhibition, you will find that Meccano Magazine has a bigger stand than ever! On it you will be able to study many of the exciting working models used in recent, current and forthcoming features and if you're lucky you may meet some of the people who produce your favourite hobby magazine.

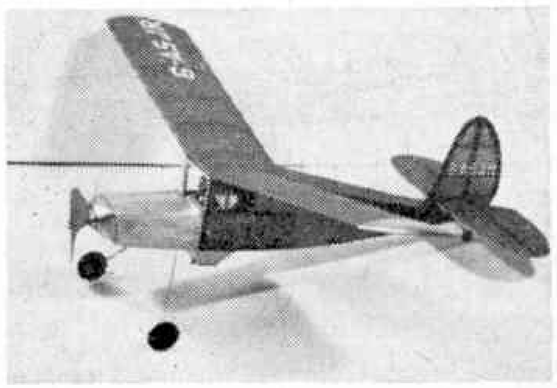
Among other exhibits, there will be a working model railway of unusual layout—the step-by-step construction of which will be fully described and illustrated during the coming year, commencing with the January issue. Stand visitors will also be able to try their luck at winning one of designer Ray Malmstrom's original flying models (illustrated below), full size plans for which we are also including in the magazine. The model power boats featured in the give-away January plan will be there and a free craft knife will be presented to every stand visitor who places a new magazine subscription. You will also be able to study our original plastic model conversions that have inspired so much favourable comment and musically-inclined visitors will be invited to have a go on our Meccano Magazine electronic organ, hundreds of which are currently being constructed from the recent magazine series.

Meccano fans will be fascinated by a working model Spiralograph which will be producing intricate geometric patterns and the January issue will include full constructional details. There will be lots more surprises for you to see as well!

So come along to the Empire Hall, Olympia—we're on the first floor—and we'll be delighted to meet you.

* Due to last minute production difficulties the model offered in this month's special Dinky Toy Competition had to be changed after last month's editorial announcement went to press. You're the winners! The Zodiac has even *more* action features. Look at our back page for all the exciting details.

Next Month: Some details of our January contents are revealed elsewhere on this page and here's a glimpse of the super flying model that you will be able to build from our full size magazine plans. The model has a working 'hopper' with which you can drop parachutes or do a spot of crop-dusting



CHRIS JELLEY

PRIVATE AND COMMERCIAL

GREAT NEW FORD TRANSIT COMMERCIAL · EXC

ABOVE LEFT

Just one of the many versions in which the real Ford Transit Van is available

ABOVE RIGHT

The VW 1600 TL as it appears in real life

OPPOSITE PAGE TOP

These examples of the new Dinky Volkswagen not only illustrate the numerous action features fitted to the model, but also show the fine detail present. Note, particularly, the wheels.

OPPOSITE PAGE BOTTOM

A model to delight commercial vehicle fans is new Dinky Toy No. 407 Ford Transit Van

'WE aim to please,' said a spokesman for Meccano Limited recently when talking about the new Dinky Toys models of the Volkswagen 1600 TL Fastback and Ford Transit Van, hot off the production lines when this article was written. I'm not sure I like his turn of phrase, but I fully understand the point he was trying to make. Broadly speaking, most die-cast model collectors can be split into two main groups —those who prefer private cars and those who go in for commercial vehicles. These latest Dinkys cater for both groups. Mind you, I suspect that Meccano also had an eye to good business. As I have mentioned on several occasions in the past, more than half the production of the company is exported, with a good proportion of the exports going to the Continent, and I'll bet that the fact that the original of one of the models happens to be a Continental car is deliberate rather than coincidental. 'Fair enough,' I say. After all, it's only right that Continental collectors, who buy such a lot of models, should be borne in mind when new models are on the stocks.

Anyway, irrespective of its nationality, the Dinky Volkswagen 1600 TL is well worth buying for its own sake. Numbered 163, it's an action-packed model in the best Dinky Toy tradition. Features present not only include the now almost standard opening bonnet, detailed engine, opening boot, suspension, windows and interior fittings, but also opening 'upholstered' doors, tipping seat-backs, plated bumpers and baseplate, jewelled headlamps and Continental-style number plates. Perhaps the most interesting feature of all, however, from the connoisseur's point of view, is the wheels. These are entirely new and are very well detailed representations of the wheels fitted to the real-life car. The doors, too, are worthy of special note. You may have noticed on other models fitted with opening doors that only the lower half of each door is present, the window surrounds having been omitted. Not so in the case of the Volkswagen. The whole door is included and the complete unit, of course, opens. Strangely enough, the only other Dinky sporting this feature is No. 129 Volkswagen 1300 Sedan—the famous 'Beetle'. It seems to be a family trait!

It's worth remembering, incidentally, that, like most other Volkswagens, the 1600 has a rear-mounted 'engine', with a luggage compartment

under the bonnet. Fine body detail is well up to standard, including door handles, guttering and engine air-intakes above the rear wheels, while rear-view mirror and windscreen wiper representations appear on the windscreen moulding. Along each side of the model, running its entire length, is a raised line representing what, on the actual car, is a chrome strip. The engine, by the way, is mounted beneath the floor of the boot. Under normal circumstances, of course, this would prevent it from being seen, so the boot has been given a transparent floor—problem overcome! Finish is in a striking red gloss with off-white interior.

In my opinion the real VW 1600 TL Fastback is an extremely attractive car, although I must admit that the lack of a radiator grille takes a bit of getting used to. The long, sloping fastback gives the vehicle a sleek powerful appearance which is well deserved. Admittedly, its maximum speed is only 84 m.p.h., but its performance up to this speed is excellent. It also has a very good climbing ability, being capable of negotiating a 1 in 2·2 hill in the lowest of its four forward gears. Power is supplied by a 4-cylinder engine of 1,584 c.c. capacity that develops a power output of 65 b.h.p. at 4,600 r.p.m. Twin carburettors are fitted as standard.

As already mentioned, the engine is mounted beneath the boot—not in it—which leaves the boot free for luggage. This, coupled with the luggage compartment under the bonnet, adds up to an enormous amount of luggage space.

Described as a 'Five-seater Sedan', the vehicle as a whole incorporates many useful safety features, including disc brakes on the front wheels, safety glass all round and little indicator repeaters at the sides, which flash in conjunction with the respective main indicators. Side repeaters of this type are rare on British cars and I can never understand why. They're very useful safety features, enabling anybody at the side of the vehicle, out of sight of the front/rear indicators, to see which way the car is turning.

The luggage compartments, themselves, also increase safety, as they allow better weight distribution when the car is loaded, resulting in safer handling. Another point which, although not connected with safety, I found interesting is the fact that all four wings are bolted in position instead of being welded. This allows damaged wings to be removed and new wings fitted easily and quickly. Even the door hinges are screwed on, making the replacement of a damaged door extremely easy. In short, the whole car can be summed up by the manufacturers' words, 'modern, practical and sensible'.

Ford Transit Van

Commercial vehicle followers will be delighted with the other new Dinky Toy to make its appearance, No. 407 Ford Transit Van. This really is a fantastic model—not only because it's an exact reproduction of a brand new and ultra-modern vehicle, but also because it's got opening doors all round the place! Both rear doors, a wide loading door in the near-side of the van body, driver's door—they all open! Never before has a Dinky Toy Commercial Vehicle been able to boast four opening, die-cast doors, but as if this wasn't enough, all the doors open correctly, those at the rear and near-side hinging outwards while the driver's door actually slides backwards and forwards!

Attention to detail hasn't stopped with the doors, however. Also included are windows, seats, steering wheel, van floor, new-type wheel centres, jewelled headlamps, and even suspension, a feature not often fitted to Dinky commercials. Working on the theory that the bigger the model, the easier it is to fit opening doors, you may think that the Transit Van has been made oversize so as to accommodate everything. This is not the case. It is produced to the now standard scale (wherever possible) of 1 : 42, therefore, it is in exact proportion to most other Dinky Toys in the range. All the same, it's a good substantial model being $4\frac{13}{16}$ in. long by $1\frac{3}{4}$ in. wide with an overall height of 2 in. Finished in a very attractive colour scheme of light blue with red interior and white roof, it carries 'Kenwood' transfers on the sides. Kenwood, of course, are the well-known manufacturers of domestic appliances such as food mixers, etc.

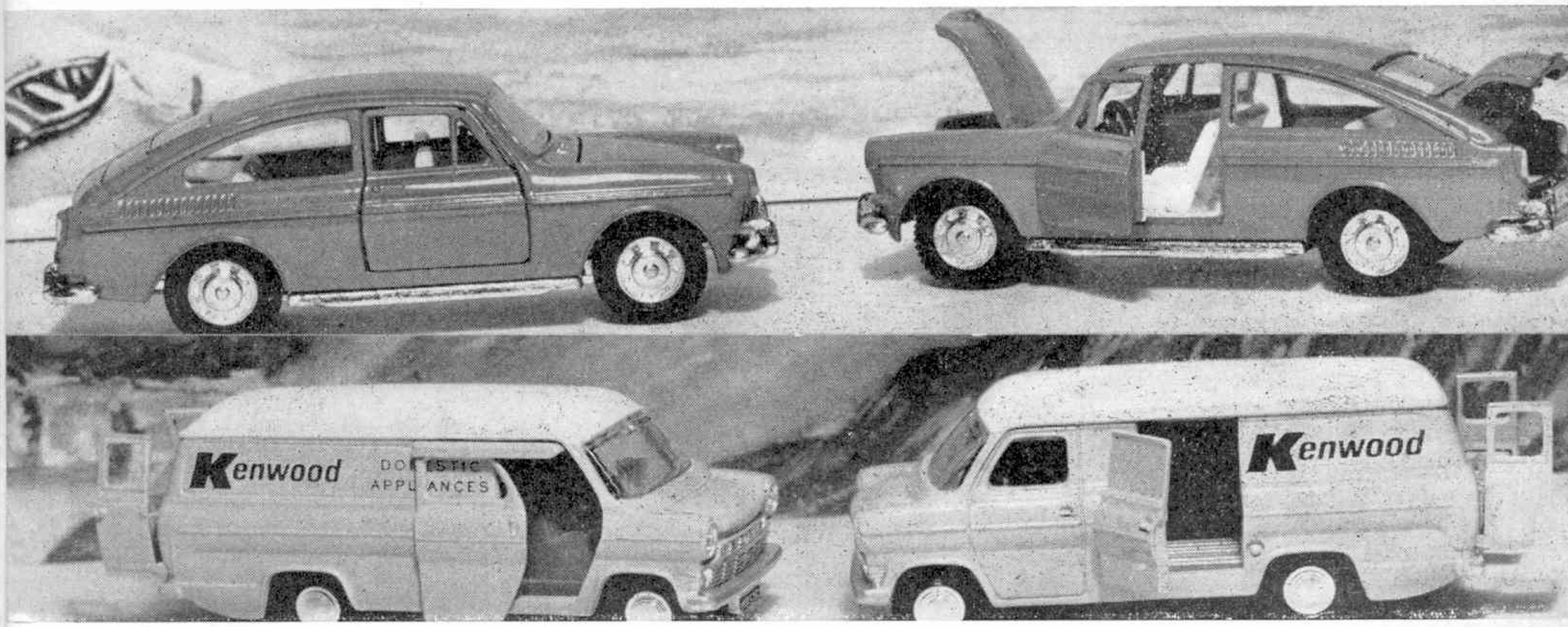
In real life, the Ford Transit was first introduced to Britain and the world in October 1965. Since then it has become a world best seller. The Ford Motor Company believe that its fantastic success is due largely to the opportunities it gives operators to 'tailor' vehicles exactly to the job they have to do. As Fords put it, 'the Transit provides over 500 basic specification variants—on two wheelbase lengths and six pay-load categories from 12 to 35 cwt. The list of options, alternatives and variants is so long that every shopkeeper, contractor, ambulance driver, builder, baker or candlestick or holidaymaker can find his own special requirements in the Ford Transit'.

It should be stressed that a lot of the '500 basic specification variants' are very minor things such as colour schemes, radiator blind, interior rear-view mirror, etc., but a lot of the variants are quite outstanding, the six different payload categories, for example, or the two wheelbase lengths. The short wheelbase versions can be 12, 17 or 22 cwt. payload carriers in a choice of five different bodies, while the long wheelbase models sport 25, 30 or 35 cwt. ratings, also in a choice of five bodies. In addition, there are 9, 12 and 15-seater buses, plus chassis-cab, chassis-windscreen and Kombi versions. The chassis-cab and chassis-windscreen models are intended to take special bodies, whereas the Kombi is a combination of van body with dual passenger seat and bus windows, providing 'a first-rate basis for conversion to motorised caravan, personnel carrier or ambulance at little extra cost'.

All standard short wheelbase versions are powered either by a compact V-4 petrol engine of 1,663 c.c. capacity that develops 73 b.h.p. at 4,750 r.p.m., or by a 4-cylinder in-line diesel engine of 1,621 c.c. capacity, developing 42·3 b.h.p. at 3,600 r.p.m. The standard long wheelbase models are powered by a 1,996 c.c. V-8 unit that develops a gross power output of 85·5 b.h.p. at 4,750 r.p.m. Transmission on all models is to the rear wheels via a 4-speed fully synchromesh gearbox.

Footnote: The Dinky Ford Transit Van is based on the standard long wheelbase van. Given free with each model is a $7\frac{1}{2}$ in. by $2\frac{1}{2}$ in. car window transfer, illustrating the new road signs.

ITING NEW VOLKSWAGEN 1600 TL FASTBACK!



In the Hart, the Hawker company had produced the fastest bomber of its time. All that was now required was a fighter that could catch it. This month John W. R. Taylor tells the story of the

FURY FUR!

AMONG the many achievements that could be claimed by the old Hawker company and their great chief designer, Sir Sydney Camm, was that they produced the first R.A.F. combat aircraft able to exceed, successively, 200 m.p.h., 300 m.p.h. and 400 m.p.h. The machine which started this unique string of 'firsts' was the Fury biplane.

In the August 1966 *Meccano Magazine*, I told the story of the Hawker Hart bomber. When this entered service, it was so fast that it could outfly even the best R.A.F. fighters of the time. It was so good, in fact, that the Air Ministry had to scrap the whole generation of new prototype fighters that had been designed to Specification F.20/27. With their bulky radial engines, they would clearly have been no match for bombers like the beautifully-streamlined Hart.

This was fine for Hawkers. Having produced a bomber that could outstrip all the fighters, they next offered the Air Ministry the only fighter able to catch their bomber.

They did this by redesigning, at their own expense, the little single-seat biplane that they had built to the original F.20/27 Specification. Instead of the clumsy 450 h.p. Jupiter radial engine, they fitted a 490 h.p. Rolls-Royce F.XIA water-cooled in-line engine. The result, inevitably, looked like a scaled-down Hart, but with only one seat and without any sweepback on the top wing.

Named the Hornet, the new fighter was displayed in public for the first time at the 1929 Aero Show at Olympia, side-by-side with the Hart, and became the star of the show. After its original engine had been replaced by a supercharged F.XIS, it proved capable of 205 m.p.h. in level flight at a height of 13,000 ft. The Air Ministry decided at once to buy the prototype, which became J9682, and official trials at Martlesham Heath experimental station showed that the Hornet's handling qualities were as pleasing as its appearance and performance.

Comparative trials against the Fairey Firefly IIM convinced the Air Ministry that the Hornet was the new fighter it needed for bomber interception duties, and Hawkers received an initial contract for 21 in August 1930. Before any of these had been completed, their chief test pilot, 'George' Bulman, flew out to Yugoslavia in the prototype and landed the first export order for six Furies.

Nowadays, when it takes anything up to six years to develop a fighter and get it into squadron service, it is a little startling to realise that Hawkers flew the first production Fury (K1926) on March 25, 1931, a mere eight months after the contract was placed. What is more, the other 20 R.A.F. aircraft and the six Yugoslav machines all made their first flights within the following three weeks!

There could be no better indication of the simplicity of the Fury's design. Its fuselage—like that of the Hart—consisted of a 'box' made up of round-section steel and duralumin struts, each rolled to a square section at the ends, so that they could be bolted or riveted between flat side plates at the joints. The wings had metal spars and spruce ribs and were fabric-covered, like the rear fuselage and tail unit. Armament, unchanged since the 1914-18 War, consisted of a pair of Vickers machine-guns mounted in the upper part of the front fuselage.

If we take a photograph of the Fury and cover up its fixed undercarriage, it looks elegant and speedy even by modern standards. In the early 'thirties when retractable undercarriages were almost unknown, it was as exciting as the most advanced supersonic research aircraft of the present time.

No. 43 Squadron, first to get Furies in May 1931, demonstrated the capabilities of their new mounts in the annual air exercises which took place soon afterwards, by intercepting far more of the 'attacking' bombers than did the more numerous Bulldog fighters of other squadrons. In the following year, a Fury of the Royal Yugoslav Air Force won the speed contest at the Zurich International Aircraft Meeting by racing round the Alps at 201 m.p.h.

At the annual R.A.F. Displays at Hendon, Fury Squadrons took over from Gamecocks and Siskins as the crack aerobatic teams. No. 25 Squadron, in particular, thrilled the crowds by completing their entire routine, from take-off to touchdown, with their Furies tied together by elastic ropes with coloured streamers attached.

The first Furies flown by the R.A.F. had 525 h.p. Rolls-Royce Kestrel IIS supercharged engines. A total of 117 were built between 1930 and 1935, and were followed by 98 Fury II's with a 640 h.p. Kestrel VI engine and wheel spats. Top speed of the Fury II was 223 m.p.h. and it had, for those days, a phenomenal rate of climb of 3,200 feet a minute. Even this did not represent the limit of the design potential, as the experimental High - Speed Fury (K3586) of 1933 could fly at 250 m.p.h.

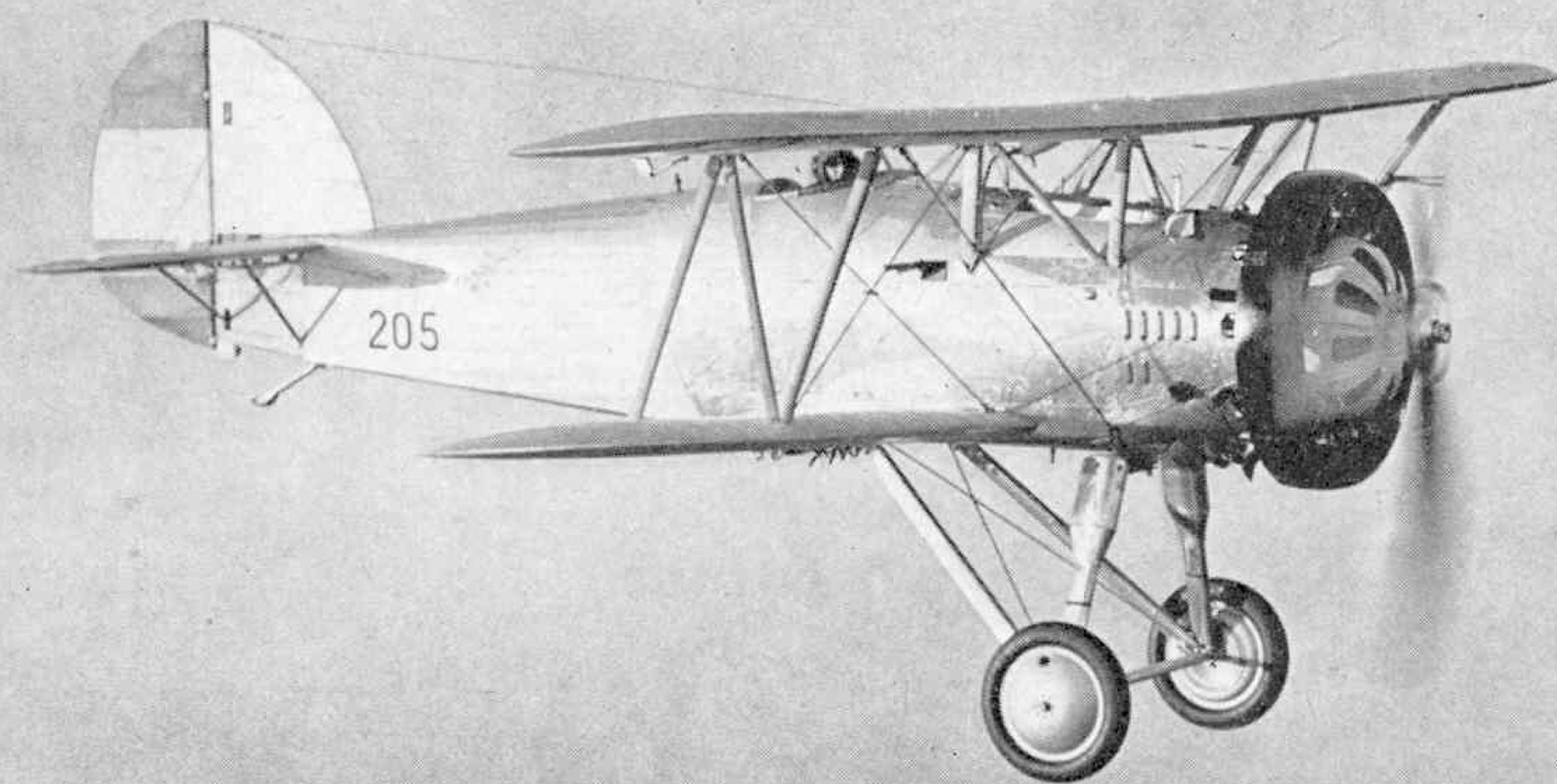
Except for its spatted undercarriage and sweptback top wing, the High-Speed Fury looked little different from the R.A.F. Fury I, but the versions sold to some foreign air forces introduced so many changes that they were hardly recognisable as Furies. The Persians, for example, bought 16 in 1933 with American Pratt & Whitney Hornet radial engines, which not only spoiled the aircraft's fine lines, but proved troublesome in service. The engines suffered from overheating in the Middle Eastern climate and the radial-engined Fury also tended to be nose-heavy. On one occasion, a Hornet-engined Fury tipped forward on to its nose while taxi-ing at Martlesham Heath.

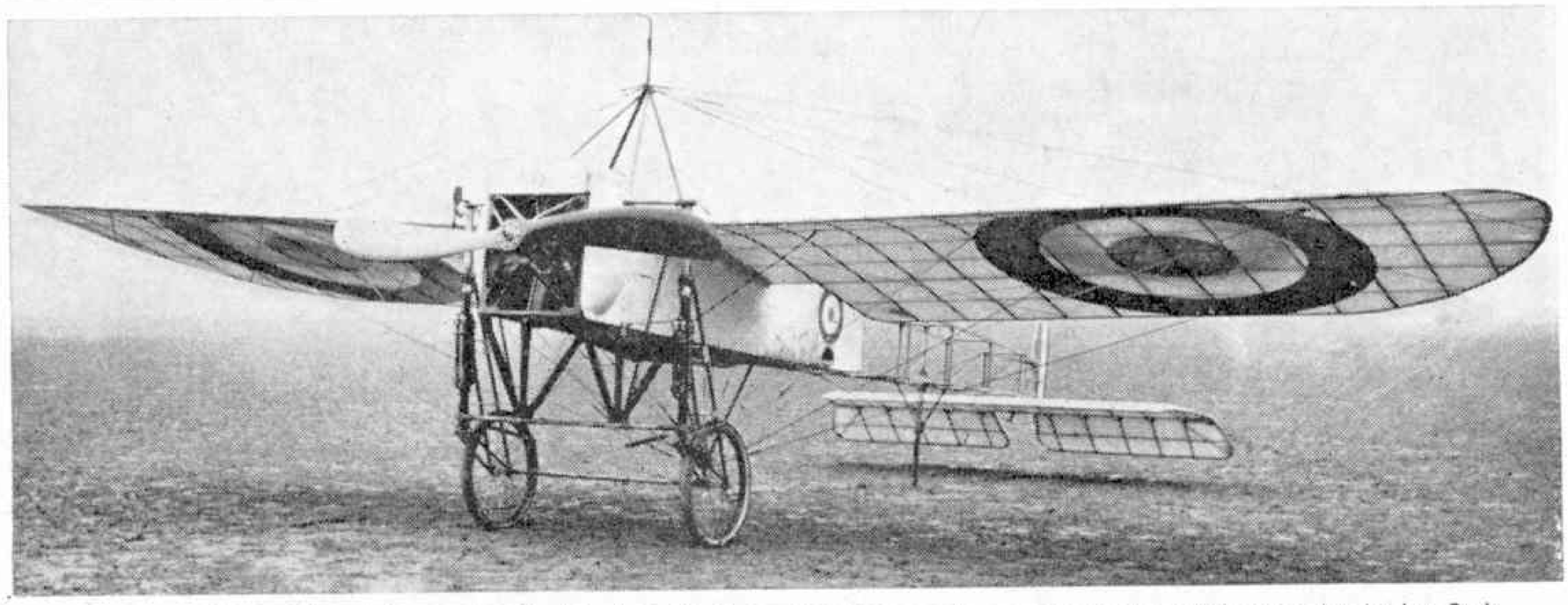
The Persians bought a second batch of Furies later with less bulky Bristol Mercury radials, and these proved more popular, remaining in service until well into the 1940s. But the finest of the foreign Furies were undoubtedly the second batch ordered by Yugoslavia in 1935. Instead of the old V-strut undercarriage, these had neat cantilever main legs, internally-sprung wheels and low-drag radiators, giving them a top speed of 242 m.p.h. Their armament could also be doubled, by installing a pair of additional machine-guns in fairings under the bottom wings.

Three similar aircraft went to Spain, with 700 h.p. Hispano-Suiza engines instead of the usual Kestrels. They arrived just before the outbreak of the Civil War in 1936 and achieved the rare distinction of serving with both the Government and Nationalist air forces. One aircraft is even reported to have changed sides several times, which shows that it must have been regarded pretty highly as a fighting machine.

However, the best tribute to the Fury was probably paid much more recently. Back in 1960, John Isaacs of Southampton was looking for a suitable design for a single-seat light plane that he could build at home. He hit upon the idea of scaling down the Fury design, and the seven-tenths scale Isaacs Fury flew for the first time on August 30, 1963, powered by a 65 h.p. Walter Mikron engine. As one would expect from such a thoroughbred design, the little biplane flies beautifully. Plans are available to other amateur constructor - pilots, and we may yet see whole squadrons of Furies in the air again, as in those days when the full-scale version represented the peak in world fighter design.

Data (Fury Mk. I): Span, 30 ft. 0 in.; length, 26 ft. 8 in.; height 10 ft. 2 in.; wing area 252 sq. ft.; weight empty, 2,623 lb., loaded, 3,490 lb.; maximum speed, 207 m.p.h. at 14,000 ft.; climb to 10,000 ft. in 4 min. 25 sec.; service ceiling, 28,000 ft.; range 305 miles.





The Bleriot Militaire XI which was described in John Taylor's article last month, together with a 1/48 scale plan by Ian Stair

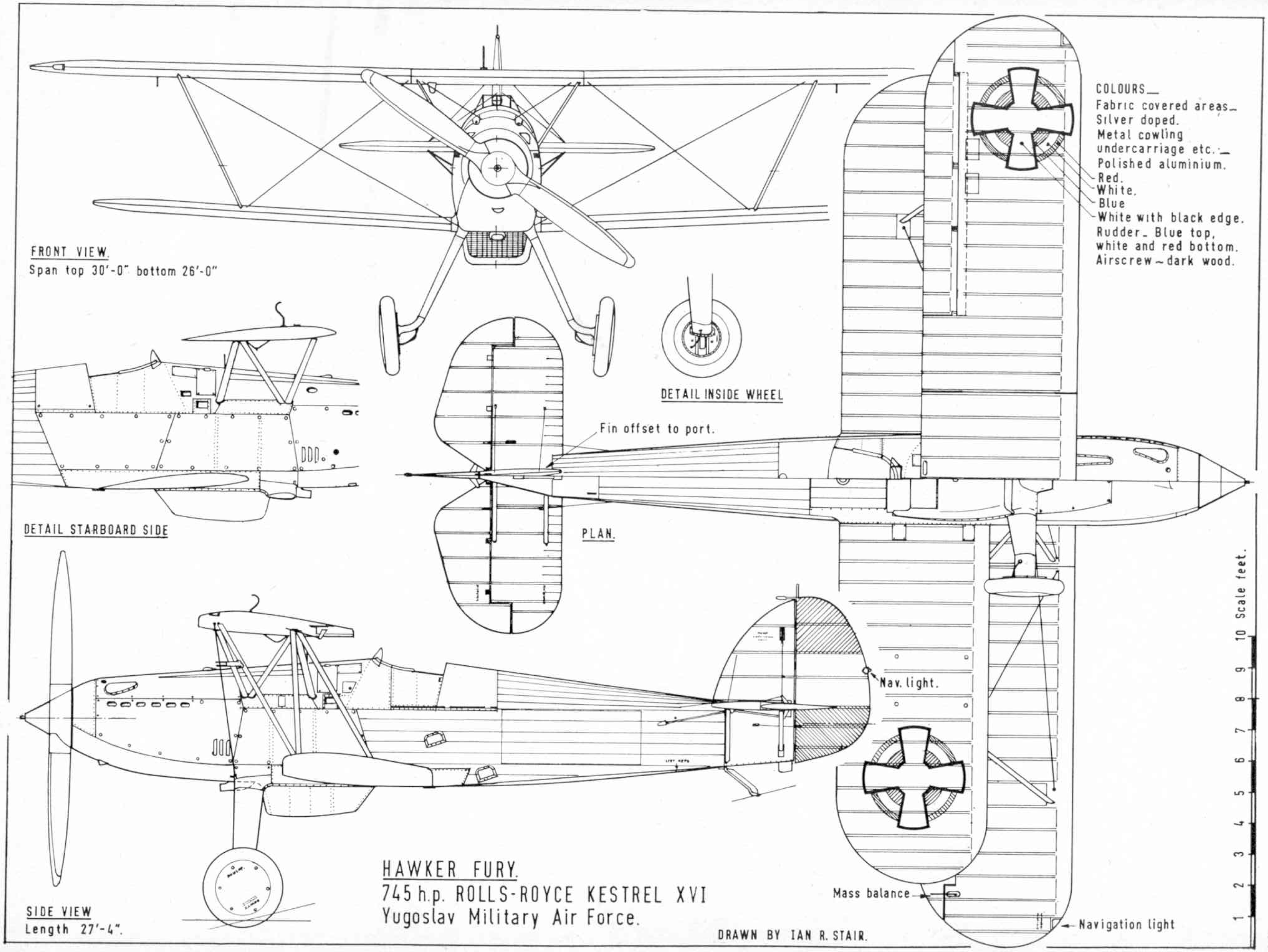
Top: probably the finest of the foreign Furies, the batch delivered to Yugoslavia in 1935 had very neat cantilever undercarriage legs and low drag radiators. Top speed was 242 m.p.h.

Centre: a Persian radial engined Fury

Opposite page: built by John Isaacs of Southampton, this seven-tenths scale Fury first flew in August 1963. A 65 h.p. Walter Mikron engine supplies the power

FURY

PLAN OVERLEAF


FRONT VIEW.
Span top 30'-0" bottom 26'-0"
DETAIL INSIDE WHEEL
COLOURS—
Fabric covered areas—
Silver doped.
Metal cowling
undercarriage etc.—
Polished aluminium.
Red.
White.
Blue
White with black edge.
Rudder— Blue top,
white and red bottom.
Airscrew—dark wood.
Fin offset to port.
DETAIL STARBOARD SIDE
PLAN.
Nav. light.
Mass balance
Navigation light
SIDE VIEW
Length 27'-4".
HAWKER FURY.
745 h.p. ROLLS-ROYCE KESTREL XVI
Yugoslav Military Air Force.
DRAWN BY IAN R. STAIR.
1 2 3 4 5 6 7 8 9 10 Scale feet.

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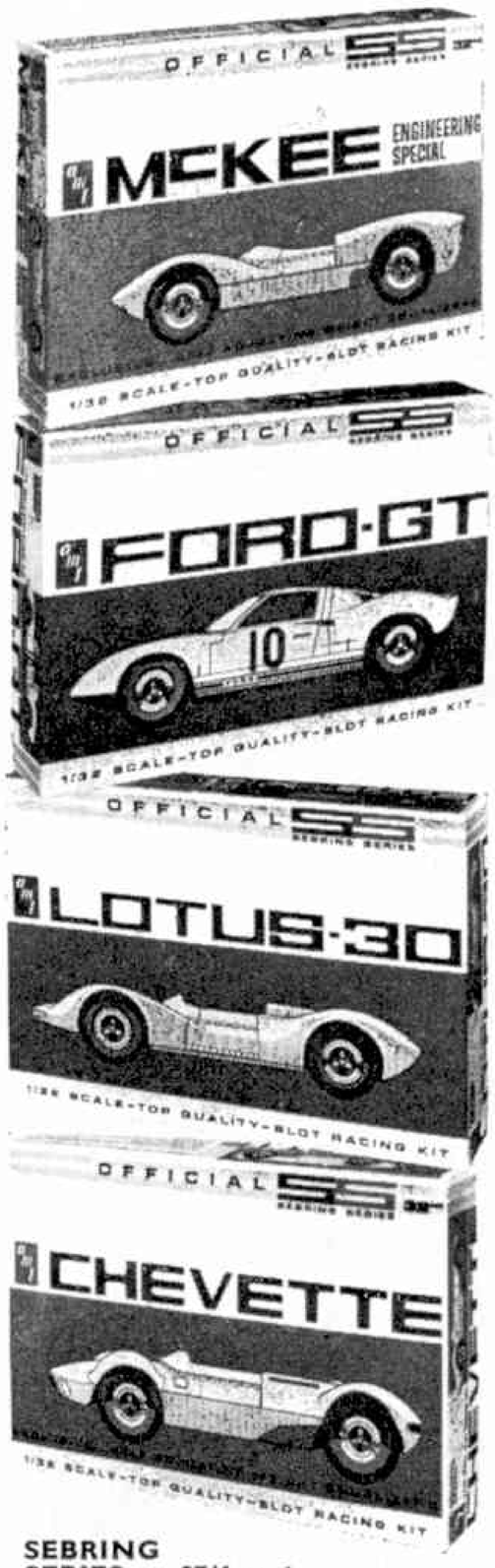
1/32nd SCALE



SEBRING SERIES . . **87/6 each**
9201 **Ford GT** 9202 **Lotus 30**
9203 **McKee** 9204 **Chevette**

1/25th SCALE

9003 **Mustang H/T 1/25th scale** **77/6**
9002 **Cobra 1/25th scale** **77/6**
9001 **Stingray 1/25th scale** **77/6**

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LESLIE HOWARD

BUYING A SECOND-HAND BICYCLE — 2

Though there is a lot to know about testing a secondhand bicycle, the examination can be done quite quickly. My previous article on this subject (September issue) dealt with the checking of the moving parts which, once you know what to do is only a few minutes' work. Now we can take a general look at the machine, check the brakes and examine the frame.

IF brake blocks are worn they can be replaced cheaply, but cables, when they need replacing, are more expensive. Brake cables stretch after a long period of service and the brake blocks move away slightly from the wheel rim. To compensate for this there is an adjustment where the cable emerges from the sheath. There is also another adjustment where the cable is gripped, but too frequent adjustment at this point often frays the cable and shortens it. So in examining a cycle with caliper brakes look for reasonable adjustment at both these points.

Rod brakes can be fully adjusted for any stretch, which is minimal anyway, but sometimes the lever linkage hinged to and parallel with the handlebar suffers distortion. Occasionally, also, the spring which pulls off this type of brake becomes fatigued. You will find this spring—one for each brake—at the end of the brake lever near the centre of the handlebar. It is cheap to replace. When fatigued it creates a need for brake adjustment which results in reduced brake travel and loss of efficiency. Thoroughly check rod brake linkages for sloppiness. A simple test is to see if the brake blocks move at the instant the brake is applied. A delayed action means slackness somewhere.

A sagging saddle is nothing to worry about, providing there is adjustment left on the nut under the peak—the pointed end. And a pump can be tested by the elementary expedient of blocking the outlet with the thumb and forcing the plunger down smartly. I think it can be truthfully argued that the more penetrating the resulting squeal the more efficient is the pump.

A bicycle frame can suffer distortion in two different ways. It can be twisted out of line—and if you stand behind the machine with the front wheel straight, such a distortion is readily apparent—or it can be buckled. Buckling is usually the result of a head-on collision and almost invariably it afflicts the front forks and front part of the frame. To detect buckling you need to stand sideways to the bicycle and observe whether the forks enter the headstock in a good straight line (if their upper section is straight) or in a clean tangential curve (if they curve all the way up). Buckling can affect the crossbar and down tube by causing them to 'droop' where they enter the lug of the headstock.

To check a dynamo lighting set you need only to snap the generator into position and spin the wheel. A good dynamo will energise lamp filaments

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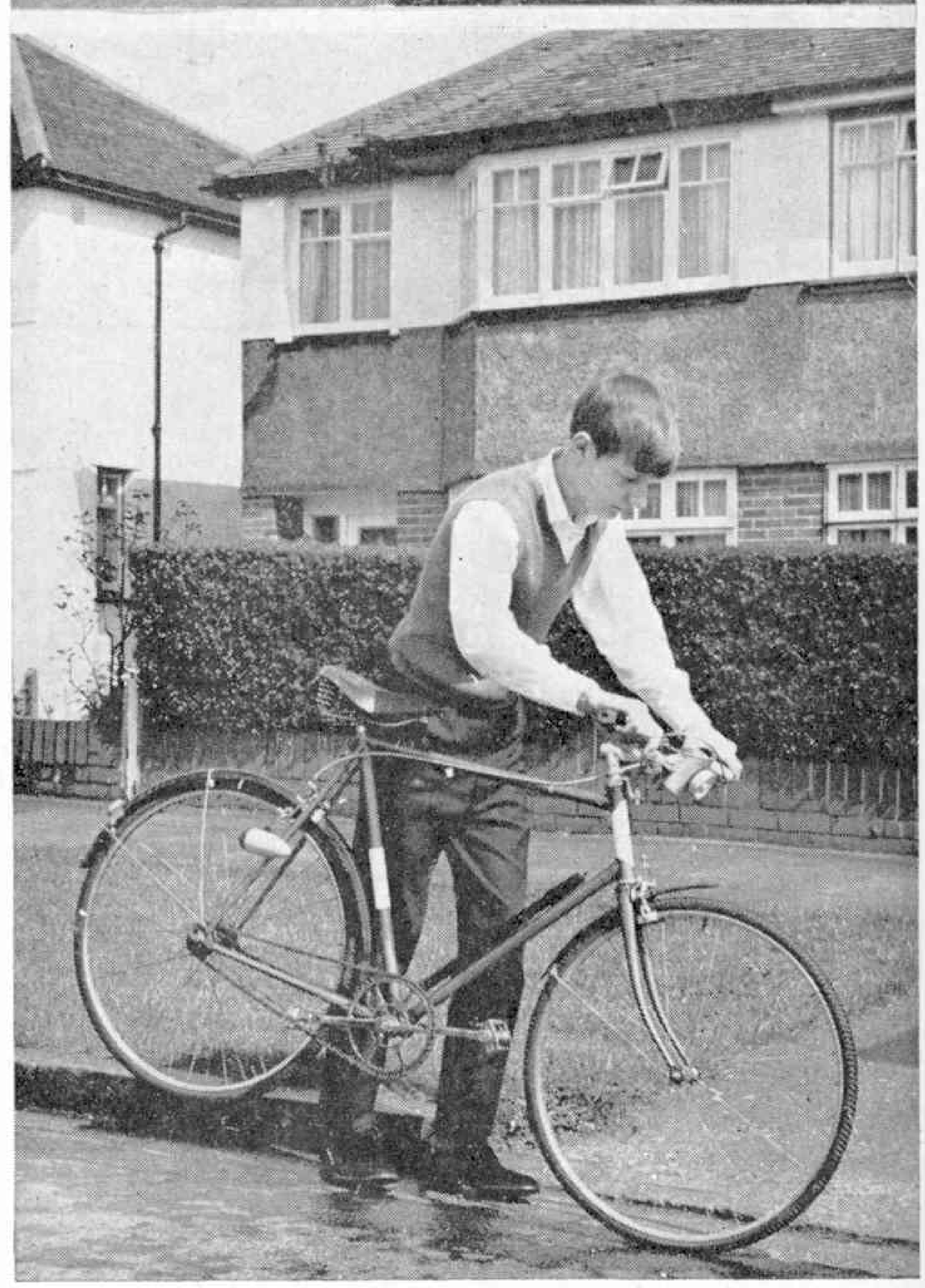

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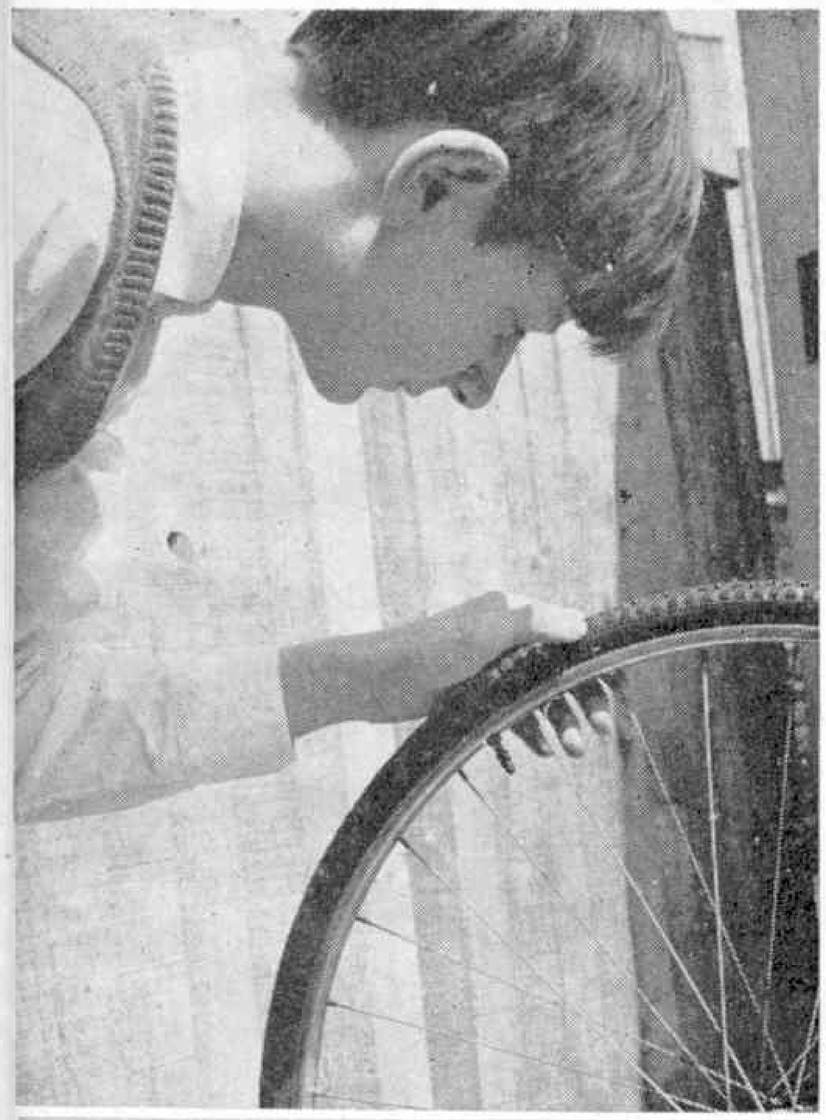

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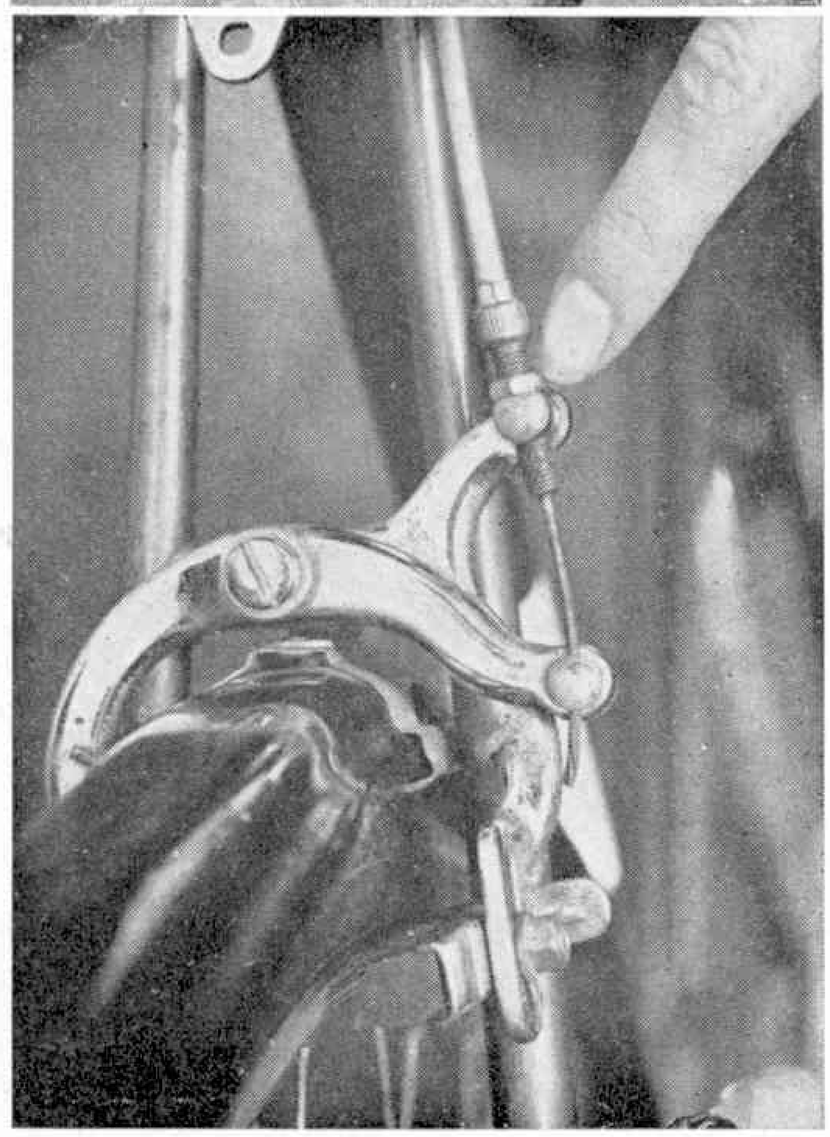

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at a surprisingly low speed. This is a chance to see whether the dynamo is correctly fitted or whether it is abrading the tyre wall; and it is also an opportunity to inspect the tyres. Even a new-looking tyre should be carefully examined for cuts and cracks in the wall caused by shock.

