FREE – 50 Dinky Toys to be won – FREE

meccano magazine

February

1s.6d.

the practical boy's hobbies magazine

IN THIS ISSUE

- **Powerboat Racing Thrills**
- **Build a working model Swing Bridge**
- **The 20-ton Hummingbird**

1966

GET YOUR MODELS MOVING WITH MECHANISMS and GEARS

Now in the great NEW COLOURS!

More marvellous news! Meccano Mechanisms and Gears Sets have been brought dramatically into line with all the other superb New-Look Meccano Sets—now come in those rugged, realistic colours and fabulous boxes—to make mechanising your models even more exciting than before!

And it's true! Meccano Mechanisms and Gears really do make your models into *machines*—let you use your engineering know-how to get cars, cranes, propellers, swing-bridges—practically *every* Meccano Model—working just like the real thing!

Pop into your local toy shop today—and see how easily you can get *Your* models *moving!*

LOOK FOR THIS BOX OF NEW-LOOK
MECCANO MECHANISMS

— contains engineering manual with full details and illustrations for making clutches, differentials, disc brakes, free-wheels, reversing mechanisms of all sorts!
U.K. Price **35/-**

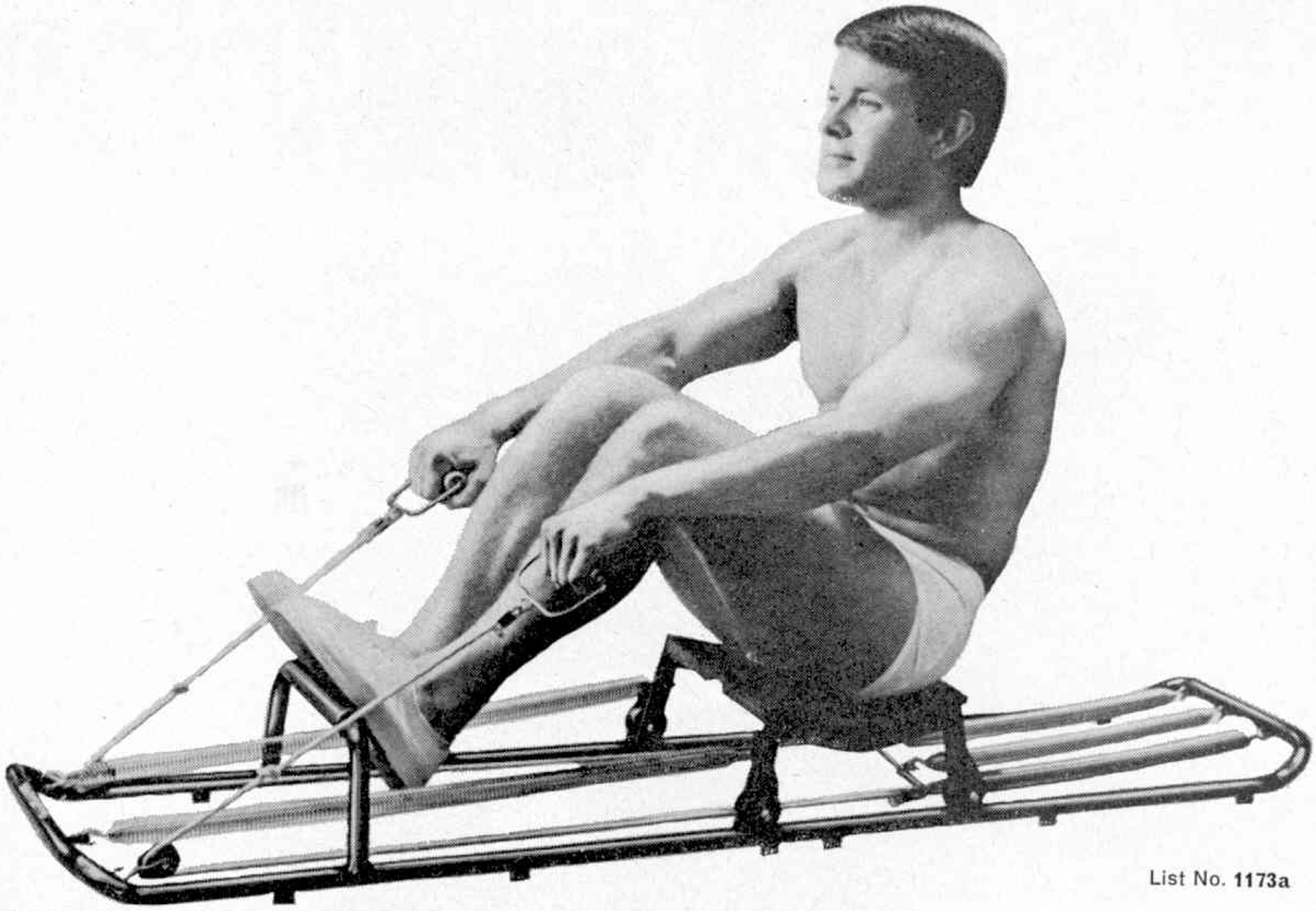
LOOK FOR THIS BOX OF NEW-LOOK
MECCANO GEARS

— contains engineering manual with full details and illustrations for making dozens of drives and gears — twin drives, intermittent drives, spur gearings, etc.
U.K. Price **19/9d**

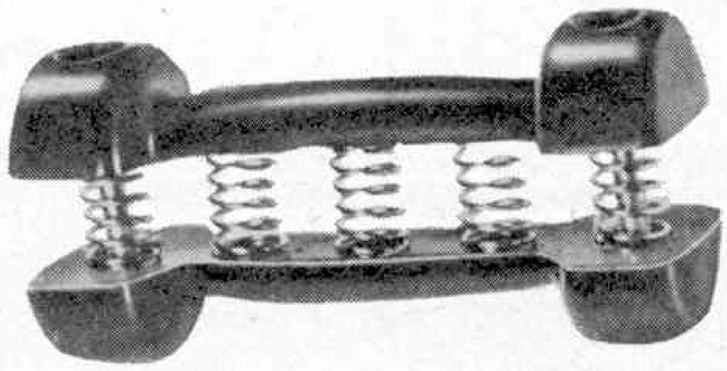
and NOW—
MECCANO CONVERSION SETS

also in the realistic new colours and 'New-Look' boxes — give you more scope for bigger and better model-making by converting your existing Meccano Set into the next larger one!
Set 6 + 6A (Conversion Set) = Set 7.
U.K. Prices from **10/3d**

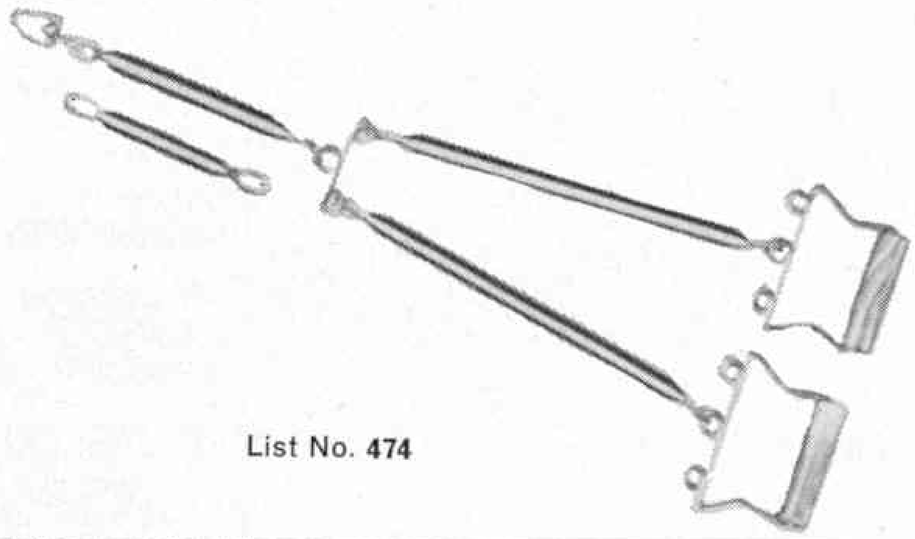
MECCANO LIMITED. BINNS ROAD. LIVERPOOL.



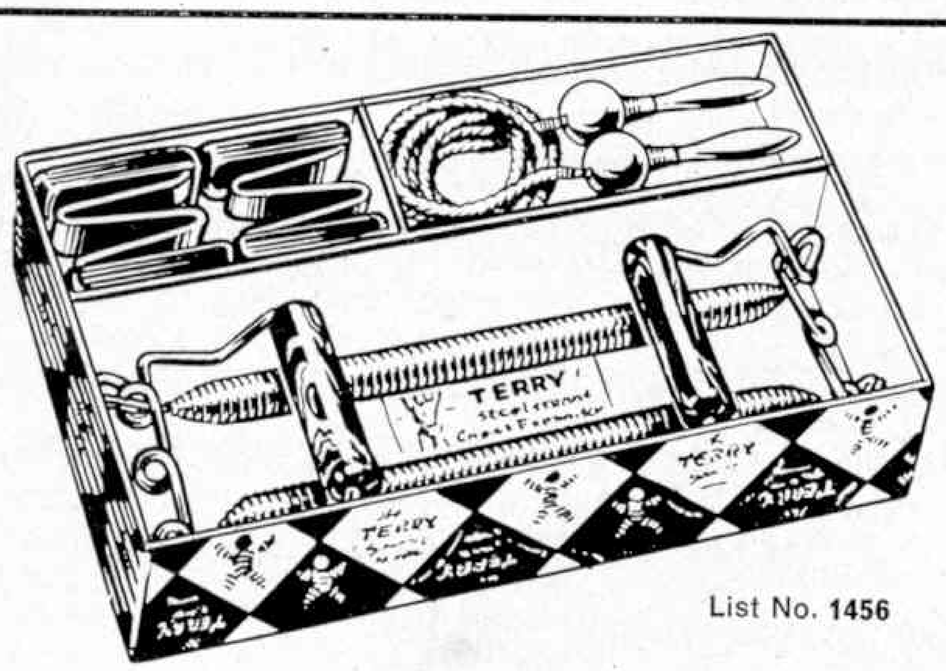
List No. **1173a**



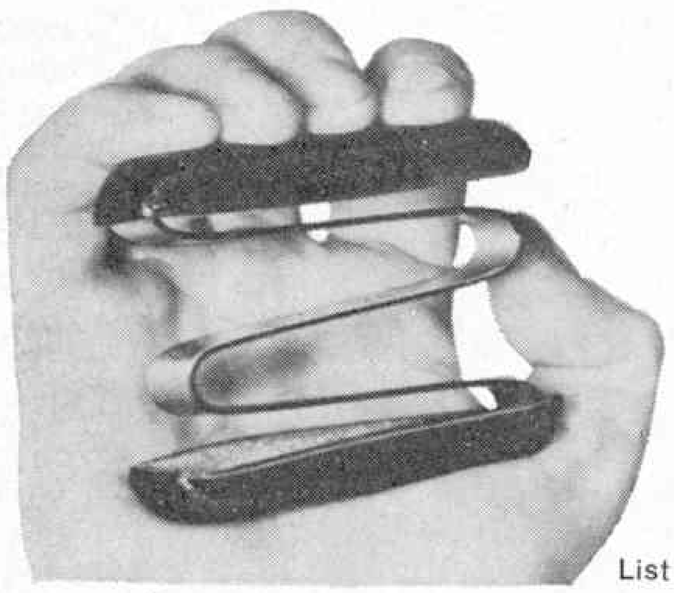
List No. **797**



List No. **474**



List No. **1456**



List No. **1150**

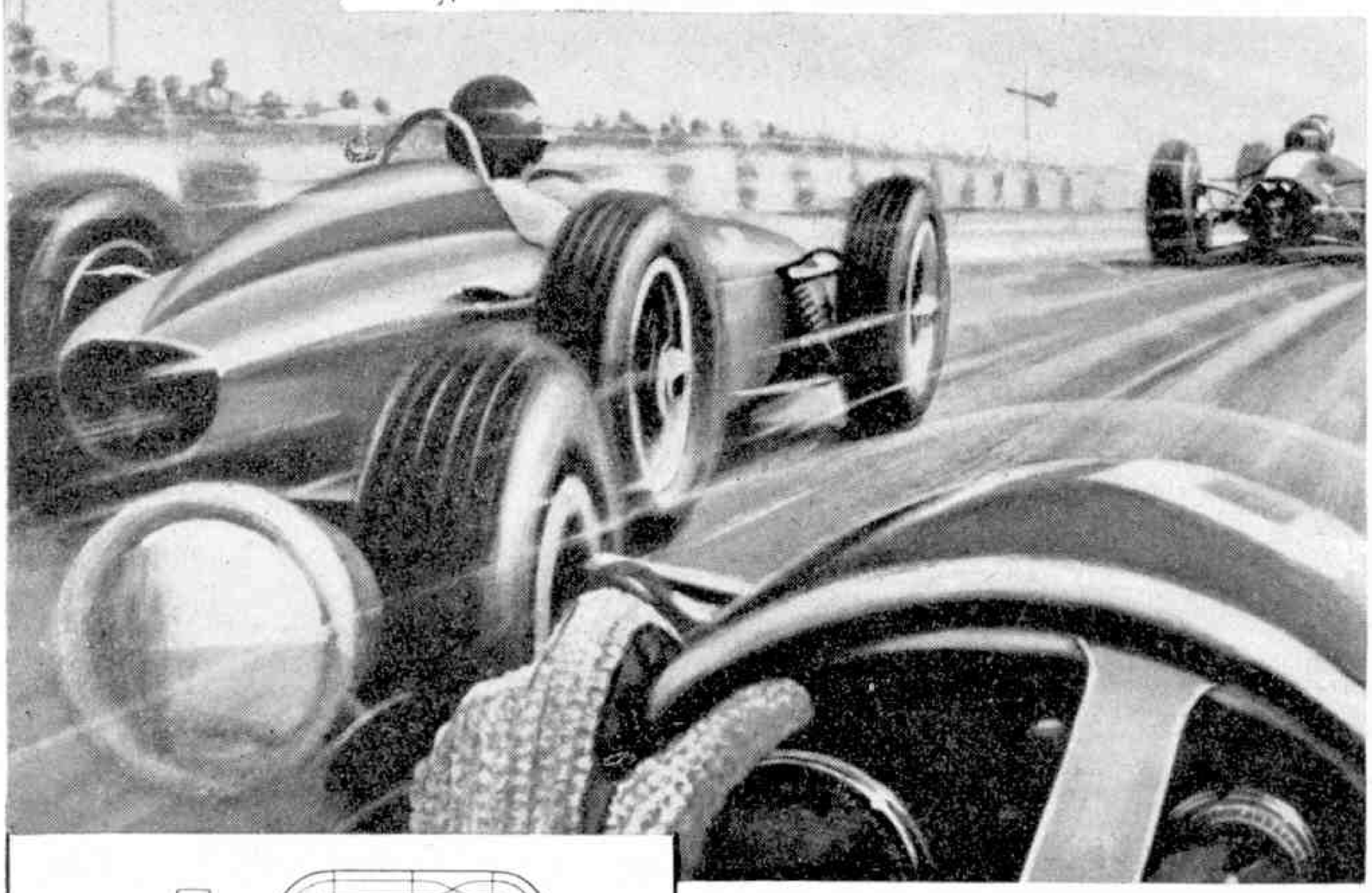
TERRY'S

sports line-up . . . just a handful of the exercising gear par excellence produced by Terry's: the people who work wonders with springs. All these items are stocked by any good sports shop. Only orders over £1 can be sent direct to the makers.

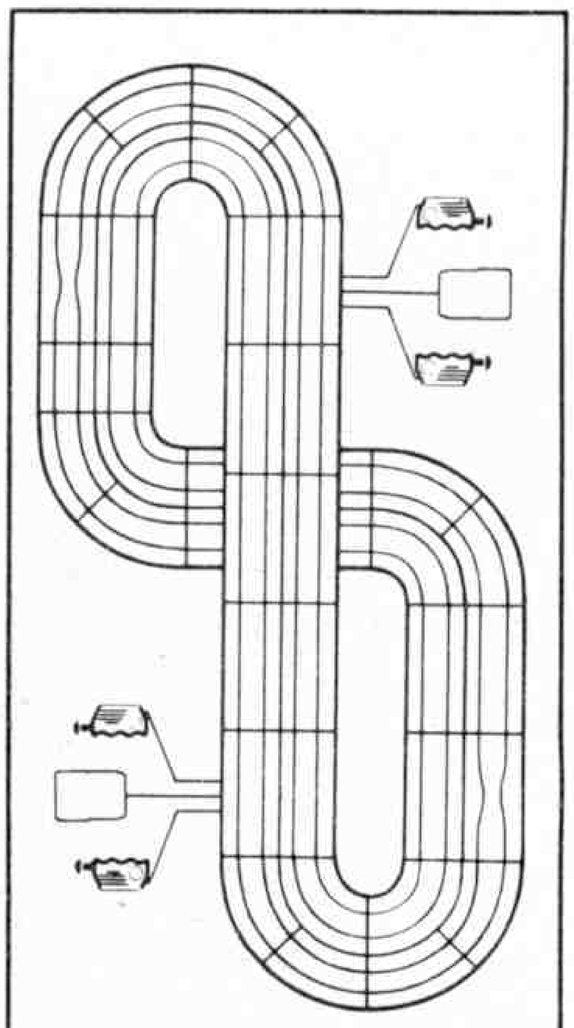
List **1173a** Sculling exerciser: £12.8.5 · List **797** Dumb-bells: from 15/9 per pr.
List **474** Five-in-one combination: size 2–42/6, size 3–44/10, size 4–49/5 each.
List **1456** Junior Home Gym Kit 34/11 · List **1150** Pocket Wrist exerciser: 2/11 ea.

MADE ONLY BY HERBERT TERRY & SONS LIMITED · REDDITCH · WORCS

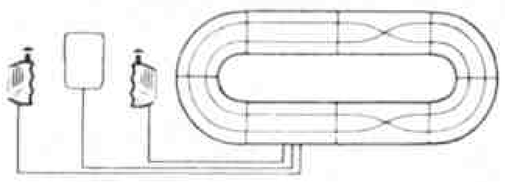
BE A CHAMPION!



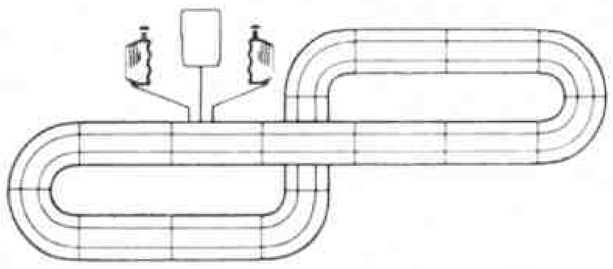
WITH



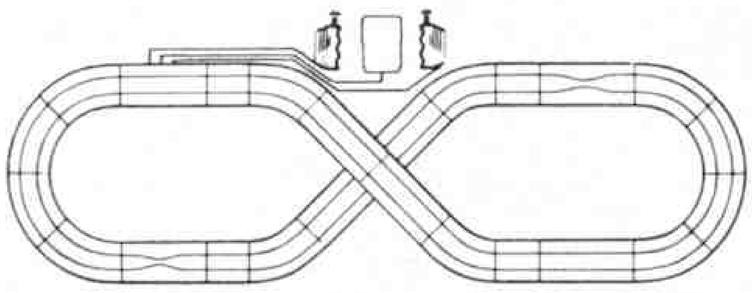
Sets B and C combine to form this 4 lane layout. 28½ ft. of figure-8 track. Area of layout 76″ × 40″.



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



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



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

CHAMPION Motor racing

TRADE MARK REGISTERED

CHAMPION! That's the new 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″. 19/11d. Also hard top version.

X.361 Ferrari Formula 1. Length 4⅛″. 19/11d. Also in plated finish. 21/-.

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

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

GRAND PRIX RACING AT YOUR FINGERTIPS!

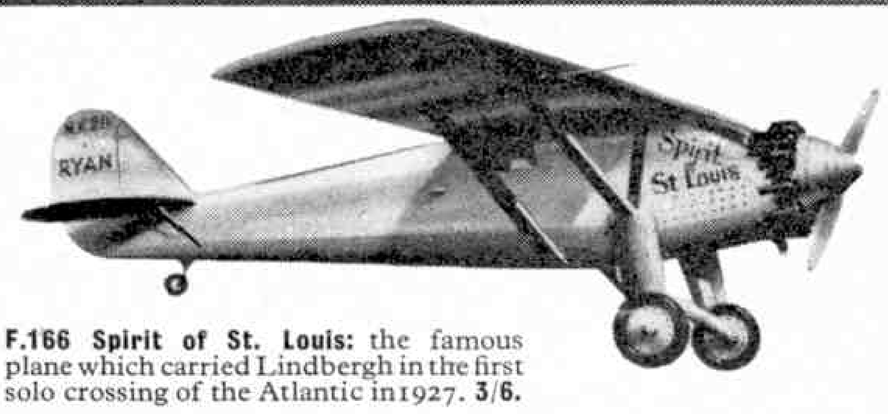
Playcraft TRADE MARK

See them all at your model shop!

Planes flown by the "greats"
of aviation history...

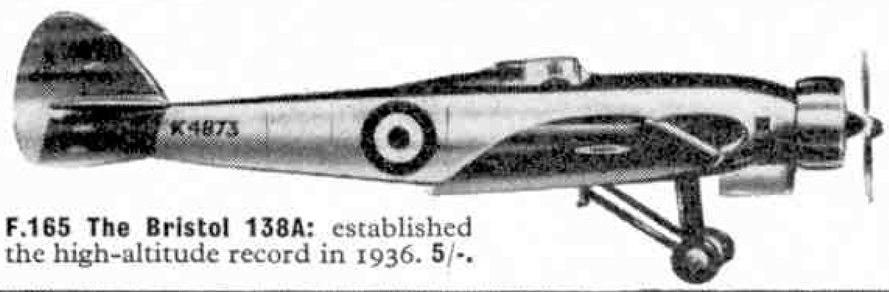
THE *TRAIL-BLAZERS*

F.167 The Westland Wallace: the famous plane that made the first historic flight over Mount Everest in 1933. **3/6.**



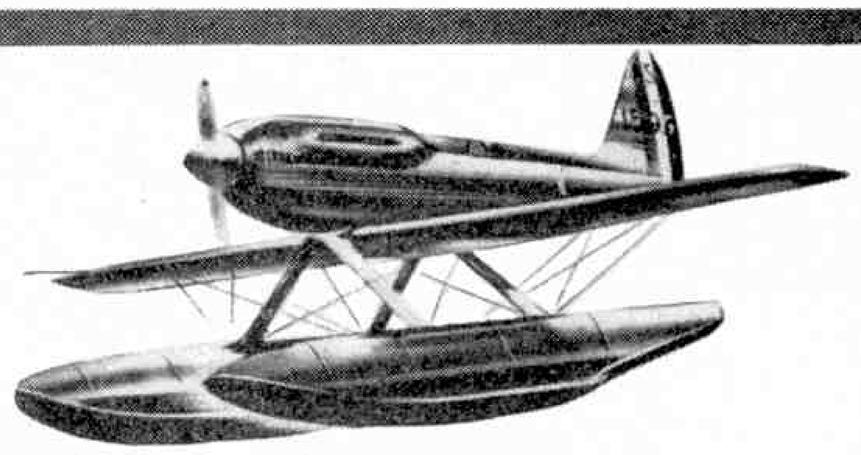
F.166 Spirit of St. Louis: the famous plane which carried Lindbergh in the first solo crossing of the Atlantic in1927. **3/6.**

F.168 The Comet Racer: in 1934 outright winner of the England to Australia Air Race. **2/6.**



F.165 The Bristol 138A: established the high-altitude record in 1936. **5/-.**

F.163 The Vickers VIMY: the plane that flew the first non-stop trans-Atlantic flight. **6/-.**



The F.164 Supermarine S.6B: The Schneider Trophy outright winner. **2/6.**

F.169 The Gipsy Moth: the first solo flight by a woman, England to Australia, 1930. **2/6.**

Which of these Frog Trail Blazer Kits have you built?
They all contain Gold Tokens for Exciting Free Gifts

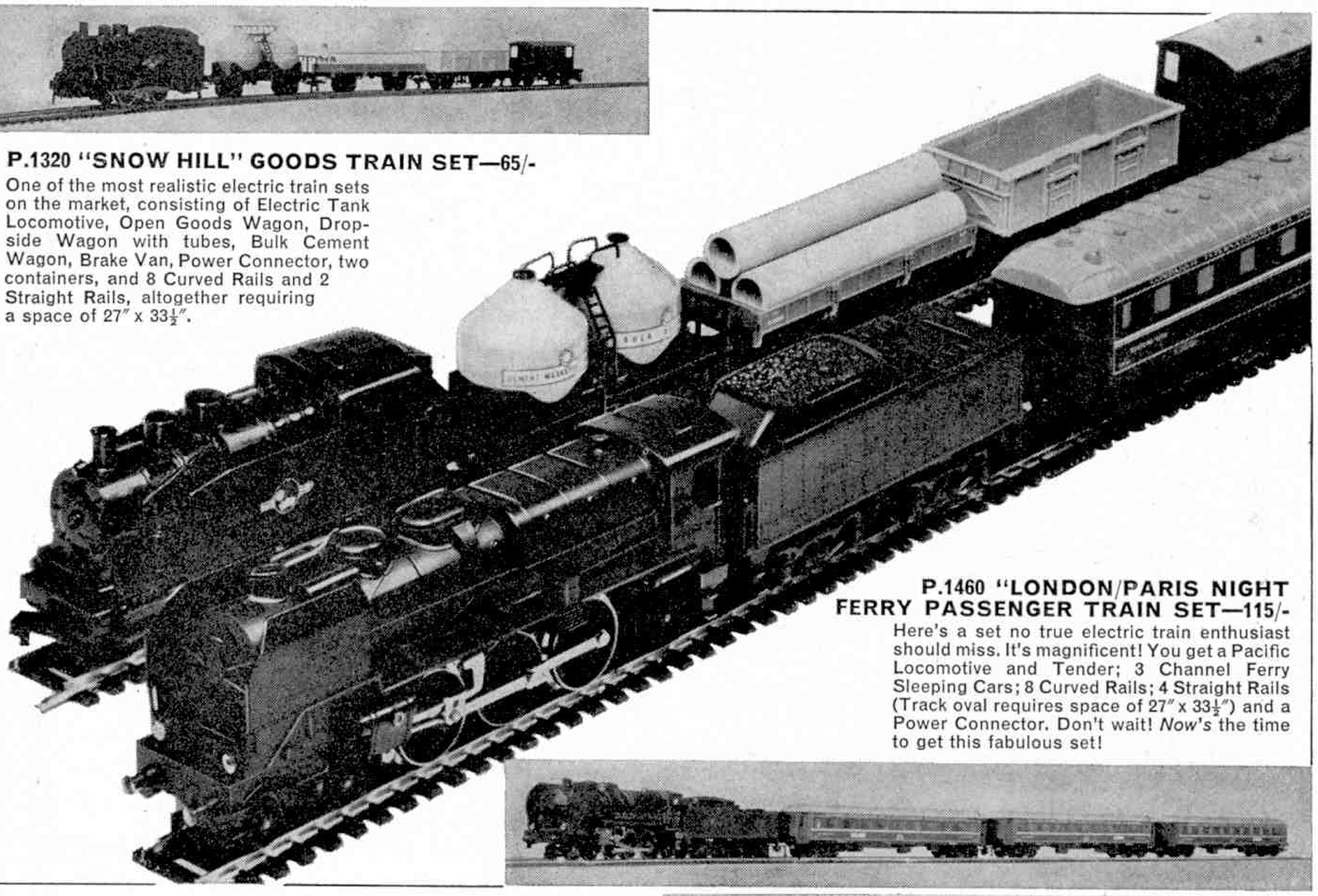
FROG®

$\frac{1}{72}$nd SCALE CONSTRUCTION KITS CREATED FROM MANUFACTURER'S BLUEPRINTS

GREAT SETS!
from PLAYCRAFT RAILWAYS

P.1320 "SNOW HILL" GOODS TRAIN SET—65/-

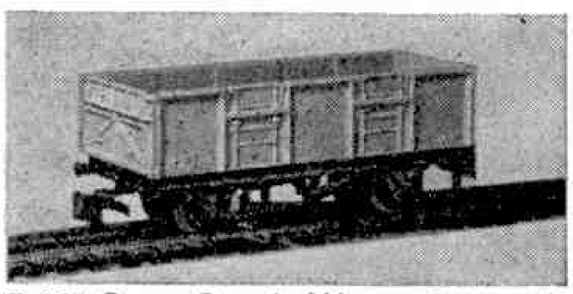
One of the most realistic electric train sets on the market, consisting of Electric Tank Locomotive, Open Goods Wagon, Drop-side Wagon with tubes, Bulk Cement Wagon, Brake Van, Power Connector, two containers, and 8 Curved Rails and 2 Straight Rails, altogether requiring a space of 27″ x 33½″.



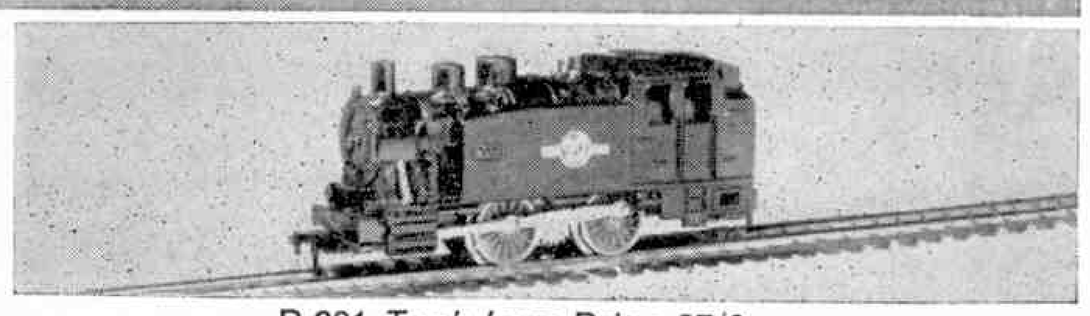
P.1460 "LONDON/PARIS NIGHT FERRY PASSENGER TRAIN SET—115/-

Here's a set no true electric train enthusiast should miss. It's magnificent! You get a Pacific Locomotive and Tender; 3 Channel Ferry Sleeping Cars; 8 Curved Rails; 4 Straight Rails (Track oval requires space of 27″ x 33½″) and a Power Connector. Don't wait! *Now's* the time to get this fabulous set!

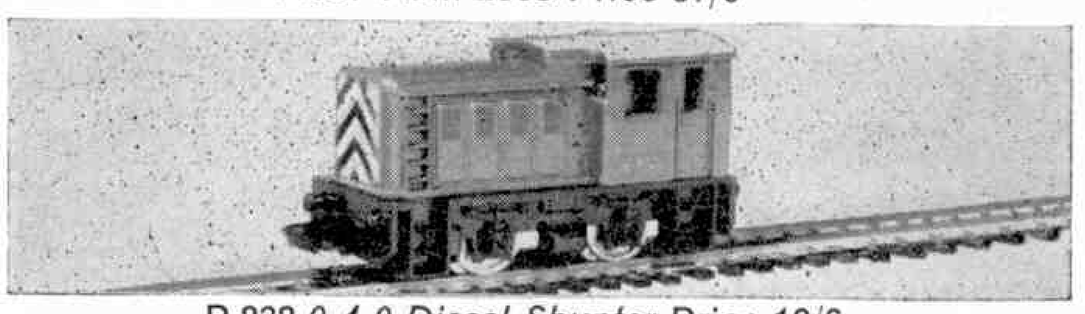
Every model railway enthusiast knows about Playcraft Railways. Knows about their fabulous realism, their watch-like precision, their wonderfully low prices! And Playcraft give you in all *14 sets* to choose from! All sets, accessories, rolling stock and rail still cost less than any other make! Build that big layout for a small outlay!



P.631 Open Goods Wagon Price 3/-



P.831 *Tank Loco* Price 37/6



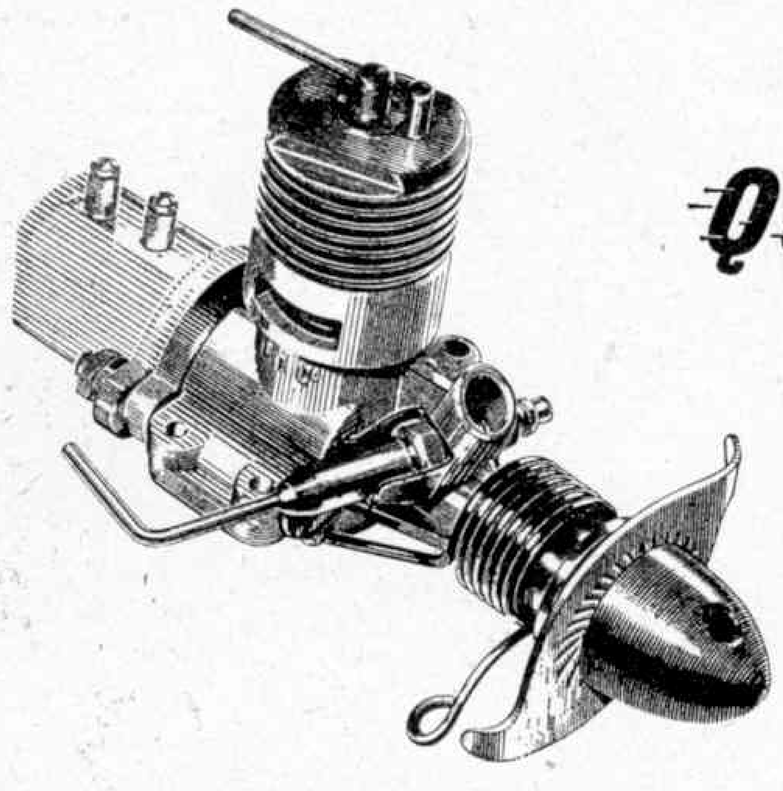
P.838 *0-4-0 Diesel Shunter* Price 18/6

P.837 *D.6100 Diesel Loco* Price 52/-

OO/HO GAUGE **Playcraft RAILWAYS**

AVAILABLE AT ALL GOOD TOYSHOPS, STORES AND F. W. WOOLWORTH LTD.

QUICKSTART



AERO ENGINES

·5cc DART 75/-
·75cc MERLIN 59/5
·75cc SUPER MERLIN 64/11
1·0cc SPITFIRE 70/9
1·5cc SABRE 75/-

ACCESSORIES

TEST STAND

CONTROL LINE HANDLE

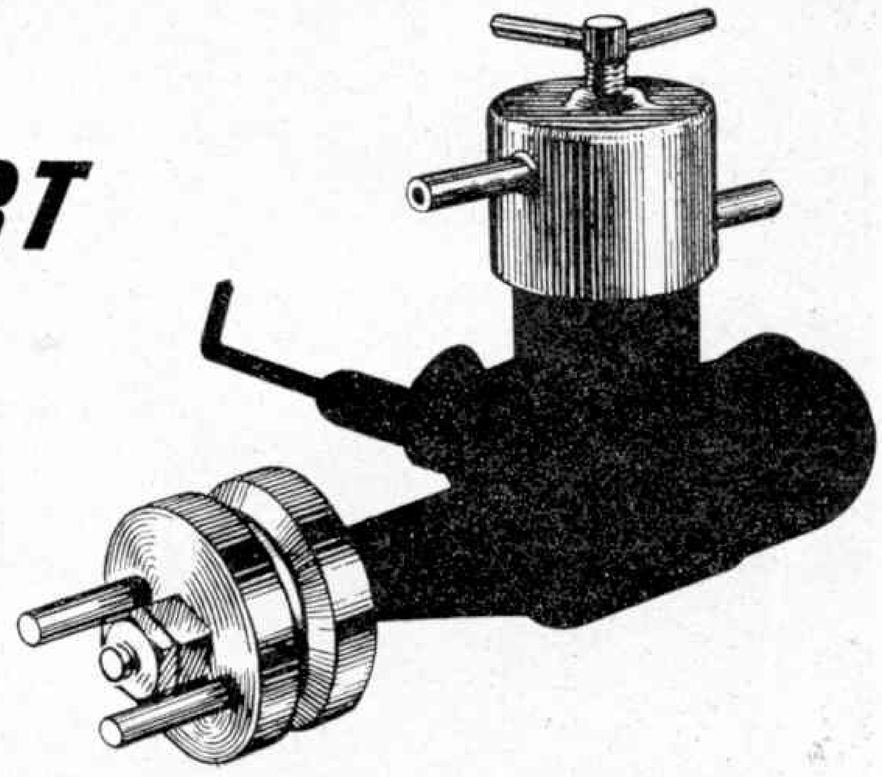
QUICKLIP CONNECTOR

QUICKSTART GLOWPLUGS
EG 98 EG 99
EG 200

SILENCERS

NYLON PROPELLERS

FLYWHEEL COUPLINGS



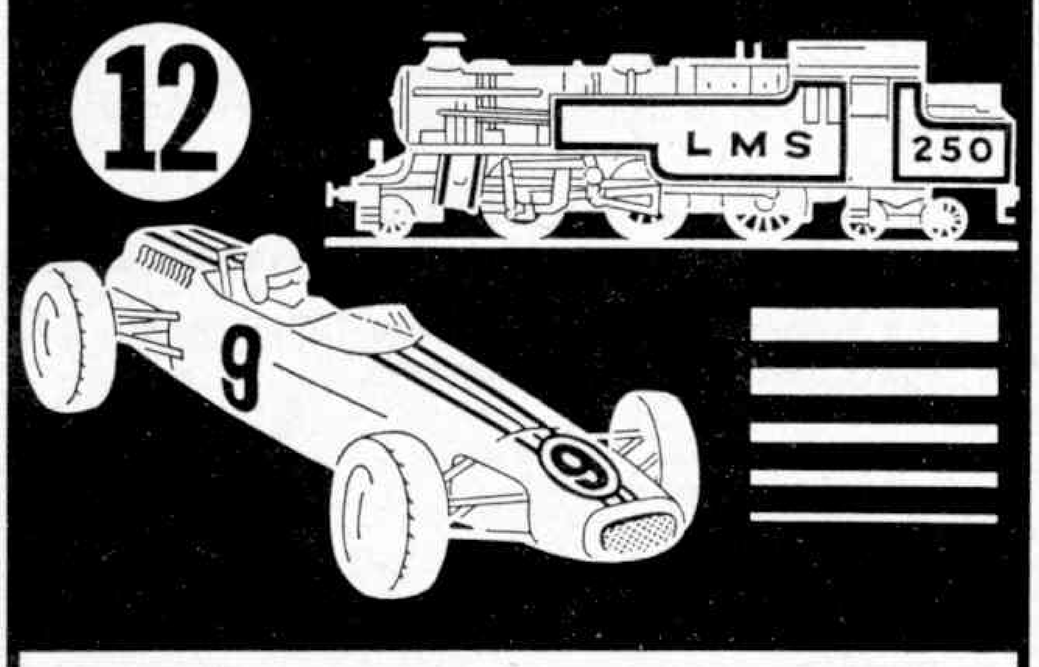
MARINE ENGINES

·5cc DART 95/-
·75cc MERLIN 80/-
1·0cc SPITFIRE 90/-
1.5cc SABRE 95/-
ALL PRICES INCLUDE TAX

CALL AT YOUR MODEL SHOP TODAY
OR IN CASE OF DIFFICULTY WRITE DIRECT TO

DAVIES CHARLTON LTD,
HILLS MEADOW, DOUGLAS, ISLE OF MAN.

NEW! modellers' dry print



RUB-ON LETTERS & STRIPES

Give your models a professional finish and save hours of work by using Blick Modellers' Dry Print.
Just rub over and the characters appear—it's as easy as that!

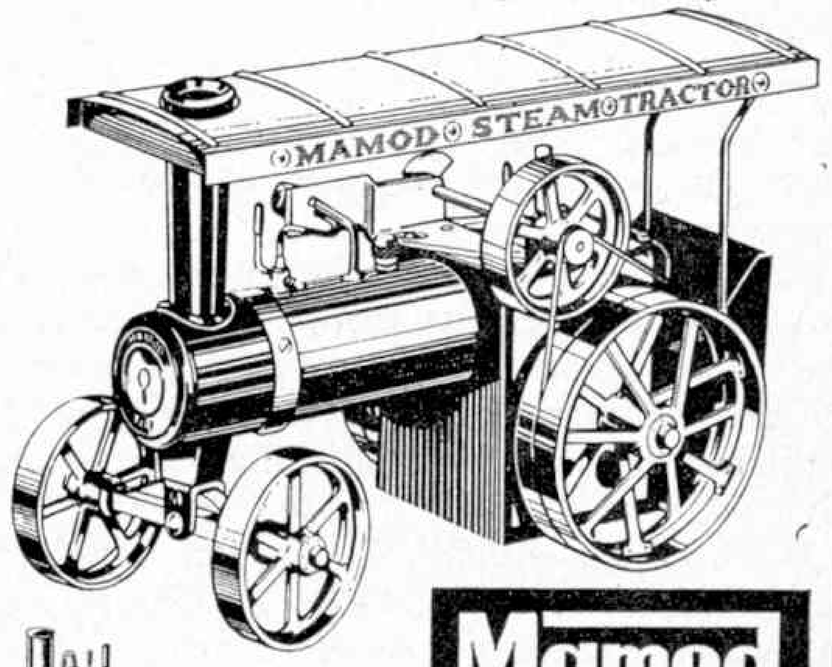
Letters and Numbers in Black, White and Gold **1/- per packet**
Rub-on Stripes in Red, White and Gold **2/- per packet**

See your local model shop for this exciting new product and look out for additions to the range.

BLICK OFFICE EQUIPMENT LTD
(Dry Print Division) 83 Copers Cope Road Beckenham Kent

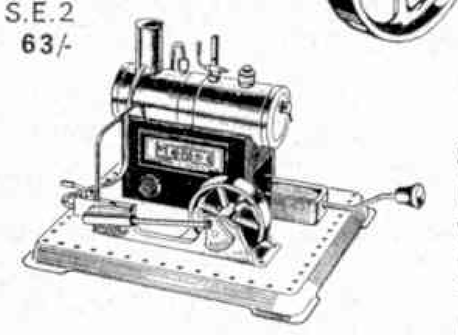
Be your own Boss

CREATE YOUR OWN POWER to drive your own models with a Mamod Steam Engine. You'll have great fun too with these models which are a complete working model in themselves.
These solidly constructed models will give you years of power, outdoors and indoors, and all you need are water and meths.
Price range 32/6 to 105/-



T.E.1
105/-

S.E.2
63/-



Mamod

See the range of models in your local toy and sports shops, or write for details to:
MALINS (Engineers) LIMITED
Thorns Works, 206 Thorns Road, Quarry Bank, Brierley Hill, Staffs.

Looking for training as a technician?

These young men are getting some of the finest training in the country—it can lead to O.N.C. and full Union recognition. They are Royal Air Force apprentices.

If you want to qualify as a technician, either on the electronic or on the aircraft side, this Technician Apprentice scheme in the R.A.F. is something to find out about. It offers technical training in an advanced modern trade, to the highest standards obtainable anywhere in this country.

In industry, training like this may take as much as 5 years. In the R.A.F., because you are taught full time by professional instructors, the course can be accommodated comfortably in three years.

And they are good years, full of interest and activity. You are in a wonderful part of the country—the Chiltern Hills or near the coast of Somerset, you have all the sport you could wish for, and you're never short of friendly company. Food and accommodation and your uniform are all provided so everything you earn is yours.

When you are qualified, the prospects before you are excellent. You can be a Corporal *when you leave the training centre;* outstanding apprentices may be selected for a Cranwell cadetship or direct entry commission.

On the other hand, if you leave the R.A.F.—say when you're 30 or thereabouts—you have good qualifications and plenty of skill and experience, so you are well placed to get a good civilian appointment.

NOW is the time to get more information.

These are the qualifications you need. Age on joining, 16-17¾. (Next entry is April/May—closing date for applications is 1st. March.) Minimum educational qualifications: 4 'O' levels, one in mathematics, one in an acceptable science subject; or equivalent Grade 1 C.S.E. passes. (If you do not have these qualifications, but are between 15½ and 17½, you may be eligible for training as a Craft or Administrative Apprentice.)

Send for this book. It gives you the facts.

R.A.F. Careers Information Service (QP7), Victory House, Kingsway, London, WC2

Please send me, without obligation, the free book 'Life as an R.A.F. apprentice'. (Enquiries from U.K. residents only.)

NAME .....

ADDRESS .....

.....

.....

.....DATE OF BIRTH.....

Please list on a separate piece of paper the 'O' levels or Grade 1 C.S.E. passes that you hold or expect to gain.

The Royal Air Force

Editor J. D. McHard; **Design** R. S. Sodhi; K. I. Ramsay; **Advertisement Manager** A. D. B. Johnson; **Head Office** Thomas Skinner & Co. (Publishers) Ltd., St. Alphage House, Fore Street, London, E.C.2. Phone: NATional 4050. Grams: Desollar, London, E.C.2; **New York** Thomas Skinner & Co. (Publishers) Ltd., 111 Broadway, New York, New York 10006; **Chicago** Thomas Skinner & Co. (Publishers) Ltd., 35 East Wacker Drive, Chicago, Illinois 60601; **Los Angeles** Duncan Scott & Marshall Inc., 1830 W. 8th Street, Los Angeles, California 90057; **San Francisco** Duncan Scott & Marshall Inc., 85 Post Street, San Francisco, California 94104; **Ottawa** Suite 35, 75 Sparks Street, Ottawa, Ontario. *©Meccano Limited 1966*

meccano magazine

the practical boy's

hobbies magazine

February 1966 · Vol. 51 · No. 2 · Monthly

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

America's big 32-seat XC-142A military transport aircraft comes in to land, with its wings beginning to tilt upward for a vertical touchdown. The story of this 20-ton 'hummingbird' is told in a special article on pages 16 & 17

Contents

To the Limit!	8
Project 66—Phase 2	10
Swing it!	14
The 20 ton Hummingbird	16
Build it 'Superquick'	19
Puzzle Page	20
Any problems?	21
Have You Seen?	22
Book Reviews	23
Mailbag	24
Stamps	25
Keep Cycling	26
Dinky Toys Competition	27
Bonzer Bonanza	28
Luggage Tractor	30
Precision for Performance	32
Forthcoming Attractions	34
Coke Anyone?	36
Meccano Dealers Directory	37

Ordering the Meccano Magazine Overseas Readers overseas can order the Meccano Magazine from Meccano dealers or direct from the publishers, or from the publishers' offices listed above. The subscription rate for 12 months is the equivalent of 20s. sterling at the current rate of exchange, U.S.A. and Canada $3.00.

Christmas is over for another year, but its after-effects are often more permanent. By now, no doubt, you will have recovered from the annual over-indulgence sufficiently to allow you to put away the indigestion pills, and have a closer look at those kits and construction sets that came as Christmas presents.

It would be interesting to know how many of our leading engineers, scientists, and technologists, whose careers were founded upon a youthful hobby interest, were introduced to that hobby by a simple Christmas present. To put it another way; how many parents, when choosing a hobby kit or constructional toy for their children, realise what a profound effect the developing interest in a hobby can have on the entire lives of the recipients?

A person who has no absorbing hobby interest, is an incomplete personality. Even if his hobby does not eventually become his vocation, the lifelong satisfaction and relaxation that he will derive from the pursuit of a constructional activity, will do much to aleviate the stresses and pressures that are imposed by the pace of life today- and tomorrow.

I always feel terribly sorry for the youths who, when asked by the magistrate why they stole the car or wrecked the clubhouse, say that it was because they 'had nothing to do'. It is unlikely that the fifty thousand or so Meccano Magazine readers will ever find themselves in that unhappy position. Most of them would, I am sure, like 48 hours in every day to give them time to pursue their many activities. This is one of the reasons for the immense sense of satisfaction that we derive from producing your monthly magazine. We feel rather like the giver of that useful present, but happily, we can do it twelve times every year. What an outcry there would be if M.M. only appeared at Christmas time!

Even so, like the too-short day, there are too-few pages in Meccano Magazine to enable justice to be done every month, to every hobby, in which our readers are interested. We cannot make the day any longer, but we may be able to do something about the other matter and I hope to be able to tell you more about that very soon.

The Editor

Next month: Another free plan! This one will show SEVEN variations on our Project 66 powerboat theme. The story and model of Britain's first jet aeroplane, which was originally announced for this month has had to be held over until the April issue.

TO THE LIMIT...

Tramontana II surges through her own spray (Daily Express Photographs)

Geoffrey Simpson describes the thrills and spills that make the modern powerboat race the most exciting contest in the world

7 gs — that's the acceleration force in TRAMONTANA as her four newly-overhauled Jaguar engines leap into life at full throttle. A total of 1,016 b.h.p. unleashed in a second.

7 gs—that's the force which distorts the face of an astronaut upon re-entry from space. 7 gs—that's when the toughest men begin to black-out.

Power boat racing is tough man's work. To recline in the cockpit of an engine and fuel-packed boat while once a second the deep-V bow thumps into the oncoming waves with enough force to shake your head from your shoulders and numb your brain—and to push your boat on to win, takes more guts than you think you've got!

