MECCANO® Magazine

JANUARY 1971

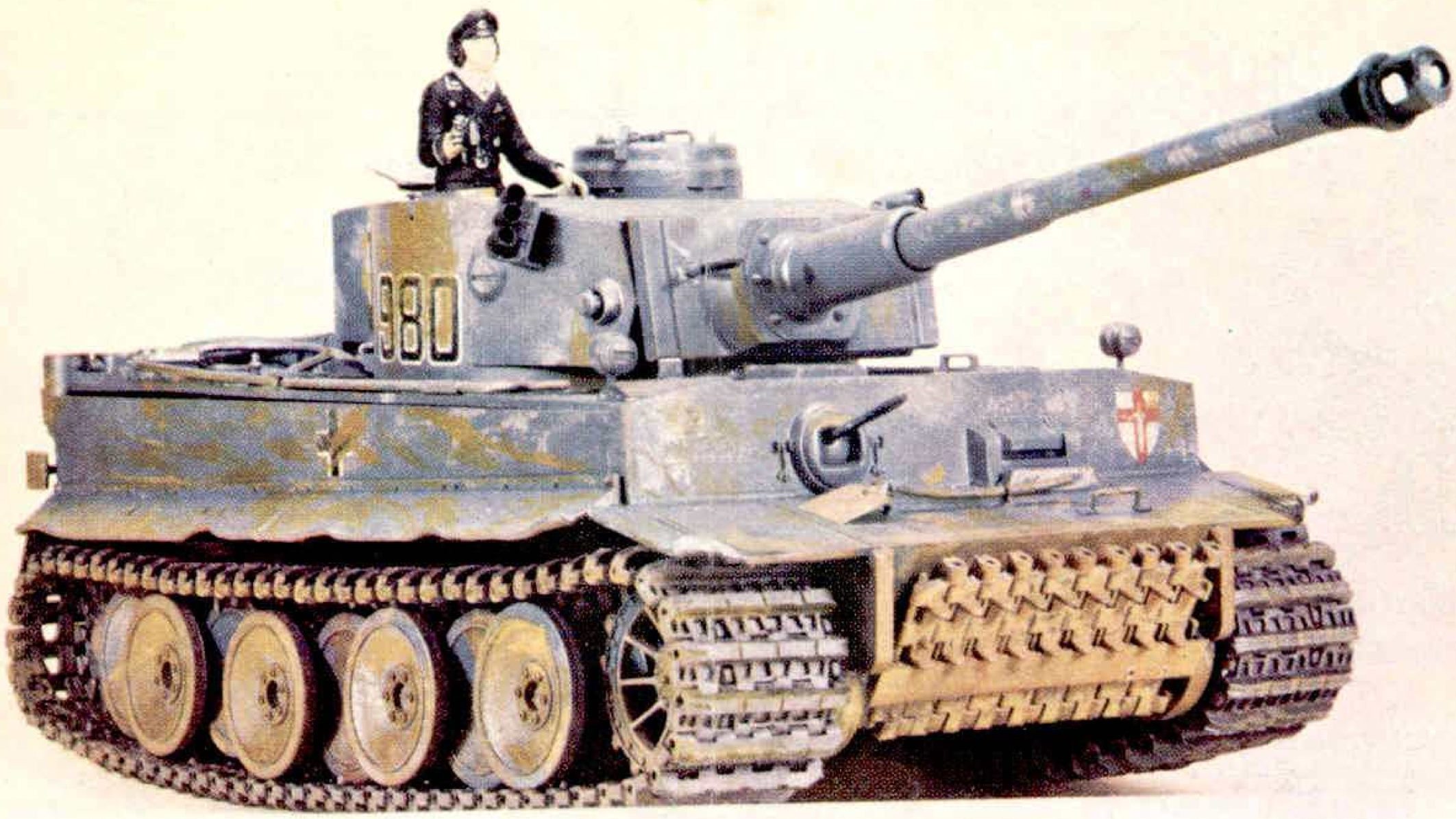
MODEL ENGINEER EXHIBITION 1971

★ STAMPS ★
★ MECCANO MODELS ★
★ STORY OF NATURAL GAS ★

MAP

THREE SHILLINGS (15p)
HOBBY MAGAZINE
U.S.A. AND CANADA 75 CENTS.

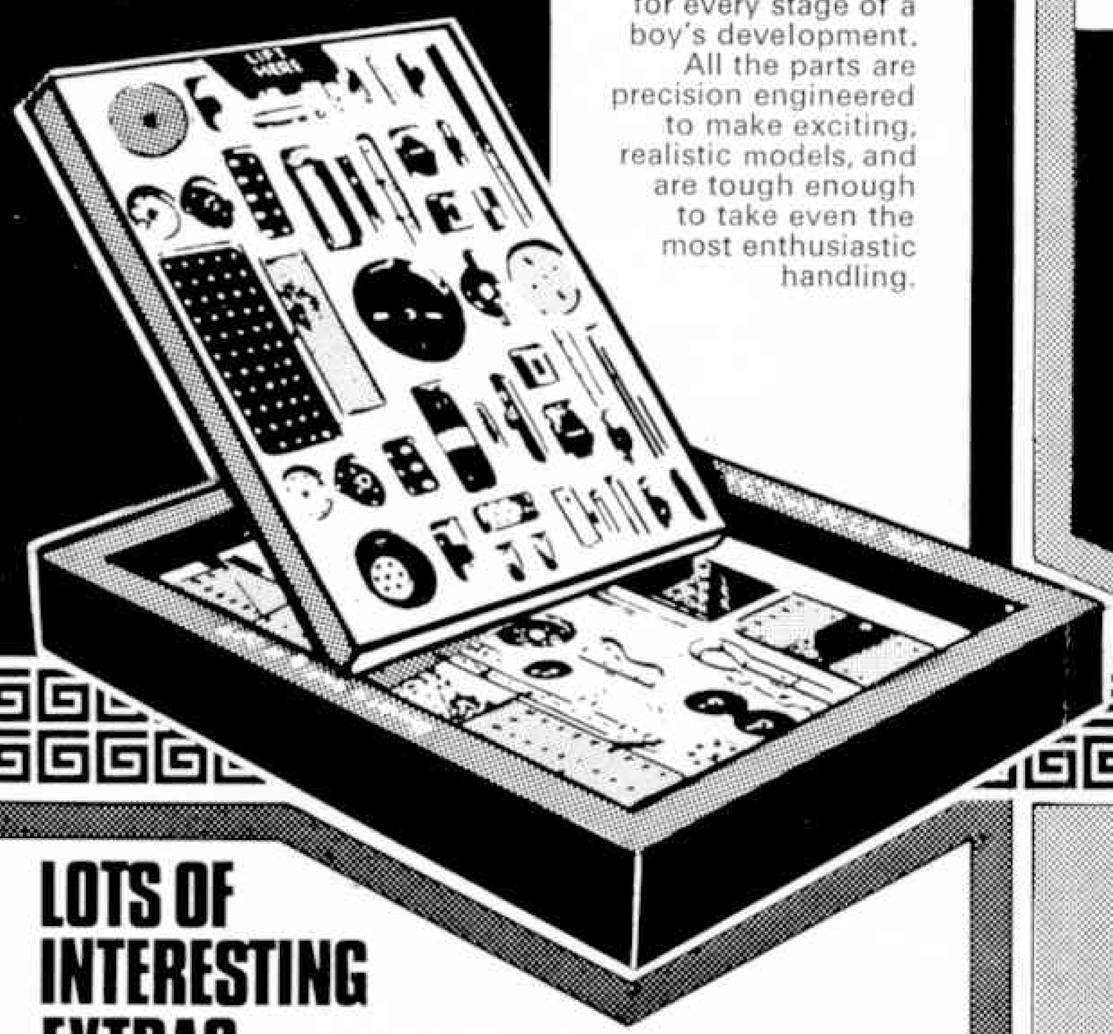
THE PRACTICAL BOY'S LEISURE TIME MAGAZINE



MECCANO®

FABULOUS SETS FROM 19/11 to £79.5.0

There are ten basic Meccano Sets catering for every stage of a boy's development. All the parts are precision engineered to make exciting, realistic models, and are tough enough to take even the most enthusiastic handling.



SPECIAL SETS

Meccano enters the space-age! You can get super motorised and electronic sets which add an exciting new dimension to model-making, a fascinating battery-operated electrical set, and an electronic-control set which adds automatic control to motorised models.

electronic power press built from 5ME set.

LOTS OF INTERESTING EXTRAS THAT MAKE MARVELLOUS PRESENTS

Meccano extras mean extra fun and extra versatility! There's a super tool set, a gears set, a mechanisms set, plus eight conversion sets that keep apace with growing imaginations.

EXCITING POWER UNITS *FROM 12/11*

Rotary power, lifting power, driving power—Meccano gives you the lot! There are six motors to choose from—3 electric, 2 clockwork and one steam. Illustrated is a simple, safe, hand-operated generator for producing up to 12 volts DC—£1.7.0.

*U.K. recommended retail prices subject to alteration.

Get your copy of the colour leaflet showing all the imaginative gift ideas for MECCANO MEN!

MECCANO®
puts the whole world in a bright new box

MECCANO® Magazine

JANUARY 1971 VOLUME 56 NUMBER 1

Meccano Magazine, founded 1916.

Editorial Director
D. J. LAIDLAW-DICKSON

Editor
DAVE ROTHWELL

Consulting Editor for MECCANO-Tri-ang LTD.
J. D. McHARD

Advertising Manager
ROLAND SUTTON

MAP **HOBBY MAGAZINE**

ABC
MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS

FRONT COVER

Two splendid motorised tanks from the superb "Tamiya" range create this unusual and we think, rather attractive cover, for this our first issue of the New Year.

The top photograph is an electric powered 1/21st scale Tiger 1, the famous German Tank of World War 2. It features plenty of detailing, a "commander" figure and has fully independently sprung bogies.

Although the lower tank appears to be almost the same size as the Tiger it is, in fact, only 1/35th scale which makes it almost half the size of the Tiger! It too is electrically driven and for its small size, sports some excellent detail.

Both these tanks plus a further 18 from the Tamiya range will be used on the remote controlled tank courses at this year's Model Engineer Exhibition.

NEXT MONTH

We get into 1971 in great style with a wide variety of features which will provide something of interest for all readers. Meccano enthusiasts, Spanner informs us, that for the February issue he will be providing us with a descriptive feature for advanced modellers on how to build a live steam wagon. For younger builders there will, of course, be a small outfit model although at time of going to press exactly what it will be has not been decided. Readers may remember our October issue provided an article on the incredible new Bond Bug 3 wheeler and naturally enough someone has now built a Meccano model of this unusual car and this will provide yet another interesting model which we are sure Meccano enthusiasts will be interested in.

On the general side, we have some rather unusual and interesting articles worth mentioning: Richard Wiggan provides a very interesting feature on Ocean Weather Ships and describes the vital work which they perform. For railway lovers we include, care of R. Angove, an article on the interesting steam vehicles to be found in Cornwall.

With the completion now of Charles Grant's popular series "Battle" we thought it might be an idea to try a spot of Battle gaming World War 2 style here at the office and will be telling you how we, as absolute novices to this interesting pastime saw our first action.

In addition to the above there will of course be many other interesting articles, plus our usual regulars such as 'Among the Model Builders' and 'Stamps.'

Advertisements and Subscription Offices: Model & Allied Publications Ltd., 13-35 Bridge Street, Hemel Hempstead, Hertfordshire. Tel.: Hemel Hempstead 2501-2-3.

Second class postage rates paid at New York, N.Y. Registered at the G.P.O. for transmission by Canadian Post. American enquiries regarding subscriptions, news stand sales and advertising should be sent to MECCANO MAGAZINE, Eastern News Distributors Inc., 155 West 15th Street, New York, N.Y. 10011, U.S.A., U.S.A. and Canada direct subscription rates $5 including index.

This periodical is sold subject to the following conditions: that it shall not, without the written consent of the publishers, be lent, re-sold, hired-out or otherwise disposed of by way of Trade at a price in excess of the recommended maximum price and that it shall not be lent, re-sold, hired-out or otherwise disposed of in a mutilated condition, or in any unauthorised cover by way of Trade; or affixed to or as part of any publication of advertising, literary or pictorial matter whatsoever.

Publishers of Aeromodeller, Model Boats, Model Cars, Model Engineer, Radio Control Models, Model Railway News, Scale Models.

CONTENTS

ON THE EDITOR'S DESK 11
News and Views by the Editor

STORY OF NATURAL GAS 12
Science feature from Charles Rigby

THE BRITISH WILDLIFE ADVENTURE SOCIETY 16
Pat Merrett meets a group of young nature lovers

PLATFORM SWEEPER 18
A working model for advanced Meccano builders

DINKY TOY NEWS 20
The latest from Binns Road

RoSPA HOUSE 22
A school for drivers

BREAKDOWN TRUCK 24
A simple working model for the youngsters

CHRISTMAS TRAVEL IN BYGONE DAYS 26
Stage coach travel a hundred years ago

DON'T FORGET THE POSTMAN 28
The history of the postal service

AIR NEWS 30
John W. R. Taylor on Aviation

AMONG THE MODEL BUILDERS 32
Readers' Meccano ideas

STARTING A MODEL COLLECTION 34
Looking after your plastic kits

SWINDON RAILWAY WORKS 36
How locomotives are made

STAMPS 38
Operettas on stamps

MECCANO COMPETITION 39
Details of the 1971 contest

CURIOUS CLOCKS 40
A look at the historical clocks in Britain

HAVE YOU SEEN 43
The latest products reviews

MODEL & ALLIED PUBLICATIONS LTD.
13-35 BRIDGE STREET, HEMEL HEMPSTEAD, HERTFORDSHIRE

MODEL ENGINEER EXHIBITION 1971

MODEL ENGINEER EXHIBITION MODEL ENGINEER EXHIBITION

40th MODEL ENGINEER EXHIBITION

Seymour Hall, London, W.1

29 Dec. '70 — 9 Jan. '71

★ **29th opens 12 midday: Press. 2.30 p.m.: Public**

Model Boats, Cars Aircraft, Locomotives Traction Engines Military Models Crafts

SPECIAL ATTRACTIONS

Last year's popular pool with working space around will be there again —located in the centre of the main hall. Aircraft will again be showing their paces above the pool. Boats will be available for visitors to try . . . The Society of Model and Experimental Engineers will be operating their famous passenger carrying model steam locomotives—some wonderful models at work under the direction as ever of Mr. Bill Carter. Other models under compressed air in action.