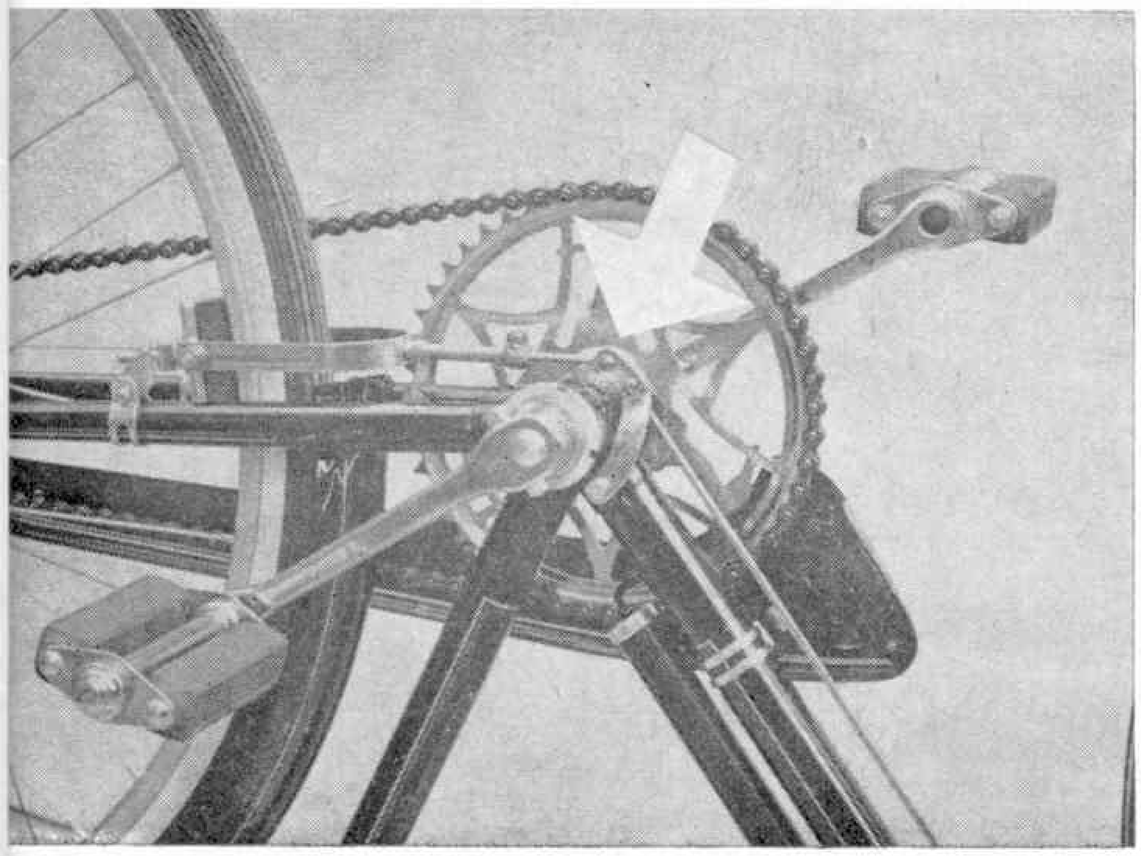
The only really satisfactory way of testing gears and freewheel is to ride the bicycle. The change from one ratio to the other should be quiet and positive and the gears should run almost silently. The idler wheel in derailleur systems will purr slightly and there will be a tiny ticking sound from a Sturmey-Archer hub, but apart from these the gears should be silent. The freewheel should not snatch or slip, and it should take up the drive instantly.

If the vendor will not let you ride the machine—there are characters who would not return to base—then the best way to test the gears is with the bicycle upside down.

I have written at length on this subject and I hope you have not concluded that buying a secondhand bicycle is a difficult task. It is not really. Providing you make certain that the frame is not bent; that neither wheel is broken or out of true; that both brakes work freely; that the transmission (chain, freewheel and gears) are sound, you will have little to worry about.

Those four things are either costly or difficult to put right. Shabby pedal rubbers, broken mudguards, even worn bearings, are not costly or troublesome to replace, so do not lose a good buy because a grip came away in your hand when you tested the steering.

1 Testing rear brake. Rear wheel should skid when machine is pushed forward with rear brake hard on
2 Testing front brake. Rear wheel should rise when cycle is pushed forward with front brake hard on
3 Even a good looking tyre needs careful examination. Broken glass can cut the newest tyre, and hard riding over kerbs and potholes can burst side walls
4 The nut by which saddle tautness is adjusted is under the peak—the pointed end—seen here
5 When examining rod-operated brakes turn the bicycle upside down and test for sloppiness in the bell crank (arrowed) under the bottom bracket
6 Although this secondhand machine has had a head-on knock, the impact must have been slight for the frame and steering are unaffected and show no signs of 'buckle'
7 Adjustment on cable brakes. Finger points to one adjustment at end of sheath; the other adjustment is below where cable is gripped
8 On this secondhand machine the leather saddle shows signs of sagging, but its tautness can be restored quickly adjusting the nut under the peak



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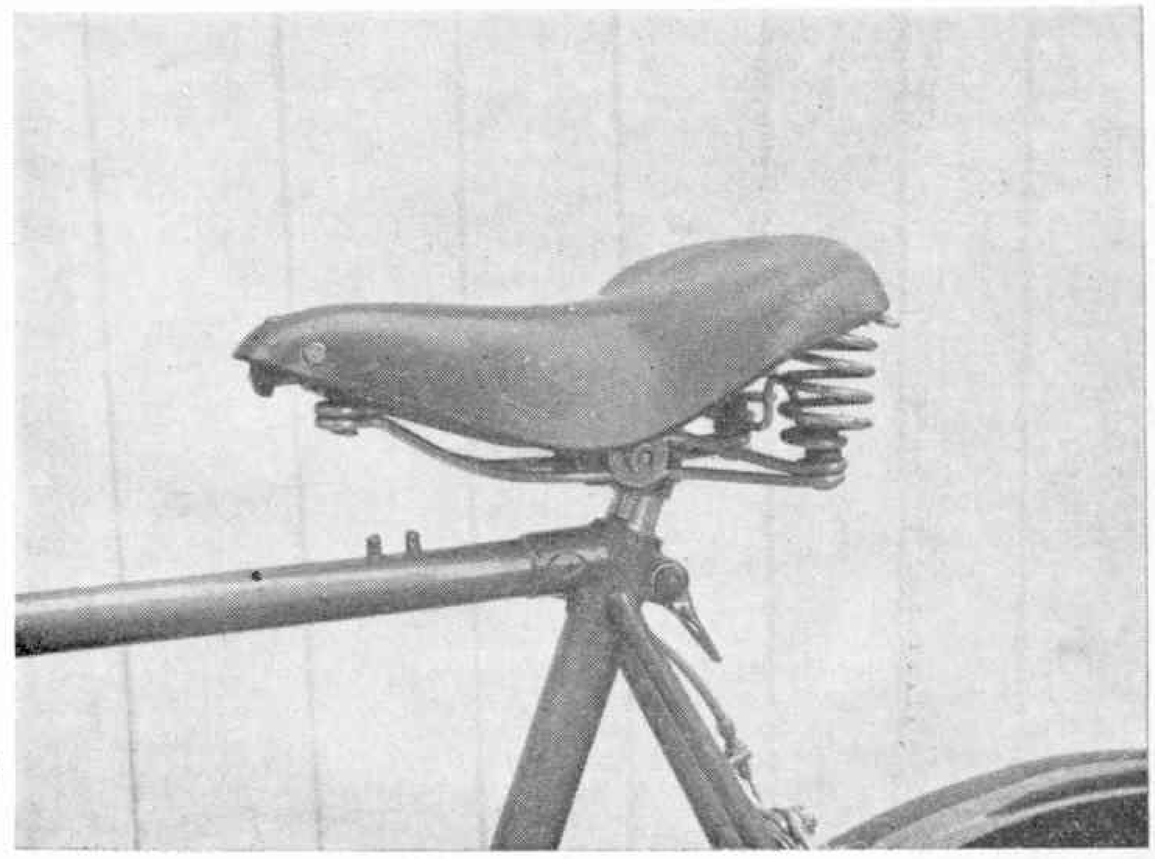

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A CYCLE WINDSPEED INDICATOR

This 'pressure plate' type airspeed indicator is the same as that used on early aircraft. The method of working is quite simple. A flat plate mounted on a spring arm is blown backwards by air pressure and moves over a calibrated scale. You simply look at the position of the plate and read off the corresponding airspeed.

This model has been designed to have a speed range of 0 to 50 miles per hour and can readily be mounted on the handlebars of a bicycle. Construction is very straightforward, but the actual size of certain parts is critical, so these are shown FULL SIZE. An exploded view of the complete model is shown in Fig. 1, which is your guide to assembly.

Start by cutting two pieces from ¼ in. sheet balsa, one 7¼ in. long by 3 in. wide and the other 3½ in. long by 1½ in. wide. Cement together as shown in Fig. 2 and mark out the main body shape, traced from the full size drawing. Cut out to this shape when the cement joint has set.

From the spare ¼ in. sheet, cut two 1 in. squares to form the spring mount. From $\frac{1}{16}$ in. sheet balsa cut a square *exactly* to the size shown on the full size drawing.

The spring is made from 22 gauge piano wire—and you *must* use piano wire and it *must* be 22 gauge. Take a full length of wire and, about 12 in. from one end, wind round a pencil to make about one and a half turns. When you release the wire it will open up to a larger coil of approximately one turn. Now take a pair of pliers and adjust the coil until it conforms as near as you can get it to the diameter shown on the full size drawing. Complete the bends at each end until you end up with a piece of wire shaped like the full size drawing. If necessary, have two or three goes with further pieces of wire to get this shape right.

To assemble the model, cement the two spring mount pieces in position and then secure the wire in place with three pins, bent over as shown. The centre of the wire coil should come in line with the bottom of the mounting blocks and the wire leg should lie parallel to the edge of the main body, as shown by the dotted line.

The pressure plate is then cemented to the bottom of the wire as shown in Fig. 3 with a backing of tissue or silk cemented in place.

Cut out the speed scale given on the full size plan (or make an accurate tracing on fairly stiff paper) and cement to the bottom of the body. Make any adjustment necessary to the wire leg by bending slightly with pliers until

(i) The pressure plate comes exactly over the 'O' position on the scale.
(ii) The pressure plate is exactly at right angles to the body.
(iii) The pressure plate clears the body by about ⅛ in. or slightly more.

To mount the airspeed indicator on the handlebars of a bicycle cement a 9 in. length of 1 in. by ½ in. hardwood to the back, as shown in the exploded drawing. Notch slightly to fit more snugly against the handlebars, but do not cut too much wood, and finally secure with a metal strap bent as shown and two 6 BA screws, washers and nuts. Adjust so that the airspeed indicator is pointing dead ahead and with the front of the body vertical.

Note 1: this indicator will read *airspeed* or speed through the air, which is not necessarily the same as speed over the road. Thus if you are cycling at 15 m.p.h. against a 10 m.p.h. headwind, the airspeed indicator will read 15+10=25 m.p.h.

Note 2: the scale shown has been specially calibrated for the *exact* wire, body and pressure plate sizes shown on the full size drawing. If these parts are not made to exact size the scale will not be correct. It can also be affected by the quality of the wire used.

If you can, it is better to calibrate *individual* indicators as made, starting with a blank paper scale. You need the co-operation of someone with a car. Get them to drive at steady speeds of 10, 15, 20 m.p.h., etc., and mark the actual position assumed by the pressure plate at these speeds when the indicator is held out of the car window.

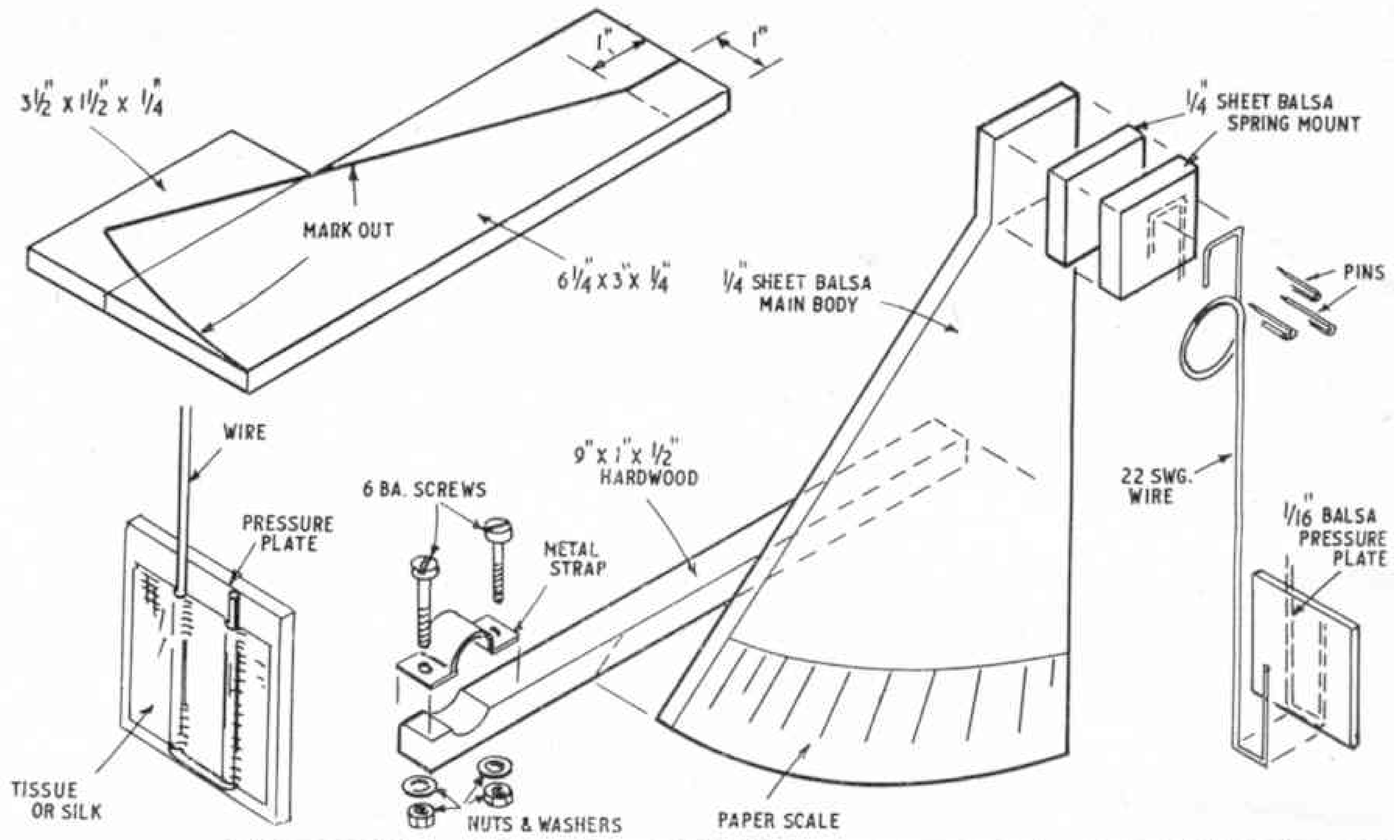


Fig. 1

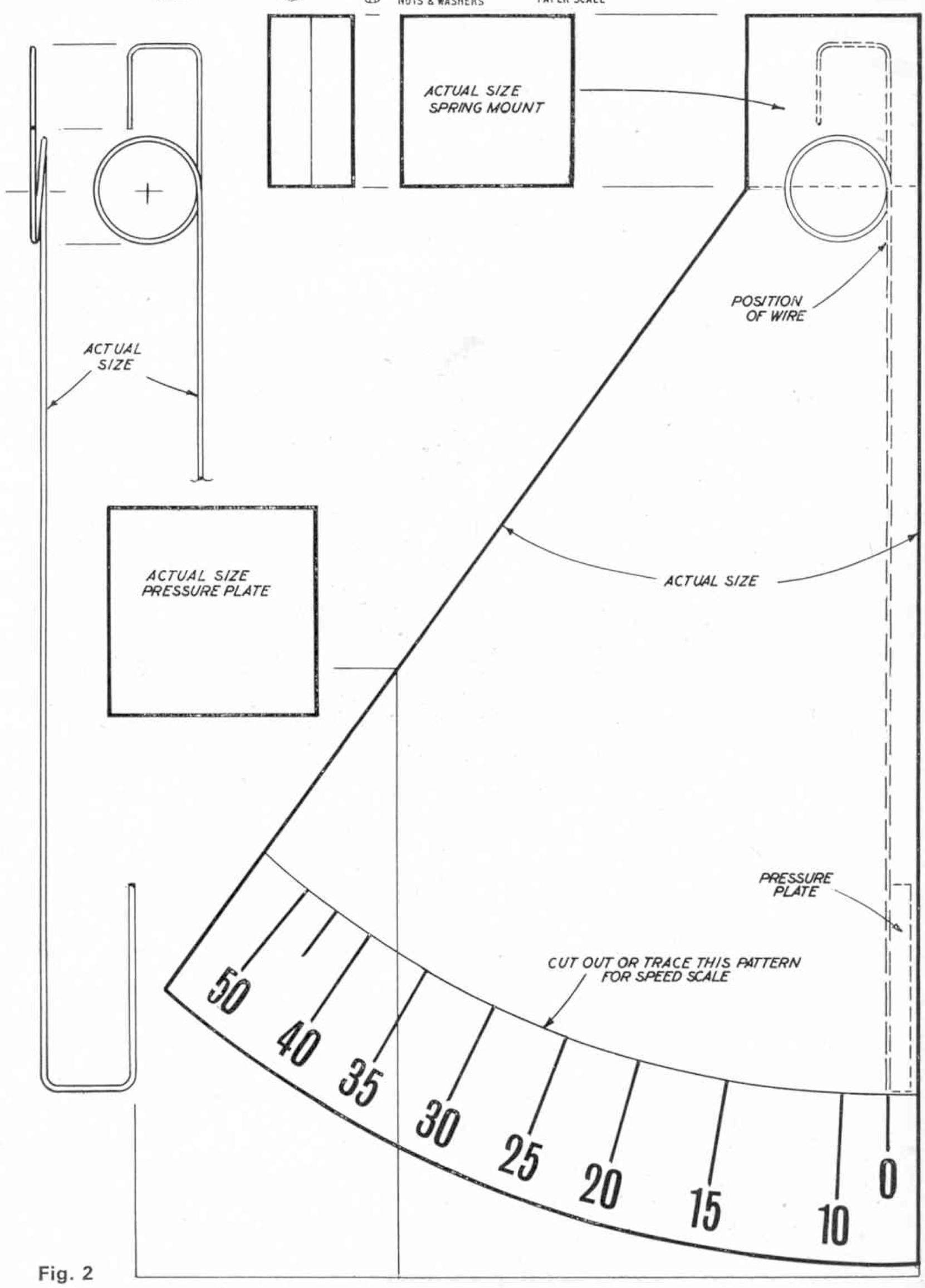


Fig. 2

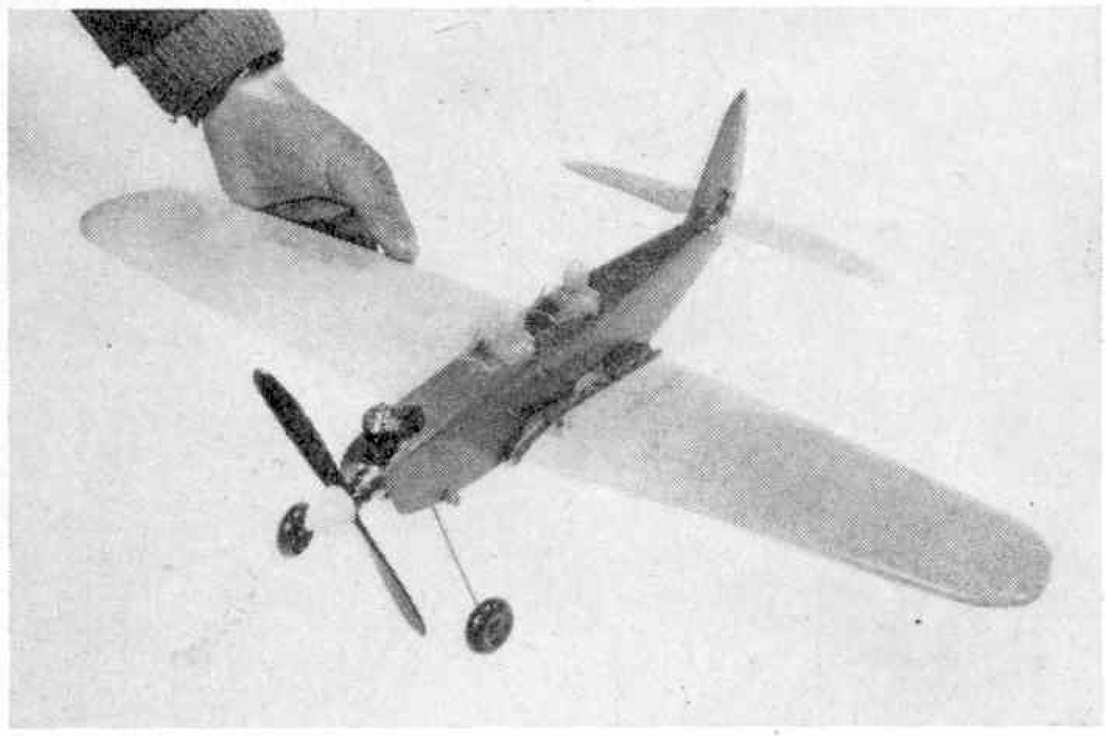
FLY A PT-19

READY-TO-FLY models give you *extra* benefits for starting aeromodelling the easy way. In the first place you get a flight tested design, manufactured by precision machinery and tools costing tens of thousands of pounds, so that each model is exact and true. Secondly, you get a colour finish and scale detail which you do not find in home-built models. Although they may seem a little expensive at first compared with a kit you do get real value for money—and, of course, every ready-to-fly model comes complete with an engine and propeller.

One of the world leaders in this type of model are the L. M. Cox Manufacturing Company of California. Cox first made his name producing small glow engines to standards of accuracy and perfection never attempted before (see last month's issue) — a complete success story in itself as shown by the fact that the ultra-modern Cox factory now turns out something like *ten thousand* engines a week to keep up the demand. A high proportion go into Cox ready-to-fly models, of course, but you can also buy Cox engines separately, to give a bit more speed and power to your home-built model. If you want to start control line flying the easy way—and know that you have a model and engine which is just right for the job—then a Cox ready-to-fly is your logical choice!

From the range of eight models we have chosen two as ideal for learning to fly control line—the PT-19 and the Fledgling. Both are, in fact, scale models of full size trainer aircraft and embody the same 'safe' flying characteristics—plus a few more 'foolproof' features which you can only use on models.

For example, both the PT-19 and Fledgling have wings strapped in place with rubber bands so that in a crash, wings and fuselage fly apart with the minimum risk of breaking. If it is a severe crash, the tail of the PT-19 will also fly off before it breaks. No fuss—you can put the model back together again in flying trim in a matter of seconds.



You don't have to worry about prop breakage, either, for the tough nylon propeller can really take it! Thus an absolute beginner can start on his first control line flight confident that he will *not* break his model if he loses control. But—be fair and fly over grass rather than concrete until you have mastered the basic technique of control line piloting! And in a *really* bad crash you *may* break something — but spares are readily available.

Of the two models we have a personal preference for the PT-19—partly because it is a large model (22 in. wingspan) and big models usually fly best, and partly because it has adjustable control sensitivity. This means that you can set the control to 'minimum sensitivity' for learning (when the model almost flies itself); or 'maximum sensitivity' for going on to primary aerobatics, all with the same model.

The Fledgling, however, is the more modern full size design with a moulded canopy instead of open cockpits and a tricycle undercarriage. Given a smooth surface to land on there is nothing so satisfying as flaring out the approach for a real three-pointer (nose and main wheel touching together) with no suspicion of bounce. Some pilots, however, prefer to touch down main wheels first—you can take your choice. Either way, good landings only come with practice, and a suitable surface to land on.

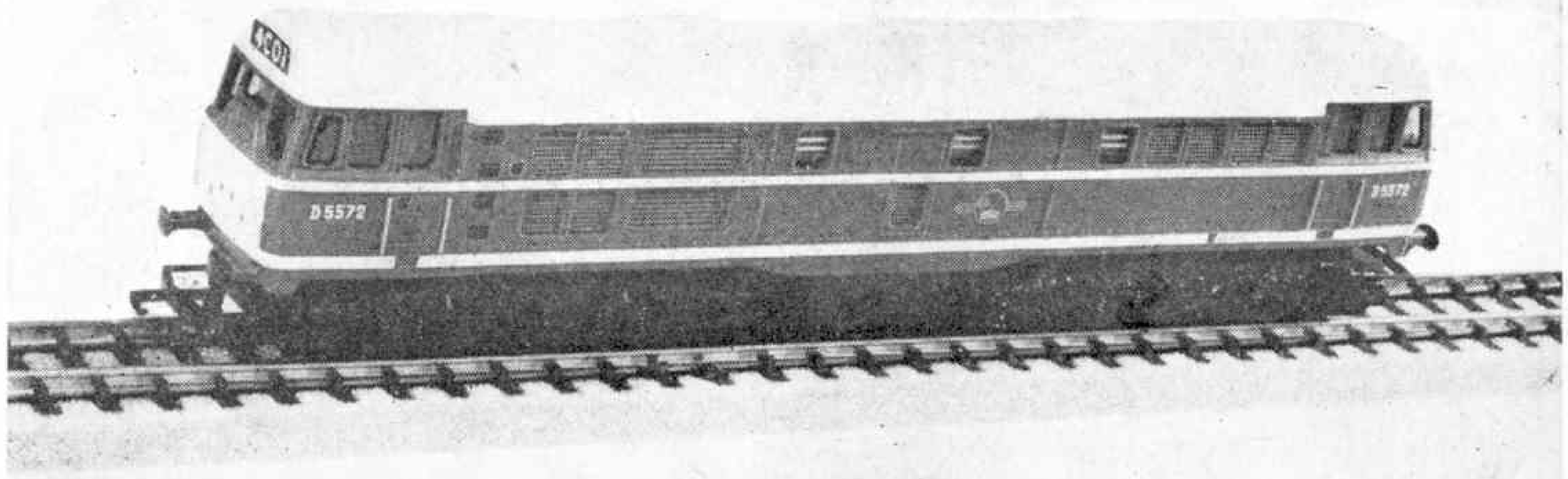
That is what control line is all about—the thrill and satisfaction of *flying* with the model under *your* control. Ready-to-fly models are the complete answer to the part that counts most—flying!

Cox models and engines are available from all good model and toy shops. The PT-19 costs 121s. 3d. and the Fledgling 93s. 10d. Other models in the range cost up to 152s. 2d. You can obtain a leaflet describing the whole range from your model shop or by writing direct to the British distributors, A. A. Hales Ltd., 26 Station Close, Potters Bar, Herts.

MIKE RICKETT

Christmas time is train set time! Here are some guidelines for present-buying

CHOOSING A TRAIN SET



LIKE so many Christmases before, thousands of train sets will this year find their way into homes on Christmas morning. Many will be used by newly-recruited model railway enthusiasts as a basis for starting their first model railway and others will go towards enlarging existing layouts. Whatever their ultimate fate, however, there is little doubt that the train set is still the most popular of all Christmas presents. This is quite understandable, for present day sets, used as a starting point for a more complete model railway, give quite unbeatable value for money. Sets in the Tri-ang Hornby range are undoubtedly good examples of this and this year they offer a choice of no less than eight widely different types of set to suit nearly every taste or requirement.

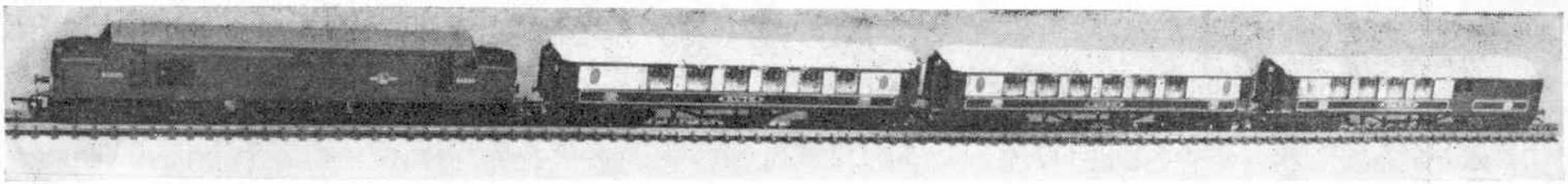
All Tri-ang Hornby train sets are provided with an oval of track, varying for the smaller sets from eight curved rails and two straight rails, to eight curved rails and four straight for larger sets, the oval being slightly longer. Most sets also have an uncoupler included, but only one in the range comes with its own controller. This, however, is no disadvantage because it leaves you quite free to choose from the many different types and specifications available, the unit that will best suit your future requirements. Ovals of track of the kind supplied with sets, although somewhat limited can, as we have shown in past issues of the magazine, be quite quickly and cheaply built into something much more comprehensive. Last month's magazine shows how an oval of track was built into a very complicated system in several stages, and this is undoubtedly an excellent method by which to extend your layout.

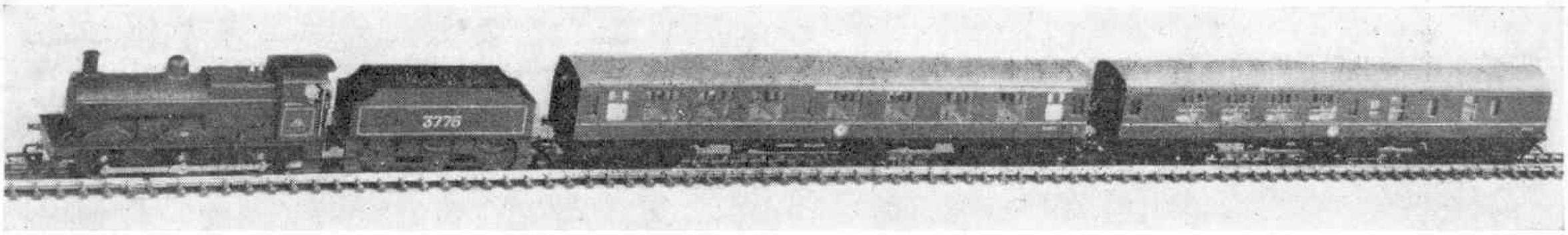
The most important item in any set is, of course, the train itself. Further track can be easily added at your leisure, but for some time after you have bought your first set, you will probably be restricted to the locomotive and rolling stock first provided in the set. It is therefore important for a wide choice of sets to be offered and the Tri-ang Hornby range is varied enough to suit all tastes as you will readily see on looking through the catalogue.

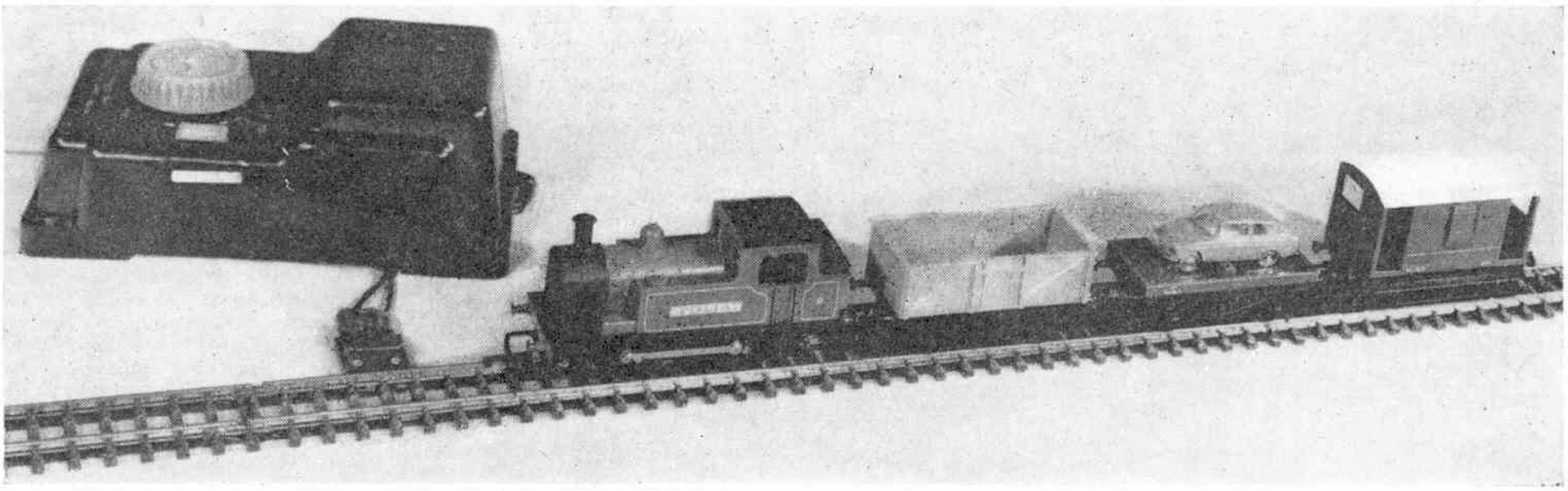
In passenger sets, for example, one has a choice of four different types, the most recent of which is the 'Inter-City Express', which has the new Tri-ang Hornby English Electric Type 3 Co-Co diesel electric locomotive R.751 and three Pullman coaches, 'Mary', 'Anne' and car No. '79'. Costing £6 7s. 9d. this is a superb set and the centre-piece is undoubtedly the Co-Co locomotive itself, one of the lastest products and which can be used for nearly every type of train, both goods and passenger. For a set with a more local character, one need look no further than 'The Midlander', which includes the Tri-ang Hornby Class 3 0-6-0 locomotive in its new lined-out maroon livery and two coaches, also in a maroon livery. One is a brake 2nd and the other a 1st/2nd composite coach. No. RS.8 in the Tri-ang Hornby range, this costs £4 16s. 4d. and has track parts to build the smaller oval. The locomotive, R.251, is fitted with 'Magnadhesion' to make the driving wheels grip the rails and so allow longer trains to be pulled.

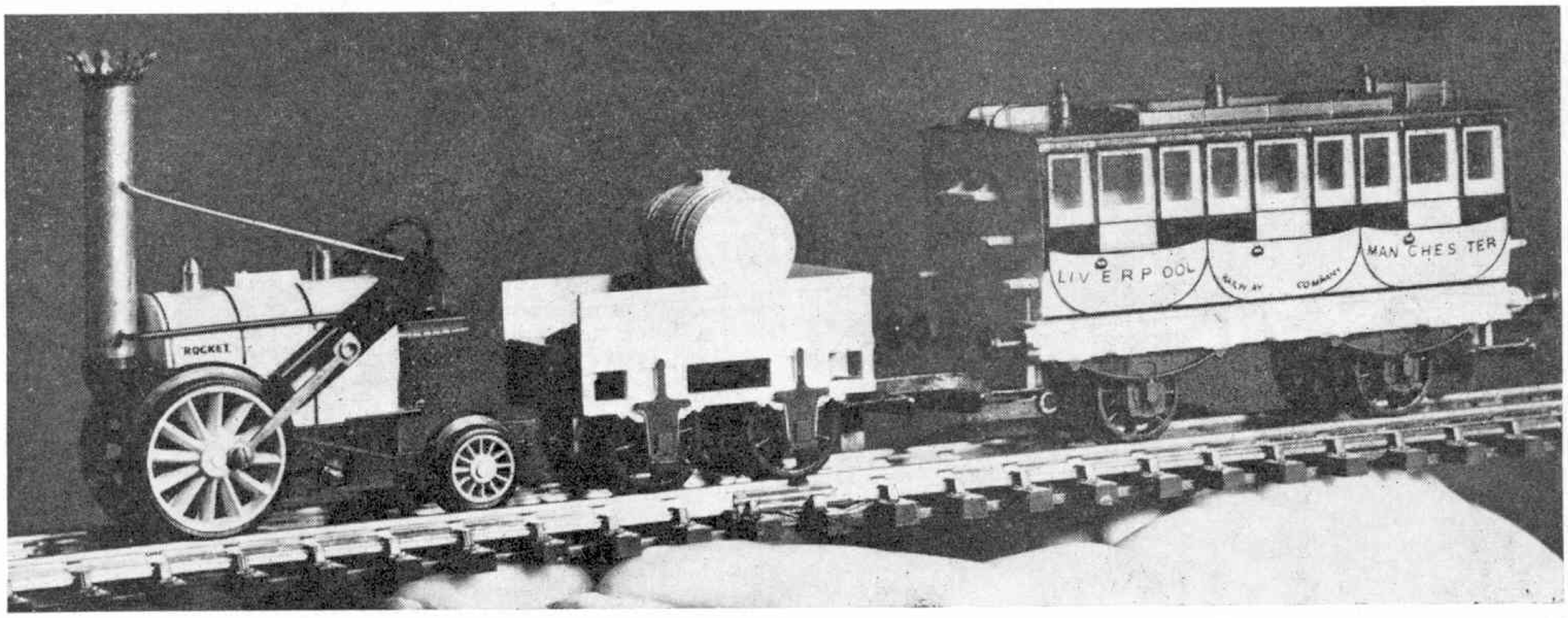
From local trains we go back to a main line set, this time a 'crack' express in the form of 'The Blue Pullman'. A model of its famous namesake, this set, No. RS.52, gives a basic 'Blue Pullman', with a Diesel Pullman Motor Car, Pullman Parlour Car and a Pullman Motor Car. One attractive feature about all three Pullman coaches is that they include full interior fittings with seats, tables and lamp standards. Luxury indeed! Altogether this makes a most attractive set which can, of course, be lengthened by adding extra Pullman Parlour Cars R.426. Costing £5 9s. 0d., the set has a large oval of track and uncoupler.

For those historically minded, or with a taste for the unusual, we go to the famous Tri-ang Hornby model of Stephenson's 'Rocket'. This, as readers may already know,









caused quite a stir in the model world when it first appeared because of the extremely compact and powerful X.500 motor which drives the locomotive. All three items in the set are magnificent models in their yellow and black livery and it undoubtedly makes a most unusual addition to any layout. This set, No. R.346, costs £2 8s. 2d., and extra coaches for the train are available separately.

In the field of goods trains, Tri-ang Hornby have four sets, any of which, for lovers of shunting, would provide plenty of interest. The largest is 'The Freightmaster', main-line in character, and which includes the Tri-ang Hornby AIA-AIA Brush type 2 diesel electric locomotive. Made to the same high standard as all other Tri-ang Hornby products, this has much very fine detail, especially on the bogie sideframes, which are veritable masterpieces. Seven items of rolling stock also come with this set: a horse box, cattle wagon, U/D milk tank wagon, 'Tri-ang' container wagon, 3-container wagon, dropside wagon and a brake van. The set (No. RS.51) costs £5 11s. 1d. and has a large oval of track with an automatic uncoupling device.

For more local or purely shunting operations the 'Pick-up' and 'Goods' sets will be of interest since both are inexpensive, costing respectively only £3 5s. 11d. and £5 0s. 11d. The Pick-up set has the blue 'Nellie' locomotive with an 'insulfish' van and 'The Goods' includes 'Polly' in red livery with a mineral wagon, flat wagon with Minix car load and a brake van. Both sets have small ovals of track with automatic uncoupler. 'The Goods' differs from other train sets, however, in that it is the only one supplied with its own power controller, fitted with speed and direction control knob and an over-load cut-out and resistance switch.

The fourth set in the goods range is probably the most unusual in that it is the special car transporter set named 'Car-A-Belle'. Two car transporters are the most important features and each are provided with six Minix cars, which can, of course, be loaded and unloaded on to the transporters. Costing £4 18s. 10d., the train has the popular Tri-ang Hornby 3F 0-6-0T locomotive, which is provided with both 'Magnadhesion' and 'Synchrosmoke'

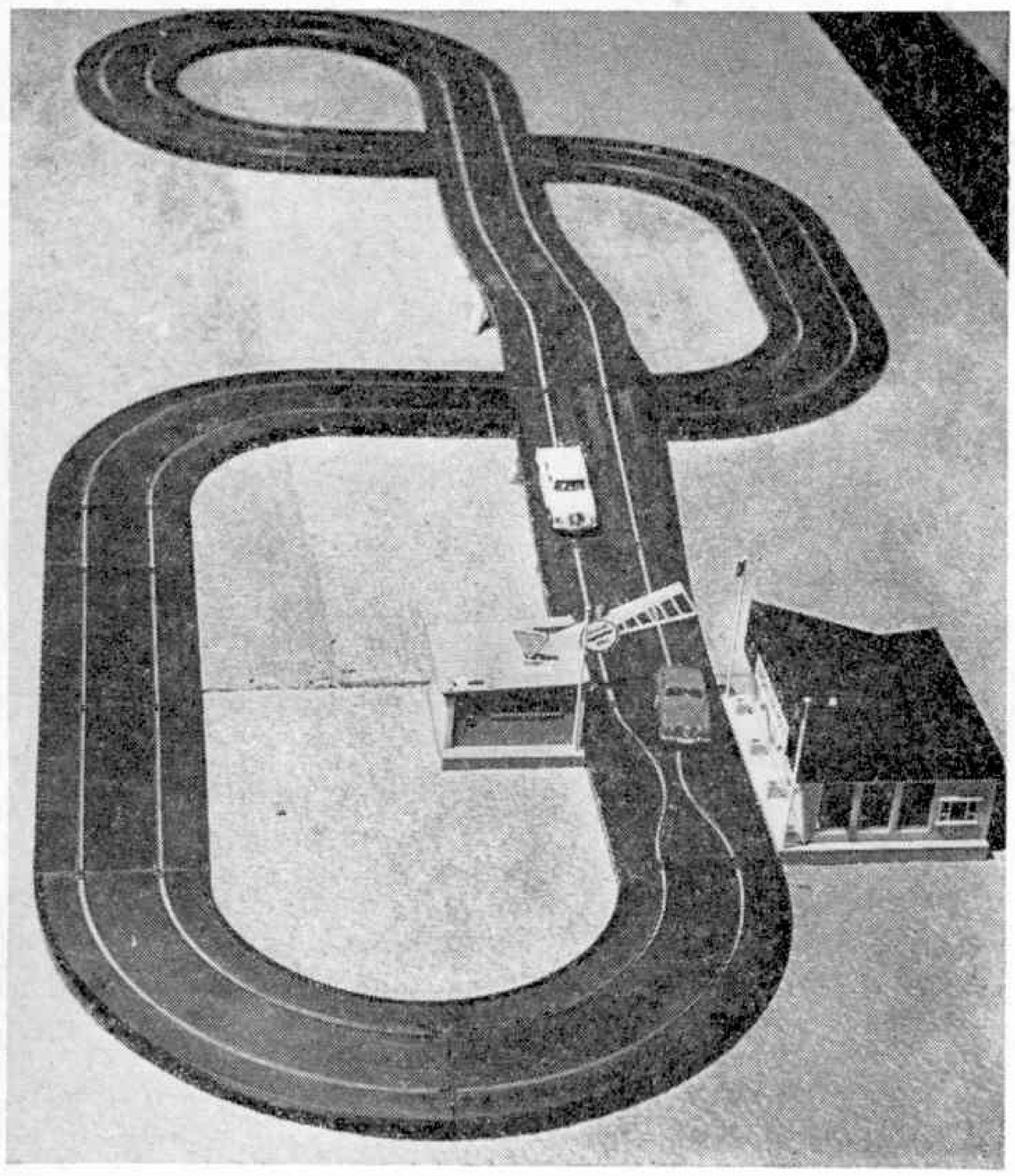
Opposite page: heading picture shows a BR type 3 diesel-electric locomotive hauling a train of 40 iron ore wagons. Below it is the Tri-ang Hornby A1A-A1A Brush type 2 diesel-electric loco. which provides the motive power for the 'Freightmaster' set

This page: four popular Tri-ang Hornby train sets: the 'Inter-City Express' with the new English Electric Type 3 Co-Co locomotive and three Pullman cars; 'The Midlander' local train with its Class 3F locomotive and two carriages resplendent in smart maroon; the 'Goods' set which includes 'Polly' in red livery, Minix car load and power controller, and finally the incredible 'Rocket' with tender and coach in the yellow and black livery of the old Liverpool and Manchester Railway

FRONTIER POST

BY JOHN BREWER

Below: the Frontier Post set includes a cross-over, a fly-over and a chicane. This whole track takes up an area only 28 in by 75 in. Bottom: the barrier house with the roof off to show the revolving drum in which pegs are inserted to vary the period of barrier operation



ODDLY enough, one of the results of technological advances made in the past few years is that the mechanical aids that we use in everyday life are steadily getting smaller and more compact. Cameras and cars, for instance, have been shrinking for years, and a so-called 'portable' radio of the early 'fifties looks ridiculously bulky by today's transistorized standards.

Exactly the same thing, of course, has been happening in the modelling field. When '00' scale railways were introduced before the war, few people could have foreseen that one day 00 scale model cars would be available, not only motorized but also capable of being very finely controlled, and running on compact table-top layouts full of authentic action and appearance. That day, of course, is today! Minic who were among the pioneers of '00' scale motoring, have developed their well known Motorways system which can be used as a fully fledged race track, a 'civilian' roadway layout in conjunction with a model railway, and, perhaps most exciting of all, a complete motor rally course complete with hazards enough to keep a real-life rally driver on his toes!

Imagine that you are driving a Mercedes-Benz 220 in a really tough Continental rally. On several occassions throughout the course you have to cross the Franco-Swiss frontier. At certain known times, the barrier at the frontier post will be opened to allow rally cars to pass through without Customs examination. You must time your driving carefully so as to arrive at the post at these specified times—if you are either early or late, the barrier will be closed, and the resultant wait will cost you valuable time and points. Skidding off the road or crashing into the barrier if it closes in front of you are additional hazards for which scoring points are deducted.

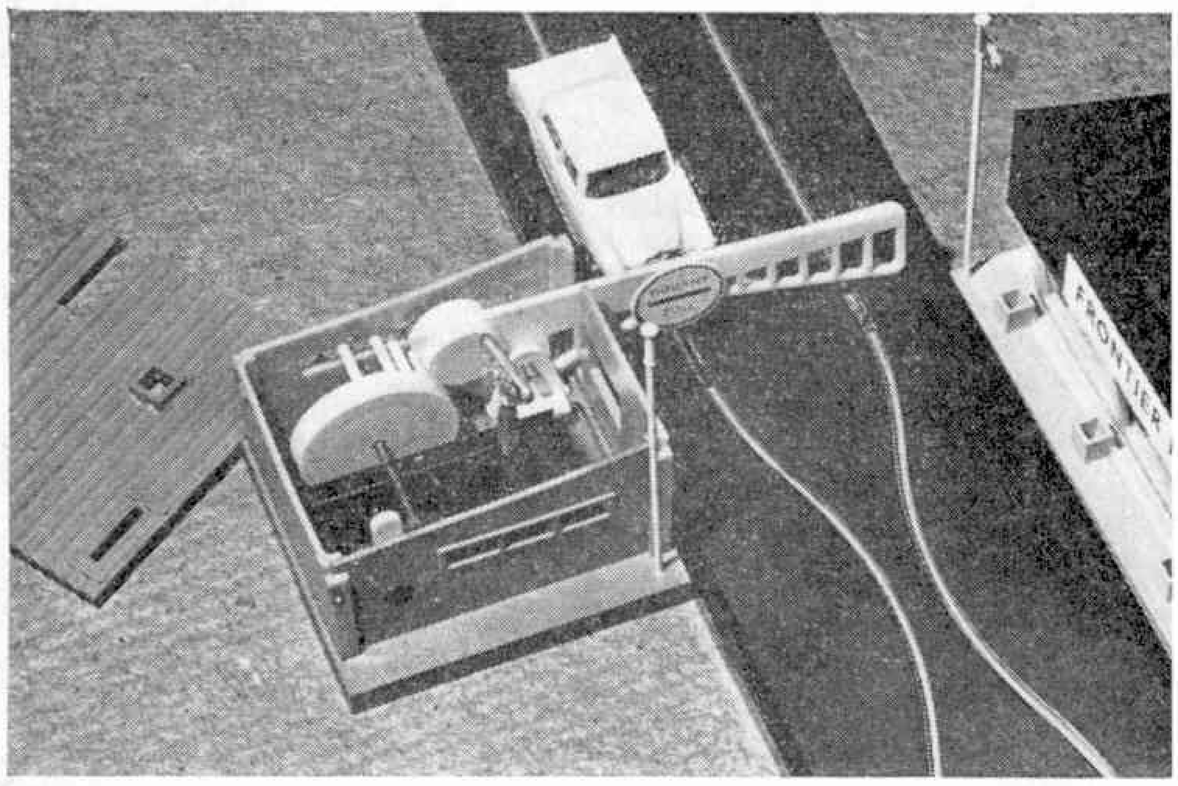
The Minic Frontier Post Rally set enables anyone to taste all these thrills, and despite the enormous fun that can be had from this sort of rallying in miniature, the ideas behind the system are basically so simple that one wonders why nobody thought of them years ago—but no-one did! The Frontier Post building itself is in very easily assembled kit form and, as can be seen from the illustrations, represents a typically Continental single storey building, nicely moulded in yellow and blue plastic. A lifting barrier closes the road, and carries a white disc which displays the words 'Douane' and 'Zoll' in large letters. These two words, as most of you will know, mean 'Customs' in French and German respectively.