But power boat racing is catching-on all over the world. In England, the Daily Express Off-Shore Power Boat Race from Cowes in the Isle of Wight to Torquay, is the classic race of every year. The boats in this race are the big boys, vast streamlined jobs many of them capable of more than 50 m.p.h. But nearly every weekend in the summer the United Kingdom Outboard-motor Association (U.K.O.B.A.) organizes races for the smaller boats. These are the small fry which may race on your nearest gravel-pit or off the end of your pier if you live at the sea-side.

The Cowes-Torquay Race is one of the most famous races in the world—and the prizes are almost endless.

For the overall winner there is the Beaverbrook Challenge Trophy and £1,000, for the second, the Billy Butlin Trophy and £500 and there are even two first class return tickets aboard a B.O.A.C. VC. 10 jet airliner from London to Nassau for the first boat to cross the starting line after completing the 58 mile first leg of the course! There are many more prizes, too.

The course is a terrifying 198 miles of open sea, and enclosed Solent waters. From the rolling start at Cowes at 10 in the morning, the boats career westwards for 10 miles before heading back on their tracks past Cowes to Ventnor, then round the war-time Nab Tower, past Cowes for the third time (first boat over this time wins the VC. 10 prize) and then off to Torquay via the Skerries Buoy.

TRAMONTANA with her four Jags didn't win. Like many of the boats in this race she had engine trouble. A heat exchanger broke loose and battered its way through the side of the boat. Without slowing down for one second, the exchanger was lashed down with ropes and TRAMONTANA, driven and owned by T. Powell and P. Ricket, came in fourth after 5 hours and 20 minutes at an average speed of 37 m.p.h.

Another boat which ran into more serious trouble in rough water was the brothers P. W. and J. R. Hicks SEVEN DIALS which finished 12th in 7 hours 6 minutes and at an average speed of 28 m.p.h.

Off Portland Bill, one side of the windscreen flew off and Peter Hicks had to tear out the other side as it threatened to fly in his face.

Below decks the terrible pounding was wrecking the boat under their feet. The toilet had broken in two and the toilet bulkhead had cracked badly. The saloon table was a mass of fire-wood, and charts, books and much of the cruising equipment which these boats are compelled to carry, was wet and mangled on the deck. SEVEN DIALS did come home to win the Restricted Diesel Prize as well as other prizes.

£900 each way

Winner of the race was the American BRAVE MOPPIE. Owned by the famous power boat driver Dick Bertram, BRAVE MOPPIE completed the 198 mile course in 4 hours and 58 minutes, at an average speed of 40 m.p.h.

It cost £900 to ship BRAVE MOPPIE to England and it will cost another £900 to ship her back. This makes her first

prize money of £1,000 look very small, but she won other prizes as well.

BRAVE MOPPIE is powered by two experimental diesels, lent to Dick Bertram by General Motors of Detroit to see how they would stand up to racing conditions. With these two 6·71X engines, each of 400 h.p., and running at more that 2,500 r.p.m., Dick Bertram holds the world record for the fastest diesel craft afloat at 57 m.p.h!

Her cockpit and seating arrangement is something special too. Instead of the heavily padded arm chairs on springs and shock absorbers, she now has a specially designed reclining couch. While racing into a heavy sea 25 gs has been measured. A steady 25 gs would cause an astronaut to black out very quickly—and it would kill him too. The 25 gs in BRAVE MOPPIE, even only for a split second, could cause blackout if your spine is rammed into the padded chair. The couch spreads the body mass load between your back and legs and makes the going far easier.

Dead reckoning

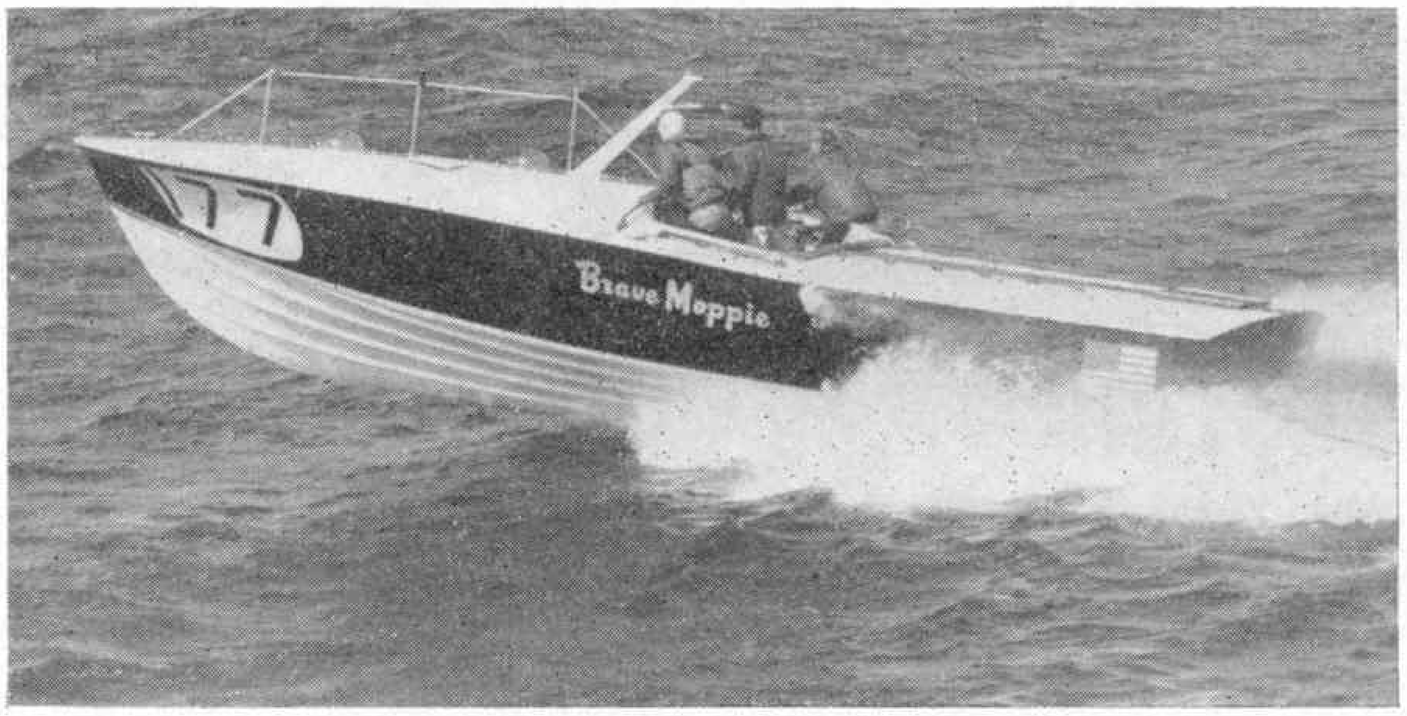
To soften the shock of landing into a wave at 57 m.p.h. the deck of BRAVE MOPPIE's cockpit is padded with a dense layer of foam, over which has been laid plywood sheeting and then a thick gold coloured carpet.

The normal method of navigating with charts is impossible with your bow slamming into hefty seas every second. But the navigator must navigate.

This he does the night before the race—or even weeks leading up to the final day. The course is gone over and over until he knows it by heart. The coastline and all the marks of the race are memorized by sailing the course beforehand or with the aid of photographs.

Seven Dials almost raced herself to destruction

Brave Moppie—subject of our own Project 66



Tramontana II again—four in the cockpit and room to spare (Daily Express photographs)

The only way to navigate in the race is by dead reckoning. Here, quickly is how it works.

SPEED from engine revs.—30 knots.

TIME at the last mark—13.30 hours.

DISTANCE between the two marks—10 miles.

ETA (estimated time arrival) 13.50 hours.

COURSE—091°.

But even this is not good enough! If you have an undamped magnetic compass, the pounding will send it hay-wire and it will be very difficult to maintain an accurate reading. A heavily damped compass will give you the course on the straight, but will spin wildly after a hard turn. BRAVE MOPPIE, the winner, went way off course after the Goodrington because of this.

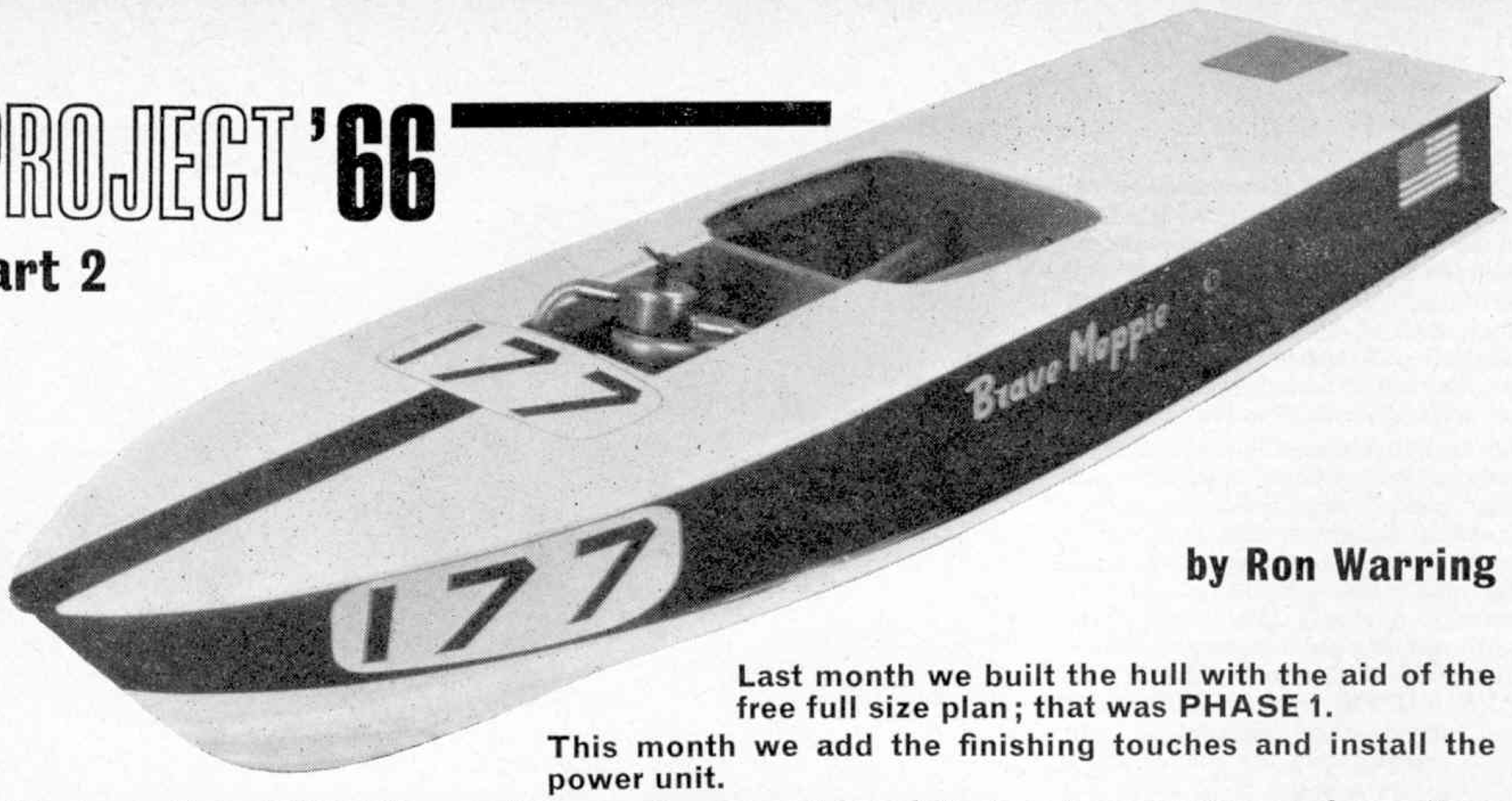
One method to beat the fickle compass—and the brain which becomes very numbed after a few hours of continual thrashing, is to use a card index system.

After each mark has been rounded a new card is fixed to the dashboard giving the helmsman all the information he needs to get to the next mark. This information will include course, distance, which hand to take the mark and whether it is showing any special signals.

It's like heaven when you eventually cross the finishing line after a race!

PROJECT '66

Part 2



by Ron Warring

Last month we built the hull with the aid of the free full size plan; that was PHASE 1.

This month we add the finishing touches and install the power unit.

Next month in PHASE 3 we will present a second free full size plan showing no fewer than SEVEN different power boats that can be adapted from the basic hull.

Finally, PHASE 4 in the April issue, will show how you can fit any of these boats with radio control.

ELECTRIC OR DIESEL?

If this is your first model powerboat, you will find it much easier to build the electric-powered version. The standard Meccano Power-Drive motor is ideal for this model and is not too heavy on batteries.

A diesel-powered boat is faster, and perhaps rather cheaper to operate in the long run. BUT far more skill is required to install a diesel engine, and great care must be taken to completely fuel-proof the inside of the boat, to prevent the fuel waste and exhaust gases from destroying the paint.

The noise of diesel operation often limits the number of places where the boat can be operated. Even with a 'silencer' the engine can be very noisy. Another point to bear in mind is the possibility of running out of fuel with the boat out of reach of dry land! An electric motor will continue to run, and eventually bring the boat within reach—even though the battery may be getting flat, but a diesel engine just stops—take your pick !

IN this article we shall describe how to complete 'Brave Moppie' as a working model with *either* electric motor *or* diesel power. The choice of power unit is, in fact, wide open. The more powerful the motor the faster the model will go. Thus if you decide on electric motor power, choose a reasonably powerful motor like the biggest models in the 'Orbit' or 'Mabuchi' range. If these are too expensive, buy the largest of the alternative sizes or makes you can afford.

In the case of diesel power, the hull will take any size of engine from 0·5 cc up to 1·5 cc. We have shown the DC 'Spitfire' on the installation drawing and we consider this, or the DC 'Merlin', an ideal power unit for this size and type of hull. Alternatively, if you want more speed, try a 1·5 cc motor.

Before fitting out the model, however, there is still some work to do on the hull. The hull has already been prepared virtually ready for painting if all the stages described in part (1) have been completed. The next thing is to fit the chine strips and gunwale strips, as shown in Fig. 1. Two strips are used in each case since these can readily be bent to the curve of the hull where a single solid strip will probably break. Cement in place securely and hold with pins until dry. When set, lightly round off the edges of the gunwale strips but round off the uppermost side of the chine strips to a complete quarter-circle section.

Each bottom panel now has four $\frac{1}{8}$ in. square balsa spray strips cemented along it, as shown in Fig. 2. These run parallel to the keel, with each strip spaced $\frac{3}{4}$ in. apart. Carry them round the curve of the bow up to the extreme bow or chine line and trim off neatly. It does not matter how the curves of the strips run at the bow, provided they are the same on each side.

Next make and fit the hatches—Fig. 3. These plug into the opening left in the hull. The forward hatch top will protrude above the deck and so must be sanded down to blend into the curvature of the deck. Both hatches should be a nice 'plug' fit in position. It is advisable to cement reinforcing strips of $\frac{1}{4}$ in. square or $\frac{1}{2}$ in. by $\frac{1}{4}$ in. balsa under the edges of the permanently fitted afterdeck pieces along the hatch line to support the decking in this region. This need not be done if the model is to be diesel powered since there is no need to gain access to the rear part of the hull once the steering has been linked up and so the aft hatch can be cemented in place permanently after ballasting. If the model is to be converted to radio control, however (to be described in the April issue), the aft hatch must be removable.

At this stage the propeller shaft tube and rudder tube should be fitted. There is already a 'channel' in the keel unit to take the stern tube and the position of this can be located by measuring $4\frac{1}{4}$ in. along the bottom of the keel from the extreme stern. If the stern tube is more than $\frac{1}{4}$ in. diameter this 'channel' should be opened up with a round file or a similar tool, until the stern tube can be slid up in position until it reaches bulkhead 4. A hole will then have to be cut in bulkhead 4 to allow the stern tube to pass through to its final position. Fill the bottom end of the 'channel', if necessary, with scraps of balsa driven in place and then *thoroughly* seal the area where

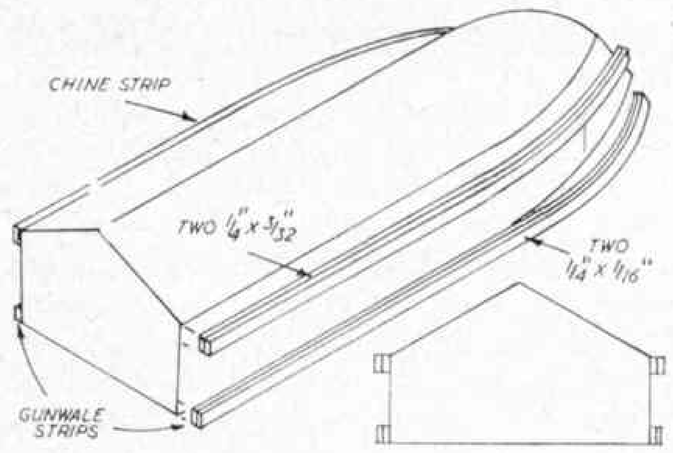


Fig. 1

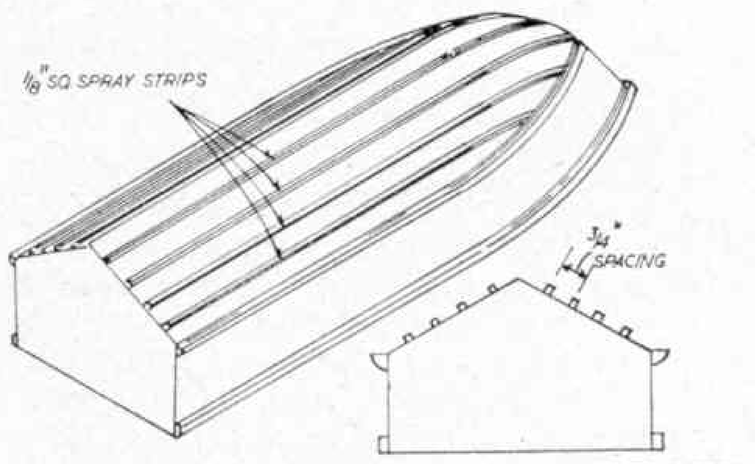


Fig. 2

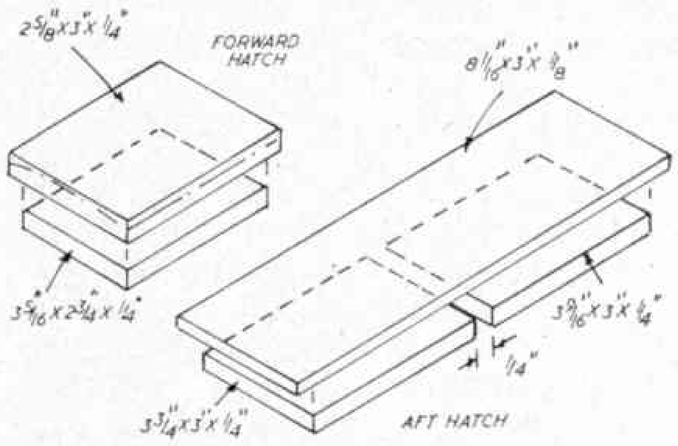


Fig. 3

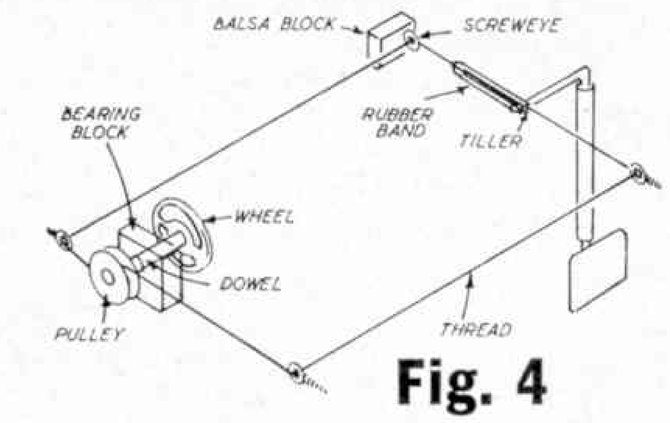


Fig. 4

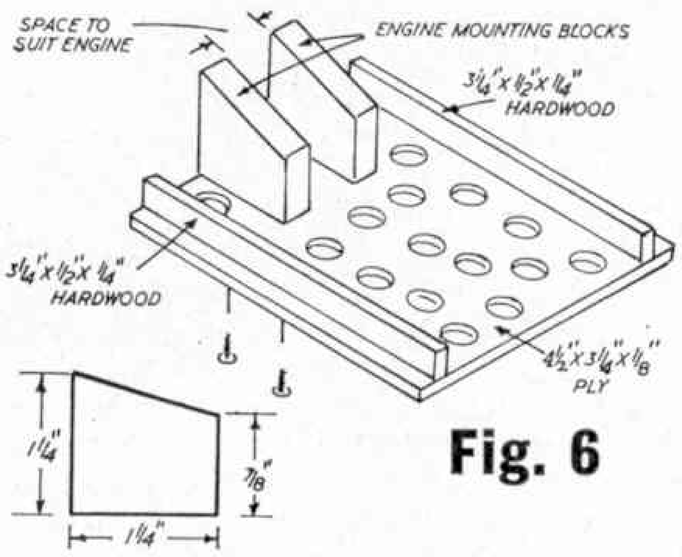


Fig. 6

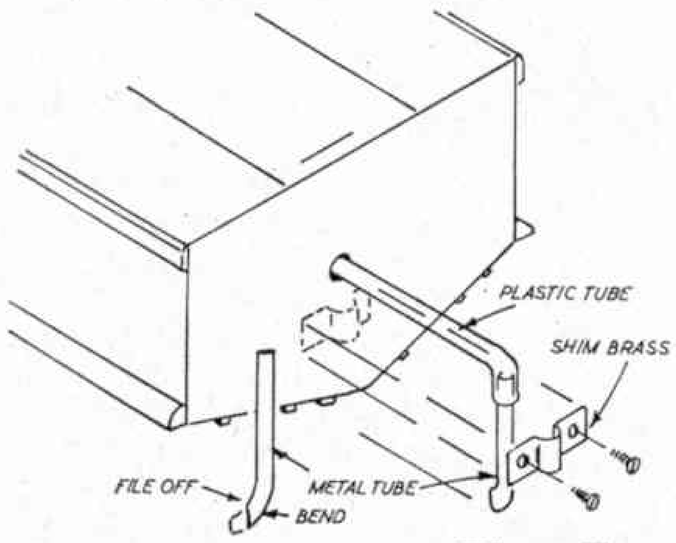


Fig. 7

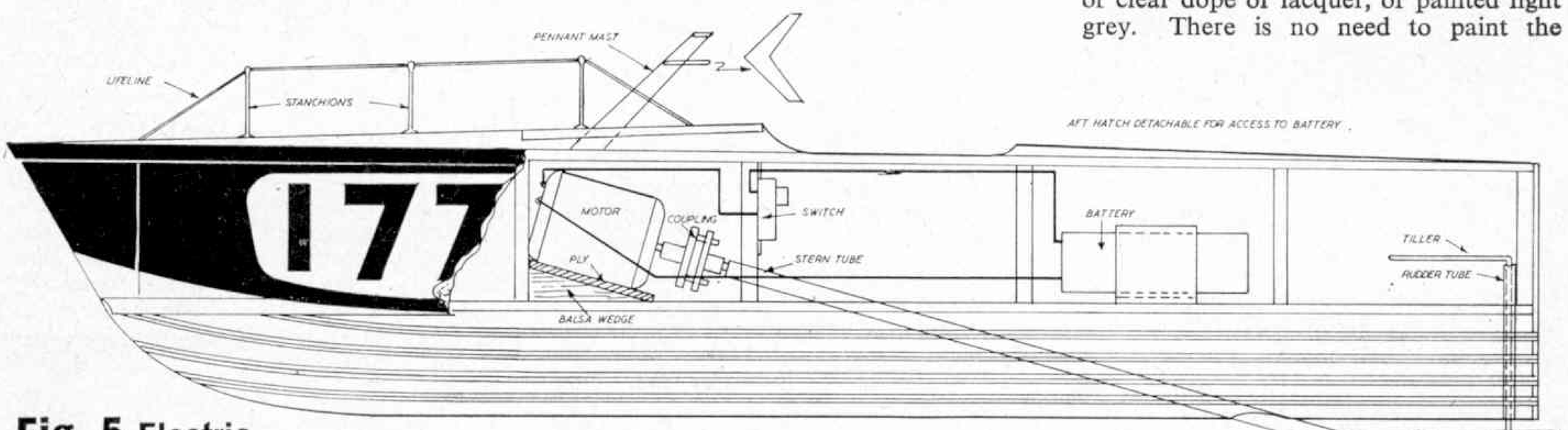


Fig. 5 Electric

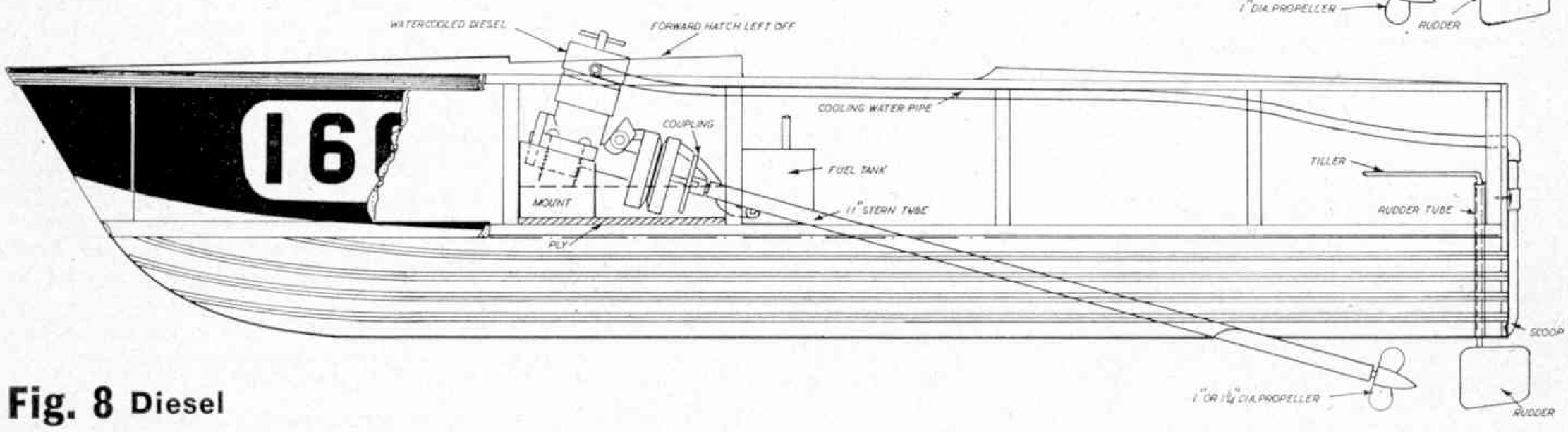


Fig. 8 Diesel

the stern tube emerges from the bottom of the hull with a generous coating of cement or Araldite.

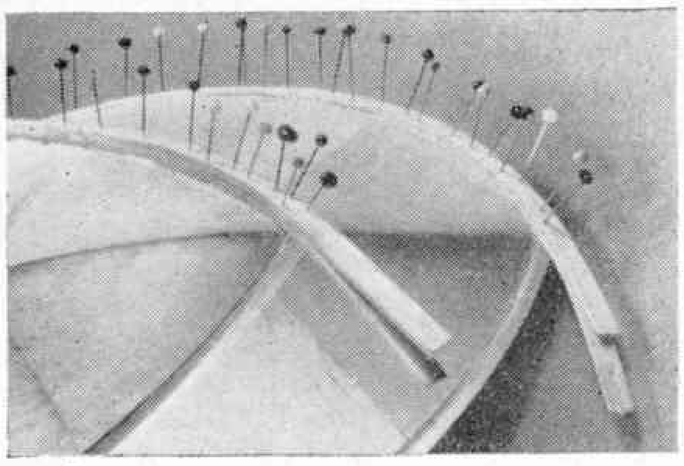
The rudder tube is much simpler to fit. Simply drill a hole up through the keel immediately in front of bulkhead 7 position—i.e. $\frac{5}{16}$ in. from the outer edge of the transom—and pass the tube up through this hole. Secure in position by cementing, or preferably Araldite, to the inner face of bulkhead 7. Note that the hole drilled for the rudder tube should be slightly smaller than the tube diameter, so that when the tube is finally fitted it is a very tight, leakfree fit.

Both the rudder tube end and the propeller shaft tube end, incidentally, finish in the hull above the waterline and thus eliminate leakage troubles which are often commonplace with more conventional model boat designs.

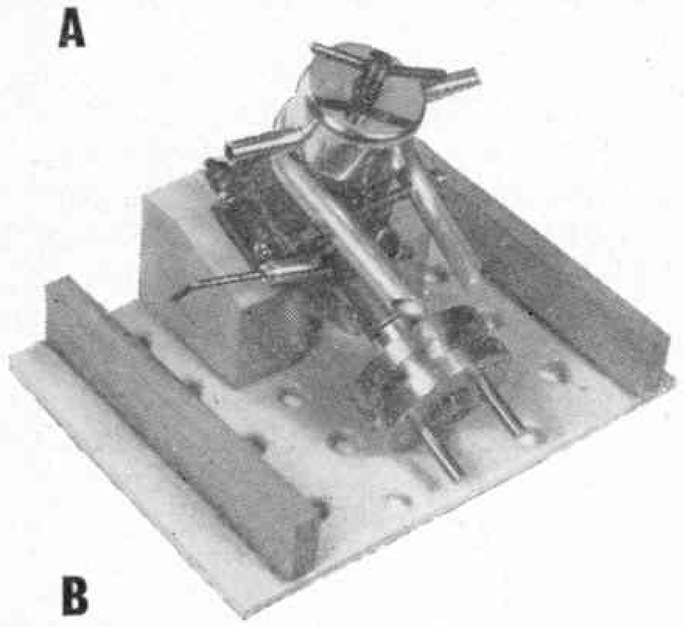
At this stage the whole model can be finish painted. If you are using ordinary cellulose dopes, then these can be applied directly over the tissue or nylon-covered hull. If you prefer to use a modern polyurethane finish—which is thoroughly to be recommended—the hull should first be painted with a suitable polyurethane filler-undercoat, rubbed down with garnet paper when dry. This will provide a good 'keying' surface for the polyurethane gloss coatings to follow.

The colour scheme to use for 'Brave Moppie' is black for the hull sides with the rest of the hull and deck white. The racing number is painted in black on a white panel. You can, of course, equally well use other colour schemes if you prefer.

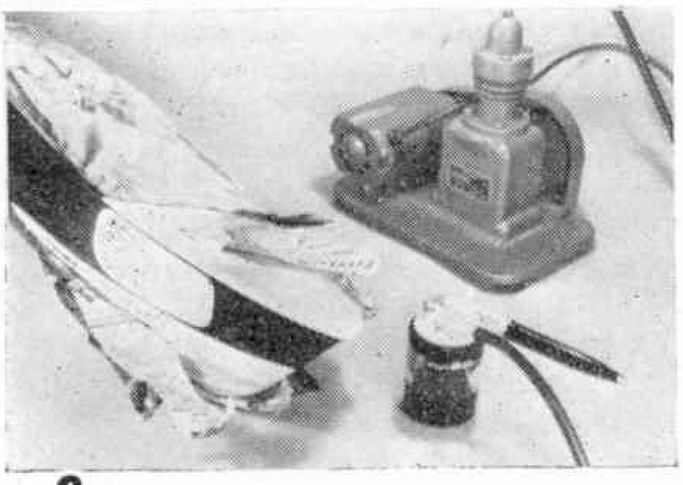
The inside of the cockpit can be left plain, 'varnished' with several coatings of clear dope or lacquer, or painted light grey. There is no need to paint the



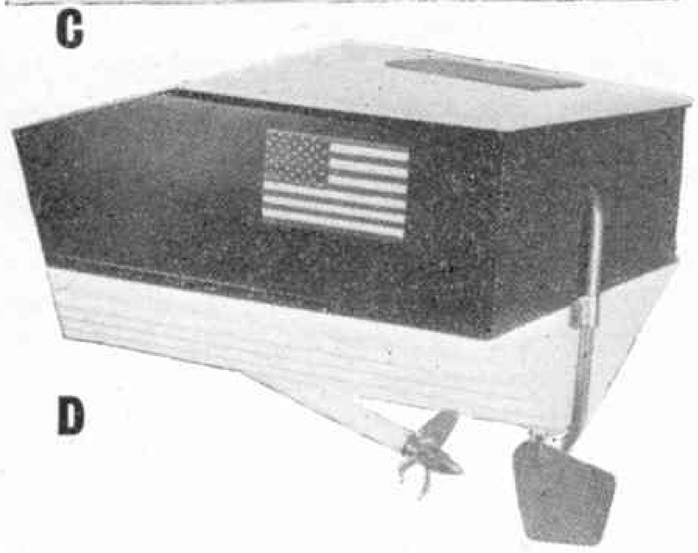
A



B



C



D

A *The chine and gunwale strips are held in place with pins until the cement dries*

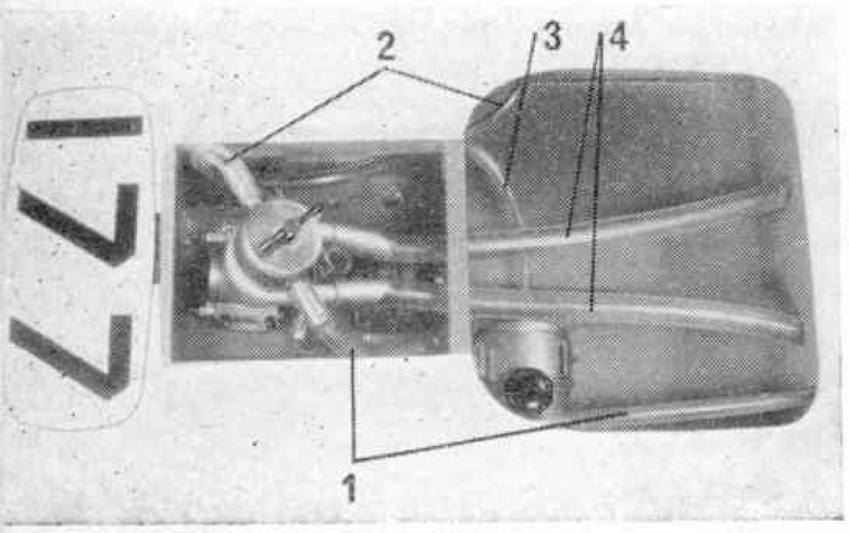
B *The D.C. Spitfire securely mounted and ready to install*

C *The Maxispray unit produces a really professional finish. Spray the entire hull white, then mask the deck and bottom using adhesive tape and newspaper, and spray the sides*

D *The propeller, rudder and water intake*

E *The 'plumbing'. 1: water inlet tube, 2: water outlet tube, 3: fuel feed tube, 4: exhaust pipes*

E



inside of the hull unless the model is to be diesel powered, when both the cockpit and the engine compartment should be given several coats of light grey dope (preferably butyrate or fuel resistant dope). Do not paint with oil colours as these will be attacked by diesel fuel.

Once finished painting, and with all the paint quite dry, the model can finally be fitted out. Assemble the rudder in its tube and bend the tiller at right angles to hold the rudder from dropping out. It is suggested that you hook up the tiller to a proper steering system, as shown in Fig. 4. This is quite easy to rig. A suitable wheel (e.g. a Ripmax plastic launch wheel) is cemented to a short length of $\frac{1}{8}$ in. diameter dowel. Drill a $\frac{1}{8}$ in. diameter hole in bulkhead 4 where you want the wheel to go, and also on a block of balsa to go behind the bulkhead to act as an additional bearing for the dowel. Mount in place with a small pulley on the other end of the dowel, cementing the bearing block to the back of the former but making sure that the dowel is not cemented as well and is free to turn when the wheel is turned.

The motors

To carry the steering cables four small screw eyes are required, screwed into small blocks of hard balsa. These blocks are cemented to the inside of the hull in convenient positions to carry the cable, as shown. The cable itself is simply a length of stout thread. Tie one end to the tiller, pass through the screw eyes on one side and across to the pulley. Wind about half a dozen turns round the pulley, then take back through the other screw eyes and make off by tying to a rubber band which also fastens to the tiller. Check for easy movement, i.e. the tiller and rudder moving as the wheel is turned, and adjust the tension of the rubber band as necessary. Note: holes will have to be drilled in bulkheads 4, 5 and 6 to pass the cable on each side, but the position of these holes is readily found by 'cut and try'.

Installation details for electric motor drive are shown in Fig. 5. The motor is mounted on a ply plate of suitable size, the plate then supported on balsa wedges to line up with the propeller shaft. The size of plate, and of the balsa wedges, will depend on the size of motor used. Mount the motor on the ply plate first and line up temporarily by 'trial and error'. When you are satisfied with the line-up, cement in place permanently, using plenty of cement. Any type of flexible coupling can be used to connect the motor to the propeller shaft — and again the type used will depend largely on the choice of motor. Alignment should be made with the two coupling units in position (i.e. one on the motor shaft and the other on the propeller shaft) as this makes it easier to establish satisfactory alignment.

The battery for the electric motor can be laid in the space between bulkheads 5 and 6, resting on the chine shelf; or you can make up a simple battery box from balsa sheet to hold in position. Use a reasonably large size of battery, such as a 4·5 volt flat flashlamp battery. Accumulators are better still, if you can afford them. All that has to be done then is to wire the battery to the motor through an on-off switch. This switch should be mounted on the cockpit side of bulkhead 4, where it is easily reached.

With the motor in position there should be no need to have to gain access to this compartment again, so the fore hatch can be cemented in place and the single lifeline supported on stanchions added; also the pennant mast, cut from $\frac{1}{16}$ in. ply.

Fitting of a diesel power unit demands a little more work for it is most important that the engine be securely mounted. Otherwise it can vibrate loose or, more likely, be pulled loose when starting with a cord round the flywheel. This time, therefore, we need a very robust engine mount, as shown in Fig. 6. This consists of two blocks of really hard wood, at least $\frac{1}{2}$ in. thick and shaped with an angled top edge, as shown. These are glued *and screwed* in place to a $4\frac{1}{2}$ in. $\times$ $3\frac{1}{4}$ in. ply panel, with the spacing between the blocks arranged to suit the engine being used. In the case of the 'Merlin' or 'Spitfire' the blocks should be spaced exactly $\frac{13}{16}$ in. apart so that the crankcase of the engine just fits between the blocks with the crankcase lugs resting on the angled faces of the mounts. The ply base piece is further stiffened by two lengths of $\frac{1}{2}$ in. by $\frac{1}{4}$ in. hardwood *screwed and glued* in place about $\frac{1}{2}$ in. from the edges, as shown. The ply base should then be drilled out with a large number of holes as this will considerably improve the strength of the glued assembly when this mounting unit is finally cemented in place.

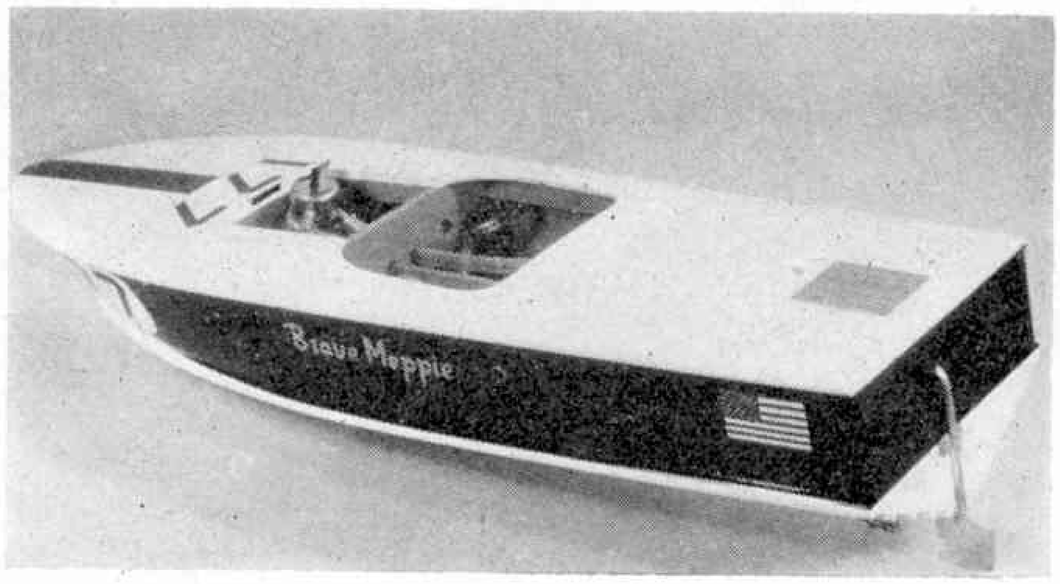
Accuracy is essential

Do not cement in place until you have checked that the motor lines up correctly with the propeller shaft. First, lay the mount in position resting on the chine shelf, lay the engine on the mounting blocks and see if the alignment is satisfactory. If all is well, secure the engine to its mounting blocks with steel woodscrews at least $\frac{3}{4}$ in. long and recheck that the alignment is OK. Then 'flood' the floor of the hull with cement and press the mount in place, making sure to line the motor up with the propeller shaft before leaving to set.

If the alignment is *not* satisfactory, then see if it can be improved with washers under the engine lugs. If so, proceed as above, with the alignment washers in position. If still not right then you may have to trim the engine blocks to get the correct alignment. Time spent in getting the engine alignment as near perfect as possible will be thoroughly worthwhile as the engine will run with less vibration and develop more power.

Continued on page 35

"PROJECT 66" See Page 10

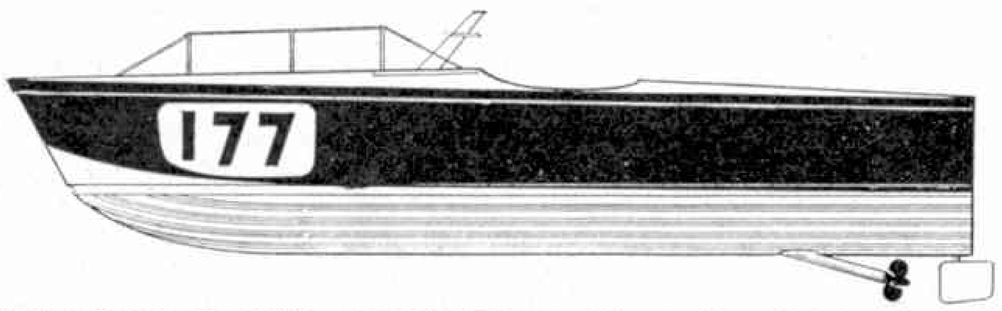


Solarbo BALSA

Model boat hulls intended for diesel power are often made from ply. That makes them more difficult to construct, and you need slow-setting synthetic resin glues to produce waterproof joints. Balsa gives you 'short cut' construction . . . so much easier and faster, and so much more enjoyable to work with. And a properly designed hull, like 'Project 66', is more than tough enough for the job.

A Balsa hull is also lighter, which can mean a better performance on less power. You gain out all round with Balsa construction!

There's one important point, though. You need the *best* Balsa for a job like 'Project 66' . . . and that means SOLARBO Balsa. Solarbo Balsa is specially selected and graded for modelling use and there just is no better Balsa obtainable anywhere. Use Solarbo Balsa for all your models. It costs no more, but the brand name ensures you that 'little extra' in quality!



SOLARBO BALSA SIZES *(Obtainable at all model shops)*

- ☐ 4 off 36″ × 3″ × $\frac{1}{4}$″
- ☐ 1 off 36″ × 3″ × $\frac{3}{16}$″
- ☐ 2 off 36″ × 2″ × $\frac{3}{16}$″
- ☐ 3 off 36″ × 3″ × $\frac{1}{8}$″
- ☐ 2 off 36″ × 2″ × $\frac{1}{8}$″
- ☐ 6″ length 2″ × 1$\frac{1}{2}$″ block
- ☐ 6″ length 2″ × 2″ block
- ☐ 1 off 36″ × $\frac{1}{2}$″ × $\frac{1}{4}$″
- ☐ 3 off 36″ × $\frac{1}{4}$″ × $\frac{1}{16}$″
- ☐ 3 off 36″ × $\frac{1}{4}$″ × $\frac{3}{32}$″
- ☐ 6 off 36″ × $\frac{1}{8}$″ sq

Other materials required include $\frac{1}{16}$″ ply, balsa cement, tissue and pins.

REMEMBER! . . . next month 'Meccano Magazine' is giving plans for making SEVEN MORE MODELS based on the 'Project 66 hull! Make sure you have stocks of Solarbo Balsa ready to start building! The material list above shows the requirements for making the hull.

Solarbo

SOLARBO LIMITED
COMMERCE WAY
LANCING, SUSSEX

THE BEST BALSA YOU CAN BUY

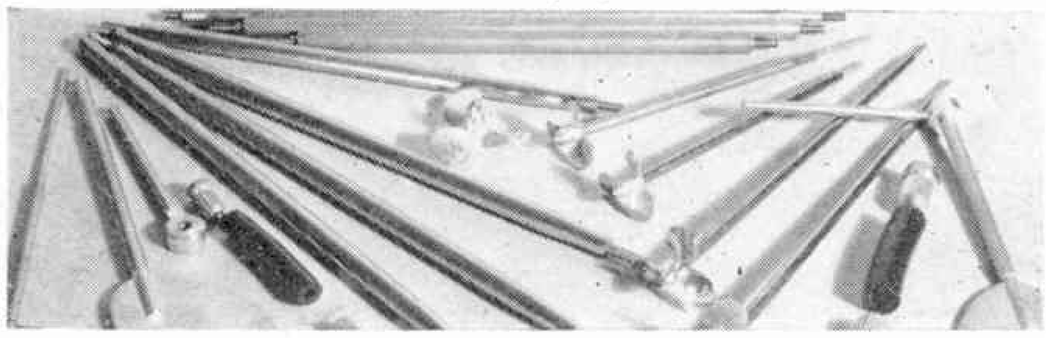
ALWAYS ASK FOR IT BY NAME

IF IT'S RipMax IT'S GOOD!

SELECT "RIPMAX" FITTINGS FOR YOUR "PROJECT 66" ★

AT YOUR MODEL SHOP!

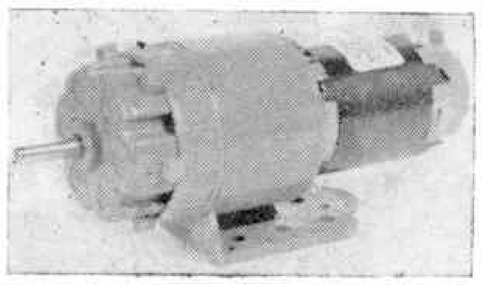
See page 10



SELECTED both by the designer and your Editor for fitting our 'Project 66' —RIPMAX ACCESSORIES. As all experienced modellers know—if it's Ripmax it's good! . . . and there's an 'RMA' fitting or accessory to suit ALL your modelling requirements A Ripmax item guarantees you real value for money, too. Your local model shop can show you all these items.

'PROJECT 66' — DIESEL

- ★ TD.II 11″ shaft and tube . . 6/8
- ★ MP.30 nylon Racing prop. . . 2/7
- ★ MA.40 Rudder assy. 4/6
- ★ C.741 Ball Coupling 5/6
- ★ MA.31 Fuel Tank 7/11
- ★ MA. 27/2 Silencer 8/6
- ★ MA. 61 Transom Flange . . 4/11
- ★ 18″ ¼″ bore Plastic Tube . . 1/-



ELECTRIC MOTORS

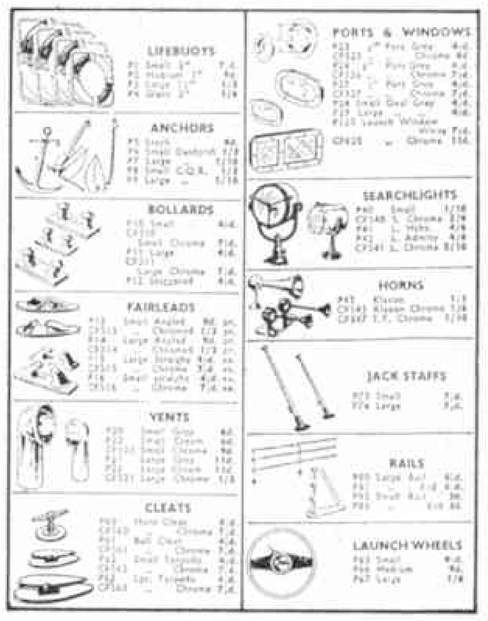
There's a size and type of electric motor in the 'RMA' range to suit any model. Here are just a few.

- **Richard I** (six-speed) . . . **49/6***
- **Richard II** (six-speed) . . . **57/6***
- **MiniRichard** (six-speed) . . **47/6**
- **Super-Q ORBIT**—105 . **5/11**; 205 . **6/3**; 305 . **6/11**; 405* . **8/11**; 505* . **10/11**; 605* . **39/6**
- ★ **ATOM** . **3/11**; **'RMA' Baby** . **6/6**
- ★ **NAUTOCRAFT*** (3-6U) . **72/6**
- ★ **MARX DECAPERM*** . **44/11**
- ★ **MARX HECTOPERM*** . **58/6**
- ★ **BONGO*** inb'd/outb'd **42/6, 50/-**
- ★ Outboards—**JOHNSON** . **34/11**
- ★ **EVINRUDE** . **36/-, OB300** . **8/6**

** Suitable for 'Project 66'*

'RMA' DECK FITTINGS

There are over 100 items in the complete range . . . here is just a selection . . . Every fitting is true scale . . . many have working features as well. In self-colour plastic and plated metal.