NEW ! A demonstration of steam ploughing by model traction engines (even better than when shown on TV !). The ECRA Championship car circuit (a little tight for room last year) moves into a larger hall Longer track, more spectator space. Jock Thin and Dick Smith welcome you again.

Other new attractions will include model soldiers, guns, dioramas. Display of woodwork and craft items. Demonstrations of various kinds. Small lecture theatre for film shows, model subject talks.

SEE & BUY

Full model trade support with well stocked stands. Stands have been taken by Beatties of London, Model Hobby Consortium, Myfords Ltd., Graham Farish Group Sales Ltd., The Turntable, Kennions, Traction Engine Enterprises, Wall Models, Historex, Mainstream Productions Ltd., Plaistow Pictorial, I.C.I. (Dufix), Crawley, Walker.

SOUVENIR GUIDE

Another CHRISTMAS EXTRA issue of *Model Engineer* will be coming out 2nd Friday in December with entries, trade stands, articles galore to assist the visitor and solace the stay-at-home.

FEATURES

RADIO CONTROL POOL
CAR RACING CIRCUIT
MODEL STEAM PLOUGHING
PASSENGER RAILWAY
MODEL TANK OBSTACLE COURSE
MODEL STEAM THRESHING
ELECTRIC POWERED AIRCRAFT

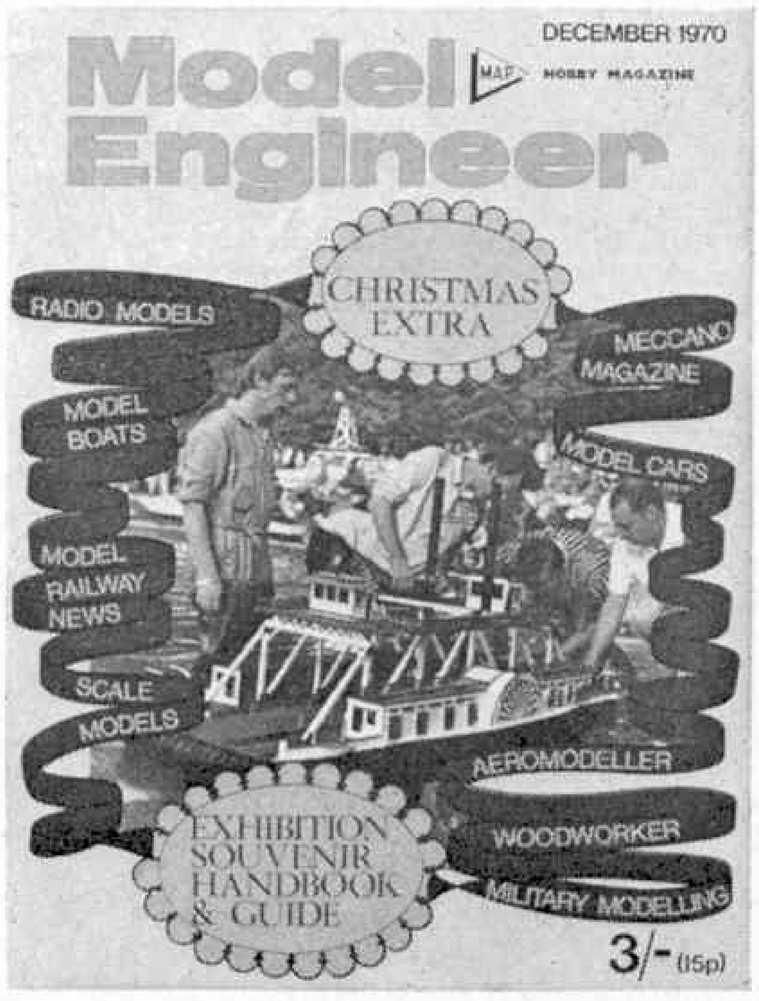
PARTIES

Many clubs will be organising parties to come. We shall be very happy to welcome them, give them reduced price bookings, also book up prepacked lunch boxes. Licensed Bar. Balcony Cafe.

Single and small number pre-booking tickets are available from these offices at Adult 4s. 6d. and Child 2s. 6d. Parties of more than ten: Adults 4s., Child 2s. Admission at the Pay-box is: Adults 5s., Child 3s. Any youngster at school is a child. Under five, admission free accompanied by an adult. Teachers i/c parties free—one per 10 in party.

★ Open Daily 10 a.m.-9 p.m., until Saturday, January 9th, closes 7.30 p.m. (closed Sunday).

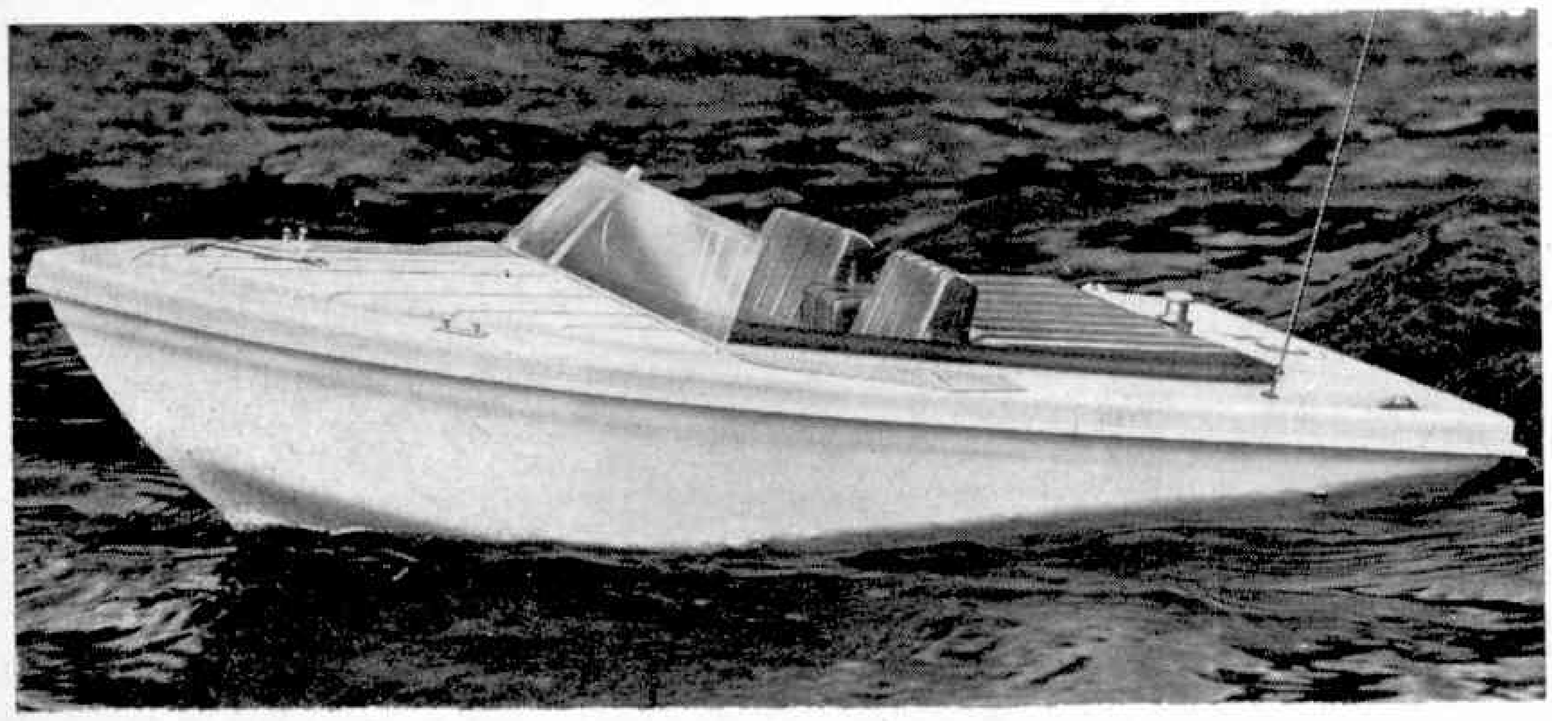
EXHIBITION MANAGER, MODEL & ALLIED PUBLICATIONS LIMITED, 13-35 BRIDGE STREET, HEMEL HEMPSTEAD, HERTS.



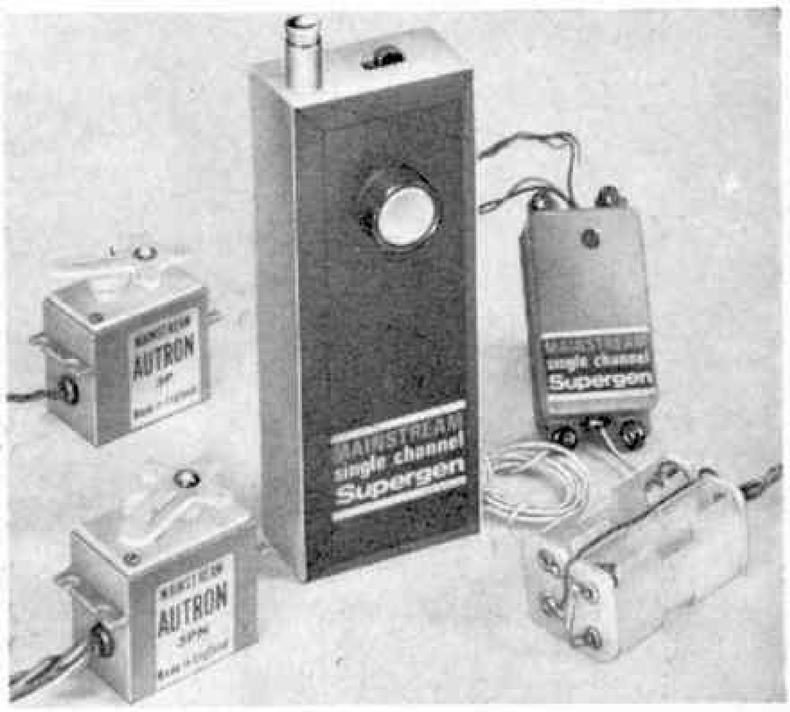
MODEL ENGINEER EXHIBITION MODEL ENGINEER EXHIBITION MODEL ENGINEER EXHIBITION

MAINSTREAM
THE PACEMAKERS/71

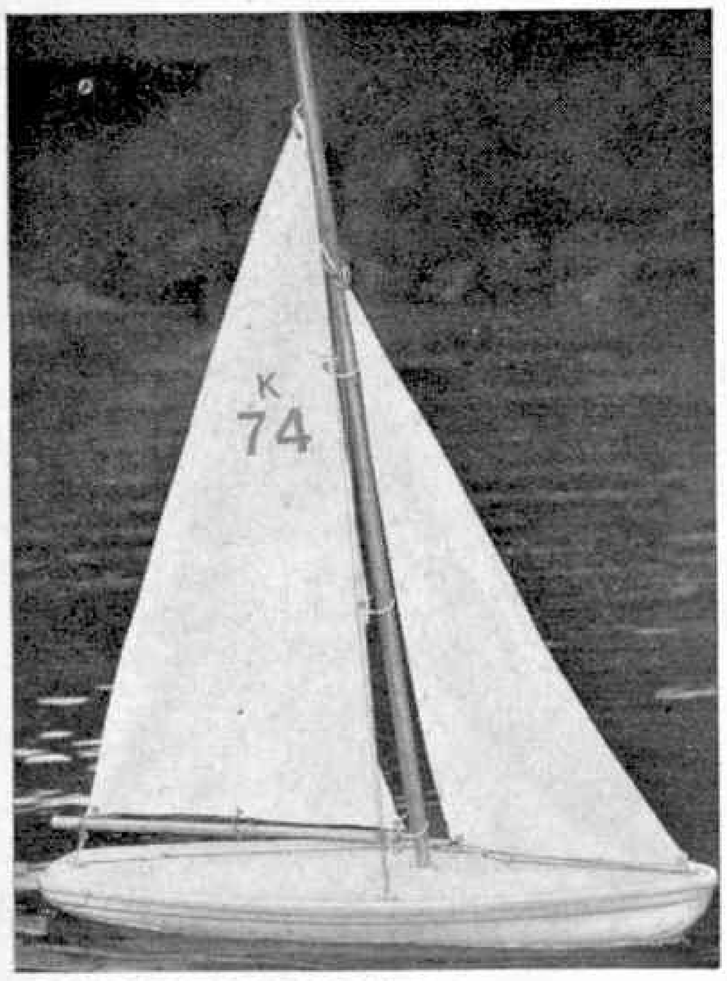
Range of action-packed kits for the young modeller



FURY SPEED BOAT fully radio controlled or in exciting kit form to build yourself.



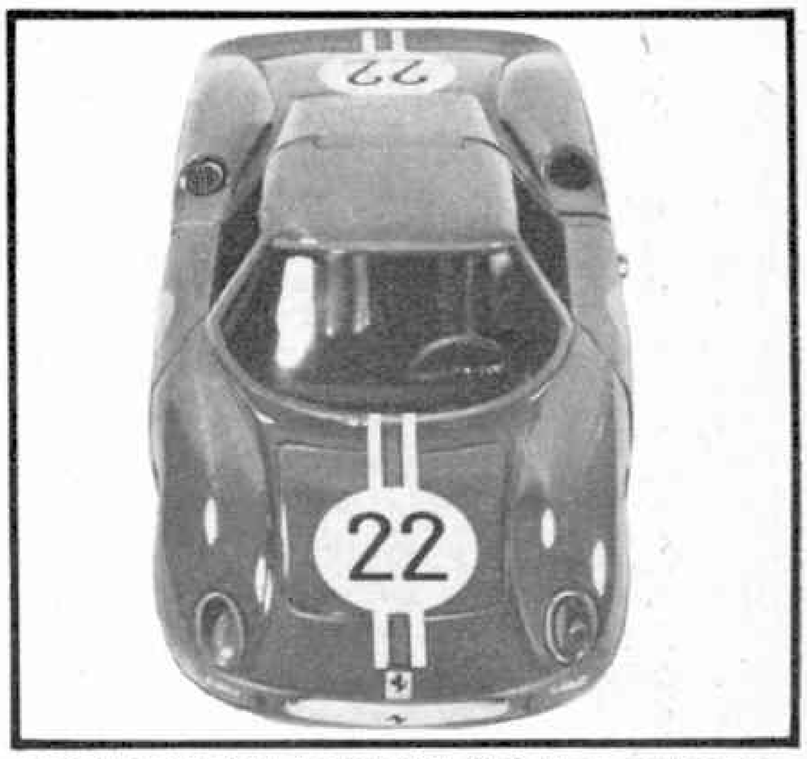
MAINSTREAM Single Channel R/C space era design to give full directional control at low cost. Full instruction manual makes installation easy for beginner or expert.
G.S/HET 2Tx & Rx + 2 Servos 3PN 3P **£28 15 0d**
S.C/GEN Tx & Supergen Rx. Relay & Harness **£13 18 0d.**



MAINSTREAM YACHTS fully rigable and guaranteed to sail, available in five sizes, illustrated K74.