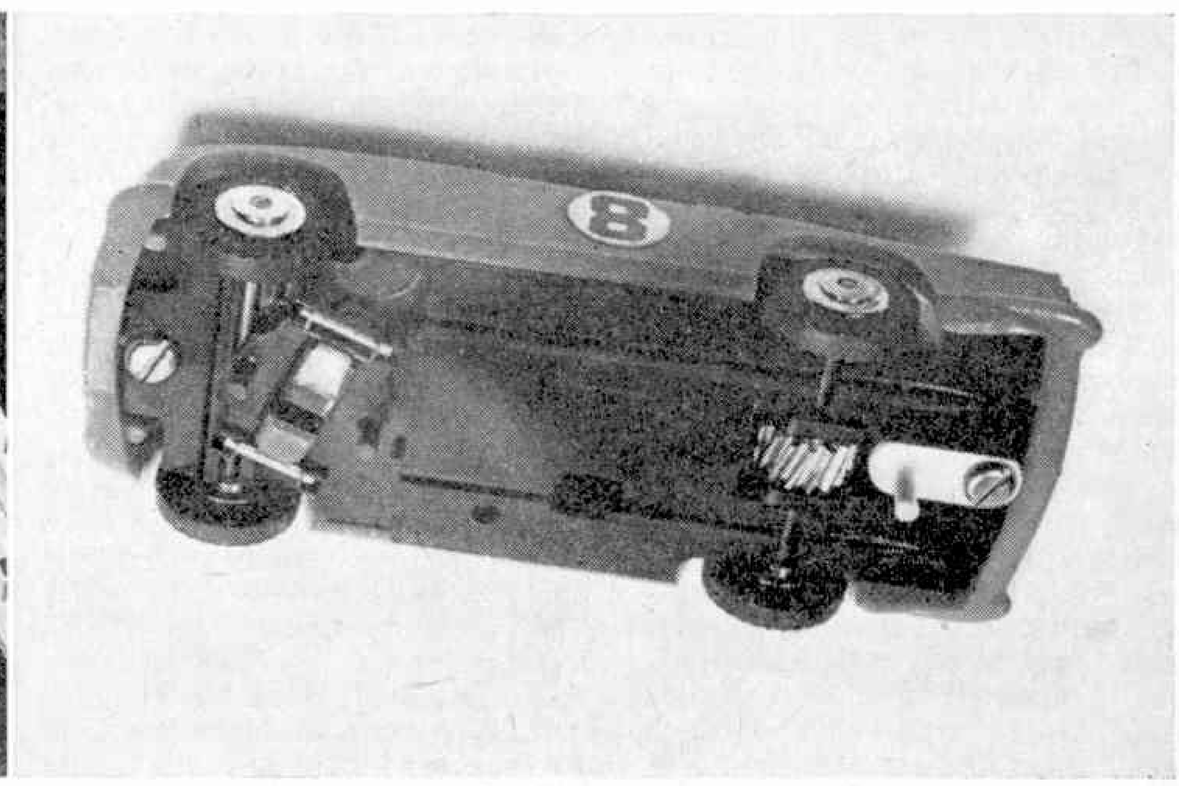
The really clever thing about the Minic Frontier Post, however, is that throughout the 'rally' the barrier rises, remains up, descends for a period of time, then rises again, and so on—completely untouched by human hand! This is achieved by means of a very long running clockwork motor concealed in the Douane office itself. The motor drives an extremely ingenious timing device which raises and lowers the barrier at pre-set intervals. The 'brain' of the mechanism is simply a slowly revolving drum, around the circumference of which plastic pegs can be pushed into holes. As the inner end of the barrier is weighted, it normally assumes the 'up' position. However, when the series of pegs on the rotating drum coincides with the weighted inner end of the barrier, that end is lifted by the pegs, and the barrier pivots on its fulcrum and 'falls'. The more pegs which are fitted to the circumference of the revolving drum, the longer the barrier will remain down.

In his article 'Miniature Motor Rallies' in the August issue of M.M. Walkden Fisher described in detail how to get the most out of your table-top rallying, but here is a brief reminder of the rules. The main point of the Frontier Post rally is to avoid being stopped by the barrier. Decide how many laps the rally will have and multiply by ten. This is the number of points with which all competitors start. Five points are deducted for stopping at the barrier, ten points for leaving the track, but twenty points are added for finishing first. Highest score is the winner.

On the cover this month you will have seen the picture of the Minic 'Checkpoint Bravo' rally set. This, although very similar to the Frontier Post, and just as exciting, requires an entirely different driving technique, *as cars must arrive at the barrier as it closes!*

Below: underside of one of the little Minic cars showing the removable 'reversing' peg in place, and the substantial skew gear on the rear axle. The unique swivelling sprung pick-up shoes are clearly visible. The whole car measures only 2¾ in. long





EGGERBAHN

NARROW GAUGE

1009 Western Loco with Tender. 0-4-0 a wood-burning steam Loco with massive brass chimney (spark catcher), carbide lamps and cow-catcher; Moving piston rods and crosshead; 2-axled tender loaded with logs; Model of the loco used in the Karl-May Winnetou films. This engine was originally used for passenger and goods traffic on the Union Pacific Railroad in U.S.A. Overall length 4¼". Colours:—Original green and black with gold lettering **£6/10/0**

EGGER-BAHN
HO—9 mm Loco's
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	Passenger Coaches:—	
2001	Passenger Coach, green	19/11
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2003	Fiery Elias car ...	24/6
2004	Luggage van, green	19/11
2005	Luggage van, brown	19/11
	Goods:—	
2100	Tip truck ...	8/11
2103	Open wooden truck	8/11
2104	Open-sided truck	8/11
2201	Short Goods van, brown	14/11
2202	Short Goods van, anthracite ...	14/11
2203	Short open truck, brown	12/11
2204	Short open truck, anthracite ...	12/11
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2303	Goods van, brown	15/-
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2306	Tanker, black, asphalte	19/11
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2308	Tanker, grey, oil	19/11
2309	Crane Truck ...	24/6
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2405	Staunchion Truck with car	28/6
2406	Staunchion Truck	19/11
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5000	Starter set ...	£6/15/0
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5200	Goods Train (no track)	£5/10/0

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ADD SPEED

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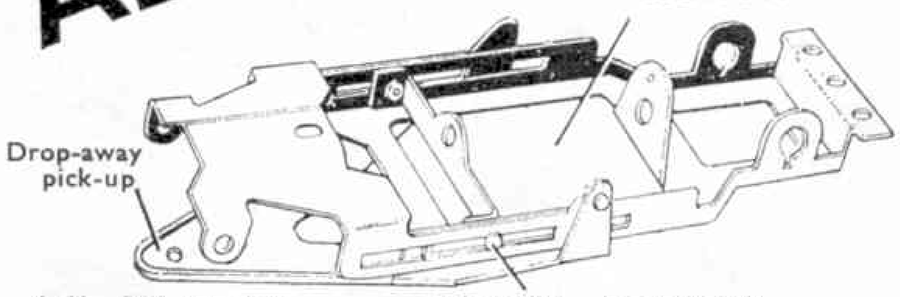

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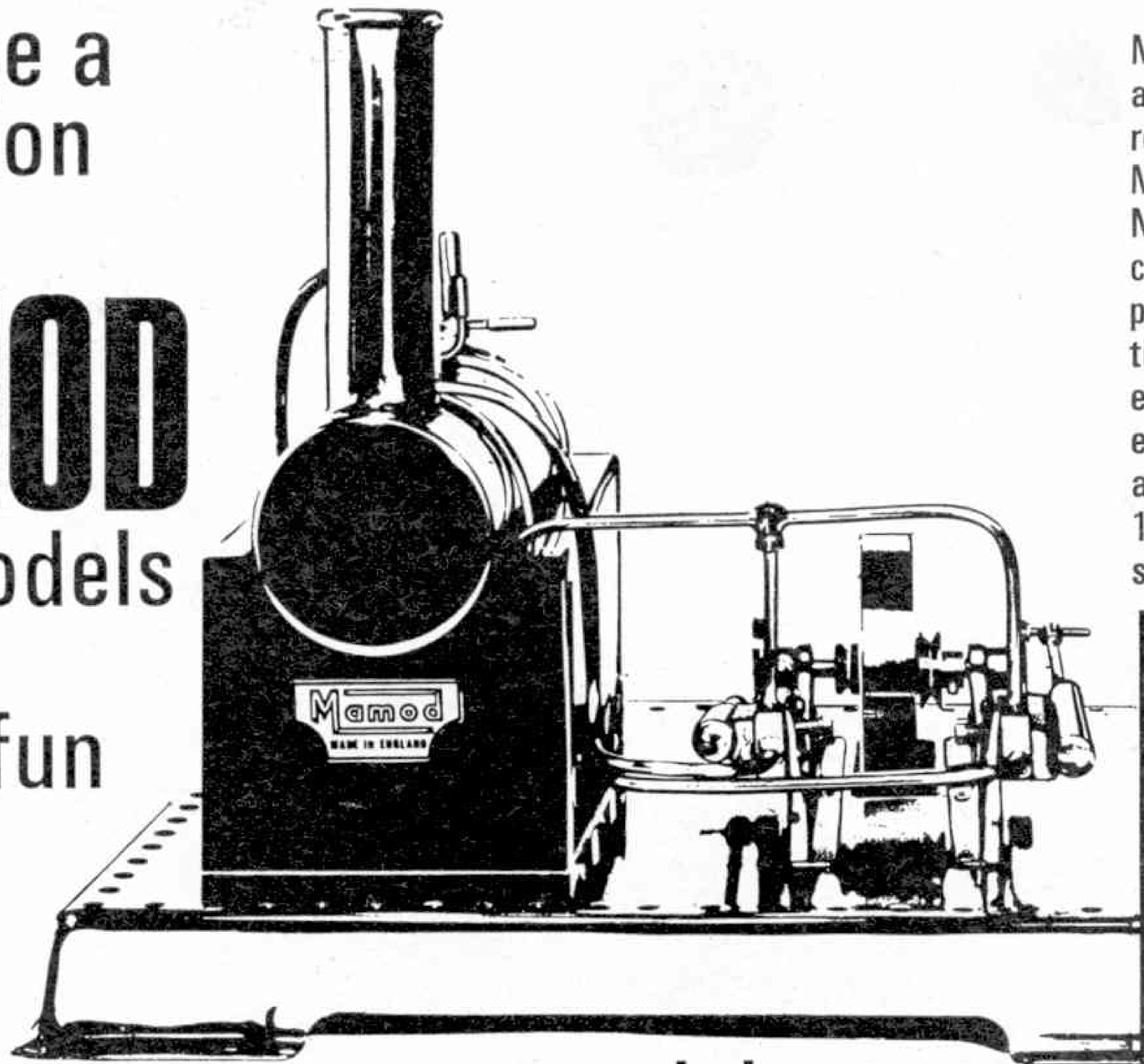

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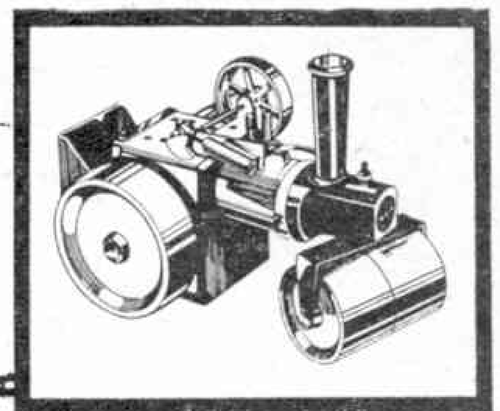

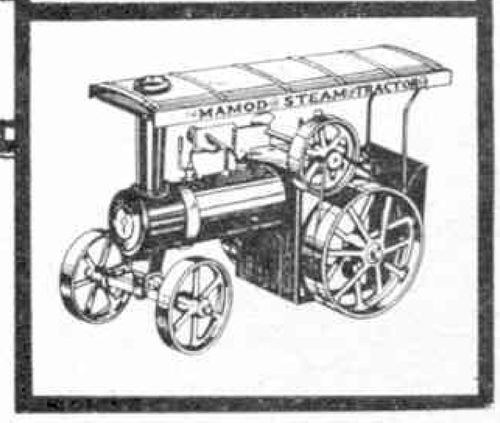

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The four models shown above were all assembled at the same time. The Frog 'tray-type' boxes were particularly useful in keeping the individual small components safe and handy. (Below right) **A** The small serial numbers on the silver Airspeed Oxford were applied with Rexel Letter-Press dry transfers. With this system, it is only necessary to place the alphabet sheet over the exact position on which the lettering is required and to rub over the letter with a hard pencil or ball-point. Blick 'Dry Print' is equally suitable. **B** Adhesive masking tape covers the yellow plastic and after applying the black enamel it is removed to reveal a striped effect

the theme's the thing

J. D. McHARD

HOW do you decide which kit to build next? Do you buy the latest issue irrespective of what type it represents—or do you go for a pretty picture on the box-top? Either way you are likely to be lumbered with an assortment of unrelated types each in itself interesting no doubt, but of little value or interest as a collection.

Just as stamp collectors derive enhanced pleasure from their hobby by gathering together as many issues as possible of one particular country or period, so you, as a plastic kit builder, can increase the satisfaction of your hobby by building to a simple pre-arranged plan. A group of three or four *related* types is infinitely more interesting than a similar number of miscellaneous models.

The Frog range of plastics presents the collector with several potential 'themes'. For instance, our little group of models shown alongside represents some of the most famous planes to serve with R.A.F. Flying Training Command. These were the aircraft in which the fighter and bomber crews learned to fly. They make a most interesting foursome.

Leading the 'flight' is an Airspeed Oxford in post-war colours—silver with yellow wing and fuselage bands. This particular aeroplane flew from Wellesbourne Mountford in Warwickshire where an Advanced Flying Training School put cadets through their pilot and navigator courses. A wartime Oxford can still be seen at the Skyfame Museum at Staverton Airport, Cheltenham. In the foreground is the shapely Miles Master III, developed from the earlier in-line engined Master II and the pre-war Kestrel sport plane. It boasted a retractable landing gear and in its tandem-seat cockpit thousands of embryo fighter pilots were put through their paces. The instructor, who usually occupied the rear position, could raise his seat until his head was above the top line of the cockpit cover. To enable him to do this, the transparent cockpit cover roof immediately above him was hinged upwards and forwards, and when locked in place, it formed an elevated windshield.

Another Miles trainer was the Magister (the little open cockpit monoplane bringing up the rear of our flight). This was the first monoplane trainer to be used by the R.A.F. and was widely employed to supplement the old Tiger Moth as a basic trainer. The rear cockpit, and its pupil occupant, could be completely covered by a folding hood, so that the machine could be used in daylight for instrument training. The pupil being completely enclosed was thus compelled to fly the plane entirely by the instruments on his blind flying panel, and the instructor—out in the daylight—could then assess the skill of his charge!

A few Magisters are still in use today, but only in civilian dress!

Finally, the Percival Proctor—a four-seater despite its modest size—can also still be seen on many a local airfield, but when it served in the Royal Air Force it performed the duties of navigational trainer and communications aircraft.

To this quartet of trainers might be added the Hotspur glider, also in the Frog range. This unusual model represents the machine used for assault glider pilot training, and with its diagonal black and yellow under stripes it makes a colourful subject.

All three single-engined models in our group were finished exactly as suggested in the colour illustrations in the respective kits, with yellow undersides and dark earth/dark green top sides. It is interesting to compare the different styles and sizes of the wing and fuselage roundels—the huge wing markings of the Magister and the tiny fuselage insignia of the Proctor.

The kit box also suggests a camouflage scheme for the Oxford and suitable transfers and squadron lettering are, of course, provided to suit such a finish. However, I have always thought the sleek lines of the Oxford were shown to best advantage in its post-war silver colour scheme with broad yellow bands encircling the wings and fuselage. The particular machine chosen for our photo was, as mentioned earlier, flown from Wellesbourne Mountford and although, to be strictly accurate, it ought to have modified undercarriage doors and under-cowling air intakes, it nevertheless looks very convincing without any alteration.

Yeoman $\frac{1}{8}$ in. black lettering transfers were used for the large fuselage squadron markings while the serial number was easily applied with one of the new 'rub-on' letter sets. The particular one used here was from the Rexel 'Letter Press' collector's pack (3s. 11d.) and is just right for the job. Blick 'Dry Print' would do equally well.

A collection such as this makes such an attractive display that many of you will, no doubt, build more than one kit at a time since they are so modestly priced. There's a lot to be said in favour of building several such models all together. Time is saved since cemented joints on one model can be allowed to dry out while working on one of the others. It's quite exciting, too, to see the whole production line nearing completion all together, and where similar finishes are to be used, they are likely to be much more uniform if they are all applied at the same time. By the time you have painted one colour on all four models, the first to be done is probably dry and ready for the next colour, so there's no tedious waiting. Tackled in this way, I reckon to complete five models in the time normally taken to finish two individually.

Now that we've trained our model pilots we can introduce them to some of the more advanced machines which can, like the trainers, be formed into attractive groups. Here are some suggested collecting themes.

1. FLEET AIR ARM AIRCRAFT

Blackburn Skua—(early wartime dive bomber).
Fairey Barracuda—(late wartime torpedo bomber).
Hawker Sea Fury—(last Navy piston engined fighter).
Fairey Gannet —(post war prop-jet patrol and attack aircraft).
Supermarine Attacker—(first R.N. jet).
Hawker Sea Hawk—(jet fighter and aerobatic display aircraft).
Westland Wessex—(Navy helicopter).
De Havilland 110—(twin jet all weather strike fighter).

2. FAIREY AIRCRAFT

Fairey Barracuda
Fairey Gannet.
Fairey Delta II—(first over 1,000 m.p.h. turbojet).

3. DE HAVILLAND AIRCRAFT

D.H. Gipsy Moth—(England to Australia solo flight).
D.H.88 Comet Racer—(England to Australia race winner).
D.H.110—(Sea Vixen (twin jet strike fighter)).
D.H. Comet IV Airliner—(world's first jet airliner 1/96th scale).

4. VICKERS AIRCRAFT

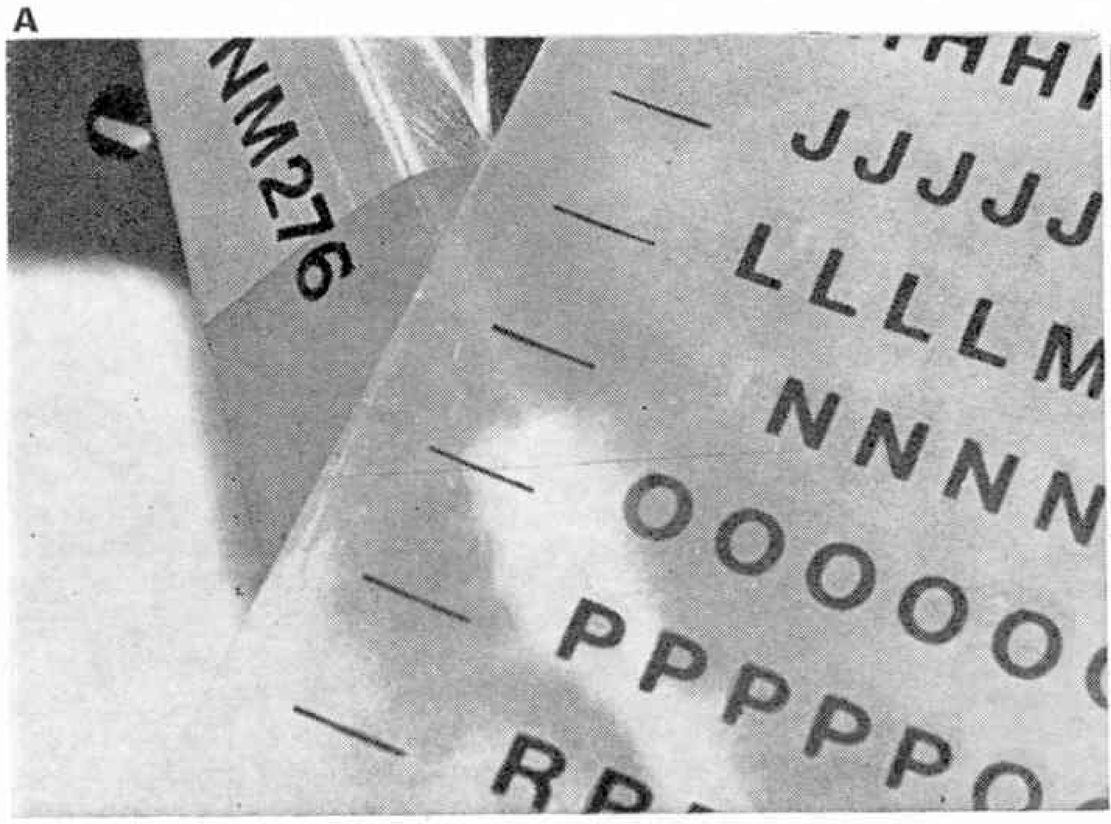
Vickers Vimy—(trans-Atlantic non-stop in 1919).
Vickers Supermarine Spitfire II—(Battle of Britain fighter).
Vickers Supermarine Attacker—(first Navy jet).
Vickers Valiant—(first R.A.F. four-jet rear engined airliner 1/96th scale).
Vickers Viscount—(first four-turboprop airliner 1/96th scale).

5. HAWKER AIRCRAFT

Hawker Typhoon—(tank buster).
Hawker Sea Fury—(last Navy piston engined fighter).
Hawker Sea Hawk—(Navy jet fighter).
Hawker Hunter—(R.A.F. ground attack and fighter aircraft).

Further 'collections' will suggest themselves and you can have a lot of fun simply working out relationships from the big full-colour Frog catalogue which you can get from your dealer for 9d.

A



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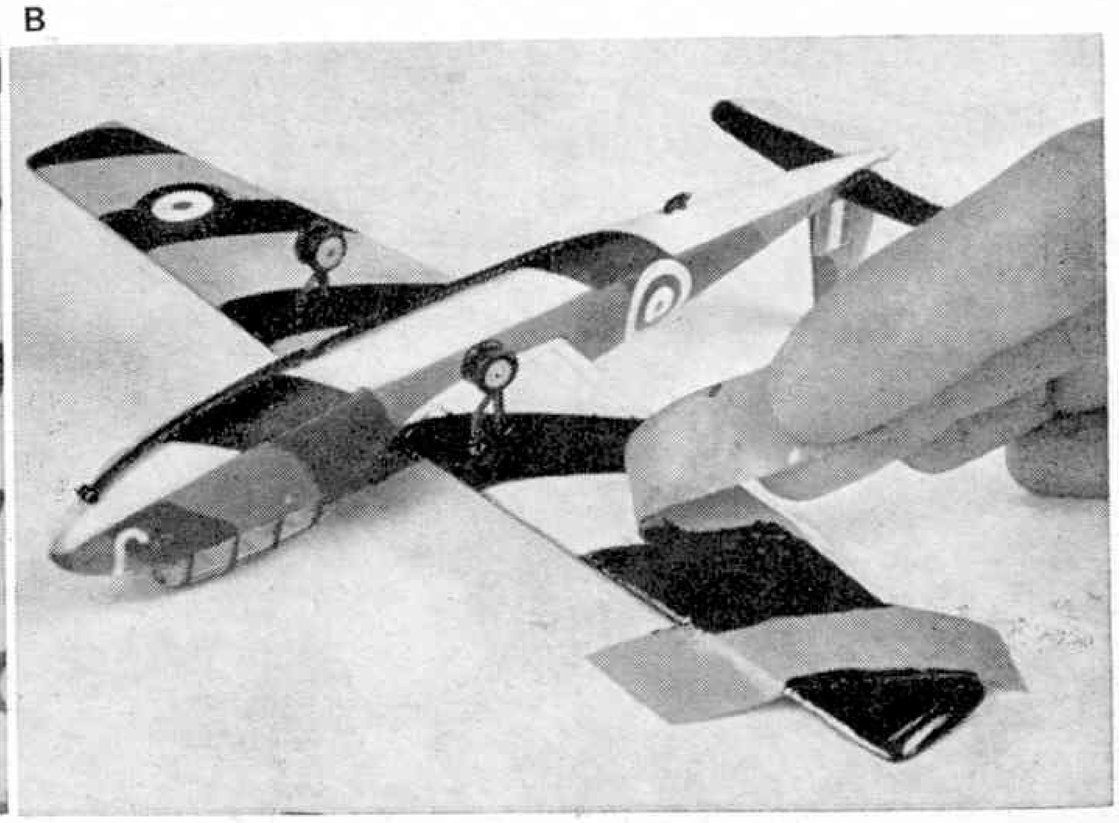


RAILWAY NOTES . . .

● Freight—Ulster to London in 18 hours An experiment designed to assess the possibilities of extending the Freightliner service to Ireland, was recently put under way when a container crossed the Irish Sea by the Stranraer-Larne Short Sea Route, the first time a Freightliner container has travelled the Irish Sea. From the Gushetfaulds Freightliner Terminal, Glasgow, the container left Ireland on board 'Caledonian Princess' for the 2¼ hour crossing. From Stranraer it was taken by road to Gushetfaulds for despatch on the 2007 Freightliner train to London where it arrived at 0435, less than 18 hours after leaving Larne.

● New West Country Service Important improvements for West country rail users next year will include a new express from Plymouth and Exeter to London, and the modernisation of Exeter's passenger station and freight depot. The new West to London inter-city service follows the success of the 'Golden Hind' train which was introduced between Plymouth and London two years ago.

Planned to run during the summer months on Mondays to Fridays, the new trains will be introduced next June, and will leave Plymouth shortly before 8 o'clock in the morning and arrive at Paddington about 11.30. A corresponding return train will depart from Paddington between 1830 and 1900 hours.

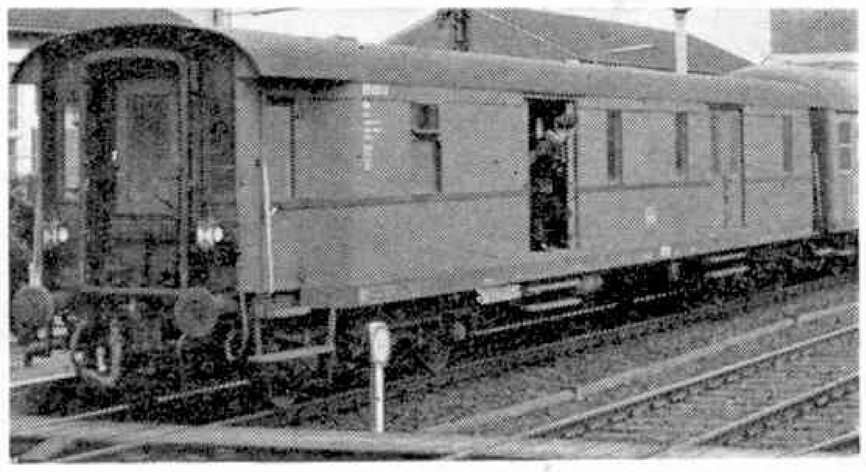
● Revised Trains to Southport Electric train services on the Liverpool (Exchange)—Southport line have recently been revised to reduce operating staff and staff costs. From Mondays to Fridays, trains will run from Liverpool to Southport at 0610, 0650 and every 20 minutes throughout the day, until the evening peak service. From 2000 hours. trains will run every 30 minutes until 2230, the last train departing at 2300 hours· The first train will leave Southport at 0610 and apart from the peak hour services, will run every 20 minutes during the day. From 1900 hours there will be a train every 30 minutes until 2230, and the last train will leave at 2250.

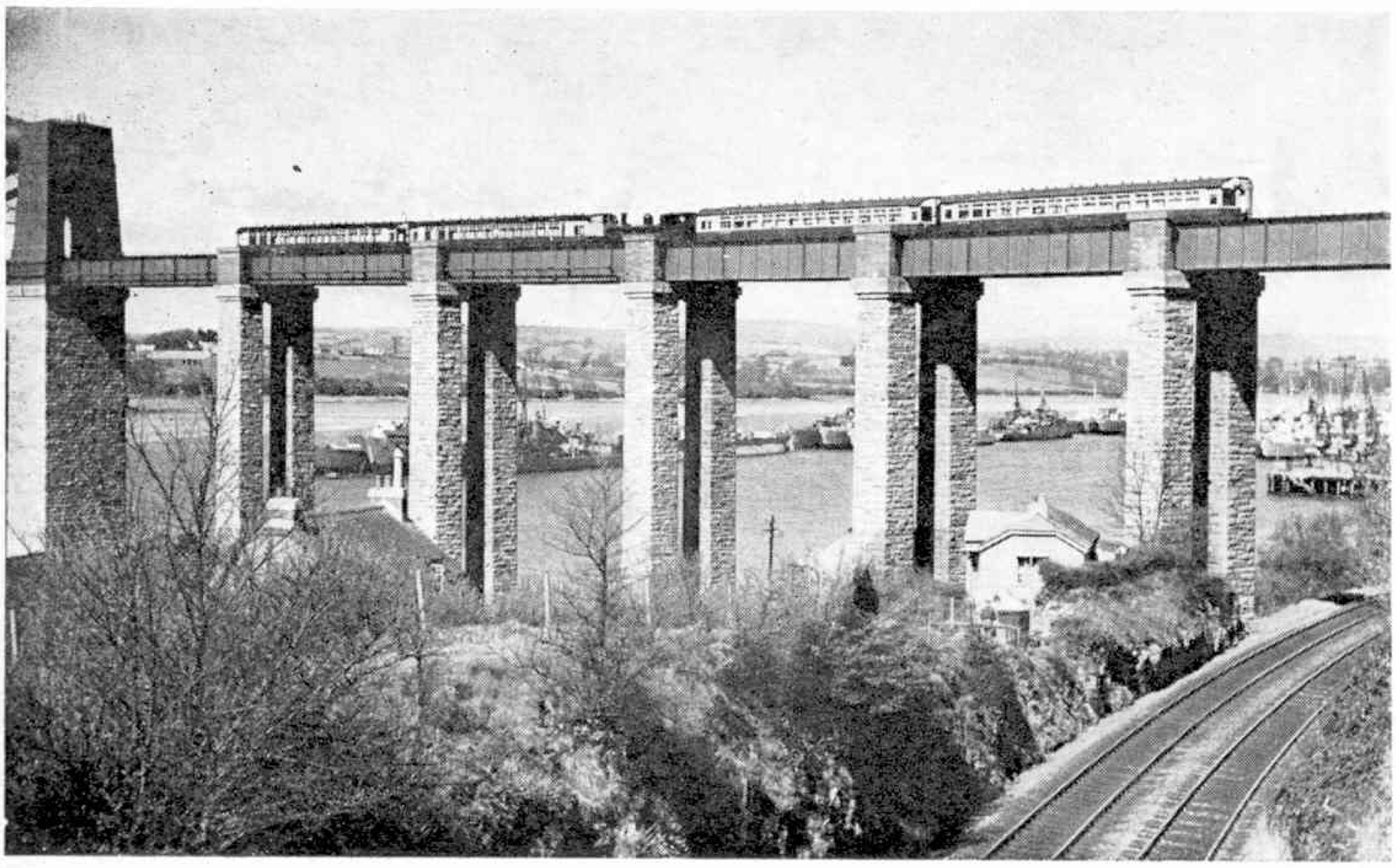
● Push-pull from Saltash One of the sights to have disappeared from our suburban and branch lines in recent years is the push-pull train, at one time used by nearly every railway company where short but fairly frequent journeys were involved. Originally used to help reduce operating costs, push-pull trains were operated with specially modified locomotives, and coaches with duplicated cab controls.

The push-pull trains used by the former Great Western Railway were particularly distinctive and our illustration shows a four coach unit with the locomotive in the middle running from Saltash to Plymouth over the eastern viaducts of the Royal Albert Bridge in April 1952, before the road bridge was built.

● Continental Freight Trains It has become almost a tradition in this country for goods trains to have a brake van, but on the Continent these are now very rarely used. This is because most, if not all, goods trains are fitted with the automatic air brake, which really disposes of the need for a van with a mechanical brake at the end of the train. A warning light at the end of a train is however one point that both British and Continenta trains do have in common, although on the Continent, especially Germany, the lamp itself is only used at night. During the day, it is turned round to expose a pattern of red and white triangles, and in Holland, only a metal plate with the triangles painted on is used. These can often be seen on trains that have worked through to Germany. Our photograph showing a luggage van on a German passenger train shows oil lamps with the triangle sides turned to the rear, and the second photo shows a Czechoslovakian State Railways van running on the Deutsche Bundesbahn at Weeze on the Kleve to Krefeld line, carrying the flat metal plates in place of oil lamps.

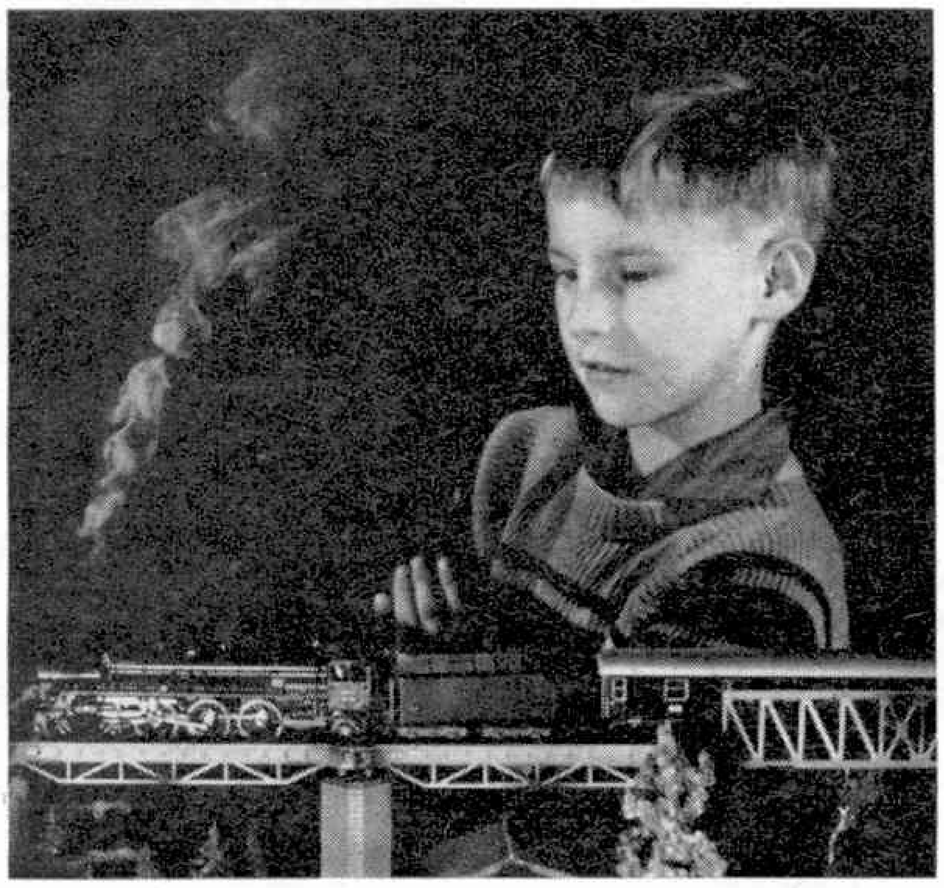
● Festiniog Plan Further Extension The steam operated narrow-gauge Festiniog Railway in North Wales has announced its intention to re-open the two and a quarter mile section to Dduallt by 1968. Working parties are already digging cuttings and building embankments for the spiral which will form part of the link reconnecting the line with Blaenau Ffestiniog. When eventually completed this will enable fine views to be had of the impressive scenery. Since the re-opening of the railway in 1955 the number of passengers carried annually has progressively increased, from over 150,000 during 1965' to the grand total of one million by April 1966. The fourth of the new coaches being built at the Company's Boston Lodge Works to the new loading gauge is expected to see service during the present season, and will for the first time, include a small toilet. With a corridor connection to Buffet Car No. 14, this and Buffet Car No. 12 are the only railway vehicles in the British Isles to have draught beer available en route.





GUESS WHICH ?

Are you able to identify the class of locomotive from the accompanying photograph which shows only one or two of its most distinguishing features? The answer will be published in the next 'Railway Notes.'



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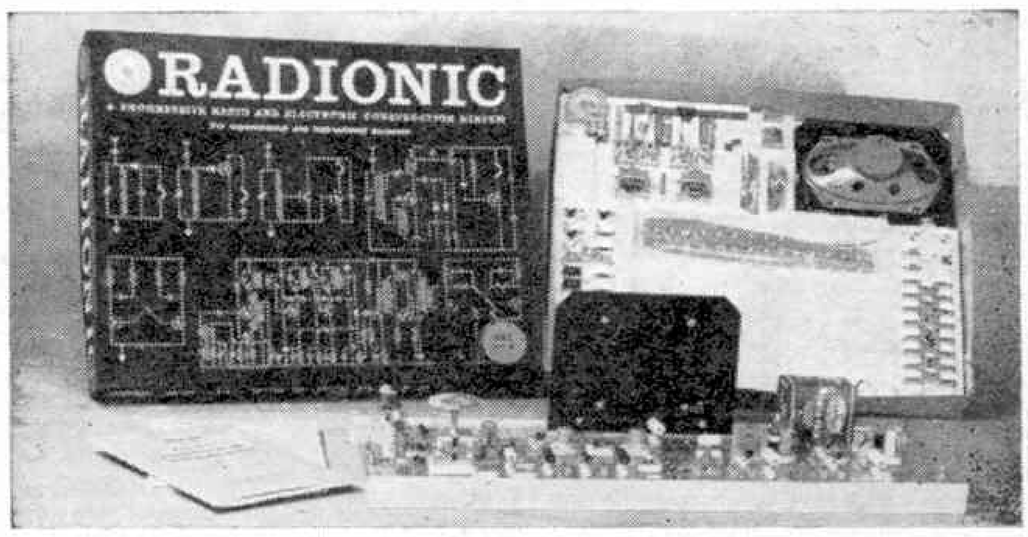
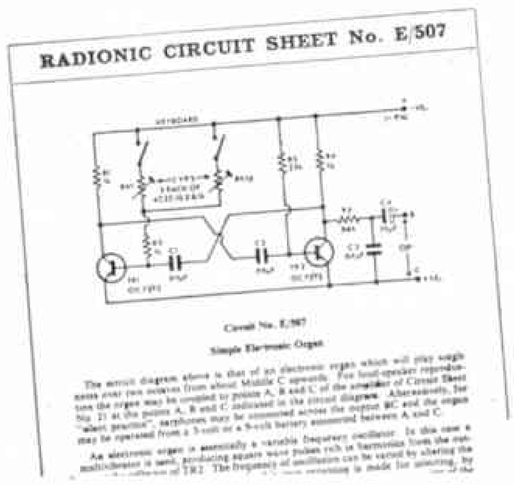
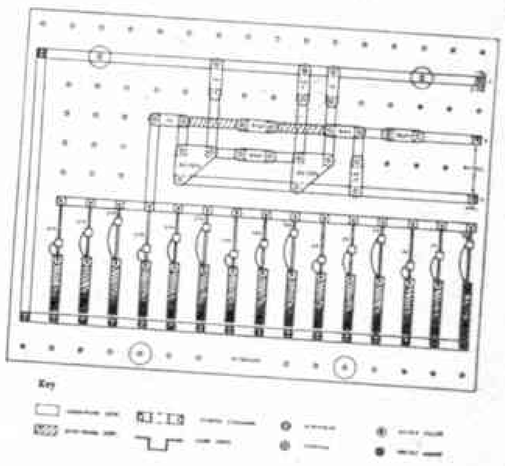


A No. 4 SET and 6-TRANSISTOR SUPERHET



Theoretical Circuit.