SPECIALLY RECOMMENDED 'VALUE FOR MONEY'

GRAUPNER BOAT KITS

18″ KITTY (right) . . **35/-**
Electric-powered cabin cruiser specially designed for radio control. Finished moulded hull in this super value kit.

CONSTELLATION (below) **79/6**
A fully moulded hull in foam plastic takes all the hard work out of building this wonderful scale model, ideal for R/C.

Other Graupner kits include:—

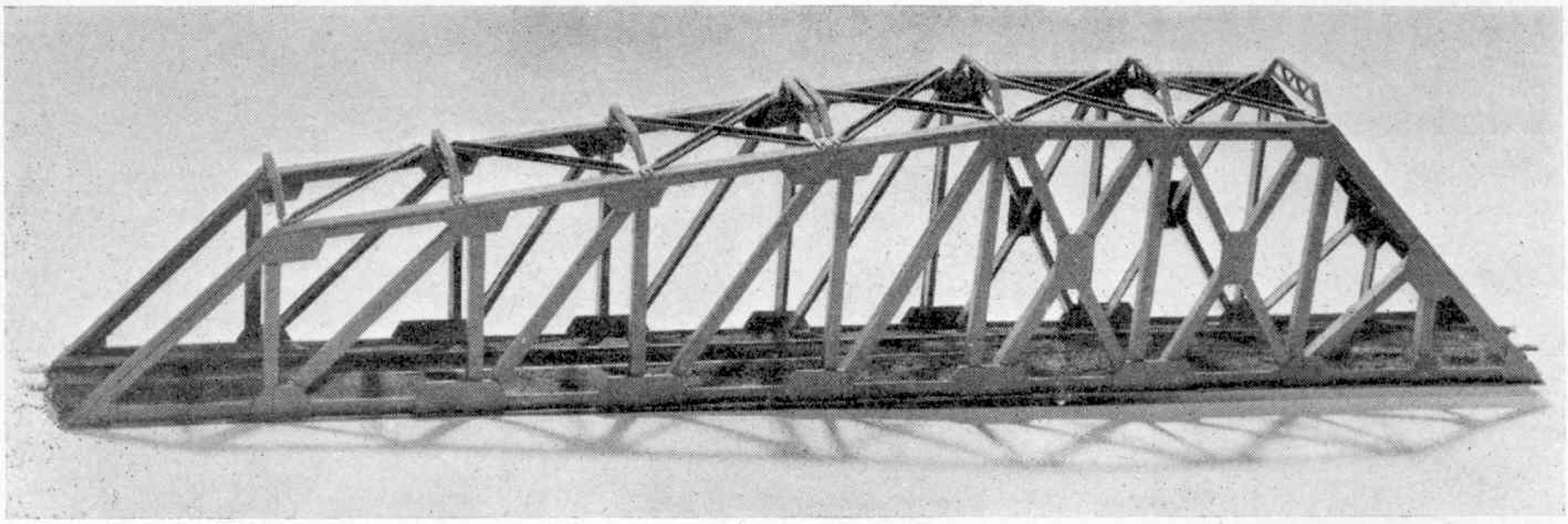
- 25″ long **Patricia** yacht . **84/-**
- 36″ long **Gracia** yacht* . **117/6**
- 39½″ long **Theodor Heus*** **159/6**
- 35″ C-C **Holiday** . . . **159/6**
- 42″ long **Graf Zeppelin***. **169/6**
- 33″ long **Esso Berlin*** . **99/6**
- 29″ long **Condor*** . . **132/6**
- 27½″ long **Pamir** . . . **122/6**
- 36″ long **Heligoland** liner* **170/-**

**Suitable for radio control*

★ **RIPMAX MODELS & ACCESSORIES**

The world's FINEST and LARGEST RANGE of model accessories . . . fittings . . . motors . . . kits . . . radio controls . . . in fact, everything you could need for model making. For the best, INSIST ON RIPMAX . . . every item tested and fully guaranteed! If in difficulty write: RIPMAX, Models & Accessories, 80 Highgate Road, London, N.W.5.

AT YOUR LOCAL MODEL SHOP



SWING IT PART 1

Visitors to the MECCANO MAGAZINE stand at the Schoolboys and Girls exhibition were fascinated by Mike Rickett's electrically operated model swing bridge. Starting below, he shows you how to build your own replica, that will greatly enhance the appeal of any layout. Next month there will be details of how to fit the mechanism, and the scenic setting, which occupies an area 2′ 6″ square, will be described in the April issue.

THE Airfix girder bridge is one of the most versatile kits in their railway series, and readily lends itself to a number of interesting conversions, one of these being a swing bascule bridge of the type to be seen on many dock systems. Although the model here described is not *absolutely* correct, in that a section has had to be sacrificed to reduce the length, the bridge *looks* the correct shape. It differs from the original only in the length and the base, which is usually inset with stone blocks, and not tarmac.

Two Airfix kits are required, and one sheet of 30 thou Plastikard, Polystyrene cement or solvent, one length of any flexible track, Polyfilla, sand, grey paint (matt), black paint (matt), and thinners. Tools are also quite basic, consisting of a razor saw, modelling knife, drill to clear Meccano rodding, an old table knife, a steel rule, and finally a Meccano Bush Wheel. You will also require a tube of contact adhesive for glueing the flexible track down to the bridge base.

Construction of the bridge begins with the base, and you will need parts 21 and 22 supplied with the two kits. The former are used for the centre of the bridge base, and the two shorter pieces, parts 22, are used for the ends. The longer pieces should be sawn off $\frac{1}{2}$ in. from one end to remove the two rectangular gaps which you will see at one end. The two base sections, when sawn, should be 7 in. long, and will be used end-to-end to form the centre of the bridge. One part 22 should also be sawn to leave one piece 2 in. long, including this time the rectangular gaps. The other part 22 is left untouched and is placed at the other end of the two longer sections. These four pieces can be glued together, once the four rectangular gaps have been positioned at each of the four outside corners for locating the bridge sides.

A flat surface, such as glass, must be used on which to glue the parts together. Twisting and warping will also be avoided if weights are placed at intervals along the base during assembly. With a straight edge, check that the base parts are quite straight and are not bent or kinked. Leave them to set when you are quite satisfied, and *do not attempt the next stage for at least twelve hours.* The glue should by that time have hardened, reducing any tendency for the bridge joints to come unstuck. A Meccano Bush Wheel (part No. 24b) is used for the bridge pivot, and it is necessary to drill two holes $6\frac{3}{4}$ in. from the end of the bridge in the longer of the two end sections—the 'big end'. One hole should be drilled on each side of the centre section, and I would suggest placing the wheel on the upper side of the bridge, marking the holes on in pencil, 'pop' marking and then drilling. Clean off the plastic fur that will remain, and attach the wheel on the underside of the bridge by using two standard Meccano bolts with the heads on the upperside of the bridge base, and lock-nutted below.

The bridge sides are assembled by using a number of Airfix parts. The two smaller ends require one each of parts 15 and 17, which should have the upper locating lug removed with the razor saw just beyond the hole. The opposite—'big end'—of the bridge requires more work, and you will need two parts, Nos. 16 and 18. The latter must have the upper gusset plate, and supporting piece of plastic without any rivet detail, removed by sawing off as close as possible, and at right angles to, the main girder. The lower gusset plate should also be removed with a razor saw.

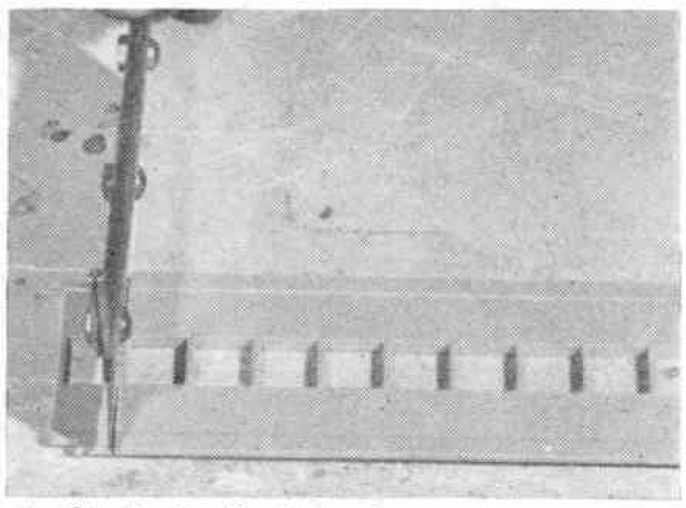
Trim the plastic

The second part, No. 18, also has the supporting piece of plastic cut off below the upper gusset plate, and the girder from this plate is cut to give a piece $2\frac{7}{16}$ in. long. Remember to trim off surplus plastic at every stage with a modelling knife, by scraping to give a smooth surface. Trim the insides of the upper and lower gusset plates on the end girders to conform with the other gussets, by sawing, and then paring down with a modelling knife. The locating piece is also removed from the upper gusset plate with a razor saw, and the two pieces from the two parts glued together to form one large V-shaped girder. The remnant of the upper part No. 18 is also used to give a piece $1\frac{5}{16}$ in. long including the lower end gusset plate and locating piece, the

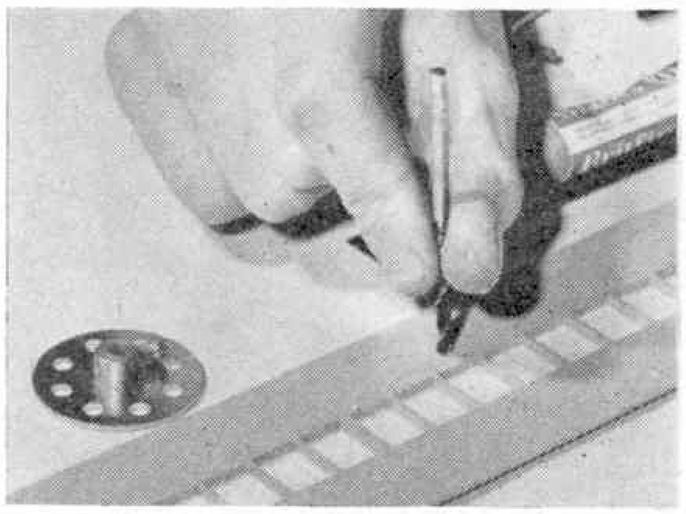
latter not included in the above dimension. This is glued to the lower end of the girder assembly.

The bottom side sections of the bridge are formed from two Airfix parts Nos. 3 and 10, one each of which will be required for each side. These should have the surplus plastic locating lugs behind the gusset plates cleaned off with a knife.

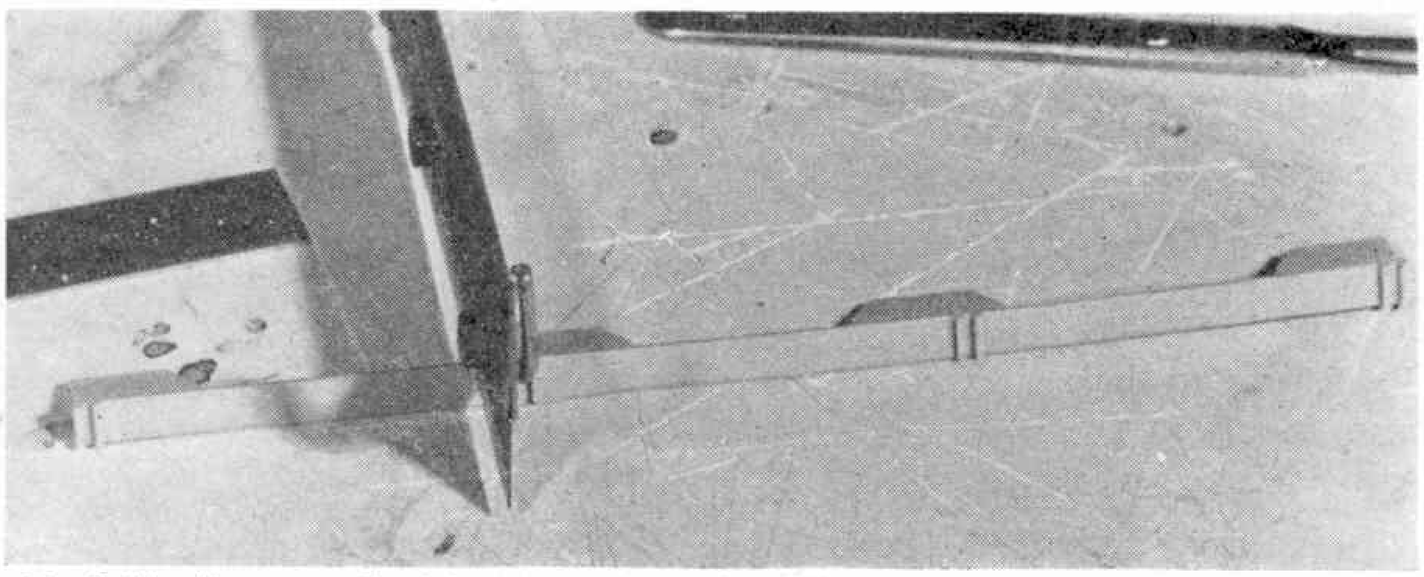
Two parts, Nos. 2 and 9, are required for the upper side girders, which at the 'small end' of the bridge will require to be angled at one side end to give the upwards slope. This is done with a razor saw which is used to make a cut between the two locating pieces on the upper part of the girder, and the opposite corner of the gusset plate. The adjacent girder to this should be cut completely in two just before the second gusset plate, to give two pieces; one $2\frac{7}{32}$ in. long, and the other $5\frac{7}{32}$ in. long. The shorter of the two is sawn at its left-hand end, to an angle which tapers from $\frac{1}{32}$ in. at the inside of the girder, and outwards to the webb.



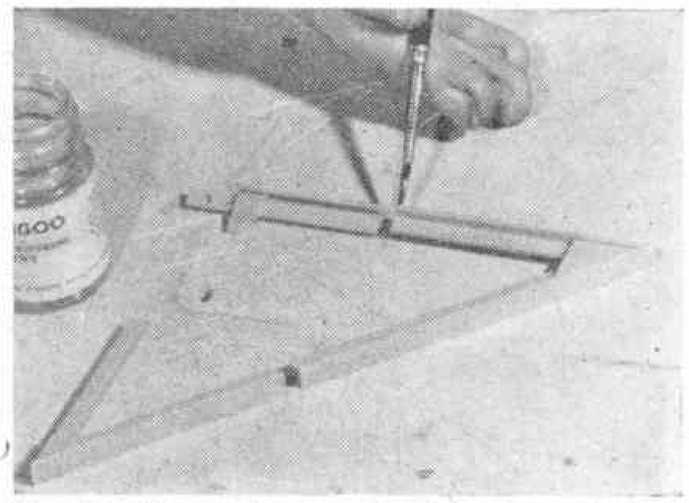
A *Shortening the base pieces with the aid of a razor saw*



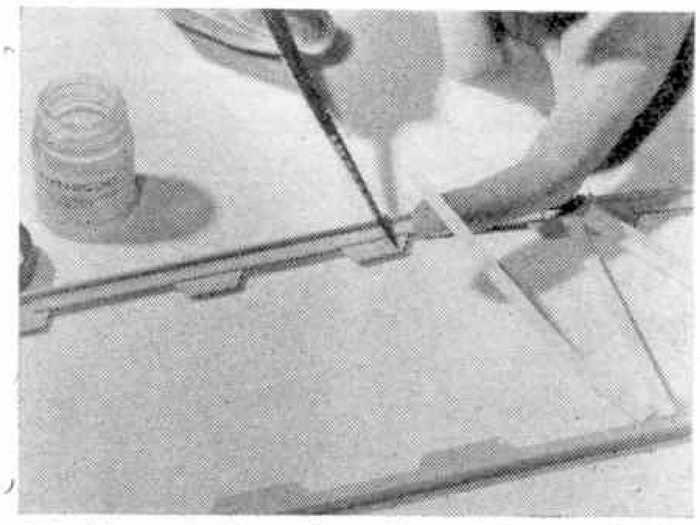
B *Drilling holes for the Meccano Bush Wheel*



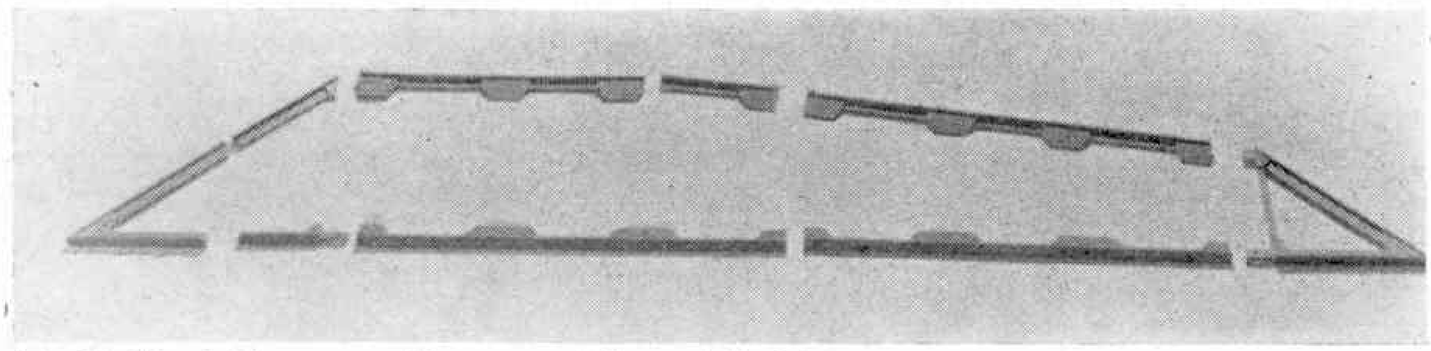
C *Cutting the upper side girder in two—the smaller of the two pieces is to be tapered at one end to form the middle upper girder section of the bridge*



D *The 'big end' is made from two standard Airfix end girders*



E *Here are the side outline girders ready for assembly. Accurate cutting will ensure a sound structure*



F *Plastikard strips are used to represent the upright girders*

The three pieces forming the triangular 'big end' of the bridge should now be glued together on a flat surface, and allowed to dry for twelve hours, followed by one bottom girder. Test all parts to ensure that they are quite straight by using a straight edge, and place weights at intervals to avoid twisting. The same procedure is followed for the opposite end of the bridge, which consists of the small triangular girder, with the other bottom straight girder and longer upper girder with tapered end glued to the upper and lower locating pieces. The remaining two parts forming the angled section in the middle and 'big end' of the bridge are glued together and set aside. When all three assemblies are quite dry, they too can be glued together and the procedure repeated for the second side of the bridge.

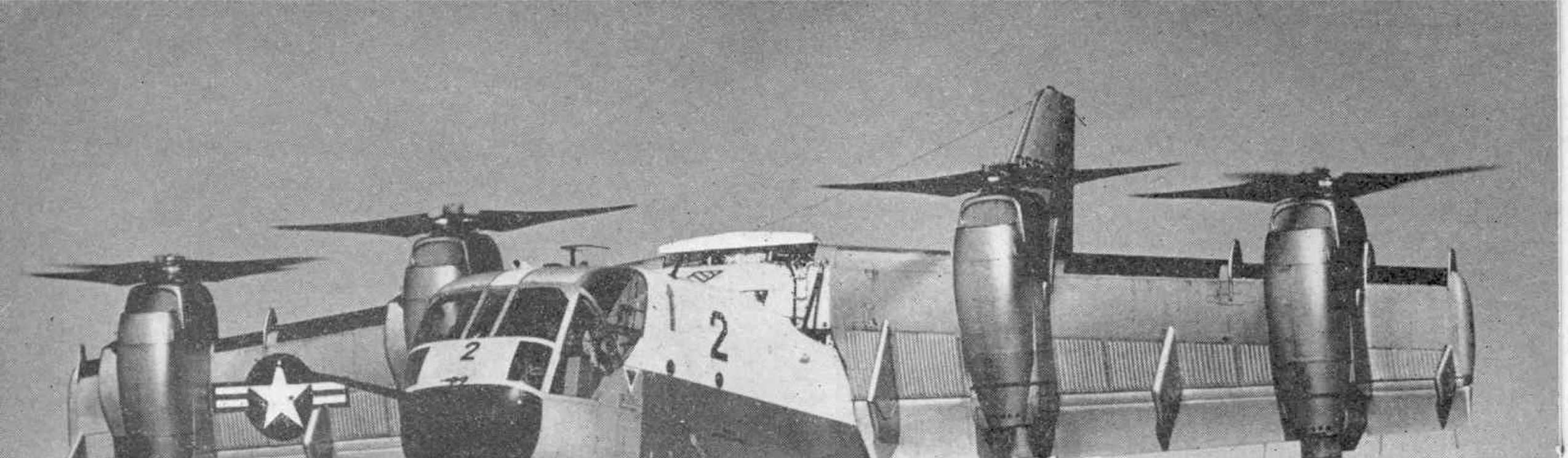
Unfortunately, the Airfix bridge kit does not include sufficient girdering of the right type to form the bracing girders that are required along both sides, and you will find it necessary to make your own, using 30 thou Plastikard cut in strips $\frac{3}{16}$ in. wide. The lack of rivet detail on these fabricated girders is not really noticeable when the bridge is assembled—in any event the task of adding rivets would be one to daunt the most enthusiastic of modellers. The fabricated girders are arranged both vertically and diagonally to coincide with the gusset plates on the top and bottom girders. The diagonal members run from the front bottom gusset plates to the top, with the exception of the two sections above the bridge pivot, where the diagonals run in both directions.

An idea of the arrangement of the girders can be had from the photographs accompanying this article, and construction should begin with the flat part of the girder webb, adding the girders from the 'small end' of the bridge. With the bridge side lying face down, glue these in position behind the gusset plates, making sure that the vertical girders are at ninety degrees to the bottom members of the bridge, and that there is sufficient room behind the gussets for the diagonal members.

Final assembly

Once the flat pieces have been added and the glue quite dry, the other webb of the girders can be glued, edge on, to the pieces already in position. If your bridge side is placed face down on the work bench, the second webb is glued to project upwards, the solvent made to run down the joint, and the girder held for a few seconds. Repeat this, once again for the second side, and then add the additional four gusset plates on each side of the 'big end' of the bridge. These are also made from Plastikard and are marked out in pencil to the exact shape, and then cut out and glued into position.

(Continued on page 37)



the 20-ton hummingbird

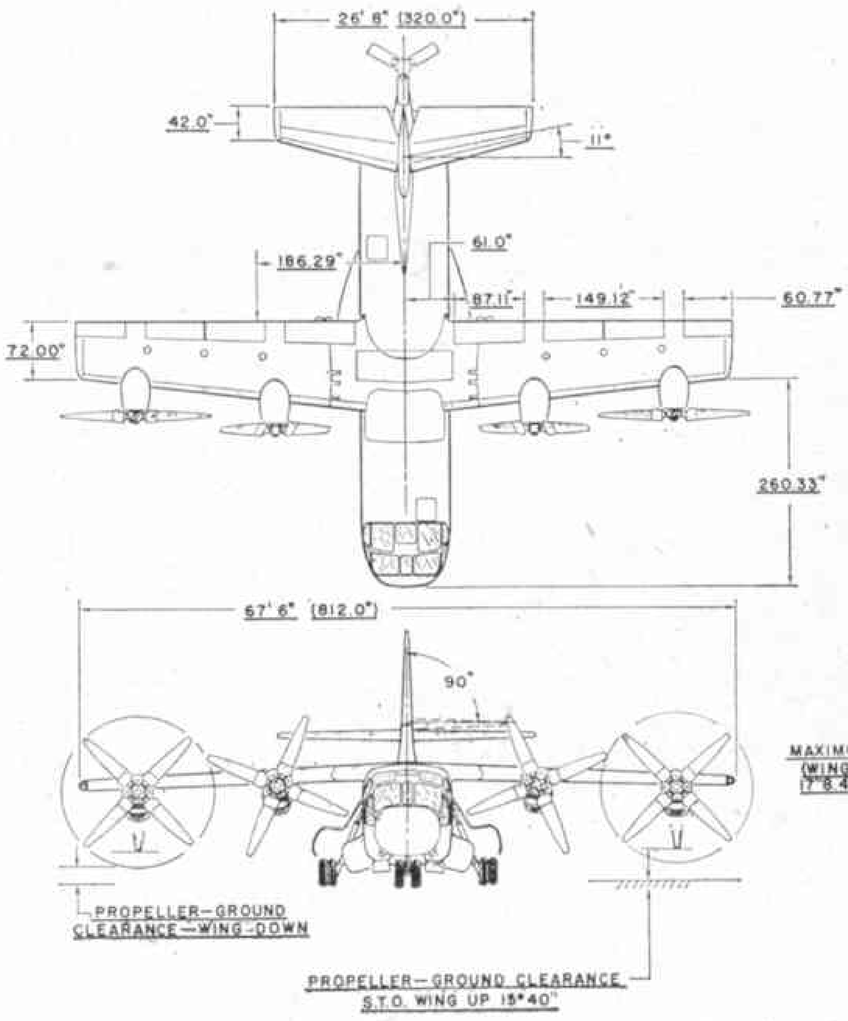
THREE facts that I always remember about Thomas Alva Edison, the famous American inventor, is that he invented the gramophone and electric light bulb and had a poor opinion of early aeroplanes. When told of the first flights by the Wright brothers, in 1903, he commented that the aeroplane would be worthless until it could go straight up and down, and hover, like a hummingbird.

Edison would have been horrified by the sight of the giant jet-liners of today hurtling along two-mile concrete runways. He foresaw that aeroplanes would be much safer, and would be able to go anywhere, only when they could take off and land vertically. It has taken 60 years for most of the world's aircraft designers to realise how right he was and to try and do something about it.

One type of vertical take-off and landing (VTOL) aircraft, the helicopter, has of course been doing useful work for more than 20 years; but this is not enough. Passengers travelling between London and Paris still spend more time on the ground, getting from city centre to airport at each end, than they do in the air. If aircraft were able to 'go straight up and down', it would no longer be necessary to build airports so far from city centres. Similarly, army commanders would receive much quicker and better support from their air forces if fighter-bombers were able to operate from small fields, jungle clearings or roads in the combat area, instead of from prepared airfields miles behind the fighting lines.

To their credit, British designers have led the field in putting some sense into aviation, and we now have the Hawker Siddeley Kestrel VTOL strike fighter on order for the R.A.F. But our successive

Like a vast insect, 20 tons of aeroplane hang motionless in the air



This three-view drawing gives a good idea of the machine's proportions. Notice the folding fin

governments have been slow to take advantage of this leadership and have left it to America to set the pace in building VTOL transport aircraft.

All kinds of weird and wonderful designs have been tested in the United States, including machines with tilting rotors, with propellers inside tilting barrel-shape ducts, with lift-fans buried in the wings, and with huge flaps to deflect downwards the slipstream from propellers. Few of the results have been successful; several of the aircraft have crashed. In fact, the House of Representatives Committee on the Armed Services complained some time ago that, although more than £107 million had been spent on these aircraft, America had failed to produce workable prototypes in sufficient numbers even to test their suitability for combat use.

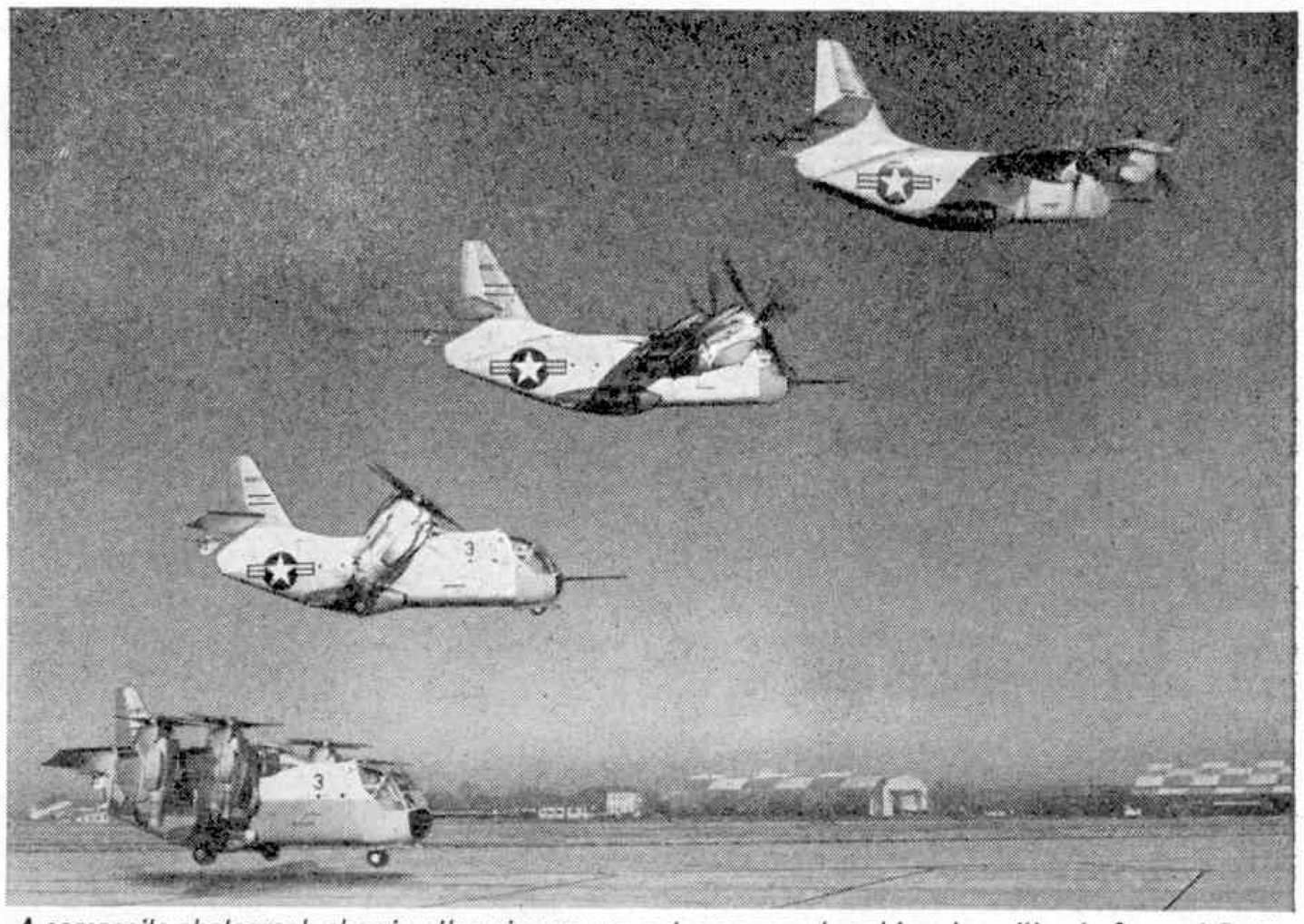
The only American VTOL aircraft that has really been given the chance to prove its worth in any numbers is the XC-142A, shown on the cover of this month's *M.M.* Biggest VTOL aeroplane yet flown outside Russia, it has a maximum take-off weight of nearly 20 tons and a cabin large enough to carry 32 fully-equipped troops, 24 casualties on stretchers or 3½ tons of cargo. If it works, it will not only be useful to ferry men, supplies and equipment into front-line battle areas, but might also offer hope of commercial air services into city centre air-bus stops one day.

More than five years have passed since the U.S. aircraft industry was invited to enter design studies for a competition to decide who should build a VTOL transport for testing by the U.S. Air Force, Army and Navy. In September 1961, it was announced that the contest had been won by a design submitted by a team made up of the Ling-Temco-Vought, Hiller and Ryan companies. They received a contract to build five flying prototypes and one extra airframe for testing in giant rigs that would twist and shake it to discover how much hard treatment it would withstand before breaking.

LTV are the leaders of the three-company team. Ryan are responsible for designing and building the rear fuselage, tail unit, wings and engine nacelles. Hiller produce the flaps, ailerons, transmission systems, gearing, shafting and propellers. The rest of the airframe is designed and built by LTV.

The tilting wing

Key to the XC-142A's VTOL capability is its tilting wing. In cruising flight, it looks little different from any other modern military transport; but for take-off and landing the whole wing is tilted, so that the propellers of the four 2,850 h.p. General Electric T64 turbo-prop engines can function as helicopter rotors. Cross-shafting, linking the four engines through the wings, ensures that all four propellers will continue to turn if one or more of the engines stop. A further shaft runs to a small rotor mounted horizontally at the tail.



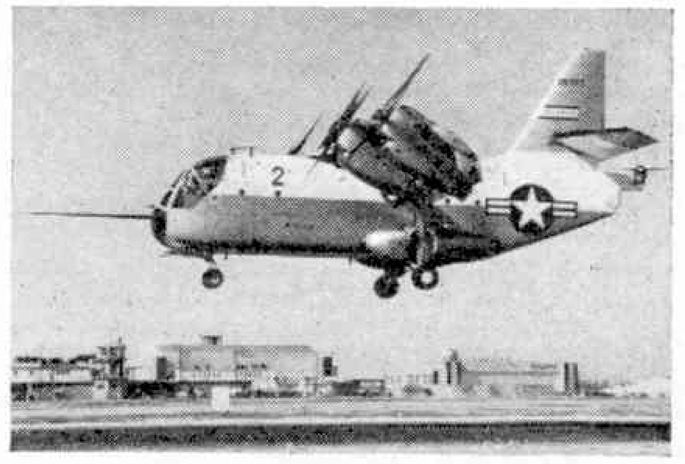
A composite photograph showing the wing movement necessary to achieve transition to forward flight

The tilt-wing method of achieving VTOL flight is not so easy as its sounds. The normal tail control surfaces cannot keep the aircraft straight and level when it hovers or travels straight up and down, as there is hardly any airflow over them. Instead, the tail rotor has to do the job of normal elevators, by keeping the fuselage parallel with the ground. The wings are kept level by varying the thrust from individual propellers. For example, if the left wing begins to drop, the propellers on that side have to give a quick increase in thrust to raise it. As the ailerons are still in the propeller slipstream, they can be used to keep the aircraft pointing in the right direction.

The many flaps

Surprisingly, this complicated double control system does not make life much more difficult for the pilot. The VTOL control system, using the propellers and tail rotor, and the normal flying controls are both operated by an ordinary control column and rudder pedals in the cockpit. Mechanical linkages sort out automatically which control system should be used, depending on the position of the wings. So the pilot operates his controls in the usual way and the only additional control is a collective lever, as on a helicopter, to vary the thrust of the propellers. An automatic stabilisation system helps to keep the aircraft straight and level, particularly at night or in bad weather when the pilot might not be able to see the ground.

To make the XC-142A work efficiently and safely, the designers have had to fit a whole series of flaps on the wing leading-edges. There are other complications that cannot be seen from outside, such as the big hydraulic jacks needed to tilt the wings. The top part of the fin folds down to enable the aircraft to be kept in



Number 2 settles gently to earth

fairly small hangars, and the tail rotor folds to one side to prevent its being damaged when bulky loads, or vehicles, are put on board via the rear loading ramp that forms the underside of the fuselage in flight.

Despite the complications, flight testing of the prototypes has gone quite well. The first XC-142A made its maiden flight, with a normal take-off and landing, on September 29, 1964. It hovered for the first time, with the wing tilted up, on December 29, and made its first conversions from vertical to forward flight, and *vice versa*, on January 11, 1965, a mere 104 days after its first flight.

By the middle of 1965, four of the aircraft were flying and had logged a total of 75 hours in the air. They have had their setbacks; but this is hardly surprising for such an ambitious venture. If all goes well, this 20-ton 'hummingbird' will eventually combine VTOL capability with forward speeds of up to 430 m.p.h. —much faster than any helicopter is ever likely to fly. If it also does away with the need for two-mile runways, miles from anywhere, it will make one of the greatest steps forward since Sir Frank Whittle perfected the jet engine.

John W. R. Taylor

KEILKRAFT

Ready-to-Fly HURRICANE

For hours of flying fun

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

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

£5-9-8 COMPLETE INC. TAX

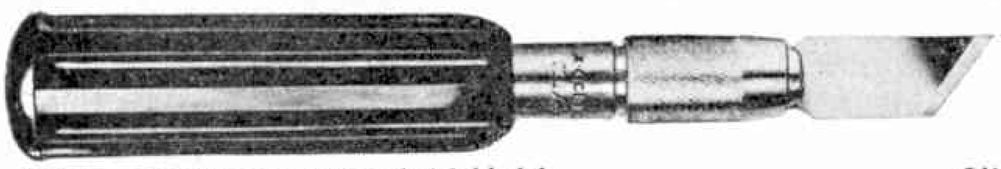
SEE THE KK HURRICANE AT YOUR LOCAL MODEL SHOP TODAY!

KEILKRAFT x-acto HOBBY TOOLS

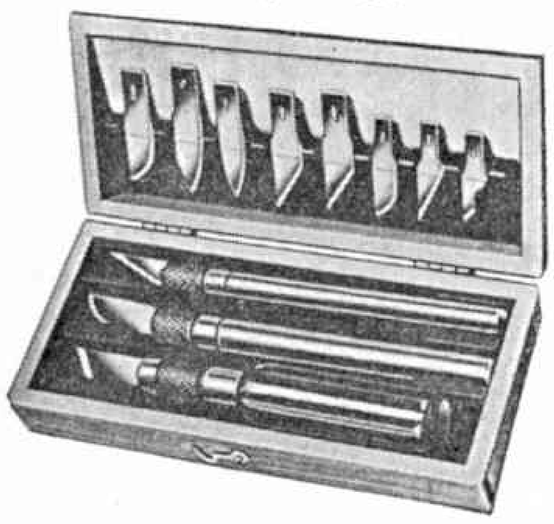
FOR THE KEEN YOUNG CRAFTSMAN

No. 1001 General Purpose Knife (with blade) 2/-
Spare blades (packet of 3) double-edged 1/4

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



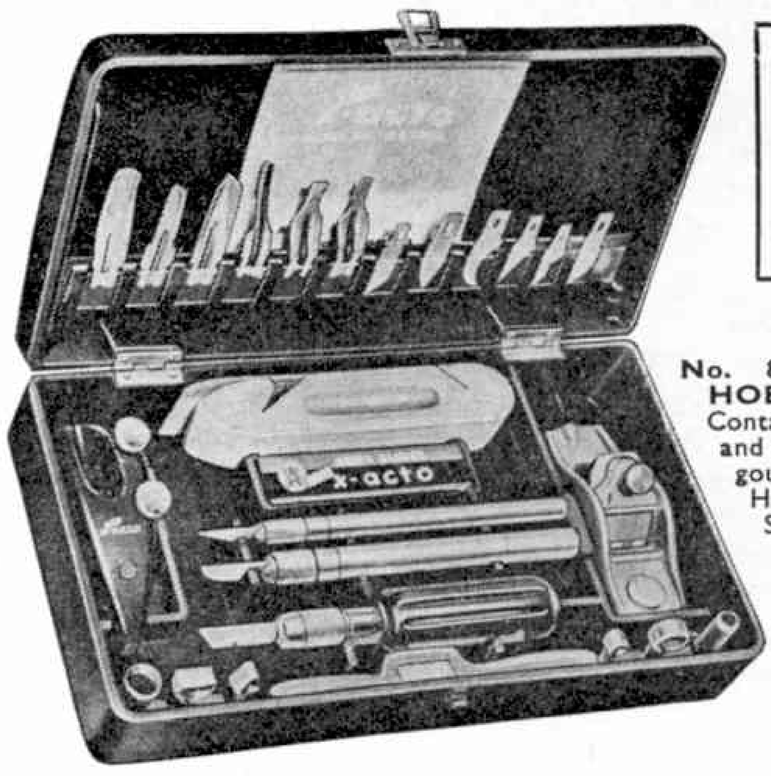
No. 5 For all heavy cutting (with blade) 8/10



No. 82 X-ACTO KNIFE CHEST

Nos. 1, 2 and 5 Knives plus 9 asstd. extra blades. Handy, natural-finish wood chest 37/-

You'll do a better job with one of these super-sharp knives!

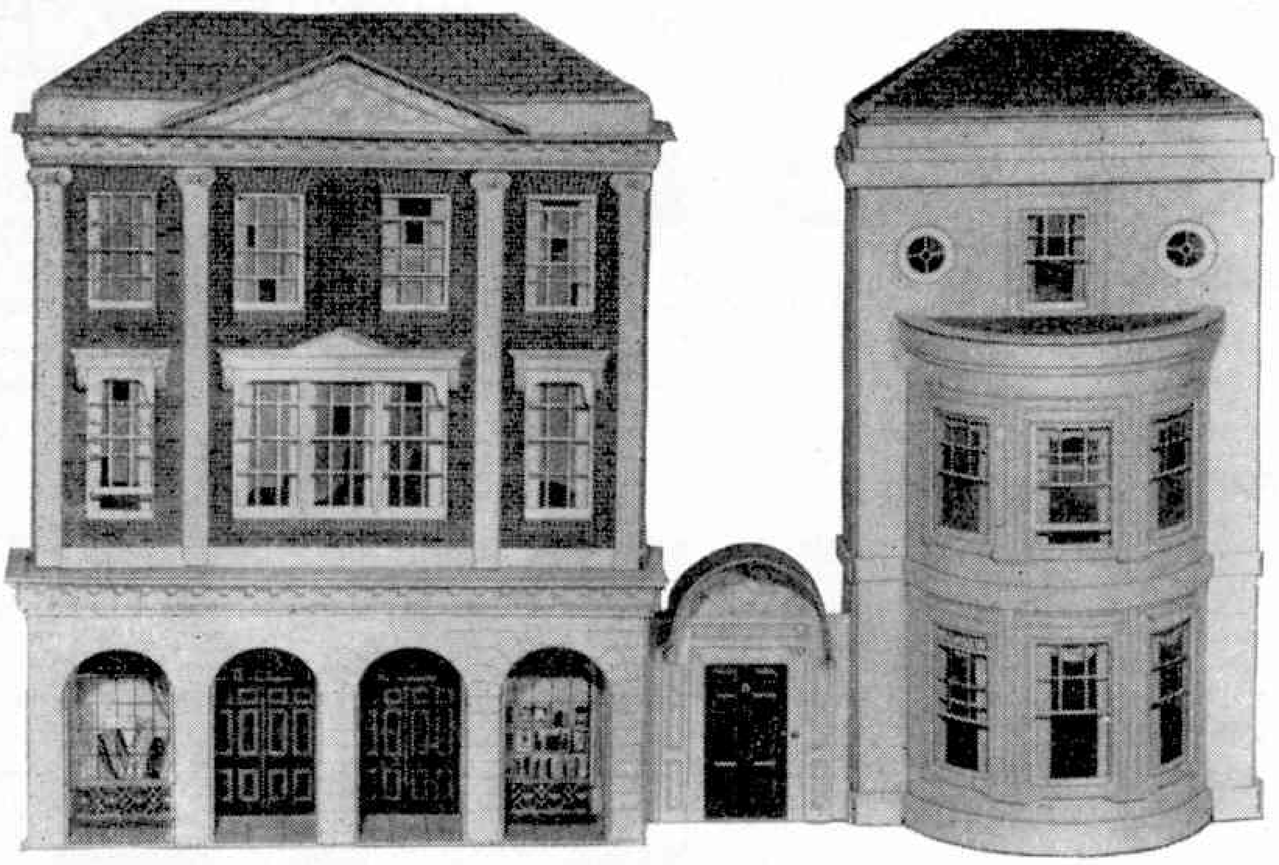


There are 28 x-acto interchangeable blades, gouges, punches and routers for every kind of cutting and carving job.

No. 86 BURLINGTON HOBBY CHEST
Contains Nos. 1, 2, 5 Knives and complete asst. of blades, gouges, routers, punches. Has X-acto Planer, Sander, Spokeshave, Balsa Stripper Steel Rule **£5.3.0**

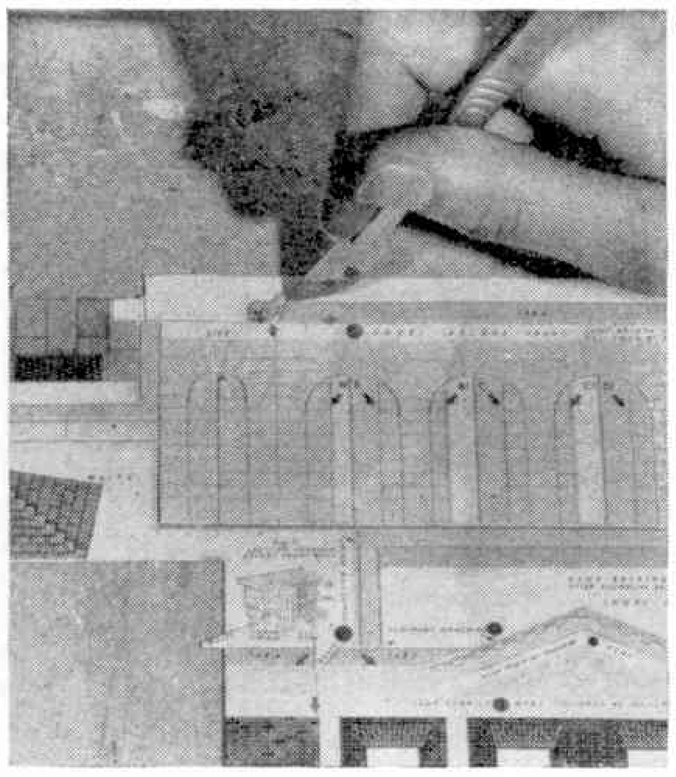
See them all at your local model shop

Sole concessionaires KEILKRAFT WICKFORD, ESSEX



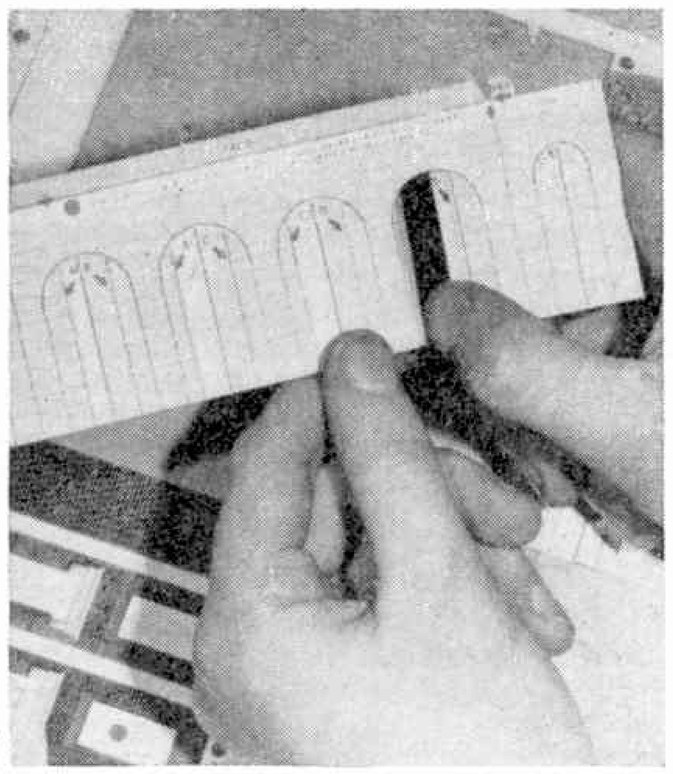
These remarkable die-cut, fully-coloured 'Superquick' card models are now an established part of the model railway scene. Their extensive range of railway and town buildings, both old and new, is constantly being extended. On this page we are assembling the Regency Shop and House kit which costs 3s. 6d. complete!

BUILD IT SUPER-QUICK



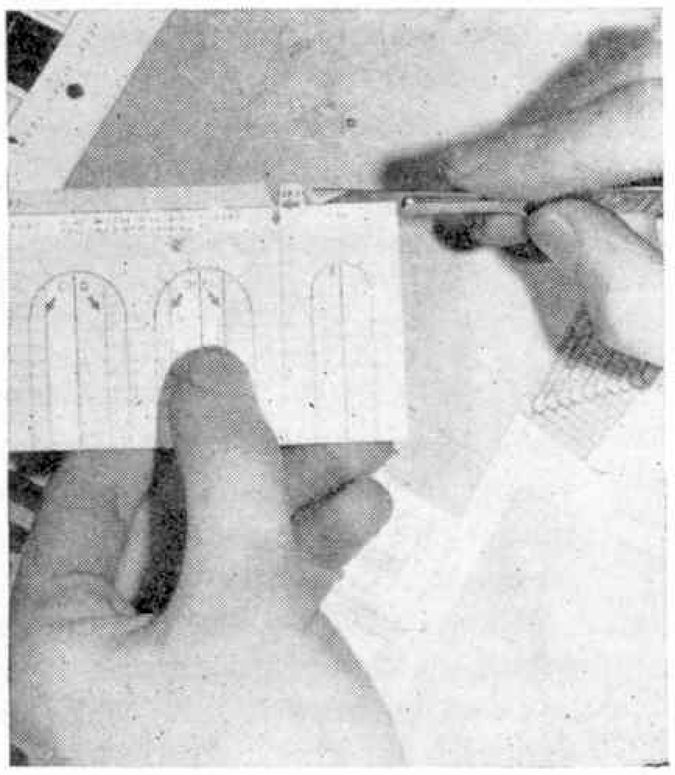
1

1 The parts for the two buildings in the kit are already partly stamped out, but require to be nicked at intervals with a modelling knife before they can be separated from the sheet. Red arrows indicate the lines that are to be completely separated, as distinct from those that are merely scored for folding.