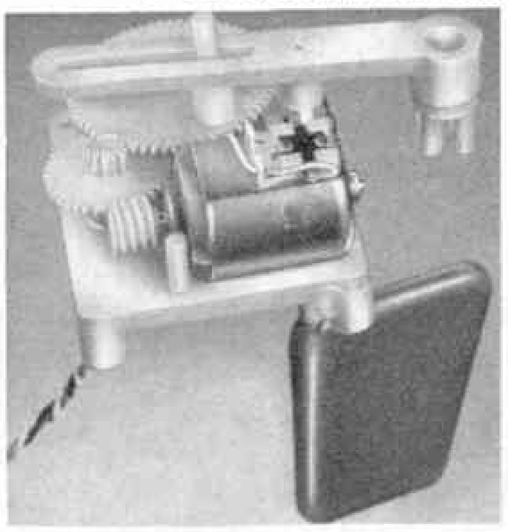
HOVERCRAFT P.P.1. KIT glides on a cushion of air - just like the real thing. Brilliantly designed, powerful electric motor included. **16/-**

MAINSTREAM power-packed **boat kits** four exciting quick-build 13" boats in this range - Motor Torpedo Boat, Speed Boat, Cabin Cruiser and Patrol Boat, complete with high powered electric motor. **16/-**

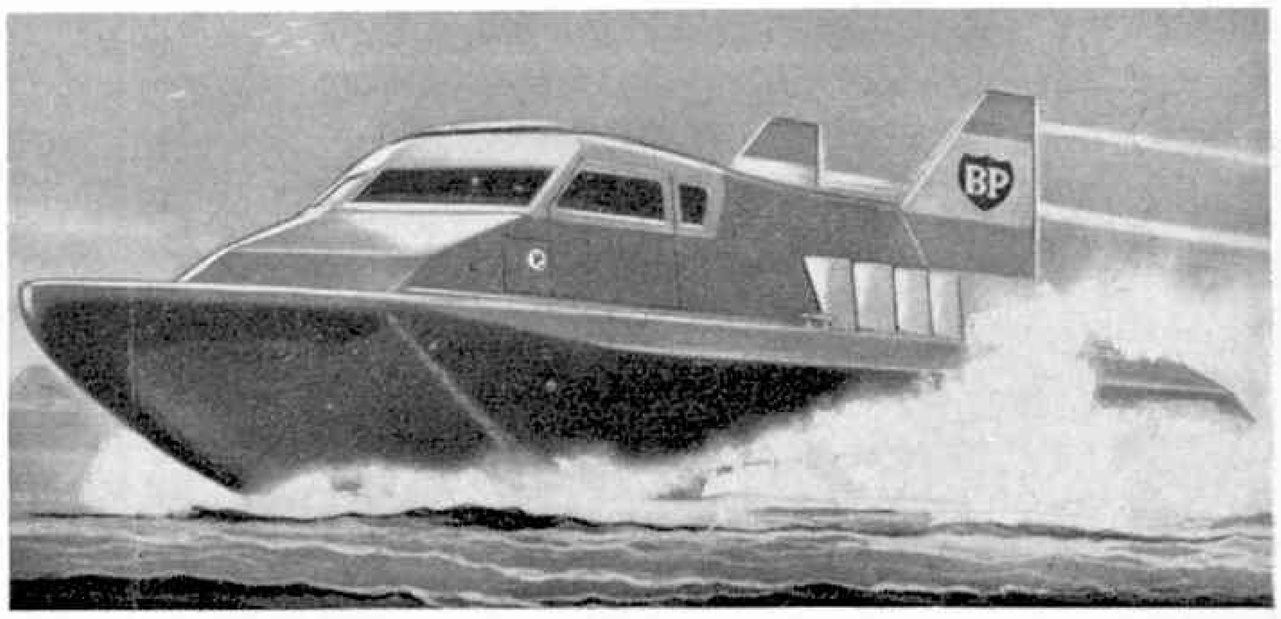


MAINSTREAM FERRARI KIT sleek, authentic detailed, 13" long electric powered car. This is a new dimension in kits and a must for the young modeller. Suitable for S.C. Radio Control installation. **£3 10 0d.**

3P MARINE SERVO with built-in switch unit. Only needs wiring to motor and power to give forward, stop and reverse. **£3 15 0d.**



AUTRONAUT SERVO
A complete unit with rudder, rudder tube and tiller arm. Fits directly into the boat giving complete steering control. **£1 17 0d.**



MEFA 11 HOVERCRAFT KIT will run at 16 knots over water on a cushion of air. All you need is a 049 Glow motor. **£1 0 0d.**

Model Railway News

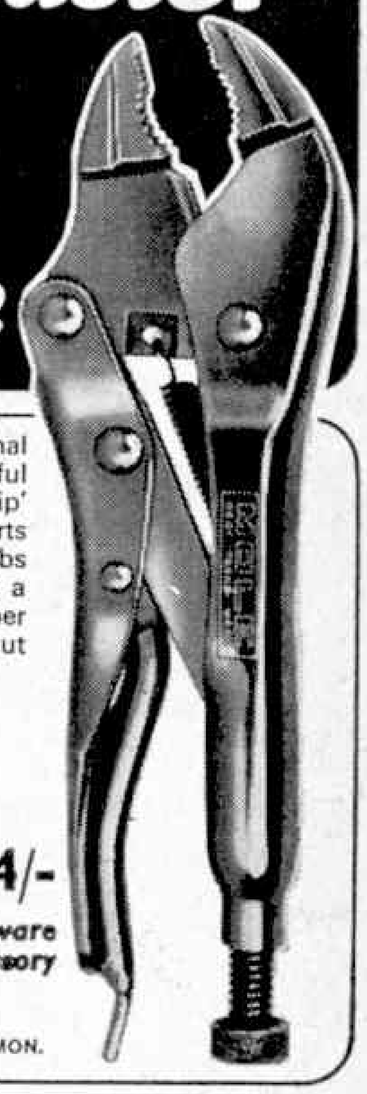
January issue on sale 11th December

Plenty for tram modellers in this issue. Ray Tustin's Southmet "K" class car is described, and Cyril Fry presents additions to his Irish tramway fleet.

From newsagents and model shops or from Model & Allied Publications Ltd. 13-35 Bridge Street, Hemel Hempstead, Herts.

Price 3s. plus 5d. first class postage

Model Making made easier with Mini Mole



Incorporating unique features made famous in the original MOLE Wrench, this pocket size edition is particularly useful for model making and intricate D.I.Y. tasks. The 'self-grip' jaws can be locked-on to easily control obstinate small parts and materials involved in model making and so many jobs around the home and in the garage. The MINI MOLE is a multi-purpose tool in every respect — a hand vice, super pliers or adjustable clamp — no tool kit is complete without one. Ask for it by name.

MINI MOLE SELF GRIP WRENCH

14/-

Available from Hardware and Motor Accessory Shops everywhere.

M. MOLE & SON LTD. CRINDAU WORKS, ALBANY STREET, NEWPORT, MON.

BINDERS

in handsome leather cloth with gold blocked name plate on spine to take 12 copies of your MECCANO MAGAZINE. Copies open flat and can be removed unmarked as required.

price including postage 17/6d.

MECCANO MAGAZINE,
13-35 BRIDGE STREET,
HEMEL HEMPSTEAD, HERTS.

get the feel of the power-packed PARATROOPER

THE WORLD'S MOST ADVANCED AIR RIFLE
with the latest pistol grip

A.S.I. Paratrooper is the gun for the real man of action, with micro-adjustable sights, adjustable 2-pressure trigger and built-in rubber recoil pad to absorb kick-back from this powerful air rifle.

Only £12.19.6.

Two more remarkable air rifles from A.S.I.

SNIPER

A real marksman's weapon, that gives spot-on accuracy. Micro-adjustable backsight allows for windage and elevation. Tunnel foresight, 2-pressure trigger and rifled barrel. Amazing value at **£8.19.6.**

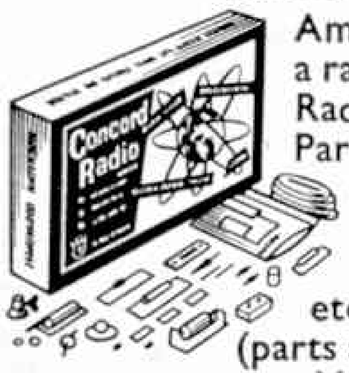
COMMANDO MK 3

A hunter's air rifle—an ideal fast-action gun with hunting sight for quick aim. Rifled barrel, 2-pressure trigger, tunnel foresight for protection in rough terrain—this is a hard working gun built to take hard use. **£10.19.6.** At all the leading gunsmiths and sports shops. Ask for colour leaflets.

Importers and Wholesale Distributors
A.S.I. Alliance House, Snape, Saxmundham, Suffolk. Tel. Snape 245.

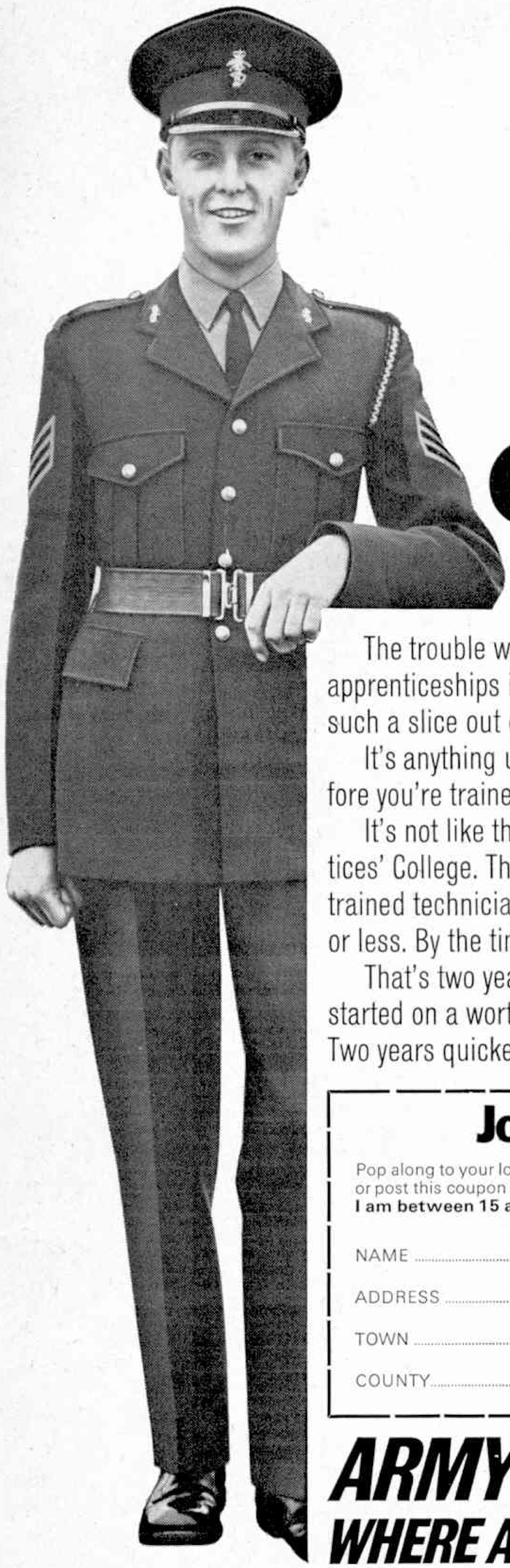
MAKES 5 DIFFERENT TRANSISTOR RADIOS

TOTAL BUILDING PRICE Last 250 **39/6**



Amazing Radio Construction set! Become a radio expert for 39/6. A complete Home Radio Course. No experience needed. Parts including instructions for each design. Step-by-step plan. All Transistors, loudspeaker (this only worth 15/-), personal 'phone, knobs, screws, etc. all you need. Box size 14" x 10" x 2" (parts avail. sep.) Send only 39/6 + 4/6 P. & P. Money back guarantee.

CONCORD ELECTRONICS LTD. (M.M. 14)
8 Westbourne Grove, London, W.2 (Nr. Bayswater Tube)
(Callers 9-6 inc. Sat.)



Make it by eighteen

The trouble with most ordinary apprenticeships is that they can take such a slice out of your life.

It's anything up to five years before you're trained.

It's not like that at an Army Apprentices' College. There, you can be a trained technician in only three years, or less. By the time you're eighteen.

That's two years quicker getting started on a worthwhile career. Two years quicker getting to the top.

You'd be surprised how many apprenticeships and trades are open to you at an Army Apprenticeships' College. In fact, over fifty. And the majority Trades Union recognised.

But there's more than just the apprenticeship training. There's the adventure; the excitement; the comradeship; the nine guineas a week; the ten weeks' paid holiday every year.

It's a great life at an Army Apprentices' College. It's one you could be enjoying.

Join the young professionals

Pop along to your local Army Careers Information Office (the address is in the telephone book under Army) or post this coupon to: Army Careers, MP6(A), Lansdowne House, Berkeley Square, London W1X 6AA.
I am between 15 and 17 and would like full details of an Army College Apprenticeship.

NAME .....

ADDRESS .....

TOWN .....