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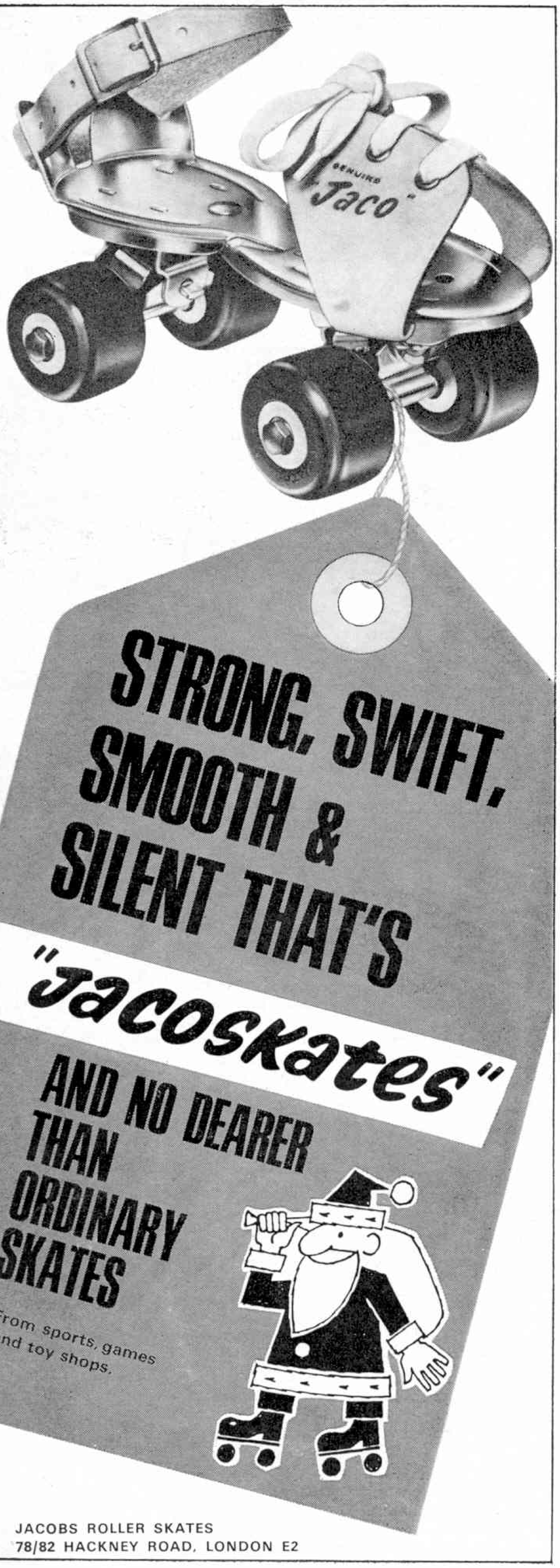

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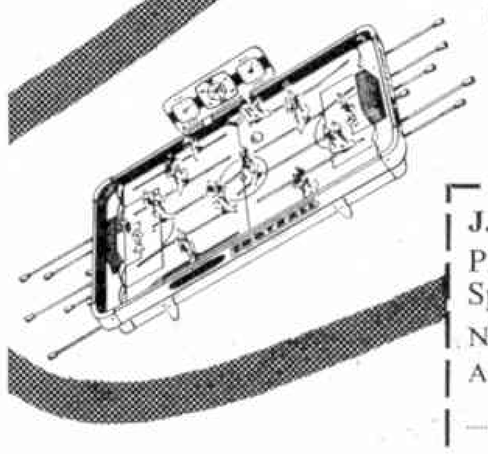

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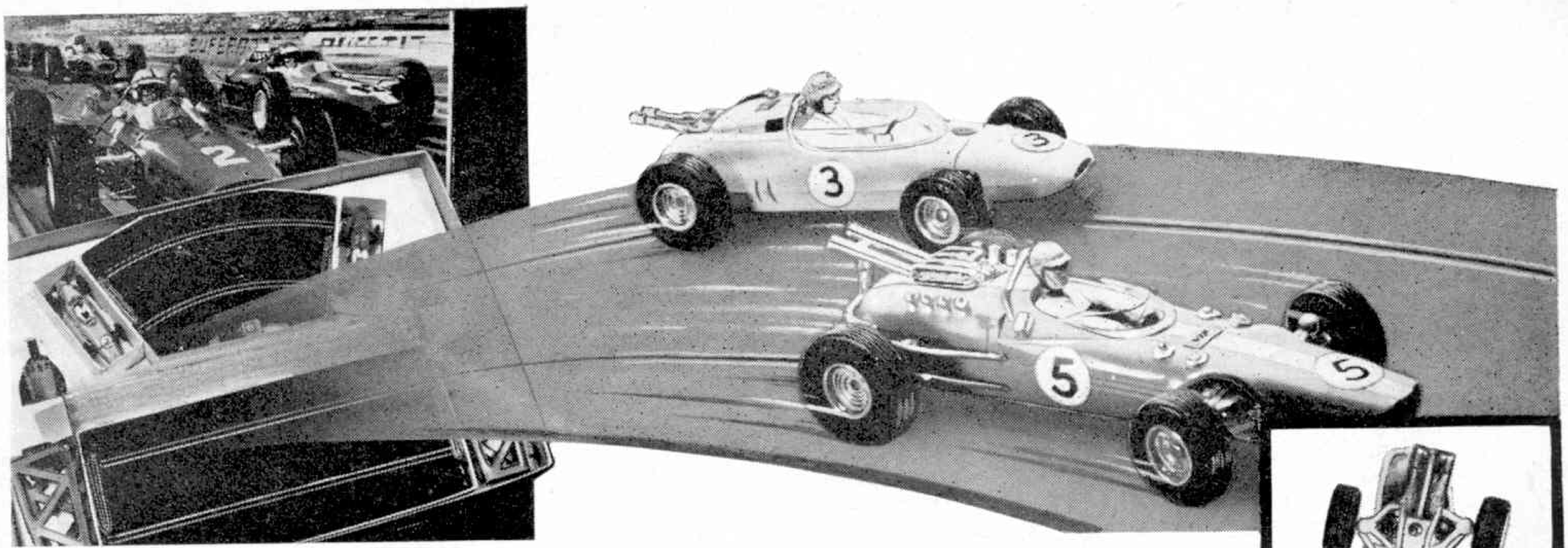

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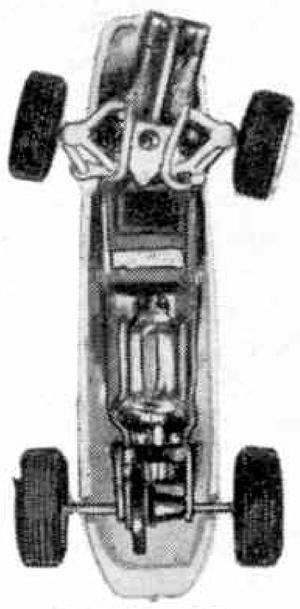

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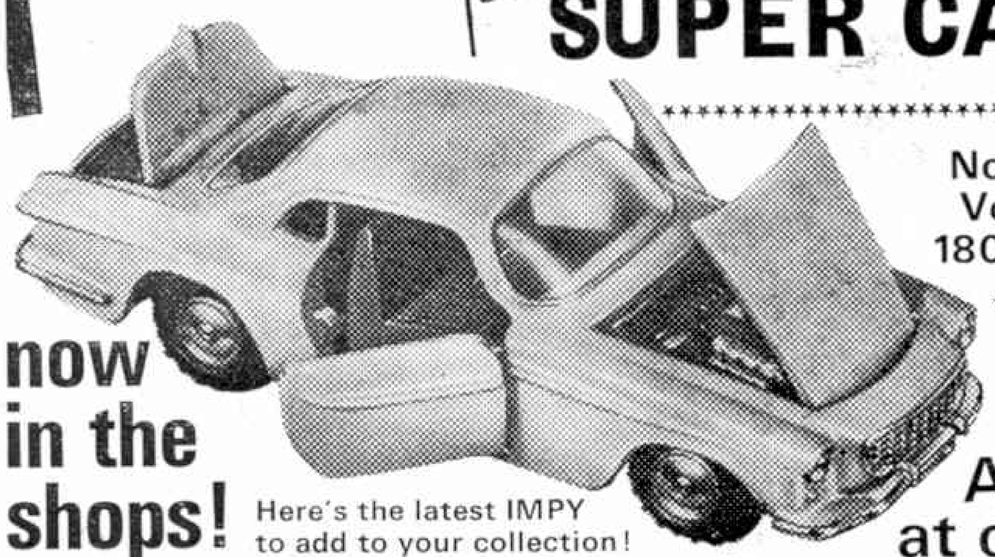

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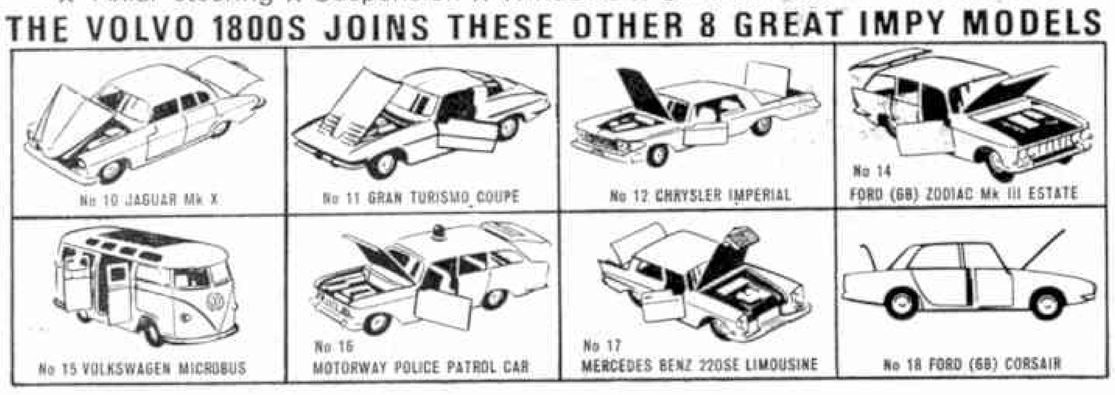

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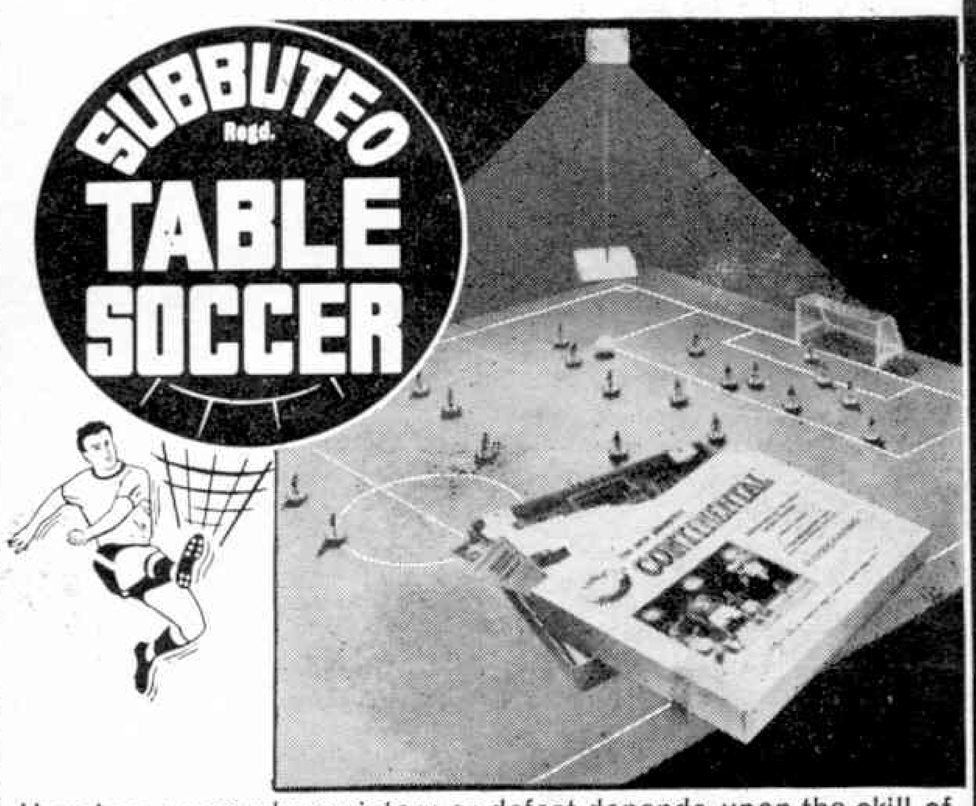

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SUBBUTEO (Dept. 5) Langton Green Tunbridge Wells, Kent.

HAVE YO

Latest in the 'Matchbox' King Size series is the SD 'Pakamatic' Refuse Truck. Finished in bright red and silver, the model incorporates the rather complex tipping action of the real vehicle. Features include cab windows, seats, steering wheel and spring suspension. Scale is 66 to 1, and the model is 4⅝ in. long. **Price 7s. 11d.**—See Photo 5.

BELLONA BATTLEFIELDS

War games enthusiasts will be interested in the new series of Battlefield Sets recently introduced by Merberlen Limited, of Hawthorn Hill, Nr. Bracknell, Berks. Nine sets are included in the range and each is formed from rigid PVC measuring 10¾ in. by 5⅜ in. The photograph shows a sample, in this case a German Light Artillery position with ammo bays plus group of three bushes plus fox hole plus sandbagged fox hole, all moulded in the PVC, which incidentally has beautifully represented ground surface. Each set costs **3s.** and all are available from Merberlen at the above address.—See Photo 6.

LOCOSPOTTERS' ANNUAL 1967
Published by: Ian Allan Limited, Terminal House, Shepperton, Middlesex. **Price 8s. 6d.**
Size 7¼ in. by 9¼ in. 64 p.p. plus 7 colour plates.

More for the younger reader, this annual puts the accent on present day B.R. practice and the selection of articles all come within this theme. They are also extremely well chosen to give a wide variety of different subjects. 'Euston—London's newest station', describing the vast scale of reconstruction it has recently undergone, is a good example. For topical interest, one cannot do better than 'The Day the Signal Box Fell Down', which describes the recent collapse of Clapham Junction Box. Then again, 'Running an Ian Allan Excursion' with all its many problems may well fascinate the many participants in such trips.

The prime purpose of a book of this sort is to entertain as well as instruct and this the Annual undoubtedly does. It can therefore be highly recommended. — See Photo 1.

TRAINS ANNUAL 1967
Published by: Ian Allan Limited, Terminal House, Shepperton, Middlesex. **Price 12s. 6d.**
Size 9¼ in. by 7¼ in. 96 p.p. plus 7 colour plates.

The 13 chapters included in this year's 'Trains Annual' are certainly not lacking in interest or the variety essential to a book of this sort. Subjects are very diversified and range from '100 m.p.h. on rails', an account of super-high speed running in different parts of the world, to the little known, and unusual account of 'Lady Angela's Railway'. Your attention can wander at will from the fascinating and occasionally amusing story of footplate life on the L.N.W.R., to more modern footplate experiences of a different kind, when one is introduced to the driver's point of view, in 'The Rough Trip', by C. J. Holyhead. You can spend a day at the 'Caley' in 1935, as Edinburgh Princes Street Station was called, or you can read about the notably unsuccessful 'Baltic' tank locomotives, built by the London Tilbury and Southend Railway. In an annual of this sort, one is never short of something different to read and I would certainly not hesitate to recommend this edition, with its handsome helping of impressive photographs, all beautifully reproduced—See Photo 2.

BUSES ANNUAL
Edited by: R. A. Smith.
Published by: Ian Allan Limited, Terminal House, Shepperton, Middlesex. **Price 12s. 6d.**
96 p.p. with many half-tone illustrations in the text. 9¾ in. by 7¼ in.

Even in this space-minded age, the humble motor bus has a fascination all its own and, despite competition from trains, 'planes and boats, maintains a following of devoted enthusiasts. Like all Ian Allan publications, Buses Annual is produced by enthusiasts for enthusiasts. In the opening article, under the title 'The Greatest Tour of All', a fascinating account is given of the adventures and exploits of the three London Transport RT class vehicles which toured North America in 1952. The trio covered 12,000 miles during the trip, and the cases of spares which had been taken as a precaution against the worst eventualities, were brought home unopened.

Another article relates the history of the famous L.G.O.C. 'NS' class double deck AEC's which performed yeoman service in London from 1923 until the mid-thirties, and were direct descendants of the well known 'ST', 'RT' and, more recently, the controversial 'Routemaster'. There are plenty of illustrations of these wonderful vehicles, in all stages of their development from the early open topped and solid tyred versions to the more sophisticated final derivatives with covered upper decks

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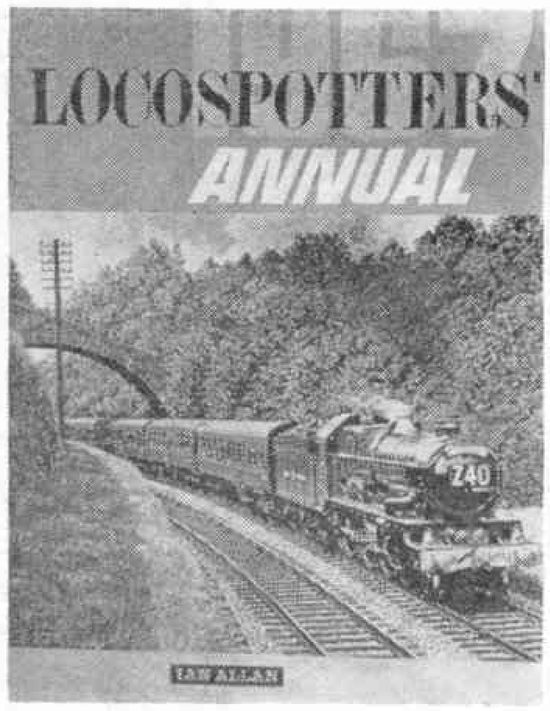

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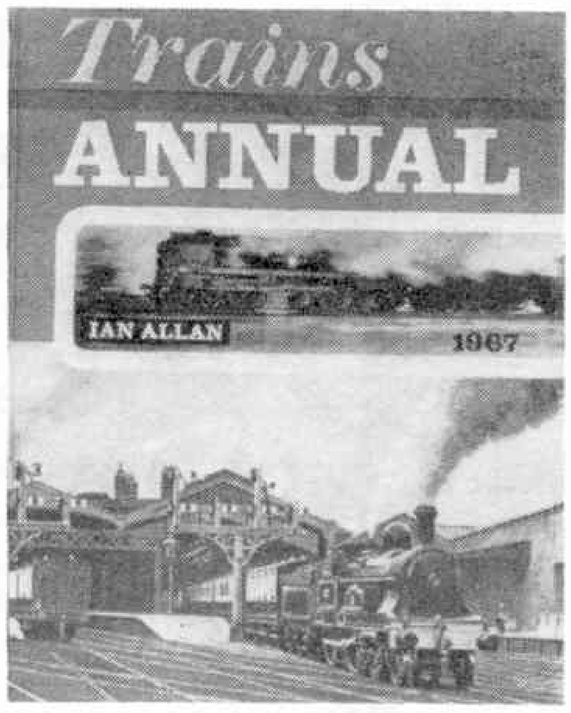

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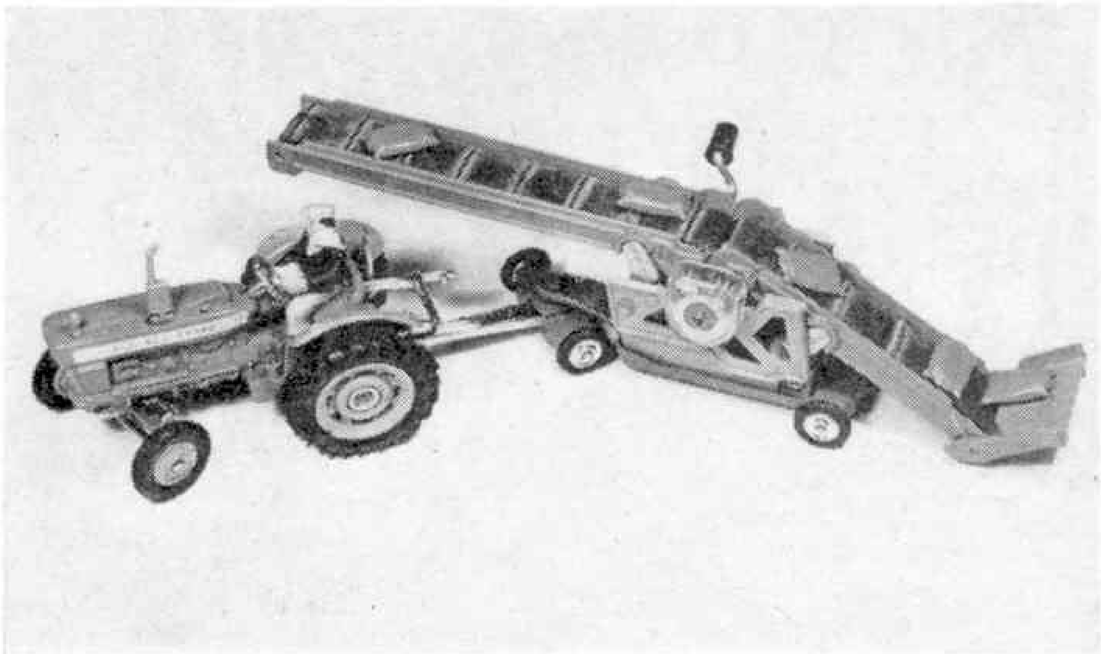

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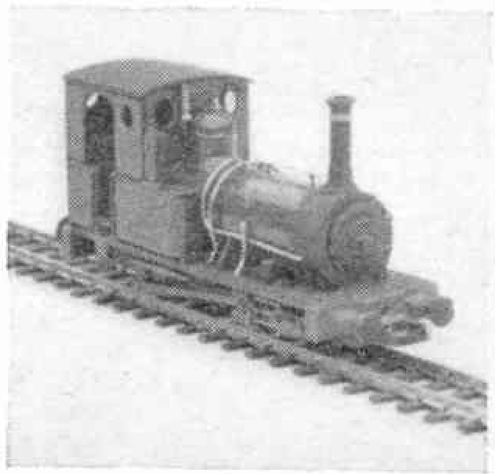

U SEEN

and pneumatic tyres. Some of the pictures would prove extremely useful to bus modellers.

The many other features in the Annual cover the whole spectrum of bus lore, both historical and up to date, serious and lighthearted, and the result is an attractive and informative book that cannot fail to appeal to the 'spotter' and serious student alike.

AIRCRAFT ANNUAL 1967
Edited by: John R. W. Taylor.
Published by: Ian Allan Limited, Terminal House, Shepperton, Middlesex. **Price 12s. 6d.**
96 p.p. Profusely illustrated with half-tones in the text. 9¾ in. by 7¼ in.

Mr. John Taylor, who has edited the book under review, scarcely needs any introduction to Meccano Magazine readers who, we know, look forward to his monthly aircraft articles which cover just about every facet of the aviation scene. In compiling Aircraft Annual, Mr. Taylor has managed to include something for everyone, as the well illustrated articles cover subjects as varied as moon exploration, early Fokker aircraft, latest Soviet 'planes and giant helicopters, light aircraft, aerobatic teams, and even songs sung by airmen on the Western Front! The pages devoted to Famous Fokkers include some very nice sectionalised line drawings which might be most interesting from a scale modeller's point of view, and featured among these is the F.X. Trimotor airliner, a derivative of the F.V11a which was the subject of an M.M. article last June.

An excellent present for an air-minded friend.

PECO

Messrs. Peco's products are held in such high regard by railway modellers, not merely because they are well made and durable, but because they bring true scale modelling within the reach of the average enthusiast. Just look at the Peco Streamline range of track for OO/HO gauge, with its closely spaced sleepers, fine scale rail section and 'chaired' appearance—it seems a far cry from the grossly overscale track upon which we used to run our trains! Illustrated is the latest unit of Streamline trackage, the long crossing with a 12° frog angle. This crossing can be used with either the 60 in. or 24 in. radius Streamline Mk. II points to form many interesting track formations, and retails at **16s. 6d.**—See Photo 4.

'N' gaugers who prefer British outline locomotives on their layouts will welcome the new Peco 'Hymec' Class 3 Diesel. This is in Body Kit form, and is intended for use with the Arnold 0232 chassis. The body of the Hymec is easily assembled from the minimum number of white metal parts, and the kit comes complete with comprehensive painting instructions. Price of Body Kit only **27s. 6d.**—See Photo 9.

GEMS FOR CHRISTMAS!

Of definite interest to narrow gauge enthusiasts will be the G.E.M. 5½ mm. scale kit of the Talyllyn Railway locomotive 'Dolgoch'. Made to run on standard 12 mm. TT track or, of course, the special 12 mm. narrow gauge track made by this firm, it is a complete kit and is provided with a ready-to-run chasis, powered by a K's motor. The motor gives a geared drive on to both axles and the kit is made from white metal parts which can be either glued or soldered together. It costs **84s.**—See Photo 7.

Another new kit from G.E.M. is the OO Gauge L.N.W.R. 'Jumbo' locomotive which was on view for the first time at the Merseyside exhibition in October and which should be available for Christmas. This is also a complete kit and both chassis and wheels are supplied. The necessary XT 60 motor is all that is needed to complete the kit. At the time of writing, no price was available.

One more kit from G.E.M. which is already available, is a kit for a Midland Railway 4-4-0 '999' class locomotive. This is also made from white metal and it gives the alternative of being built into a Midland Railway 'Class 3' locomotive by using the alternative cab side provided. The kit costs **£3 19s. 6d.** and fits on to the Tri-ang LI chassis.

—See Photo 8.

CORGI GIFT SET

Agricultural equipment enthusiasts will love Corgi Gift Set No. 47 which comprises the massive Ford 5000 tractor towing a working conveyor on a four-wheeled trailer with swivelling front axle. A handle on the conveyor works the conveyor belt, which can be moved in either direction, and the gears of the mechanism can be seen through their transparent casing. The tractor itself includes steering, plough lifting mechanism, towing hook, jewelled headlights, plated exhaust stack, and authentic Ford livery. To complete the picture, a burly farmer is at the wheel of the tractor, and sacks are provided for use on the conveyor. Overall length of complete assembly: 8¾ in. Price **17s. 6d.**

—See Photo 3.

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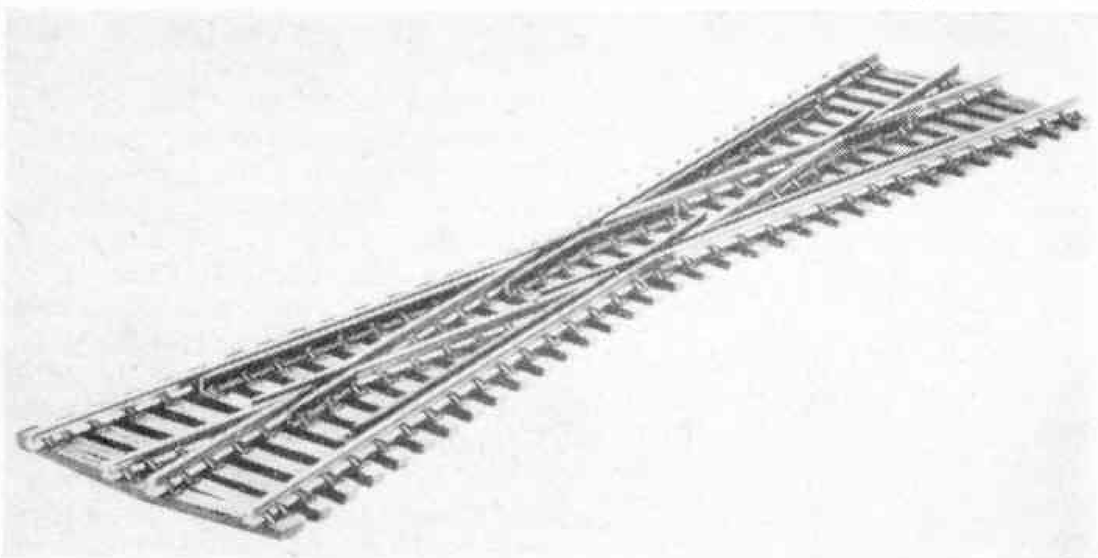

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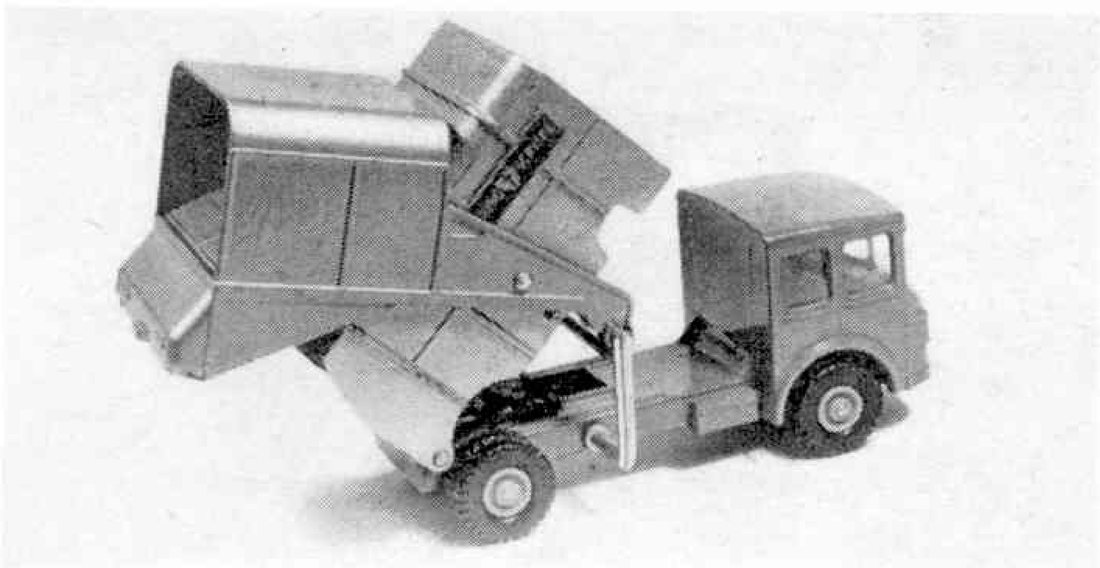

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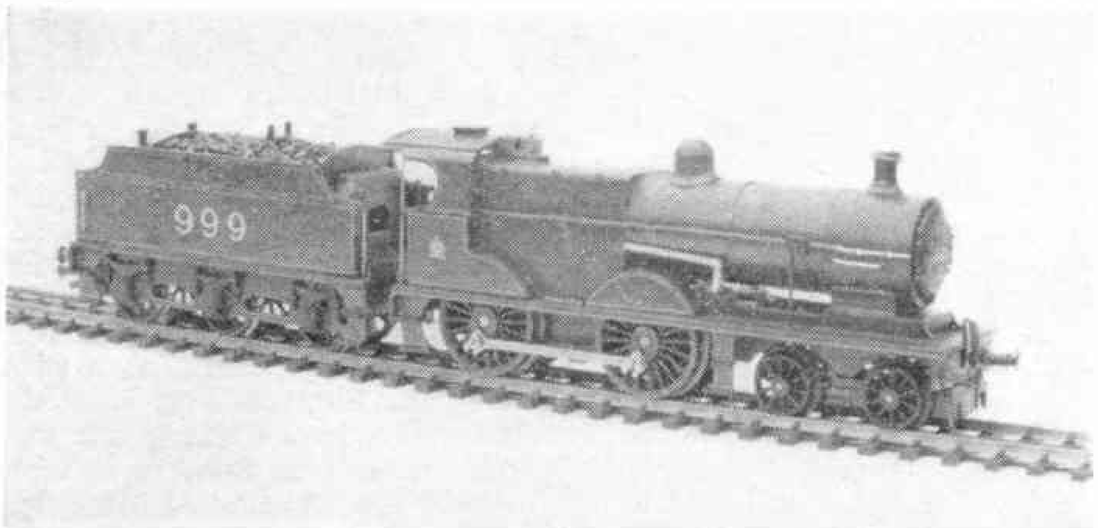

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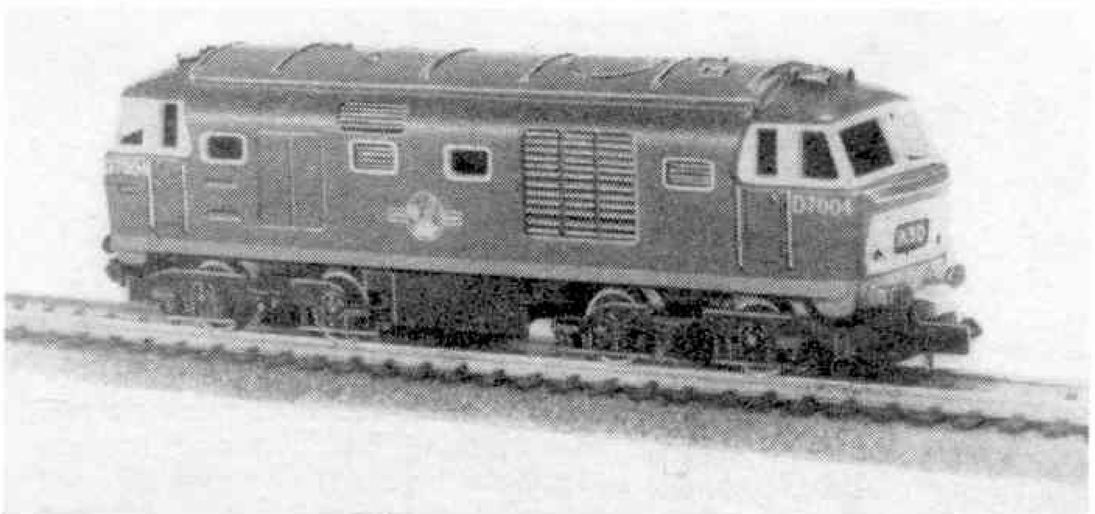
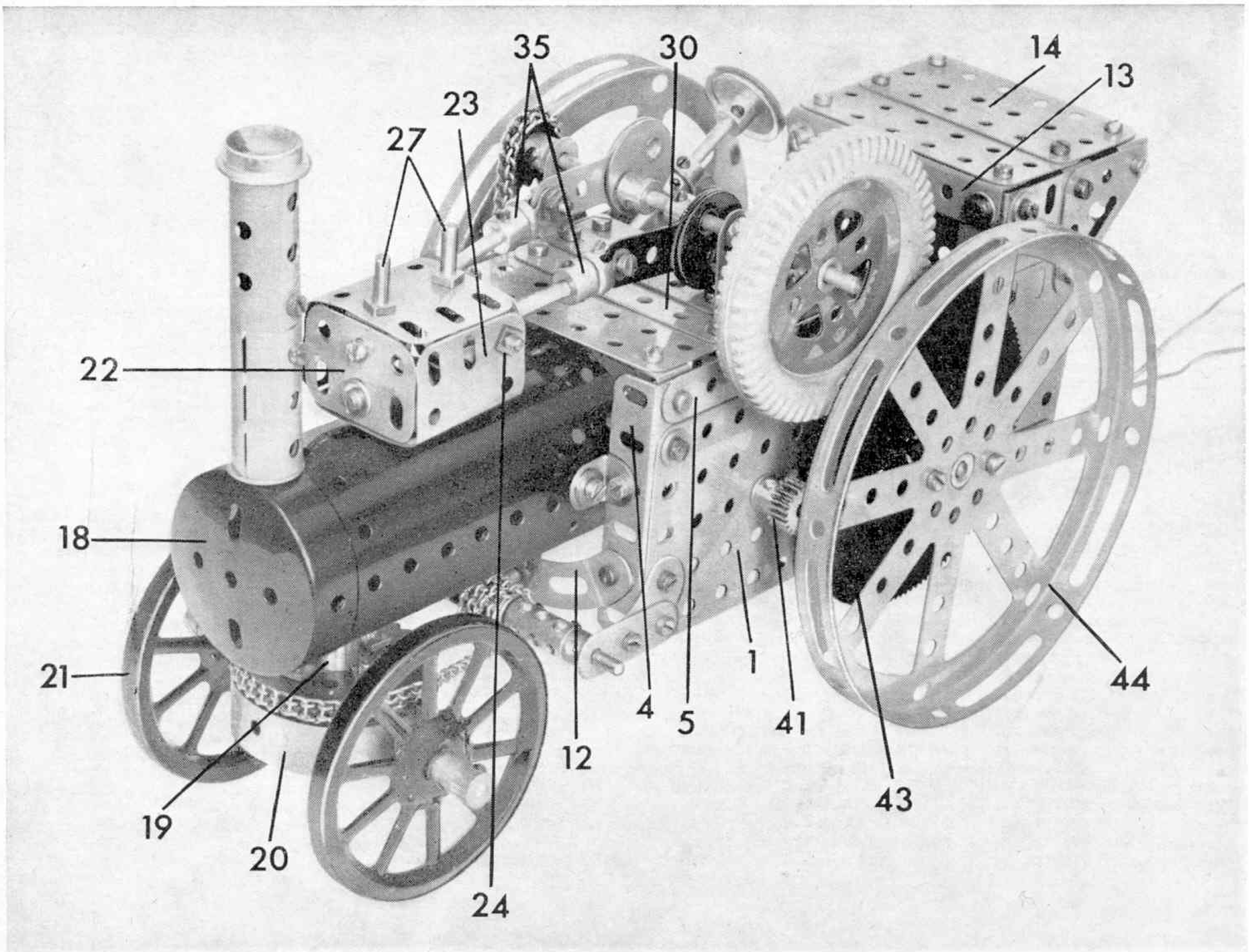




The old faithful

by 'Spanner'

ON numerous occasions in the past we have featured that good old standby of the Meccano model-builder—the Traction Engine. Big ones, little ones, fat ones, thin ones, complex ones, simple ones, just about every conceivable shape and size—they've all appeared at some time or another, yet we still get plenty of requests for further examples. I am convinced, in fact, that the majority of British people, no matter how young they are, have a deep-rooted nostalgia for the fast-disappearing era of the steam engine, which is why these requests keep rolling in.

I am not at all sure of the reason for this keen interest in steam, but I do know that it exists and even count myself very much among the interested parties! Perhaps it is because Britain was the first to successfully harness the power of steam or because Britain owes her position in the world to the 'industrial revolution' made possible by successful exploitation of steam power. More probably, however, it's simply because there's something tremendously fascinating about the musical clanking of moving machinery accompanied by the sibilant hiss of escaping steam, and the whole thing surrounded by the warm, pleasing odour of hot oil and smoke.

Unfortunately, the pleasure evoked by steam-powered machinery will soon be a memory. Traction engines are now virtually extinct, except for a few examples preserved by enthusiasts, and British Rail's mighty steam locomotives are hurriedly being replaced by diesel and electric units, but this does not prevent Meccano builders from producing miniature versions of the old machines. The Traction Engine featured here is something for you to have a shot at.

Admittedly, it's not a very complex or detailed example of a traction engine, but it does reproduce the general lines of its prototype and it's not difficult to build. It's based, incidentally, not on the large Showman's type of engine, but on the smaller 'work horse' machine used particularly by farmers.

BODY

As both sides of the body are identical I need describe only one of them. A 4½ in. by 2½ in. Flat Plate 1 is extended five holes rearwards by a 4½ in. Angle Girder 2, at the same time fixing a 3 in. Strip 3 to the inside edge of the Plate. Fixed to the inside forward edge of the Plate is a 3 in. Angle Girder 4 which is connected to Strip 3 by a 4½ in. Strip 5. The lower Bolts securing Angle Girder 4 also hold a 1 in. Corner Bracket overlaid by a 1½ in. Strip 6.

At the rear, a 3½ in. Angle Girder 7 and a 2½ in. Angle Girder 8 are bolted to the vertical flange of Girder 1, at the same time holding in position two 2½ in. by 1½ in. Flexible Plates 9, overlapped three holes. A 1½ in. Corner Bracket 10 is bolted to these Plates as shown. At this stage the sides can be joined. Two 3 in. Strips 11 are bolted between Angle Girders 2, while a 3 in. Stepped Curved Strip 12 is bolted between Angle Girders 4. Angle Girders 7 are joined by a 3 in. Angle Girder 13, to which a compound 3 in. by 2½ in. Flat Plate 14, built up from two 3 in. by 1½ in. Flat Plates, is bolted. This plate is also secured to the sides by Angle Brackets, as is a similar compound 3 in. by 2½ in. Flat Plate 15 at the front end of the body. A compound 3 in. by 2½ in. Flexible Plate 16 is now built up from two 2½ in. by 2½ in. Flexible Plates laid side by side and connected by two 3 in. Strips. This is bolted between Angle Girders 8, whereas two 2½ in. by 1½ in. Flexible Plates 17, overlapped four holes, are attached to Corner Brackets 10 by Angle Brackets.

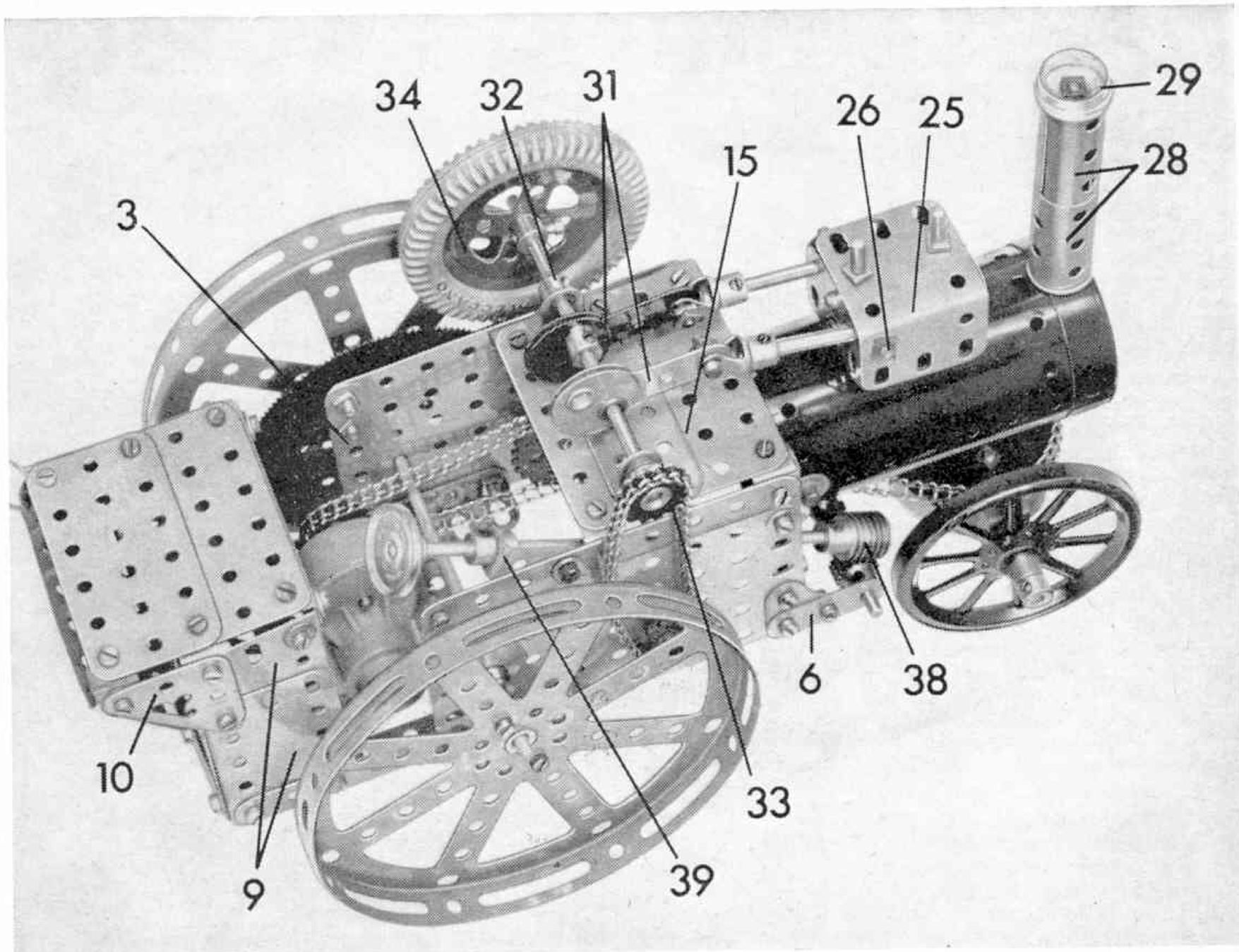
BOILER AND ATTACHMENTS

It is advisable to build up the valve gear, chimney and front axle, and fit these to the boiler before attaching the boiler to the body. The boiler itself consists of a Meccano Boiler fitted with a Boiler End 18 at the front. Bolted to the inside of the Boiler, at its lowest point, is a Crank arranged so that the hole in the boss of the Crank lies over the third hole from the front of the Boiler. Loose in the boss of the Crank is a 1½ in. Rod, held in place by a Collar above the Crank and a 1 in. Sprocket Wheel 19 below the Boiler. A 2½ in. by ½ in. Double Angle Strip is fixed to the face of this Sprocket Wheel, after which a Boiler End 20 is secured to the underside of the Double Angle Strip by 1⅛ in. Bolts

passed through the Boiler End and into the Sprocket Wheel. A 4½ in. Rod is journalled in this Boiler End and in the lugs of the Double Angle Strip. Loose on this Rod are two Spoked Wheels 21, held in place by Collars.

The valve gear is simply built up from two 1½ in. Flat Girders 22, the upper and lower edges of which are joined by two 1½ in. by 1½ in. Double Angle Strips. A 2½ in. by 1½ in. Flexible Plate 23 is bent to shape over the centre of the Boiler where it is secured in position by bolting the Flat Girder 22 Double Angle Strip arrangement to the Boiler. An Angle Bracket is fixed to the inside of the Plate by Bolt 24. Another 2½ in. by 1½ in. Flexible Plate 25, to which a second Angle Bracket is fixed by Bolt 26, is attached to the upper Double Angle Strip by Threaded Pins 27, then the Plate is bent to shape, as shown.

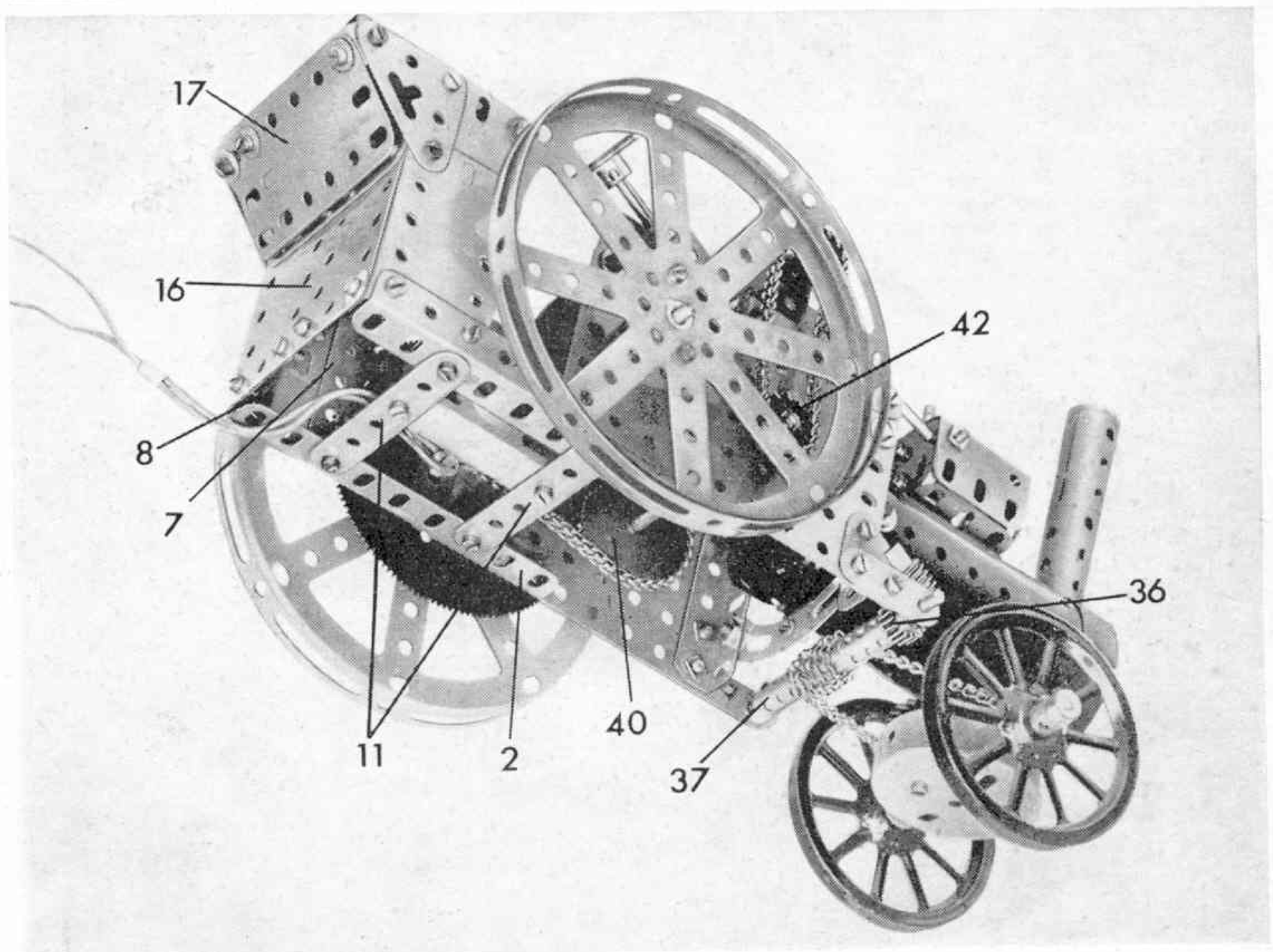
Finally, a chimney is built up from two Sleeve Pieces 28, connected on the inside by a 3 in. Narrow Strip. Placed in the upper Sleeve is a ¾ in. Flanged Wheel 29, in the boss of which a 3½ in. Screwed Rod is fixed. A ¾ in. Washer is added below the Sleeve Pieces and the Rod is passed through the Boiler End and Boiler to be secured by a Nut. The completed boiler is now attached by Angle Brackets to Angle Girders 4 and Stepped Curved Strip 12.



CRANKSHAFT AND STEERING

In constructing this part of the model a 2½ in. by 1 in. Double Angle Strip 30 is bolted to Compound Flat Plate 15. Journalled in the lugs of this Double Angle Strip is a 4½ in. Rod, carrying two Single Throw Eccentrics 31 and held in place by a Collar 32 and a ¾ in. Sprocket Wheel 33, the latter spaced from the Double Angle Strip by two Washers. A 2 in. Pulley, with Motor Tyre 34 is mounted on the other end of the Rod to represent the flywheel. Lock-nutted to the arm of each Eccentric is an End Bearing 35, carrying a 2 in. Rod which slides in rearmost Flat Girder 22 and the lugs of the Angle Brackets held by Bolts 24 and 26.

Mounted in Strip 6 is a 4 in. Rod carrying a ½ in. Pinion 36, three Couplings 37 and a Collar. Pinion 36 engages with a Worm 38, journalled in off-side Angle Girder 4 and in a 1 in. by ½ in. Angle Bracket 39, bolted to Strip 5, and held in place by Collars. A 1 in. Pulley with boss is fixed on the end of the Rod to act as the steering wheel. A length of Sprocket Chain is wrapped tightly three times round Couplings 37, and is taken round Sprocket Wheel 19, after which the ends of the Chain are joined. Note that this Chain should be as tight as possible.



MOTOR AND DRIVE

Power for the Traction Engine comes from a Meccano Emebo Motor bolted to Strips 11. A ¾ in. Sprocket Wheel on the Motor output shaft is connected by Chain to a 1½ in. Sprocket Wheel 40 fixed on a 4 in. Rod, journalled in Flat Plates 1. This Rod is held in place by a ½ in. Pinion 41 and a ¾ in. Sprocket Wheel 42 that is connected by Chain to Sprocket Wheel 33 on the crankshaft. Pinion 41, in turn, meshes with a 3½ in. Gear Wheel 43 fixed on the rear axle, which is a 5½ in. Rod held in place by the Gear Wheel at one side and by a Collar at the other. Mounted on each end of the axle is a 8-hole Bush Wheel to which a Hub Disc 44 is bolted.