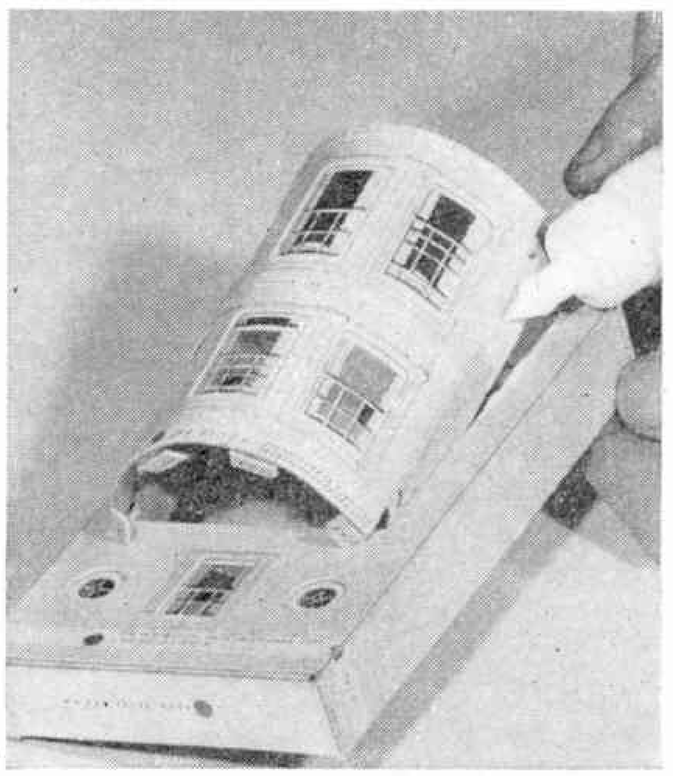
2

2 When separated from the remainder of the sheet, any surplus cardboard 'furr' should be removed from the edges with a modelling knife to give a cleaner appearance. Be careful, however, not to accidentally remove the tabs. The same procedure is followed for windows and other openings, which may be pushed out, and then cleaned up.



3

3 Parts that are only *partly* cut through, and which are indicated with blue arrows, should be folded over further than is actually required, to allow for the natural springiness of the cardboard. Gluing tabs also require to be treated in this manner.



4

4 A P.V.A. glue is preferable for cardboard kits since it does not shrink on drying, and also dries matt and transparent—a useful asset. Tabs and other parts, once bent over, should be given a fairly liberal coating of the glue, and then pushed and pressed into position. The glue dries very rapidly, but care should be taken to ensure that parts do not come apart while drying.

5

5 When completely assembled, a better appearance will result if folds and uncoloured parts are touched in with a paint of the appropriate colour—preferably matt. Always use a small brush when doing this, and only paint when absolutely necessary.

Puzzle Page

Answers to these puzzles will appear in our next issue

A. In each of these horizontal rows of letters are six countries in various parts of the world—all containing the same number of letters. The printer, however, got the letters out of place. See if you can restore the order and find the six countries.

N A U H R S D O
R A U P G L T O
O N L S A D T C
S I A T N A M A
O I E R S A D H
L I M C B A O O

★ ★ ★

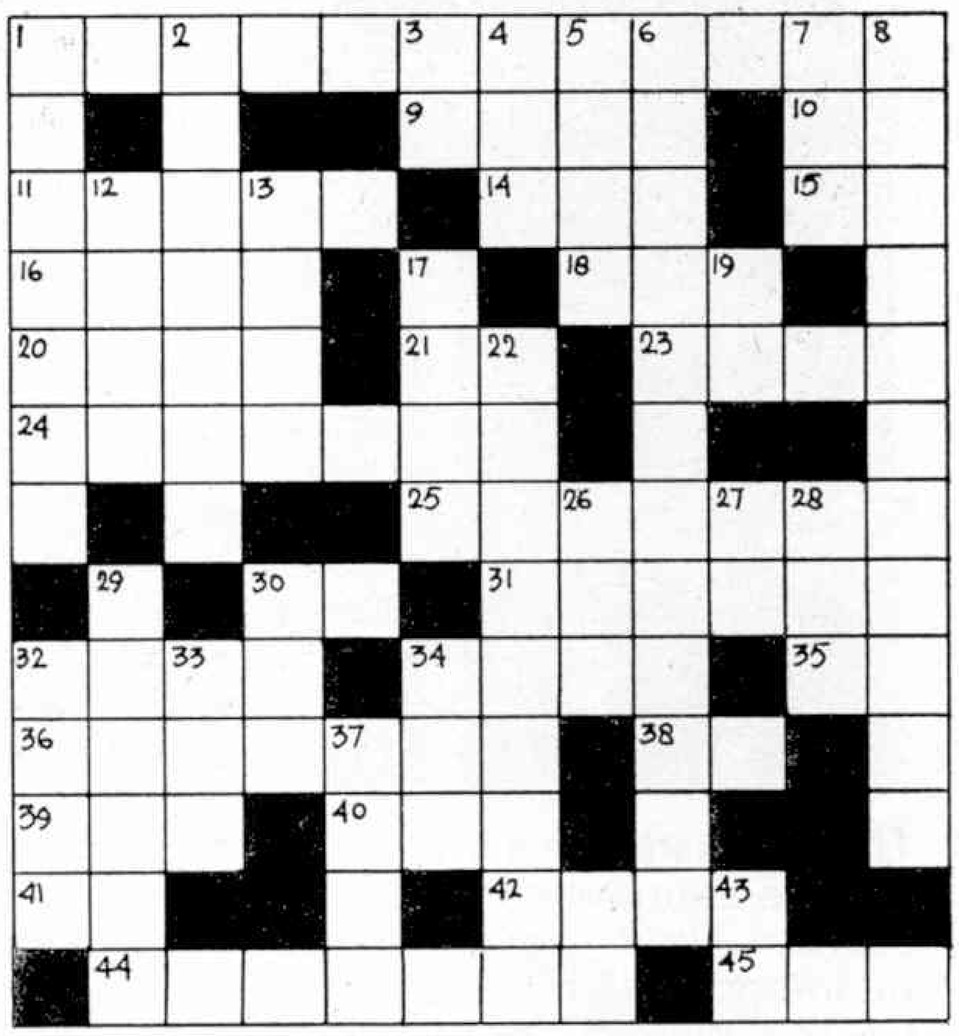
B. A certain country inn had eight regular customers. One man came every day, another every second day, a third every third day, and so on, up to the eighth customer, who came every eighth day. After how many days will all eight customers patronise the inn on the same day?

★ ★ ★

C. Here's a word-finding puzzle, the idea being to answer each of the following clues with a word ending up in DENT. The first answer is PRESIDENT—try to find the others!

1. The DENT that presides.
2. The DENT that dwells in a place.
3. The DENT that is not subject to control.
4. The DENT that is discreet.
5. The DENT that is insolent.
6. The DENT that studies.
7. The DENT that is a mishap.
8. The DENT that is obvious.
9. The DENT that is self reliant.

Crossword Puzzle No. 12

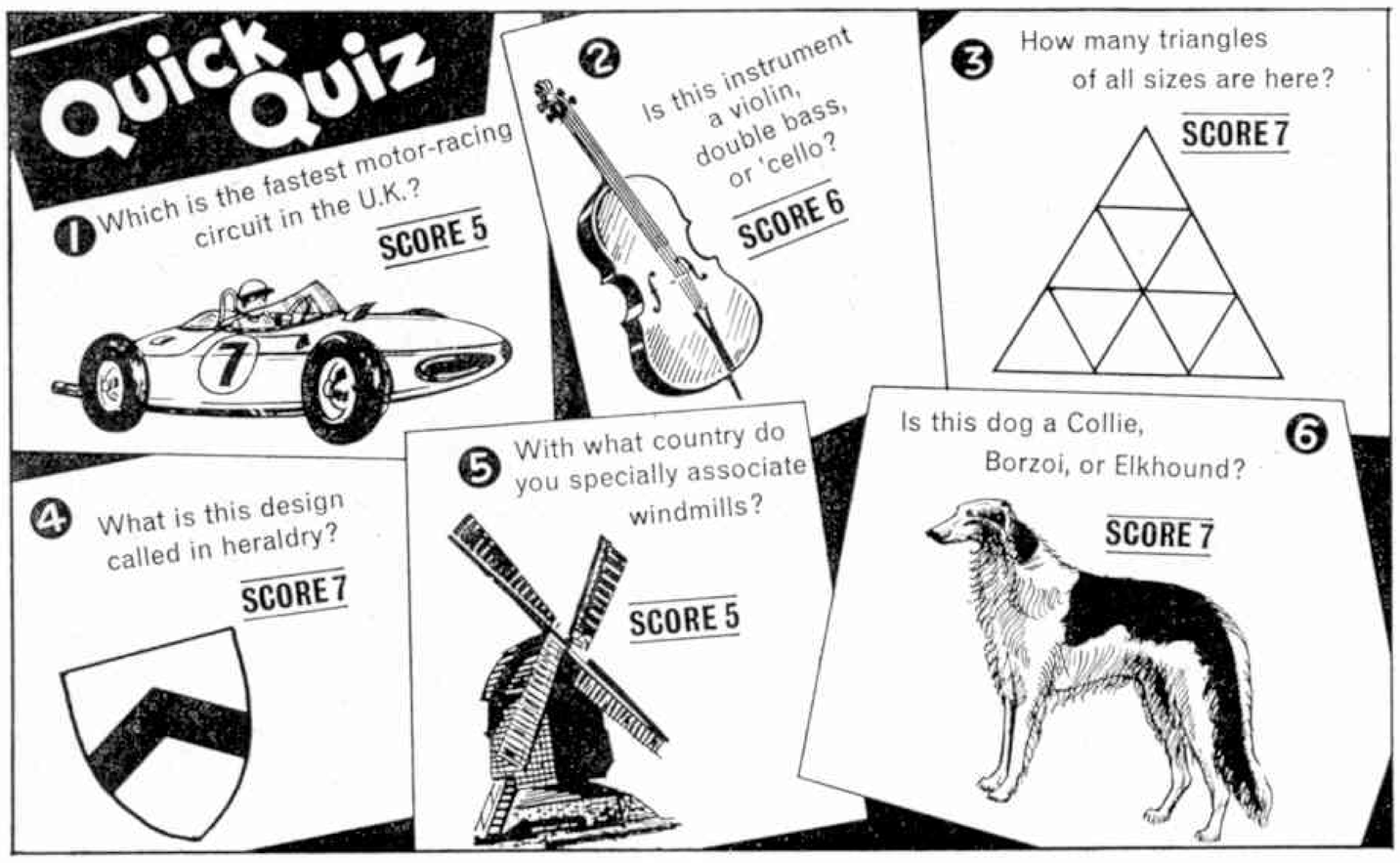


ACROSS

1 In charge of locomotives
9 Sought by soccer players
10 Goes in France
11 Immense
14 What you get when you don't get 9 across
15 Prefix
16 I'd as —— do that
18 A religious woman
20 Small portion
21 Belonging to
23 Spirit
24 More severe
25 Beginnings
30 Therefore
31 Impudent
32 Measurement
34 A plant
35 Not available
36 Famous motor-cyclist
38 That is to say
39 Independent TV
40 A long sigh
41 Badge seen on cars
42 German girl's name
44 A light
45 Carried unanimously

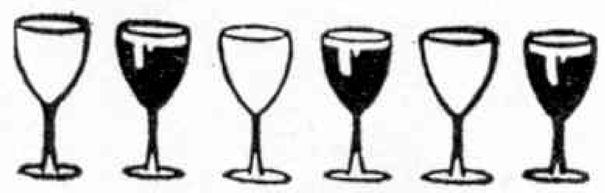
DOWN

1 Found south of the Border
2 Welcomed
3 For example
4 Spanish nobleman
5 It's liquid
6 Most books have at least one
7 Girl's name
8 A reptile
12 A disturbance
13 In the distance
17 To do in the present
19 Negative
22 English mariner who helped to defeat the Armada
26 A container
27 First two letters of an Iron Curtain country
28 Even (poet.)
29 Cruel
30 They did it for a portrait
32 Continent
33 Period
34 Airline's initials
37 Sunrise seen here
43 Ordinary seaman



Once Over Lightly

NEXT time guests are seated around the dinner table, arrange six glasses in a row as shown below, three filled and



three empty. Then invite a fellow player to move one glass only so that three empty glasses stand alongside three filled glasses.

When all fail, the performer takes up the glass second from left and empties it into the glass second from right. That's it!

any problems

Have you a problem—in science, history, literature or any other subject—to which you cannot find the answer?
Ask Tom Sheridan and he will do his best to answer it. Questions should be sent on postcards bearing your full name and address, but these will not be published if you put them in brackets and just add your initials. Address them to Tom Sheridan, Meccano Magazine, Thomas Skinner and Co. (Publishers) Ltd., St. Alphage House, Fore Street, London, E.C.2.

Man of measure

Q. *Who started geometry? Was it Euclid? —B. D., Harrow.*

A. Geometry began with the Babylonians and Egyptians, out of the need for measuring areas of land and fixing boundaries. The growth of architecture gave it further impetus, and Greeks such as Thales and Pythagoras developed it as a branch of mathematics. But until Euclid arrived on the scene it was no more than a jumbled mass of information. He collected all the known geometrical facts and theorems, arranged them in proper order, improved on them, and worked on fresh theorems of his own. His masterpiece the *Elements of Geometry*, set out in several books a clear picture of the science which has been the basis of 2000 years of study.

Thirsty spinners

Q. *Do spiders drink water?—A. L. P., Prestwich, Lancs.*

A. Yes—which is why they are often found trapped in empty baths and basins. They will crawl up drainpipes in their search for water, and are nearly always found in damp places. Their bodies are not so well protected against evaporation as those of most insects, and they soon die without moisture, which aids them in producing the silk for their webs.

'Digs' wanted

Q. *I am interested in archæology and would like to take part in some 'digs'. How do I go about it?—T. R. F., Hitchin, Herts.*

A. Local museums and archæological societies often welcome assistance from youth clubs and Scout groups in making excavations on sites before they are built on. If you belong to a youth group, it is easier to get this opportunity than it is for individuals; but you should contact the nearest museum or archæological society, either through your local library or by writing to the Council for British Archæology, which issues a calendar of excavations listing sites where helpers are needed. Address: 10 Bolton Gardens, London, S.W.5.

Budding's genius

Q. *How long have lawnmowers been in use?—M. R., Mitcham, Surrey.*

A. The lawnmower was invented in 1830 by Edwin Budding, an engineer who worked in a cloth factory at Stroud, Gloucestershire, where he got the idea from a gadget used for cutting the pile on cloth. The first machines were made in two sizes—narrow ones for use by country gentlemen to whom grasscutting could be 'an amusing, useful and healthy exercise,' and wider models for working gardeners. The London Zoo was one of the first users, and by the 1870s horse-drawn mowers were employed in Kew Gardens. A mower propelled by a pedal-tricycle did not catch on, but in 1893 a steam-driven model weighing 1½ tons was patented. Petrol-driven machines are now common equipment—*see picture.*

Blue or brown?

Q. *Why do some people have blue eyes and others brown?—J. S., Burton-on-Trent.*

A. Eye-colour is due to pigmentation of the front and middle of the iris, that part of the eye containing the pupil, behind the transparent cornea. The back of the iris is black, which accounts for the dark, greyish-blue colour of a new-born baby's eyes. As we grow up, white, yellow or brown pigment deposits on the front surface of the iris, giving us grey or brown eyes of varying shades. But blue-eyed people have little pigment; the effect is due to reflected light from the rear surface of the eyeball and is largely an optical illusion. The type of pigmentation is determined by hereditary factors transmitted by the chromosomes.

Story-teller

Q. *Who was the world's biggest liar?—E. O'B., Holyhead.*

A. The distinction is usually accorded to Baron Karl Friedrich Hieronymus Münchhausen, the German soldier who fought for the Russians against the Turks and won a reputation for the tall stories he told about his adventures. In 1785 they were published in English as *Baron Münchhausen's Narrative of his Marvellous Travels and Campaigns in Russia.*

For paper-folders

Q. *Can you tell me of any new, inexpensive books on Japanese paper-folding?—L. V., Felixstowe.*

A. Methuen have recently published three at 6s. each—*Origami Birds*, *Origami Flowers*, and *Origami Animals and Fishes.*

Long-life fridge?

Q. *Is it possible to extend human life by freezing?—D. C., Blackpool.*

A. Not yet—but scientists are now experimenting with techniques aimed at preserving human tissues, whole organs, and perhaps entire animals indefinitely. At present, at a few degrees above freezing, respiration and circulation stop, and much of the oxygen in the cells is exhausted, resulting in severe damage to the tissues. But British researchers have revived small animals after freezing as much as 40 per cent of their bodies at minus 5 deg. Centigrade for nearly an hour. If the problems can be overcome, medical scientists of the future may be able to thaw out human bodies frozen immediately after death, repair any physical damage, and revive them.

Backward walk

Q. *Has anyone ever claimed a record for walking backwards?—G. K., Abertillery, Mon.*

A. Seven youths aged 15 to 18 and a girl of 15 claimed to have walked backwards non-stop for six miles in Adelaide, Queensland, only last March. According to them it took 105 minutes, a world record.

Books and catalogues for your winter reading

Lancaster—the story of a famous bomber

Those who are already familiar with the well-established and authoritative series of Harleyford historical aircraft books, will know what to expect from this excellent new volume. Like its several companions, it is a most comprehensive account of the history development and personality of the aeroplane in its title. We write 'personality' deliberately, because this is no cold, impersonal data list, it is a real life story, exciting and informative, with hundreds of excellent and often rare photographs of Lancasters in peace and at war.

Almost certainly the best heavy bomber of World War 2, the Lancaster story is one in which numbers of our senior readers (and the fathers of many of our younger ones) actively participated. If any of them have records of the service numbers of the aircraft with which they worked, they will find it mentioned in this book. For in a remarkable appendix, there appears a history of every one of the 7,374 Lancasters ever produced!

We have long had in our possession, a set of obscure Lancaster crash pictures which carried no details other than the date of the accident. Now, the mystery is solved, and sure enough, the date in 'Lancaster' tallies with our photograph (above).

Author, Bruce Robertson, has produced a masterpiece that will certainly become a standard reference for all future researchers—and modellers. Price 60s.

A free 28 page illustrated catalogue with full details of Harleyford books is available to readers of Meccano Magazine. Just write your name and address on a postcard and send it to Harleyford Publications Ltd., Letchworth, Hertfordshire.

Aircraft of the world

You'll have to be a real enthusiast to afford this one, but it's worth every penny of its cost. There are 360 pages of tightly packed drawings, photographs and data on just about every aircraft currently flying anywhere in the world.

Big or small, privately constructed or mass produced, you'll find it here. What's more, we'll bet that there are dozens—nay, hundreds—of interesting planes that are quite new to you.

Even if you can't afford to buy this book, it's nice to know that this information *can* be found, and your local reference library will almost certainly have a copy to which you can refer.

Macdonald 95s.

Gamages model book 1965-1966

An annual event eagerly awaited by thousands of people all over the world is the appearance of Gamages Model Book. Once again, it is crammed full of information on all kinds of toys and models. Aircraft, railways, cars, boats, Meccano and plastic kits of all varieties—in fact just about every hobby and model subject is described and illustrated here. And what value—100 pages for a shilling! Or 1s. 6d. including postage from Gamages, Holborn, London, E.C.1.

Vollmer 1965-1966 catalogue

This is a full-colour catalogue, absolutely bursting with those interesting Continental models that do so much to enhance any OO/HO railway—big or small. The architectural style of many of these minutely detailed masterpieces would not be at all out of place on a 'British' system.

2s. from your dealer, or 2s. 6d. post paid from Richard Kohnstam Ltd., 13/15a, High Street, Hemel Hempstead, Herts.

The Revell manual of model car racing

A colourful, lively and informative handbook giving full details of currently available Revell Raceways equipment and a few tantalising glimpses into the future.

For the newcomer there is a potted history of the slot racing hobby and the book is full of big photographs, drawings and track plans—fine value at 9d., from your dealer, or 1s. 3d. post paid from Revell (Great Britain) Ltd., Cranborne Road, Potters Bar, Hertfordshire.

Ships monthly

This is a new magazine for those with nautical interests. It appears on the first Friday of the month, and costs 3s. per copy. Further details are available from Ships Monthly, Grosvenor Road, London, E.10.

'Scenic modelling made easy'

This book, generously and colourfully illustrated, is full of simple instructions that will appeal to any boy interested in modelling for its own sake—from the beginner to the expert.

It explains in detail how to build mountains from empty boxes and crepe paper, finishing them with plastic cement and paint. How to build tunnels with interestingly shaped entrances, made from realistically embossed panels. How to span valleys with bridges actually built girder by girder to fit exactly into the mountain sides. How to erect each building in modern towns or old world villages, surrounding them by trees, ponds, waterfalls, park benches, windmills and other lifelike effects. And, last but not least, how to plan a complete scenic layout including railway networks and roads.

At 9s. this Faller book will give endless hours of pleasure and free rein to the imagination. It's on sale at Hamleys and all good toy and hobby shops.

A.T.C. Revellations - 1

The manufacturers of **Revell** kits recently organised a plastic kit construction contest for members of the Air Training Corps. The Northumberland Wing entry, although not winning any of the prizes, impressed us with its originality and neat execution. It represented a Messerschmitt Me109 (built from the Revell kit) on dispersal at an airfield in northern Italy. The sandbags were entirely modelled in Plasticene and the model had been very neatly modified to reveal the machine gun breeches beneath removable wing hatches. It just goes to show what *can* be done with a little imagination and a 2s. 11d. plastic kit!

A winner from Auto-Kits

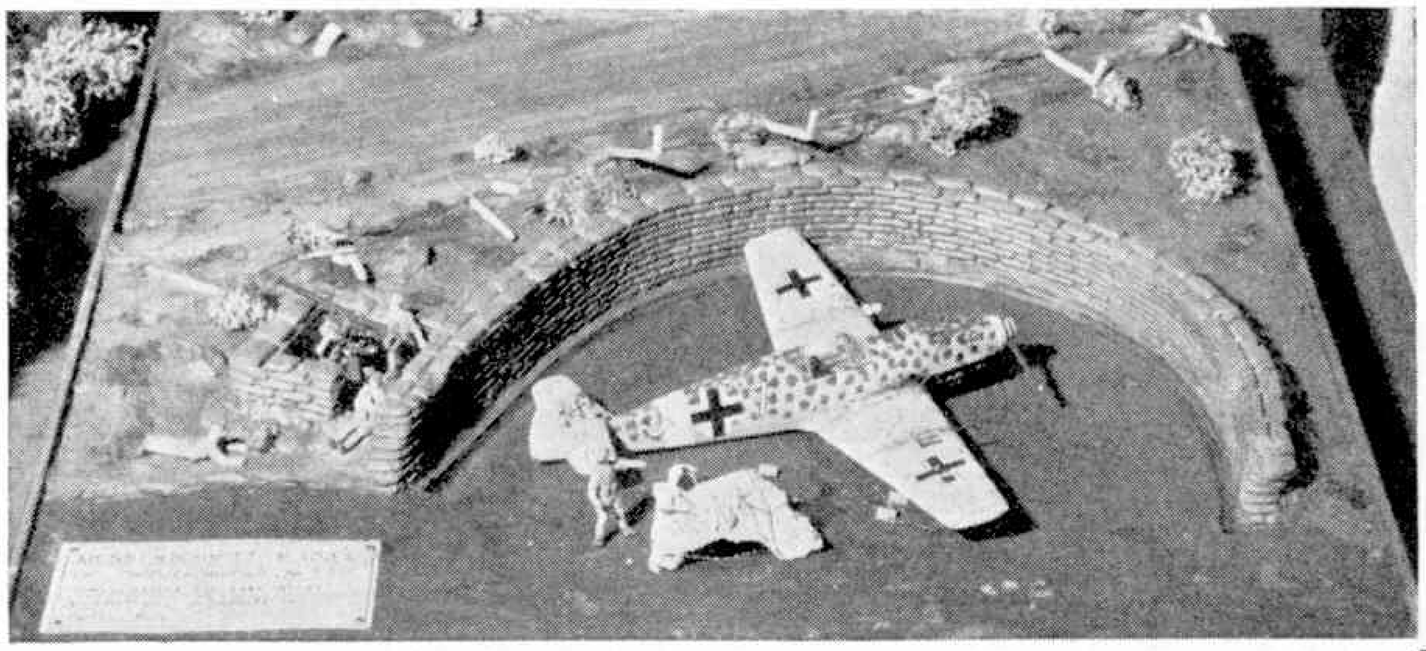
The first model of the Indianapolis winning Lotus has been released by the specialist model car building firm, Auto-Kits Limited.
An all metal kit to 1/24th scale, it is made up of approx. 50 pieces and glues together with any of the recognised metal glues.
Complete in every detail with off-set suspension, removable carburettor covers, cockpit detail and Indy Firestone tyres, this kit is priced at 49s. 6d., plus 2s. packing and postage, from Auto-Models Limited, 70 Finsbury Pavement, London, E.C.2.

have you seen?

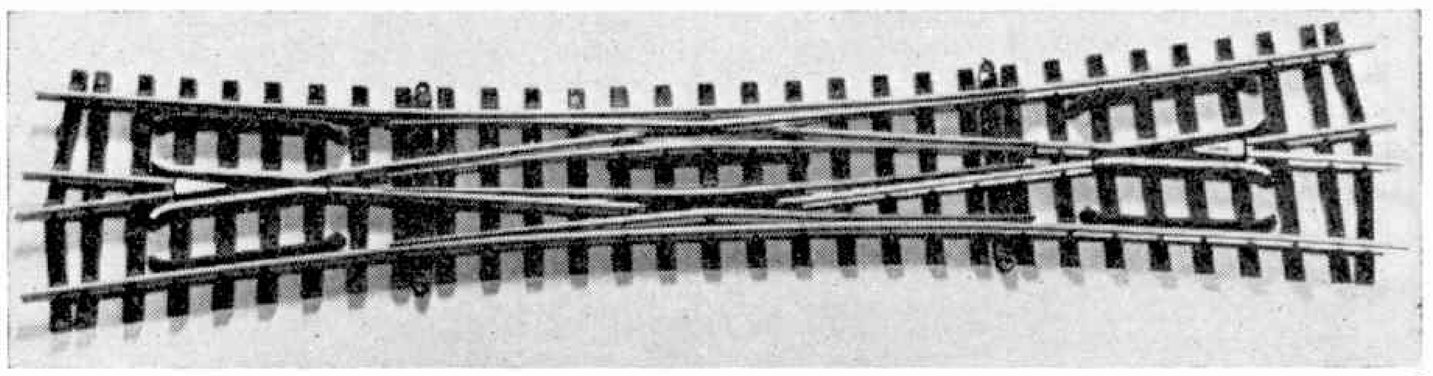
Space-Saving pointwork - 2

Manufactured by Graham Farish Ltd., Romany Works, Holton Heath, Poole, Dorset.
Price 35s

Formoway OO gauge flexible track, with its already comprehensive range of points have increased the range still further with what is probably the most complicated point formation in existence—the double slip. This three foot radius point formation has a 1/16 in. thick brown plastic sleeper-base incorporating both frogs, check rails, and chairs holding the nickel silver flat bottom rail in position. Electrical bonding is already done, and rails are live at all times, so that it is necessary to include a nylon fishplate and an on/off switch on any siding that requires to be isolating. The plastic frog is of course electrically dead, and so current can be fed in anywhere on the point without fear of a short circuit. Because of the plastic frog, four coupled locomotives with a short wheelbase may hesitate, and we would recommend wherever possible, the use of six coupled locomotives. The point formation will accept most wheel standards, with the exception of coarse scale Trix, and a large number of Tri-ang locomotives and rolling stock. The latter can however be modified quite simply, and Graham Farish explain this more completely in their catalogue. The point tie bars have holes for a point lever or motor connecting wire, and are reinforced with pieces of metal to prevent them from becoming elongated over a period of time. The point formation should be used for greatest advantage, where space is at a premium, and where there is insufficient room for the four normal turnouts and crossing that would normally be required. The tension on the point blades is less than that on the other turnouts, but a point lever or motor would still be required for each tie bar.
Incidentally, the photograph used to illustrate Formoway track in our November Flexible Track Review, may have given the impression that rail ends were 'staggered'. This, of course is not the case. Rails are of uniform length and sleepers are parallel. Perhaps we should call this *our* double slip!



1



3

2

Jailbreak?-3

Well, not exactly, but we didn't have any windows handy so we thought we'd use the **Spot-on** Commer Window Cleaner's van as a getaway car! Seriously though, this is a super little model and the ladder, which normally lives on the van roof, is fully extendable in true scale fashion. In its attractive 'window' box, and complete with free standing crew member, this 5 in. long model costs 12s. 11d.

Quickies

We were impressed with the latest **Airfix** releases. A 1/72 scale Boeing B29 'Superfortress' with a full *two foot* wingspan, and at the other end of the time scale a superb model of Nelson's 'Victory'. This one has no fewer than 353 individual parts and measures 23 in. overall when complete. The 'Superfort' costs 12s. 6d. and 'Victory' costs 17s. 6d.
The **Frog** 1/500th scale R-100 airship kit featured last month is now out and costs 15s.
As from January 1st, ½-oz. tinlets of **Humbrol** One Hour Enamel, Humbrol Clear Varnish and Flat Finish were increased to 10d. each, and 2-oz. tins of the Enamel and Clear Varnish are increased to 1s. 10d. each.

mailbag

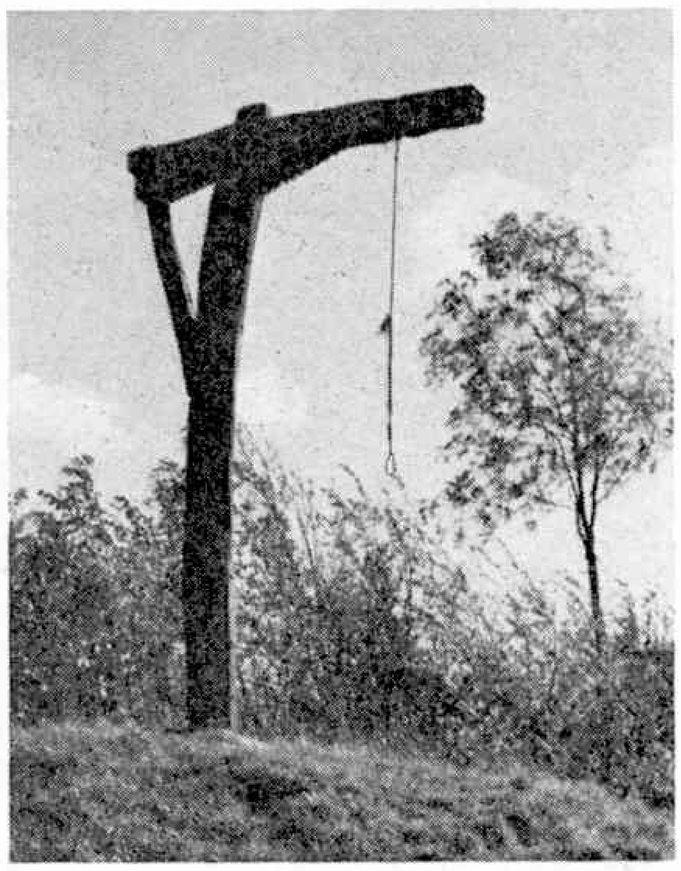
The Editor invites any subjects of interest for publication on this page

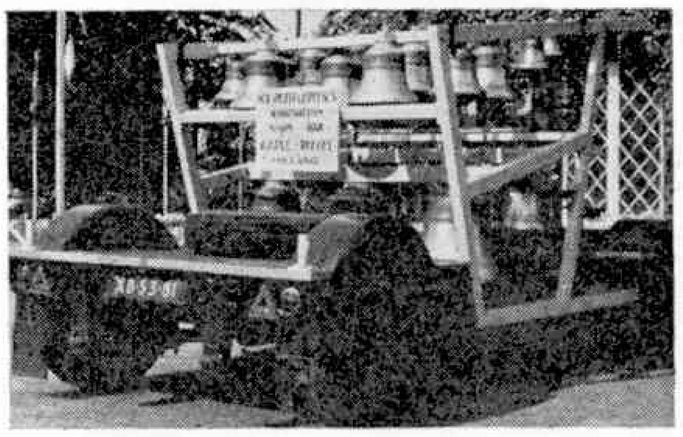
Your money or your life!

Few visible signs still exist in Britain today of the bad old days when highwaymen roamed our lonely roads, terrorising travellers and robbing the mail-coaches.

These brigands, not infrequently, were captured and made to answer for their crimes, and were usually hanged. In the open country, the gallows were often set up at cross-roads, and a reminder of these times may be seen at the junction of the Cambridge and Huntingdon roads in a Cambridgeshire locality which, even today is known as 'Caxton Gibbet' owing to its proximity to the village of Caxton and the presence of its sinister gallows. These stand by the side of the road, on a slight bluff, where they would have been clearly seen (and still are) in what must have been a flat, windswept and desolate landscape —a grim warning of retribution to the wrongdoers.

R. S. Riddell, Totteridge.





Still ringing

Here is an interesting photograph which I took last August while attending a festival of folk dancing at Schoten, near Antwerp in Belgium. The carillon, which had a tractor to tow it and came from Holland, was played by one man who operated a keyboard rather like an organ console, at the front.

The volume of sound produced was, for my taste, rather excessive but would, no doubt, have delighted a campanologist.

Old Colwyn, Colwyn Bay.

ADVERTISEMENT ENQUIRY SERVICE — FEBRUARY

So many readers have asked for further coupons, so that their friends may receive information, that we are including 2 more below. Ask your friends to fill these out.

A list of advertisements in this issue is given below. For more information fill in this form and send it to us.

- ☐ Adana
- ☐ Ashford
- ☐ Archer
- ☐ Beck
- ☐ Birkdale
- ☐ Blick
- ☐ Battstamps
- ☐ Brook Bond
- ☐ Davies Charlton
- ☐ Falcon
- ☐ Frog
- ☐ Gee Kay
- ☐ Gibbon
- ☐ Granta Canoes
- ☐ Hattons
- ☐ H.A.C.
- ☐ Hinton
- ☐ Harbutts
- ☐ Johnsons of Hendon
- ☐ KeilKraft
- ☐ King Charles
- ☐ Meccano
- ☐ Meccano (Dinky Toys)
- ☐ Meccano
- ☐ Meccano
- ☐ Malins
- ☐ Mellor
- ☐ Minimodels
- ☐ Morley
- ☐ Peco
- ☐ Playcraft (Champion)
- ☐ Playcraft (Railways)
- ☐ R.A.F.
- ☐ Railway Modeller
- ☐ Rearden Smith
- ☐ Ripmax
- ☐ Royal Navy
- ☐ Stamp Club
- ☐ Sea Breezes
- ☐ Seccotine
- ☐ T. H. Smith
- ☐ Solarbo
- ☐ Terry
- ☐ Warne
- ☐ Webley & Scott

To: Meccano Magazine, St. Alphage House, Fore Street, London, E.C.2.

NAME .....

ADDRESS .....

.....

Friend's Coupon No. 1.

- ☐ Adana
- ☐ Ashford
- ☐ Archer
- ☐ Beck
- ☐ Birkdale
- ☐ Blick
- ☐ Battstamps
- ☐ Brook Bond
- ☐ Davies Charlton
- ☐ Falcon
- ☐ Frog
- ☐ Gee Kay
- ☐ Gibbon
- ☐ Granta Canoes
- ☐ Hattons
- ☐ H.A.C.
- ☐ Hinton
- ☐ Harbutts
- ☐ Johnsons of Hendon
- ☐ KeilKraft
- ☐ King Charles
- ☐ Meccano
- ☐ Meccano (Dinky Toys)
- ☐ Meccano
- ☐ Meccano
- ☐ Malins
- ☐ Mellor
- ☐ Minimodels
- ☐ Morley
- ☐ Peco
- ☐ Playcraft (Champion)
- ☐ Playcraft (Railways)
- ☐ R.A.F.
- ☐ Railway Modeller
- ☐ Rearden Smith
- ☐ Ripmax
- ☐ Royal Navy
- ☐ Stamp Club
- ☐ Sea Breezes
- ☐ Seccotine
- ☐ T. H. Smith
- ☐ Solarbo
- ☐ Terry
- ☐ Warne
- ☐ Webley & Scott

To: Meccano Magazine, St. Alphage House, Fore Street, London, E.C.2.

NAME .....

ADDRESS .....

.....

Friend's Coupon No. 2.

- ☐ Adana
- ☐ Ashford
- ☐ Archer
- ☐ Beck
- ☐ Birkdale
- ☐ Blick
- ☐ Batttsamps
- ☐ Brook Bond
- ☐ Davies Charlton
- ☐ Falcon
- ☐ Frog
- ☐ Gee Kay
- ☐ Gibbon
- ☐ Granta Canoes
- ☐ Hattons
- ☐ H.A.C.
- ☐ Hinton
- ☐ Harbutts
- ☐ Johnsons of Hendon
- ☐ KeilKraft
- ☐ King Charles
- ☐ Meccano
- ☐ Meccano (Dinky Toys)
- ☐ Meccano
- ☐ Meccano
- ☐ Malins
- ☐ Mellor
- ☐ Minimodels
- ☐ Morley
- ☐ Peco
- ☐ Playcraft (Champion)
- ☐ Playcraft (Railways)
- ☐ R.A.F.
- ☐ Railway Modeller
- ☐ Rearden Smith
- ☐ Ripmax
- ☐ Royal Navy
- ☐ Stamp Club
- ☐ Sea Breezes
- ☐ Seccotine
- ☐ T. H. Smith
- ☐ Solarbo
- ☐ Terry
- ☐ Warne
- ☐ Webley & Scott

To: Meccano Magazine, St. Alphage House, Fore Street, London, E.C.2.

NAME .....

ADDRESS .....

.....

STAMPS

by F. E. Metcalfe

Churchilliana

By the time these lines appear in print, most collectors of British Commonwealth stamps will have a real chore on their hands, the omnibus issue of the Colonies, will just have been issued, four stamps each for 32 territories. Pity the poor dealer who runs a large new issue service, in his task of making up sets of 132 stamps, as well as all the others he will have to handle. He will have to get a move on, too, for in the middle of February, Australia, etc., will also open their philatelic floodgates, but more about that later. No doubt these Churchill stamps will be popular, as have been other stamps already issued in honour of that great man, but a word of warning. There may be quite a rush to buy this omnibus issue, and this may bang up prices. If this happens before you buy, well don't be in a hurry. For what goes up, quite often comes down, particularly if the rise has been very rapid. As a matter of fact, after the novelty has died down, there is generally a reaction, and that is when such stamps can often be bought a bit cheaper.

Coins v Stamps

I have previously mentioned what a boom there has been in coin collecting, and some stamp collectors rather feared that numismatics (the cult of coin collecting) might injure the hobby of philately. It was in the U.S.A. where coin collecting became such a rage recently, but according to reports, there has been some reaction. I spoke to a new coin collector one day, and one of the reasons he gave for taking up the hobby, was that, unlike stamps, there was no faking. Which I am afraid showed how green he was. As a matter of fact, forged coins are around all the time, but that's not what I wish to write about. Someone had a bright idea, and made the proposal to Tonga, that stamps made to look like coins would yield nice profits for everyone, so a set of round die stamped stamps all got up in gilt, was issued, and they soon went to a fiver a set, although the face value was only around 30 shillings. Later, these were surcharged, and they, too, sold for big money, but they are dropping back now a bit. Recently the African country of Burundi followed that lead, and has already issued two sets of coins stamps. Not to be out of the swim the Arabian Gulf State of Umm Al-Qiwain has also issued a set. But these stamps appear as silver, rather than gold, which is rather significant, for they do point to what has really happened, the gilt is off the ginger bread, or rather the stamps, for no one is rushing to buy these latest, and if you want to buy a set as a novelty, OK, but don't pay any fancy prices.

Puffin Billy

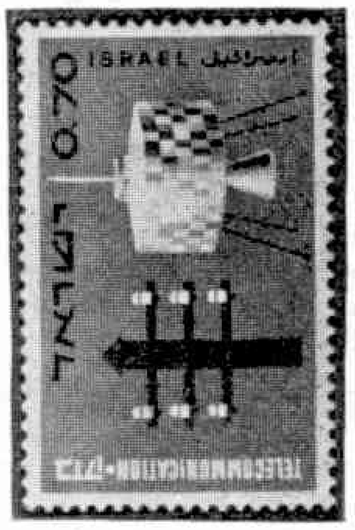
I am not very interested in West German stamps myself, but I cannot resist asking the Editor to illustrate one of the stamps issued by the country concerned, part of a set of six released last year to mark the Transport Exhibition. I need not explain to Meccano readers what is depicted on the stamp, but isn't it funny? German stamps are very popular with British collectors, and with stamps like these, who can wonder?

Decimal Currency

Now we come to some real stamps. Issues which I do recommend you to buy, either for fun or investment. All know that on February 14th, Australia, her dependencies (Nauru, Norfolk Is., and Papua and New Guinea), and British Solomon Islands, and Gilbert and Ellice Islands, change over from pounds, shillings and pence, to dollars and cents. That means, of course, that stamps have to be changed also, and Australia alone is bringing out 22 new stamps, plus two coil stamps, which will differ philatelically. British Solomons and Gilbert and Ellice, will surcharge their present stamp, and the three Australian dependencies will have all new stamps. That's three bags full with a vengeance. But do not overlook that, unlike those gimmick "coin" issues produced exclusively for sale to collectors, all the "decimal" issues are produced for postal purposes, though I don't say that any of the postal administrations concerned (particularly the dependencies) mind selling a few stamps to collectors. Anyhow, it is stamps such as these which, in the long run, prove the best buy. But if you cannot afford to buy all at once go first for the British Solomons and Gilbert and Ellice overprints, for these will only remain on sale until entirely new sets can be issued. Good hunting in Australasia.

The Tip of the Month

All know how popular Israel stamps are. And of course the earlier issues are beyond the pockets of most collectors. But from time to time this tight little country issues some of the most attractive stamps in the world. They are always available to start with, at ordinary current rates. So my suggestion is that if you wish to take up a new country, as collectors so often do, why not consider Israel, ignoring the earlier stamps, of course. You could do a lot worse. The stamp illustrated was issued to mark the centenary of the International Telecommunications Union (I.T.U.), and it is quite a good little stamp already.



KEEP CYCLING

WINTER cycling can be fun—more fun in many ways than in the height of summer. For one thing, there is not nearly so much traffic and I always think winter is much more exhilarating.

The secret of enjoying winter riding is to make yourself comfortable. Your clothing must be right. Shorts, of course, are out, and a pair of light windproof trousers are the best substitute. I always think jeans are a bit tight, although they are certainly windproof. An easy way to keep warm without too much weight is to wear a couple of thin jersies and a windproof jacket over the top. Many riders, however, do not favour this idea because perspiration is not given a chance to dry out. Perhaps a better scheme is to wear several wool sweaters one over the other.

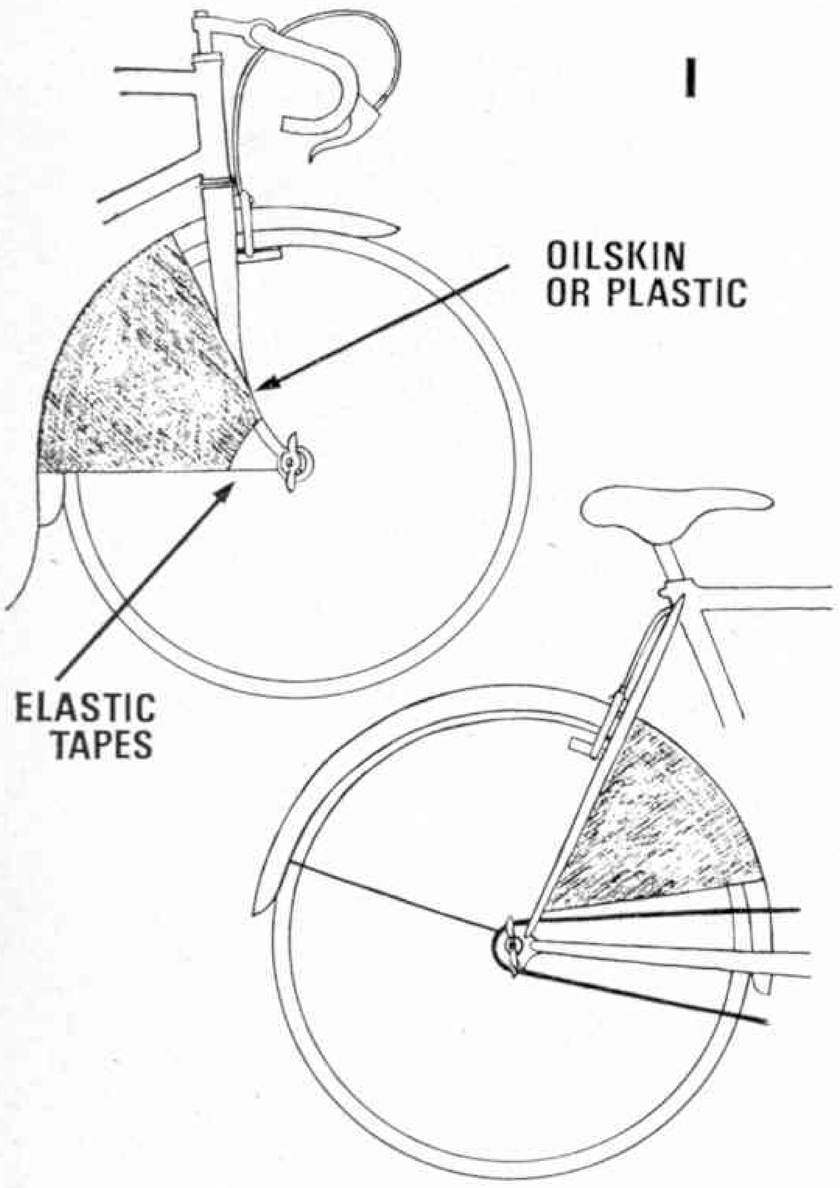
In really cold weather, it is the hands and feet which seem to get coldest. Gloves, of course, must be worn. The best scheme is to have two pairs—a thin woollen pair and a heavy pair of leather gauntlets. If it is bitterly cold, wear both pairs. If you get too hot, either pair can be worn as required.

Keeping the feet warm is a different problem altogether, and one to which I have not found a satisfactory solution. Thick socks will help but are not really the answer. The only thing left to do is to get off occasionally and walk!

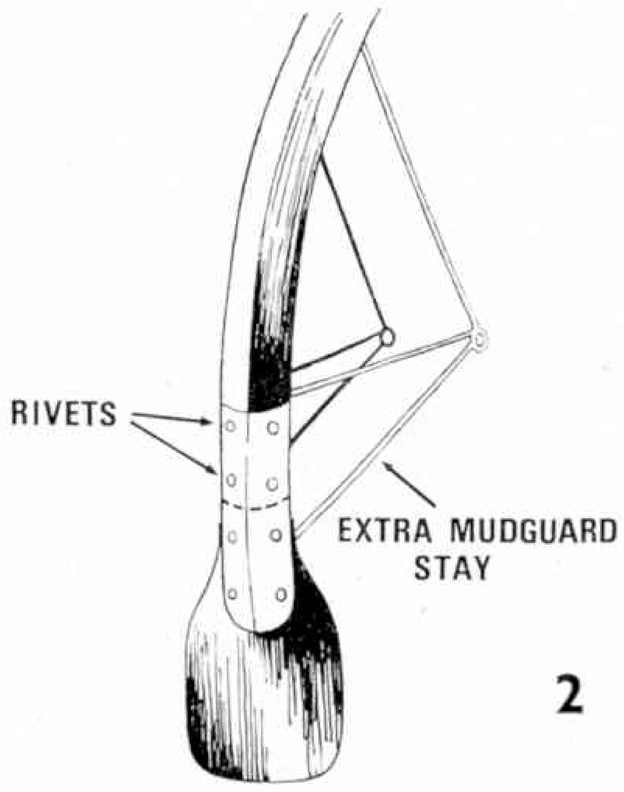
Keeping dry is again a problem which can only be solved in part. The feet again are the most difficult parts to keep clear of the wet. They are not only subject to falling rain but also to wet splashed up from the front wheel and by the wheels of passing cars. Spats and leggings help, but often condensation inside will make you just as wet. Many riders just decide to get wet. O.K., but have a spare pair of shoes and socks in the saddlebag.

Choosing a cape is a matter of individual preference. There is a large range available but make sure you get one which is big enough to come down behind the saddle and to stretch far enough in front to cover the handlebars. It should be equipped inside with tapes to tie around the waist and with tape loops for the thumbs. These are essential to prevent the wind from getting under the cape and ballooning it up. A sou'wester is the only really waterproof headcovering but it does have the disadvantage that it drips water into your eyes. A good substitute is a cap. The peak comes in useful too at night for shielding your eyes from undipped car headlights. The good cyclist never goes far without his full wet weather regalia, especially in the winter months.