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

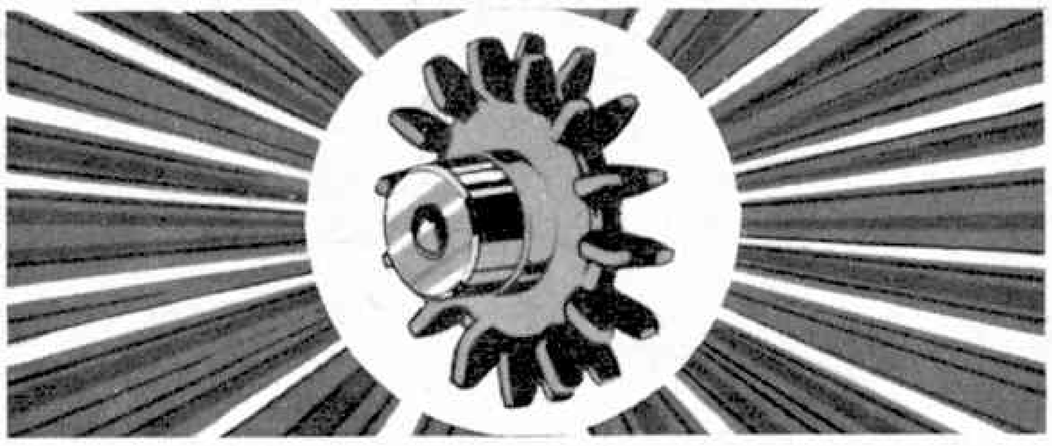
J41170501

ARMY APPRENTICES' COLLEGE
WHERE A GREAT CAREER STARTS AT FIFTEEN

NEW MECCANO NEWS

NEW PARTS

The Fantastic New Gear Wheel - No. 27f



AS A GEAR WHEEL

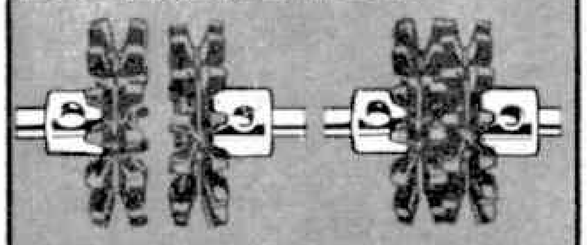
It will transmit drive at any angle

even up to 90°!

AS A ROAD WHEEL

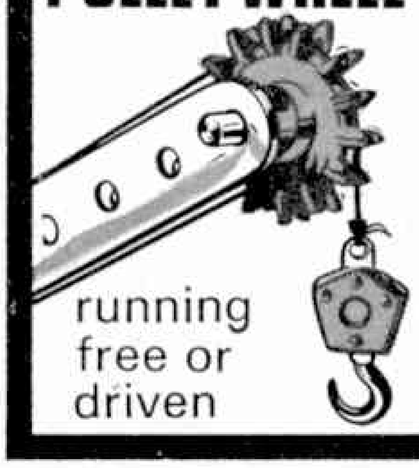
Fitted with a standard 1" tyre

AS A CLUTCH



face to face

AS A PULLEY WHEEL



running free or driven

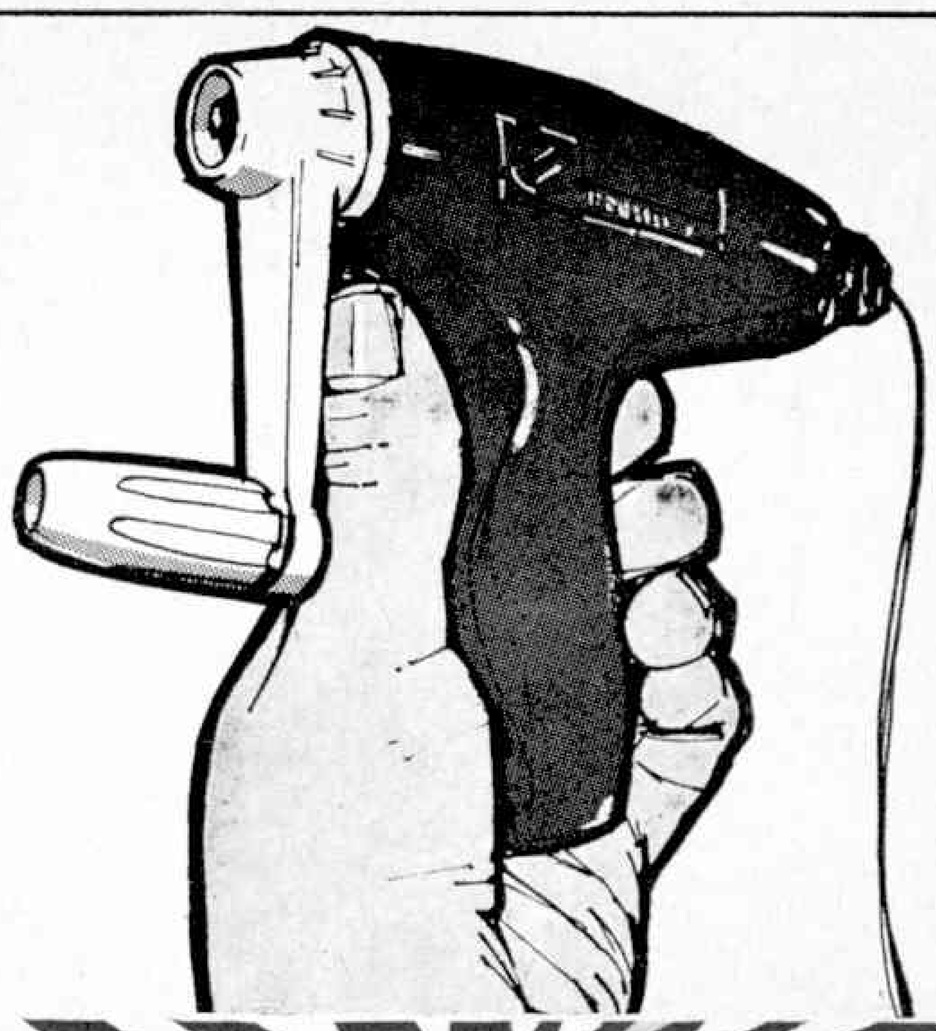
WHAT A WHEEL!!

A must for every Meccano enthusiast!

This is just one of the new Meccano parts. Ask your dealer for the new full colour spare parts list.

MECCANO®

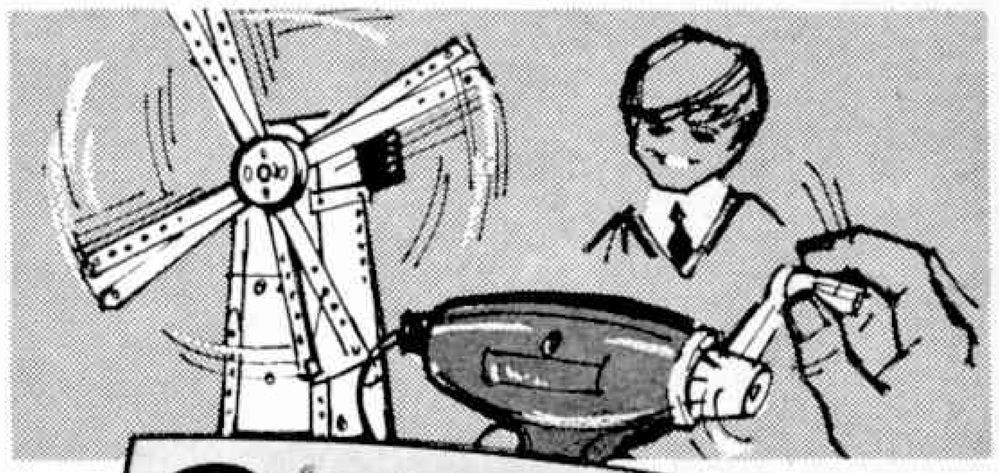
Every Set NEW — every model NEW
See NEW MECCANO at your toy shop now!



NEW POWER

New Hand Generator

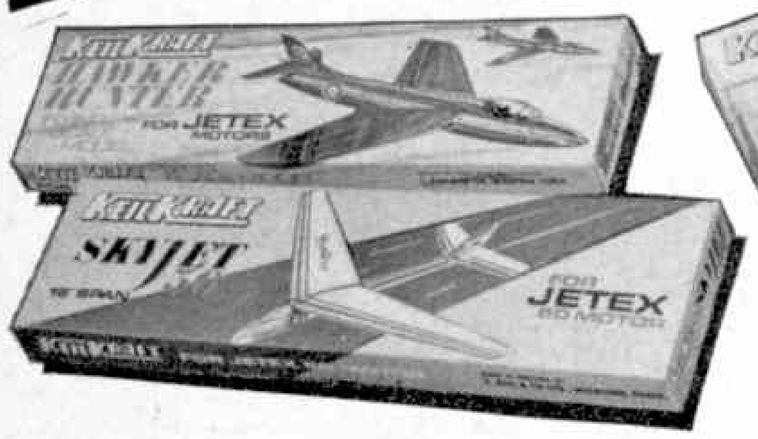
A portable Power House!
Generates up to 12 volts D.C. – plenty of electricity to drive Meccano electric motors, light bulbs etc!



The perfect combination!

KEIL KRAFT kits JETEX POWER

FLYING SCALE SERIES JETEX POWERED



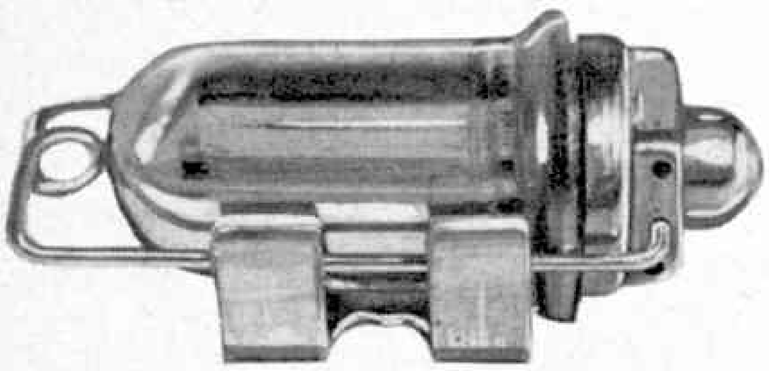
SKYRAY
Span 13½″

VENOM
Span 16½″

World Wide Jet Fighters

Gloster Javelin
Attacker
Avro 707A
D.H.110
Hawker Hunter
F86 Sabre
MIG 15
Supermarine Swift

JETEX 50



GRUMMAN PANTHER
Span 17″

THE JET MOTOR THAT PROVIDES THE THRUST

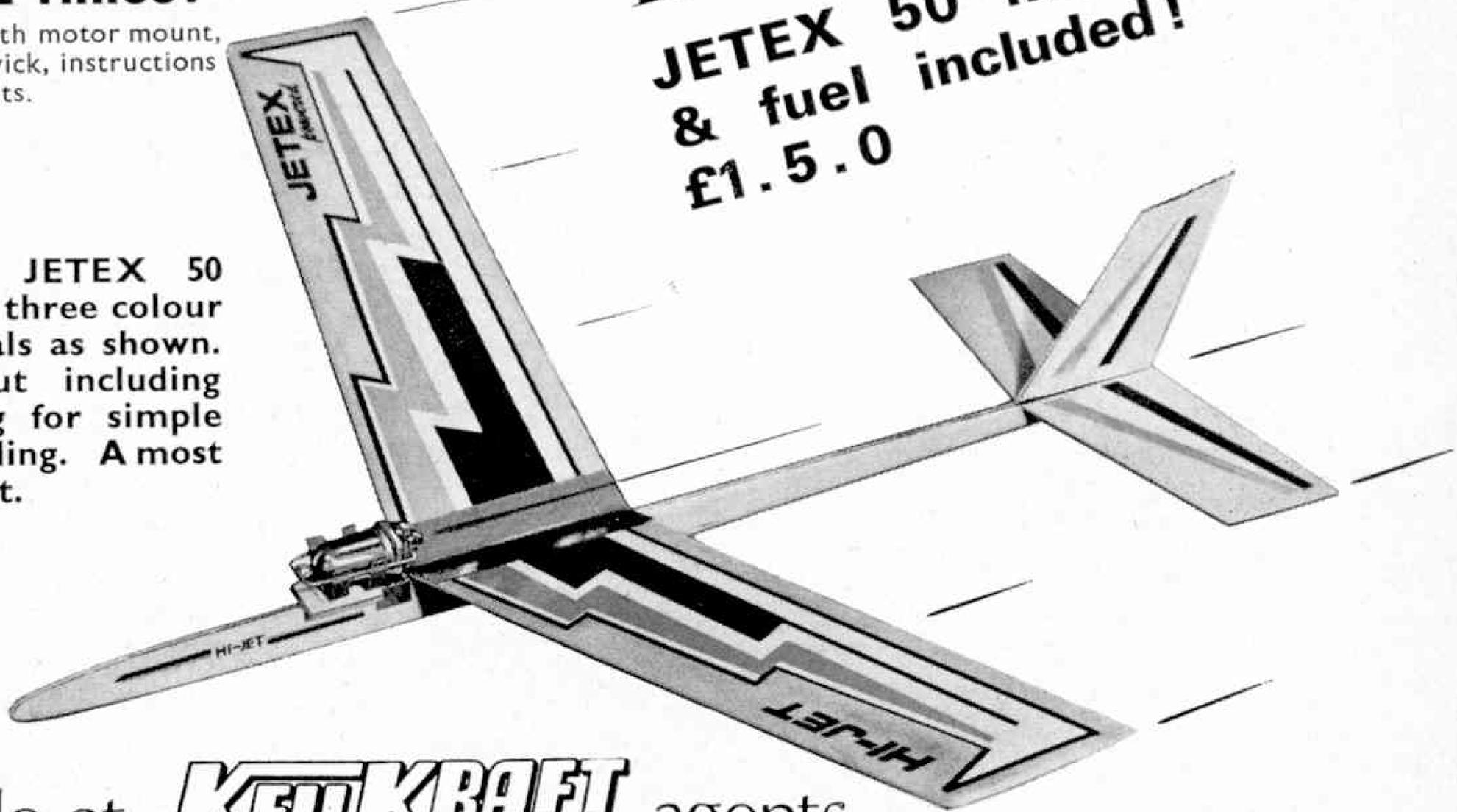
50 OUTFIT complete with motor mount, fuel charges, igniter wick, instructions etc. Not included in kits.

10/-

HI-JET

JETEX 50 motor & fuel included! £1.5.0

Complete with JETEX 50 motor outfit and three colour self-adhesive decals as shown. All parts pre-cut including easy-assembly jig for simple and accurate building. A most comprehensive kit. Wingspan 21″.