PARTS REQUIRED

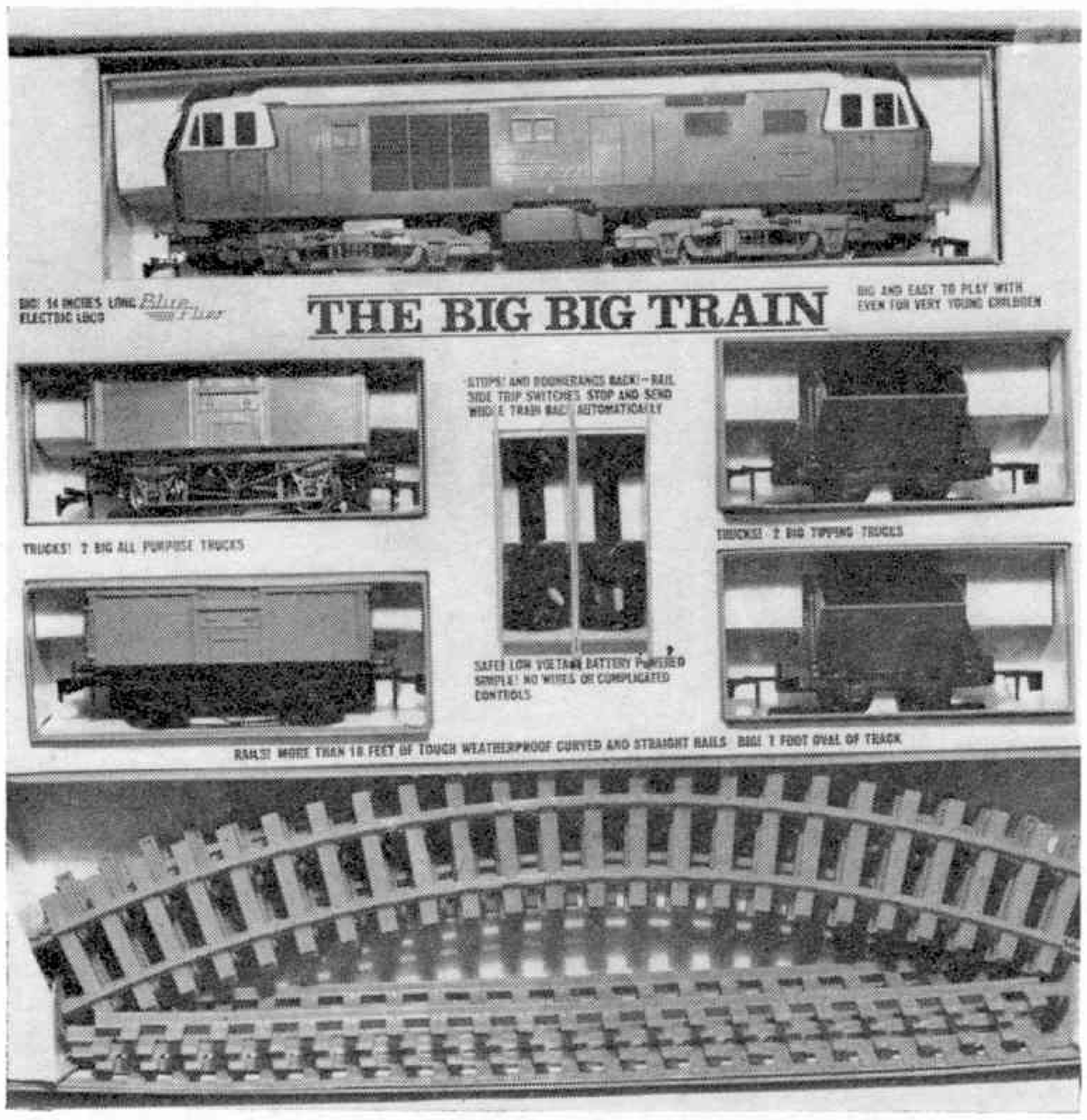
2 of No. 2a	1 of No. 14a	1 of No. 27b	8 of No. 59	2 of No. 103h	2 of No. 162a
6 of No. 4	2 of No. 15b	1 of No. 32	1 of No. 62	4 of No. 111c	2 of No. 163
2 of No. 6a	2 of No. 17	100 of No. 37a	3 of No. 63	2 of No. 111d	2 of No. 166
2 of No. 9a	1 of No. 18a	88 of No. 37b	4 of No. 73	2 of No. 115	10 of No. 188
2 of No. 9b	2 of No. 19a	19 of No. 38	1 of No. 80a	2 of No. 118	1 of No. 235a
3 of No. 9c	1 of No. 20a	1 of No. 38d	1 of No. 89a	2 of No. 130a	1 Emebo Electric Motor
2 of No. 9d	1 of No. 20b	1 of No. 46	1 of No. 94	2 of No. 133	
15 of No. 12	1 of No. 22	2 of No. 48	1 of No. 95	2 of No. 133a	
1 of No. 12b	2 of No. 24	1 of No. 48a	1 of No. 95a	1 of No. 142a	
1 of No. 14	2 of No. 26	2 of No. 53a	3 of No.96a	1 of No. 162	

BIG BIG TOPICS

ONLY six months ago when we first made an announcement about the new 'Big Big Train' Set we predicted that it would revolutionise 0 Gauge and give a much needed fillip to the scale. In many ways we have been proved correct, for many 0 Gauge modellers are now using items in the Tri-ang 0 Gauge range in various guises on their 0 Gauge layouts. The Tipping Wagon, for example, I have seen used on a scale 0 Gauge Quarry railway in a repainted form and fitted with new wheels. It is remarkable how effective a train of eight of these, rattling along the track can be. The Mineral Wagon also, is of great use to any scale modeller, since it can either be re-built, as shown in our last 0 Gauge article, or simply repainted to taste, since it is itself a scale model.

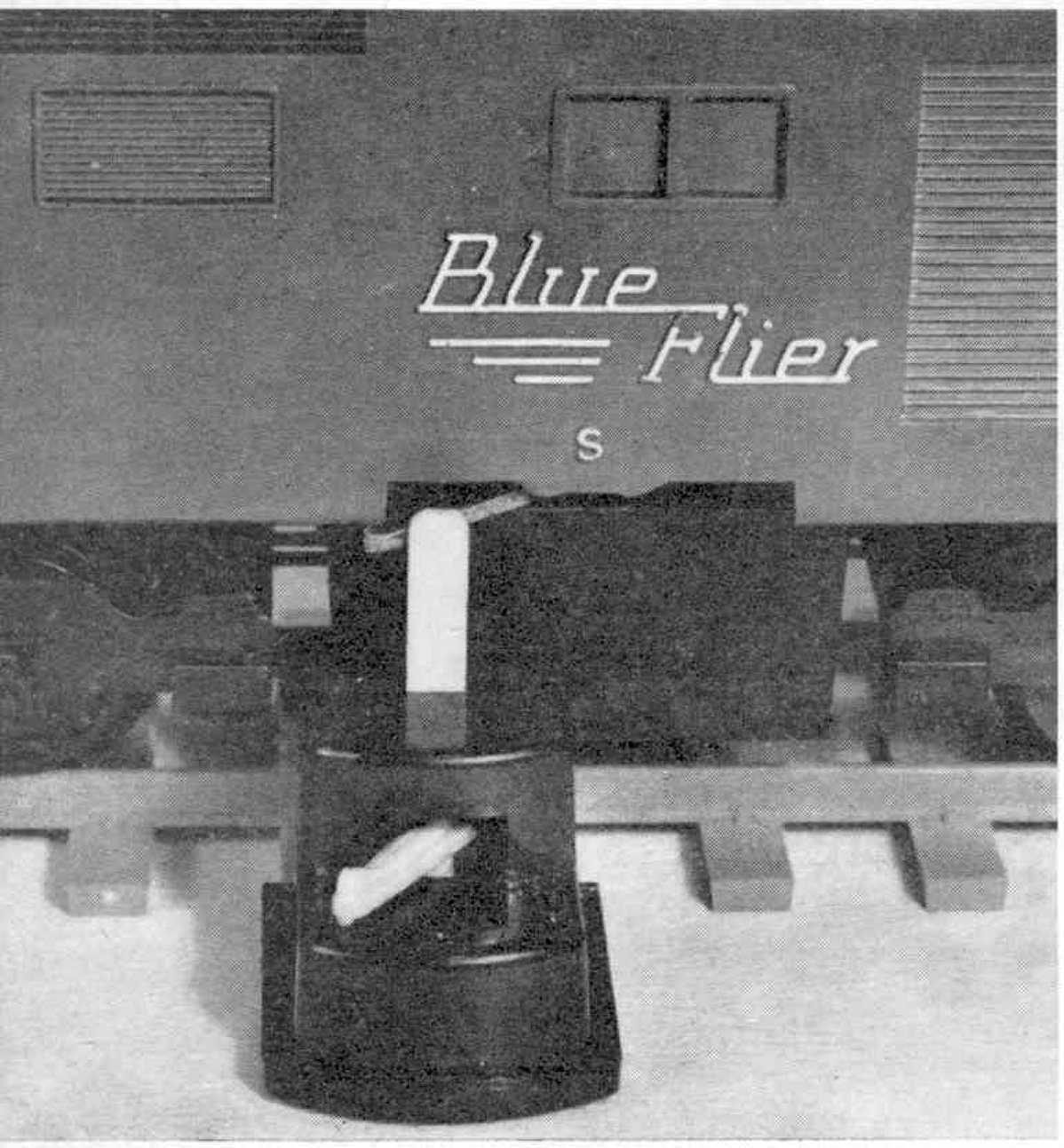
It is not, however, of the detailing of individual items that we wish to talk this month, but the basic train sets. These two sets will, for many people, be a first introduction to 0 Gauge and they both make excellent Christmas presents. The 'Blue Flier' locomotive, a model of a B.R. 'Hymek' Bo-Bo engine, is supplied both separately and in the two sets, which also contain sufficient plastic track to form an oval. Two and four wagons are in addition packed in both sets.

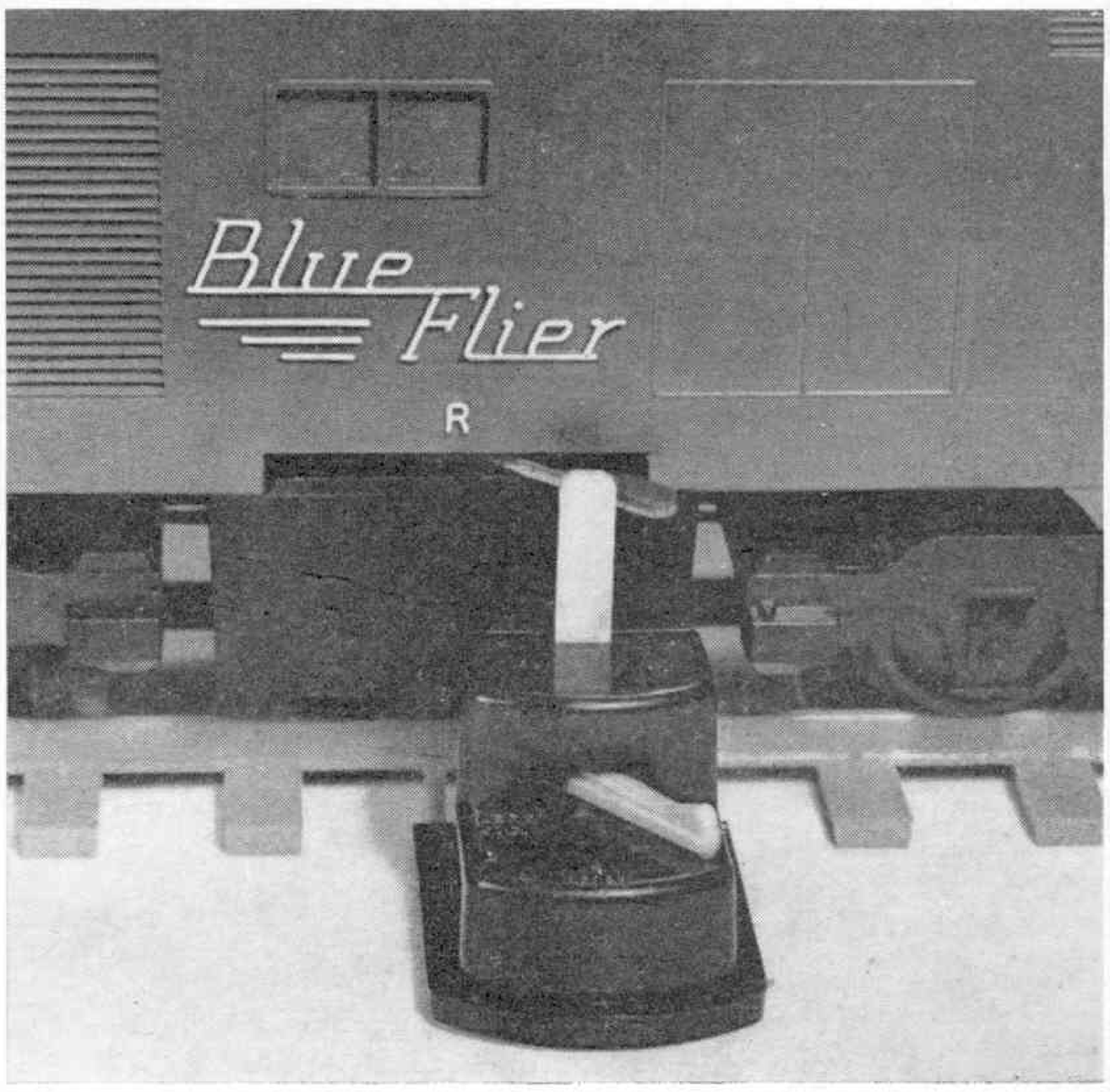
The locomotive, it will be remembered, is battery operated and will, therefore, require no power unit. It operates from four 1½ volt single cell dry batteries which have to be bought separately and are not included in the set. Ever-Ready U2 or equivalents can be used, but we would recommend instead, the Ever-Ready HP2 batteries, which will give a much longer life between battery changes. These are fitted in the locomotive itself, under the white roof which has to be lifted off by removing the screw at either end. Underneath is a cavity and the batteries are fitted, two at each end and facing each end of the locomotive. It is most important that they face in the correct direction as shown at the bottom of the battery compartments. It is always a good idea to take out your batteries when the locomotive is out of use for a long period. This helps to prevent damage to both the batteries and the locomotive. The engine can be operated either on or off the track, which is ideal for youngsters, and you will notice that the two bogies are connected to the locomotive by a rubber band. This is to prevent them both swinging and also to maintain a straight line of travel when the train is not on the track. (It should, of course, be taken off if the train is to be run on the track.)



One item included in both sets that has not as yet been mentioned, is the trackside switch. Intended to operate the two control switches situated on the sides of the locomotive, this can stop and reverse the direction of the locomotive. On one side is a lever marked 'S' which has to be set in a central position to start the locomotive. On the other side of the engine is a second lever marked 'R'. The direction of travel of the locomotive is determined by the position of this lever. Both switches can be automatically operated by the trackside switch. If the horizontal linking lever on this switch is in the central 'Free' position, the upright lever will move in either direction and will have no effect on the locomotive. By turning to 'right lock' or 'left lock', the lever will be locked so that it moves the switch on the locomotive when travelling to the left or right respectively, as viewed from the switch. This means that the switch can be used at either side or at either end of the track. A most useful accessory, this is also available separately, as indeed are all of the other items in both 'Big Big Train' Sets.

The locomotive can be made to stop automatically when the trackside switch is set to either left or right lock to move the 'S' lever on the locomotive. The engine can also reverse automatically when the trackside switch makes contact with switch 'R' on the opposite side of the locomotive





SCRATCH BUILDING PART 3 BY GODFREY ARNOLD

FINISHING YOUR FERRARI 250P

LAST month I told you how to build a 250P Ferrari to a stage where it could be tested. Once you are happy with the road-holding the car can be finished, for it should then have suffered the worst of its accidents. The following advice, although applied specifically to this car, can be taken for any other model.

The first step is to remove any scratches that the body may have got, after removing the chassis, with 400 grade rubbing down paper (obtainable from garages and good hardware stores), used wet. Once all scratches have been removed, the body should be rinsed off, allowed to dry and the head fairing stuck on. Once this is firmly fixed, rub the body over with enamel thinners, then wipe it off with a clean rag. Plastic, when wiped with an ordinary cloth, will tend to become electrically charged so rub it over lightly with an anti-static cloth, as used for photographic purposes, and mount it on a block of balsa wood, a match box or something similar and it is ready for spraying or brush-painting.

If the car is to be sprayed, it is useful to make up a 'booth' for this. I used an old baked beans carton which has had one side cut and folded up. A turntable, fixed to the bottom, consists of a windscreen wiper pinion box with a piece of hardboard fixed to the top, but almost any similar pivot would do—you could even make one from Meccano! A piece of string is fixed to the turntable and wound a few times around the base so that, when spraying, if the string is pulled, the body will revolve, so that it does not have to be handled and one does not end up with hands and cuffs to match the car.

Shake the spray can vigorously for **at least** a minute, and then, in a well ventilated room, practice on an old body. Hold the nozzle 12-15 inches from the model and move it up and down at the same time pulling the string so that the turntable revolves slowly and the model receives an entire **but light** covering. Examine it to make sure that it is all covered, paying particular attention to the undersides.

Any hairs or pieces of dust can be removed with a fine brush but, if much trouble is experienced with this, it must be floating around in the air and being carried to the surface in the spray mist. If you boil a kettle of water in the room, most of it will settle with the steam.

Further coats of spray may be applied within a few minutes of each other and as soon as you are satisfied that the car has an even covering put it away, into a dust free cupboard or large box, for at least twenty-four hours. The Ferrari is finished in Humbrol sea blue and white and was sprayed white all over to start with.

Once the first application is perfectly dry further colours may be applied. Mask off the area that is to remain the first colour, using cellulose tape firmly applied, and respray the rest as you did before. By applying such a double thickness of paint a certain amount of detail is lost, but if the two areas are masked alternately, either a ridge or an unsprayed line will result. If one should be spraying another model where lines, such as door surrounds, are indented rather than raised, detail can be retained to a certain extent by enlarging the indentations with the point of a modelling knife. Once the second coat is dry the masking may be removed and the model is ready for detail finishing.

In the case of our 250P, the next stage is to scratch away some of the paint underneath the driver and stick him into position, then paint the whole cockpit area and the front air intake matt black. Once this is dry, paint the spokes of the steering wheel silver, the driver's gloves matt brown and his overalls matt blue. Stick his head on and paint the face flesh colour, goggles silver and his helmet any colour that you like. When all this is dry enough to accept gentle handling, stick on the windscreen and headlights, first removing paint where necessary, and put a spot of red enamel on the tail lamps, allow to dry and apply the numeral transfers. The completed model should then be put away for a further twenty-four hours to allow it to harden, whereupon it is ready to win.

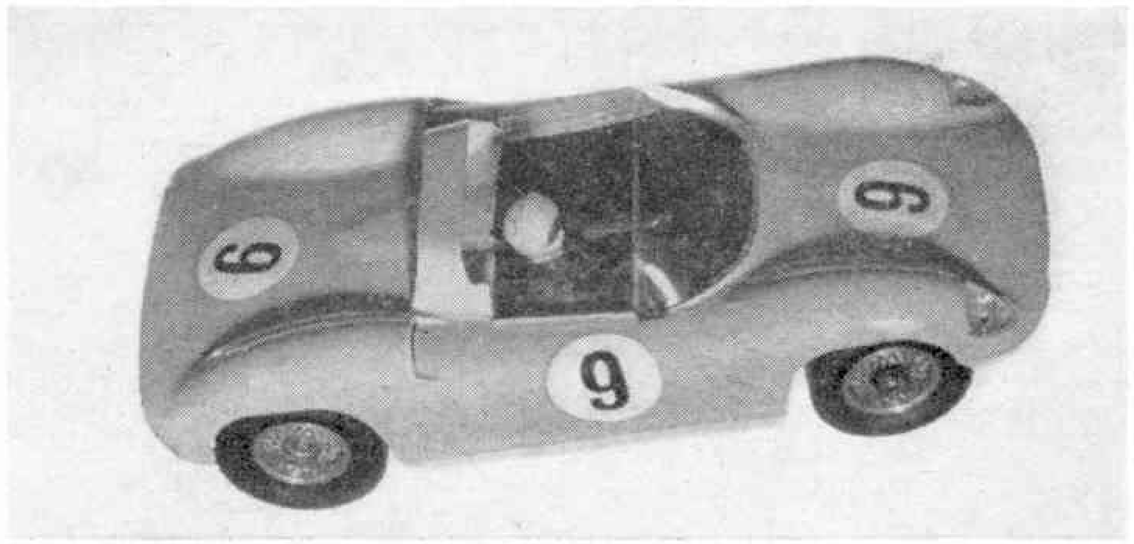
For an extremely tough finish, Humbrol Polyurethane spray may be applied. This is a special type of clear varnish in an aerosol which should be sprayed on before fixing windows and applying of matt finishes. I use this for most of my cars, especially those on which I retain the original colour of the shell, for it helps to eliminate the plastic appearance. Where the original colour is a red this can be made less translucent by painting the interior matt black.

If you prefer to apply paint by brush, make sure that you use a good quality one that will not lose its bristles, soak it in thinners for an hour or so and give it a good wiping dry with a clean rag before you use it. For best results, varnishes should always be sprayed, and this is essential if they are used on metallic colours.

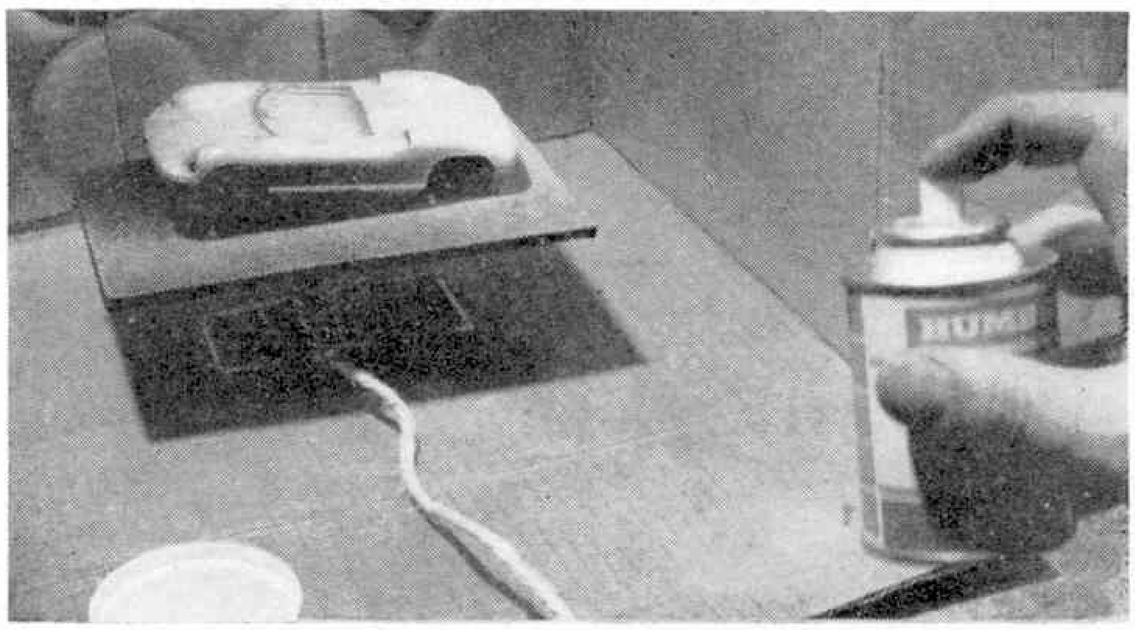
Do not be discouraged if your first attempts at spraying do not give the results that you had hoped for. A certain amount of experience is needed for absolutely perfect finishes but after very few tries your results will depend only on the amount of trouble you take.

Main points to remember: 1. never try to 'cover' in one coat or the paint will run; 2. allow time for one coat to dry before applying the next one or handling the model.

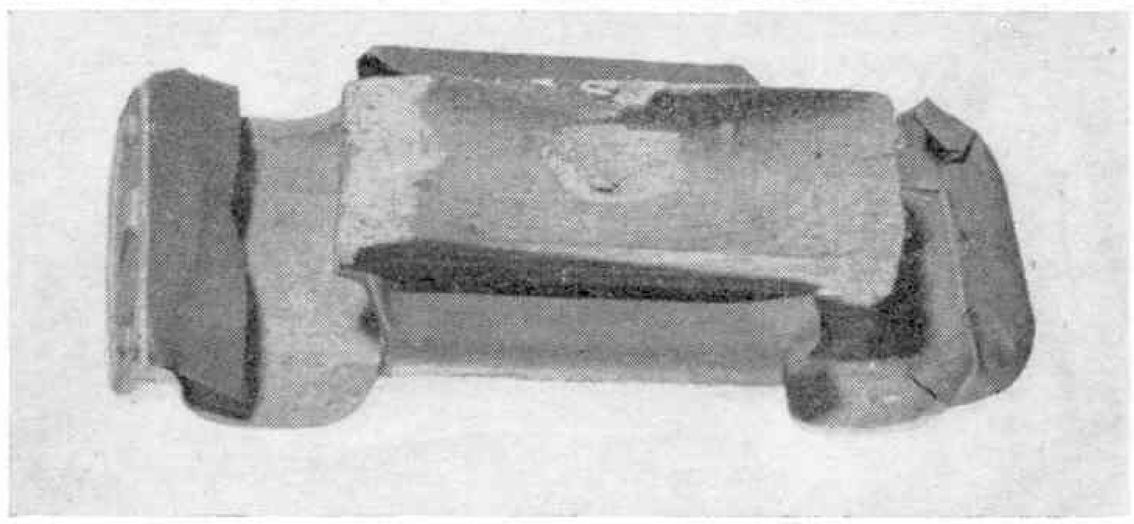
The finished car. Note that it is assembled with the driver on the right as with all racing Ferraris



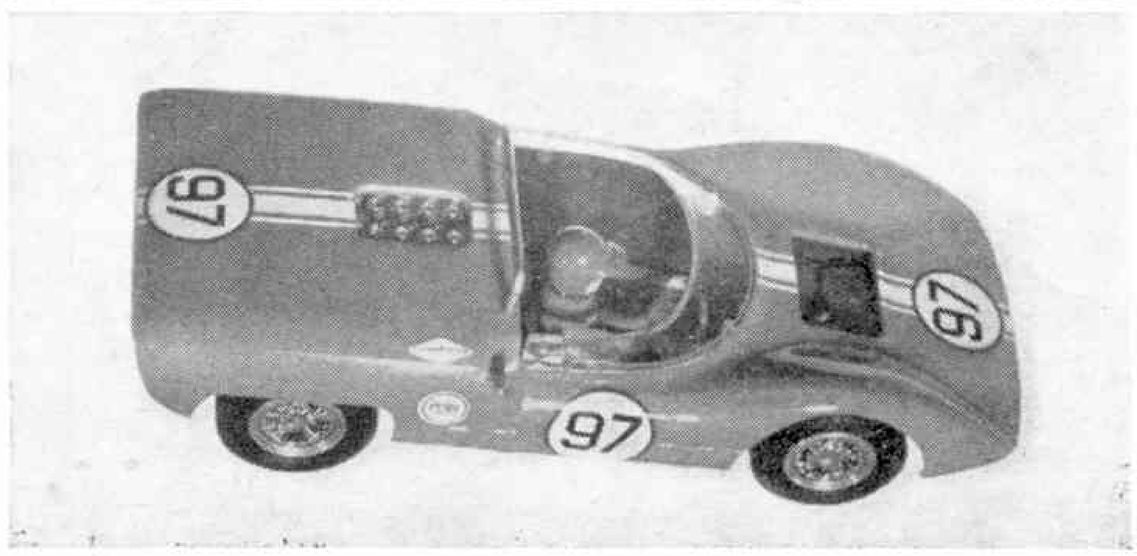
Spraying in progress. The piece of string is being used to revolve the car and the aerosol can is being moved up and down



The parts of the car to be kept white are masked here. The block of balsa wood is pushed over the chassis retaining screw

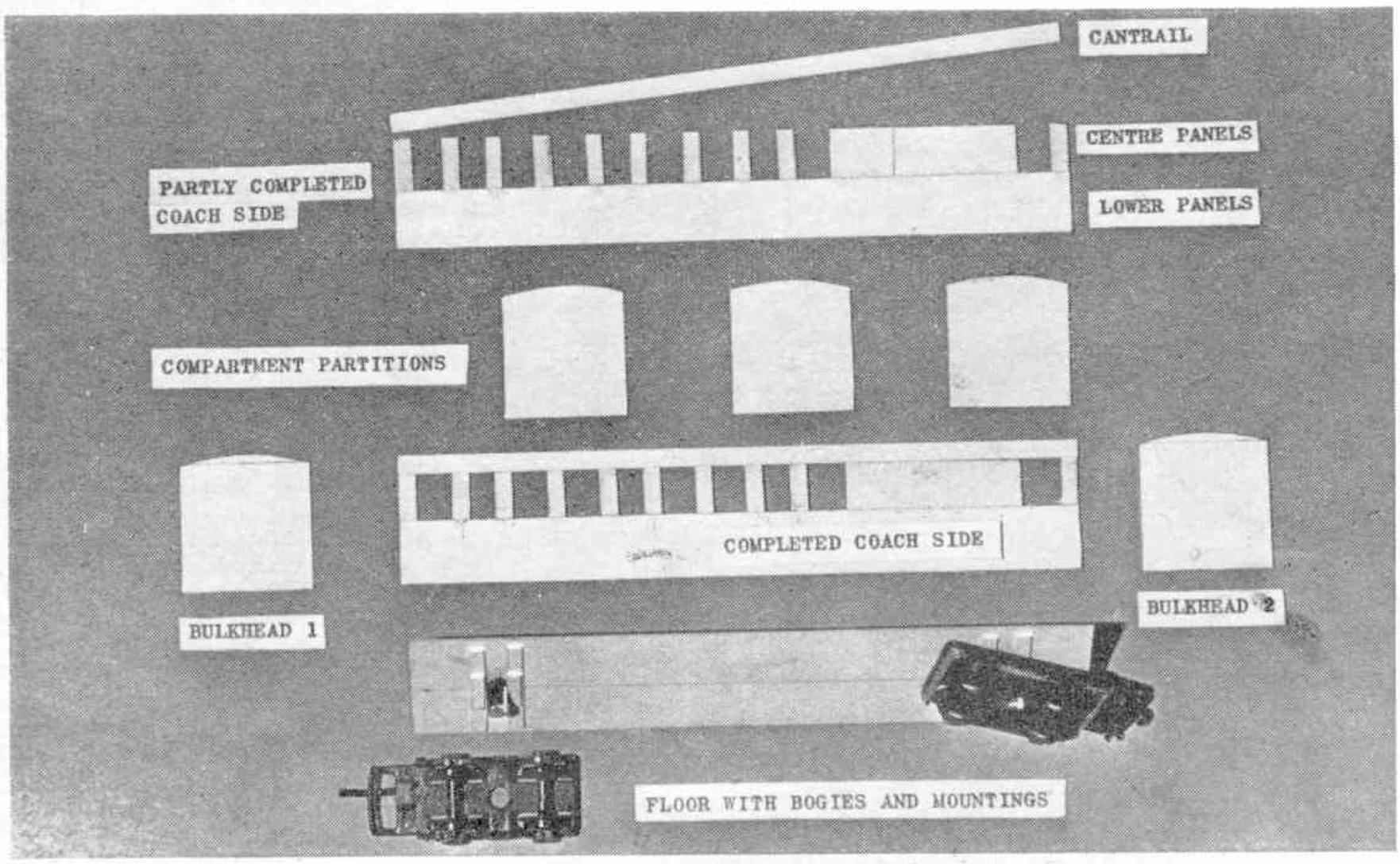


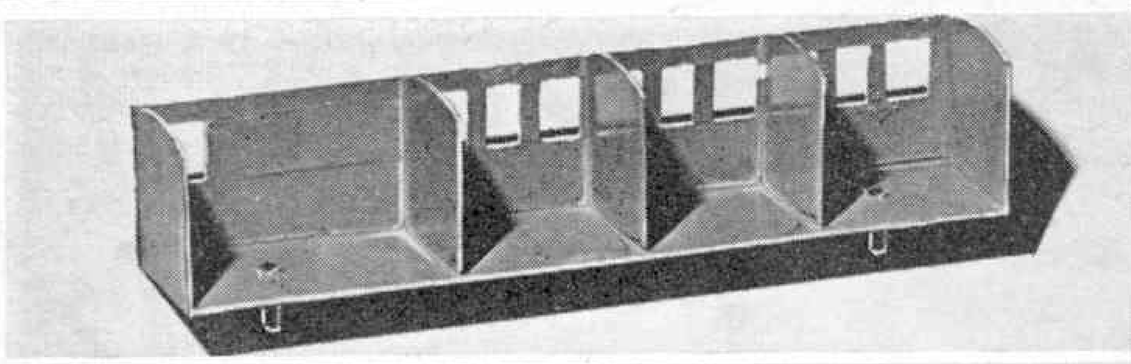
This Revell Cooper-Cobra has been left its original colour but has been sprayed with Humbrol Polyurethane finish to preserve the transfers.

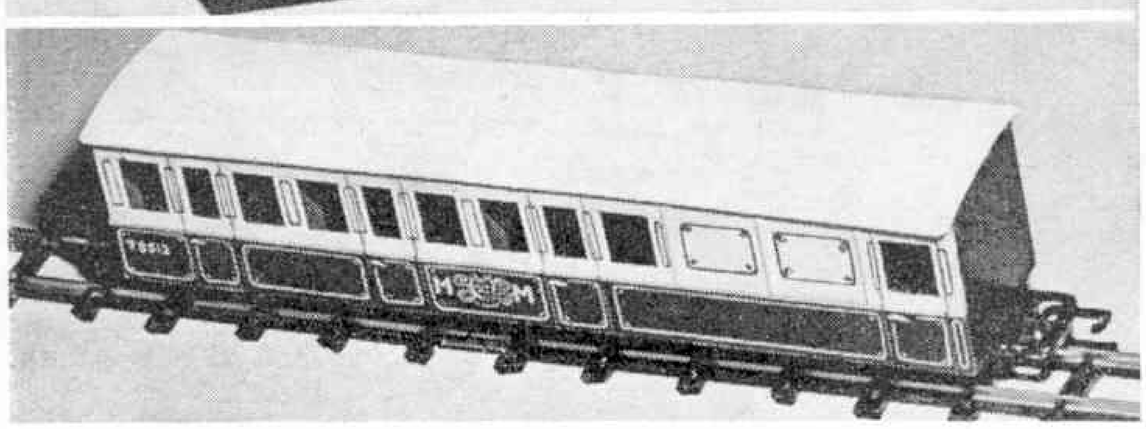


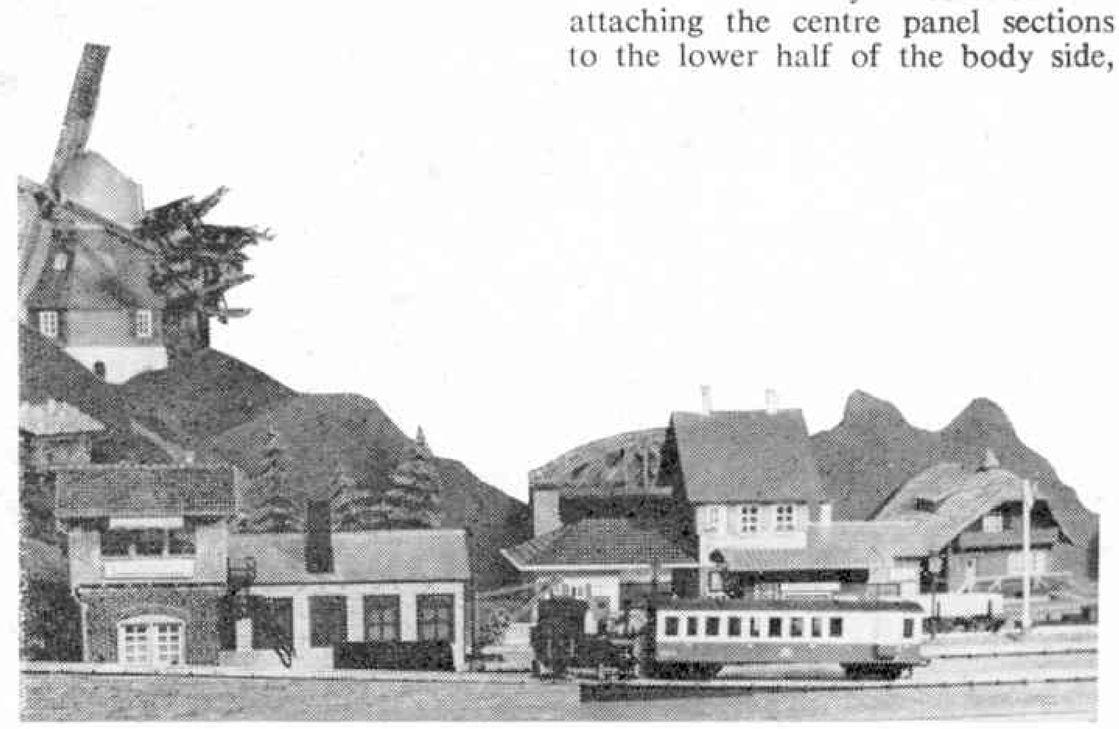
a narrow gauge coach for your feeder line

We were so taken with Mike Trestrail's little coach that we simply had to make one for ourselves. So we took some pictures during the process and can therefore vouch for the simplicity of its construction. The photos prove its realism.









Mike Trestrail's original coach, seen here on his Norwood Junction Narrow Gauge Railway, being hauled by one of the N.J.N.G. Eggerbahn locos

A GREAT advantage of narrow gauge railroading—which applies to the real thing as well as the model—is that all kinds of rolling stock can be marshalled and operated behind a usually asthmatic and wheezing locomotive.

Such practice is commonplace on my own NJNG—Norwood Junction Narrow Gauge—Eggerbahn layout, but in fairness to the manufacturers, the locomotives are all one hundred per cent sound in wind and limb! And, I might add, very carefully maintained.

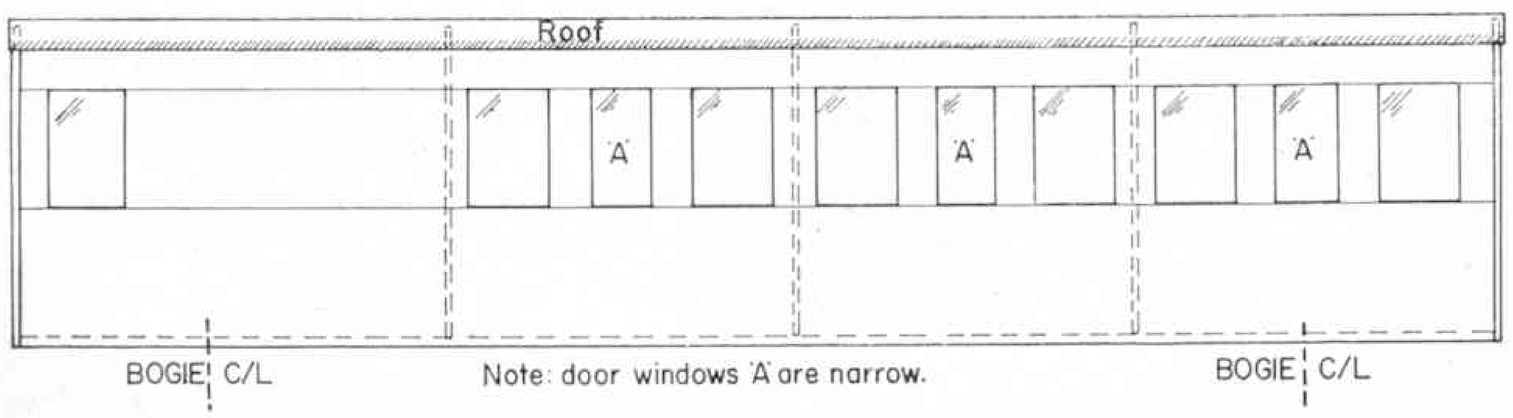
To provide facilities for the holiday crowd which will shortly flock in from the planned—when funds permit — independent HO section, which is scheduled for completion next year — some extra narrow gauge, bogie carriages were required.

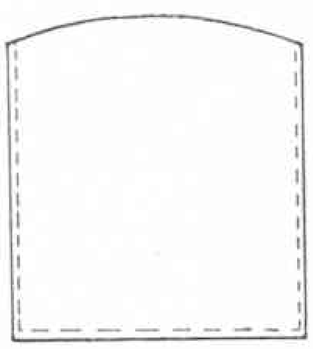
After a check on standard Festiniog practice, a sketch was produced of a bogie brake scaling approximately 35 feet long with three third class compartments. Next a sheet of 0.030 in. thick styrene was obtained and production of the first unit put in hand.

Construction proved to be extremely simple providing the golden rule of model making was followed, namely, complete accuracy in marking and cutting out. If a part does not come out as required, throw it away and start again. The sheet is cheap enough and the reject can be used for smaller components or for reinforcing joints in need of stiffening.

The first and most important operation was construction of the two body sides and these were built up from a series of accurately cut strips which were assembled with jointing fluid, applied with a small brush, the full-sized drawing (Fig. 1) giving the dimensions of these components.

Initial assembly consisted of attaching the centre panel sections to the lower half of the body side,





Cut 2 ends to outer line.

Cut 3 compartment dividers to inner dotted line.

Fig. 1 full size

the window spacings being set with the aid of a thin card gauge cut to the width of the window openings. Two window dimensions were involved, those on the doors being slightly narrower than the others. When the lower and centre units were assembled, the top cantrail was positioned and a small drop of jointing fluid applied. The assembly was then turned over and stiffening strips of $\frac{1}{16}$ in. wide sheet fitted in place to hold the top, centre and bottom sections securely in place. These were cut to fall $\frac{1}{32}$ in. short of the upper and bottom edges of the carriage sides, to allow sufficient room for a floor and ceiling section to be added.

After checking both sides for accuracy—a steel square and rule are essential—the coach ends and compartment divisions were cut out. The ends measure 1 in. wide and are $1\frac{1}{32}$ in. tall, the roof profile being curved to allow a height at each end of $\frac{15}{16}$ in., the same measurement, of course, as the sides. Any slight variations in the roof curve were taken care of by careful filing, but great care was necessary to ensure that all the units were identical in profile, otherwise the coach body would be out of square after assembly. Three compartment divisions were required each being the same size as the ends, but after cutting out, they were reduced by the thickness of the sheet on the sides and bottom edges. After finishing the ends and divisions, a floor and ceiling section were cut from the sheet, both measuring the length of the sides and the width of the compartment divisions, namely 1 in., minus the thickness of the two side members.

So now we have two sides, two ends, three compartment divisions, a floor and a ceiling; assembly is the next stage. To simplify matters this is tabulated as follows:

1. Stick floor to inside bottom edge of one side.
2. Stick compartment divisions to floor and side, making certain all is square.
3. Attach second side.
4. Fit ends to coach and floor assembly and join.
5. At this stage strengthen all joints with plastic sheet offcuts.
6. Seats can be fitted in the compartments if required, made up from $\frac{1}{4}$ in. wide plastic card strips, but when the ceiling is in place they are barely visible.
7. When assembled the compartment interiors can be painted. Blue and red are good colours.
8. Allow the paint to dry, cut strips of transparent plastic sheet for windows—they should be slightly wider than the windows to fit snugly between the side stiffening strips—and stick in position with small blobs of contact adhesive. Take care not to use too much adhesive, otherwise the plastic sides will be softened.
9. Fit ceiling sheet in place.

Operation (8) virtually completes the coach assembly except for the roof, bogie pivots and panelling and details which can be as elaborate as we wish.

The roof of the model illustrated was cut from 0·020 in. thick sheet, allowing $\frac{1}{16}$ in. overlap at the ends and $\frac{1}{32}$ in. at the sides. It was precurved on a broomstick handle before fitting in place. The curved top edges of the compartment divisions were then coated with plastic cement and the roof placed in position and secured with a number of elastic bands to keep it secure and jointing fluid applied to the coach side and end top edges. To ensure a perfect job, the work was left overnight with the rubber bands over the roof to allow the joints to thoroughly harden out.

The bogies for use with this particular model were Lone Star coach units, which will run with perfect ease through Eggerbahn points and are very cheap to buy.

The bogie pivots were made up from two small lengths of circular sprue from a plastic kit. The sprue was cleaned up with a file and two pieces approximately $\frac{1}{4}$ in. long were cut off. The bogies were positioned along the centre line of the floor with the coupling joint clearing the coach end. The bogie pivot centres were marked on the floor with a pointed nail and holes were made with a sharp tip of a small file through the floor.

Each hole should be made just large enough to allow the round 'sprue' pivots to enter as a tight fit. When this point was reached, the pivots were cemented in place with jointing fluid. It may be necessary to open out the bogie pivot holes with a file to fit the pivots, but this is a simple operation. If necessary, two strips of 0·020 in. thick sheet should be located as bolsters around the pivots to pack up the bogies and to stop the wheels rubbing against the coach floor.

Coach body details on my model consist of guard ducketts (lookouts) made up from laminated sheet and panelling including a waistline made from 0·010 in. thick strips of sheet 1 mm. wide. These were applied with jointing fluid to hold them in place. Door handles and grab rails were also made up from the same material.

When all the details were complete, the model was cleaned up with wet and dry rubbing down paper and a small Swiss file, thoroughly dusted off and the paint scheme applied. This consists of white above and apple green below the waistline, matt black ends, underside and roof. All handrails and waistlines were picked out in yellow.

When dry, the bogie can be refitted and held in place with a dry square of sheet cemented over the ends of the pivots.

Whilst the model is in no way a faithful model of any prototype—there is a lot of Festiniog about it—it looks right and for that matter it is right.

It is not fully detailed, but later, it will be returned to the shops to have wire truss rods and roof ventilators fitted. Meanwhile it is earning its keep and most important, giving its owner a great deal of personal satisfaction.

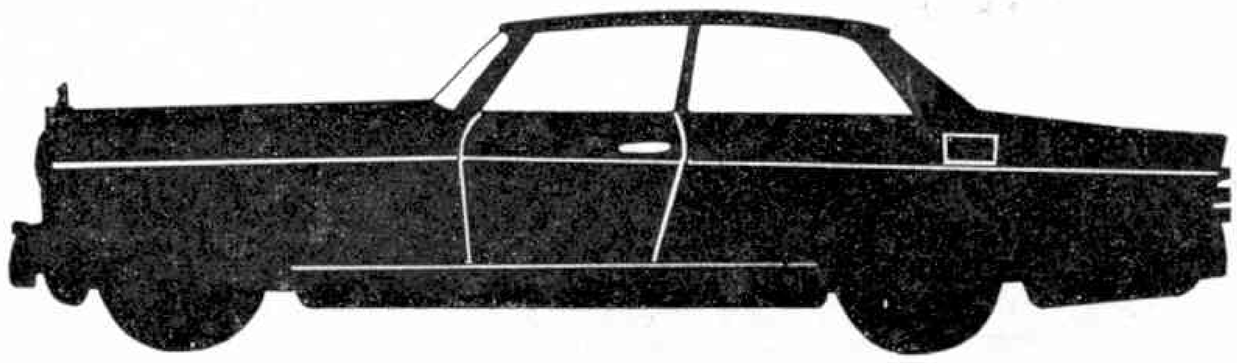
FREE GUESS THE VEHICLE COMPETITION

250 Dinkys to be won

Complete the entry form by filling in your name and address, and the full name of the Dinky vehicle shown in the accompanying silhouette and post it off. The senders of the first 230 correct answers to be "pulled out of the bag" on December 7th will each win one of the exciting new Dinky models of the NEW FORD ZODIAC, AS SHOWN ON TELEVISION.