Rain splashing up from the road is just as big a problem as the rain falling from above. The modern narrow lightweight mudguard does not help matters either. The answer here is some extra protection. Plastic splashguards are available from most cycle shops and are fitted as shown in Fig. 1. Alternatively you can fit your own from old pieces of cycle cape, cut to shape and size and held by stitched-in elastic loops. The efficiency of the mudflap at the bottom of the front mudguard can be improved by fitting a larger type. These are made for motorcycles and mopeds and will help a lot to keep your feet dry.



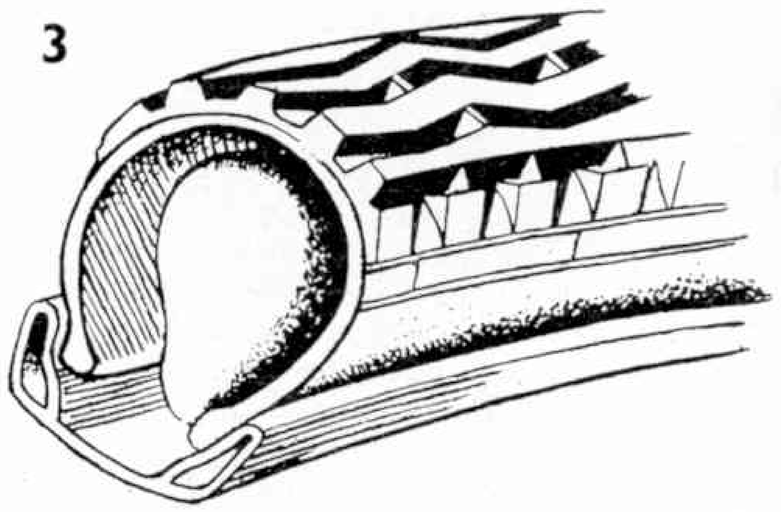
1



2

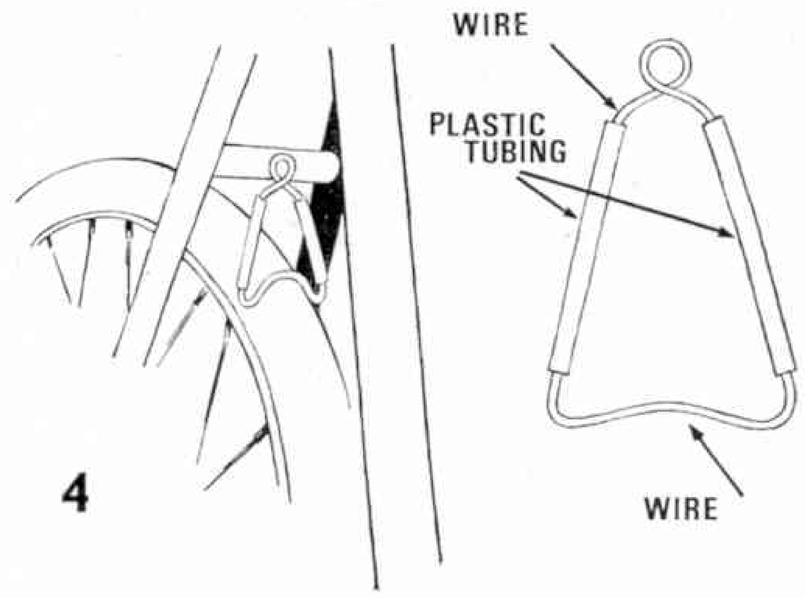
If you travel with friends, protect the rear mudguard as well by adding a short piece of mudguard fitted with a mudflap (Fig. 2). This will stop a fine spray of water from being thrown all over those riding behind. The nearer the ground the mudflap reaches, the more efficient it will be.

Tyres are always important but never more than in winter. If you can afford it, it is well worth while putting on a heavier type (Fig. 3). The lightweight and sports cycles are fitted with narrow skin-sided tyres. These are fine for fast easy riding in the summer, but something more robust is called for in the winter



3

(Fig. 3). Tyres always seem to cut more easily in the wet and what with roads being gritted frequently in icy conditions, there is usually a much greater chance of picking up punctures. The heavier tread not only helps in this way but also there is usually a good shoulder tread which will help to grip when cornering on wet or slippery roads. A heavy tread will help brake efficiency too.



4

One last tip on the subject of tyres. You can help to prevent punctures by using a little gadget known as a tyre saver (Fig. 4). This is shaped from wire and is held in position behind the brake locking nut. It should be just out of contact with the tyre—close enough to prevent grit from becoming embedded but not touching hard enough to wear the tyre.

Rust is the big enemy to your cycle in the winter. You can prevent this by drying and cleaning your bike every time you use it, but this is tedious. If you don't mind a shabby appearance, the best scheme is to coat all the bright work with grease. It will prevent rust and grease and dirt can be cleaned off to expose perfect chrome in the spring.

What have you got to lose? Getting wet won't hurt you . . .

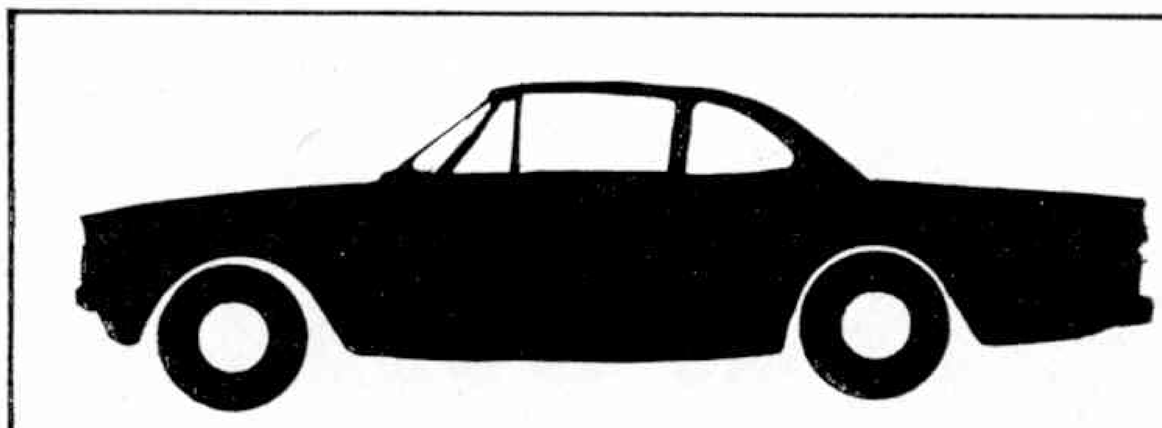
car outline COMPETITION

50 Dinky Toy Models to be won!

Fill out the form and send it to us. The names of the senders of the first 50 correct answers will be published in the next issue of Meccano Magazine. The winners will then be expected to write to us to claim their prize. The competition will be judged by the Editor of Meccano Magazine. His decision will be final and no correspondence can be entered into.

FIVE CARS will be reserved for OVERSEAS READERS. These will be selected one month after publication date.

To:—Meccano Magazine: Competition I, St. Alphage House, Fore Street, London, E.C.2.



The vehicle illustrated is:—

.....

.....

.....

NAME .....

ADDRESS .....

.....

Dinky Toy Winners Competition H

BELOW is a list of fifty names of readers whose entries for last month's 'Silhouette' competition were the first correct answers to be selected by the Editor. If your name appears in this list, then write on a postcard to: *Silhouette Prize, Meccano Magazine, Thomas Skinner & Co. Ltd., St. Alphage House, Fore Street, London, E.C.2,* and claim your FREE Dinky Model Volkswagen 1500. If your name does not appear in this list, even though you entered for the competition, don't be too disappointed—try again!

Philip Barnes, First Ave., Atherton, Nr. Manchester, Lancs. *Keith Booker,* Hill Top Close, Loughton, Essex. *C. E. Brown,* Main St., Skidby, Cottingham, E. Yorks. *D. K. Brinkley,* Guildhall St., Bury St. Edmunds, Suffolk. *J. R. Burleton,* Malista, Sutton Place, Abinger, Surrey. *A. Cholerton,* Blenheim Drive, Allestree, Derby. *A. Collier,* 67, Paget St., Grangetown, Cardiff. *M. Cripps,* Kingsbury St., Marlborough, Wiltshire. *P. Dally,* Castle Grove, Newbury, Berks. *Peter Dixon,* Patteson Rd., Norwich, Norfolk, Nor. 21N. *R. A. Dodd,* Farnborough Rd., Clifton, Notts. *D. J. Eastwood,* Gypsy Lane, Kettering, Northants. *R. J. Finbow,* Naunton Oaks, Rendlesham, Woodbridge, Suffolk. *S. Fox,* Churchward Ave., Swindon, Wilts. *N. R. Garforth,* Ravenshouse Rd., Scout Hill, Dewsbury, Yorks. *A. Greenwood,* Rochester Rd., Lodge Moor, Sheffield 10, Yorks. *D. Hedges,* Meadow Way, Gt. Bookham, Surrey. *I. Hodkinson,* Heys Rd., Ashton-Under-Lyne, Lancs. *I. Hume,* Haddon Drive, Woodley, Nr. Reading, Berks. *Hamish S. Kean,* Kimbolton Court, Kimbolton Rd., Bedford, Beds. *T. Kendall-Carpenter,* School House, Cranbrook, Kent. *A. Lockwood,* Middleton Drive, Pinner, Middx. *K. Johnson,* Hadney Rd., Eye, Nr. Peterborough. *P. Leverkus,* Well Street, Thetford, Norfolk. *M. J. Lishman,* Havelock Rd., Windermere, Westmorland. *J. Lovell,* Balmoral Rd., Longwell Green, Bristol. *K. Marchant,* Harlequin Close, Redcliffe-on-Trent, Notts. *Philip Marns,* Ducketts Lane, Green Tye, Much Hadham, Herts. *P. D. Marriott,* Westbourne Road, Blackheath, Birmingham. *P. Mitchell,* The Ridgeway, Ruislip, Middx. *D. Morton,* Riverside Rd., Richmond, Yorks. *P. Noble,* Priory Villa, Richmond, Yorks. *J. F. W. Paige,* Master Close, Oxted, Surrey. *J. Perry,* Hillside Ave., Kingswood, Bristol. *J. Smith,* Norway Drive, Wexham Ct. Estate, Slough, Bucks. *A. Garrarel Smith,* Tatler Rd., Quorn, Leics. *P. Snelling,* Withy Pitts, Turners Hill, Nr. Crawley, Sussex. *D. Spencer,* Carr Manor Grove, Leeds 17. *P. Thomas,* Jubilee Drive, West Kirby, Wirral, Cheshire. *J. Tomkins,* Defford, Worcester. *Francis Volans,* Barrow-upon-Soar, Loughborough, Leics. *J. Webster,* Prestwick Drive, Blundellsands. Liverpool 23. *C. Wright,* The Crescent, Swaffham, Norfolk. *D. Yarrow,* Ellacombe Rd., Longwell Green, Bristol.

The names of five overseas winners will be published next month.

Winners from the Overseas Competition G

J. C. Bourgeois, Avenue Louis Plana, 31 Toulouse, France. *Versailles Jacques,* 14 rue au Beurre, Ypres, Belgium. *Androuin Jean-Marc,* 4 Allee la Fontaine, La Celle St., Cloud Yvelines 78, France. *Guillaume L.P.M.,* 63 rue Fort St. Irenee, Lyon 5, France. *B. Foster,* Molkolmsbacken 45, 6tr. Farsta, Sweden.

Falcon

THE LIGHTWEIGHT CYCLE

For catalogue and nearest dealer write to

FALCON LIGHTWEIGHT CYCLES · WILLS STREET · SMETHWICK · STAFFORDSHIRE

The "PARAGON SPORTS" model 60

Still the finest value in lightweights—backed by the experience of the famous Falcon team

FRAME 19" 21" 22" & 23" · CENTRE PULL BRAKES
5 SPEED · 27" WHEELS · **Finish: Gold with Contrasting Head & Panel**

£24 - 19 - 6

a bonzer bonanza

LAST year Dinky Toys produced an excellent little model of that world-famous business plane, the Beechcraft S35 Bonanza. I have long believed that it is possible to build in Meccano a model of almost anything that Dinky Toys turn out in die-cast metal, and the Meccano Beechcraft Bonanza featured here, proved my point. Admittedly it is rather larger than the Dinky version and may not be quite so detailed, but it is still a good representation.

Construction is not difficult. Each side of the fuselage is built up from a 12½ in. Strip 1, extended four holes by a 3½ in. Strip 2. Attached to Strip 2 at the front are a Fishplate 3 and a 4 in. Stepped Curve Strip 4, to which a 4½ in. Strip 5, extended by a 7½ in. Strip 6, is bolted. All the Strips are arranged as shown in the illustrations and the intervening space is filled in, working backwards from the front, by a 3½ in. by 1½ in. Triangular Flexible Plate, a 5½ in. by 1½ in. Flexible Plate, another 3½ in. by 1½ in. Triangular Flexible Plate and a 2½ in. by 1½ in. Triangular Flexible Plate.

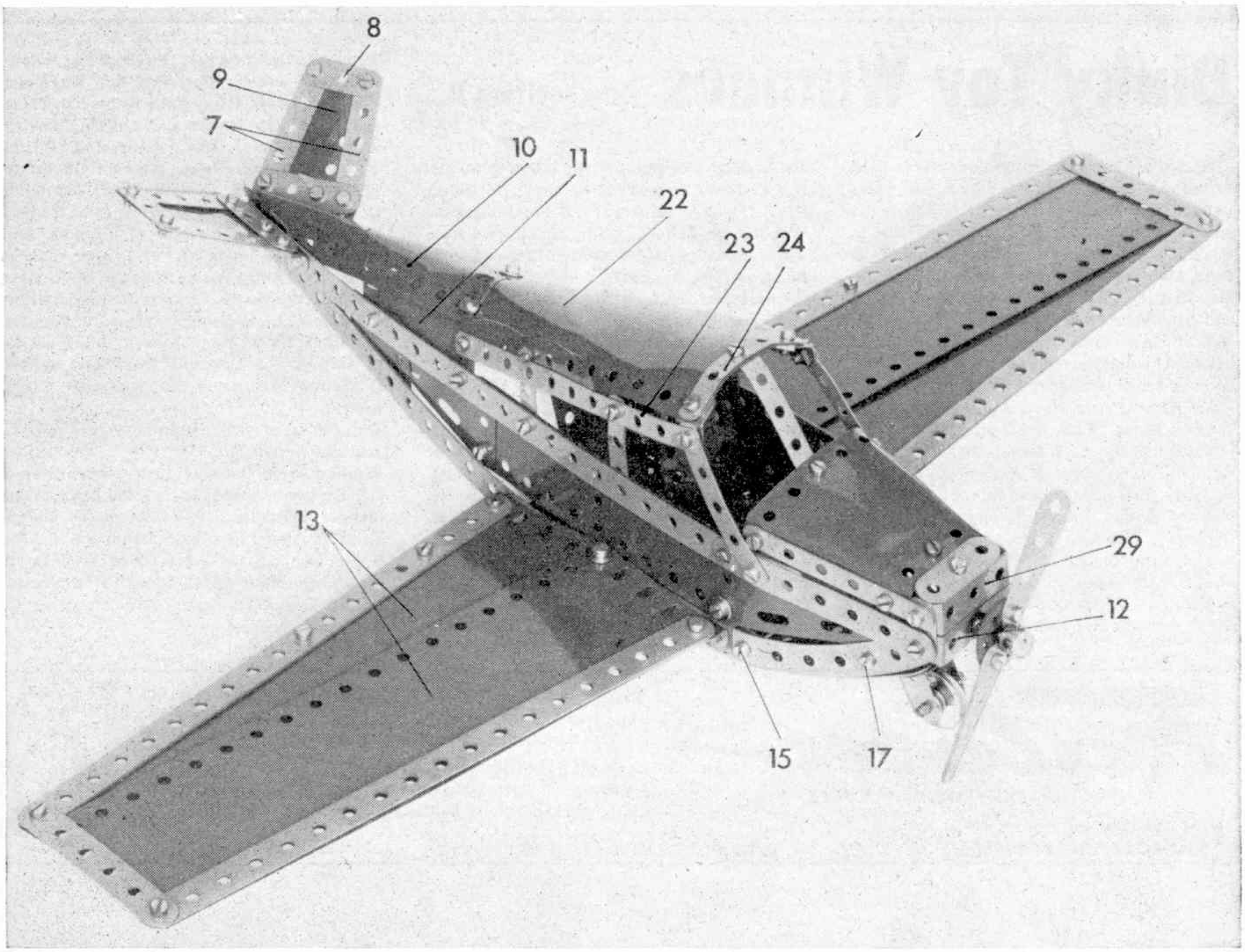
Both tailplane sections should now be completed, each being similarly built. Two 2½ in. Strips 7 are bolted to a 2 in. Strip 8, at the same time fixing a 2½ in. by 1½ in. Flexible Plate 9 in position. The two tailplane sections are then connected to the fuselage, as shown, by Obtuse Angle Brackets.

A single ¼ in. Bolt is used to fix both rear Obtuse Angle Brackets to the fuselage, at the same time securing a 5½ in. by 1½ in. Plastic Plate 10 in position. A 2½ in. by 1½ in. Plastic Plate 11 is bolted to each Strip 1 and, at the front, Strips 2 are joined by a 1½ in. by ½ in. Double Angle Strip 12.

Each wing is built up from two 9½ in. by 2½ in. Strip Plates 13, edged by two 9½ in. and one 3 in. Strip. Angle Brackets are used to connect them to the fuselage, at the same time fixing two 2½ in. by ½ in. Double Angle Strips in position between Strips 5. A 4½ in. by 2½ in. Flat Plate 14 is bolted to these Double Angle Strips. Another 2½ in. by ½ in. Double Angle Strip held by Bolts 15 is added between Stepped Curved Strips 4 and secured to this are two 3 in. Strips and a 3 in. by 1½ in. Flat Plate 16. The Plate and Strips are also fixed to Curved Strip 4 by a Compound Double Angle Strip, held by Bolts 17, built up from two 1 in. Angle Brackets.

It is best to now fit the propeller assembly, before the top of the fuselage is added. The propeller, itself, is composed of two 2 in. Strips, twisted to shape

The Beechcraft S35 Bonanza—In Meccano

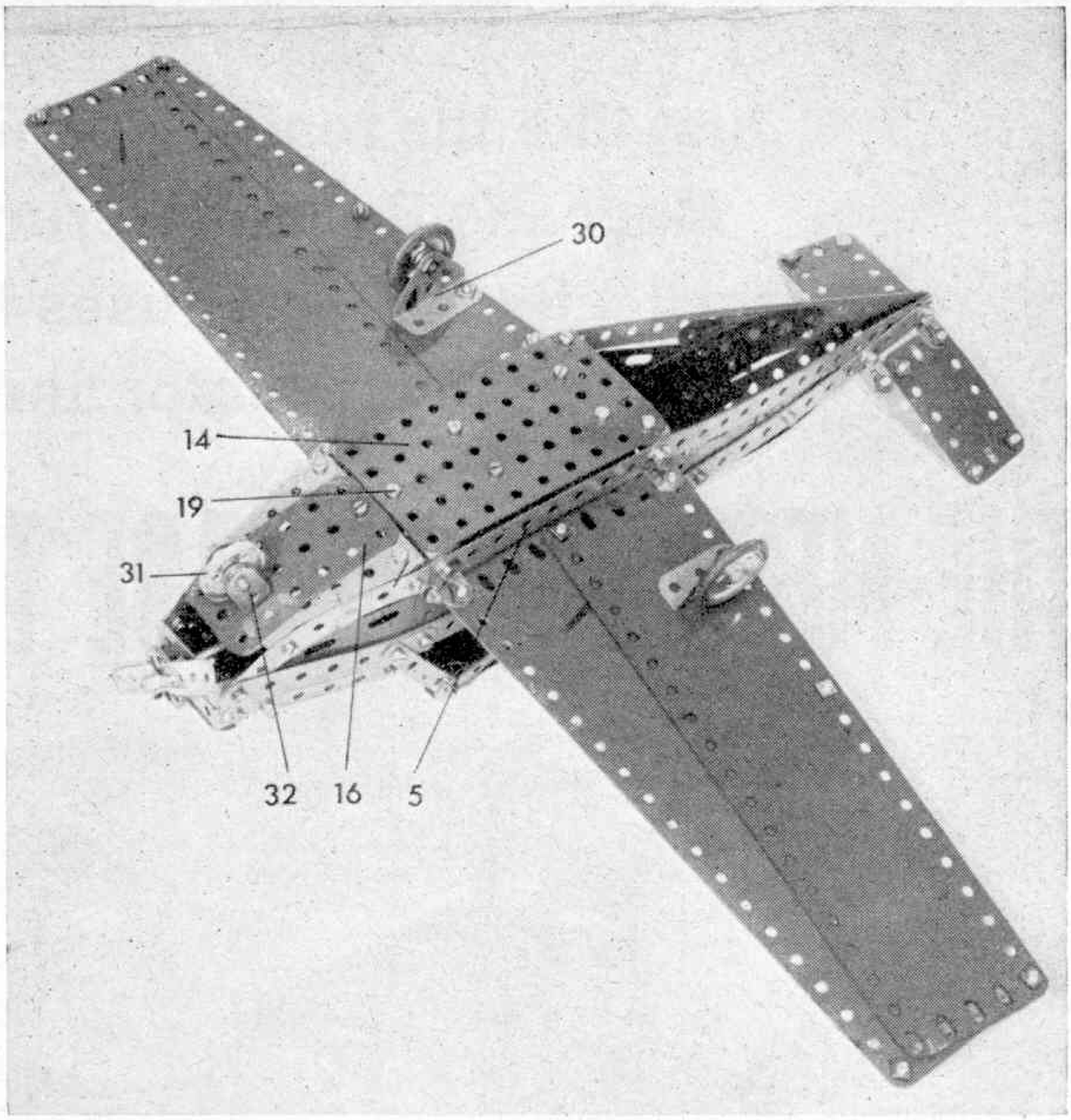


and bolted to a 1 in. Bush Wheel 18 (Elektrikit Part No. 518). This, in turn, is mounted on a 4½ in. Rod journalled in Double Angle Strip 12 and another 1½ in. by ½ in. Double Angle Strip, secured in a vertical position by Bolts 19, to the Double Angle Strip held by Bolts 15, a Collar behind the Double Angle Strip holding it in place. A second Collar is added at the front to act as a spinner.

Inside the model, two seats are fitted, each being built up from a 1½ in. Flat Girder 20, attached to a 2½ in. by 1½ in. Flexible Plate 21 by two Angle Brackets. The Flexible Plate is attached to Flat Plate 14, also by Angle Brackets.

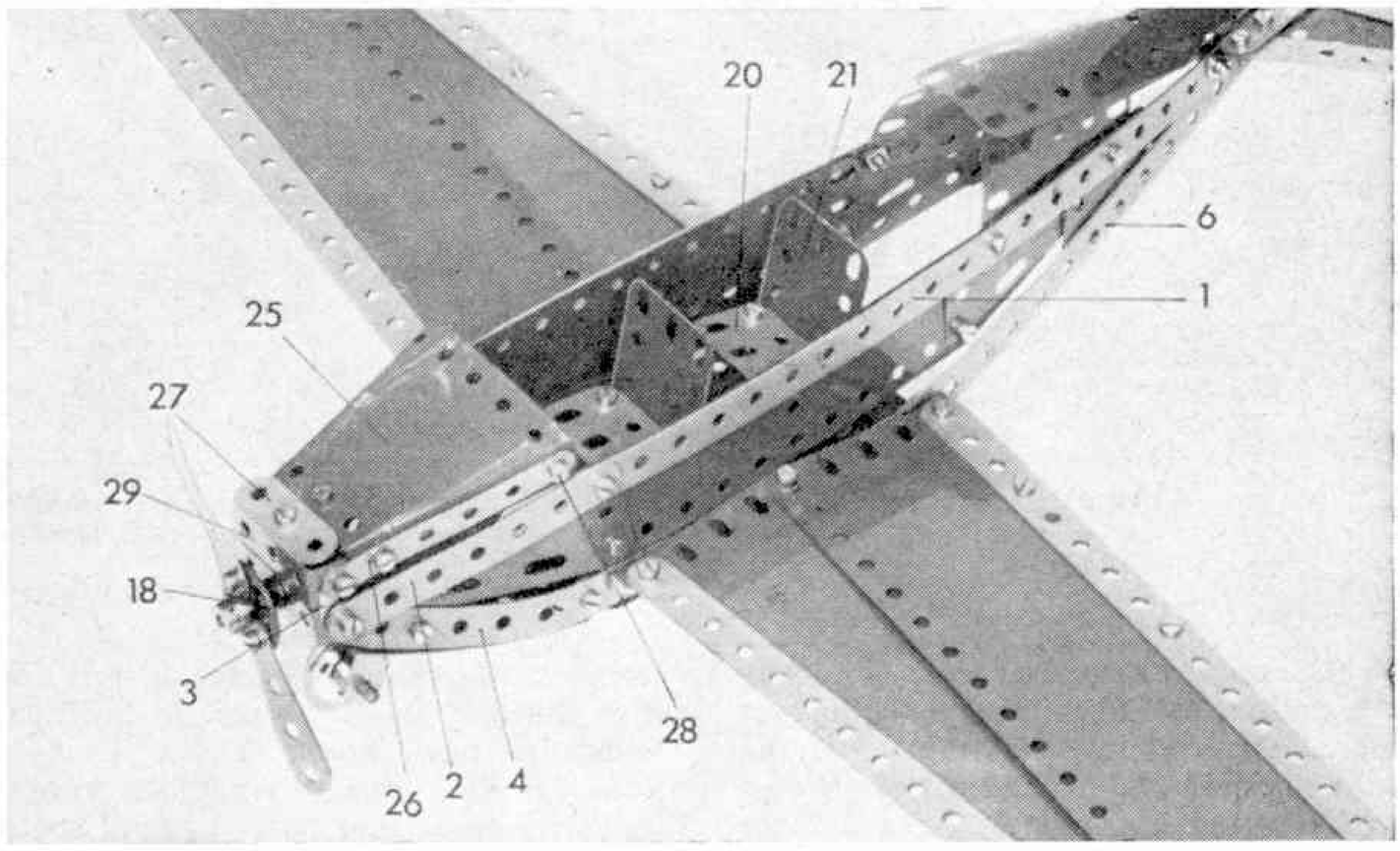
The cabin is easily constructed from a 5½ in. by 2½ in. Plastic Plate 22 to which two 5½ in. Narrow Strips 23 are fixed by Obtuse Angle Brackets, at the same time securing a shaped 2½ in. Narrow Strip 24 in position. Plastic Plate 22 is then bolted to Plastic Plates 10 and 11, after which the cabin roof is connected to the fuselage by six 2½ in. Narrow Strips, as shown.

An engine cowl is built up from a 3½ in. by 2½ in. Flexible Plate 25, bent to shape and overlayed by two 3 in. Narrow Strips 26, one at each side. The Strips are bolted through the end elongated holes at the rear of Plate 25, and through the respective second holes at the front. A 1½ in. Strip 27 is attached to Plate 25 by a Fishplate, then another two Fishplates are added, being held on the inside by Bolts 28. These are fixed to the fuselage, while, at the front, Strips 26 are bolted to Fishplates 3, along with a 1½ in. by ½ in. Double Angle Strip 29.



Above: an underneath view of the aircraft showing the underside of the fuselage and the tricycle undercarriage

Below: the model with the cabin removed to show the seats



Motorised?

All that now remains to be fitted is the undercarriage. Like the full-size aircraft, this is of the tricycle type, the two main landing wheels being fixed to the wings, with the smaller third wheel beneath the nose. Each main wheel is composed of a 1 in. loose Pulley with Rubber Ring free on a ⅜ in. Bolt which is lock-nutted through the apex hole of a Trunnion 30. The nosewheel is another 1 in. loose Pulley 31, mounted, together with three Washers and a Collar, on a 1 in. Rod, journalled in a 1 in. by ½ in. Double Bracket 32. The Double Bracket is bolted to Flat Plate 16.

This, then, completes the model as it is illustrated in the accompanying photographs, but there is no need to stop here. I have often mentioned the increased enjoyment and satisfaction that can be obtained from making your own modifications or additions to basic structures and this aircraft is no exception. For example, it would be a comparatively easy matter to motorise at least the propeller which would result in a very realistic effect. The seats would need to be removed, of course, but this is a simple job and, once out, the space could easily accommodate an Emebo Motor or even the new Power Drive Unit. There might also be enough room for one of the small 4½ volt flat batteries, from which either Motor can be operated.

With the Motor in position, I do not think it would be difficult to couple up the propeller shaft in some way. As this is only a suggestion, however, and I have not actually tried the modification, I cannot give any exact instructions but you should be able to devise an effective method. I think it is well worth trying, anyway.

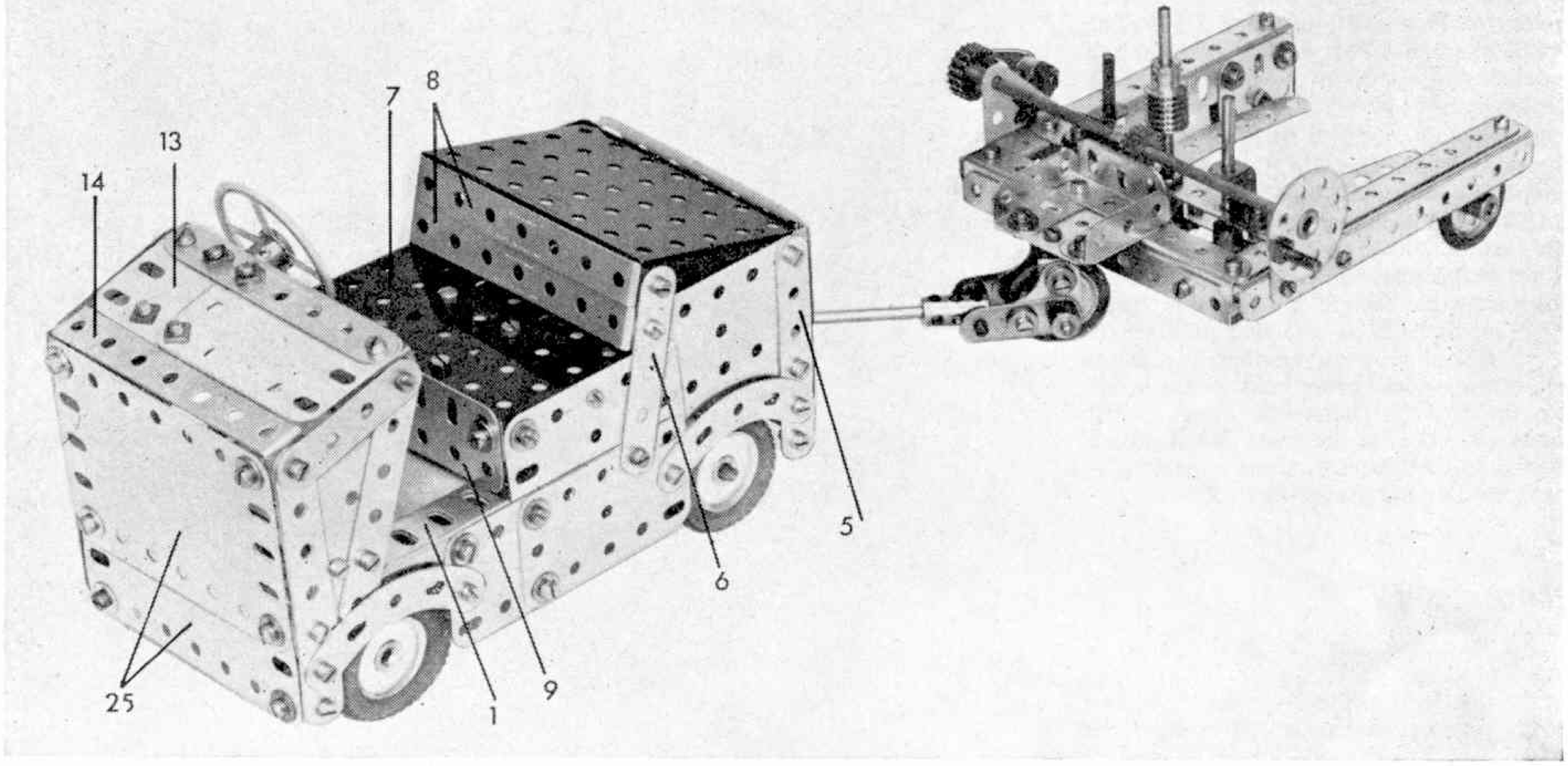
Spanner

Parts required

2 of No. 1	1 of No. 18b	2 of No. 155
4 of No. 1a	3 of No. 22a	4 of No. 188
2 of No. 1b	102 of No. 37a	2 of No. 189
2 of No. 2a	97 of No. 37b	1 of No. 190a
2 of No. 3	13 of No. 38	2 of No. 194
4 of No. 4	3 of No. 48	1 of No. 194d
4 of No. 5	3 of No. 48a	1 of No. 194e
6 of No. 6	1 of No. 53a	4 of No. 196
3 of No. 6a	3 of No. 59	2 of No. 221
5 of No. 10	1 of No. 73	4 of No. 224
1 of No. 11a	2 of No. 89b	8 of No. 235
12 of No. 12	2 of No. 103h	2 of No. 235a
2 of No. 12b	1 of No. 111a	2 of No. 235f
6 of No. 12c	2 of No. 111c	1 of No. 518
1 of No. 15a	2 of No. 126	

Just like the real one—this Meccano Baggage Truck is electrically driven. It uses the new Power Drive motor and gear box!

THE MECCANO BAGGAGE TRUCK Part 1



A splendid working model of a Lansing Bagnall Tractor and Trailer, motive power for which is supplied by the new Power Drive Unit. Building instructions for the Tractor are given in the accompanying article. The Trailer will be described next month

ASK any young boy what railway stations call to mind and the answer will almost certainly be 'trains'. If the same question had been asked of me as a boy, I would immediately have thought of those delightful baggage trucks that zoom up and down the platforms, often with a line of trailers strung out behind. For some reason I always found these fascinating and, if anything, more interesting that the trains themselves. I am particularly pleased, therefore, to be able to describe this excellent Meccano tractor and trailer, both of which are reproductions of actual equipment manufactured by Lansing Bagnall Ltd., of Basingstoke, Hants., who supply most of the powered luggage trucks found at railway stations.

This model, based on the Lansing Bagnall TD 220, is something of a milestone in Meccano Magazine history, as it is the first 'M.M.' model to be fitted with the new Power Drive Unit—a powerful D.C. Motor complete with a built-in 6-speed gear box. Lack of space prohibits me from describing the Trailer this month, but building instructions for the Tractor are as follows :

Two 7½ in. Angle Girders 1 are connected by a 3½ in. by 2½ in. Flanged Plate 2 and a 3½ in. by 2½ in. Flexible Plate 3 overlapped by a 3½ in. Strip 4. Bolted to the vertical flange of each Angle Girder are four 2½ in. by 1½ in. Flexible Plates, arranged as shown in the illustrations. The rearmost of these Plates is overlapped by a 3 in. Strip 5, at the same time bolting an Angle Bracket in place at the top. A 2½ in. Strip 6 is added to the side of the model then Strips 5 and 6 at each side are joined by a second 3½ in. by 2½ in. Flanged Plate. Another 3½ in. by 2½ in. Flanged Plate 7 is bolted in place as shown, the Strips 6 are connected by two 3½ in. by ½ in. Double Angle Strips 8.

Motor mounting

Four Double Brackets are bolted to the underside of Flanged Plate 7, and the Power Drive Unit is secured to the other lugs of these Double Brackets. Actually, it would be more advisable to fix the Motor in place before attaching the Flanged Plate to the model. A 3½ in. Flat Girder 9 is fixed between the sides by Angle Brackets.

A 2½ in. by 1½ in. Triangular Flexible Plate 10, overlayed and enlarged slightly by a 3½ in. Strip 11, a 3 in. Strip and

2 in. Strip, is bolted to the front of each Angle Girder 1. Note that the 3 in. Strip is secured to the Triangular Flexible Plate by a Fishplate 12. Front and rear mudguards are provided by $2\frac{1}{2}$ in. Stepped Curved Strips, as shown.

The top of the bonnet is composed of a compound $3\frac{1}{2}$ in. by $2\frac{1}{2}$ in. Plate 13, obtained from two $2\frac{1}{2}$ in. by $1\frac{1}{2}$ in. Flexible Plates overlaid by a $3\frac{1}{2}$ in. Strip, and a $3\frac{1}{2}$ in. by $1\frac{1}{2}$ in. Double Angle Strip 14, the compound plate being connected to the sides by Angle Brackets. Before fitting the bonnet top, however, it is best to add the appropriate part of the steering mechanism. Two $1\frac{1}{2}$ in. by $\frac{1}{2}$ in. Double Angle Strips, the off-side one being extended one hole by a 2 in. Strip 15, are bolted to the underside of the bonnet. A $2\frac{1}{2}$ in. Rod 16, carrying a Steering Wheel, and a $\frac{1}{2}$ in. Pinion, is journalled in the right-hand Double Angle Strip, while a 2 in. Rod carrying another $\frac{1}{2}$ in. Pinion and a Collar, is journalled in the other. The two Pinions are in constant mesh with each other.

Front and rear axle arrangements

Two $\frac{1}{2}$ in. Reversed Angle Brackets are attached by $\frac{1}{2}$ in. Bolts to the underside of Strip 4, being separated from it by a Collar on the shank of each Bolt. A $2\frac{1}{2}$ in. Strip 17 is bolted to the free lugs of these Reversed Angle Brackets and two Double Brackets, each carrying a $1\frac{1}{2}$ in. Strip 18 between its lugs, are lock-nutted through the end holes of this Strip, $\frac{3}{8}$ in. Bolts being used. Lock-nutted between Strips 18 is another $2\frac{1}{2}$ in. Strip, to which a Fishplate 19 is bolted. A $1\frac{1}{2}$ in. Rod carrying a 1 in. fixed Pulley with Motor Tyre 20 and a Collar, is journalled in the lugs of each Double Bracket.

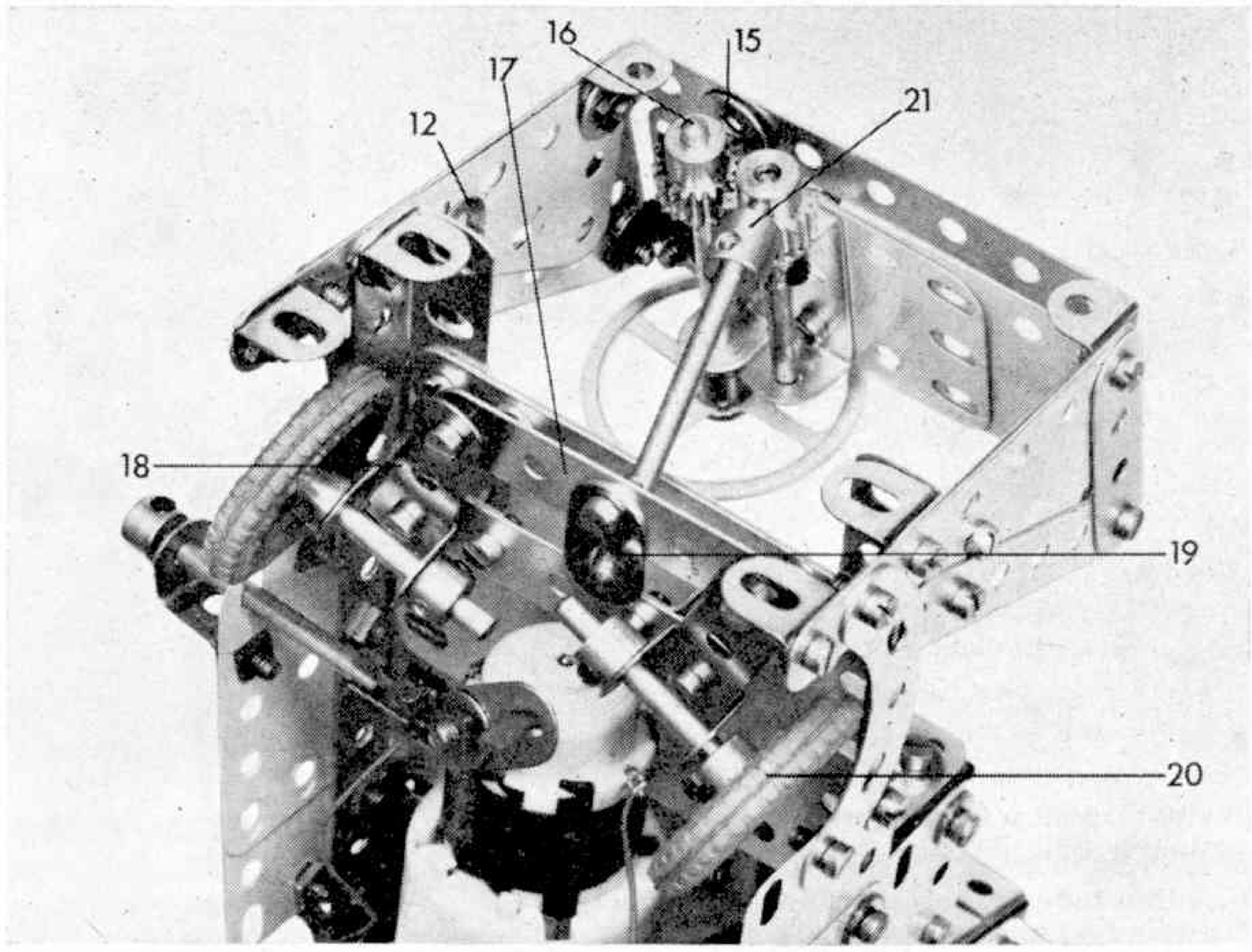
Fixed in the boss of the $\frac{1}{2}$ in. Pinion on the 2 in. Rod is a Rod Socket 21. Mounted in this is a 2 in. Rod which fits into the elongated hole of Fishplate 19.

At the rear, two $1\frac{1}{2}$ in. Angle Girders 22, each extended by a Flat Trunnion, are fixed to Flanged Plate 2. A $2\frac{1}{2}$ in. Rod 23 carrying a $\frac{1}{2}$ in. Pinion, a $\frac{3}{4}$ in. Contrate Wheel and a Collar, is journalled in the centre vertical holes of the Flat Trunnions. The Contrate is in constant mesh with a $\frac{1}{2}$ in. Pinion fixed on the Motor output shaft, while the Pinion is in constant mesh with another $\frac{1}{2}$ in. Pinion 24 on a $3\frac{1}{2}$ in. Rod, journalled in the apex holes of the Flat Trunnion. 1 in. fixed Pulleys with Motor Tyres hold the Rod in place.

Two $3\frac{1}{2}$ in. by $2\frac{1}{2}$ in. Flexible Plates 25, attached to the sides by Angle Brackets, complete the front of the model, while another $3\frac{1}{2}$ in. by $2\frac{1}{2}$ in. Flexible Plate 26, fixed to a $3\frac{1}{2}$ in. by $\frac{1}{2}$ in. Double Angle Strip by Hinges, encloses the rear. The Double Angle Strip which carries a Small Fork Piece on a $\frac{1}{2}$ in. Bolt, is bolted between Strips 5.

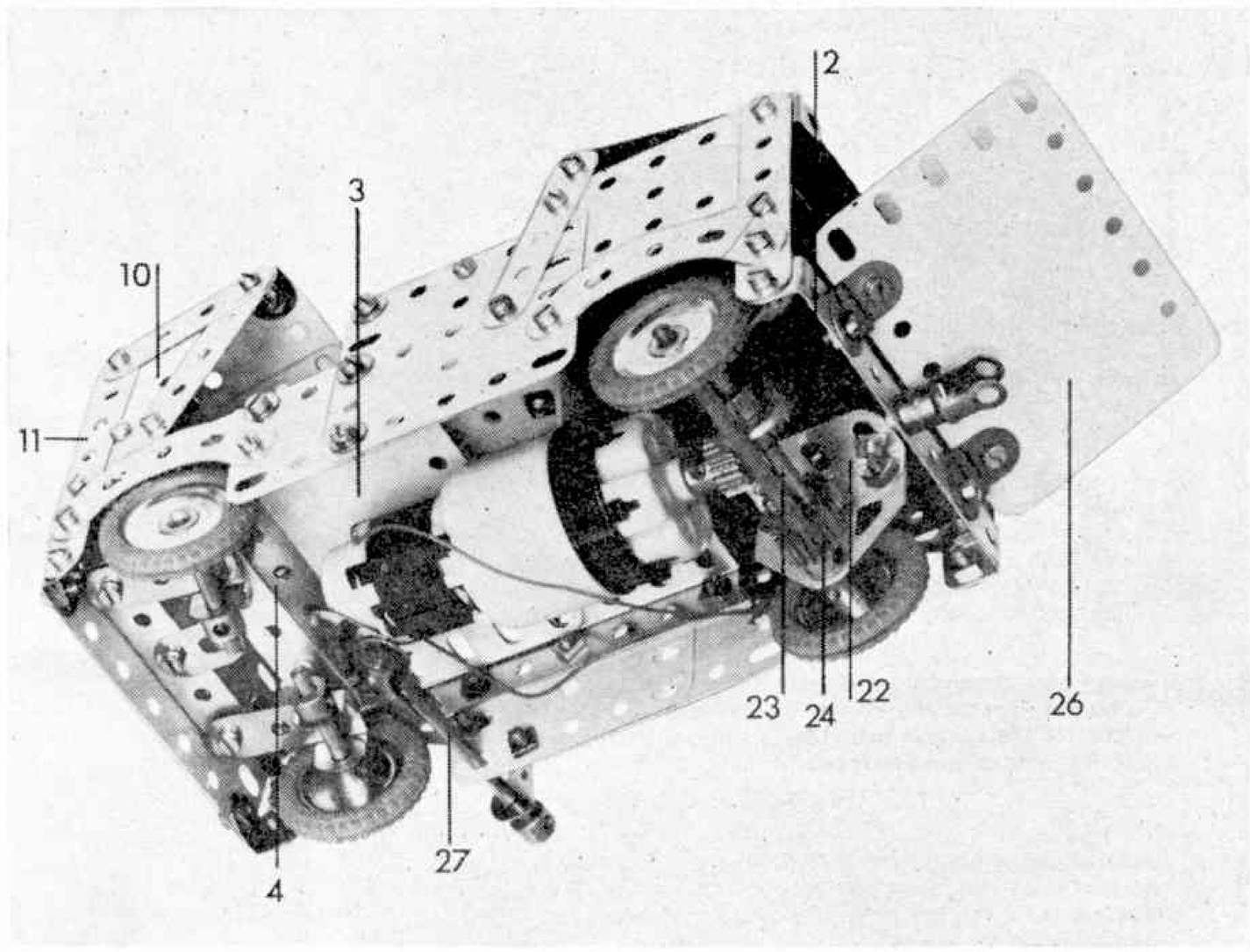
Finally, a stop-start lever is provided by a 2 in. Rod 27, journalled in the side of the model, and in a $\frac{1}{2}$ in. Reversed Angle Bracket bolted to the side. A Rod and Strip Connector, extended by a Fishplate, is fixed on the Rod, as also is a Collar. The Fishplate fits over the forward / reverse / stop switch of the Motor.