Obtainable at KEIL KRAFT agents

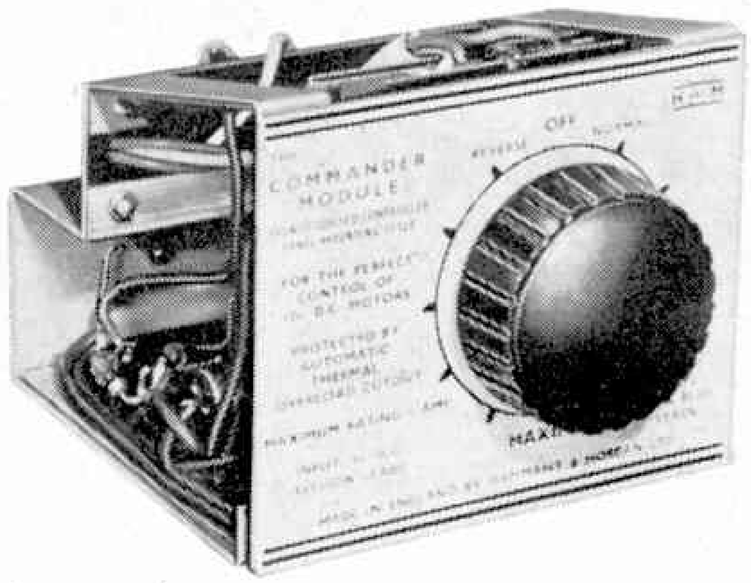
A sleek sports-racer of the thirties is the subject of D. M. Collin's plan in January issue. This $1\frac{1}{4}''$ equals 1 ft. scale model *Miles Sparrowhawk* is $35\frac{3}{4}''$ span and is ideal for 8 cc. engines. Engine test of the month is the OS 40 S, a power unit of considerable interest to control line flyers. The S.E.P.E.C.A.T./B.A.C. Jaguar is the subject of an extensively detailed drawing of great topical interest. Control line and free flight news includes three-views of outstanding models supported by regular features.

Aero Modeller

ON SALE 18th DEC PRICE 3/-

FOR TRANSISTORISED CONTROL! THE NEW

COMMANDER MODULE



PRICE 52/6 (£2.625)

A panel-mounting, transistorised controller for the perfect control of 12 v. D.C. motors up to 1 amp current rating.

Write to H & M for full details.

Price List Free. 36 page Catalogue 1/3 (6p).

HAMMANT and MORGAN Ltd.

Handem Works, Apem Estate, St. Albans Road, Watford, Hertfordshire

Now £100,000 INSURANCE

MODELLERS' ACCIDENT PROTECTION • MAP

Model & Allied Publications Limited

13-35 Bridge St., Hemel Hempstead, Herts.

We are happy to announce that our already well-known third party insurance for readers has now been increased to offer indemnity of £100,000! This magnificent insurance scheme, which covers modelling activities within Great Britain, Northern Ireland, Channel Islands and the Isle of Man, has been negotiated with a leading insurance company. It is sufficiently embracing to cover all forms of model activity. It is equally applicable to free flight models, control line models, radio control models, aircraft, boats, cars and locomotives.

All that is necessary for you to do to obtain the benefits of this magnificent cover is to complete the forms at the right of this announcement, sending part II to us together with your remittance of 5/-, which covers you for one year, and handing part I to your usual magazine supplier. Whether or not you already have an order in hand for the regular supply of your magazine, this form should still be handed in and your dealer will adjust his requirements according to whether you are a new customer or merely continuing your old arrangement.

This insurance is the prudent thing for every modeller to take out, but it is a sad fact that until now, although the governing bodies of the hobby have offered this cover to their members, something like 90 per cent. of the modellers in the U.K. have never taken up this opportunity and are operating 'without insurance protection'. By joining M.A.P. 'Modellers' Accident Protection' you come into the world's BIGGEST MODEL CLUB. For your initial subscription you obtain a lapel badge for identification and transfers to put on your model.

Complete the form and send on at once. We will send you back your membership card, lapel badge and waterslide transfers immediately.

M.A.P. INSURANCE MEMBERSHIP FORM

PART I to be handed to Newsagent

To _____

_____

Please *reserve/deliver one copy of *AEROMODELLER/MODEL BOATS/MODEL CARS/RADIO CONTROL MODELS & ELECTRONICS/SCALE MODELS/MODEL ENGINEER/MODEL RAILWAY NEWS/MECCANO MAGAZINE, commencing

with the _____ **issue.** (*Delete as applicable.)

Name _____

Address _____

PART II of the Form should be completed and sent to us at the address above left, together with your remittance of 5/-. **PART I** should be handed to your usual supplier either newsagent, model shop, bookseller or wherever you normally expect to get your magazine.

PART II to be sent to M.A.P. Ltd.

Name (in full) _____

Address _____

_____ Date _____

I enclose herewith postal order value 5/- for membership of M.A.P. £100,000 insurance scheme. This sum, I understand, includes two transfers and a lapel badge, and is conditional upon my ordering

***AEROMODELLER/MODEL BOATS/MODEL CARS/RADIO CONTROL MODELS & ELECTRONICS/SCALE MODELS/MODEL ENGINEER/MODEL RAILWAY NEWS/MECCANO MAGAZINE:**

(*Delete those not applicable.)

I have today instructed my newsagent _____

Address _____

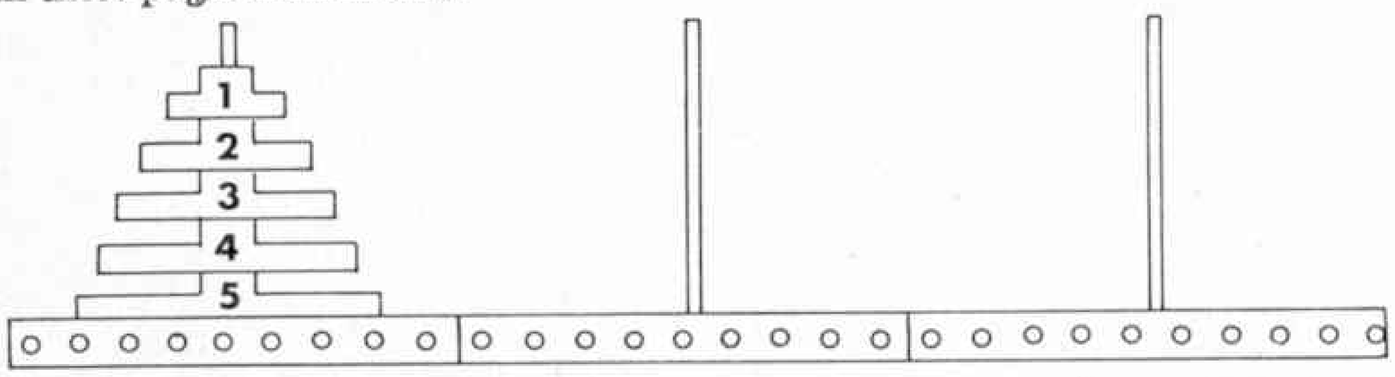
to deliver me the magazine _____ until further notice.

ON THE EDITOR'S DESK

Puzzle solution

Last month 'Spanner' set readers a little Pulley-and-Rod puzzle supplied by Mr. Bob Hauton of Lincoln—and now comes the moment of truth. Did you get it right? The correct solution is given in the accompanying chart, each "box" representing one move and the movements running along the lines from top left.

At the time of writing the time allowed for you to send in your solutions has not yet elapsed, therefore we do not yet know the winners of the promised Meccano Parts. By the time you read this, however, the winners will have been chosen and will be announced in these pages next month.



The three rods used in the construction of the puzzle are of equal length and are equally spaced.

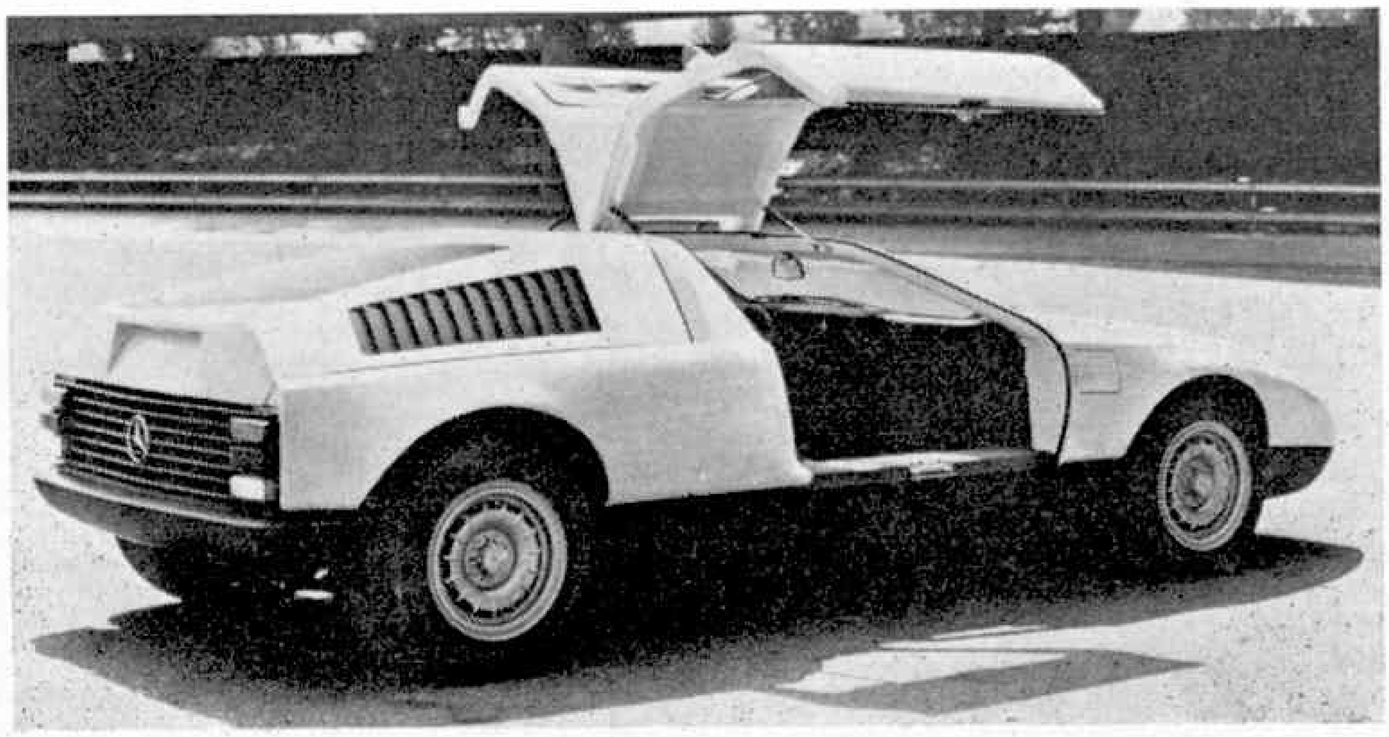
1 2 3 4 5	–	–	2 3 4 5	–	1	3 4 5	2	1	3 4 5	1 2	–
4 5	1 2	3	1 4 5	2	3	1 4 5	–	2 3	4 5	–	1 2 3
5	4	1 2 3	5	1 4	2 3	2 5	1 4	3	1 2 5	4	3
1 2 5	3 4	–	2 5	3 4	1	5	2 3 4	1	5	1 2 3 4	–
–	1 2 3 4	5	1	2 3 4	5	1	3 4	2 5	–	3 4	1 2 5
3	4	1 2 5	3	1 4	2 5	2 3	1 4	5	1 2 3	4	5
1 2 3	–	4 5	2 3	–	1 4 5	3	2	1 4 5	3	1 2	4 5
–	1 2	3 4 5	1	2	3 4 5	1	–	2 3 4 5	–	–	1 2 3 4 5

Christmas Greetings

to all readers and Meccano enthusiasts everywhere from the Editor and Staff of MECCANO MAGAZINE

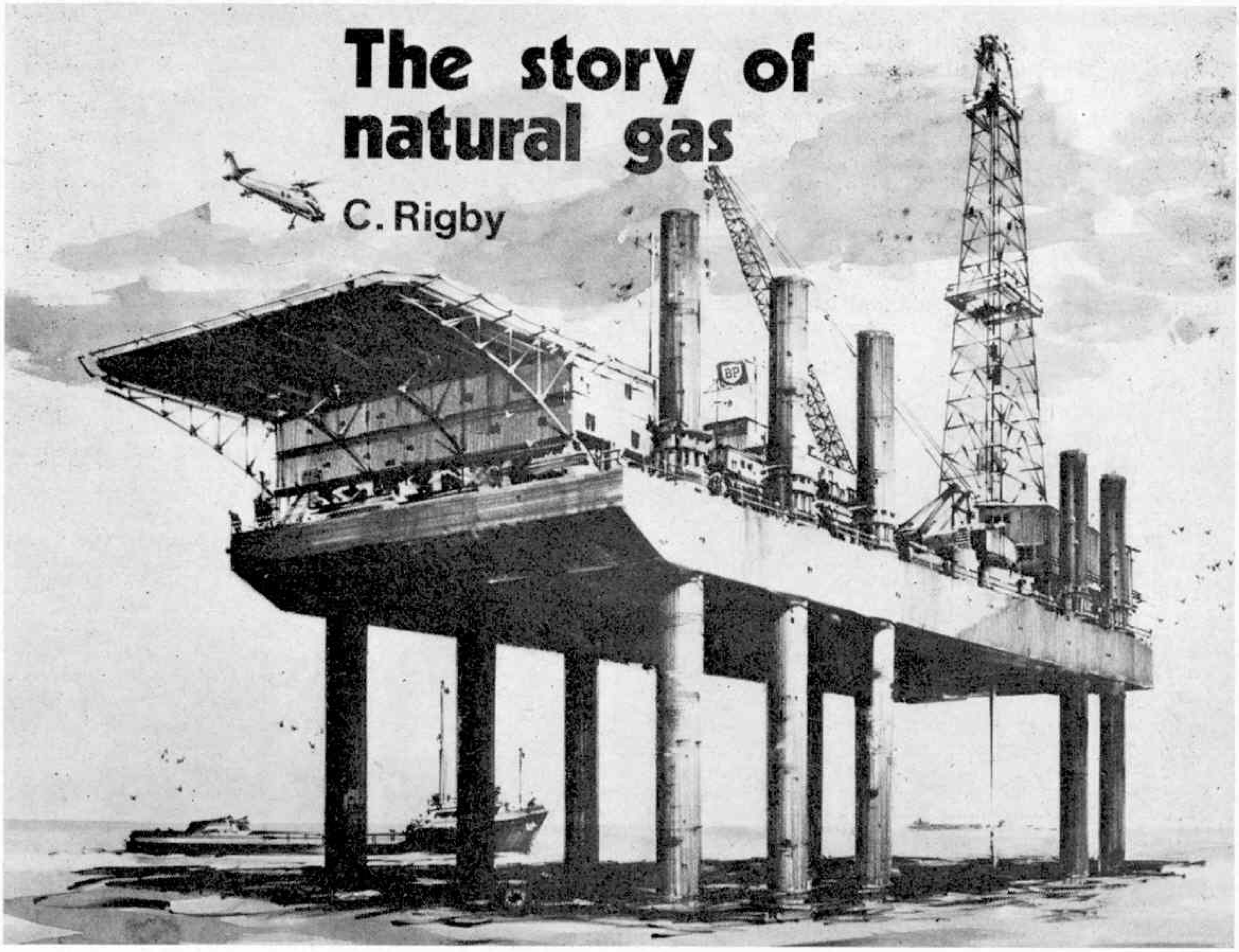
This is the revolutionary new Mercedes-Benz Research and Development car the C.111. It features upward opening 'gull-wing' doors which made their first appearance on the earlier 300SL Mercedes Sports car and is powered by the latest internal combustion engine, the triple-motor Wankel rotary type which gives the C111 its top speed of over 162 m.p.h.!