The winners' names will be published in the February 1967 issue (on sale January 17th) and winners must write to claim their prizes. The competition will be judged by the Editor of Meccano Magazine whose decision will be final. NO correspondence can be entered into.

Twenty models will be awarded to overseas readers and these will be selected on January 7th. The results being published in the March 1967 issue of Meccano Magazine.



THE VEHICLE ILLUSTRATED IS .....

NAME.....

ADDRESS .....

Cut out along heavy line and post to:-

Meccano Magazine, Competition St Alphage House, Fore Street, London EC2

Small but Interesting

by Spanner

FEATURED below are two models which, although small in size, are little short of giants in interest from the younger model-builder's point of view. The first is a simple Stone Crusher that can be built with Outfit No. 3, while the other is an almost scale reproduction of a Quadricycle as produced in the year 1840.

STONE CRUSHER

Dealing first with the Stone Crusher, this is an example of a machine whereby stones to be crushed are placed in a funnel-shaped hopper with a hinged side that is forced backwards by the action of a large flywheel, driven by a powerful engine. As the flywheel revolves, the side is forced inwards, thus crushing the lower level of stones, then it opens to let the crushed stone fall down a chute. Before uncrushed stone can fall out, however, the side again closes and the cycle is repeated.

Construction of the model is not difficult. The end flanges of a 5½ in. by 2½ in. Flanged Plate are extended sideways by two 2½ in. Strips 1, to each of which a Double Bracket is bolted. A 5½ in. Strip 2 is secured to the outside lug of each of these Double Brackets as also is a 2½ in. Strip 3. Another two 5½ in. Strips 4 are bolted to the side of the Flanged Plate, then Strips 2 and 4 in both cases are joined by an inverted Flat Trunnion 5. The apex holes of these Trunnions provide the bearings for a 4 in. Rod 6 that acts as the axle of the flywheel.

The flywheel itself is built-up from an 8-hole Bush Wheel to which four 2½ in. Strips 7 are bolted at right-angles to each other. Fixed to these Strips by Angle Brackets are two 12½ in. Strips bent to form a circle and bolted together with an overlap of seven holes at each end. The completed unit is held in place by two 1 in. Pulleys 8, mounted on Rod 6 between the Flat Trunnions. Another two 1 in. Pulleys 9 and 10 are secured on the ends of Rod 6, remembering that the boss of Pulley 10 points outwards. Pulley 9 is connected by a 6 in. Driving Band to a Magic Motor bolted to Strips 3.

Bolted to one end flange of the Flanged Plate are two 5½ in. Strips 11 connected by a 2½ in. by 2½ in. Flexible Plate 12, the securing bolts also holding four Angle Brackets in place. Two 2½ in. by 1½ in. Triangular Flexible Plates 13 are bolted to these Angle Brackets, then a 2½ in. by ½ in. Double Angle Strip is lock-nutted between them. A second 2½ in. by 2½ in. Flexible Plate 14, to which an Angle Bracket 15 is fixed, is secured to the Double Angle Strip, then a 2½ in. Strip 16 is lock-nutted between Angle Bracket 15 and another Angle Bracket attached to the boss of Pulley 10.

Finally, a 5½ in. by 2½ in. Flexible Plate 17 is bolted to the side flange of the Flanged Plate and a chute is provided by a 2½ in. by 1½ in. Flexible Plate 18, fixed by a bent Fishplate to a 2½ in. by ½ in. Double Angle Strip bolted between Strips 11.

PARTS REQUIRED:

2 of No. 1	4 of No. 22	2 of No. 126a
6 of No. 2	1 of No. 24	1 of No. 196a
9 of No. 5	60 of No. 37a	1 of No. 188
1 of No. 10	56 of No. 37b	2 of No. 190
2 of No. 11	4 of No. 38	1 of No. 192
10 of No. 12	2 of No. 48a	2 of No. 221
1 of No. 15b	1 of No. 52	1 Magic Motor

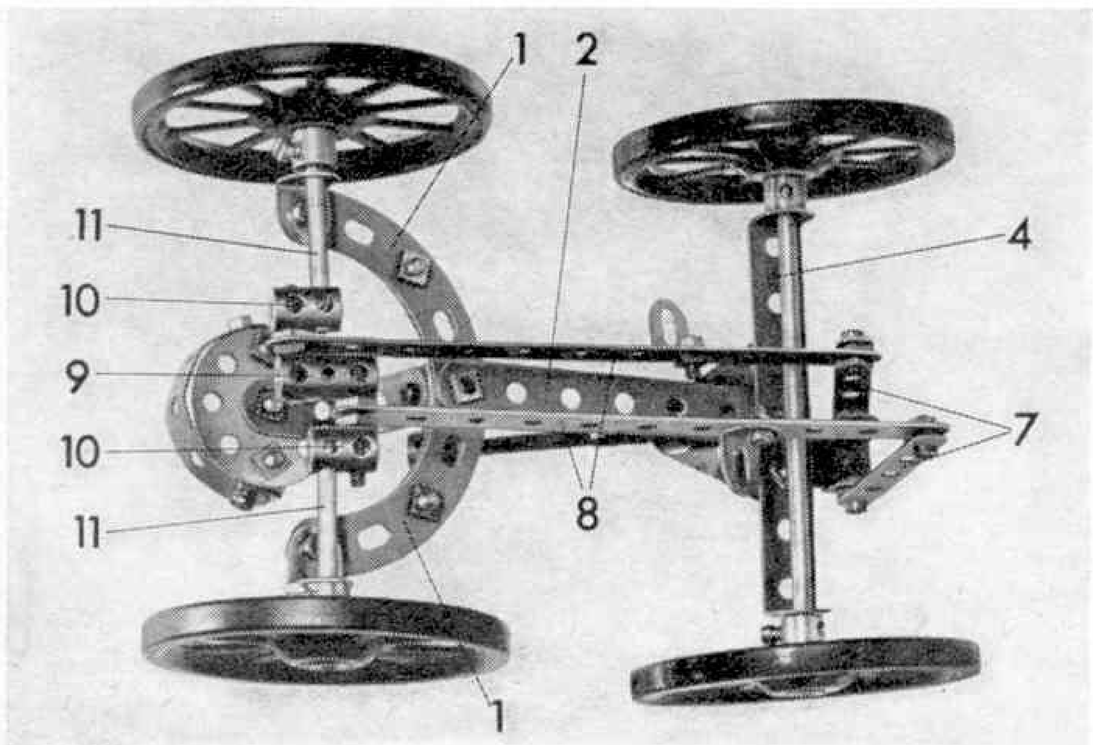
QUADRICYCLE

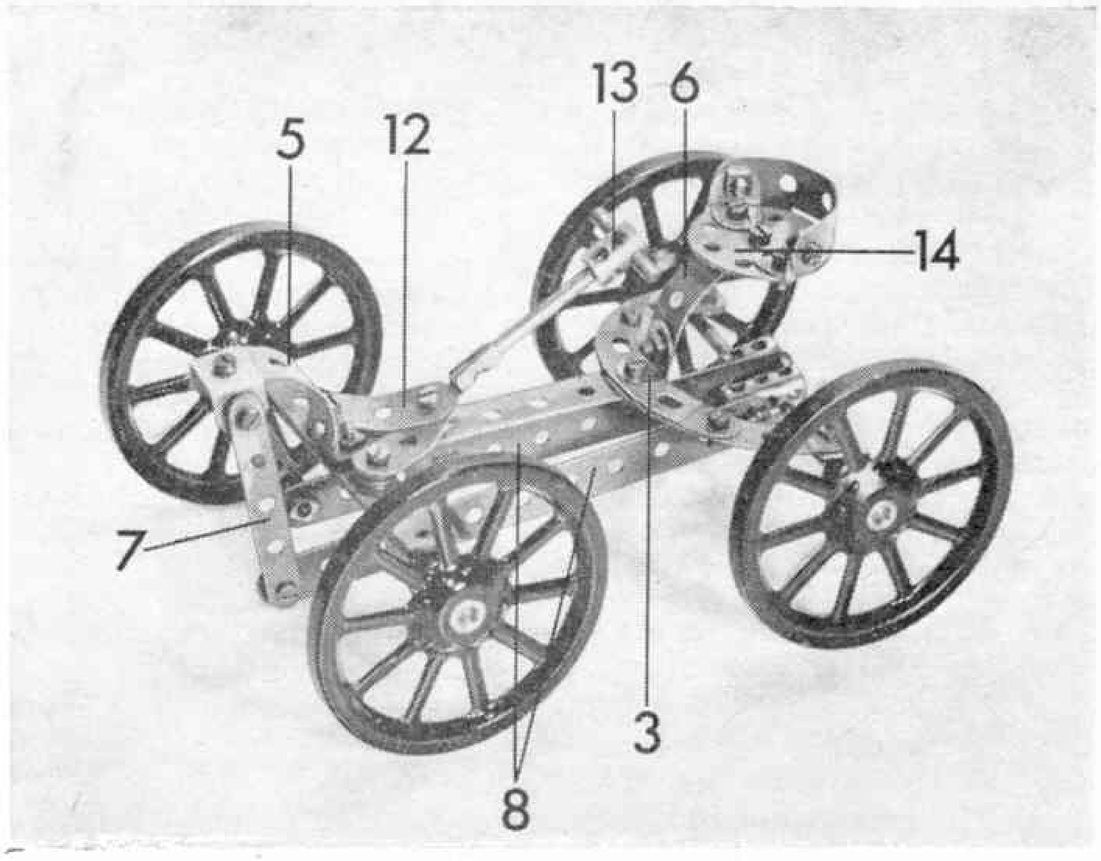
Turning to the Quadricycle, this is not only a scale model of the 1840 original, but is also a WORKING scale model. Just as the full-size version was pedal-driven, the little Meccano miniature version has pedals linked to the cranked back axle. When the pedals are 'worked' the wheels turn.

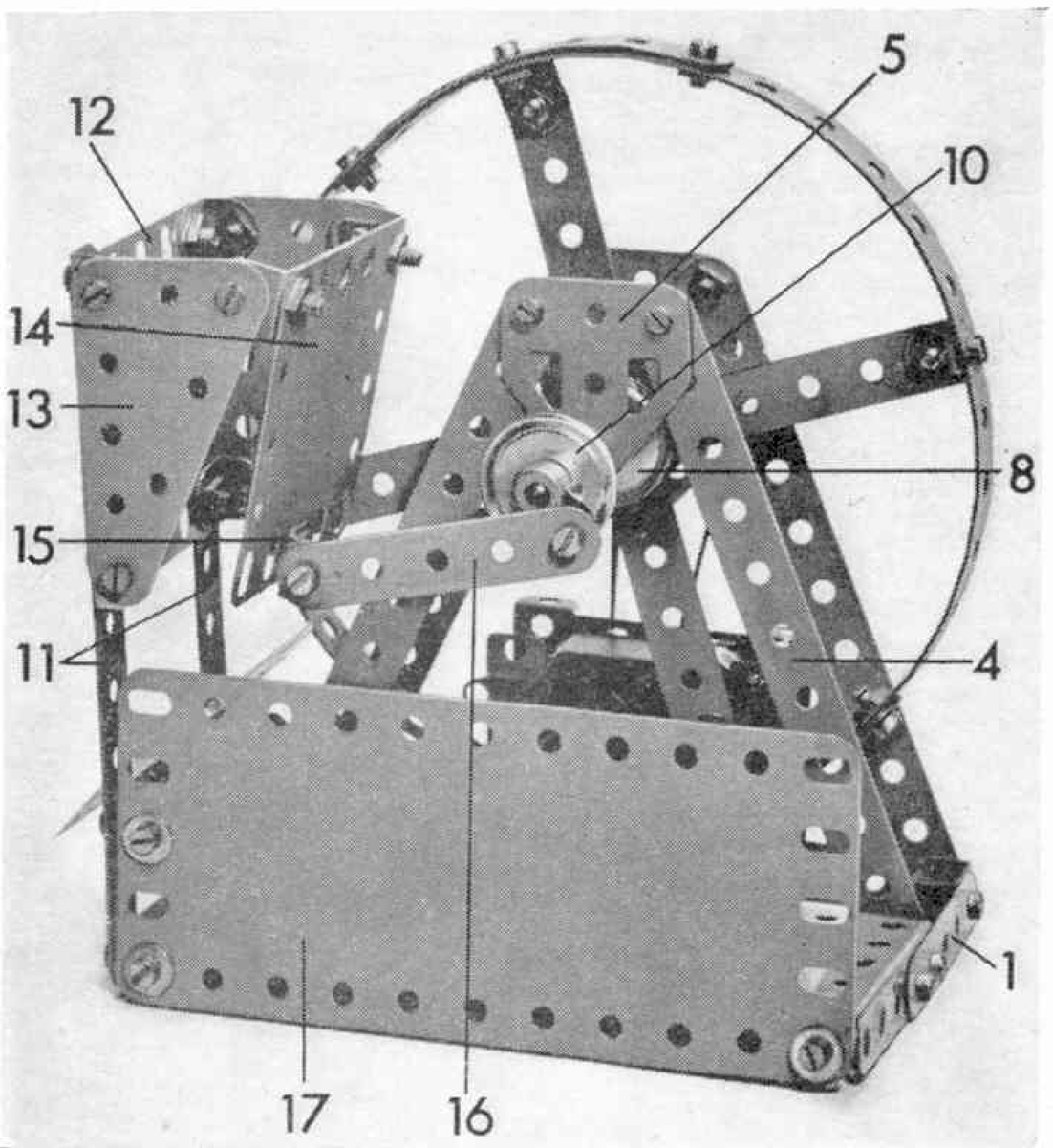
In building the model, a 'Y' is produced from three 2½ in. Stepped Curved Strips 1 and a 3½ in. Strip 2, at the same time bolting an Angle Bracket 3 in place where Strip 2 joins the arms of the 'Y'. A 3½ in. by ½ in. Double Angle Strip 4 is lock-nutted to the other end of Strip 2, at the same time securing a second Angle Bracket in place. Two 2 in. Strips 5 and 6 are curved as shown and are then bolted, one to this Angle Bracket and the other to Angle Bracket 3.

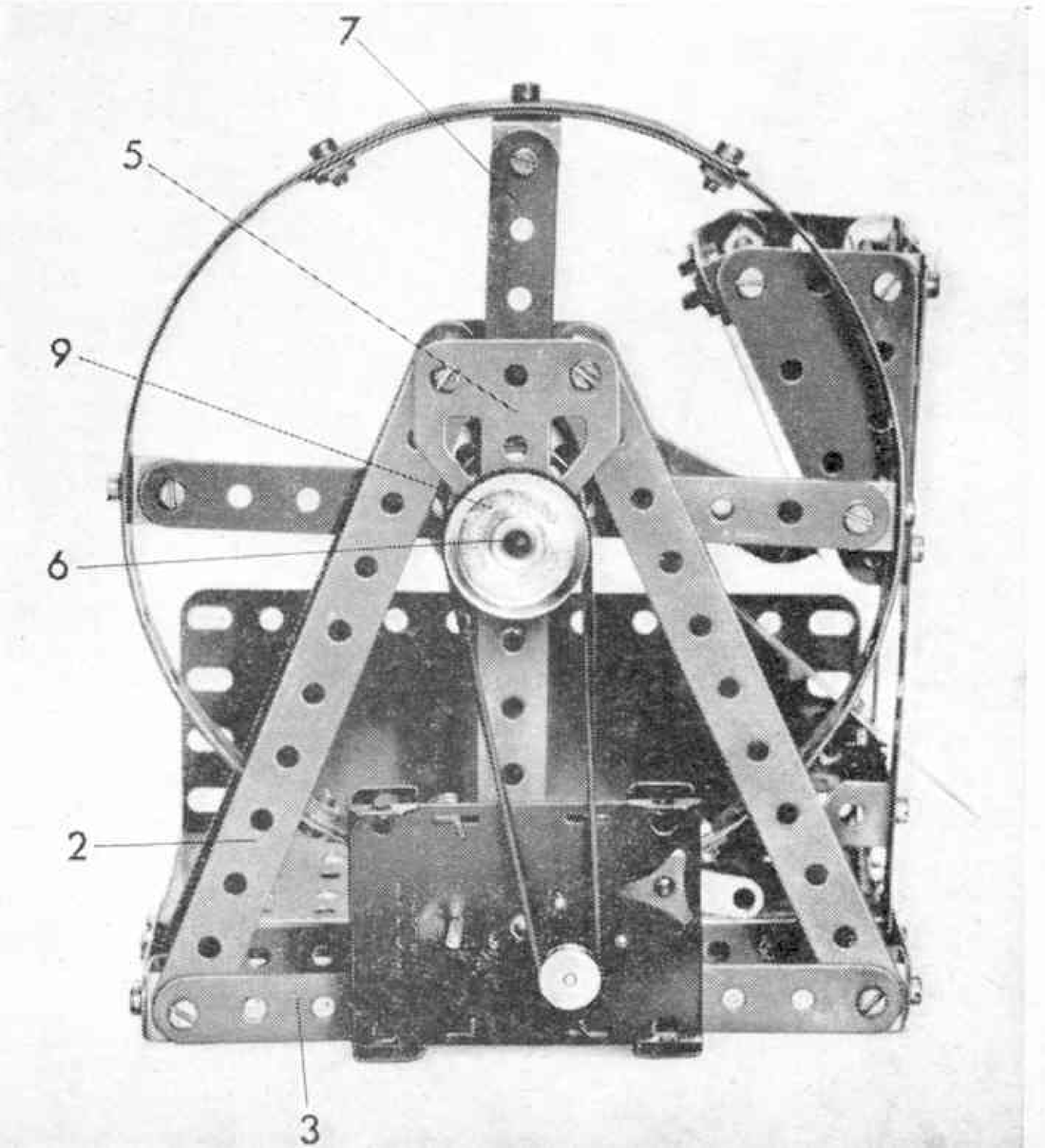
Two 2½ in. Narrow Strips 7 are lock-nutted to the lugs of a Double

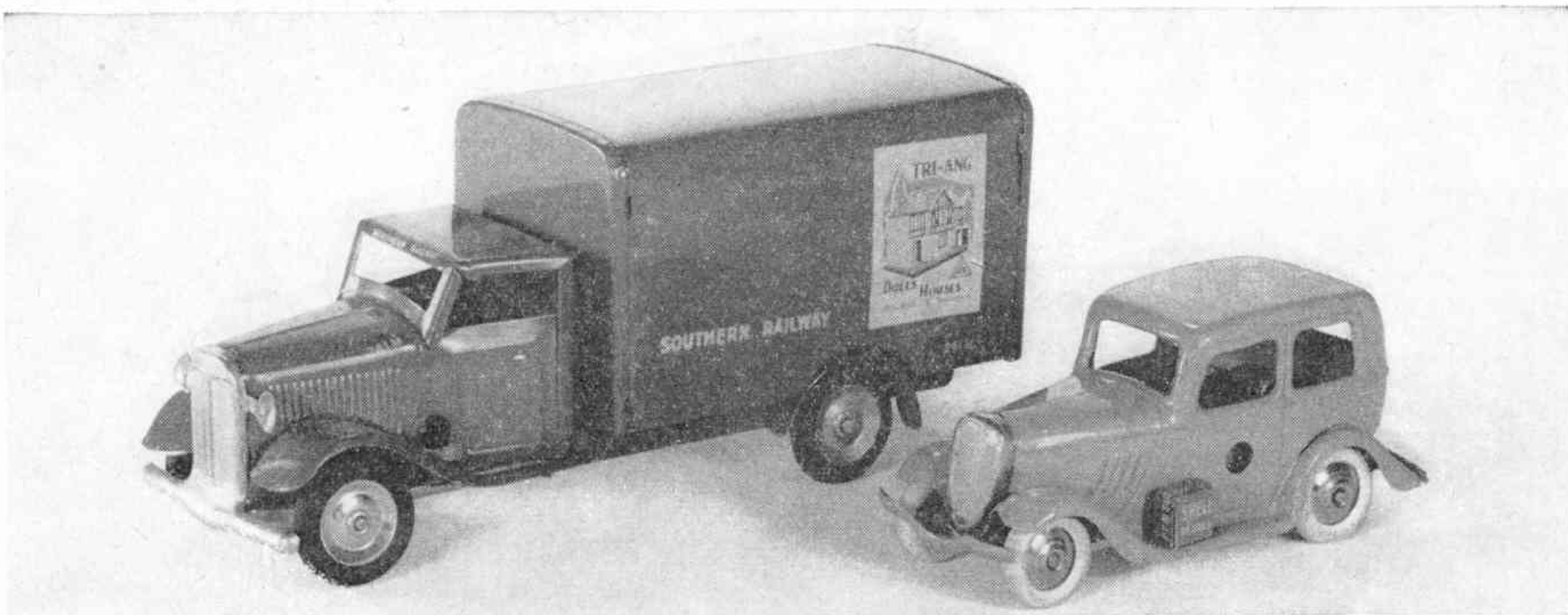
Continued on page 44











Two pre-war Minic clockwork road vehicles

KEN'S CHRISTMAS CAROL

IT was a little incorrect for me to offer you a trip in 'Dr. Who's' time machine last month, though I have seen things some of you might be envious of— Ken's dreaming, you say?—then take a look at the two pictures, hear what I have to say and judge for yourselves!

This all began late in October, when I'd arranged to drive down to a spot near Helston in Cornwall, to visit Jeff Marlow, an old friend of mine who is engaged, with a couple of other ex-R.A.F. types, on research into time and matter.

I left Torquay early on the 23rd, not wanting to arrive late as I wished to return home the same evening. It was one of those crisp full-of-ozone days, more applicable to Sussex than sleepy Devon, and I drove as fast as our local roads will allow. (There was little traffic on the way, due, probably, to the time of day—the Sunday crawlers weren't about yet.) The end result was, that I arrived at Jeff's 'Establishment' just before eleven. To cut a long story short, we chatted about old times in the Air Force, etc., and before we knew it, it was one o'clock and lunchtime. This was to be had, in the company of Jeff's mates, at the local hostelry. Two-twenty-five found us back at the research station and seated around a batch of curious dials. I'd had it explained to me in very technical detail, what each dial plus a few levers did, but it had gone in one ear and out the other, for all things were a wee bit too complicated for an ex-gunner's head!

Being strapped into my seat with my feet straight out before me, like 007 in his Aston DB5, didn't appeal all that much, but before I could grumble, Jeff had pulled the lever with the bright red top and we were away—back to 1939! It only took a few seconds, yet it seemed an age and I had the funny feeling there were dozens of me all interlaced and in a row. Also I felt as sick as a dog!

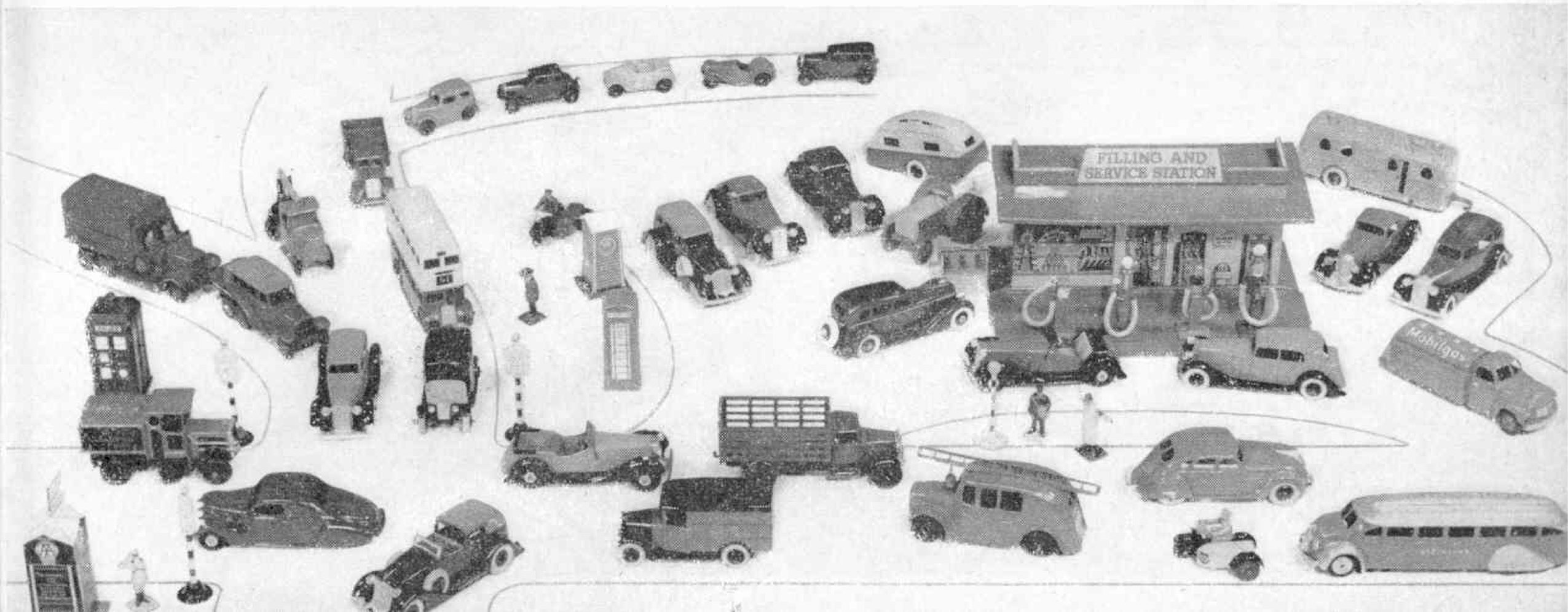
After the effects wore off, we all 'unstrapped' and Jeff calmly stated we had arrived—he hoped —in October 1939, and to prove it, suggested we all take a stroll into Helston to see. This was done with hearts beating overtime. Helston didn't seem a lot different than it is today, a few housing estates less, the odd shop front, etc. The weather was just as we'd left it, but all the shops were open with their goods displayed at give-away prices. To find out what day it was, we bought a paper and to put you somewhat in the picture here's the sort of thing we read in it:

Speeches by the First Lord of the Admiralty Winston Churchill, instructions on how to fit and use 'gas masks' (World War II had begun six weeks previously with Germany's attack on Poland). A liner, the Athenia, with a great many civilians on board had been sunk by U-Boats and was still very much front page news. The accent was on war and feeling rather grim we folded the paper and turned to brighter things. Half way down the High Street, we came across a toy shop—Messrs. Eddy & Son—naturally I stopped dead! the window was full of new/old toys (old to me, but new to the kids of 1939). I just stood and stared, all those old Dinkys, Hornby Trains, Minics, etc., row upon row of Dinky Toys —old Buicks, Town Sedans, Mail Vans, Chrysler Airflows—all the rare expensive types resplendent in their new paint at threepence and sixpence each. I think the dearest was priced tenpence!

I almost fell through the door with wallet in hand, to buy as many as we could carry. The result or outcome of my spending spree is shown here photographed on 1966 cardboard with a 1966 camera, after I'd gone through that sick feeling for the second time and returned with Jeff and the others to the station and my old banger.

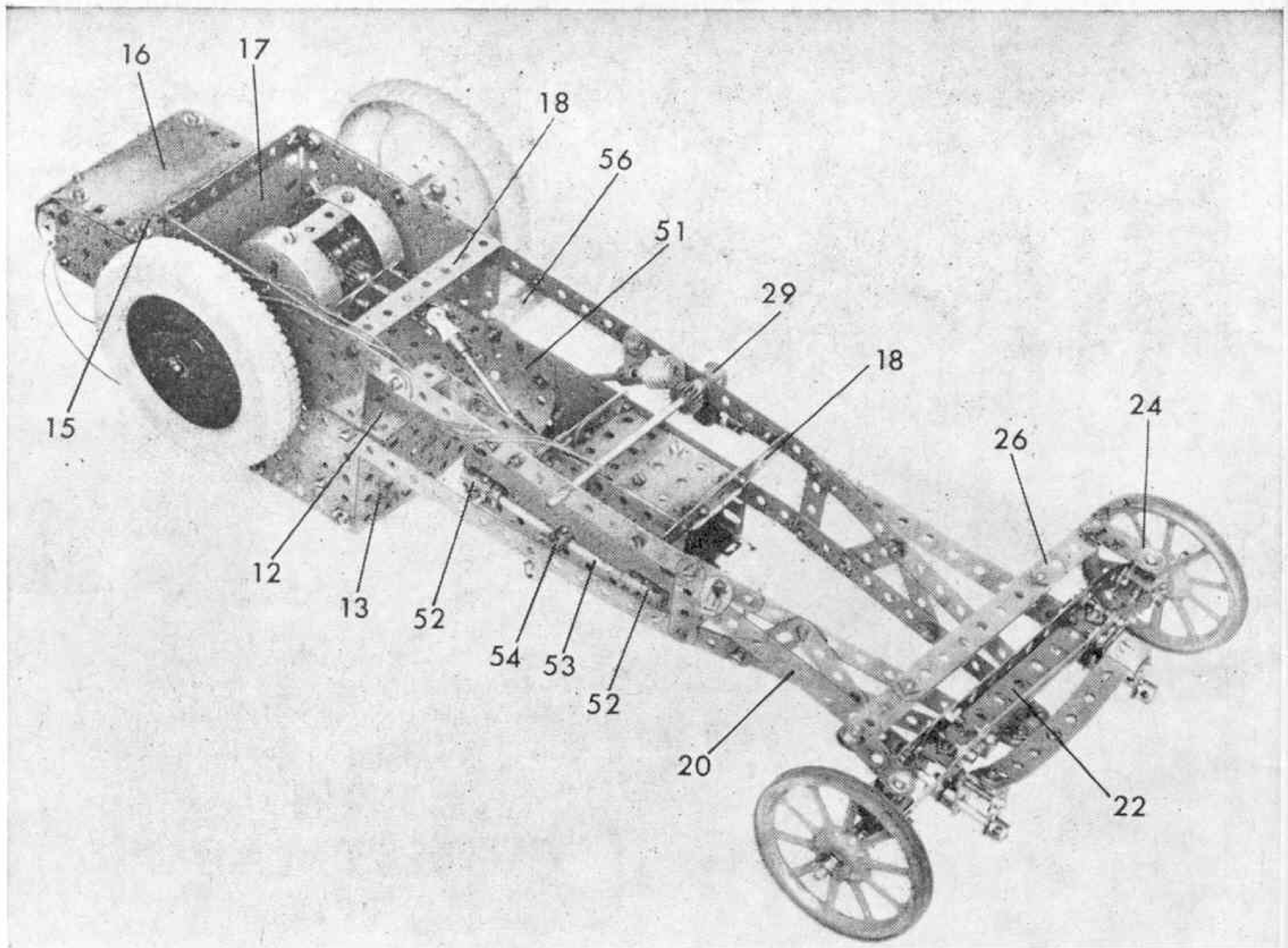
Fact or fiction? I'll leave the decision to you, but when you've digested all of it and studied the illustrations fully, I want you to do something for me. Name as many of the models as you can, with catalogue numbers if possible (I've also made a deliberate mistake in the picture, see if you can spot that too), and pop it in the post to me. The one budding collector with the most names, etc., gets a prize from yours truly, of one (can't afford more) of the following *Present Day* Dinkys: Aston Martin, Volvo 1800, Rolls-Royce Silver Cloud, Cortina, Volkswagen, Triumph 2000, Ford Mustang, Ford GT, and Volkswagen 1600.

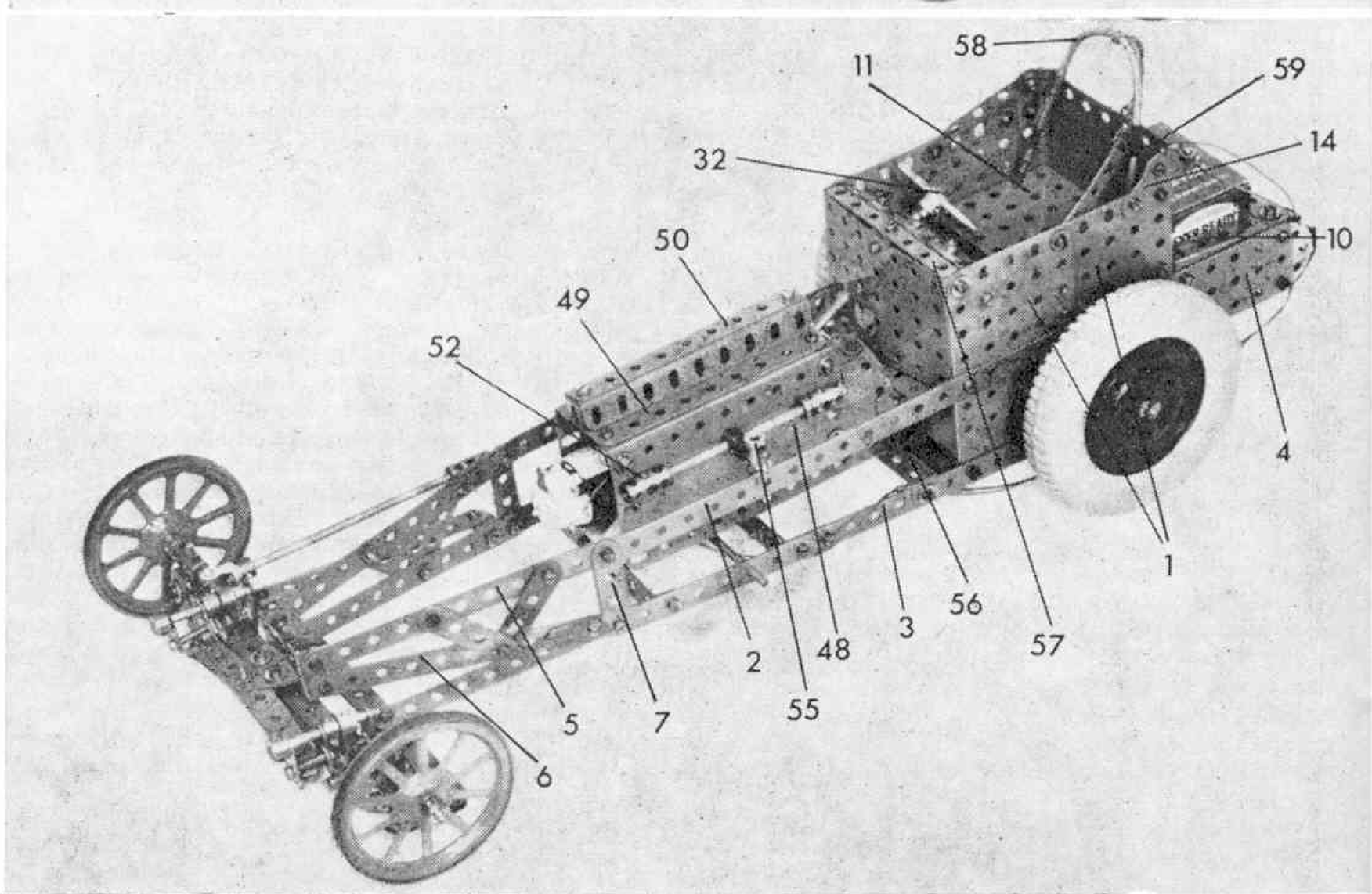
So get a catalogue, take your pick, and take up pencil and paper. I will announce the winner later. Hope you enjoyed my little trip. Next month I'm taking a look at a few three-pointed stars—a brace of Mercedes. Till then, a Happy Christmas and adieu till January! **Ken Wootton.**

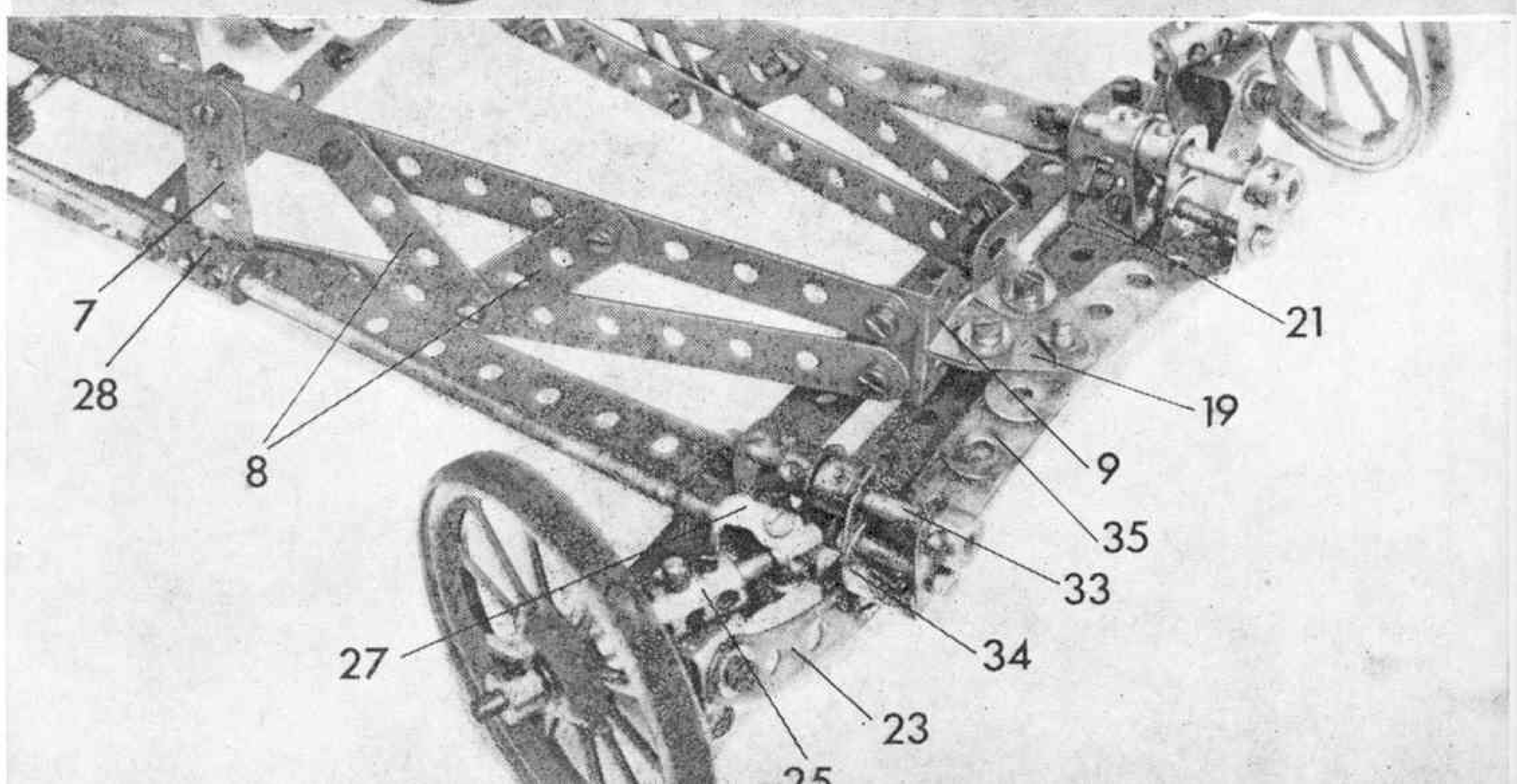


POWER DRIVE AND A DRAGSTER

BY SPANNER







DRAG racing, I am told, is one of the most exciting motor sports ever to have come out of America. Exciting it undoubtedly is but, for the driver, the excitement must be pretty short-lived for, as I see it, the actual drag race lasts only a matter of seconds on a tiny ¼ mile-long course. In this distance, however, from a standing start, a dragster will attain phenomenal speeds—often in excess of 170 m.p.h. —which makes you wonder what sort of a car is involved.

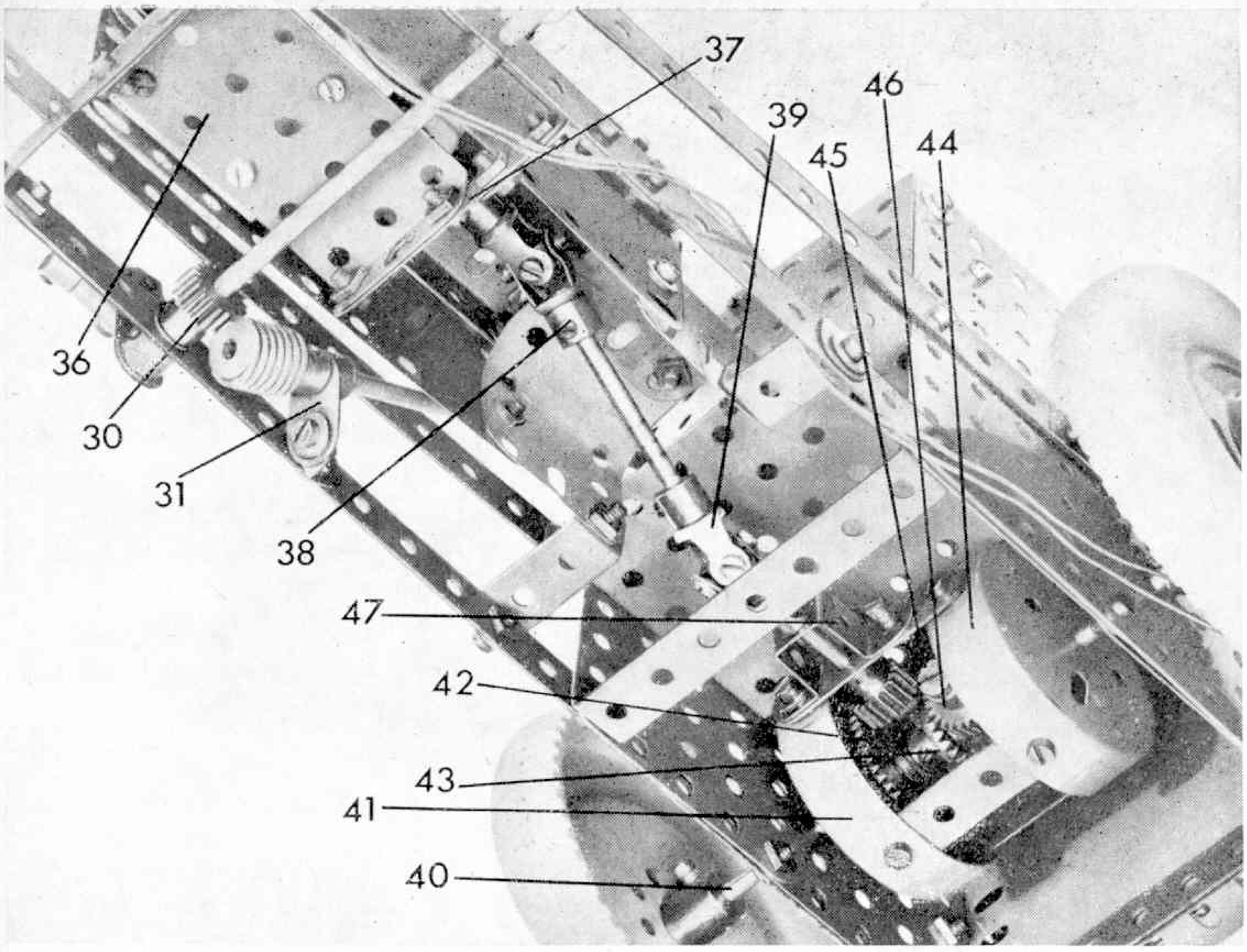
'Car', here, is definitely the wrong word. In fact, a dragster couldn't look much less like a car. All it appears to be is a huge engine, mounted on a skeleton chassis equipped with enormous rear tyres and spindly front wheels that look little bigger than those on a bicycle, with the driver 'stuck in' where there's room. The overall effect is one of immense power, barely leashed and ready to break forth at a moment's notice.

In my opinion, a dragster can not be termed ridiculous-looking, but it is certainly unique and, for this reason, we felt it was about time that a Meccano Dragster appeared on the scene. We put the problem to our model-building expert who, before long, turned up with the rather splendid — and typical— example described below.

CHASSIS

Both sides of the chassis are similarly built from two 4½ in. by 2½ in. Flat Plates 1, bolted together and extended forward by two 12½ in. Strips 2 and 3, and extended to the rear by a 3 in. by 1½ in. Flat Plate 4. Note that Strip 3 should converge slightly on Strip 2, an operation that can be easily performed by making use of the elongated holes in Plates 1. Strips 2 and 3 are themselves both extended forward by two 5½ in. Strips 5 and 6, overlapped three holes, at the same time fixing a 2 in. Strip 7 between the upper and lower Strips.

A further two 2 in. Strips 8 are fixed between Strips 5 and 6, but note that these Strips are first



brought almost together at the front when they are connected by a Fishplate, at the same time securing one right-hand and one left-hand Corner Angle Bracket 9 in position. At the rear, two 2½ in. Angle Girders 10 are bolted one to the upper edge of Flat Plate 4 and the other to its lower edge, the rear securing Bolts also holding an 8-hole Wheel Disc in place.

The sides can now be joined together. First of all, a 3½ in. by 2½ in. Flanged Plate 11 is bolted between rearmost Flat Plates 1 through their fourth holes from the top, then a second, inverted, 3½ in. by 2½ in. Flanged Plate 12 is bolted between forward Plates 1, this time through their centre holes. Also bolted, vertically, between forward Plates 1 is a third 3½ in. by 2½ in. Flanged Plate 13, while a 4½ in. by 2½ in. Flexible Plate is bent to shape and bolted vertically between rearmost Plates 1, as shown, at the same time securing two 1 in. Corner Brackets 14 in place.

Fixed to lower Angle Girders 10 is a 3½ in. Flat Girder 15, to which a 3½ in. by 2½ in. Flexible Plate 16, extended by another similar Plate, is bolted. This latter Plate 16 is curved round the Wheel Discs and is bolted to upper Angle Girders 10. A third 3½ in. by 2½ in. Flexible Plate 17 is bolted to a 3½ in. by ½ in. Double Angle Strip which is fixed between rearmost Plates 1. Two further 3½ in. by ½ in. Double Angle Strips 18 are fixed between Strips 3 at each side, as can be seen from the accompanying pictures. At the front, Corner Angle Brackets 14 are brought close together and are bolted to each side of a 1 in. Triangular Plate 19.

STEERING ARRANGEMENT

One end of a 4½ in. Strip 20 is fixed by an Angle Bracket to each Strip 3, while its other end is fixed, also by an Angle Bracket, to one lug of a 1 in. by ½ in. Double Bracket 21. A 'U' Section Girder 22 is now built up from two 4½ in. Angle Girders and is bolted to the back of Double Brackets 21. Each end of Girder 22 is extended three holes by two 2½ in. Curved Strips 23, the ends of which are joined by two Double Brackets to form a box. Journalled in these Double Brackets is a 1½ in. Rod held in place by a Crank 24, below the Double Brackets, and a Coupling 25 above them. Another 1½ in. Rod is fixed in the longitudinal bore of this Coupling and carries a loosely-mounted Spoked Wheel, held in place by a Collar. A wide elastic band is glued round the rim of the Spoked Wheels to increase adhesion. Lock-nutted between the arms of Cranks 24 is a compound 7 in. Strip 26, built up from two 5½ in. Strips, overlapped eight holes.