As you will have guessed, the above-mentioned Small Fork Piece serves as the towing hook for the trailer, which I will be describing next month. For those of you interested in mechanical handling, I have some technical facts concerning the real-life trailer, so look out for them in the next issue. — **Spanner**



In this view of the Tractor, the front of the model has been removed to show the steering arrangement

An underneath view of the Tractor showing the Power Drive Unit and drive to the rear wheels

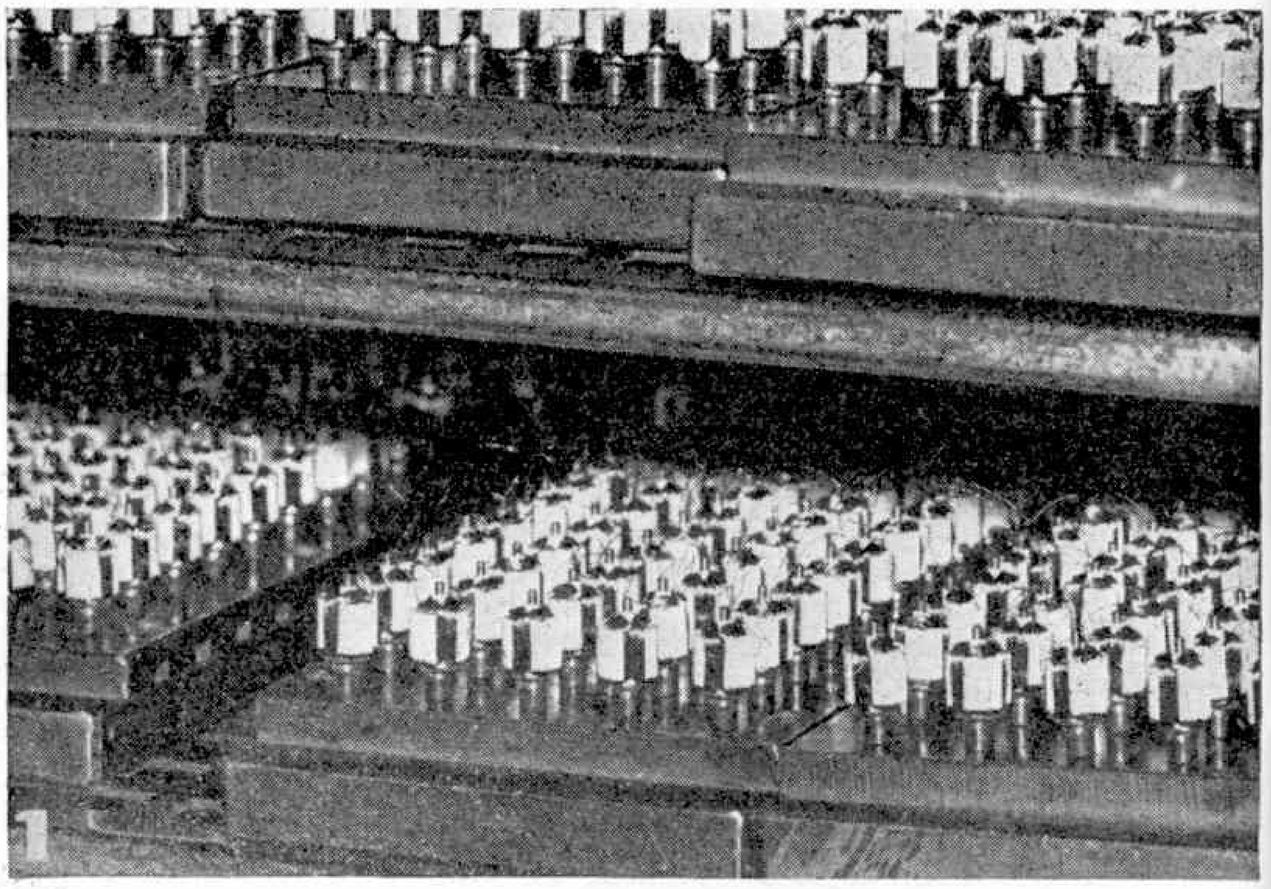


Parts required

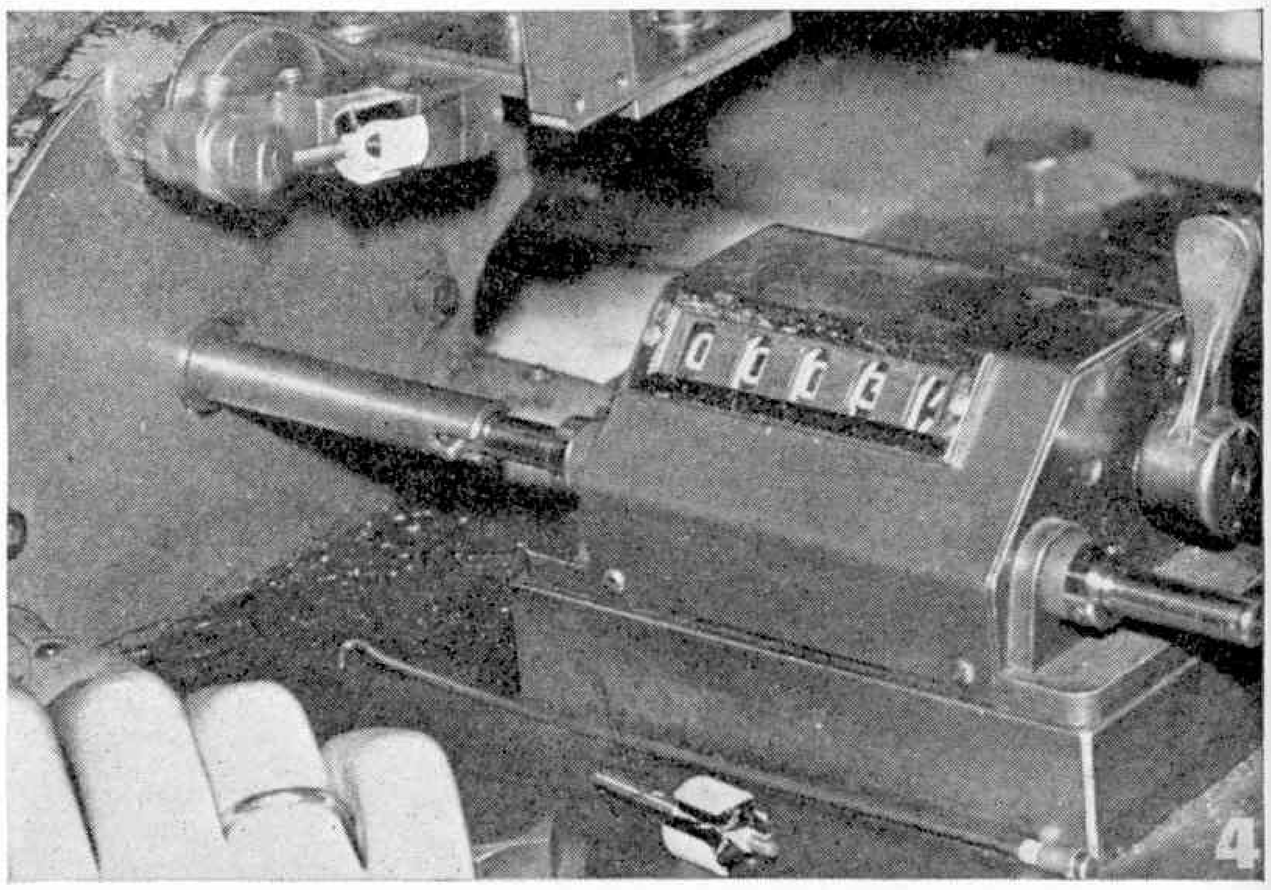
4 of No. 3	4 of No. 22	1 of No. 116a
4 of No. 4	5 of No. 26	3 of No. 125
4 of No. 5	1 of No. 29	2 of No. 126a
3 of No. 6	92 of No. 37a	4 of No. 142c
2 of No. 6a	81 of No. 37b	1 of No. 179
2 of No. 8b	20 of No. 38	1 of No. 185
2 of No. 9f	2 of No. 48	10 of No. 188
4 of No. 10	4 of No. 48b	4 of No. 190a
6 of No. 11	3 of No. 53	1 of No. 212
12 of No. 12	7 of No. 59	2 of No. 221
1 of No. 16	4 of No. 90a	1 Power Drive
2 of No. 16a	1 of No. 103d	Unit set at a
1 of No. 16b	3 of No. 111a	ratio of 32:1
2 of No. 17	2 of No. 111c	on $4\frac{1}{2}$ volts
2 of No. 18a	2 of No. 114	

PRECISION FOR PERFORMANCE

They get overloaded, covered with dust, crashed and generally abused, but how many of you appreciate the vast amount of care and skilled workmanship that goes into every Scalextric motor? We thought that you would have a greater respect for your motor if you could see some of the production stages at first hand, so the Editor took his camera along to the factory and brought back these pictures.



1 Like a well-drilled parade of soldiers, hundreds of armature/commutator assemblies await their installation.

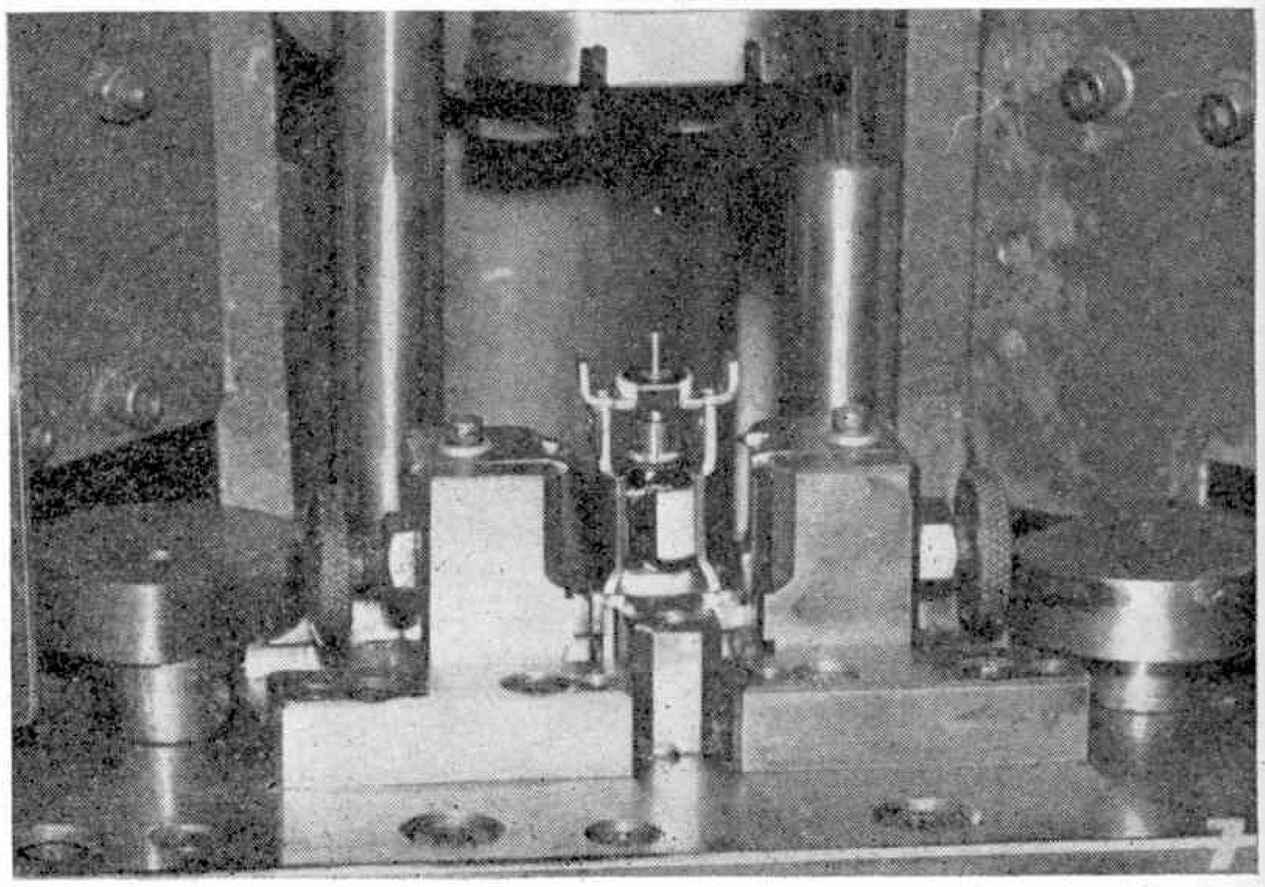


2 The armatures in the heading photograph are first built up from a number of tiny stamped-out segments that are automatically located on the main shaft as they are pressed out of their steel strip.

3 The armature ends must be capped with fibre washers. These are stamped out by the thousand from long fibre strips.

4 The three armature poles are each wound with an exact number of turns of enamelled copper wire. Our electronic flash has almost 'stopped' the one being wound in the photo above. The automatic counter on the right shows that 37 turns have already been put on.

5 The copper commutators are each accurately 'skimmed' in a lathe to produce a very smooth, friction free surface for the carbon brushes to run on. Extremely close tolerances are observed.

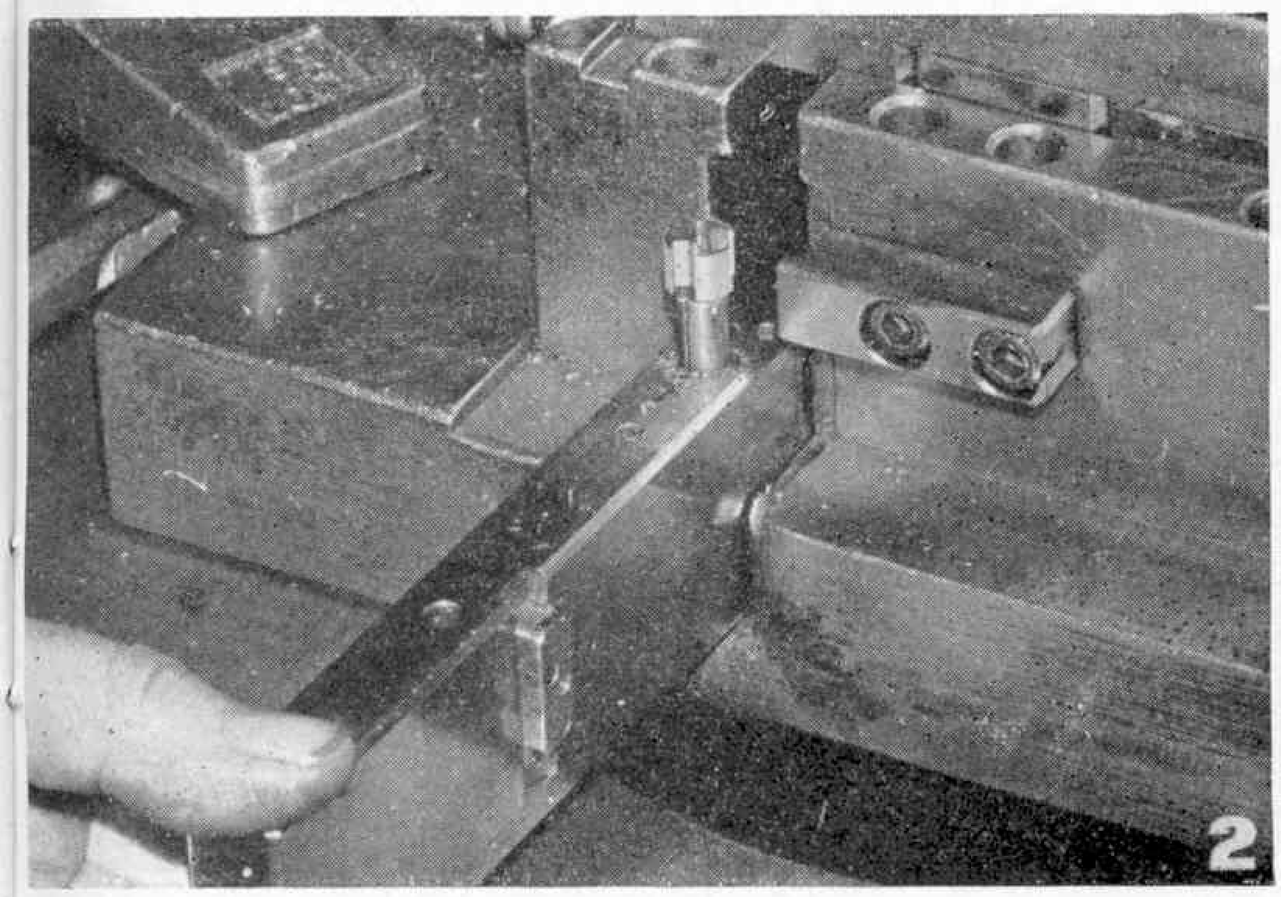


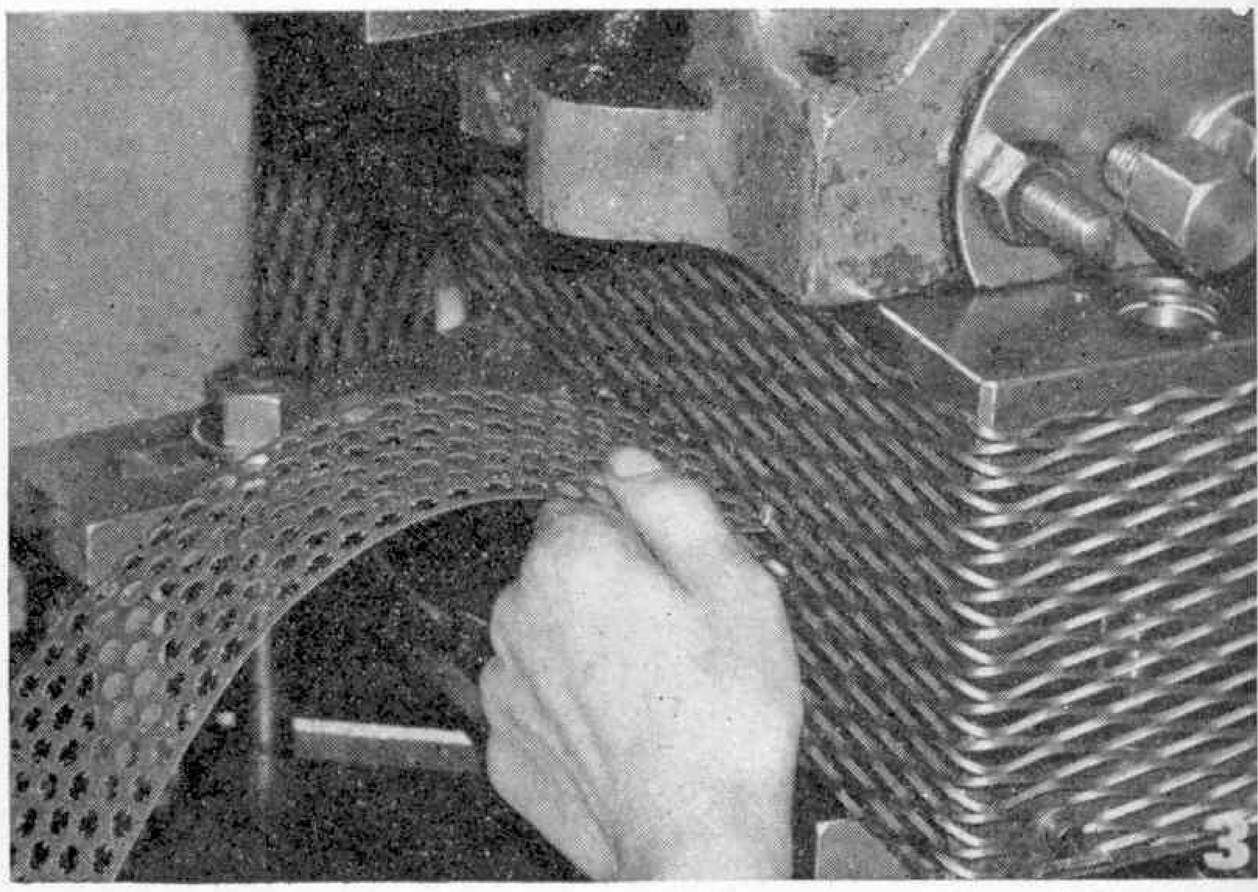
6 Armature assemblies are individually tested and every one that does not come up to specification is ruthlessly rejected. Here we see a reject being stripped of its copper windings.

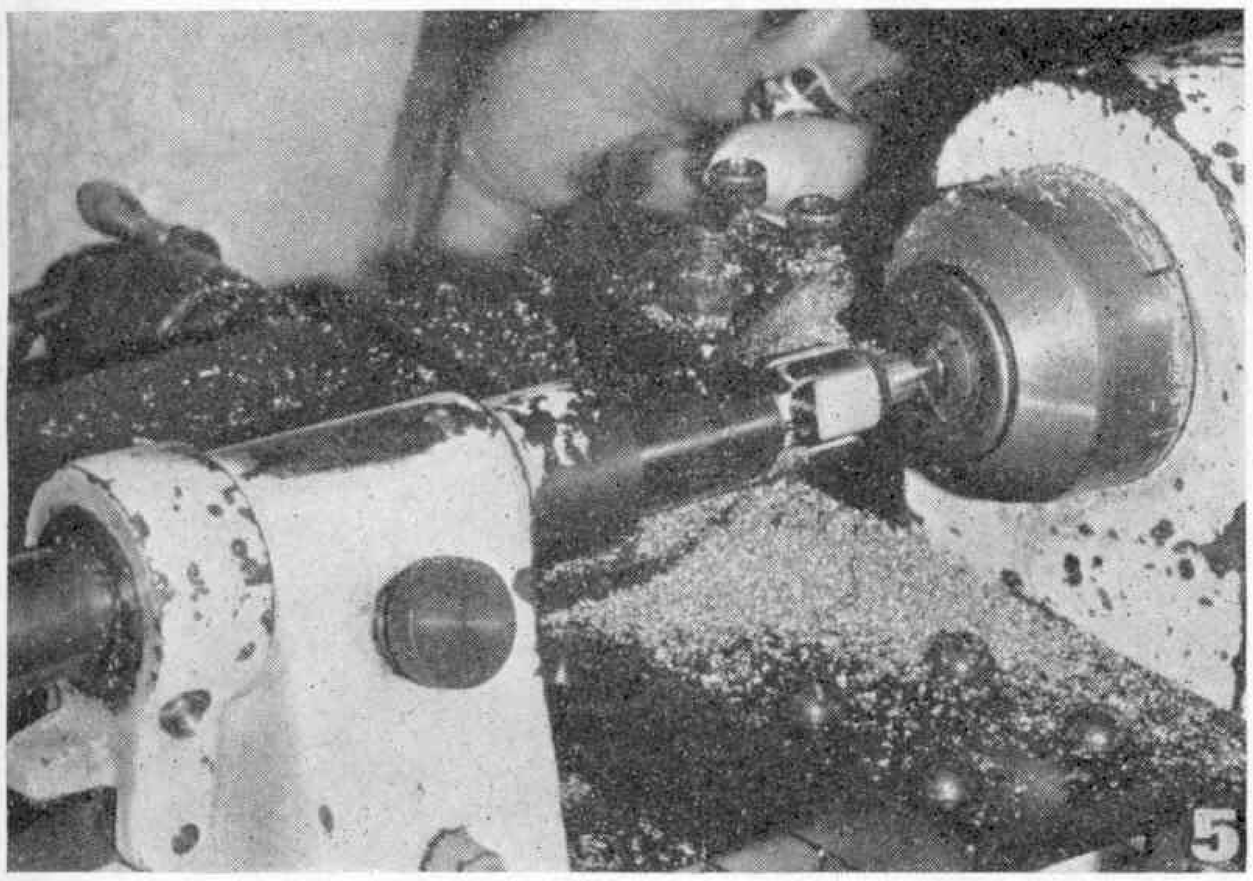
7 A huge precision machine accurately clamps the individual motor components in their correct relative positions and then securely rivets them together.

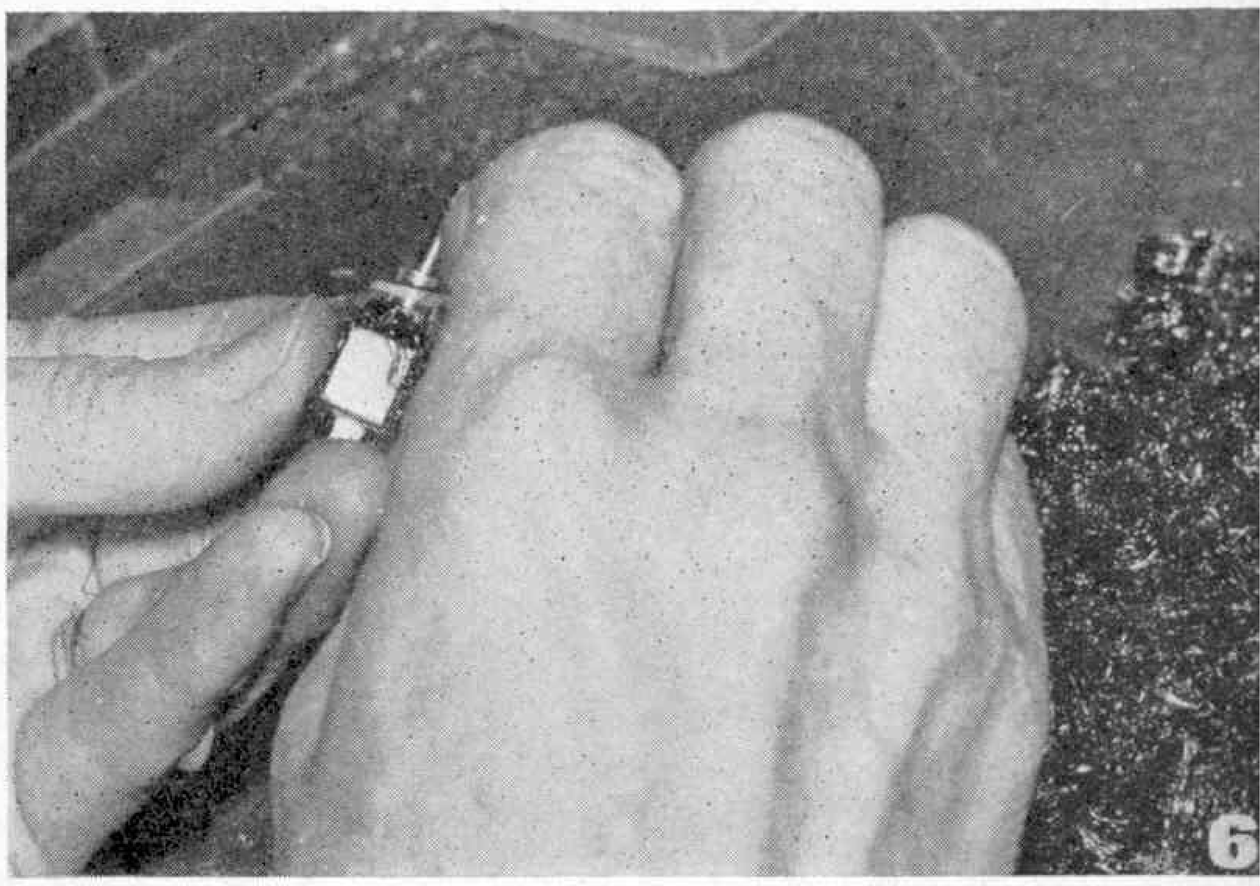
8 The powerful magnet is now energised and the motor is ready for performance testing. The motor shown here being magnetised is destined for one of the Formula 1 B.R.M. cars.

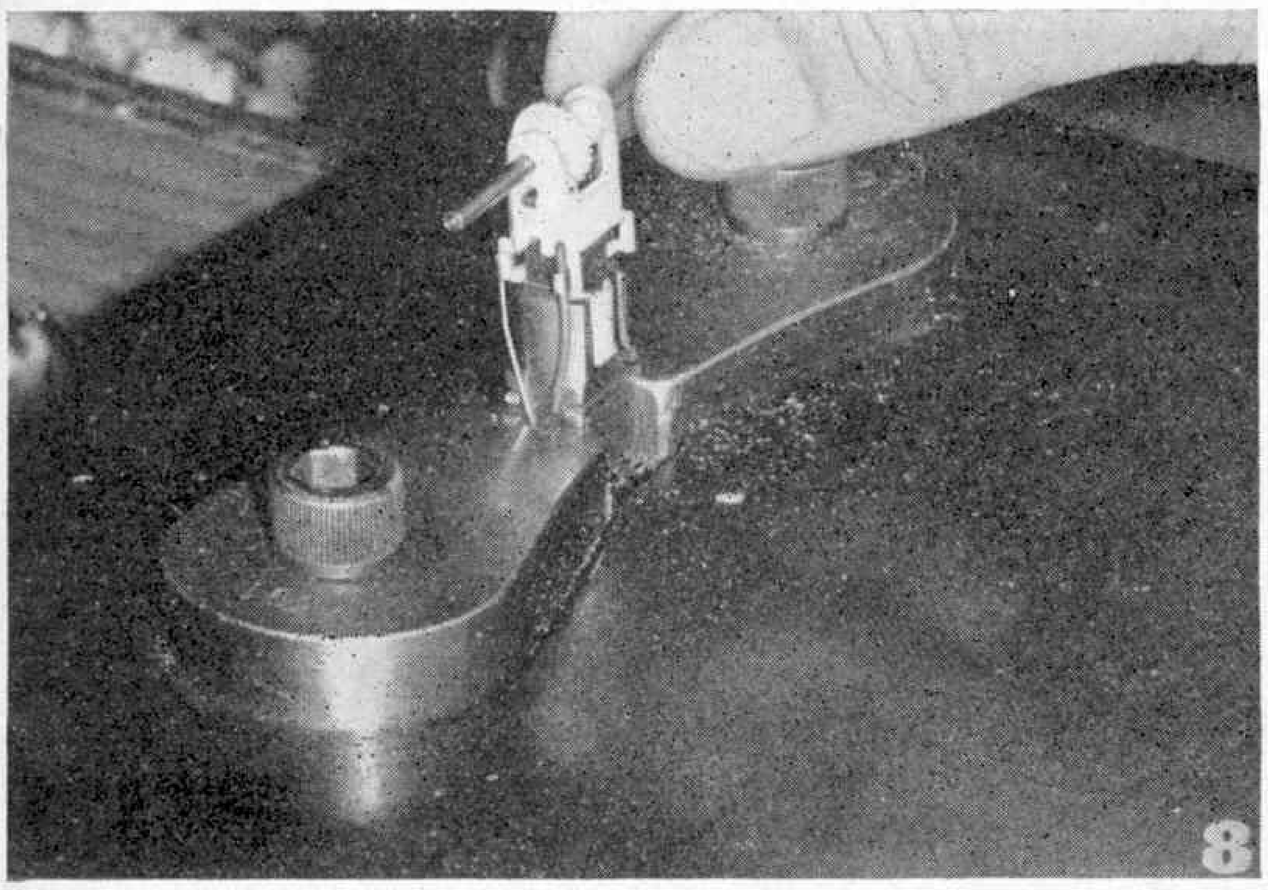
9 On test! Here the motor is being electrically checked out; afterwards it will be performance tested and the revolutions will be shown on the big dial which indicates revs. in hundreds. If—and only if—the motor meets the tough specification laid down, it will then be passed for installation in a new Scalextric car.

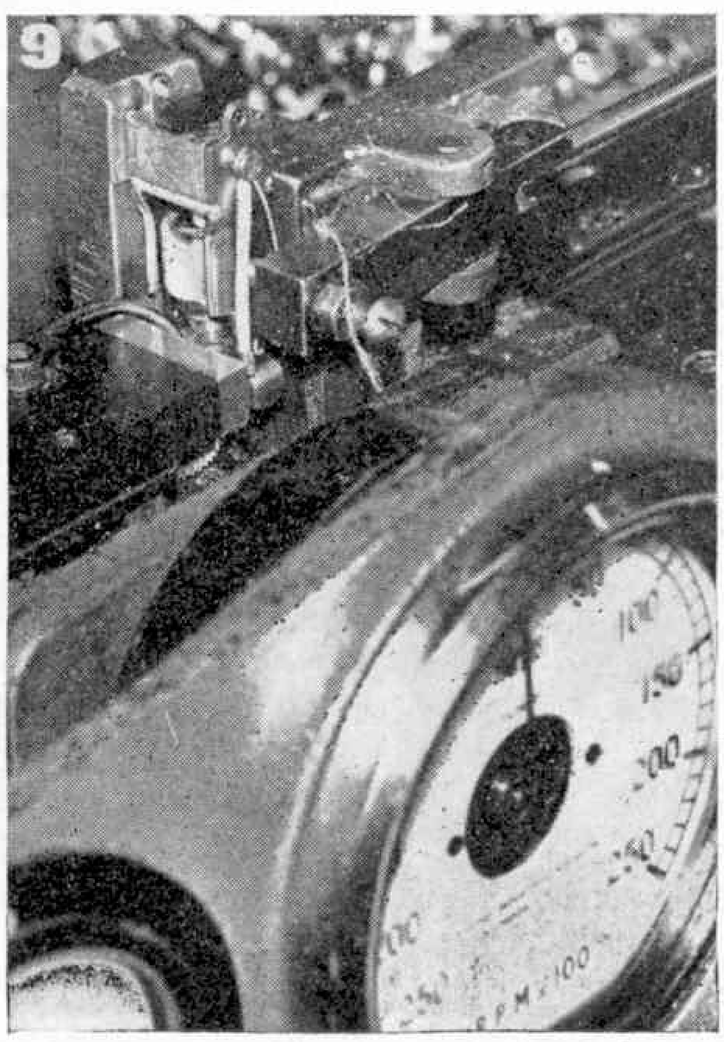






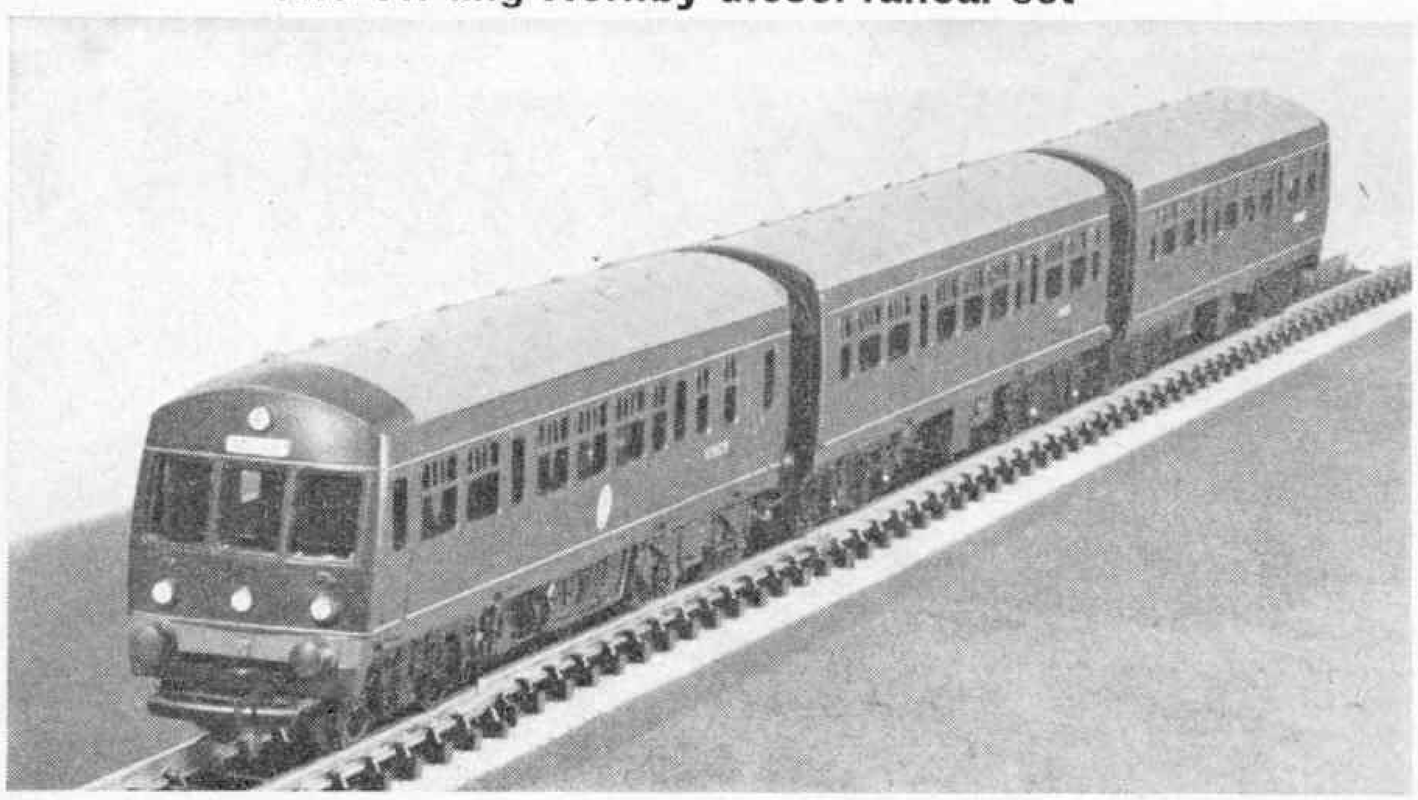






The British Rail version of the Hymek B-B

The Tri-ang Hornby diesel railcar set



Forthcoming Tri-ang Hornby Attractions

IF, like me, you have been wondering what plans Tri-ang Hornby have for the coming year, you will be as eager to see the new Catalogue as I was. On glancing through the 28 page booklet when it first appeared on my desk, I was not disappointed either, for several items of exceptional interest that should make an appearance during the coming year, are included in its pages.

In common with the previous Catalogue, the cover is again a reproduction of a Cuneo painting, this time a night scene of a blue Electric adjacent to a 'Jinty' 0-6-0. It makes a most impressive cover, although I was very disappointed in being unable to find the almost legendary mouse! (I believe it's hidden behind the word Hornby—*Ed.*)

The first and most important news contained in the Catalogue is of two new locomotives that are planned for the coming year. These are bound to be welcomed by nearly everyone—especially Great Western enthusiasts, for the first model is none other than a 'Hall' 4-6-0. The model, number 4983 'Albert Hall', represents the modified class of locomotives introduced in 1928 by Collett and will include copper capped chimney and safety valve. The second locomotive will also, I am sure, prove to be a useful addition to the Tri-ang Hornby range and is a model of a Hymek B-B diesel hydraulic locomotive. Bearing the number D7000 and made by Beyer Peacock in 1961, the model will have the authentic B.R. livery of green with a white panel round the front and rear windows, with a yellow panel beneath and a white strip along the bottom of the body side.

Other changes in the locomotive range affect both steam and diesel locomotives, which, have this time been allocated separate pages in the new catalogue. The M.R. 0-6-0 3F locomotive R251, is no longer available in the black livery that most of you will, by now, be accustomed to, but will in future be available in a maroon livery only. This looks quite attractive, and those of you who still require a black engine should not, I imagine, have any difficulty in doing the necessary repainting yourself. The range of steam locomotives also includes the 'Barnstaple' locomotive No. R2235, formerly of Hornby-Dublo.

Other than the Hymek diesel mentioned above, the section of the catalogue devoted to diesel locomotives contains no completely new additions, although several changes are to be made during 1966. The first and most commendable of these is the new look given to the AIA-AIA Brush Type 2 diesel and EM2 Co-Co pantograph locomotives which, in keeping with the new B.R. policy, are painted a very attractive blue. The AIA-AIA Type 2 is also available in the usual green livery with its existing number of D5572.. The blue version has been given the new number of D5578, which will please all those enthusiasts who want more than one of the locomotives on their layout.

New colours

Two locomotives mentioned in last year's Catalogue, and which are now available, are listed in these two pages. They are the English Electric Co-Co Type 3, and Bo-Bo Class 3001 pantograph locomotive, which I intend saying more about in a future issue. The Tri-ang Hornby Co-Bo diesel electric locomotive, formerly of the Hornby-Dublo range, is also included.

Some of the Tri-ang Hornby coaches, although basically the same type as before, are to be given a new look. The first to be affected are the two coaches for running with the new AIA-AIA locomotive. These are now to be supplied in two-tone blue, which brings the stock into line with those built for the electrification scheme between London and Liverpool. The coaches are suitable for use with both the locomotives mentioned above, and the pantograph locomotive — yet another argument in favour of modernising your layout with a catenary system!

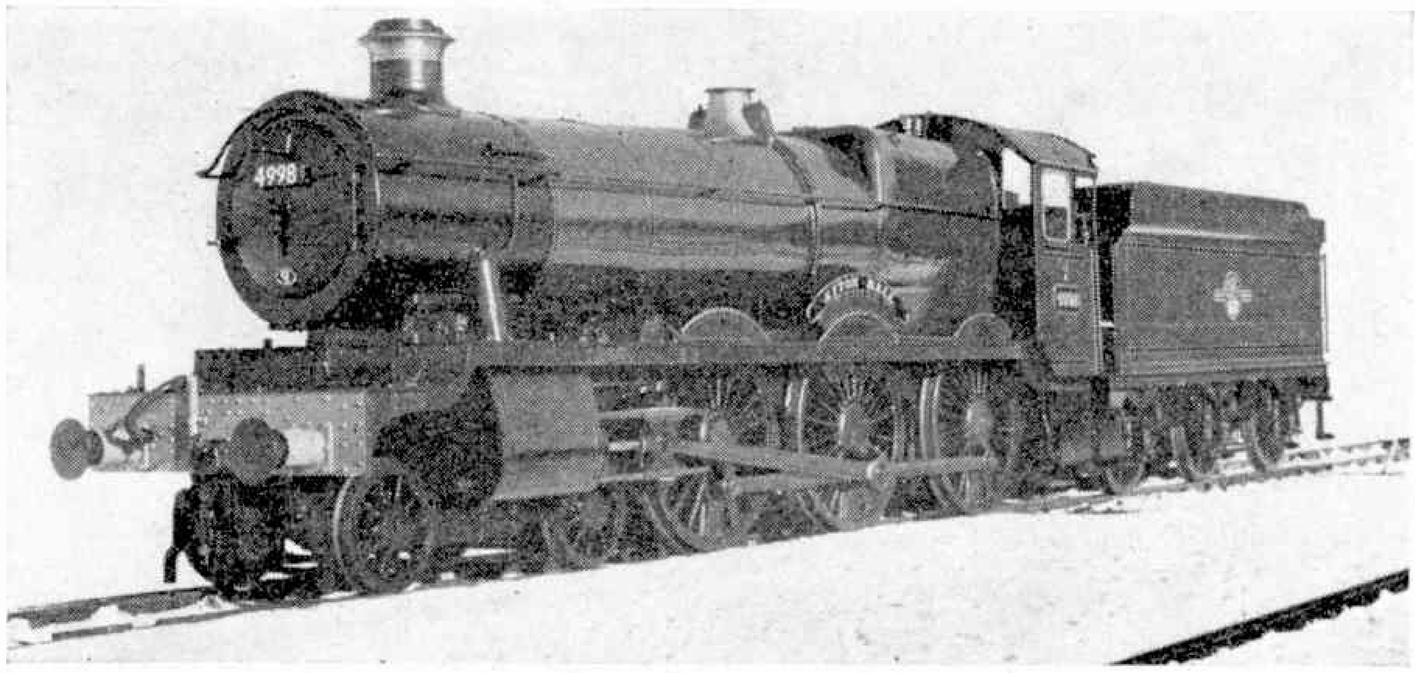
The engineering department coach R620, hitherto available in a black livery, is now in olive green, which is, perhaps, more suitable, and adds a little colour to the railway. The G.W.R. clerestory coaches have been withdrawn, but the superb coaches made for use with the Caledonian 'Single' No. 123 are still available. The old red and cream coaches are not included in the Catalogue and have been replaced with the two blue coaches mentioned above.

Of the 'old sets', only the 'Rocket' and Blue Pullman are still available, but two new passenger train sets take the place of those listed last year. These are the 'Midlander', which consists of the 0-6-0 3F

locomotive and two coaches, and the 'Inter City Express', a magnificent set which includes the English Electric Type 3 Co-Co locomotive and three Pullman coaches. Both include sufficient track to build an oval, which is slightly larger in the case of the 'Inter City Express'.

Only one addition has been made to the range of goods train sets, and this will include an old favourite—'Polly', the 0-4-0 tank locomotive. The set is called quite simply 'Goods', and includes two wagons—one a match truck with Minix car load—and a brake van, as well as the usual oval of track and a power controller fitted with directional control —a new feature for a smaller set. 'Old Smokey' is the only set to be discontinued in the goods range, keeping the total number of goods sets to four.

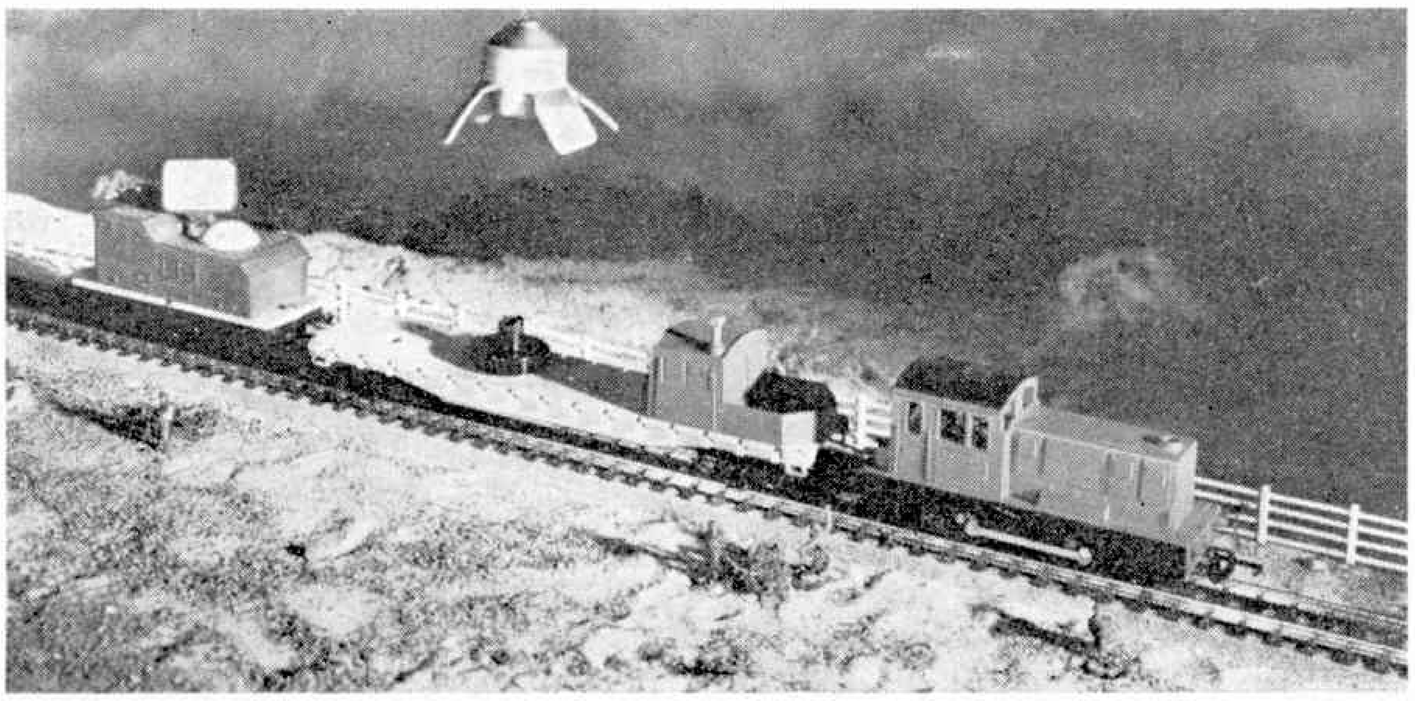
A number of items in the Transcontinental range have not been included in the new Catalogue, and the range of both passenger and goods rolling stock is predominantly of British design. One change that has been made, concerns the single bolster wagon R17 which is now available with a Minix car load—the same series of cars that are in fact used for the Car Transporter, which has six cars. The 'Car-a-belle' set has two of these fascinating bogie vehicles, and makes a most unusual set.



A former Great Western Railway 'Hall' class locomotive

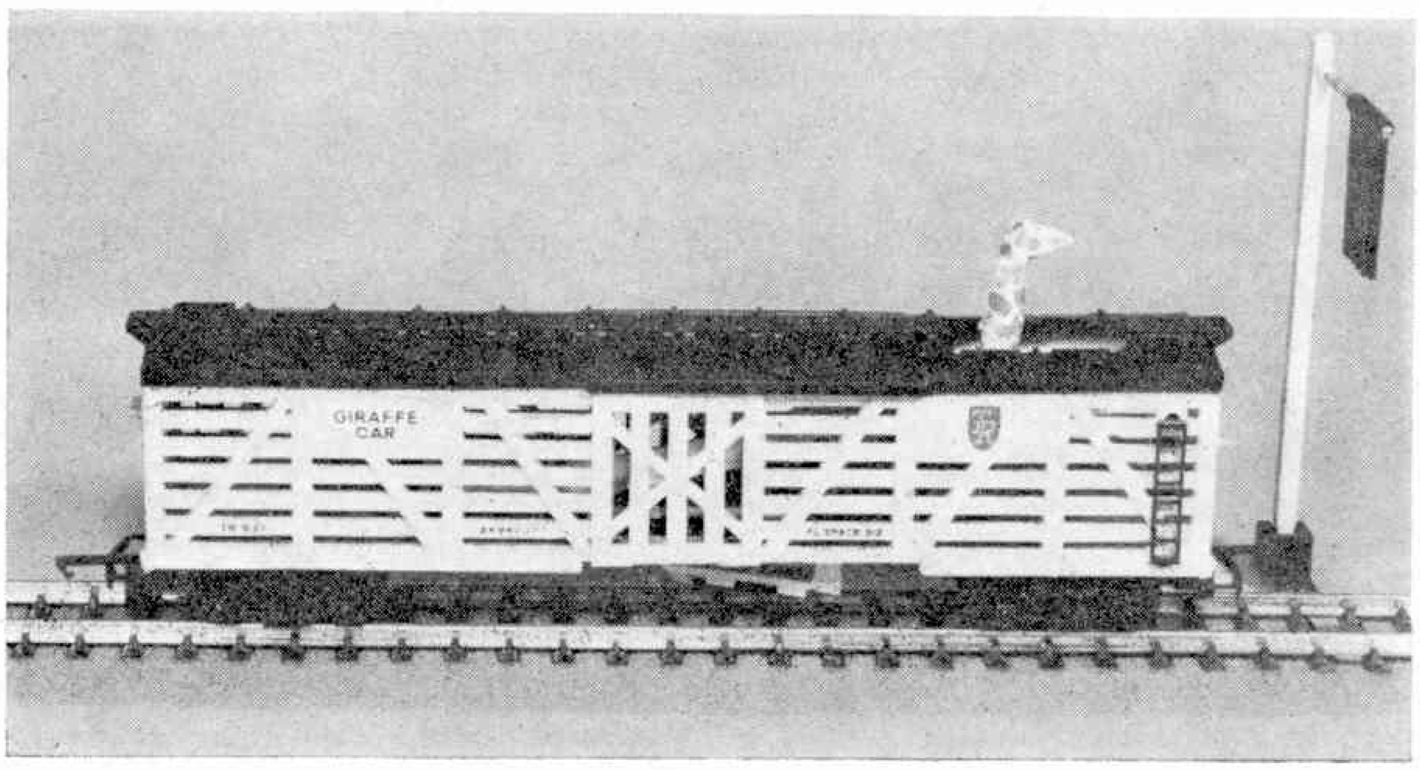
The many 'action features' that the Tri-ang Hornby range has become famous for, are still continued in the new Catalogue, and include no less than eight wagons in the 'Battle Space' series each of which have some sort of action feature. Some additions to this series are included in the new Catalogue and the first, called the 'Satellite Set' includes a spy satellite launching car, a radar tracking command car, and an 0-4-0 diesel locomotive. The second item is a most ingenious propeller driven 'Space Car', which can, by skilfully varying the speed of the propeller, be driven at a wide range of speeds, and should provide a great amount of fun.