Right up to date as usual, the Dinky toy people are just releasing a faithful replica of the new car and together with another new release, the Monteverdi 375L it is described in full by Chris Jelley in 'Dinky Toy News' on page 20.



The story of natural gas

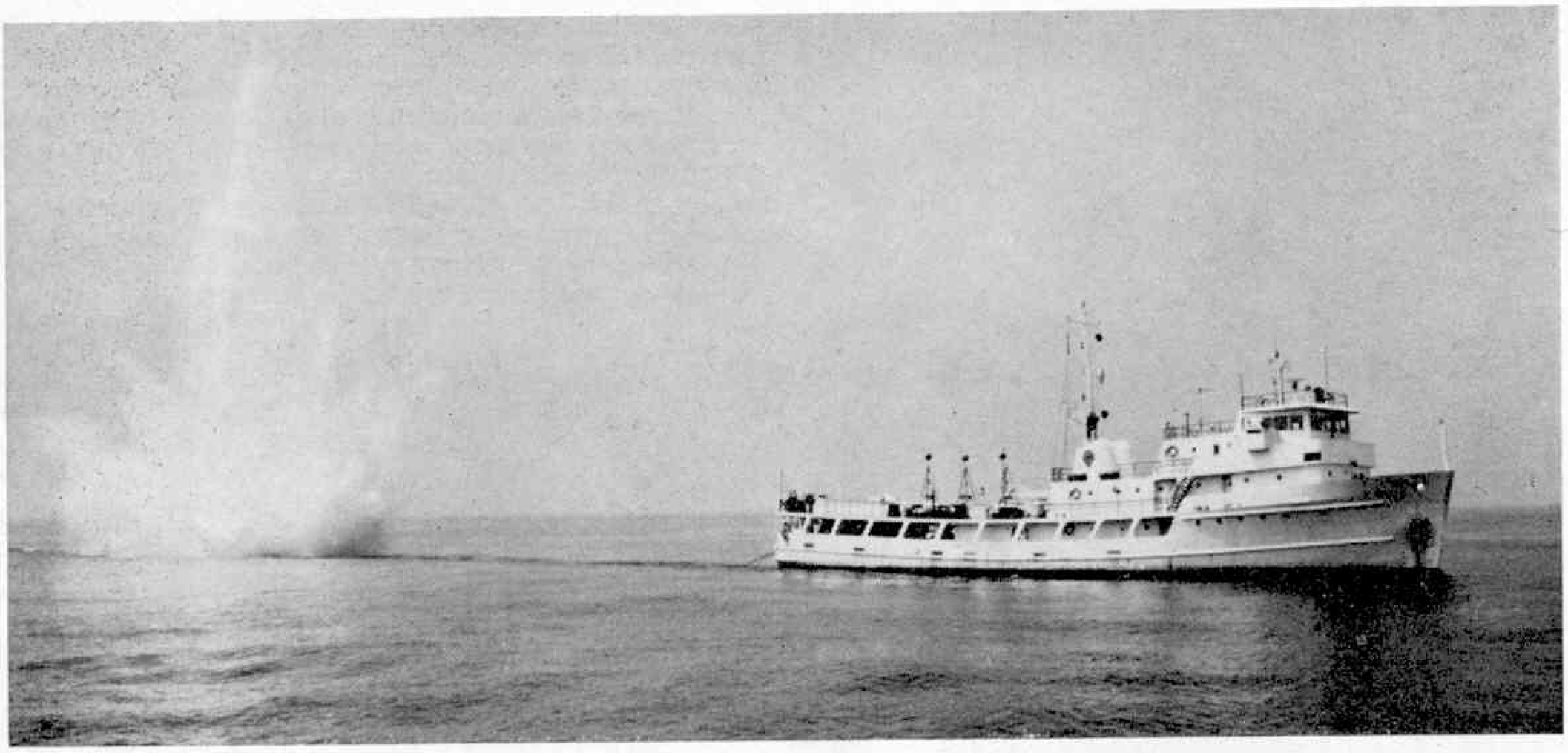
C. Rigby



Charles Rigby, one of our most popular contributors, describes in a clear and concise manner how natural gas is located and brought into our homes from under the North Sea.

FOUND ALONG WITH PETROLEUM in many parts of the world, natural gas has become a valuable commodity today. One of the most sought after fuels now, it is cheaper to produce than coal-gas which was once used, and like uranium which is needed for nuclear power, its wide uses in various spheres helps to save the world's supply of coal. In recent years, there have been several developments.

Long before this time, the only natural gases known were 'fire-damp', which can cause explosions in mines; and 'marsh gas', resulting from the decay of vegetable material in swampy places. The principal component is 'methane', the simplest hydrocarbon, consisting of one carbon atom and four hydrogen atoms. Usually found along with petroleum, it also contains certain gaseous members of the paraffin series

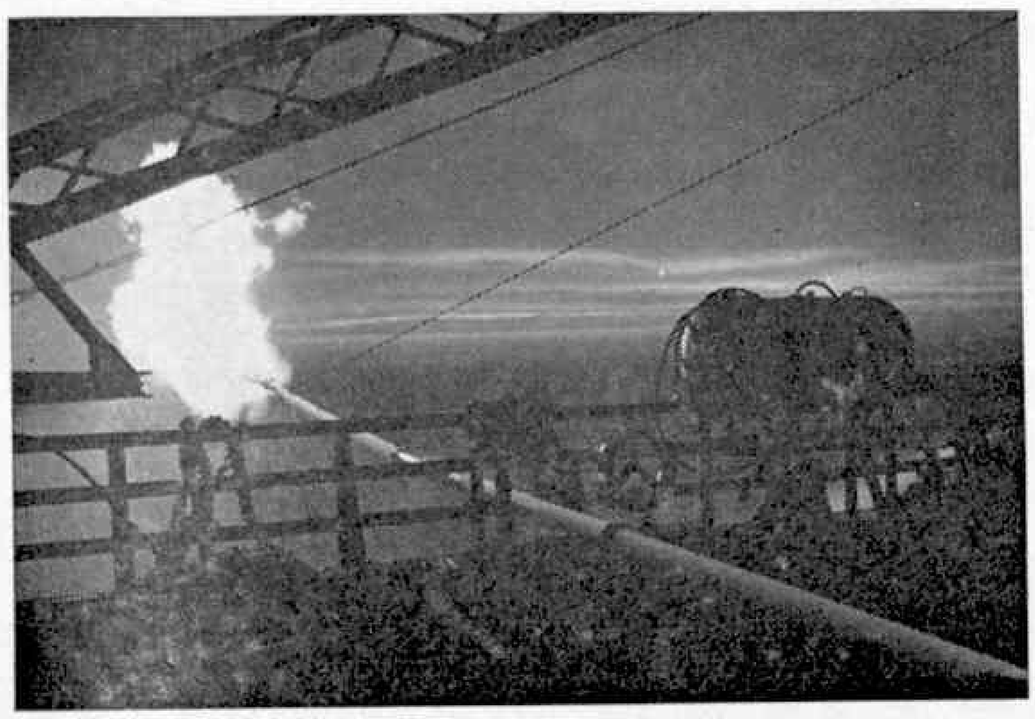


For the purpose of discovering oil and gas, seismic surveys are carried out at sea by the survey ship "PHAEDRA", which operates as a combined shooting and recording vessel. *Shell International Petroleum Co. Ltd.*

of hydrocarbons, some hydrogen and often a small percentage of helium, which is extracted by liquefaction of the remaining gases. The average composition of pipeline gas is methane—72.3 per cent, ethane—14.4 per cent, nitrogen—12.8 per cent, and carbon dioxide —0.5 per cent.

With twice the heat value of coal-gas, it can be used for any heating task normally done by conventional solid, liquid, or gaseous fuels, and is suitable for high-grade applications. The by-products are also valuable. With a huge hydrogen content it is a suitable source of that gas for ammonia and nitrogen extraction. Again, certain plastics and synthetic fibres and other chemicals can also be made from the methane molecule. Burnt in pure oxygen, methane produces the two gases carbon monoxide and hydrogen, the important building blocks for producing synthetic petrol.

It is found in underground structures, similar to those containing crude oil. Often referred to as wells, 'pockets', or fields, there are three main types, namely (1) Those where the gas is dissolved in crude oil, and known as 'solution gas' and in some cases also in contact with gas-saturated crude, known as 'gas-cap-gas'. These are called 'associated gas', fields.

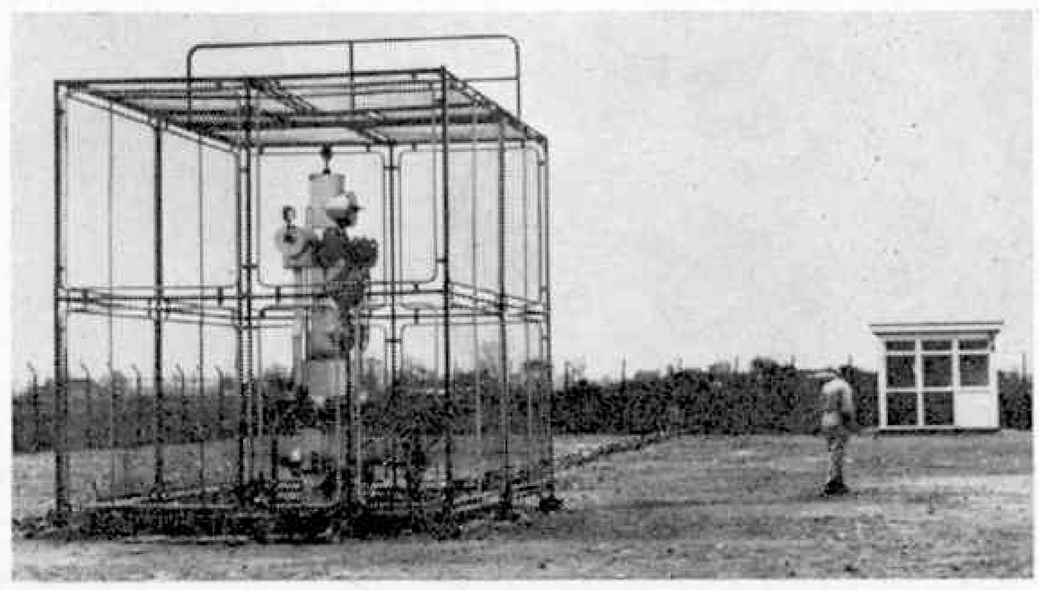


Flow of the gas being tested to find out the size of the field. *Mobil Oil Company Ltd.*

(2) Condensate reservoirs which yield relatively large amounts of gas per barrel of liquid hydrocarbon, which are used chiefly for gas, but sometimes it is re-injected or 're-cycled' to improve liquid recovery. (3) Wells from which only gas can be produced economically. The last two classes are known as 'unassociated gas'.

The Middle East countries, in particular, have the largest supplies in the world. After them, in order of volume of reserves are the USA (with the 'Panhandle' field), USSR, Algeria, Netherlands, Canada, Venezuela, Pakistan, Mexico, Rumania, Italy, Nigeria, Indonesia, Columbia, China, Trinadad, Czechoslovakia. W. Germany, Chile, Argentina, Libya, Austria, Peru, New Zealand, and Poland. With the use of floating drilling barges, lately, the extent of natural gas fields has been greatly increased by other countries, including the UK.

Regarding the true origin of oil, it is generally believed that it is derived chiefly from marine organisms. During the world's history, the oceans have covered much of what we know as land today. Plants or animals lived in or near the water's edge, and as they



The first Natural Gas well at Groningen. In 1959, natural gas was found at Slochteren in the province of Groningen, Holland. *Shell International Petroleum Co. Ltd.*

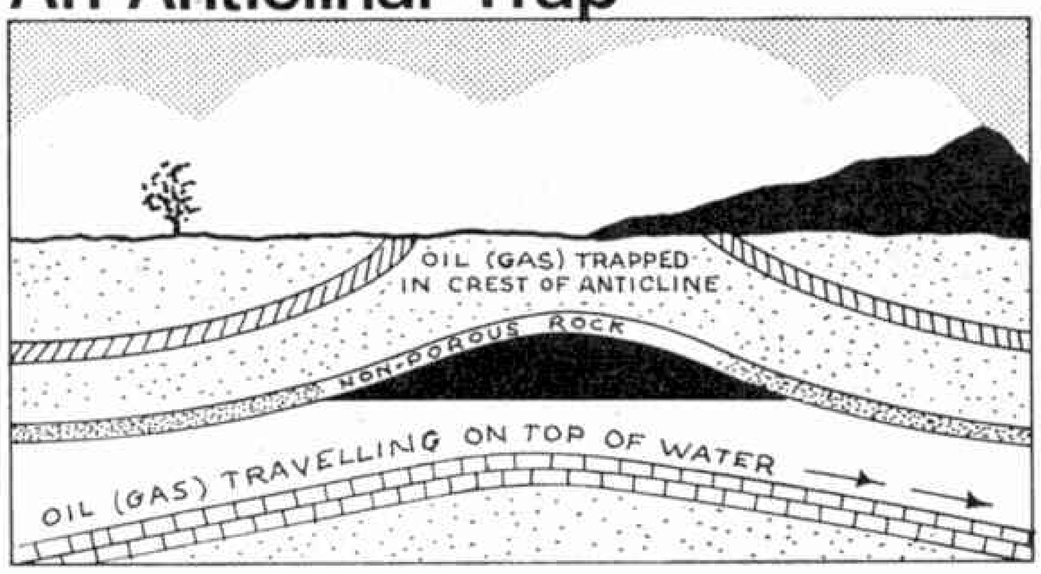
The 30 in./4 in. North Sea pipeline in its ditch on the beach at Bacton, Norfolk.

died their remains became entombed in the layers of sand and mud washed down from the land. In time, the dead organisms were concentrated in the mud and ooze and through the processes of decay were transformed into oil. The sediment also retained a high proportion of sea water.