Mounted in the longitudinal bore of off-side Coupling 25, in addition to the 1½ in. Rod, is a 1 in. Rod on which the 'spider' of the Swivel Bearing 27 is fixed. Mounted in the boss of this Swivel bearing is a 4½ in. Rod, extended by a Coupling 28 and a 2½ in. Rod, on the end of which a second Swivel Bearing is fixed. The 'spider' of this Swivel Bearing is loose on a ½ in. Bolt fixed by Nuts in the arms of Crank 29 on a 4½ in. Rod journalled in Strips 3 and held in place by a ½ in. Pinion 30. This Pinion engages with a Worm on a 6½ in. Rod mounted in Flanged Plate 31 attached to Strip 3 by an Angle Bracket. A Steering Wheel 32 is fixed on the end of the Rod, which is held in place by a Collar against Fishplate 31.

Returning to the front axle, a 2 in. Rod 33 is held by Collars in the lugs of each Double Bracket 21. Slipped on to this Rod, and held by a Collar, are two Fishplates which are pivotally fixed to the lugs of a Double Bracket 34 by a ¾ in. Bolt. A Leaf-spring 35 is then built up from one 4½ in., one 3½ in., one 2½ in., and one 1½ in. Strip, all bent to shape, and is bolted between Double Brackets 34, also being fixed to Triangular Plate 19 by a ⅜ in. Bolt.

MOTOR AND DRIVE

Motive power for the Dragster is supplied by the versatile Power Drive Unit disguised by a cover, designed to represent a scale 'engine'. The Unit is secured to a 2½ in. by 1½ in. Flanged Plate 36 bolted to forward Double Angle Strip 18 and connected to nearside Strip 3 by a 1 in. by ½ in. Angle Bracket extended by a 2½ in. Strip 37. A Universal Coupling 38 fixed on the output shaft is connected to another Universal Coupling 39 by a 2 in. Rod. This latter Universal Coupling will later be connected to the differential.

The differential, itself, is more or less of standard construction. A 3½ in. Rod 40 carrying a Boiler End 41, a loose 1½ in. Contrate Wheel 42, and a fixed ¾ in. Contrate Wheel 43 is fitted partway in to the longitudinal bore of a Coupling, while another 3½ in. Rod, also carrying a Boiler End 44 and a fixed ¾ in. Contrate Wheel is fitted into the other end of the longitudinal bore of the Coupling. Note that Contrate Wheel 42 is spaced from Boiler End 41 by four Collars, and from Contrate Wheel 43 by three Washers, whereas the other ¾ in. Contrate Wheel is spaced from Boiler End 44 by two Washers.

Fixed in the central transverse smooth bore of the Coupling is a 1½ in. Rod, carrying a Collar at each end. These Collars are attached to Contrate Wheel 42 by 1 in. Screwed Rods, secured by Nuts in diametrically opposite holes in the face of the Contrate Wheel. Fixed in the central transverse tapped bores of the Coupling are two Pivot Bolts 45, carrying loose ¾ in. Pinions 46. These Pinions engage with the ¾ in. Contrate Wheels, and remember that the 3½ in. Rods are loose in the longitudinal bore of the Coupling. Boiler Ends 41 and 44 are connected by four 2 in. Strips, to one of which a Double Bent Strip 47 is bolted. Journalled in this and the corresponding Strip is a 1½ in. Rod carrying a ½ in. Pinion that engages with Contrate Wheel 42. Universal Coupling 39 is fixed on the end of the Rod. Two 4¼ in. Road Wheels are fixed on the ends of the 3½ in. Rods which, by the way, are held in Flat Plates 1 by Collars.

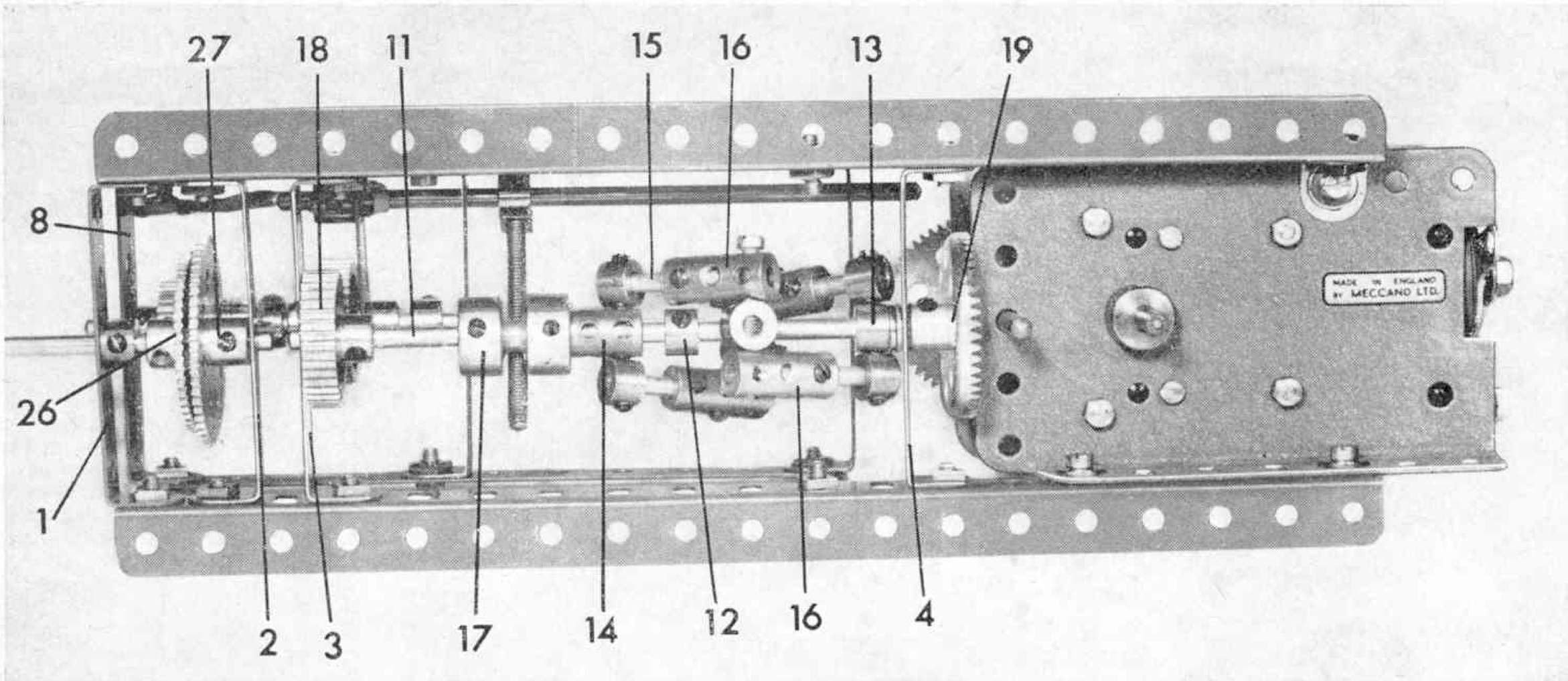
The imitation 'engine' is built up from two 4½ in. by 2½ in. Flexible Plates 48, each bolted to a 4½ in. Angle Girder, the upper flange of which is extended by a 4½ in. Flat Girder 49. These Flat Girders are overlapped and are bolted together by two ¾ in. Bolts at the same time fixing in place two 4½ in. Angle Girders 50 arranged in an inverted 'U' with the ends enclosed by Angle Brackets. Two 2½ in. by 1½ in. Flexible Plates 51 are bolted together and are fixed to Flexible Plates 48. The rear ends of the Angle Girders at the top of Flexible Plates 48 are joined by a 1½ in. Strip attached by Angle Brackets, at the same time securing two 1 in. Corner Brackets in position to enclose the remaining space. Two Couplings 52, joined by a 3½ in. Rod 53 carrying a Short Coupling 54, are fixed to nearside Flexible Plate 48, then a ¾ in. Bolt carrying another Coupling 55 is fixed in the longitudinal bore of the Short Coupling. The completed 'engine' is attached to Strips 3 by two 1 in. by ½ in. Reversed Angle Brackets 56.

Finally a dashboard is obtained from a 3½ in. Flat Girder, attached to Flat Plates 1 by Angle Brackets, with the resulting space between the Flat Plate and Flanged Plate 13 being covered by a 3½ in. Narrow Strip 57, also attached by an Angle Bracket. Dials and gauges are represented on the dashboard by ordinary and ¾ in. Washers. A roll bar is provided by a 11½ in. Rod 58 bent to shape and inserted in Flanged Plate 11. It is secured by two 2½ in. Narrow Strips 59 bolted to Plates 1 and attached to the Rod by right-angled Rod and Strip Connectors. The battery for the Motor, incidentally, is carried in the compartment behind the driver's seat.

PARTS REQUIRED

4 of No. 1	5 of No. 18a	2 of No. 74
6 of No. 2	1 of No. 18b	1 of No. 77
5 of No. 2a	2 of No. 19a	2 of No. 82
1 of No. 3	2 of No. 24a	2 of No. 103c
1 of No. 4	2 of No. 25	2 of No. 103d
2 of No. 5	2 of No. 26	5 of No. 111
10 of No. 6	1 of No. 28	2 of No. 124
1 of No. 6a	2 of No. 29	4 of No. 133a
2 of No. 9	1 of No. 32	2 of No. 140
4 of No. 9a	164 of No. 37a	2 of No. 147b
8 of No. 9d	146 of No. 37b	2 of No. 154a
7 of No. 10	34 of No. 38	2 of No. 154b
1 of No. 11	3 of No. 38d	2 of No. 162a
2 of No. 11a	1 of No. 45	2 of No. 165
12 of No. 12	3 of No. 48b	1 of No. 185
1 of No. 13	1 of No. 51	2 of No. 187b
1 of No. 14	3 of No. 53	2 of No. 188
2 of No. 15a	4 of No. 53a	3 of No. 190a
2 of No. 16	10 of No. 59	3 of No. 191
1 of No. 16a	3 of No. 62	2 of No. 212a
1 of No. 16b	7 of No. 63	2 of No. 235
3 of No. 17	1 of No. 63d	1 of No. 235b

1 Power Drive Unit



among the model builders

'READ THE MECCANO MAGAZINE FOR INSPIRATION'—This, I hasten to add, is not a new advertising slogan created by our M.M. Circulation people, but is a little something which flashed into my mind when I received details of the Automatic Gearbox, described below. It was designed by Michael Edwards of Stanmore, Middlesex, and is clear proof of how models or, more particularly, mechanisms featured in these pages can inspire the interested reader into expanding his own mechanical abilities.

In the October M.M., you may remember, we published details of a simple Automatic Gearbox designed by Paul and Clive Woods of Oadby, Leicestershire. This, while being a first-class mechanism in its own right, was rather too large to incorporate in, say, a medium-sized car, as I am sure Messrs. Woods will be the first to agree. Mr. Edwards, therefore, has taken the principles involved and has developed them into a very much smaller and more compact two-speed unit. As he says himself, however, it still 'works on the same principle as the one described in the M.M.'. He goes on to say, 'It works extremely effectively on small or medium-sized models, but it needs a speed controller for the motor, as it is the speed of the motor which governs the gearbox.' This is a point which must be remembered when operating a model in which the unit is fitted.

Construction of the slightly modified mechanism, illustrated here, is not difficult. Two 9½ in. Angle Girders are connected, through their first, second, fourth and thirteenth holes respectively, by four 2½ in. by ½ in. Double Angle Strips 1, 2, 3 and 4. The Bolts securing Double Angle Strip 1 also hold two 1½ in. Strips 5 in place. A further two 1½ in. Strips 6 are fixed to the Girders through their eleventh holes, then Strips 5 and 6 at each side are joined by a 5½ in. Strip 7, at the same time securing two 2½ in. by ½ in. Double Angle Strips 8 and 9 between the sides. Another 2½ in. by ½ in. Double Angle Strip 10 is added.

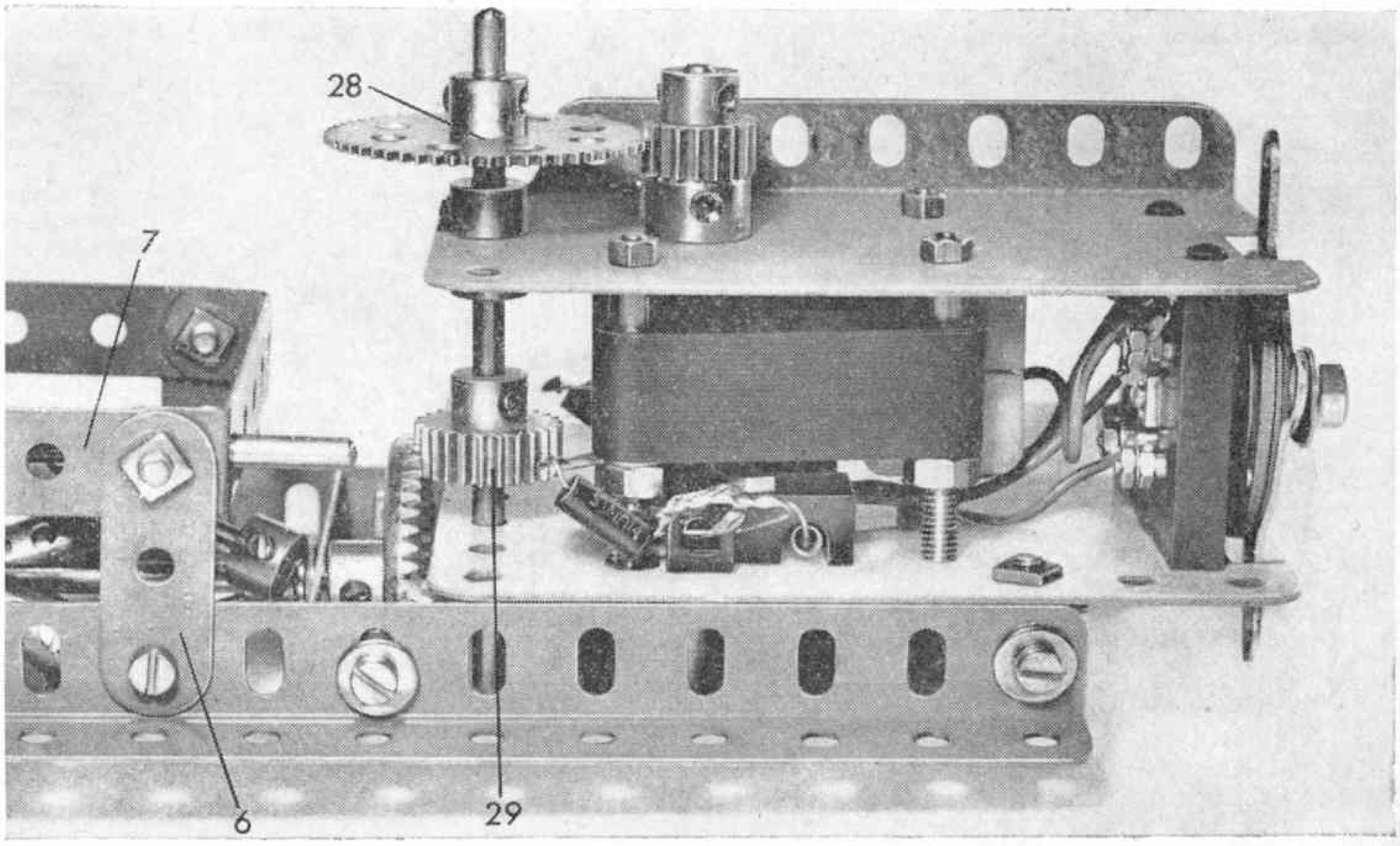
A governor is now built up on a 5 in. Rod 11 which acts as the gearbox input shaft. Two Collars 12 and 13 and a Coupling 14 are placed on the Rod, then two $\frac{7}{32}$ in. Grub Screws (Part No. 69b) are screwed tight into the transverse tapped bores of Collar 13, and another two screwed into the end tapped bores of the Coupling. The latter two, however, must not grip the Rod. Having done this, you will find that approximately half the length of the Grub Screws protrude above the Collar and Coupling. Screwed loosely on to this protruding length, in each case, is another Collar in which a 1 in. Rod 15 is held. A Coupling 16 is fixed on the other end of each of these Rods, leaving about ¼ in. between it and the Collar.

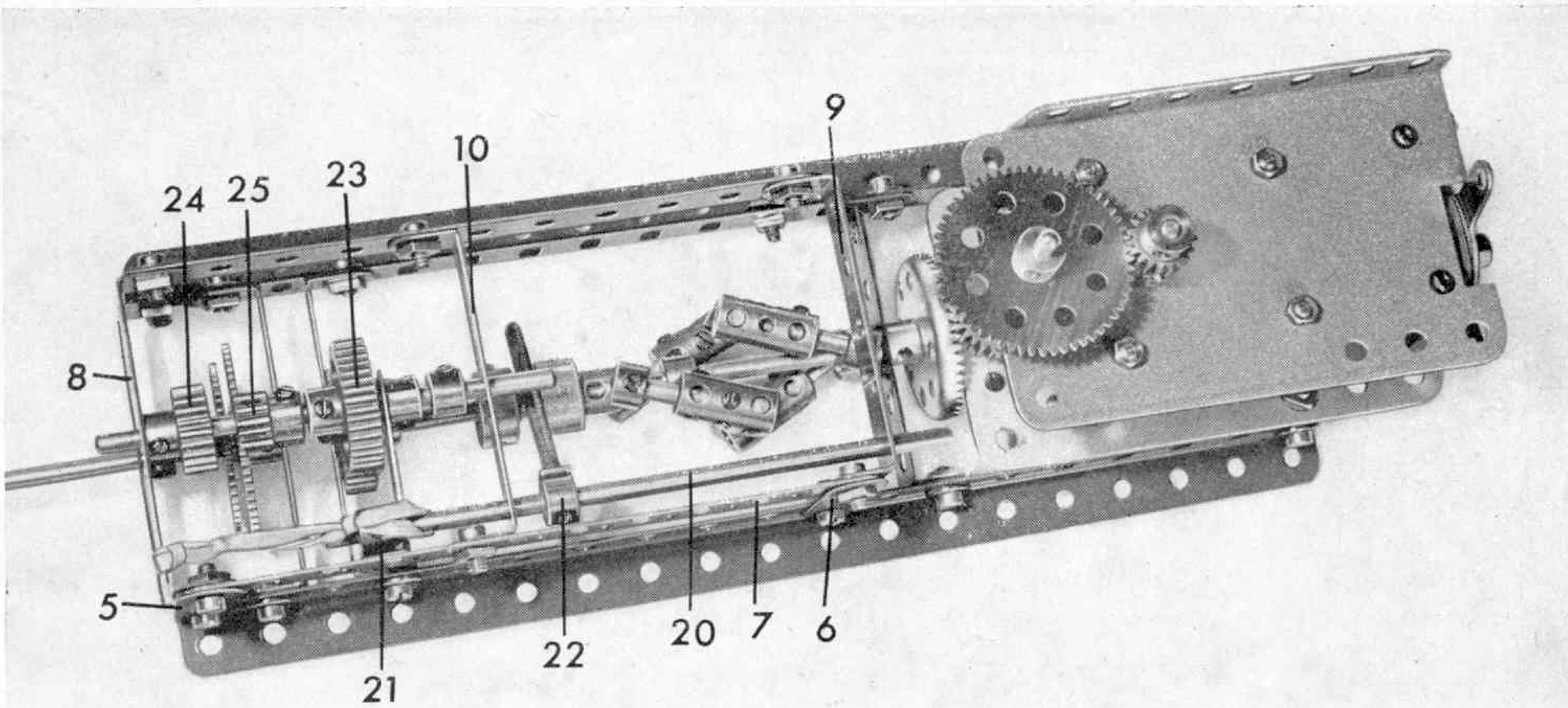
At this stage, you should have four Collar-Rod-Coupling arrangements, two attached to Collar 13 and two to Coupling 14. Assuming that one arrangement in each case lies above Rod 11, with the other lying below the Rod, the upper arrangement in Collar 13 and the lower arrangement in Coupling 14 are moved to one side, then a 1⅛ in. Bolt is passed through the end transverse smooth bore of upper Coupling 16, is screwed through the tapped bores of a Collar and is fitted into the corresponding bore of lower Coupling 16. The remaining two arrangements are similarly treated.

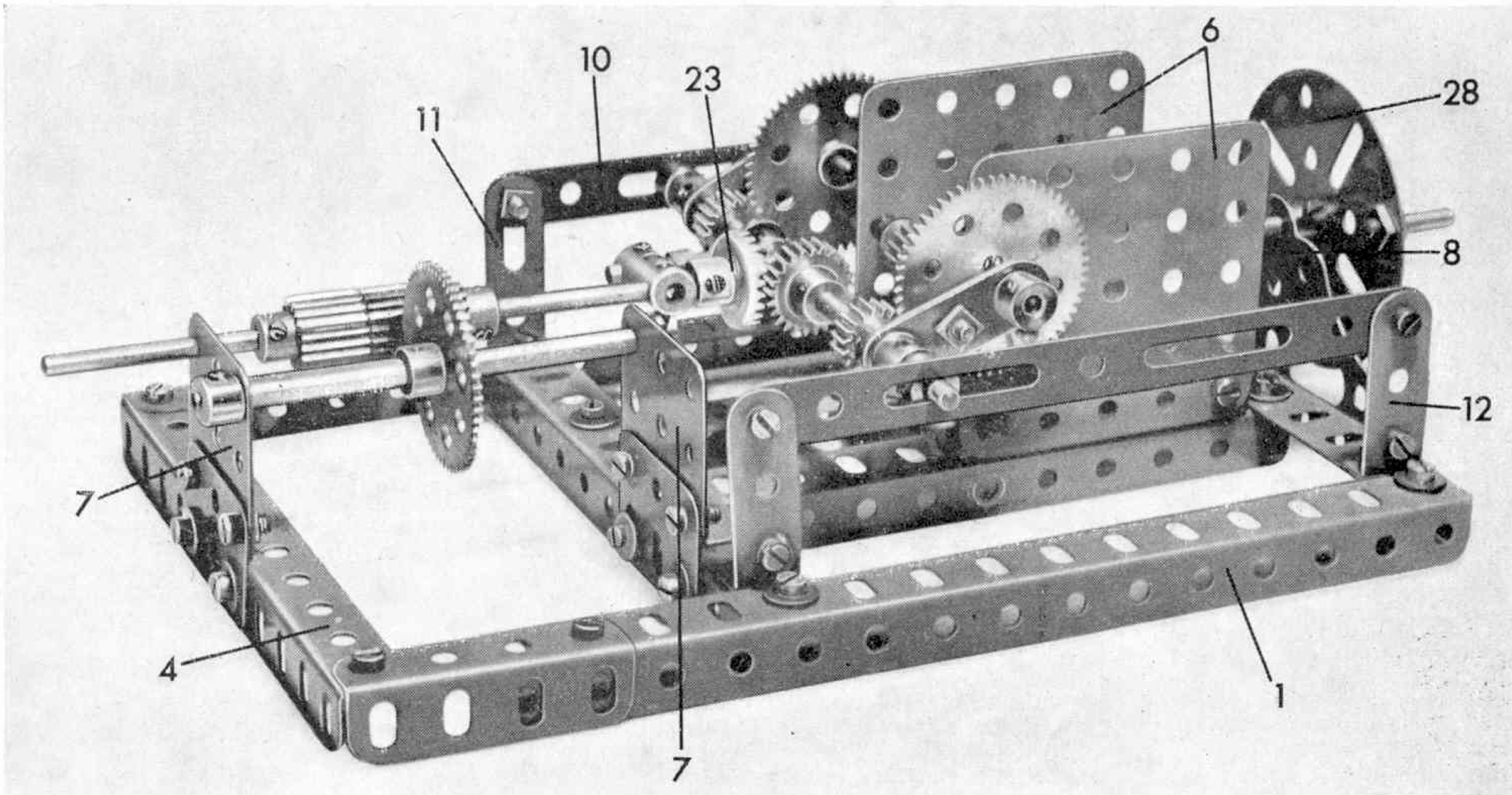
A Socket Coupling 17 and a 1 in. Gear 18 are now mounted on Rod 11 which is then journalled in Double Angle Strips 3 and 4. Collar 13 being spaced from Double Angle Strip 4 by Washers. Coupling 14 is fixed tightly in the Socket Coupling, but the combined units must still be free to move on the Rod. Gear 18 is fixed, as also is a 1½ in. Contrate Wheel 19, on the end of the Rod.

Journalled in Double Angle Strips 9 and 10 is a 5 in. Rod 20, on which are secured a Crank 21 and a Collar 22. A 2 in. Screwed Rod fixed in the tapped bore of this Collar engages with the slot in Socket Coupling 17. The arm of Crank 21 is held between a 1 in. Gear 23 and a Collar fixed on the layshaft, which is a 3½ in. Rod mounted in Double Angle Strips 8 and 10. Also fixed on the layshaft are a ¾ in. Pinion 24, a $\frac{7}{16}$ in. Pinion 25 and a Collar, the last acting as a 'stop' for the Rod.

The output shaft, journalled in Double Angle Strips 1 and 2, carries a 50-teeth Gear 26 and a 60-







teeth Gear 27. The length of the shaft, of course, depends on the particular model in which the mechanism is incorporated, but, in the unit illustrated, we used a 3½ in. Rod. A light elastic band between Double Angle Strip 8 and Crank 21 provides tension, holding the gearbox in bottom gear at low speeds. Power for the unit is supplied by a geared-down E15R Electric Motor bolted direct to one of the 9½ in. Angle Girders, and attached to the other Angle Girder by an Angle Bracket. Held by Collars in the Motor side plates is a 3½ in. Rod carrying a 57-teeth Gear 28 and a ¾ in. Pinion 29. Gear 28 meshes with a ½ in. Pinion on the Motor output shaft, while Pinion 29 meshes with Contrate Wheel 19.

The theory of the mechanism is quite straightforward. At low speeds the elastic band keeps Pinion 24 in mesh with Gear 26. As speed increases, the action of the governor draws Sprocket Coupling 17 up Rod 11, this movement being transferred to the layshaft by the Screwed Rod and Collar, and Crank 21 attached to 5 in. Rod 20. With the movement of the layshaft, Pinion 24 disengages from Gear 26, then Pinion 25 engages with Gear 27. As speed decreases, this process is reversed. Note that the positions of Pinions 24 and 25 and Gears 26 and 27 are most important. The first two must have disengaged before the latter two engage—in other words, there must be a short neutral period between the two gears.

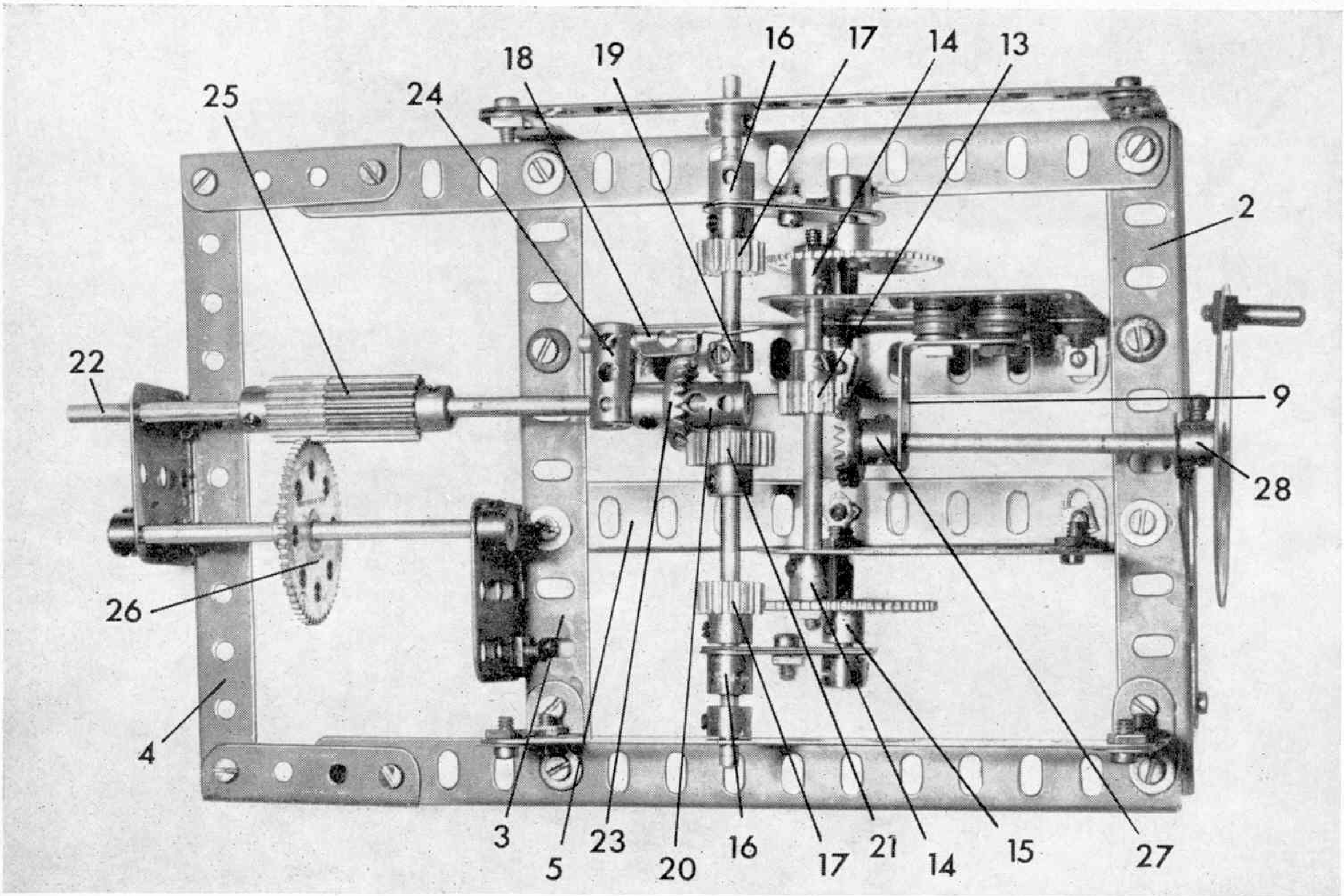
PARTS REQUIRED:

2 of No. 2	1 of No. 26c	7 of No. 48a
4 of No. 6a	1 of No. 27	14 of No. 59
2 of No. 8a	1 of No. 27a	1 of No. 62
1 of No. 12	1 of No. 27d	5 of No. 63
2 of No. 15	1 of No. 28	4 of No. 69b
3 of No. 16	2 of No. 31	1 of No. 81
4 of No. 18b	20 of No. 37a	2 of No. 111d
2 of No. 25	19 of No. 37b	1 of No. 171
1 of No. 26	10 of No. 38	1 E15R Electric Motor

VARYING SPEED MECHANISM

Mr. H. H. Taylor, of Huddersfield, Yorks., is not only an outstanding model-builder but is also an amazingly versatile designer. Only two or three months ago we featured an interesting crank mechanism he had produced—now we feature an ingenious Variable Speed Mechanism with which he has supplied me. Here again, the basic idea came from a unit illustrated in the 'M.M.' very many years ago, as Mr. Taylor readily admits, but the mechanism illustrated is a great advancement on the original.

Basically, it consists of a framework built up from two 8½ in. Compound Angle Girders 1 connected by three 5½ in. Angle Girders 2, 3 and 4. Each Compound Girder is obtained from a 7½ in. Angle Girder extended by a



2 in. Angle Girder. Girders 2 and 3 are, in turn, joined by a further two 5½ in. Angle Girders 5, to which two 2½ in. by 2½ in. Flat Plates 6 are fixed by 2½ in. Angle Girders. Fixed to Angle Girders 3 and 4 by 1½ in. Flat Girders are two 1½ in. by 1½ in. Flat Plates 7, while a Corner Gusset 8 is bolted to the vertical flange of Angle Girder 2. A 1 in. by 1 in. Angle Bracket 9 is fixed by ⅜ in. Bolts to one of the Flat Plates 6, but is spaced from it by five Washers on the shank of each Bolt. Two 5½ in. Slotted Strips 10 are then attached to the framework, one by 2 in. Slotted Strips 11 and the other by 1 in. by ½ in. Angle Brackets extended by 1½ in. Strips 12.

Journalled in Flat Plates 6 is a 3 in. Rod carrying a ½ in. Pinion 13 and held in place by Rod Sockets 14. Bolted to each of these Rod Sockets is a 57-teeth Gear 15, the shank of the Rod Socket passing through one of the holes in the face of the Gear. In the boss of each Gear a 1 in. Rod is fixed. Mounted in one of the slotted holes of Slotted Strips 10 is a 5½ in. Rod, held in place by Collars and carrying two Cranks 16 to the arms of each of which a 1½ in. Strip is bolted, two ½ in. Pinions 17, a Rod and Strip Connector 18, holding a 1 in. Rod, a Collar 19, a Coupling 20 and a ¾ in. Pinion 21. Pinion 21 is spaced from Coupling 20 by a Washer while Collar 19 prevents the Coupling, which is loose on the Rod, from moving out of position. The arms of Cranks 16 are slipped over the 1 in. Rods in the bosses of Gears 15 and are held in place by Collars. The Gears themselves mesh with Pinion 17.

Another 5½ in. Rod 22, carrying a ¾ in. Contrate Wheel 23, a Coupling 24 and a compound ½ in. diameter 1¼ in. face Pinion 25, obtained from one ¾ in. face and one ½ in. face Pinion, is journalled in end 1½ in. by 1½ in. Flat Plate 7 and the longitudinal bore of Coupling 20. The Rod must be free to turn both in this Coupling and in the end transverse bore of Coupling 24. Tightly fixed in the other end transverse bore of Coupling 24 is the 1 in. Rod and Strip Connector 18. Contrate Wheel 23 meshes with a ¾ in. Pinion 21 whereas Compound Pinion 25 meshes with a 57-teeth Gear 26 on a 3½ in. Rod held by Collars in Flat Plate 7. This Rod is the output shaft of the mechanism. The input shaft is provided by a 3 in. Rod journalled in Corner Gusset 8 and Angle Bracket 9 and carrying a ¾ in. Contrate Wheel 27 and a Face Plate 28 in which a Threaded Pin is mounted to act as a handle. Contrate Wheel 27 meshes with Pinion 13.

The theory of the unit becomes self-evident in operation. As Face Plate 28 is turned, Gear Wheels 15 revolve in an eccentric manner, thus having the same effect as a Gear Wheel of varying diameter. As you know, if you increase the diameter of a Gear Wheel in mesh with a Pinion, you will cause the Pinion to revolve faster, although the speed of the Gear Wheel remains constant. In the same way, if you decrease the diameter, the Pinion will revolve at a slower speed. In the case of Mr. Taylor's mechanism the varying operational diameter of Gear Wheels 15 cause Pinions 17 to revolve at varying speeds, which are, of course, transferred to the output shaft via the intermediate gearing.

PARTS REQUIRED:

4 of No. 6a	1 of No. 25	2 of No. 62
2 of No. 8b	3 of No. 26	1 of No. 63
5 of No. 9	1 of No. 26a	1 of No. 63d
2 of No. 9d	1 of No. 26b	2 of No. 72
2 of No. 9e	3 of No. 27a	2 of No. 74
1 of No. 12a	2 of No. 29	2 of No. 103h
2 of No. 12b	44 of No. 37a	1 of No. 108
2 of No. 14a	42 of No. 37b	1 of No. 109
1 of No. 16	28 of No. 38	2 of No. 111c
1 of No. 16a	2 of No. 55	1 of No. 115
1 of No. 16b	2 of No. 55a	1 of No. 212
3 of No. 18b	7 of No. 59	

Continued from page 38

Bracket which is then fixed to the end of Strip 5. The other ends of Narrow Strips 7 are, in turn, locknutted to two 5½ in. Strips 8, to each of which an Angle Bracket is bolted to represent a pedal. At its other end, each Strip 8 is held loosely on the centre of a 1 in. Screwed Rod by two Nuts. These Rods are then screwed into opposite end transverse tapped bores of a Coupling 9, while short Couplings 10 are screwed on to the other ends of the Rods, as shown. Two 1½ in. Rods 11 are now journalled in Angle Brackets bolted to Curved Strips 1 and are tightly fixed in the transverse smooth bores of Short Couplings 10. Spoked wheels are mounted on the ends of these Rods and also on the ends of a 5 in. Rod, journalled in the lugs of Double Angle Strip 4.

A steering handle is obtained by fixing two 1½ in. Strips 12 to Double Angle Strip 4 with ⅜ in. Bolts, the Strips being spaced from the Double Angle Strip by four Washers on the shank of each Bolt. The other ends of Strips 12 are brought together and are bolted to a Rod and Strip Connector, in which a 2 in. Rod is held. A short Coupling 13, carrying a transversely-mounted 1 in. Rod, is fixed on the upper end of this 2 in. Rod. Finally, a seat is provided by an 8-hole Wheel Disc 14, to which a bent 2 in. Strip is fixed by Angle Brackets. The Wheel Disc is bolted to Strip 6.

PARTS REQUIRED:

2 of No. 2	1 of No. 24a
1 of No. 3	31 of No. 37a
1 of No. 5	21 of No. 37b
1 of No. 6	8 of No. 38
2 of No. 6a	1 of No. 48b
1 of No. 11	1 of No. 63
8 of No. 12	3 of No. 63d
1 of No. 15a	3 of No. 90a
3 of No. 17	3 of No. 111c
1 of No. 18a	1 of No. 212
4 of No. 19a	2 of No. 235

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WHAT SHALL WE BUY NEXT

BY GODFREY ARNOLD

LAST Christmas, a young acquaintance of mine was given a Scalextric set but his father, whose generosity exceeded his familiarity with such things, added two extra cars to 'make the present up'. When I called on them about four months later the whole lot was lying in a cupboard, forgotten. The father told me that he thought that his son would derive even more interest from the set with two more cars and so deserves recognition for realising that interest could wane. What he did not realise, however, was that he was starting his son off in what must be the most competitive hobby that there is and that, while additional cars are very nice to have, other things come first and will do much more to foster an interest which will grow into a dedication for a most rewarding pastime. Do not, however, think that one should not buy more cars; do so by all means, but get your track developed to start with.

The majority of Scalextric enthusiasts begin with complete sets and this is really the best way to start, no matter whether it is the cheapest '30' set or the relatively expensive, yet equally good value for money, '90' set, for any one may be expanded to form a large and complete racing layout. I have tried all the tracks on the market and Scalextric, although it may, possibly, be beaten on a couple of small details by other makes, offers far more scope and versatility than any other, or even all the others' features put together.

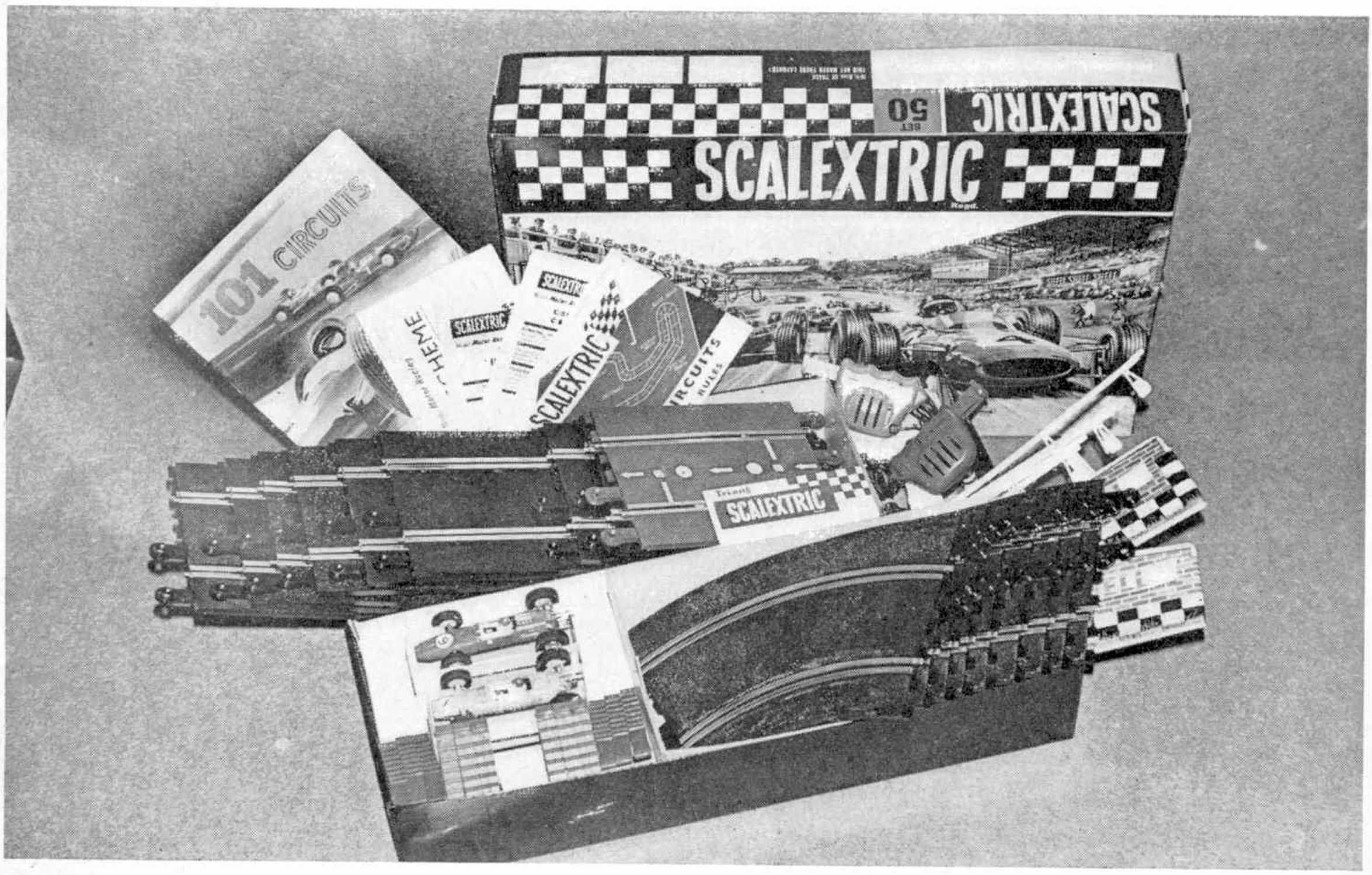
Most basic sets have to comprise of either a 'figure eight' or an oval and be more or less symmetrical if they are to present equal opportunities for each lane and, as such, can be learned thoroughly in a relatively short time, so that one drives with an on/off rhythm that is practically unbeatable and there are few things more boring than continually winning on one's own track.

Probably the best way to start expanding a track is to buy some more straights. Somewhere in every circuit there are two parallel joins, on the same side of any bridge, where straights can be put in in pairs to lengthen the layout. I mentioned earlier that one can drive round small tracks with a rhythm, but as soon as the straights get longer this does not hold true. It is difficult to say at exactly what length of straight this rhythm fails but I would think that it is about seven or eight feet. Of course, if you want to go on winning races purely by knowing the exact timing for your own track then you would be ill-advised to expand it, but before long you would have no opponents!

There is a length limit to every room and, in any case, one wants to race on more complicated circuits than 'figure eights with long straights' as one's skill increases, in fact, this is the whole key to the enjoyment that Scalextric offers, that one's layout may be enlarged and altered to match one's skill, so that circuits demanding a higher degree of driving competence may be made up as one progresses. Many such layouts are described in the booklet, '101 Circuits For Scalextric Drivers' and it should be possible to pick something out that you like, but after years of racing, I would advise that your ultimate circuit is based on a maximum length of main straight, having no 'obstruction' except lap counters and pit entries, which are approached and left by the shallowest possible bends, and a 'country' section containing such items as chicanes, bridges, paddock, etc. If you are going to stick to no set plan but are going to design your own circuits using the sections that you have available, make sure that you have a couple each of A and B straights (PT/57 and PT/58) before you start, for there are few things more frustrating than coming to the end of laying out a really superb track and finding that the two ends will not meet. By using combinations of these two short straights almost any two ends will come together. Scalextric alone allows such a flexibility of circuit design and it is the wide variety of bends available, for up to eight lanes can be used, together with these short straights that accounts for this.

An interesting alternative to a racing circuit, which is particularly attractive if you do not have the 'capital' to invest in a great deal of track, is to use a hill-climb and dragster turn to effectively double the length of your existing track. This opens up a new field of racing against the clock and, although full-size hill-climbs are run in one direction only, you can get even more excitement by racing up and down the hill. A start and finish banner is useful here, for it gives a definite line to time from, and the 'hill' may easily be made from books, boxes, tables, etc. Drag strips require two turns and several straights but when the turns are used to simulate rally sections the fun really starts. A good way to do this is to place all one's track sections in a pile, shuffle them, and join them in the order that you pick them up, with the start/finish line at one end and the dragster turn at the other. Use a few books and boxes to give both up and down gradients, then allow no practice but time each competitor over the course, from a 'count down' start to stopping again

The way most people start—a '50' set which comes, as you can see, with lots of track, a fly-over, hand controllers, lap-recorder, fences and, of course, cars! The book '101 Circuits' is a useful addition that will suggest the most suitable extra track to buy next.