The Catalogue also mentions the Model Land and Minix series, and of course the numerous accessories available for the Tri-ang Hornby range, including many of the buildings from the old Hornby-Dublo range.



The Satellite set, with launching and radar cars

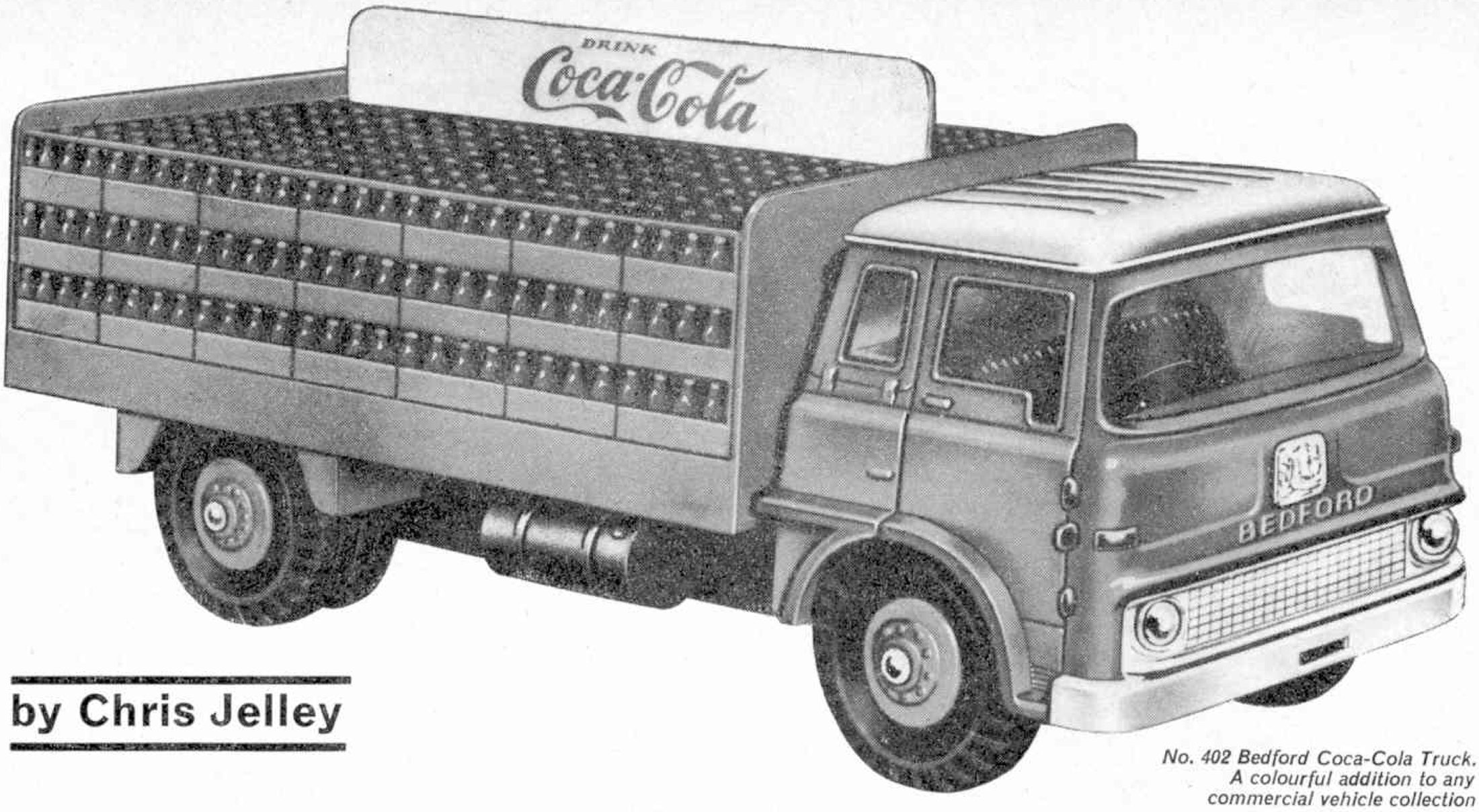
The Tri-ang Hornby Giraffe car R348



Project '66 continued from page 12

Engine mounting and other installation details can be followed from Fig. 7. The fuel tank is best mounted in the cockpit where it is close to the engine and handy for filling. The cooling water supply is obtained from a length of brass or copper tube with one end bent over and then filed off as shown in Fig. 8. This diagram also shows how this scoop tube is attached to a length of plastic tube running to the lower pipe on the water-cooled head of the engine, and how it is clamped in position to the back of the transom. The open end of the tube should come below the bottom of the hull, open end facing forwards, and as near as possible to the centre line without fouling the rudder. Water outlet from the cylinder jacket of the engine is fed through a short length of pipe terminating in a hole drilled in the side of the hull. If a silencer is fitted to the engine, exhaust waste from the silencer should be taken away through a large diameter plastic tube, either through the side of the hull again or back inside the hull and through a hole in the transom.

With the diesel powered version the forward hatch is not fitted to allow the top of the cylinder to protrude slightly above the deck. This provides very easy access to the engine controls and also allows the engine to 'breathe' properly. The hatch can be fitted, if preferred, with a cut-out to clear the cylinder head. In this case the engine compartment will have to be ventilated, either with a scoop fitted in the top of the hatch or by drilling holes through bulkhead 4.



No. 402 Bedford Coca-Cola Truck. A colourful addition to any commercial vehicle collection

by Chris Jelley

COKE ANYBODY?

'HAVE a Coke!'—a cry heard in coffee bars, cafes, and at parties all over the country. Coke, or to give this distinctive drink its correct name, Coca-Cola, is one of the most popular every-day commodities to come from America. Visit any city, town, village or even hamlet anywhere in the world and you will almost certainly find a shop stocked with the distinctively-shaped bottles in which it is sold.

Coca-Cola is drunk in vast quantities and so, to make sure that stockists do not run short, the manufacturers must make regular and frequent deliveries. These deliveries are by road and, as you must have noticed, it is not uncommon to see (and hear!) a large lorry, packed high with crates, rattling merrily upon its way. The first of this month's new Dinky Toy releases is based on just such a lorry. Officially named Bedford Coca-Cola Truck, it is marketed under the Sales No. 402.

Readers with a strong interest in commercial vehicles will be able to tell from the accompanying picture that the model is built up on the highly popular Bedford TK Chassis. Mounted on the main chassis members, behind the cab, is a flat-bed platform with tall, fixed head and tail boards. As on the real vehicle, the load platform is split into two sections by a full-length partition which protrudes above the head and tail boards and which carries the slogan 'Drink Coca-Cola'.

Of course, it would be pointless to market a Coca-Cola Truck unless it came complete with a load of Coca-Cola, therefore, loaded it is. According to my calculations, in fact, it carries as many as 1,344 bottles packed in an appropriate number of crates. To be quite honest, the bottles and crates are not separate little items, but are moulded and painted representations. Six mouldings, all removable, are provided, and these fit three each side of the central partition.

In common with the other Dinky TK models, the cab is fitted with windows, seats and steering wheel. It is finished in red with a white roof and blue interior. The body is also red, while the earlier-mentioned advertisement is in red lettering on a white background.

Coca-Cola, as I have already said, is an American 'formula' and the Americans hold all the manufacturing rights. Our 'Coke', however, is not imported from the U.S.A., but is made under licence over here. What happens is that the Coca-Cola Corporation of America grant a franchise to a local bottler in a particular area, who actually makes and distributes the drink. This bottler is responsible to the British Head Office of the Corporation which, in turn, is responsible to the parent company in America.

Enter 'The Saint'

Turning now to the second new release, we have an excellent model of one of the best-known sports cars to come from the Continent—The Swedish Volvo 1800 S. Manufactured by Aktiebolaget Volvo of Gothenburg, Sweden, this sleek automobile owes a certain amount of its present popularity to the English television series, 'The Saint'. Simon Templar, the hero of the series, often drives one in the show.

Volvo refer to the 1800 S as 'the outstanding car for high-speed, long-distance travelling', and this is not an idle boast. Power is supplied by a 4-cylinder o.h.v. engine of 1,780 c.c. capacity that develops a maximum power output of 108 b.h.p. at 5,800 r.p.m. This gives the car a top speed of 110 m.p.h. and the high cruising speed of 95 m.p.h. Transmission to the rear wheels is via an all-synchromesh 4-speed and reverse gear-box, actuated by a delightfully short floor-mounted gear lever. Overdrive is also fitted, operating on the fourth gear.

Braking is a pet subject of mine, and the faster the car, the better must be the brakes. On the Volvo, I am pleased to say, the braking system is more than adequate. Splash-protected, self-adjusting disc brakes are fitted to the front wheels, while self-centring drum brakes are fitted to the rear. Both are hydraulically operated. Safety belts, a safety feature which I think should be made compulsory, are fitted as standard equipment for both front seats.

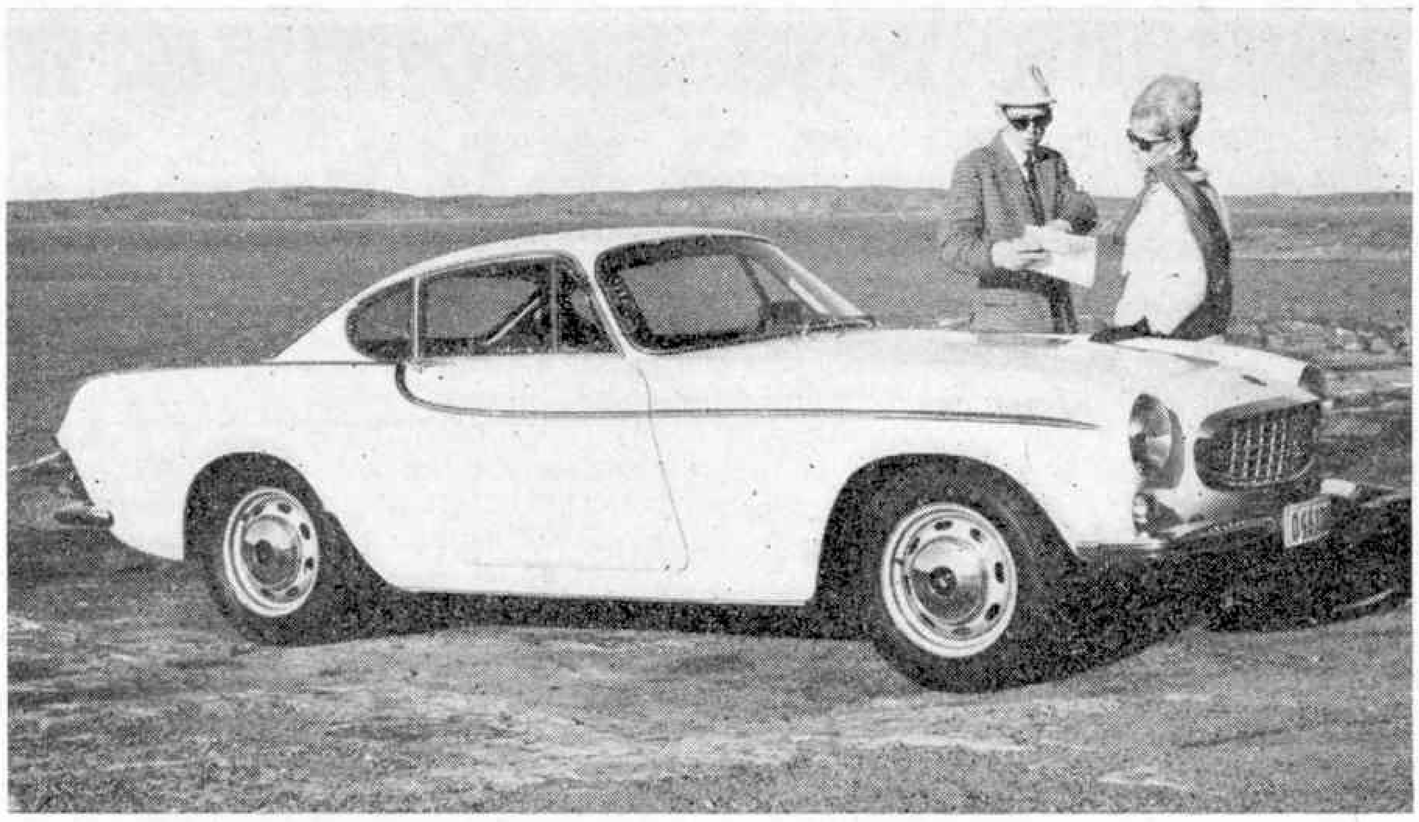
So much for high-speed motoring, but what about long-distance travelling? To begin with the car has an average fuel consumption of 28-30 m.p.g. which is quite reasonable for the size of the engine. Perhaps the most important consideration in distance motoring, however, is comfort, and, with the Volvo being a sports car, it is reasonable to take only the front seats into consideration.

These are scientifically-designed, leather-upholstered, and substantial. They are fully adjustable so that even the support in the small of the back can be varied, and should not cause any aches or pains no matter how much time is spent in them at the wheel.

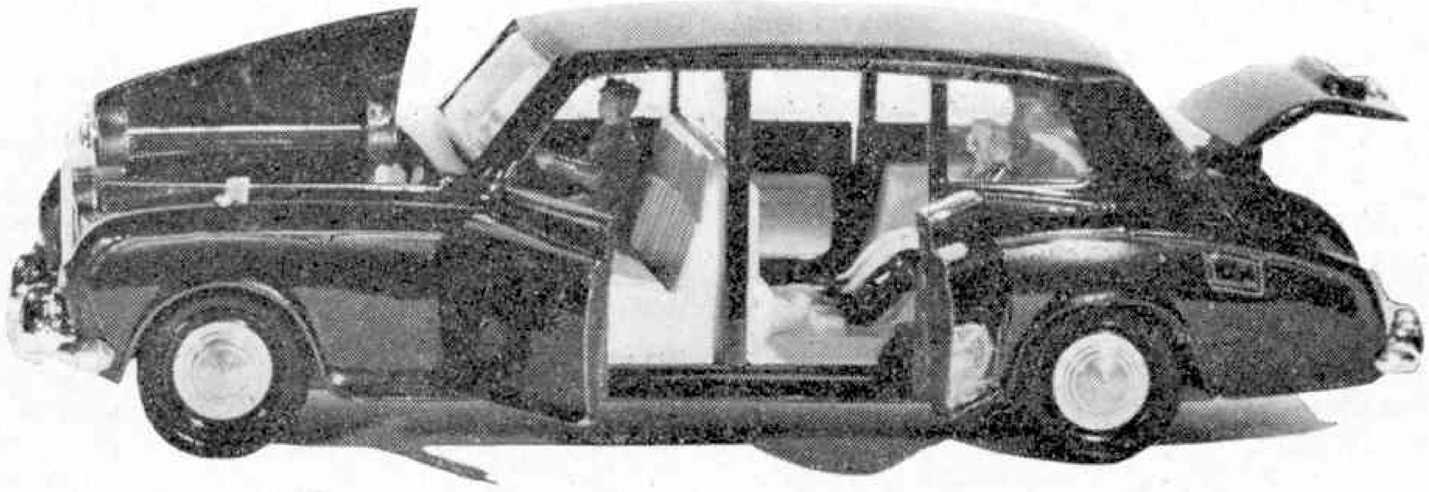
Assuming that anybody travelling a long distance will be carrying a good amount of 'gear', luggage space must be an important factor. In this case an exceptionally large boot, for the type of car, is provided, and also the back of the rear seat can be folded down to provide additional luggage accommodation. Little trouble should be experienced on this score, therefore. In short, the Volvo 1800 S is a top-quality sports car with numerous appealing features.

The Dinky Toy version, too is a top-quality sports car in the die-cast modelling world, and it also has many fascinating features. In fact, it incorporates almost all Dinky Toys' special features yet invented. For example, it 'sports' an opening bonnet, covering a detailed plated engine, an opening boot and opening doors, plus Prestomatic steering, 4-wheel suspension, wire wheels and plated radiator and bumpers. Also fitted are jewelled headlamps, number plates, windows, seats and steering wheel. The backs of the front seats tip forward to allow access to the rear. Finished in all-over off-white with red interior, the model carries Sales No. 116.

Unfortunately, a photograph of the Dinky Volvo was not available at the time of writing, but I will include an illustration in these pages at the first possible opportunity.



The real-life Volvo 1800S—"the outstanding car for high-speed long-distance travelling"



These two photographs reveal something of the magnificent grandeur of the Dinky Toy Rolls-Royce Phantom V which was fully described last month. Turn to page 19 for further details of that realistic background in the picture below!

Swing It continued from page 15

The two sides can now be glued on the base of the bridge, the bottom lip on the two sides going underneath the base, and the two ends of the sides fitting in the rectangular gaps at each end of the base. Glue one Airfix part No. 27 at each end of the bridge between the tops of the girders, to strengthen the structure while the glue is drying, and cut a piece of track the appropriate length to leave a projection of approximately ½ in. at each end. Spread contact adhesive on both the base and the underside of the track, and glue on, making sure that the track is straight and central along the base. When this is dry, a mixture of two parts sawdust to one part sand can be mixed and applied with an old table knife to rail height on the outside of the track, with sufficient to cover the sleepers on the inside.

Glue four parts No. 1 along the top of the bridge, and the remainder of parts No. 27 in the appropriate position, also along the top. Two parts No. 14 can finally be added at the small end of the bridge, and the whole structure allowed to dry. The insetting can be painted a matt black diluted slightly with thinners to give it a greyish appearance, and the bridge girdering given a coat of matt grey—I used Humbrol L.M.S. wagon grey.

The next step is the building of the mechanism and base, which I shall describe next month.

Dealers who specialise in MECCANO spare parts

This is the first part of a list of dealers who handle full ranges of Meccano Spare Parts, published at the request of many readers. It is supplementary to the page of advertisements of Meccano spare parts specialists on page 40. Names are arranged by counties with entries in alphabetical order of town. This list will be continued in the next issue

Bedfordshire

HERBERT J. BANKS, 23 St. Peter's St., Bedford.
S. BRIGHTMAN & SON, 29 St. John's St., Bedford.
G. A. WILD & SONS LTD., 7 High St., Bedford.
LARKINSON (FANCY GOODS) LTD., 27/29 High St., Biggleswade.
G. A. WILD & SONS LTD., 41 High St. North, Dunstable.
AEROMODELS, 49 Wellington St., Luton.
K. EAMES, 341 Hitchin Rd., Round Green, Luton.
LUTON INDUSTRIAL CO-OP. SOC. LTD., 4 New Bedford Rd., Luton.
G. A. WILD & SONS, 14 Manchester St., Luton.

Berkshire

L. M. SEAR, The Wool Shop, 37 Prospect St., Caversham, Reading.
A. G. COOPER, 2 Bridge Rd., Maidenhead.
CURRYS LTD., 4/5 West St., Reading.
FORTESCUE BROS., West St., Reading.
READING MODEL SUPPLIES, 1 Hosier St., Reading.
F. J. A. WRIGHT, The Gift Shop, 13 Broad St., Wokingham.

Buckinghamshire

R. BUTLER, 13 Market Square, Amersham.
S. R. PAGE, 33 Woodside Rd., Amersham.
HALLAHANS LTD., 8 Kingsbury Square, Aylesbury.
CHAS. WARD & SONS LTD., 28 High St., Aylesbury.
WM. B. TINKER & SON, 39/41 High St., Burnham.
J. LITTON, 89 High St., Chesham.
MURRAYS LTD., 27 White Hart St., High Wycombe.
JANE ANN, 36 West St., Marlow.
F. L. FRIDAY, Corner House, 18 High St., Newport Pagnell.
ADCOCK & PERCIVAL LTD., Market Square, Princes Risborough.
N. E. CHIPPERFIELD LTD., 35/37 High St., Stony Stratford.
R. J. SAUNDERS, Winslow Cycle Works, 36 High St., Winslow.

Cambridgeshire

AUTOMODELS LTD., 102 Peas Hill, Cambridge.
H. DRAKE, 58/60 Hills Rd., Cambridge.
RENBRO MODEL DEPT., Mill Rd., Cambridge.
JOSHUA TAYLOR & CO., Sidney St., Cambridge.
J. WARD & SONS, 86/88 Castle St., Cambridge.
J. WARD & SONS LTD., 24 Chesterton Rd., Cambridge.
J. WARD & SONS LTD., 29/32 East Rd., Cambridge.
H. FITCH & SONS LTD., 16 High St., Chatteris.
CURRYS LTD., 15/17 High St., Ely.
K. A. TRINDER, Post Office, High St., Soham.

Cheshire

ALTRINCHAM SPORTS CO., 2/3 Grafton St., Altrincham.
BIRKENHEAD MODEL SUPPLIES LTD., 32 Grange Rd. West, Birkenhead.
BORO CYCLE STORES, 66 New Chester Rd., New Ferry, Birkenhead.
HEYCROFT LTD., 756 Borough Rd., Birkenhead.
J. KENNEDY & SONS, 130 Home Farm Rd., Woodchurch Estate, Birkenhead.
W. V. SHALLCROSS, 157/9 Laird St., Birkenhead.
THORNLEY'S OF PRENTON, 361 Woodchurch Rd., Prenton, Birkenhead.
F. G. DENSEM & SONS LTD., The Square, Crewe.
LEIGH & CO., 31 Station Rd., Ellesmere Port.
HEWITTS, 25/27 King St., Knutsford.
A. WHITING, 43 Chestergate, Macclesfield.
HINDE'S, 127 Welsh Row, Nantwich.
J. F. PEMBERTON, 399 Washway Rd., Sale.
G. C. HOWARTH, 141 Northenden Rd., Sale.
HARRISONS SPORTS LTD., 9 Princes St., Stockport.
HEAVILEY GENERAL STORE, 48 Buxton Rd., Heaviley, Stockport.
KENNY CAMPBELL (WALLASEY) LTD., 292 Liscard Rd., Wallasey.
J. HASKINS, 7 Grange Rd., West Kirby.
SHAW'S, 11 Grove St., Wilmslow.

Cornwall

EDDY & SON LTD., Meneage St., Helston.
LOOSE OF LOOE LTD., West Quay, Looe.
W. A. SIMPSON, 62 Causeyway Head, Penzance.
F. J. LIBBY, St. Piran's Rd., Perranporth.
W. E. JONES, 54 West End, Redruth.
DINGLE & CO., 102 Fore St., Saltash.
MID-CORNWALL TOY & TURNERY CO., 15 South St., St. Austell.
J. C. HOLLOW, 1 Tregenna Hill, St. Ives.
JOHN LANGDON, 20 St. Mary St., Truro.
TREMAINS, 8 Molesworth St., Wadebridge.

Cumberland

GORDON EASTON & CO., The Sports House, 40 Lowther St., Carlisle.
R. M. HILL & SONS, 23 Botchergate, Carlisle.
PLUMMER BROS. LTD., 47 Main St., Egremont.
T. MANDLE LTD., Church St., Maryport.
MARK TAYLOR, 21 King St., Whitehaven.
W. A. LEWIS, 18 Fisher St., Workington.

Derbyshire

J. H. RAYNES & CO. LTD., High St., Alfreton.
BAYLISS BROS., 1 St. John St., Ashbourne.
DERBY CO-OP. SOC. LTD., East St., Derby.
FIELD SPORTS (DERBY) LTD., Shot Tower Corner, The Morledge, Derby.
RANBY'S LTD., 17/24 Victoria St., Derby.
SYD SHARROCK (THE MODEL CENTRE), 7 Cockpit Hill, Derby.
THE WHITE HOUSE (DERBY) LTD., 23/31/52 Babington Lane, Derby.
W. & D. STEEL, 28/30 Chesterfield Rd., Dronfield.
G. C. BRITTAIN & SONS LTD., Caxton Buildings, Ripley.
T. H. GODKIN, 1 Church St., Ripley.
PINXTON CO-OP. SOC. LTD., Market St., South Normanton.

Devonshire

CURRYS LTD., 75 High St., Barnstaple.
E. GALE & SON LTD., 20 Joy St., Barnstaple.
E. GALE & SON LTD., 2/3 Mill St., Bideford.
SMARDON'S, Bolton Cross, Brixham.
R. SAUNDERS, 22 Fore St., Cullompton.
W. T. PILLAR & CO., St. George's Square, Dartmouth.
CURRYS LTD., 230 High St., Exeter.
HOBBIES LTD., 9 North St., Exeter.
WALTON (EXETER) LTD., 215/219 High St., Exeter.
J. H. CONGDON, 14 Fore St., Ivybridge.
K. & M. STORES, 13 Fore St., Kingsbridge.
PERCY HODGE (SPORTS) LTD., 104 Queen St., Newton Abbot.
H. COVE CLARK, 45/7 Torbay Rd., Paignton.
NEW INVENTIONS DEPOT, 15 Torbay Rd., Paignton.
CURRYS LTD., 131/133 Armada Way, Plymouth.
E. DINGLE & CO. LTD., Royal Parade, City Centre, Plymouth.
E. E. & A. E. MARDEN, 628 Wolseley Rd., St. Budeaux Square, Plymouth.
SPOONER & CO. LTD., Brittanic Bldgs., Tavistock Rd., Plymouth.
JOHN WHEEL LTD., 52 Mutley Plain, Plymouth.
A. J. MOULES & SON, 82 South St., South Molton.
SWEET'S TAVISTOCK LTD., 82 West St., Tavistock.
BABYLAND, 40 Tor Hill Rd., Torquay.
NORTON (TORQUAY) LTD., 82 Fleet St., Torquay.
TORBAY MODEL RLY. CO., 59 Victoria Rd., Ellacombe, Torquay.
CUMING & SON, 57 High St., Totnes.

Dorsetshire

J. J. HOBBS & SONS LTD., 5/7 Salisbury St., Blandford Forum.
C. ALLINGHAM OF BRIDPORT, 6 East St., Bridport.
ELMES (BRIDPORT) LTD., 21/21a East St., Bridport.
BRAGGS SPORTS DEPOT, 15 High West St., Dorchester.
V. W. McCRAE LTD., 21 Salisbury St., Shaftesbury.
P. ASHTON, 11 Station Rd., Swanage.
THE SPORTS SHOP, 60 High St., Swanage.
E. C. FARWELL, 8 North St., Wareham.
F. DARCH, 43a St. Thomas St., Weymouth.

Co. Durham

DRESSERS, High Row, Darlington.
THORNLEY & CO., 168/170 Northgate, Darlington.
C. T. APPLEGARTH, Model Shop, 92 Claypath, Durham.
D. W. McKENCHNIE, 126/8 Ravensworth Rd., Dunston-on-Tyne, Gateshead.
E. SHEPHERD LTD., Ellison St., Gateshead.
E. M. GARDINER, The Electric Shop, Front St., Hetton-le-Hole.
BINNS LTD., King St., South Shields.
RIPPONS SPORTS CENTRE, 23/27 Fowler St., South Shields.
THE LAYGATE MODEL SHOP, 12 New Green St., South Shields.
ALEX HASTINGS LTD., Seaburn Post Office, Seaburn, Sunderland.
JOSEPH'S (SPORTS) LTD., 4/5 Union St., Sunderland.
J. MAXWELL, 14 Vine Place, Sunderland.
M. HART & SON, 125 Stockton Rd., West Hartlepool.

Essex

J. T. WORRICKER (RETAIL) LTD., 3 East St., Barking.
E. J. MARMENT, 12 Clarence Tce., High St., Barkingside.
PAGES OF BARKINGSIDE LTD., Fencepiece Rd., Barkingside.
H. T. DWYER LTD., 3 South Bank, Town Centre, Basildon.
E. McDOWELL, 2 Rayne Rd., Braintree.
E. G. & F. M. CULLIS, 8/14 Ongar Rd., Brentwood.
JOHN STEWARD LTD., 10 The Broadway, Shenfield, Brentwood.
POPE & SMITH LTD., Tindal St., Chelmsford.
COOK & EAVES LTD., 10/11 Central Bldgs., Clacton-on-Sea.
THE GIFT HOUSE, 3/5 Pier Ave., Clacton-on-Sea.
TOYLAND OF CLACTON, Odeon Bldg., West Ave., Clacton-on-Sea.
JOHNSON & SON, London Rd., Lexden, Colchester.
KENT, BLAXILL & CO. LTD., 3 High St., Colchester.
W. E. WAS, 22/24 Long Wyre St., Colchester.
WEST END CYCLE STORES, 65 Crouch St., Colchester.
JOHN BISHOP & SON, 13 Rowallen Parade, Green Lane, Dagenham.
MAYWOODS, 538 Rainham Rd. South, Dagenham.
PALMER & SON LTD., 29 Heathway, Dagenham.
G. SUFFIELD LTD., Broad St., Dagenham.
P. D. HOWELETT, 31 Kingsway, Dovercourt, Harwich.
W. PAINE & CO. LTD., 9 High St., Grays.
THE PARADE CYCLE STORES, 37 The Parade, Socketts Heath, Grays
I. E. MARDELL, High St., Great Dunmow.

RICHARD BLANKS LTD., 109 The Stow, Harlow.
H. T. DWYER LTD., 20 Terminus St., Harlow.
F. KING & CO. LTD., 3/5 West Gate, Town Centre, Harlow.
S. T. WILCE-TAYLOR LTD., High St., Harlow.
GARDNERS BROS. LTD, 23 The Broadway, Elm Park, Hornchurch.
F. WATLING, 134 Hornchurch Rd., Hornchurch, Romford.
AJAX SPORTS (ILFORD) LTD., High Rd., Ilford.
CRANBROOK SPORTS DEPOT, Cranbrook Rd., Ilford.
ILFORD SPORTS LTD., 33 Sevenways Parade, Gants Hill, Ilford.
J. & E. JONES, 1614 London Rd., Leigh-on-Sea.
D. S. DAVEY LTD., 172 High Rd., Loughton.
H. NICHOLLS, 120 High St., Maldon.
RAYLEIGH PRAM STORES LTD., 92 High St., Rayleigh.
CRADDOCKS (ROMFORD) LTD., South St., Romford.
HARRY'S (CYCLES) LTD., 104/106 Market Place, Romford.
M. N. HATHAWAY, 28 Victoria Rd., Romford.
PETTITTS, 17 The Pavement, High Rd., Chadwell Heath, Romford.
J. S. WREFORD LTD., 26 North St., Romford.
YOUNGSTERS LTD., 24 Collier Row Rd., Romford.
G. J. KEDDIE & SONS LTD., High St., Southend-on-Sea.
F. LIDDIARD & SON, 300/2 Victoria Ave., Prittlewell, Southend-on-Sea.
D. & W. SMAPSON, 5/8 Victoria Ave., Southend-on-Sea.
OWEN WALLIS & SONS LTD., 59/61 High St., Southend-on-Sea.
ROOMES STORES LTD., Station Rd., Upminster.
C. J. TIBBLE, 75 High St., Walton-on-Naze.
R. E. JOHNSTON SAGE, 859/861 London Rd., Westcliff-on-Sea.
PICTON BROS., 320 London Rd., Westcliff-on-Sea.
J. J. STORTON "The Argosy", 553 London Rd., Westcliff-on-Sea.

Gloucestershire

SANFORDS OF SHIREHAMPTON, 27 High St., Shirehampton, Avonmouth.
JOHN HALL (TOOLS) LTD., 7 Broad Quay, Bristol 1.
HUSBANDS & SONS LTD., 8 St. Augustines Parade, Bristol 1.
MODEL AERO SUPPLIES LTD., 51 Colston St., Bristol 1.
HOBBIES LTD., Fairfax St., Bristol.
H. SALANSON & CO. LTD., 83/85 Fairfax St., Bristol 1.
G. WITCOMBE & CO., 13 The Arcade, Broadmead, Bristol 1.
CURRY'S LTD., 25/27 Broadmead, Bristol 2.
C. R. BURTON, 11 Symes Ave., Hartcliffe, Bristol 3.
E. HARDING, 45 East St., Bedminster, Bristol 3.
D. MUSSELWHITE, 123 North St., Bristol 3.
D. DAVIS, 410 Wells Rd., Red Lion Hill, Bristol 4.
MAX WILLIAMS, 5 Church Rd., Redfield, Bristol 5.
THOS. BENNETT & SONS LTD., 196 Stapleton Rd., Bristol 6.
M. H. B. DAWSON, 96 Whiteladies Rd., Bristol 6.
M. H. B. DAWSON, 13 Zetland Rd., Redland, Bristol 6.
CLAUDE LEWIS LTD., 379 Gloucester Rd., Bristol 7.
O. I. OAKE, 22 Filton Rd., Bristol 7.
GYLES BROS. LTD., 188 Whiteladies Rd., Bristol 8.
B. MAGGS & CO., Queens Rd., Clifton, Bristol 8.
THE DOWNEND PRESS, Badmington Rd., Downend, Fishponds, Nr. Bristol.
WHITE TREE ELECTRICAL STORES, 28 North View, Westbury Park, Bristol 6.
CAVENDISH HOUSE LTD., Promenade, Cheltenham.
I. NEWMAN LTD., 127/9 Bath Rd., Cheltenham.
E. L. WARD LTD., 201/208 High St., Cheltenham.
A. WILLIAMS & CO., 8/10 Portland St., Cheltenham.
WM. BLOODWORTH & SON, 25 Long St., Dursley.
CURRY'S LTD., 12 Eastgate St., Gloucester.
GLOUCESTER CO-OP. SOC. LTD., Brunswick Rd., Gloucester.
T. G. HALL, 25/27 Barton St., Gloucester.
W. G. HOOK, 55 Westgate St., Gloucester.
A. G. WILLIS, 15 High St., Hanham, Kingswood, Nr. Bristol.
YOUNGSTERS LTD., 323 Two Mile Hill, Kingswood, Nr. Bristol.
BATEMANS SPORTS CO. LTD., Kendrick St., Stroud.
W. A. GALE, 45 High St., Tewkesbury.
HAYWARDS LTD., 125/6 High St., Tewkesbury.

Hampshire

THOS. WHITE & CO. LTD., 23 Union St., High St., Aldershot.
P. E. GREGORY LTD., 9 High St., Crown Hill, Alton.
TOYLAND, 45 Bridge St., Andover, Hants.
H. J. GIFFORD LTD., Gifford's Corner, Basingstoke.
PACKHARDS GIFT STORES, 548 Christchurch Rd., Boscombe, Bournemouth.
H. J. PERRIS LTD., 685 Christchurch Rd., Boscombe, Bournemouth.
DEPPERS, 918 Wimborne Rd., Bournemouth.
GRANT'S MODELS LTD., 308 Charminster Rd., Bournemouth.
HALL & SONS, 926/928 Christchurch Rd., Bournemouth.
THE SPORTS SHOP, 14 Seamoor Rd., Westbourne, Bourenmouth.
TETT'S IRONMONGERS, 402 Wimborne Rd., Winton, Bournemouth.
A. J. STEVENS, Brookley Rd., Brockenhurst.
A. K. ROBERTS, 3 Church St., Christchurch.
W. A. WELCH & SON, 2 High St., Eastleigh.
F. G. WARE, 3 Castle St., Portchester, Fareham.
GOSPORT MODEL SHOP, 16 North Cross St., Gosport.
B. OSBORNE LTD., 80 Gregson Ave., Bridgemary, Gosport.
E. F. BAYLY, The Square, Horndean.
K. E. WOOLTORTON, 26 Station Rd., New Milton.
ROWSWELL BROS., 26 High St., Petersfield.
CONNELL BROS., 175 Allaway Ave., Paulsgrove, Portsmouth.
J. & R. F. EVELYN, 46/48 Fratton Rd., Portsmouth.
E. HORNE & SON, Northern Bldgs., Cosham, Portsmouth.
LANDPORT DRAPERY BAZAAR LTD., Commercial Rd., Portsmouth.
PORTSEA ISLAND MUTUAL CO-OP. SOC., 69 Fratton Rd., Portsmouth.
SEALS OF SOUTHSEA LTD., 61 High St., Cosham, Portsmouth.
ROBIN THWAITES LTD., 248 Fratton Rd., Portsmouth.
FOREST PHOTOS LTD., Fridays Cross, Ringwood.
DAVIDSON'S OF ROMSEY, 25 Bell St., Romsey.
C. E. BURR, 38a Portsmouth Rd., Woolston, Southampton.
P. FRIPP (SOUTHAMPTON) LTD., 101/105 Shirley Rd., Southampton.
EDWIN JONES & CO. LTD., Queens Bldgs., Southampton.
OSBORNE & CO. (SOUTHAMPTON) LTD., 9 High St., Southampton.
SHIRLEY TOYS LTD., 100 Shirley High St., Southampton.
H. G. GROUT, 65 Highland Rd., Southsea.
HANDLEYS LTD., Palmerston Rd., Southsea.
A. HOLMES, 1 Mill Hill Rd., Cowes, I.O.W.
O. V. MAINSTONE LTD., 9 Union St., Ryde, I.O.W.
C. CLARK & SON (I.W.) LTD., 28/30 High St., Shanklin, I.O.W.

Herefordshire

M. B. ROBINS, Market Square, Bromyard.
CHADDS OF HEREFORD LTD., Commercial St., Hereford.
CONS, The Mansion House, Widemarsh St., Hereford.
LARCOMBE'S OF LEOMINSTER, 10 High St., Leominster.
DEAN'S, 30/31 Broad St., Ross-on-Wye.

Hertfordshire

THE HOWARD CYCLE CO., 176 High St., Barnet.
MURRAYS LTD., 122 Shenley Rd., Borehamwood.
DENIS HICKS LTD., 8 Heddon Court Parade, Cockfosters, Barnet.
E. W. FREEMAN-YOUNG, 10 Railway St., Hertford.
E. MUNNINGS, Old Cross Post Office, Hertford.
SPRINGS OF HERTFORD, 67/69 Fore St., Hertford.
WILMANS, Arcade, Hitchin.
CECIL EVANS, The Oakway, 59/61 Watling St., Radlett.
H. A. SAUNDERS LTD., 54 High St., Rickmansworth.
H. C. GREEN, 25 High St., Royston .
GRACIES, 145/147 Hatfield Rd., St. Albans.
C. G. HERBERT, The Globe Cycle and Radio Stores, London Rd., Shenley, St. Albans.
P. H. STONE & SON, 157 Hatfield Rd., St. Albans.
THE TODDLERS SHOP, 101 St. Peters St., St. Albans.
W. WREN & SONS LTD., Chequers St., St. Albans.
PLAYLAND, 96 Broadwater Cres., Stevenage.
PLAYLAND, 4 Queensway, Stevenage, Herts.
ASPLANDS, 131 High St., Waltham Cross.
O.T.S. (WEMBLEY) LTD., 103 The Parade, Watford.
A. BLUNT & SONS LTD., 38 Fretherne Rd., Welwyn Garden City.

Huntingdonshire

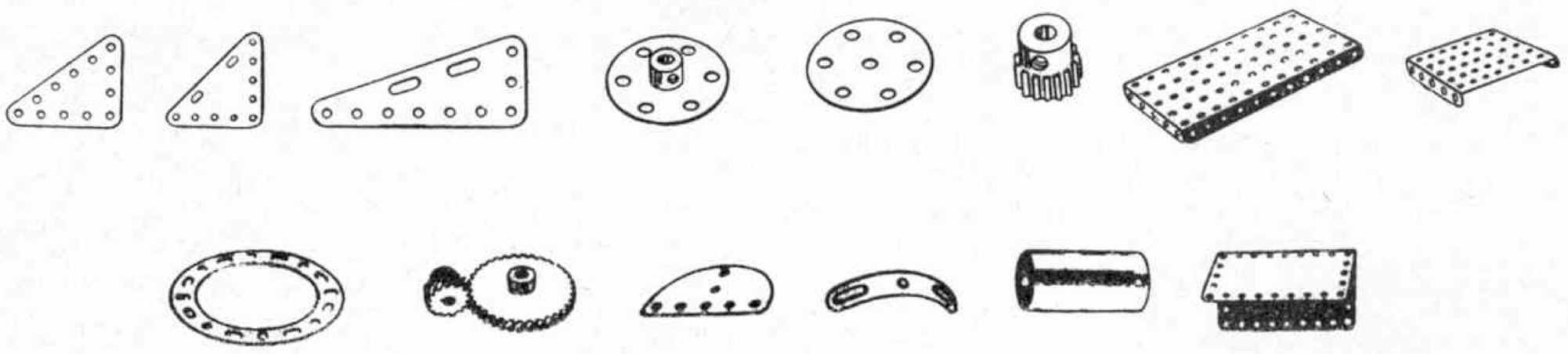
J. FREEMAN & SON, 6/8 Gt. Whyte, Ramsey.

Kent

C. HAMLEY LTD., 226 High St., Beckenham.
DERRETT & DORMAN LTD., 11/12 Nuxley Rd., Belvedere.
W. J. & H. G. JENNINGS LTD., 114/116a Broadway, Bexleyheath.
HANLEYS, 53 High St., Broadstairs.
R. E. HILLS & SON, 481 Bromley Rd., Downham, Bromley.
W. PAINE & CO. LTD., 168 High St., Chatham.
S. MASON, 43 High St., Chislehurst.
H. B. LEA, The Library, Store St., Cranbrook.
DARTFORD IND. CO-OP. SOC. LTD., Furnishing Dept., Dartford.
DOYLE & SON, 110 High St., Dover.
L. T. & E. M. JARRETT, The Gift Shop, 12 Bench St., Dover.
BERKLEYS, The Square, Edenbridge.
BOBBY & CO. LTD., Sandgate Rd., Folkestone.
MARTIN WALTER LTD., 90 Sandgate Rd., Folkestone.
G. SIMS, 12 Cheriton High St., Folkestone.
J. R. BAKER, 14 Canterbury St., Gillingham.
HUBBLE & AMES, 8 High St., Gillingham.
E. R. SEDGE, 14 Twydall Green, Gillingham.
L. HEYES, Toystores, 19 High St., Gravesend.
V. H. PHILLIMORE & SON LTD., 98 Mortimer St., Herne Bay.
V. H. PHILLIMORE & SON, 100 High St., Hythe.
CHIESMANS LTD., 23/27 High St., Maidstone.
F. I. GILBERT & SON, 116/8 Week St., Maidstone.
L. J. BLUNT, 59 Cotmandene Cres., St. Pauls Cray, Orpington.
PETTS WOOD TOYS LTD., 7 Chatsworth Parade, Queens Way, Petts Wood, Orpington.
DECCA SPORTS, 36 King St., Ramsgate.
F. K. LEE, 55 Queen St., Ramsgate.
W. DOUGHTY, 358 High St., Rochester.
LANE'S TOY SHOP, 75 High St., Rochester.
THE PRAM SHOP, 27 Cuxton Rd., Strood, Rochester.
J. G. KEZZARD, 16 King St., Sandwich.
SPORTSCRAFTS, 67 London Rd., Sevenoaks.
A. E. BURRELL, 4/5 Elm Parade, Main Rd., Sidcup.
A. G. & O. M. COOPER, 227 Blackfen Rd., Sidcup.
R. F. DAVIES, 283 Main Rd., Sidcup.
ERIC TURVILL, 31 High St., Sittingbourne.
BERKELEY'S, 82 London Rd., Southborough, Tunbridge Wells.
WHITE'S BAZAAR, 30/34 Monson Rd., Tunbridge Wells.
KIDDYLINES, 88/90 High Rd., West Wickham.

Lancashire

ASHTON MODEL SUPPLIES, 201 Old St., Ashton-under-Lyne.
GEOFFREY GIBSON, 43/45 Market Ave., Ashton-under-Lyne.
W. A. CLIFFE. 5 Cavendish Square. Barrow-in-Furness.
WINDER & CO., Oxford Chambers, Barrow-in-Furness.
DUCKWORTHS, 15 King St., Blackburn.



Dealers who specialise in Meccano spare parts

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

C. G. MARSHALL
Maxwell Road
BEACONSFIELD
Telephone: 1092

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

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

BARRETT'S LTD.
2 St. George's Street
CANTERBURY
Telephone: 66161

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

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

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

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

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

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

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

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

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

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

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

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

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

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

OVERSEAS DEALERS

AUSTRALIA

Jack Stanbridge's Hobby Shop
54a Canning Highway
Victoria Park, PERTH, W. Aust.
Telephone: 61-1668

NORTH SHORE HOBBIES PTY. LTD.
(Mail Order, Parts and Sets)
8 Post Office Street
Pymble (SYDNEY) N.S.W.

Walter & Stevenson Pty. Ltd.
395 George Street
SYDNEY
Telephone: 29 3566

NEW ZEALAND

BUNKERS LTD.
P.O. Box 58
HASTINGS
Telephone: 84-283 (Mail orders welcomed)

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

H.M.S. Lynx

Then read on...

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

What does it offer you?

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

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

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

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

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

Royal Navy

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

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

NAME_____

ADDRESS_____

_____

_____

Date of birth_____

SALES

• For sale: Meccano No. 5, Meccano Elektrikit, good condition. Any reasonable price accepted. Watson, 56 Napier Grove, London, N.1.

• Hornby 2-rail Deltic Diesel, rolling stock, breakdown set, track, three electric points, one other transformer, accessories. Excellent condition. £6 10s. 8 Birdhurst Gardens, South Croydon, Mun. 1540.

• Bassett-Lowke Gauge "0" Compound Locomotive. 12 V. As new. Track parts, etc. £12. Vigilant 2525 (Surrey).

• Meccano (cost £22), two motors, good condition, £10 o.n.o. Deane, 7 Seymour Road, East Molesey, Surrey.

• Burn's Bicentenary first day cover posted at Accoway January 25—3s. Maclean, 53 Rannoch Drive, Bearsden, Glasgow.

• Collector selling duplicates and few other stamps. Selections from Shade, 39 St. Leonard's Rd., Lowestoft.

• Hornby 00 Loco., and tender "Ludlow Castle". £2 o.n.o. 3-rail as new. Woodford School House, Groombridge, Tunbridge Wells, Kent.

• Hornby 00 Duchess Atholl, track, station, points controller. £5. Mr. Rigby, 34 Burnslack Rd., Ribbleton, Preston.

• Meccano No. 10, many extras; Bayko No. 4, many extras; Chemistry equipment; 53 M.M.'s, 1958-1963, good condition, £15, £2, £1, 15s. respectively, o.n.o., s.a.e. details. 105 Brunswick St., Leamington Spa.

• £50 worth Tri-Ang motorway - railway - accessories; perfect condition; £30 o.n.o. Coller, 20 Alpha Road, Surbiton, Surrey.

• M.M.'s, November 1961 - June 1965, one missing, mint condition, £3, including postage. L. B. Evans, Clay Pightles, Kingwood, Henley, Oxon.

• Tri-ang Train Set, 36 feet track, four locos., trucks, carriages, mail set, electrically operated and accessories with 8 ft. by 4 ft. board. £25. Neal, 35th Row, Sutton Ely, Cambs.

• 200 Mixed Stamps. Old! New! Valuable? Offers. Harrison, Eas-Mhor, Strachur, Argyle, Scotland.

• I am selling large stamp album full of stamps in approval selection. Write now to 41 Canberra Rd., Weston, Somerset, for free magnificent collection.

• Scalextric 32 set. Complete as new, 5 guineas o.n.o. Post paid. Clarke, 11 Gainsborough Gardens, Hampstead, London, N.W.3.

• For sale: 175 Great Britain Stamps, all different, 25s. Also 530 Colonials, 37s. 6d. Melville, 72 Graighall Rd., Edinburgh 6.

• Meccano E 15 R Electric Motor. Good working order, 33s. Brown, 77 Harborne Park Rd., Birmingham 17.

• M.M.'s, January 1961 - May 1964, inclusive. Reasonable condition, 25s. Bennett, Lingmell, Sutton, St. Nicholas, Hereford.

• If you need a stamp for your collection contact Colin Clark, 5 Tweedy Rd., Bromley, Kent.

• Tri-ang Train Set: four locos., good condition, nearest offer £20, s.a.e. Details: Jones, 98 Gorwydd Road, Gowerton, Glam.

• Original No. 3 Bayko set, 25s. Two dozen Dinkies, half price approx. Reasonable condition. S.a.e. to: Marsden, 24 Franklin Rd., Witton, Blackburn, Lancs.

• Soccer Programme Bundles—any value; free programmes, s.a.e. D. West, 11 Mulfords Hill, Tadley, Hants.

WANTS

• Hornby Clockwork Gauge "0" Schools Class or similar locomotive. Mathews, 203 Elm Drive, Hove.