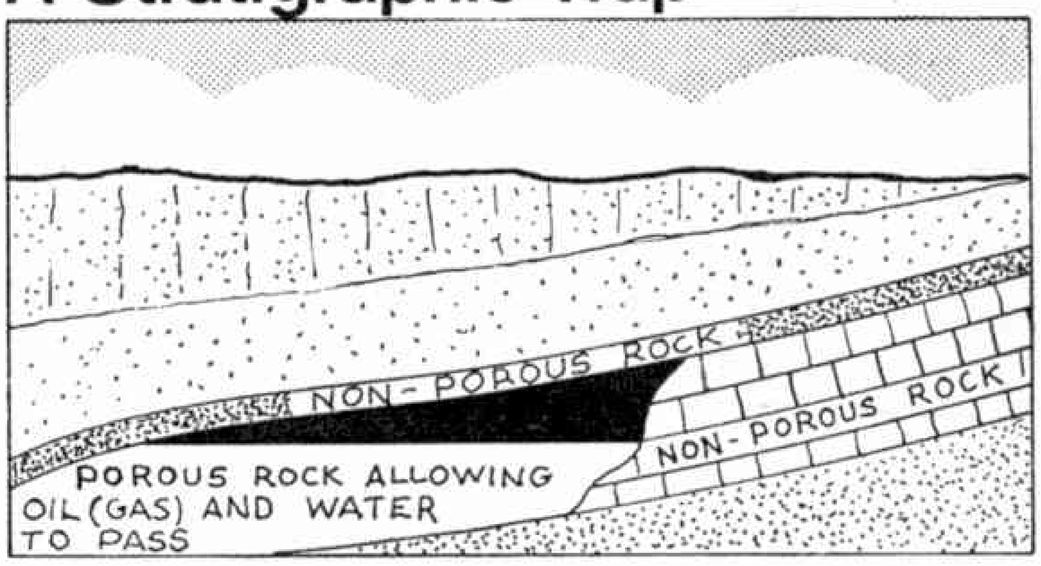
As more and more sediments were deposited, the older layers became more deeply buried. The increasing weight of underlying sediments compacted the muds and oozes with shales and limestones, and also expelled the contained fluids (water and oil) into the more porous surrounding rocks. Pressures within the porous rocks arising from their burial at depth are invariably higher than at outcrop. They caused the water and oil, together, to flow towards the outcrop, though the oil being lighter than water tended to rise to the top of the porous carrier beds. Oil accumulated wherever a barrier or 'trap' occurred. There are

Fixed drilling platform BD, capable of drilling up to 10 wells, operating in the North Sea. *Shell Petroleum Co. Ltd.*

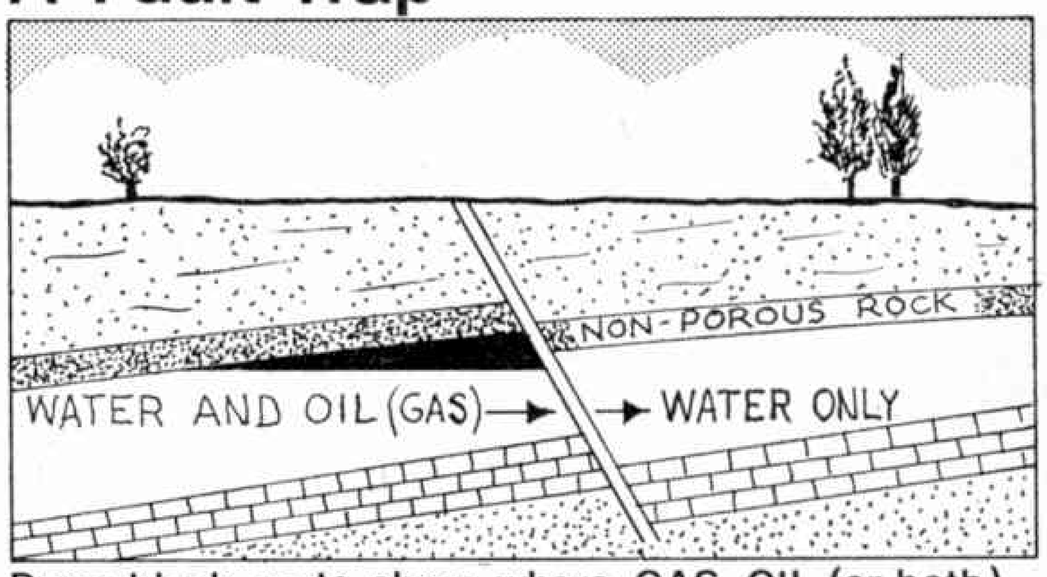
An Anticlinal Trap



A Stratigraphic Trap



A Fault Trap



Deep black parts show where GAS, OIL (or both) are trapped

three main types of these, namely: Anticlines, (2) Stratigraphic, and (3) Fault 'traps'.

The 'Anticlinal' is one where the rocks are bent upwards into an arch. If a porous bed with oil or gas lies under a non-porous bed, then they collect beneath this arch and an oil or gas 'pocket' is formed. The 'Stratigraphic' trap is formed where the size of

the pore spaces in a particular formation change from large to small updip. Due to the difference in energy required to move oil and water, the oil cannot pass from the large pores to the small ones, and is trapped at this point. In the case of a 'Fault', where the rock layers have been broken, and rocks of one side have moved down farther than those on the other side, if a porous layer on one side of the break is sealed by a non-porous layer on the opposite side, oil or gas in the porous layer is trapped.

Where 'traps' exist is another part of the problem. In many parts of the world seepages on the surface indicate the presence of oil and perhaps gas, and the structure of the visible rocks may show that traps might exist deep underground. In other places, although there may be seepages, there are very few indications of their presence and special ways of looking under the surface have been developed. A structural survey may be carried out in which a number of shallow holes are drilled and a study made of the rock layers penetrated.

Geophysical surveys may also be necessary. In one method, a sensitive seismograph instrument which works in the same way as that used for recording earthquakes is used. Vibrations in the rocks like those occurring with earthquakes, but less destructive, are caused by exploding charges of dynamite at a depth of 6 ft. or more below the surface. The seismograph, in contact with the ground, is sensitive to the vibrations, collects them, and records them in such a way that the rock formation can be studied and visualised. After the surveys, a site is selected where the conditions appear to be favourable.

In recent years, geophysical survey ships, such as the "PHAEDRA" are employed for probing the rock layers beneath the sea-bed. Using the 'reflection' method, small charges are exploded under water, and by measuring the time taken for some waves to 'echo' back from various rock layers, a geological picture of the rock structure is built up. Results from preliminary surveys show that there were many structures under the North Sea of varying size, some were small—a mile or two across, and others were extensive. While some were unproductive, there is no direct method of finding this out except by drilling.

As time went on, floating drilling platforms or barges for drilling wells on the ocean floor were invented. In 1961, 'Blue Water' operated successfully in the Gulf of Mexico, weathering winter storms with waves up to 28 ft. high, and winds of more than 25 miles per hour. In the worst weather, roll and pitch was less than 5 degrees. Three exploratory wells were then drilled 40 miles off the Louisiana coast, one being 11,586 ft. deep, and another 13,202 ft., while a fourth hole was completed in nearly 300 ft. of water. The underwater completion system which allows the wellhead to be on the ocean bed instead of a massive pile-driven structure projecting above the surface, was developed by a British company.

During the 1960's, there were two important phases in natural gas developments which made possible its use in Britain. First were the discoveries of large gas fields at Groningen, Holland, in 1959, and at Hassi R'Mel in Algeria, and certain other countries. Many formidable problems remained to be solved before it could be introduced. To change methane into liquid form required reducing the temperature to 258 deg. F., and to transport it from Port Arzew, North Africa, to the U.K. would need special tankers of a kind never before constructed.

An American company, Constock, in partnership

Fixed platform AD with UNIFOR derricks capable of drilling up to to 10 wells.

with the Gas Council converted a 5,000 ton cargo vessel into a 2,200 ton liquid methane carrier, and after trials over the Atlantic proved that it could be done. Thereupon, a scheme to transport liquefied natural gas from Port Arzew in North Africa to a receptional terminal at Canvey Island was begun in 1961. In this way, the first natural gas in liquefied state was brought to Britain for treatment and use.

However, although this method of supply served well, there were many drawbacks, and as there were no wells in the UK with large supplies, the search for gas or oil turned to the North Sea, where scientists believed there were vast reserves, judging by the large Groningen well in Holland, which also lies on the Continental shelf. As a consequence, in September 1964, a number of companies were granted licences to survey the British portion, covering roughly 100,00 square miles.

Despite the many difficulties to face and often during severe weather, the scientists proved right. Natural gas finds proved valuable, and now the gas is supplied to the Gas Council who are responsible for the work of marking possible its delivery, and its uses in the home, as well as in industry. As a commercial proposition, of course, it has to be specially treated to remove water, petroleum liquids, and water vapour at a special gas treating plant.

Aerial view of the North Sea Gas Treating Plant at Bacton, Norfolk. *Shell International Petroleum Co. Ltd.*

THE BRITISH WILDLIFE ADVENTURE SOCIETY 'JUNIOR EXPLORERS' . . .

Pat Merrett pays a visit to the Society's H.Q. at Wickham Bishops, Essex

WE, AT THE MECCANO OFFICES, were delighted to receive an invitation to visit the Head Quarters of the British Wildlife Adventure Society, which is situated at the beautiful home of Mr. John Lodge, at Great Ruffins, Wickham Bishops, Essex, who is Director-Leader of this forward thinking and lively group. On the occasion of our visit it was Presentation Day and all the boys were congregated in excited throngs to meet their President, Sir Alec Rose, well-known for his single-handed circumnavigation of the world in a beautiful yacht named " Lively Lady."

When we arrived we were met by John Lodge who introduced us to one of the Society's young members,

We came across these youngsters as we made our way through the grounds at Gt. Ruffins. They were enjoying a sit round the camp fire whilst waiting for Sir Alec to arrive.

John Deakin of Dulwich who is 11 years old and has been a member of the Society for just about five months now. It was John's third visit to Great Ruffins and he was obviously delighted with the entire set up. He gave us a very lively and interesting walk around the 12 acres of gardens, pointing out where the boys were camping, and all having a marvellous time with their

Sir Alec Rose presents John Deakin with his prize for scoring high points on his knowledge of wildlife. He was presented with a copy of Ring of Bright Water by Gavin Maxwell who was predecessor to Sir Alec in the position of President of the Society.

camp fires and lots of good things to eat. He showed us many things of interest such as badger sets, pheasants, and an aviary of budgerigars. He named many of the trees and it was quite apparent that apart from the obvious pleasure that John derived from all the thrills of camping, he had learned a great deal about wildlife, animals, trees and plants and to prove this, he was one of the lucky lads who received a well deserved prize from Sir Alec Rose in the afternoon. John also had some thrilling memories of sleeping out in hay lofts of old barns and shared with us some of the delights of being told " ghost " stories by John Lodge when they were too excited to sleep. All in all, we gathered that John Deakin found it a very adventurous life and some of his enchanting stories about chasing poachers and discovering many new and wondrous things, completely delighted us—" Thank you, John for a splendid and very interesting morning."

While the youngsters (the Society is of course not only for boys, but girls as well) are out on their expeditions, they learn to take care of themselves, to cook and to know what can, and cannot be eaten. They learn to distinguish between edible fungi and the other brilliantly coloured poisonous varieties. They become knowledgeable and useful members of society and it is a point to make at this juncture that any parents reading this article can be well assured that the safety of their children is complete in the capable hands of Mr. John Lodge.

As members of the British Wildlife Society, the Junior Explorers (together with their parents) are full and equal partners. The children are encouraged to put forward their ideas and suggestions. They are expected to help plan and organise expeditions. It is said that the scheme is paradise, but only for those young people who are prepared to live without an imposed rigid discipline or a host of countless rules—of the latter, there are none. The Society is not a training ground for those with anti-social tendencies. The Junior Explorers meet for their expedition-activities in an atmosphere of friendship and equality, where the ideas and talents of the individual are not only respected, but put to good use.

The Society has been in existence for five years and in that time they have completed 173 expeditions. That is a total of 49,000 miles in Britain and during that time visited 38 islands around the coast of Britain. The main wildlife adventure expeditions are of between 7 and 12 days duration. Parts of Great Britain visited include: The Orkney and Shetland Isles, Central Dartmoor, Snowdonia, the Outer Hebrides: Berneray, Lewis and Harris, the New Forest, Isle of Scilly: Tean, St. Martin, White Island and the Eastern Isles, the Isle of Skye and N.W. Highlands. There are also 3-5 day expeditions and these, together with the popular 1-day wildlife-adventure treks take place throughout the year.

After we had enjoyed a delicious tea supplied by

all the Mums of these lucky children, we sat down to hear what Sir Alec Rose had to say about the Society and to watch him present the boys who had won awards with their well earned prizes of books. Sir Alec's main theme was that he was delighted and proud to be President of such a wonderful Society whereby children were able to learn the rudiments of living rough which is a great character builder in a Society which makes them conscious of the responsibilities to everybody around them and is also a vehicle by which they have their eyes and ears opened for them; to unfold to them the untold joys that are all around them for the taking. He also congratulated John Lodge on doing such a wonderful job and indeed, dedicating his whole life to these children. We must say, we agree entirely with Sir Alec on this point, as we cannot remember ever before seeing so many boisterous boys really working hard and obviously enjoying every minute of it—this is no doubt brought about by the mutual respect which is so obvious between Mr. Lodge and the children.

List of 1 Day Expeditions planned for Autumn-Winter 1971-72.