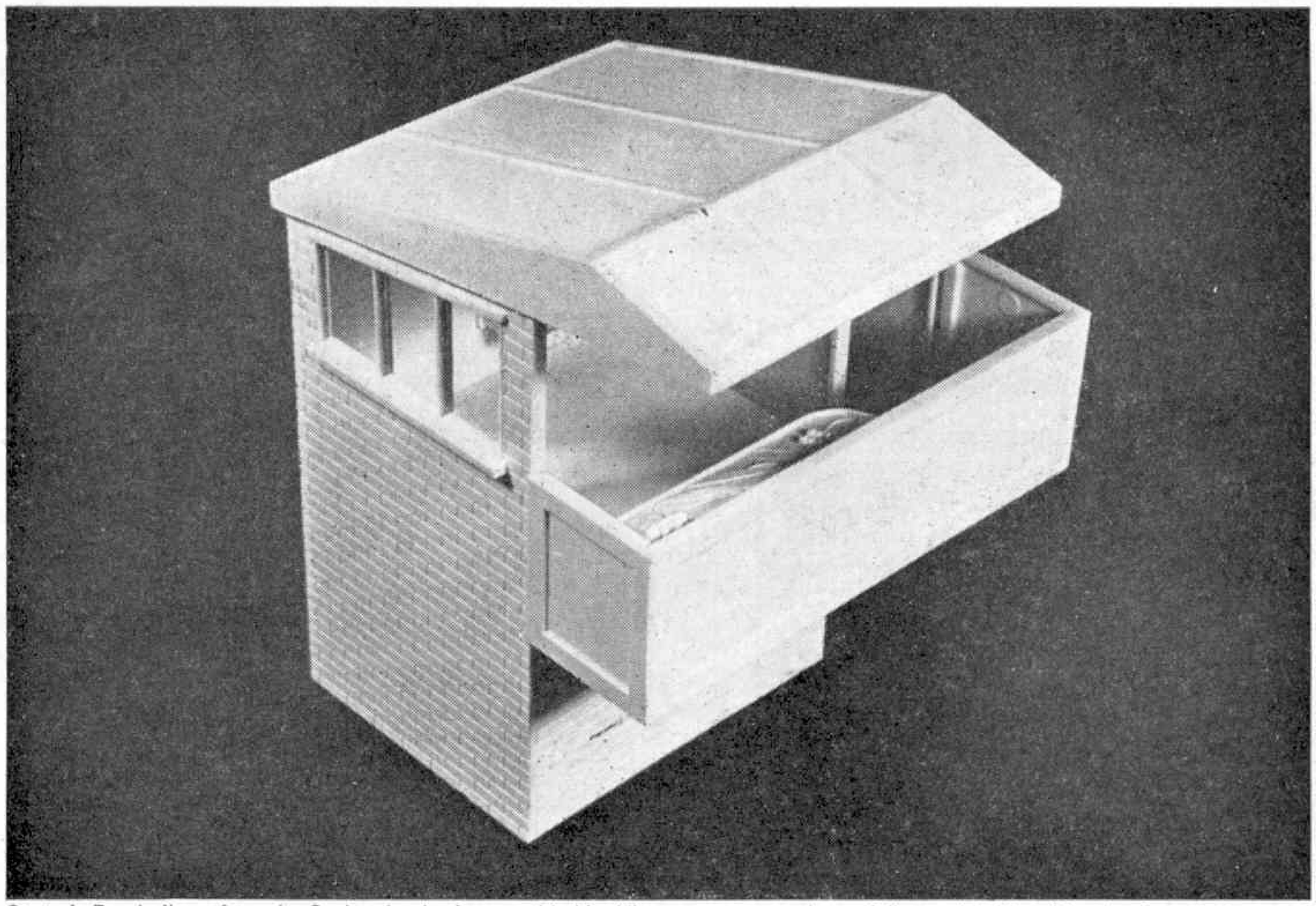
on the finish line, awarding one penalty point for each second taken, including any time taken by the driver to put his own car back on should he 'lose it'. Once everyone has completed his run and all times are noted, dismantle this stage and build a different one, using about ten stages in all, then add up the penalty points, the one with the least being the winner.

Once you have enough track to make a variety of interesting layouts, realism can be attained by adding the various 'scenic' accessories that Scalextric offer. Usually, the first items to add are buildings, whether in kit form or ready made, and the scope here is tremendous. The obvious place to start is the pits, and a control tower makes a useful complement. Once you have a few buildings, add some people and the necessary fences to stop them going into prohibited areas. Track signs, and further buildings and figures can then be added as you progress to give a high degree of realism.

Using some of the available accessories, a realistic race procedure may run something as follows: The three minute signal is given from the time-keepers' hut and cars are driven from the paddock for a couple of exploratory laps and then brought into the pits for a last check-up. A further lap is then covered and cars are brought up to the start line. At the one minute signal the lap counters are zeroed, fuel load gauges are set, the starter drops his flag and they are off. All should run well until someone gets low on fuel and has to bring his car into the pits to reset the gauge. It should be obligatory for all cars to be refueled in the pits and if he runs out while still on the circuit, a driver should have to push his car back to the pits before more fuel can be taken on. Races should be planned to last longer than the maximum setting on the fuel load gauge so that at least one pit stop is essential.

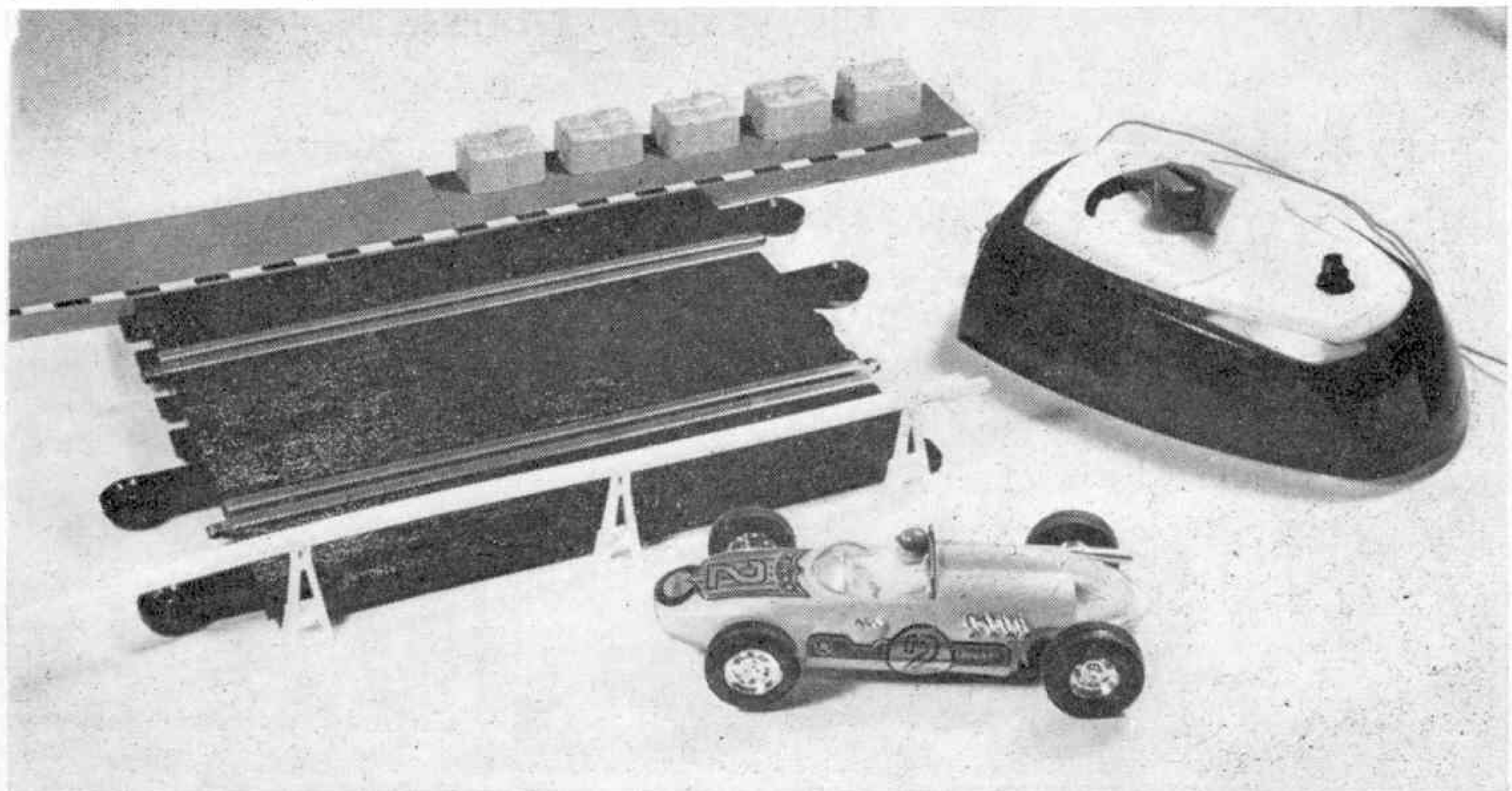
No other manufacturer offers such a comprehensive range of cars, track and accessories as Scalextric and this range provides unrivalled scope for making a really interesting layout and the ease with which Plexytrack can be assembled and put away means that it is quite practicable to lay down large circuits for a short length of time. There is adequate equipment available to maintain almost anyone's interest and if you really want to prove your skill try the Race-Tuned cars and controllers for these excellent items really put a premium on driving ability.

At present, the national slot racing champions come from those who started some while ago and did not have as much chance of developing their skill at home as you have. Just as the world champion racing drivers of tomorrow come from the club drivers of today, so the slot racing champions will come from those who now do all their racing at home, so keep practising and adding to your track to make it as varied as possible. The climb to the top will be harder in the future and it is driving ability that counts and this can only be improved by as much driving as possible on circuits that are as good as can be arranged with the track available.



Starter's Box built up from the Scalextric plastic assembly kit. All components are beautifully moulded in white plastic and allow great scope for painting ingenuity

Above: Racing Drivers and Mechanics add tremendous realism and action to the pit scene. Below: some of the useful 'extras' mentioned in this feature:— a 'Short' Straight Track Section; 'Grass' Verges and Straw Bales; Track Fence; Fuel Load Gauge; Race-Tuned Car (Rear Engined Offenhauser)



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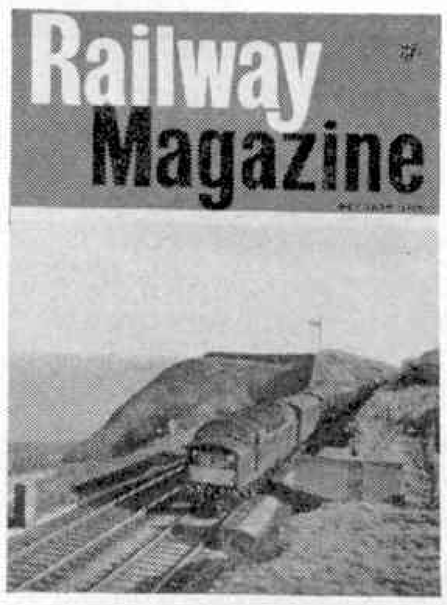

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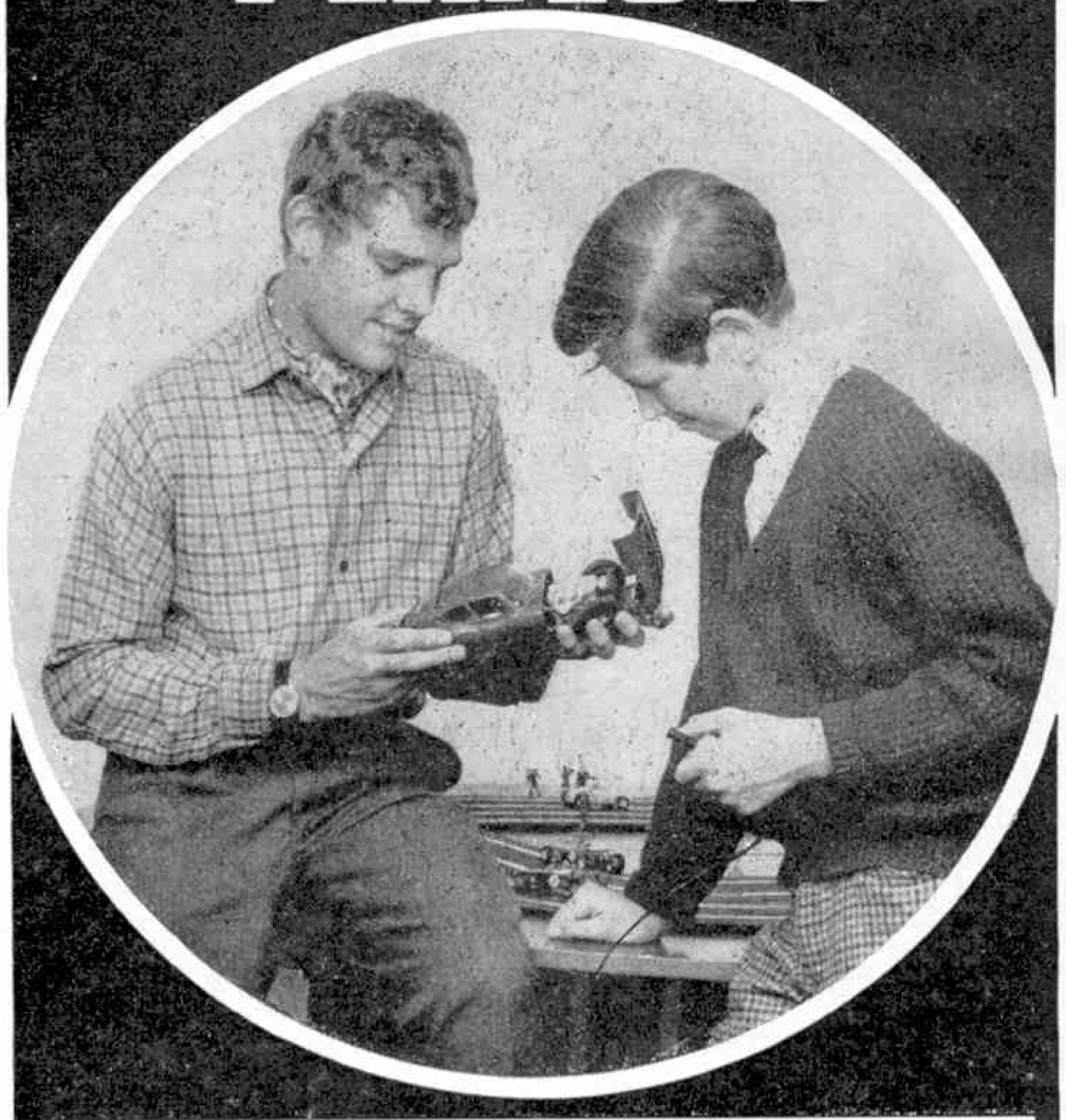

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SLOW-MOTION TV

Q. When football games are televised on the spot, how do they re-show bits in slow motion just after goals have been scored?—'Soccer Fan', Burnley.

A. It is done by a process invented by B.B.C. engineers. The match is recorded by video tape, and when part is to be shown in slow-motion the portion of tape is fed to a magnetic disc which, when played back, gives the slow-motion effect.

PAINT OR DOPE?

Q. Is it best to paint or dope a floating balsa-wood model below the waterline? —John Boyle, Maghull, Liverpool.

A. For an electric-powered model or sailing boat, a proper marine finish will be more durable and waterproof than a cellulose dope or finish such as used for model aircraft. But oil-bound paints and marine finishes are attacked by engine fuel; so if your model is to be fitted with a diesel or glow-motor it is best to use cellulose colour dopes, with a final coat of fuel-proofer if a glow-motor is to be fitted. The inside of the hull should also be painted, or coated with shellac, to ensure waterproofing; for balsa wood will absorb any water collecting inside the hull unless the surface is sealed. For further tips see *Model Kits,* by R. H. Warring (Arco, 25s.).

SUN'S SPAN

Q. How long will the sun continue to support life on this planet?—D. B., Bushey, Herts.

A. According to modern theories the sun will last at least ten thousand millions of years, during which its heat will gradually increase, though we shall not notice any perceptible difference. But near the end of its life its radiation may become so intense that it will scorch the earth and cause its seas to evaporate. It may then take a few million years for the sun's energies to be entirely dissipated. There is certainly no cause for us to be concerned.

TEGESTOLOGY

Q. Can you tell me the proper name for collecting beer-mats and give me any other information about the hobby?—John Bateson, Cwmbran, Mon.

A. The name is tegestology. The two most valuable beer-mats in the world are reputed to be worth at least £75 each. There are several clubs devoted to the hobby, and many dealers, at least one of whom offers 800 different specimens for sale. Claiming to be the oldest club in Britain is the Beer-Mat Collectors Society, which has members all over the world, holds regular meetings, and issues a monthly magazine. Inquiries to the secretary at 142 Leicester Street, Wolverhampton, Staffs.

MUSIC, MUSIC, MUSIC

Q. Can you inform me of any periodicals concerning music?—R. Blayney, Biggleswade, Beds.

(2) Is there any magazine devoted to Folk and Country and Western music? M. D., Llangollen, Denbighshire.

A. The *Newspaper Press Directory* lists between 50 and 60 publications dealing with music of various sorts. Many of these are so specialised in their interest that, unless I know your particular tastes, I cannot recommend any that would appeal to you; but, for lovers of serious music, perhaps *Music and Musicians* (monthly) has the most general appeal. Several weekly papers, such as *Melody Maker, Disc,* and *New Musical Express,* cover pop music; but I know of no publication which is devoted exclusively to Folk and C. and W. music.

CHICK'S BIRTH

Q. Which part of a hen's egg does the chick come from—the yolk or the white part?—G. F., Chiswick.

A. Both the yolk and the white are food for the embyro from which the chick develops. The only living part of the egg is a tiny patch on top of the yolk, which grows by gradually absorbing the whole contents of the egg.

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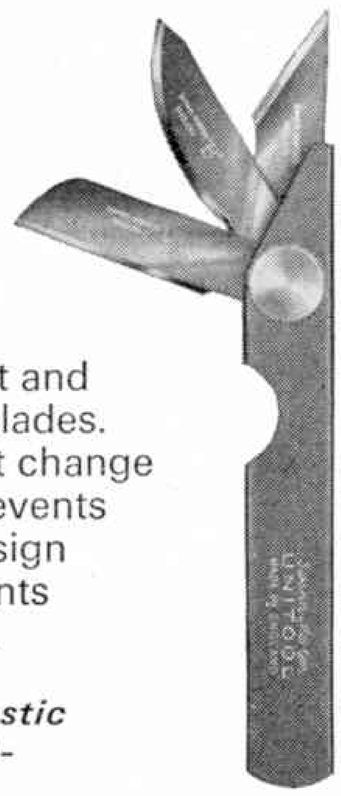

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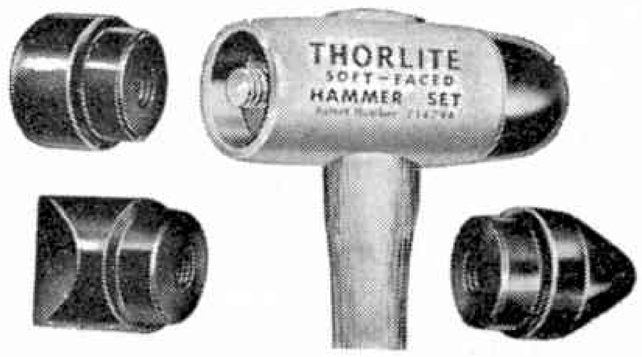

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- Transformers, Toys, Books, Meccano Magazines, Look and Learn Magazines, etc.; S.A.E. for list. Vick, 13 Badshot Lea Road, Farnham, Surrey.
- For full details of the Independent International Dan Dare Club, send a stamped addressed envelope to: 16 Beechey Road, Bournemouth, Hampshire.
- Bayko, Chemistry Set, Books, etc.; S.A.E. for details. 45 Brinkburn Gardens, Edgware, Middlesex.
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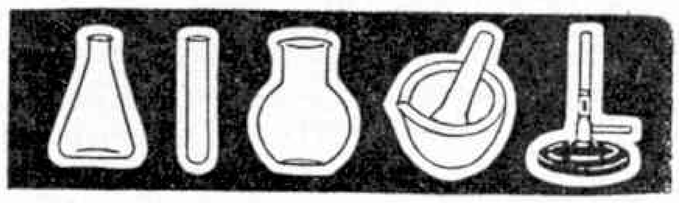

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STAMPS NEWS BY F. E. METCALFE

CHURCHILL

'Seventy post offices in all parts of the world have issued stamps in memory of the late Sir Winston Churchill. Collector interest in these stamps has been consistently strong internationally and additional series are planned for later this year from still other post offices.' Thus runs a circular sent all over the world, by a New York firm of stamp dealers, and what they say is true enough, for not only are all these seventy sets of stamps being snapped up, but more are following, and a well mounted collection fairly representative of this Churchill theme will prove attractive to non-collectors as well, of course, as those interested in stamps. It will prove a world-wide collection too, as can be imagined from the number of countries concerned. The designs are many and varied, but my favourite is the one chosen by both Australia and New Zealand and the U.S.A. stamp. Here we have simple stamps issued really in honour of the great man, and not just as a means of tapping collectors' pockets, which was undoubtedly the object behind many of the seventy issues.

GOING UP

Those who have seen copies of new editions of the Commonwealth and Gibbons catalogues will have noticed how that stamps of Ireland are not only going up, but have gone up to a fantastic degree. In fact, values have shot up so rapidly during the past few months that the prices in the body of Gibbons Part 1 were out-of-date before the catalogue could be published, and a host of further rises had to be inserted in the addenda. After so long in the doldrums, it is difficult to say why there has been such a change. However, collectors with Irish collections already, will not worry about looking a gift horse in the mouth, if I may put it that way, but just congratulate themselves that they do not have to buy their stamps now at the new rates. Of course, Irish stamps really deserve well of collectors, for there has been no attempt whatever by the Postal Administration over the water to try and soak philatelists. Even at today's prices, Eire stamps are well worth collecting, in my humble opinion, for now they are really in a class which leads to steady price increases all the time. Buy Irish is a good slogan for those interested in taking up a new country. However, if you do take up Ireland, be sure and get at once the two 'Europa' stamps, which were issued September 26. Also worth obtaining is the definitive set which has actually been on sale since 1922, with a mere change of watermark, for a new issue is being printed and should appear shortly. Then the current issue will increase in price, probably quite a bit, in spite of the fact that it has been on sale so long.

SEA ANGLING

I can just imagine how many readers of that heading will be smacking their lips at the very thought of such a pastime. But it isn't always as exciting as it sounds. I remember when on holiday on the Costa Brava, being one of a party which pushed out the boat to catch sharks, or anything else as big. Would the boat be big enough to hold the four of us, and all the big fish we would land? A Spaniard who was with us, explained that until the fish were caught, they were called 'pez', but those we hauled in became 'pescado' (in other words, fish became fished, which is how the Spaniards put it). Alas, as far as we were concerned, they all remained fish, for we didn't land as much as a stickleback. But it must have been our fault, as there are surely plenty of pez in the Mediterranean, for only a few miles from where we were staying, in Gibraltar to be exact, the European Sea Angling Championships were held recently, and to mark all the big fish we missed and they no doubt caught, a set of three special stamps was issued on August 27. Grand sport no doubt, if you could only catch anything!

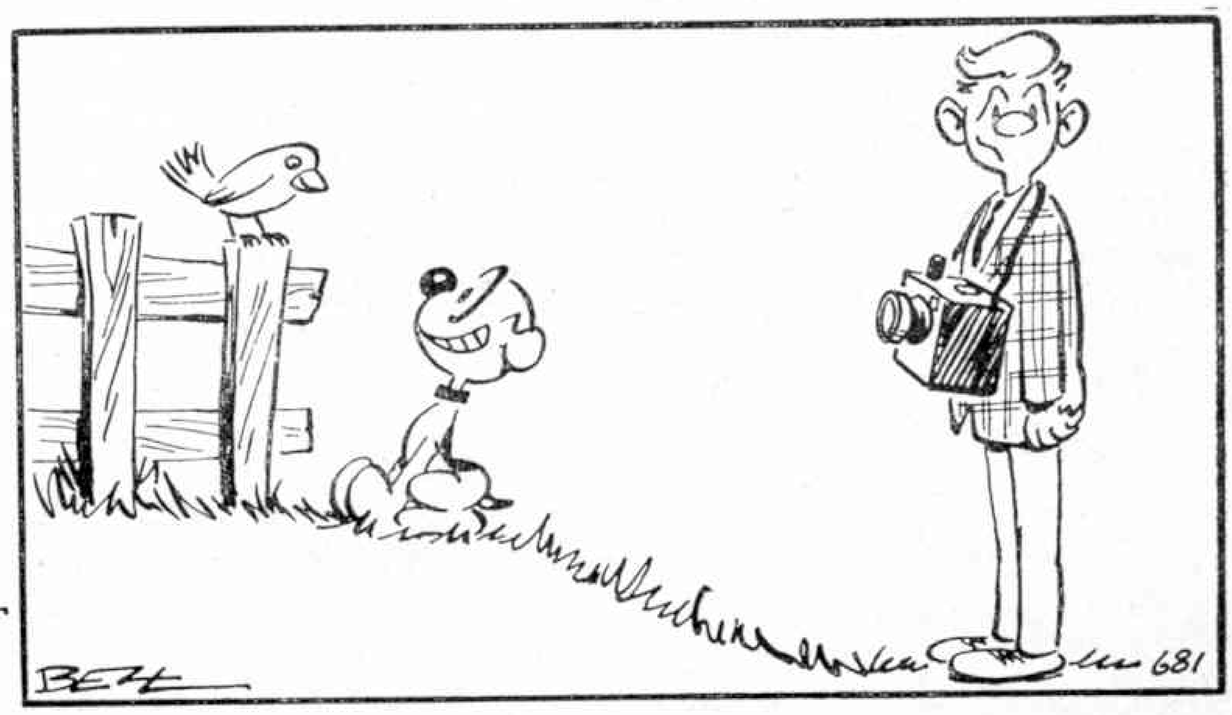
TRISTAN DA CUNHA

This lonely little island has been much in the news lately, and collectors were treated, on August 11, to a simply gorgeous set of four stamps to mark the 150th Anniversary of the Establishment of the First Garrison. At least that was the official reason for the issue. I wonder if you and I know another reason why the stamps were issued, with what was rather a substantial face value (4s. 9d.) for such an object. But never mind, the stamps are really posh, and no wonder they are proving so popular. A fact or two about Tristan. It lies in the South Atlantic, midway between South Africa and South America. No wonder it is called the loneliest island in the world. Volcanic in origin, it only covers 38 square miles, yet it has a peak actually 6,760 feet high, or twice as high as anything we can boast of. During the forced residence of Napoleon on St. Helena in 1816, a detachment of eighteen seamen established a camp on Tristan, where the present township, now called Edinburgh Settlement is. But it was decided that the cost was too high, and the following year, in November, 1817, the garrison was withdrawn (pity they hadn't thought about stamps in those days, they could have kept things going, as they almost do now, by issuing a set every few months). But Corporal William Glass, with his wife and two children, elected to stay on. Shortly afterwards two discharged seamen joined him, and from time to time other seamen added to the population, as well as a number of Creole women from St. Helena. That was and is Tristan, and incidentally its postage stamps are fantastically popular today. Better get your 'Garrison' set now. It will go up in price later.

THE TIP OF THE MONTH

As has been announced, Canada is to bring out, next February, a completely new definitive set of stamps (and some nice designs there are too) which means that the current issue will be replaced. But there is one stamp which, for some reason or other, remains rather scarce, the $1 carmine, which was issued in 1963. I am not going to claim that the stamp will ever be a rarity, yet I am sure that a nicely cancelled copy will be well worth picking up. But you will have to be quick and not grumble if you have to pay full catalogue price of around 4s. 6d.

CHIPPER



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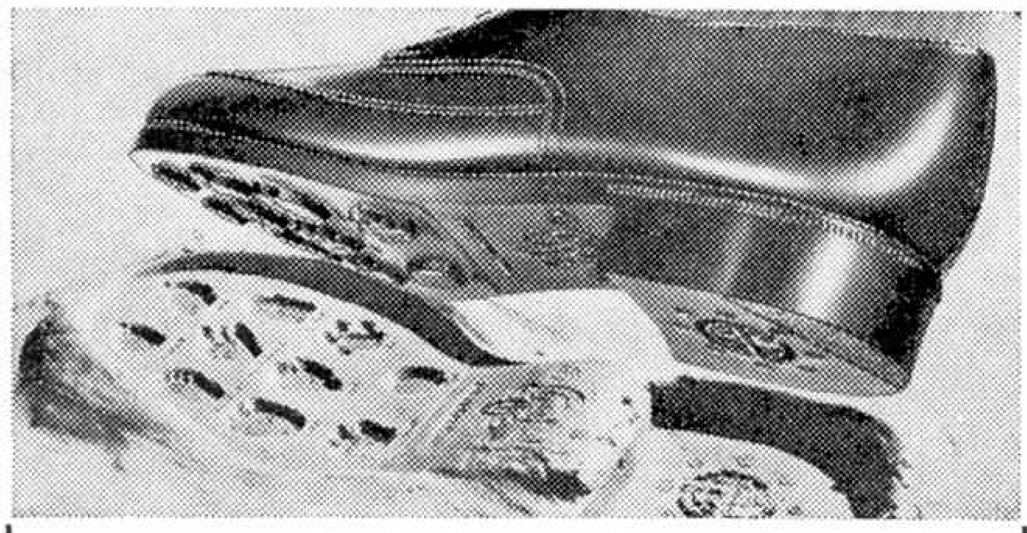

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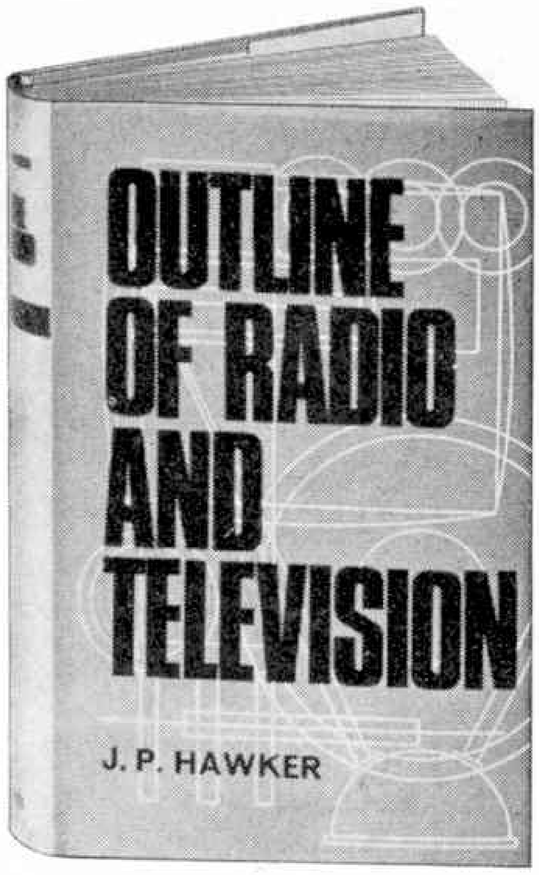

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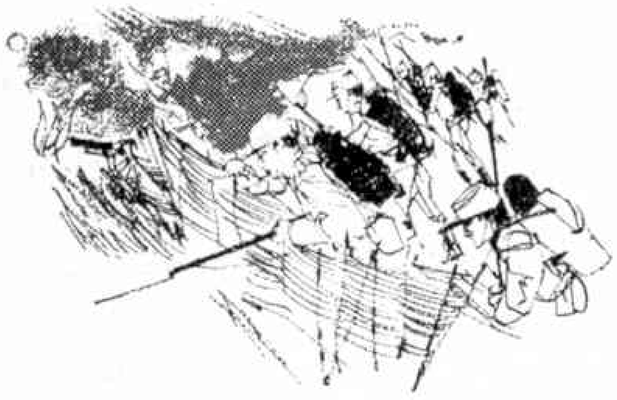

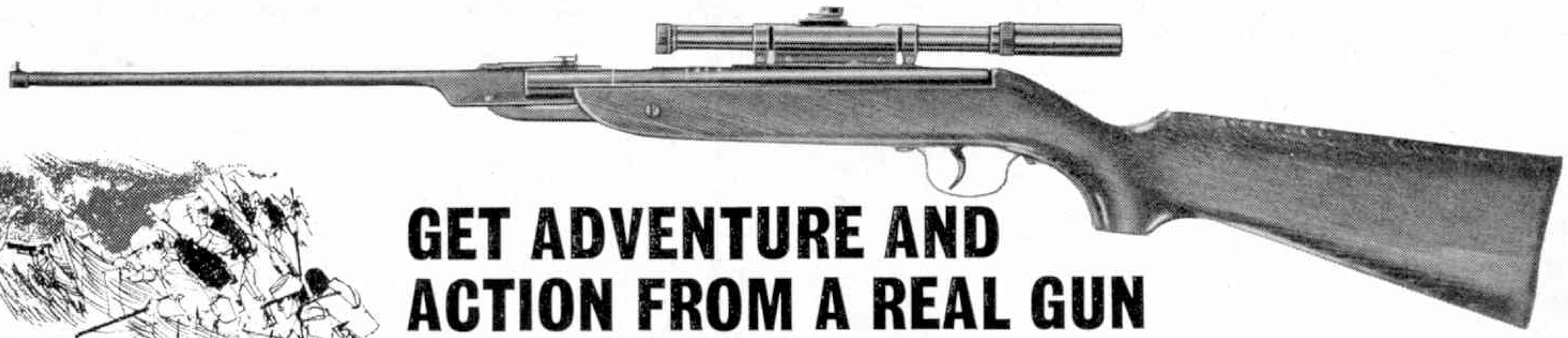

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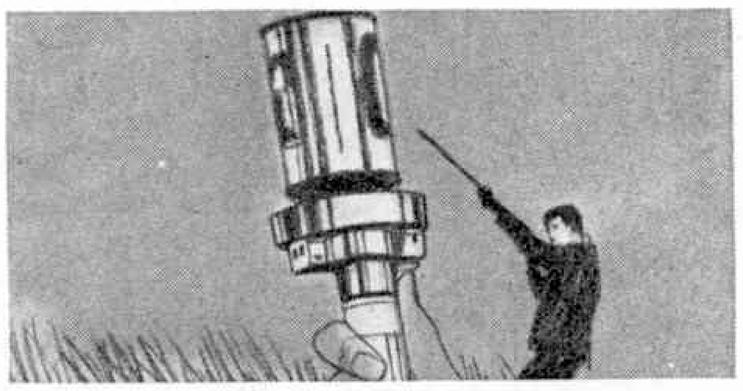

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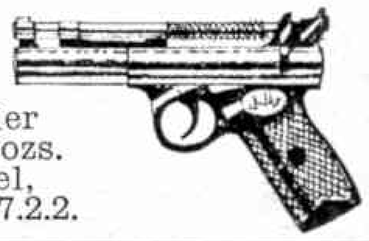

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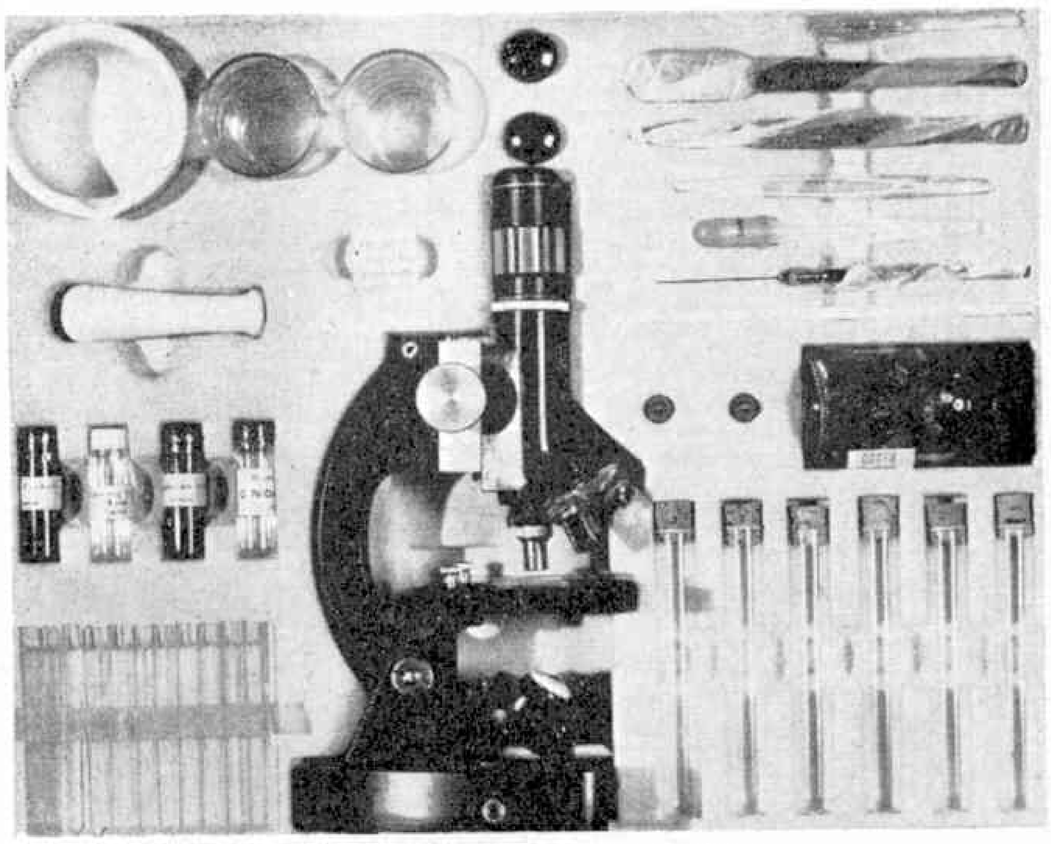

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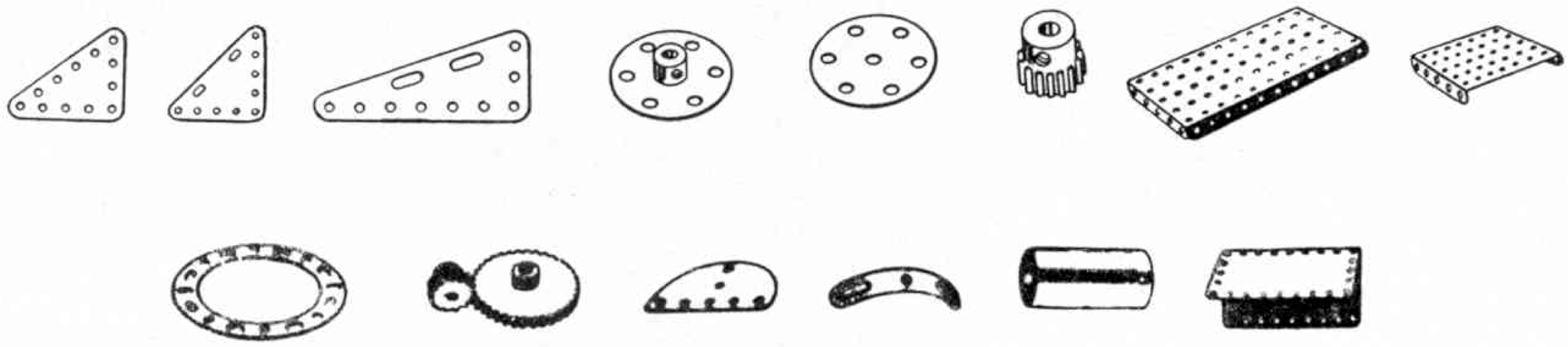

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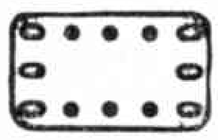

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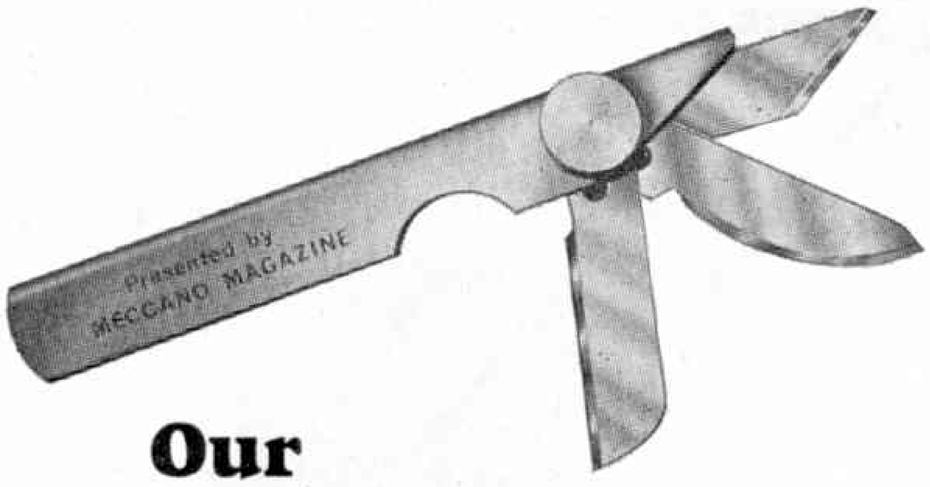

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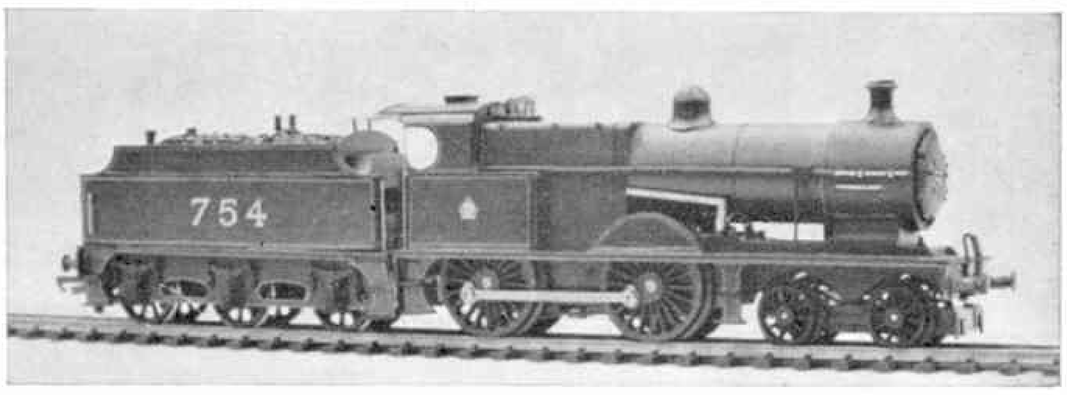

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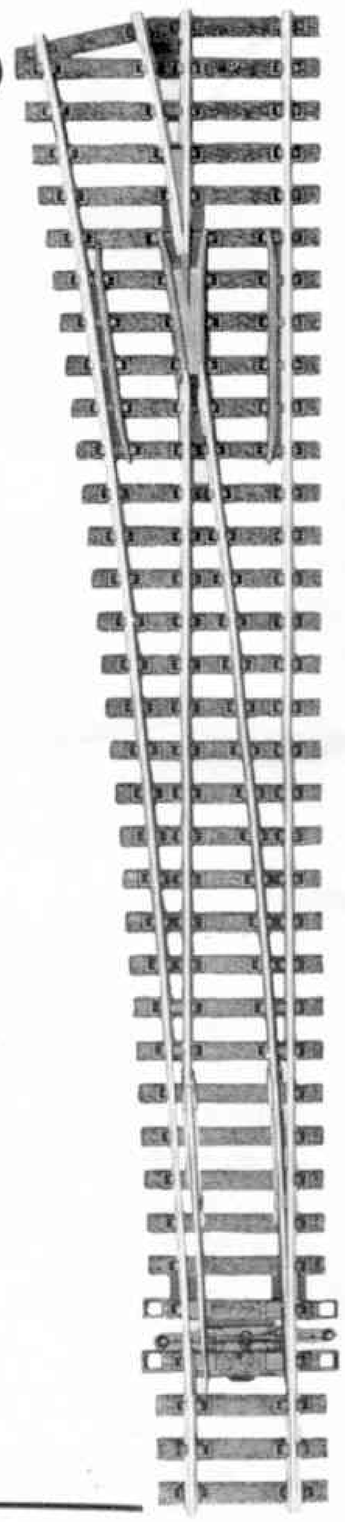

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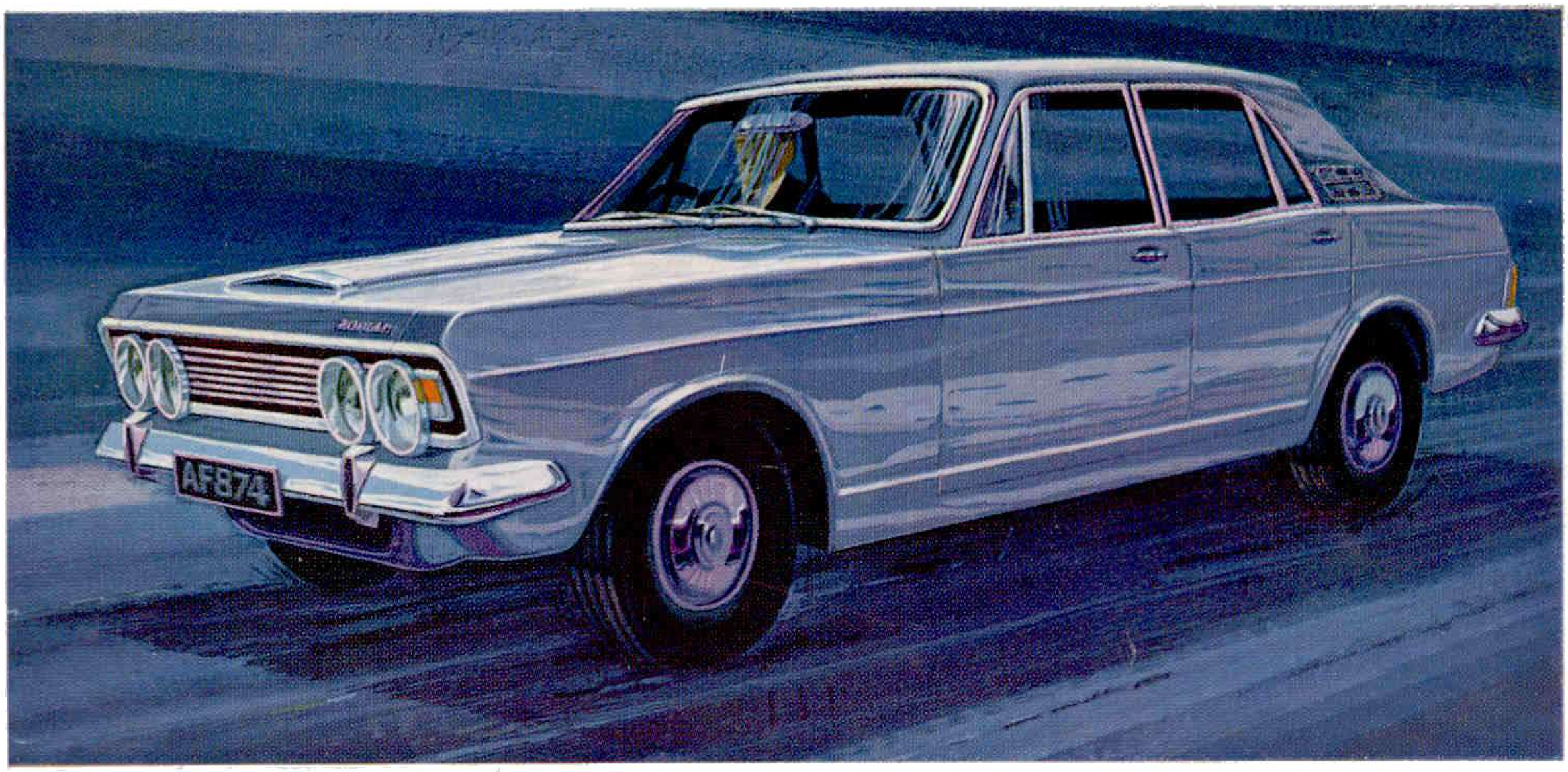

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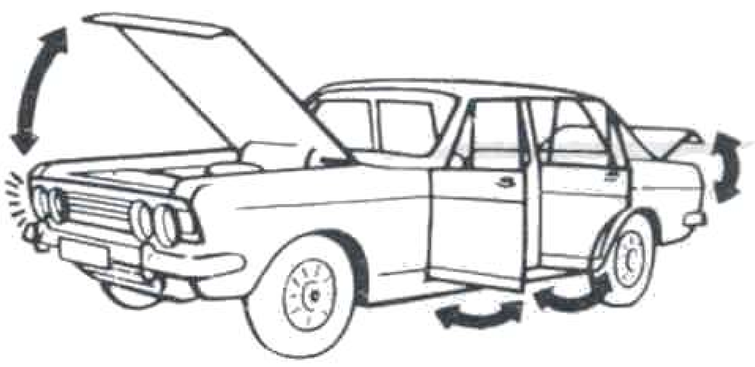

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