• Wanted: Second-hand Tri-ang "Lord of the Isles", good condition, smoke not essential. Contact: Cook, 2 McClue Rd., Renfrew.

• Recent Hornby 2-rail of Tri-ang layout, plus rolling stock, etc. Details to: 18 Church Street, Sheringham, Norfolk.

• Urgent. Wanted: Dinky Toys, Cars and Commercial Vans. Early 1950's. Good prices paid. Rodney Laredo, 6 Bevin Place, Fendalton, Christchurch, New Zealand.

• Pre-1930 original Wooden Cabinet Meccano Outfit, No. 7, also parts same period. If available, offers to: Michaux, 30 Avenue Kreig Ch.1208 Geneve, Switzerland.

• Pre-war Meccano Instruction Manuals. Hurley, 130 Aldykes, Hatfield, Herts.

Wanted: Dinky and similar Metal Ships. Larcombe, 27 Hervey Rd., Chard, Somerset.

SWOPS

E 20 R E020, Motor, t 20 Transformer for E 15 R Motor, good condition. Brown, 21 Squadron, Workshop, B.F.P.O. 20.

Canoes

P.B.K. CANOES
Plans, Materials, Accessories, Canoes Built to order
G. G. HINTON (6), Milton St., Fairford. Glos. S.A.E.

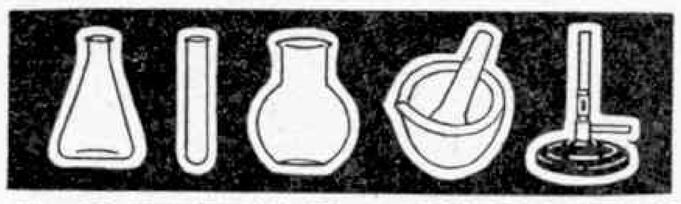
Science Apparatus

THE WIDEST RANGE OF
CHEMISTRY APPARATUS and CHEMICALS
IS AVAILABLE TO CALLERS OR BY POST FROM:-
A. N. BECK & SONS
60 STOKE NEWINGTON HIGH ST.
LONDON N.16 CLI 0335
LIST FREE

Radio

HEAR ALL CONTINENTS
WITH H.A.C. SHORT-WAVE RECEIVERS
Noted for over 25 years for . . . S.W. Receivers of Quality
Improved 1966 Models now available . . . provide even more startling results.
One-Valve Model "CX" . . . . . Price 34/6
Two-Valve Model "E" . . . . . Price 52/6
All kits complete with all components, accessories and full instructions. Before ordering call and inspect a demonstration receiver, or **send stamped addressed envelope** for descriptive catalogue.
"H.A.C." SHORT-WAVE PRODUCTS
(Dept. M.M.), 44, Old Bond St., London, W.1

Chemical Spares



LOTT'S CHEMISTRY APPARATUS
Endless interest! Build your laboratory with spare apparatus and chemicals always available. Write for price list enclosing 3d. stamped addressed envelope.
LOTT'S BRICKS LTD. Dept. MC3 Watford Herts

Stamps

10 RUSSIA FREE to everyone ordering one of these **PACKETS**

10 diff.		50 diff.		100 diff.	
Liberia	1/9	Belgium Col.	5/6	Australia	6/–
Saudi Arabia	1/9	Bolivia	5/6	Austria	3/3
Sudan	1/9	Brasilia	1/9	Canada	6/–
Triangulars	1/6	Bulgaria	2/–	China	1/9
Zanzibar	3/3	Cuba	3/6	Chile ...	7/–
25 diff.		Egypt	2/6	France	2/–
Ceylon	1/9	Eire	5/–	Hungary	2/–
Columbia	1/9	French Col.	1/9	India	3/6
Cyprus	4/6	Greece	3/6	Italy	2/–
Hong Kong	3/9	Luxemburg	4/6	Norway	3/6
Iceland	3/9	Malaya	3/6	Peru	10/–
Israel	3/–	Manchuria	4/–	Portugal	3/9
Malta	3/9	New Zealand	3/6	Russia	7/6
Monaco	3/–	Pakistan	3/3	Spain	3/–
Vatican	7/-	Portug. Col.	4/–	Swiss	6/–
Venezuela	4/–	South Africa	2/9	Turkey	5/6
San Marino	2/6	Turkey	2/–	U.S.A.	4/–

Please tell your parents.
Postage 4d. extra. C.W.O. LIST FREE.
BATTSTAMPS (10) 16, Kidderminster Road, Croydon, Surrey.

Educational

City of Cardiff Education Committee
REARDON SMITH NAUTICAL COLLEGE, FAIRWATER, CARDIFF
Principal:
Capt. J. N. Rose, R.D., J.P., M.I.N., Master Mariner
PRE-SEA TRAINING
This Residential College provides courses as follows:—

(a) A one-year course of Phase I towards an Ordinary National Diploma in Nautical Science—with Phases II & III after the young man goes to sea. Four passes at 'O' Level required including Mathematics, English and Physics or some comparable subject.

(b) A one-year course for those not eligible for (a). Passes in Mathematics and English at least are very desirable but not essential; opportunity exists to take these subjects at the College, provided a candidate's ability is such that he can reach the necessary standard.

Each course leads to NINE months Remission of Sea Service.

Fees for residence and tuition £180. Grants are available from Local Education Authorities and certain other channels.

Prospectus and further information may be obtained from the Principal (address as above).

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

Canoes

BUILD YOUR OWN CANOE
with the new Laminated/PVC covering
Full-size Plans and Instructions 10s. 0d.
Complete Kit of Parts from £13. 15s. 0d.
or Ready Built Canoes from £18. 0s. 0d.
Catalogue FREE from
GRANTA CANOES · COTTENHAM · CAMBRIDGE

Railways

HORNBY-DUBLO 3 RAIL BARGAINS
All in perfect condition. Duchess Montrose and tenders **50/-**, SR Motor Coaches **55/-**, CoBo Diesels **57/6**, Bristol Castles **55/-**, Straight rails **2/-**, Curved rails **7/6** doz., Large radius curves **2/-**, Half rails **1/-**, Uncoupling rails **5 for 10/-**, Electric uncoupling rails **5/-**, Electric points **12/6**, Royal Mail sets **25/-**, Quarter, short rails **1/-**, Diamond crossings **5/-**, Goods stock **6 for £1.** 2 RAIL ITEMS—Barnstaple and tenders **79/6**, 0/6/2 Tanks **39/6**, CoBo Diesels **57/6**, SR Motor coaches **55/-**, French type electric locos **70/-**, Diesel shunters **45/-**, Straight rails **1/3**, Curved rails **9d.**, Electric points **12/6**, Diamond crossings **7/6**, Suburban coaches **7/6**; Corridor coaches **9/-**. Postage **2/6**.
HATTONS, 180 Smithdown Road, Liverpool 15.

Publications

"SEA BREEZES" FAMOUS SHIPS, by J. H. Isherwood. Six sets of six cards, 10"×8", each card featuring a coloured line drawing (to scale) of a famous merchant ship, together with full details of her construction, machinery and an outline of her career. Each set costs 6/- post free; among the ships featured are the **Aquitania, Mauretania, Titanic, Baltic, Rawalpindi, Statendam, Scot** and many more—36 in all. A special display album is also available to hold four sets, and costs 25/- post free. Send for your sets of FAMOUS SHIPS and display album now to Sea Breezes, 17 James Street, Liverpool, 2.

FINE STAMPS AT FAIR PRICES

and NO RUBBISH included in our BARGAIN DISCOUNT APPROVALS which offer a wide range of modern Br. Colonials only or Whole World in singles and sets. Only stamps catalogued by Gibbons included. SEND TO-DAY for a large trial selection. No "free gift" but we always pay outward postage. No obligation to buy.

THE BIRKDALE STAMP CO., 104, LIVERPOOL ROAD, SOUTHPORT, LANCS. *NO CALLERS* *POSTAL BUSINESS ONLY*

GREAT BRITAIN

2/6, 5/- & 10/- (cat. 6/3) FREE

This packet of stamps is given absolutely **FREE** to all genuine applicants for my superior used British Colonial Approvals enclosing 4d. in stamps for postage. Overseas Applications Invited.

D. L. ARCHER (M),

2 LITCHFIELD WAY, BROXBOURNE, HERTS

FREE!!

100 STAMPS (all different)

To all collectors who

- Request our Bargain Discount Approvals.
- Enclose 4d Postage.

GEE-KAY STAMPS

68 Holtspur Top Lane, Beaconsfield, Bucks.

British Colonial Approvals, sent on 14 days approval. Single Country Books if preferred. Satisfaction and personal service guaranteed.

Ashford, 31A Disraeli Road, Putney, London, S.W.15

CIGARETTE CARDS—Illustrated Cat. 2/9.

25 Cards 1/-, 250 Cards (Sets & Part Sets) 6/9
500 13/-. 1,000 25/-.
Q.E.II. Stamp Cat. Well Illustrated 6/9

T. H. SMITH, Wick Farm, Langport, Somerset.

GEM LNWR 00 gauge LOCO KIT

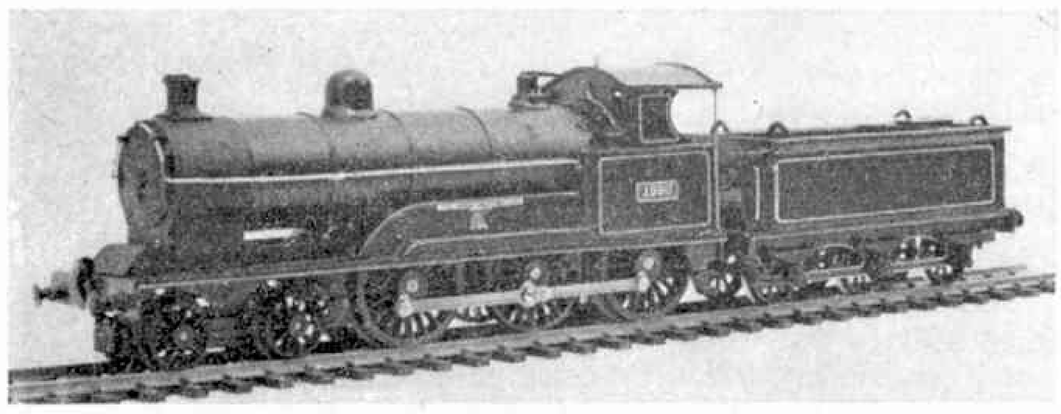
'Prince of Wales' or 'Experiment' 4-6-0

Build this magnificent model from the Golden Age of Steam

Our kit is designed to use the Tri-ang B.12 chassis and is all metal. The castings are full of detail and easily fit together by glueing. The illustrated instructions simplify assembly.

LOCO & TENDER BODY KIT £3-19-6
B.12 chassis and motor ready to run £1-16-6
Tender wheels **3/6** set. Name and number plates **8/9** set.

If you are interested in OO, TT or Narrow Gauge you need the 1966 GEM Catalogue. **1/6** post free.



George E. Mellor (Dept. M/M)

31a Rhos Road, Rhos-on-Sea, North Wales

Trade Inquiries Invited

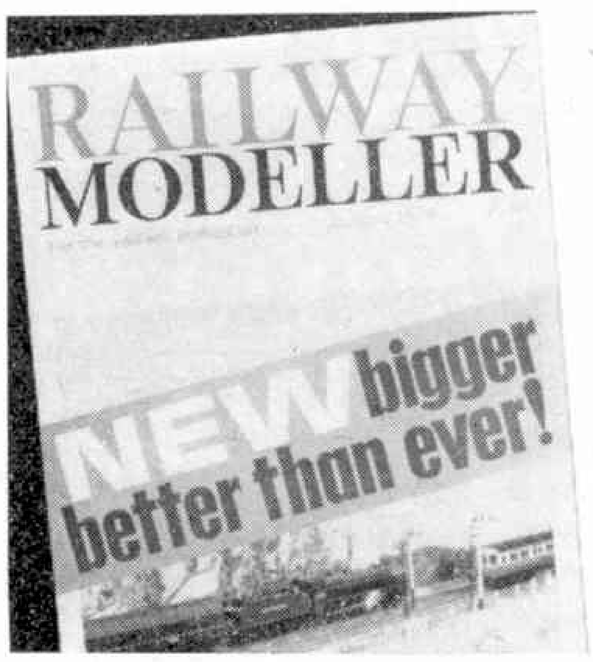
DON'T BE BULLIED

Get tough double quick. Morley Lightning-quick Ju-Jitsu Course shows how. Make any attacker helpless in a flash with your bare hands. Easy to learn; quick Jap combat tricks, and all knock-out blows. Fear no-one. Full 48-lesson course only 10/- post paid. Satisfaction or money back.

Develop Powerful Arms Course 3/6, **Powerful Chest** 3/6, **Powerful Abdomen** 3/6, **Powerful Legs** Course 3/6, The 4 Courses 12/6, **Tricks of Self-Defence** 5/-, **How to Conquer Nervous Fears** 3/6, **How to Develop a Perfect Voice** 3/6, **Swimming in 12 Easy Lessons** 3/4, **Secrets of Karate** (details free) 25/-, **114 Ways to Be Your Own Boss** 6/10, **Fortunes from Formulas,** 10,000 Trade Secrets 30/- (details free), **Profitable Stamp Dealing at Home** 8/10, **Money from Typing at Home** (35 ways) 5/10.

J. J. MORLEY, 28 (M.M.8) Dean Road, London, N.W.2.

3,000 Self-Help and "How" Books—List free.



Britain's top Model Railway magazine. Now better than ever with more pages . . . bigger pages . . . and a fresh, contemporary typographical style. All the usual favourite features but now with a bright new sparkle. It's *the* magazine for *all* railway modellers!

2/6 monthly

February issue out 25th. Jan.

PECO PUBLICATIONS LTD · SEATON · DEVON

Now Available the 1966 Edition of

OBSERVER'S BOOK OF AIRCRAFT

William Green

The most successful book ever published on this subject is an annual publication used throughout the world. Completely up-to-date and fully illustrated with 150 photographs and three-view spotter's silhouettes. Be sure to get your copy now from your local Bookshop only *5s net.*

FREDERICK WARNE & CO. LTD.

1–4 Bedford Court, London, W.C.2

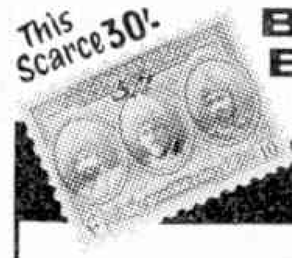
STAMP QUIZ

Do You Know :-

1. What country puts 'C.C.C.P.' on its stamps?.....
2. Does ICELAND issue stamps?.....
3. Name any country which has issued TRIANGULAR stamps?...
4. What country issues special CHRISTMAS stamps? .....

Prizes:—We will send you a special prize packet of 50 choice stamps free for each question you answer correctly. 200 stamps free (catalogued over 35/-) plus the famous Black Swan, for 4 correct answers. We will also send you our Famous New approvals. Please tell your parents.

UNIVERSAL STAMP CO.
(Dept. M.M.7)
Eastrington, Goole, Yorks.



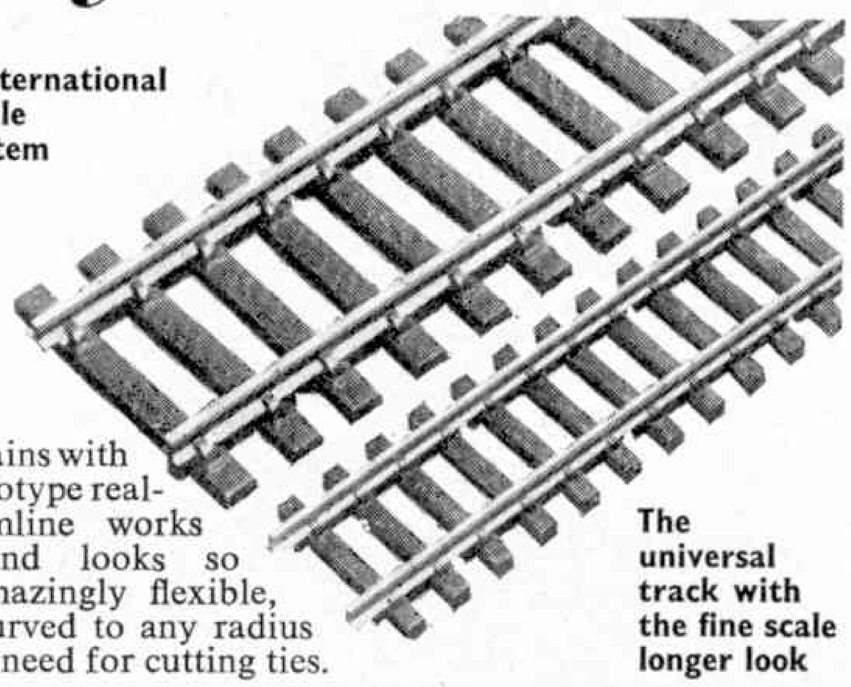
BRITISH EMPIRE MINT HIGH VALUE FREE

This 1948 Bahawalpur (Pakistan) High value commemorative has a face value of 10 rupees (15/-) and is catalogued at 30/-. This stamp comes free to you when you ask to see our book of special approvals which are of truly wonderful value (no need to buy any!)

THE STAMP CLUB
(Dept. M.M.3)
Eastrington, Goole, Yorks.

PECO STREAMLINE your track!

The British international universal scale trackage system



The universal track with the fine scale longer look

OO
Run your trains with smooth prototype realism. Streamline works superbly and looks so "right". Amazingly flexible, it can be curved to any radius without the need for cutting ties.

N gauge (OOO). The "small brother" of OO and engineered to the same high standard of precision. Nickel silver rail on unbreakable plastic base with 200 sleepers to the yard. Fully universal.

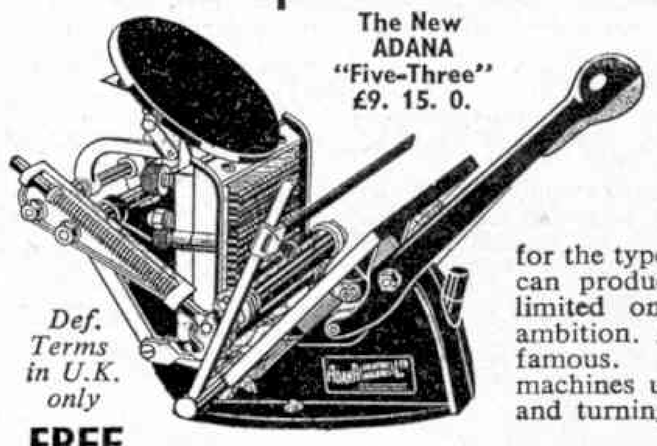
OO/9. Streamline in 9 mm. narrow gauge. Beautifully made with authentic "random" sleepering. Can be curved easily to match the tight turns and twists usual in narrow gauge practice.

Ask to see Streamline at your Model Shop

PRITCHARD PATENT PRODUCT CO LTD · SEATON · DEVON

AMBITION AND ADANA

Adds up to PROFITABLE PLEASURE



The New ADANA "Five-Three" £9. 15. 0.

Def. Terms in U.K. only

If you are looking for a really absorbing, instructive hobby and have the ambition to earn EXTRA CASH then start to get ahead NOW—by PRINTING at home with an **ADANA!** Your customers are all around you, waiting for the type of printing jobs the **ADANA** can produce. The potentialities are limited only by the scope of your ambition. Adana machines are world-famous. They are real printing machines using standard printers' type and turning out first-class work.

FREE
A sample of real printers' type, as used in **ADANA Machines** for all who write for details.

ADANA LTD (Dept. MM29)
15/19 Church Street, Twickenham, Middlesex
London Branch: 8 Grays Inn Rd., W.C.1.

THE EDITOR

has an extensive collection of 'vintage' model aircraft engines, the display of which has formed an attractive centre-piece at many model exhibitions. If you have any pre-1950 model diesel or petrol engines that you would like to dispose of he would be very pleased to hear from you. The Editor also maintains a comprehensive file of flying scale model KIT plans (not magazine plans). He is constantly on the look-out for additions to the collection—the older they are, the better! Write to:

THE EDITOR, MECCANO MAGAZINE,
Thomas Skinner & Co. (Publishers) Ltd.,
St. Alphage House, Fore Street, London, E.C.2.

DOUBLE YOUR ADHESIVE POWER WITH SECCOTINE

Use either new No. 2 P.V.A. Seccotine for most plastic or household uses. Fast setting, oil-proof, waterproof and heatproof.

STILL ONLY **1'6** PER TUBE

SECCOTINE No 2 P.V.A.
GENERAL-PURPOSE ADHESIVE

Or Standard Seccotine—indispensable to every handyman for over seventy years. Its sheer adhesive power is known everywhere.

STILL ONLY **1'3** PER TUBE

SECCOTINE

Sole Manufacturers:
McCaw Stevenson & Orr Ltd. Belfast

GAMAGES

NEW 'SPORTSMAN' CYCLE

With 'Sturmey-Archer' 3-Speed Gear

ONLY **16** GNS. or 51/- Dep. & 12 Mthly. Pymts. of **25/-** (*Total* £17.11.0)

A huge contract with a well-known maker enables Gamages to offer this superb quality cycle, with first-class specification, at this

SENSATIONALLY LOW PRICE

Specification: Gents. 19", 21" or 23". Blue enamel with double Gold colour lining. Fully brazed frame. Quick-release fork ends. 26" x 1⅜" wheels. "All Rounder" handlebar with adjustable stem. Caliper brakes. Sports pattern mudguards. Rubber pedals. **CYCLE LIST FREE.**

Lady's model 19" or 21" frame with chainguard. **£17.5.0.** or 52/- Deposit and 12 Monthly Payments of **25/9** (*Total £18.1.0.*)

CARR. PAID G.B. (Mainland)

GAMAGES, HOLBORN, LONDON, E.C.1 **HOLborn 8484**

FOR PERMANENT RESULTS . . . MODEL IT IN

Plastone

Regd. Trade Mark.

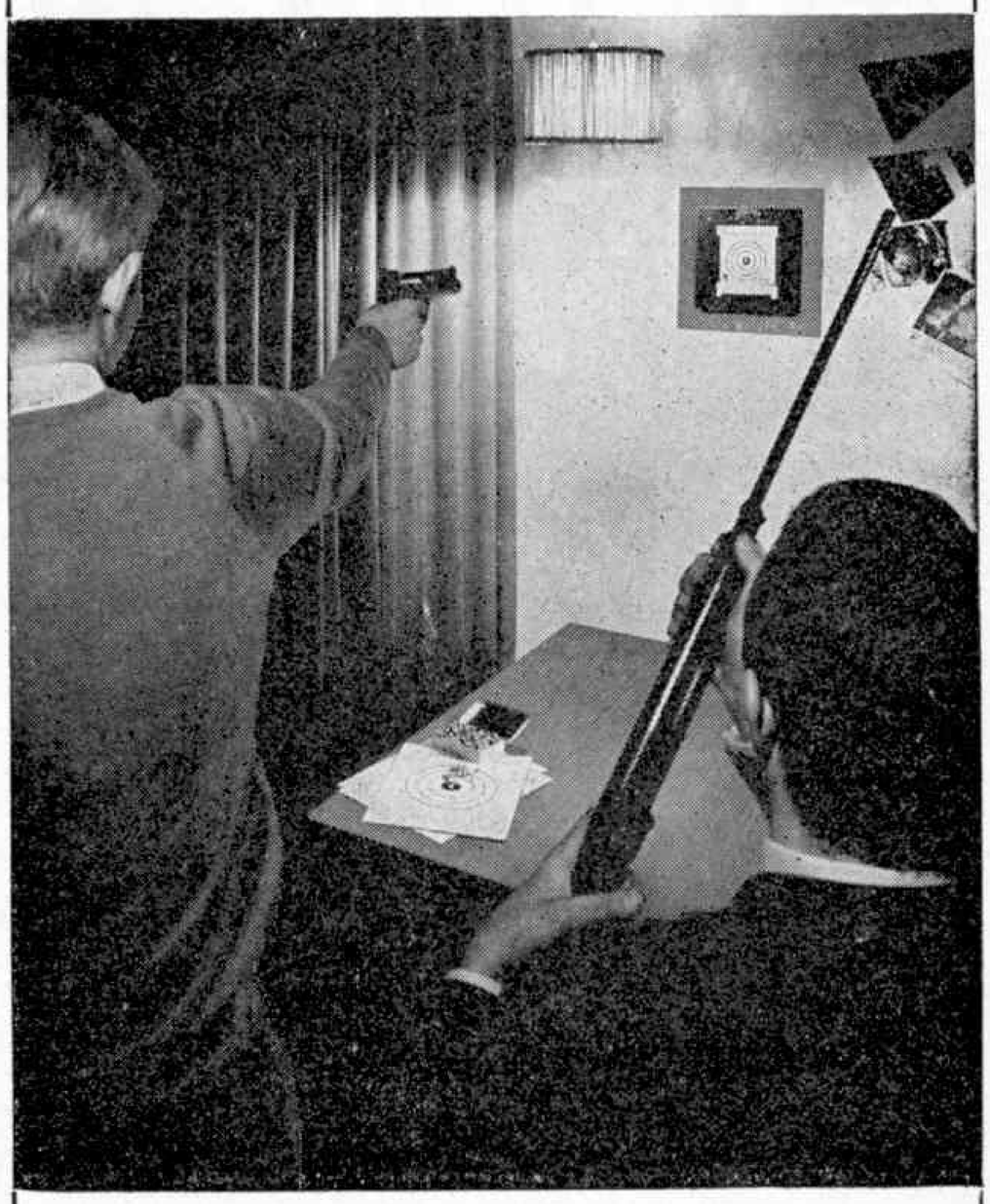
—the self-hardening modelling material.

Send for sample tin and booklet 4/9 (including postage) to sole Manufacturers—

Harbutt's Plasticine Ltd., Bathampton, Bath, Somerset.

INDOOR SHOOTING

made easy for everybody!



With the famous Webley air pistols and air rifles, there is no need to 'wait on the weather' for shooting fun. You can enjoy shooting right in your home today, safely — simply. The whole family can have hours of sport, whilst learning to handle guns with responsibility and confidence — shooting like the experts.

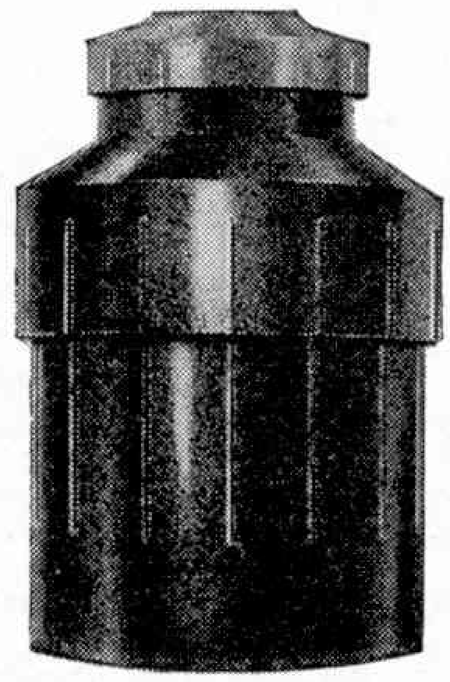
The perfect complement to all Webley air weapons — Webley target holders, strongly made with wide splash aprons — will catch and hold your pellets, prevent damage to walls and retain your targets securely. They are available in three sizes — 10″ x 10″ x 1″, 6½″ x 6½″ x 1″, or 4½″ x 4″ x 1″.

Improve your skill and accuracy with Britain's finest range of air weapons — THE JUNIOR or PREMIER AIR PISTOL, THE JAGUAR, RANGER, FALCON or MARK III AIR RIFLE — there's a weapon for all, each ideal for indoor or outdoor shooting.

Illustrated Webley catalogue of air rifles, air pistols and accessories sent on request. Please enclose 4d. stamp for postage to:—

Webley & Scott Ltd

37/E/F PARK LANE, BIRMINGHAM, 21



JOHNSON UNIVERSAL DEVELOPING TANK

(designed by practical photographers to do a better job)

1. easy to load with roto feed device. 2. large filling funnel. 3. takes 4 sizes of film—120/620, 127, 35 and 16 mm; takes two at a time of 120 or 127. 4. lid easy to replace in dark. 5. empties easily, cleanly and rapidly. 6. leak-proof with screw-on lid. 7. ribbed to prevent slipping in wet hands. 8. novel system of light trapping eliminates "spluttering". 9. design based on years of experience and manufacture. 10. made in black polystyrene. 32/6 at your stockist.

JOHNSONS
OF HENDON LTD

HAVE YOU A 2-RAIL LAY-OUT?

Then try just one FLEISCHMANN loco—prices from 58/11 to £9— will run on any 2-rail track— negotiate any 2-rail point—and will give a power and smoothness of control that will amaze you.

1965/66 CATALOGUE 2/9 inc. post

KING CHARLES SPORTS CENTRE

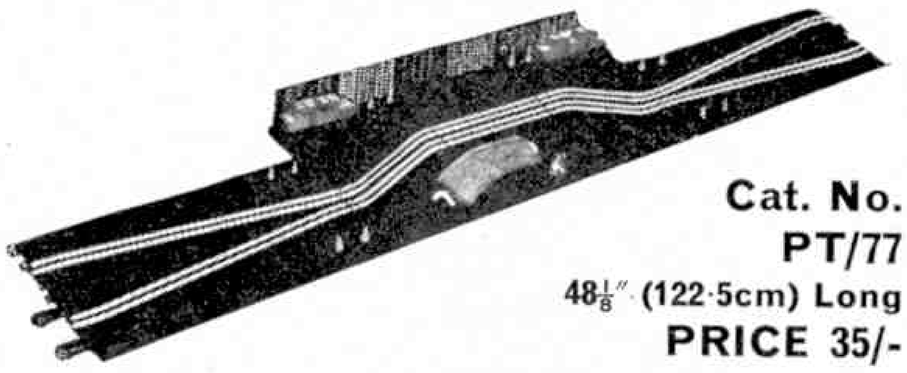
MODEL RAILWAY SPECIALISTS
RAILWAY HOUSE,
18 KING CHARLES STREET, LEEDS, 1.
Tel. 26611

GO! with SCALEXTRIC REGD.

Now start adding that extra track and have all the excitement of watching your Scalextric Set grow into that dreamed-of super layout.

Over 30 different exciting track sections to choose from.

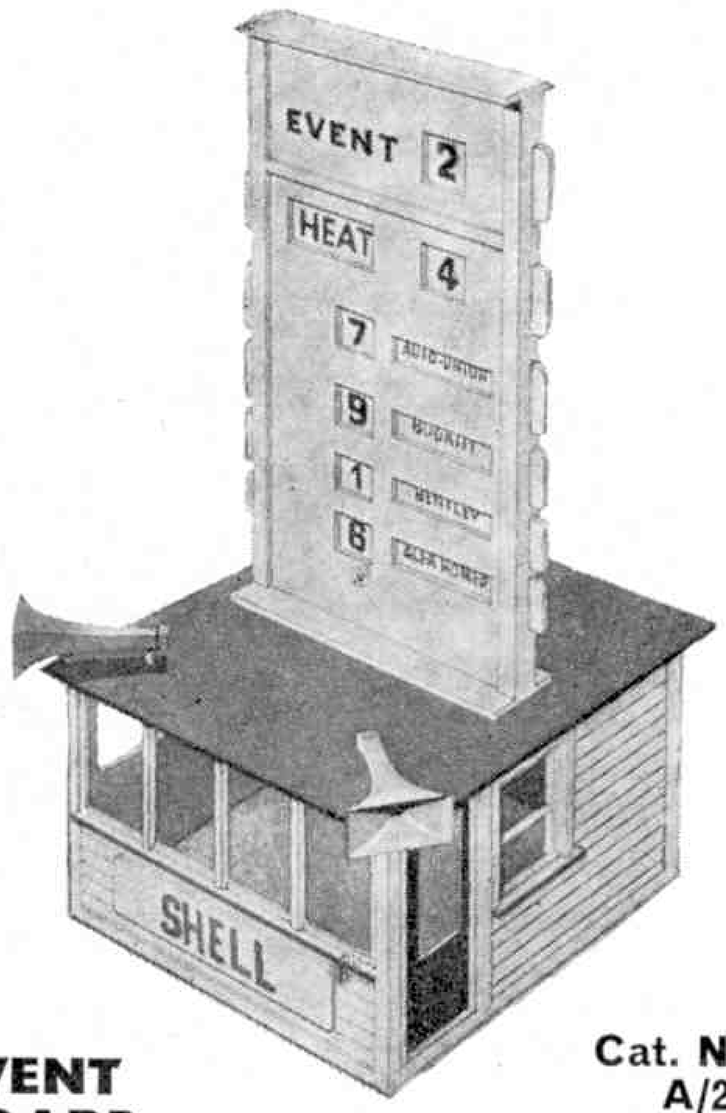
'GOODWOOD' CHICANE SET



Cat. No. PT/77
48⅛" (122·5cm) Long
PRICE 35/-

Two 'Goodwood' Chicane Sets make an excellent 4-Lane Chicane.

Add life to your circuit by adding from the wonderful Scalextric range of trackside buildings, figures and accessories.



EVENT BOARD AND HUT

Cat. No. A/201
PRICE 12/6d

THE ACCEPTED STANDARD IN SCALE MODEL MOTOR RACING

Scalextric Cars will keep you in front— GO WITH SCALEXTRIC to all race meetings.

Grande Prix Cars
Competition Cars
Sports Cars
Grand Touring Cars
Vintage Cars
Motor Cycle Combinations
Go-Karts

Cat. No. C/75

MERCEDES 190SL
(White or Blue)

PRICE: 29/6d

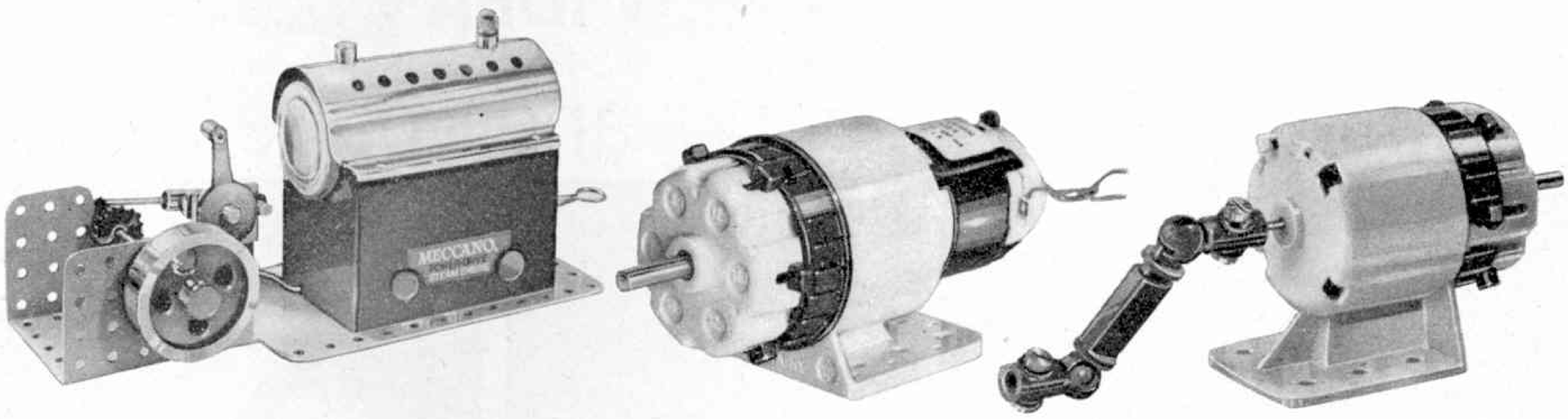
The ever increasing Scalextric range of super Cars, Track and Accessories will bring fantastic realism and super excitement when added to your circuit. Keep in touch with your dealer to see all the latest additions.

THE WORLD'S MOST COMPLETE MODEL MOTOR RACING SYSTEM

MINIMODELS LTD · HAVANT · HANTS · ENGLAND

FORWARD OR BACKWARD, UP AND DOWN, LIFT, SPIN, PULL, PUSH

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 68/6

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 49/6

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 29/11

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

MECCANO® POWER DRIVE SERIES

COMPLETE WITH FULL INSTRUCTIONS FOR USE

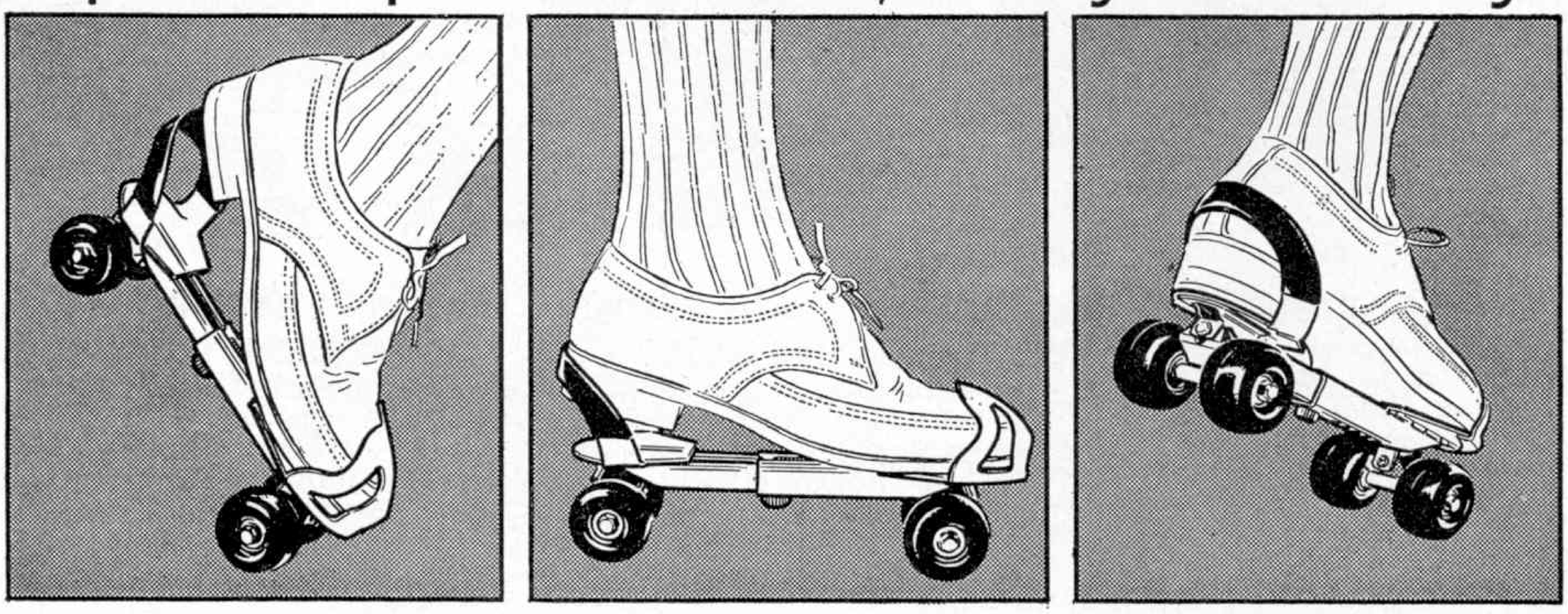
Meccano Ltd., Binns Rd., Liverpool

much more fun!

Super-Skates

THE REVOLUTIONARY NEW IDEA BY MECCANO

slip on . . . push . . . click, and you're away!

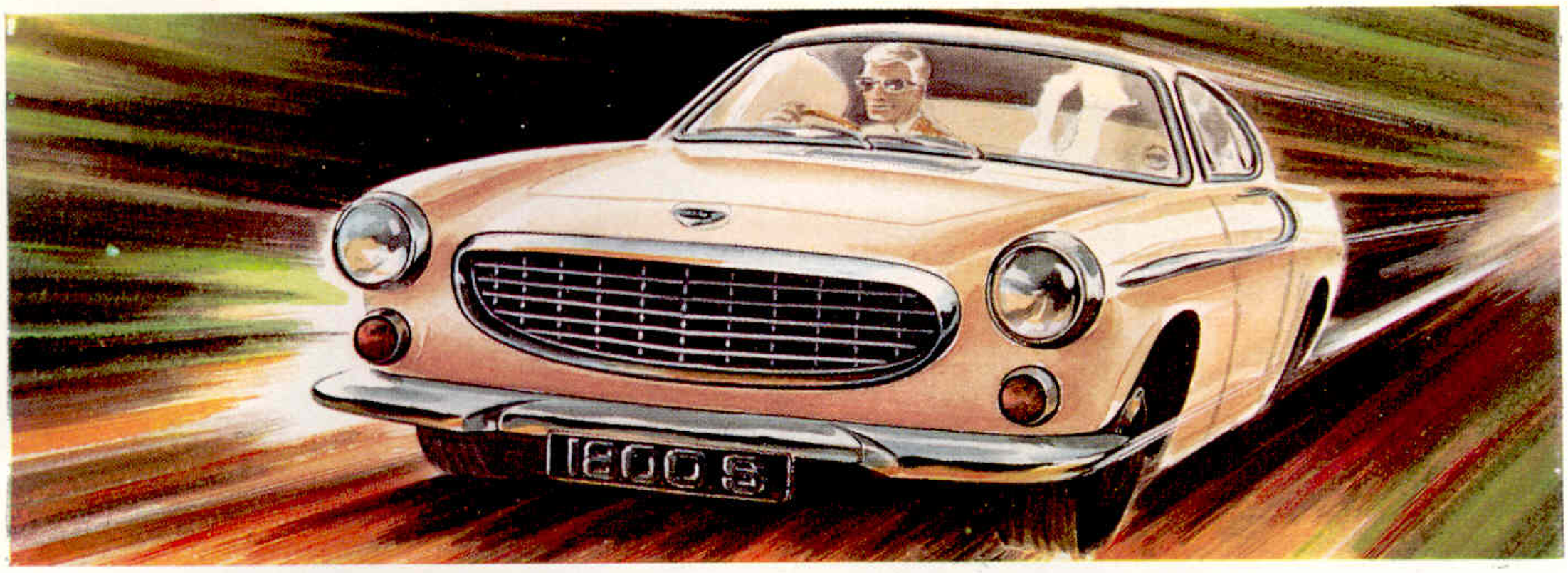


Much better than skating — try super-skating. On Super-Skates there's only a 4 second countdown and you're away! Just pick 'em up, click 'em on and skate. No straps, No keys, No maintenance. Super-Skates can't come off accidentally. And they're built extra-tough to last. **49/6**

- ☐ Spring loaded front for instant correct fit
- ☐ Thumbscrew adjustment — age 4 to 14
- ☐ Safety hubs on super silent rubber wheels
- ☐ Toe and heel guards prevent shoe scuffing

SUPER-SKATES ARE THE ONLY NO-STRAP, NO-KEY SKATES IN THE WORLD

Made in England and guaranteed by Meccano Ltd.

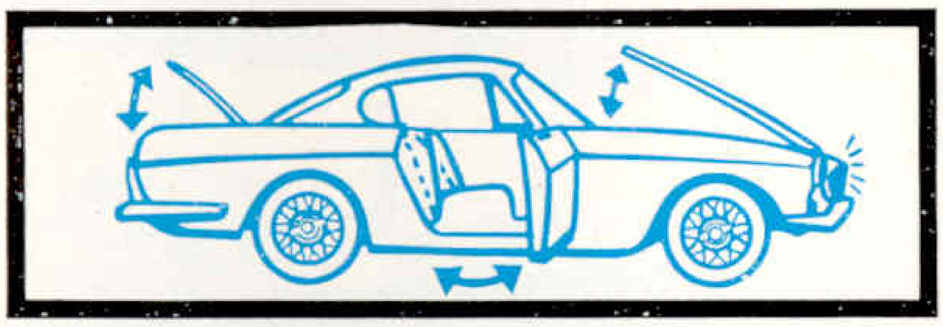


TWO SUPER NEW DINKY MODELS

Volvo 1800 S • Coca-Cola Truck

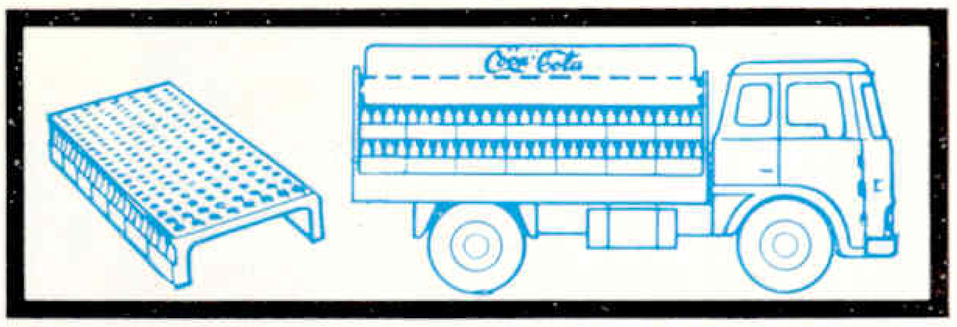
Another winner from the Continent with wonderful Dinky action features. Bonnet opens to show detailed engine. Boot lid lifts up. Doors open and seats fold forward. Jewelled headlights, all-round suspension and wire wheels.

Model No. 116 Length 4⅛" Price **9/11**



Load and unload this delivery truck in real Coca-Cola colours! There are six individual detachable "crates" which lift on and off the rugged Bedford T.K. chassis. Complete with genuine Coca-Cola sign.

Model No. 402 Length 4¾" Price **8/11**



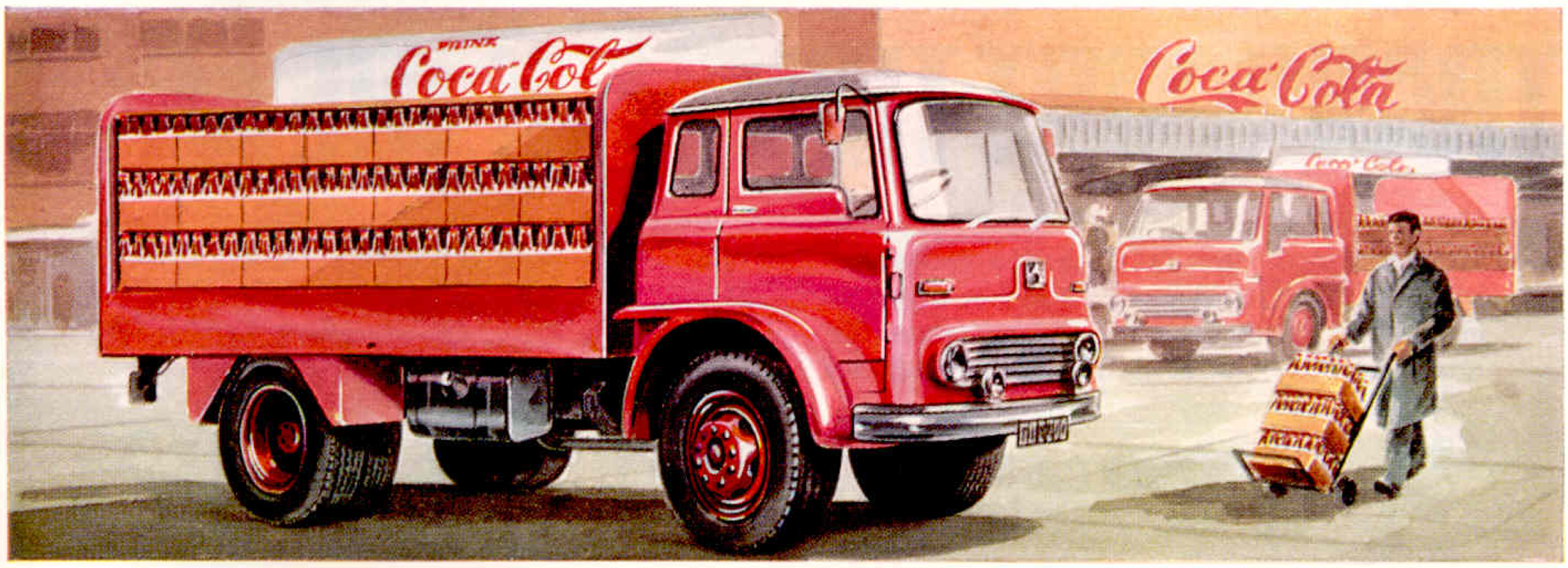
Ask for them at your toy shop

Always something new from

DINKY TOYS®

PRECISION DIE-CAST SCALE MODELS

From Hamleys, Harrods, Gamages, Selfridges and all good toy shops. Manufactured by Meccano Ltd., Binns Road, Liverpool.



Lift-off! *New Brooke Bond Picture Cards*

TRANSPORT THROUGH THE AGES

Planes, trains, ships, cars ! Here's the whole history of transport, from horses and camels to rockets and jets ! All colourfully illustrated and fully described in the new Brooke Bond picture card series. Out now ! Ask your grocer for a colourful, illustrated album to take all 50 cards in the new series. It costs only 6d. (Or write to Brooke Bond Tea Limited, Dept. PC, Goulston Street, London E.1. Enclose 6d. postal order.) Cards and albums available in U.K. only.

Picture card free in every packet of BROOKE BOND TEA

Published by Thomas Skinner & Co. (Publishers) Ltd., St. Alphage House, Fore St., London, E.C.2. Printed by James Cond Ltd., Charlotte St., Birmingham 3