The Norfolk Wildlife Park & Pheasant Trust, Gt. Witchingham, Norwich, Norfolk.
The Childrens' Book Centre, Kensington Church Street, London.
The Slimbridge Wildfowl Trust, Slimbridge, Gloucestershire.
Jason's Trip along the Regent's Canal, London.
St. Gile's Fair, Oxford.
Hylands Park, Nr. Chelmsford, Essex.
The Childrens' Centre, Natural History Museum, London.
The Devil's Punchbowl, at Hindhead in Surrey—1 day trek.
Ditchling Beacon, South Downs, Sussex.
Wickham Bishops-Maldon-Northey Isle—1 day trek.
Chedworth Roman Villa, Nr. Cheltenham, Gloucestershire.
(following disused railway lines).
The Windsor Great Park & Forest, Virginia Water, Surrey.
Box Hill, Nr. Dorking, Surrey.
The Junior Explorers' Feast (This is for each of the six Groups and includes a treasure hunt and football match i.e. v. Parents.)
Stanton Great Wood, Nr. Uffinton, Wiltshire.
The British Children's Book Exhibition, London.
The Falconry Centre, Newent, Gloucestershire.
Selbourne Common and Hanger (The Nature Reserve of National Trust that fired the Rev. Gilbert White to write so vividly of the animals and plants of Hampshire's Scarplands).
Hidcote Manor, Nr. Evesham, Gloucestershire.
The Forest of Dean-Biblin's Adventure Trail, Gloucestershire.

Sir Alec summed up his speech by reiterating his great pride in being their President and by wishing the Society the very best of luck in the future and that it should go from strength to strength. He then presented prizes to: Anthony Knockage, Roger Moreton, Clive Britain, Ian Fisher, Vernon Bridges, John Deakin, Andrew Swinton, Thomas Bowman, Neal Catford, Charles Tate, Simon Goff, and Ian Williamson.

We hope that we have whetted your appetites and that you will want to know how to become members of the British Wildlife Adventure Society. If so, admission is by way of a short essay-composition on some aspect of the great outdoors and which has special appeal to the young person concerned. The same may be illustrated by diagrams, drawings or photographs. This essay is followed by a one day

Sir Alec and the boys gather round the map no doubt to plan some more exciting trips for the months ahead.

wildlife adventure expedition, after which, if successful, the youngster joins the Junior Explorers as a full and equal member.

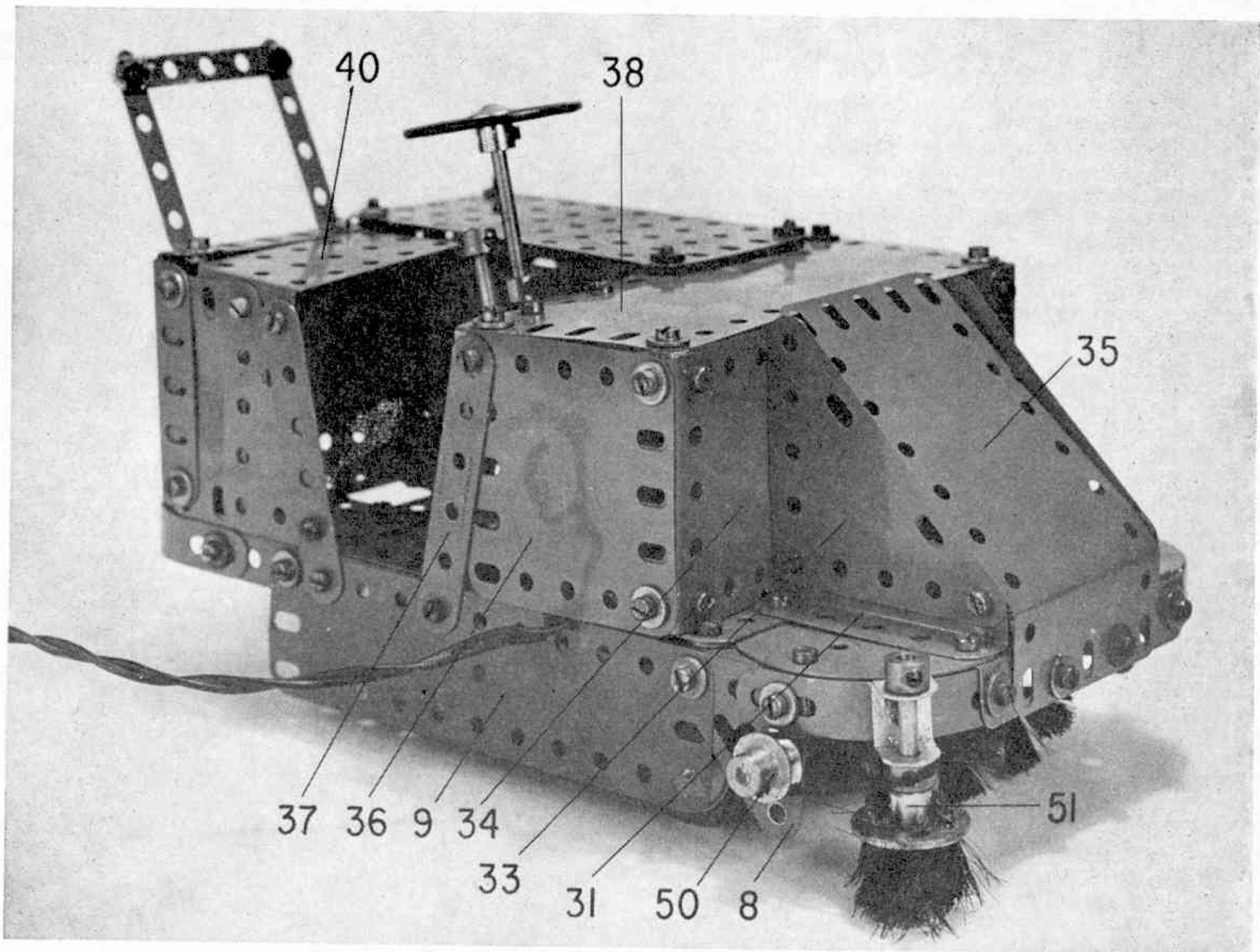
The Society is open to children in the 8-14 age range, and who, born in the United Kingdom, are British subjects. The exception to this regulation applies to children of New Zealand, who visiting Great Britain

Mr. John Lodge is seen above addressing all the boys and girls and their parents on Presentation Day. Next to him on his left is Mrs. Anne Mahoney who gave him a great deal of assistance in making the day a success.

for either long or short periods are most welcome to join in the Junior Explorers' many varied activities.

Anybody who feels that they come into these categories and are keen to join are invited to contact Mr. John Lodge at " Great Ruffins ", Wickham Bishops, Essex and we fell sure that if you do manage to become members, you will have a wonderful time and will never regret it.

Final picture shows Sir Alec Rose with quite a number of the children who are members of the Society. They all lead a full and interesting life as active members of this Society and we hope that you may be able to join them !



A WORKING PLATFORM SWEEPER IN MECCANO

An unusual and interesting model for Meccano builders described by SPANNER

Part 1

MANY A SCATHING COMMENT on the "dirty state" of British railway stations has been heard muttered in the dark recesses of austere station waiting rooms up and down the country, but I wonder if the disgruntled passengers who make the comments are being strictly fair. I'm no expert on British Rail, but I do know that I have travelled literally thousands of times on a short commuter line running into Liverpool from the Wirral Peninsula and perhaps the most common sight of all from the train is to see a porter busily engaged in sweeping the platforms of the small stations dotted along the line. This, to my mind, proves that station staff are concerned with cleanliness and, in fact, I understand that a good, wide-headed sweeping brush is an essential piece of any station's equipment !

Considering the size of station platforms in this country, keeping them clean must be a bit of a problem. In the case of small two-platform stations, the porter with a sweeping brush might be able to do the job reasonably well, but what about large terminal and main-line stations with an enormous platform area to be kept clean ? If this was done by hand, a whole company of cleaners would need to be employed full-time on the job and the cost would be so high as to make this course of action quite out of the question. What has happened, instead, is that the railways, like the roads, have made use of special sweeping machines

which enable one man to do the whole job with a minimum amount of trouble and effort. At least one such machine can be seen in regular use at Lime Street Station in Liverpool city centre and although we cannot show the full-size machine, we do at least feature here a very good scale reproduction of it, built in Meccano. Although only a model, it works extremely well, powered by an E15R Electric Motor carried inside the body and with brushes supplied by bristles cut from an old paintbrush.

Chassis

As is usual, construction of the model begins with the chassis. Two 7½ in. Angle Girders 1 are connected by a 5½ × 3½ in. Flat Plate 2 and a 5½ in. Flat Girder 3, both being so positioned as to leave two holes free at each end of each Angle Girder. Bolted to the rear end of each Girder 1 and to the Flat Plate is a Semi-circular Plate 4, these Plates at each side being connected by a 5½ in. Angle Girder 5, spare flange pointing upwards, and a 4½ in. Angle Girder 6, spare flange pointing downwards. The latter Girder is joined to each Girder 1 by two Formed Slotted Strips which round off the corners nicely.

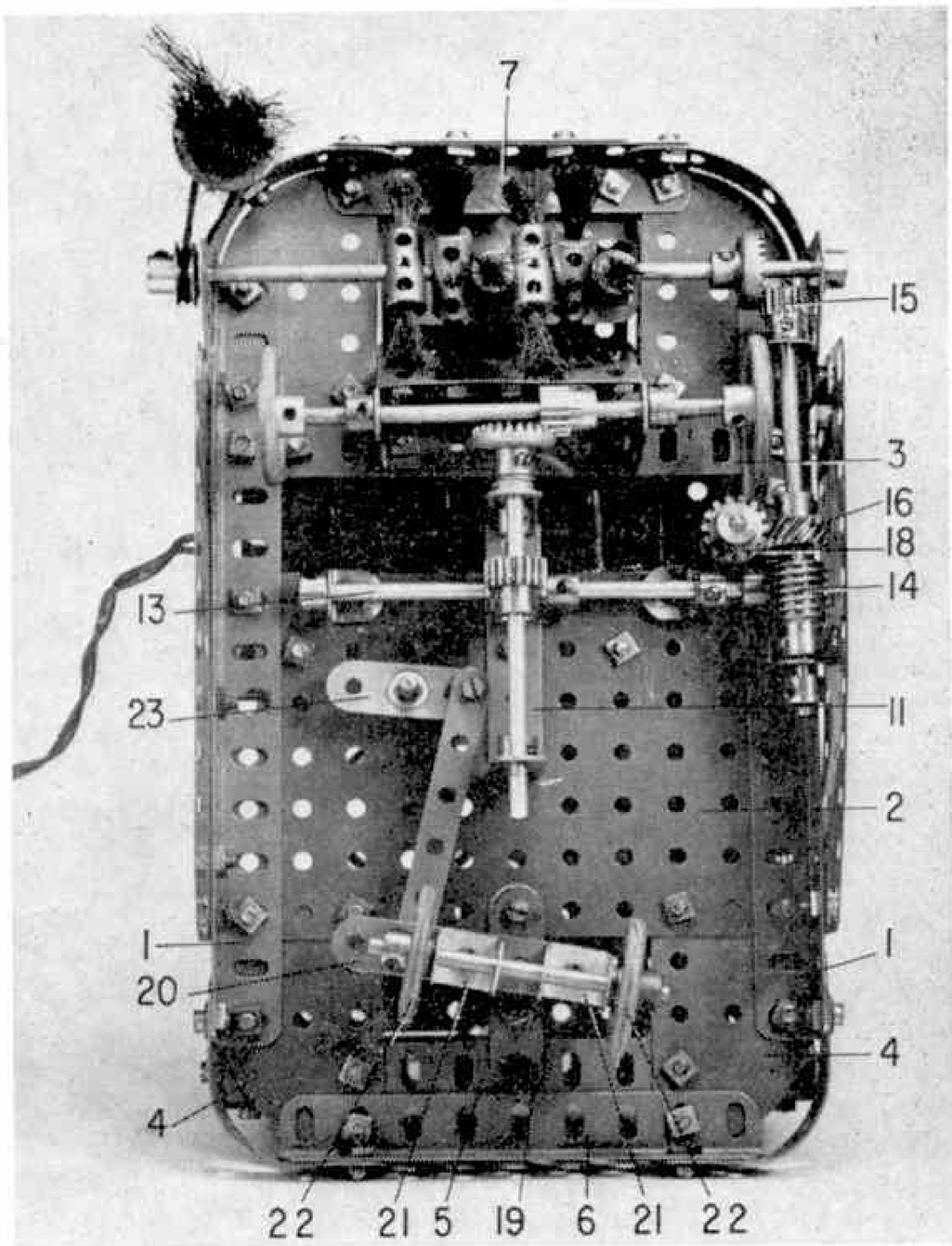
Now bolted to the forward ends of Girders 1 and to Flat Girder 3 are two further Semi-circular Plates, these being connected at the front by a 3½ in. Angle Girder 7 which is, in turn, connected to each Girder 1 by two further Formed Slotted Strips to round off the corners. Note that the Bolt fixing each of these Formed Slotted Strips to respective Angle Girder 1 also helps to secure a 1½ in. Corner Bracket 8 to the Girder, the other Bracket-securing Bolt helping to fix a 5½ × 1½ in. Flexible Plate 9 to the same Girder. The Corner Brackets will later serve as the bearings for the main sweeping-brush assembly.

Bolted to the centre underside of Flat Girder 3 is a 2½ × 1½ in. Double Angle Strip the securing Bolts helping to fix an E15R Motor (operating switch to the right) to the top of the Girder, this Motor also being fixed to the top of Flat Plate 2. Held by Collars in the end holes in the lugs of the Double Angle Strip is a 4½ in. Rod, carrying a $\frac{7}{16}$ in. Pinion and two 1 in. Pulleys fitted with Rubber Rings, the latter mounted one on each end of the Rod. In mesh with the Pinion is a ¾ in. Contrate Wheel 10 on the end of a 3½ in. Rod journalled in the end holes in the lugs of another 2½ × 1½ in. Double Angle Strip 11, bolted to the underside of Flat Plate 2. The Contrate is spaced from the lug of the Double Angle Strip by three Washers.

Also fixed on the Rod, between the lugs of the Double Angle Strip, is a ½ in. Pinion which meshes with a second ½ in. Pinion 12 on a 2½ in. Rod, held by Collars in the centre holes in the lugs of the Double Angle Strip. This Pinion is in constant mesh with a Worm fixed on a 4½ in. Rod 13, held by Collars in two Angle Brackets bolted to Flat Plate 2. Each Angle Bracket is spaced from the Plate by a Washer on the shank of the securing Bolt. Mounted on the left-hand end of Rod 13 is a ½ in. Pinion which, itself, meshes with a Worm 14 on a 4 in. Rod, held by a Collar and a $\frac{7}{16}$ in. Pinion 15 in one right-hand and one left-hand Corner Angle Bracket bolted to nearby Girder 1. Also fixed on the Rod in the position shown is a ½ in. Helical Gear 16.

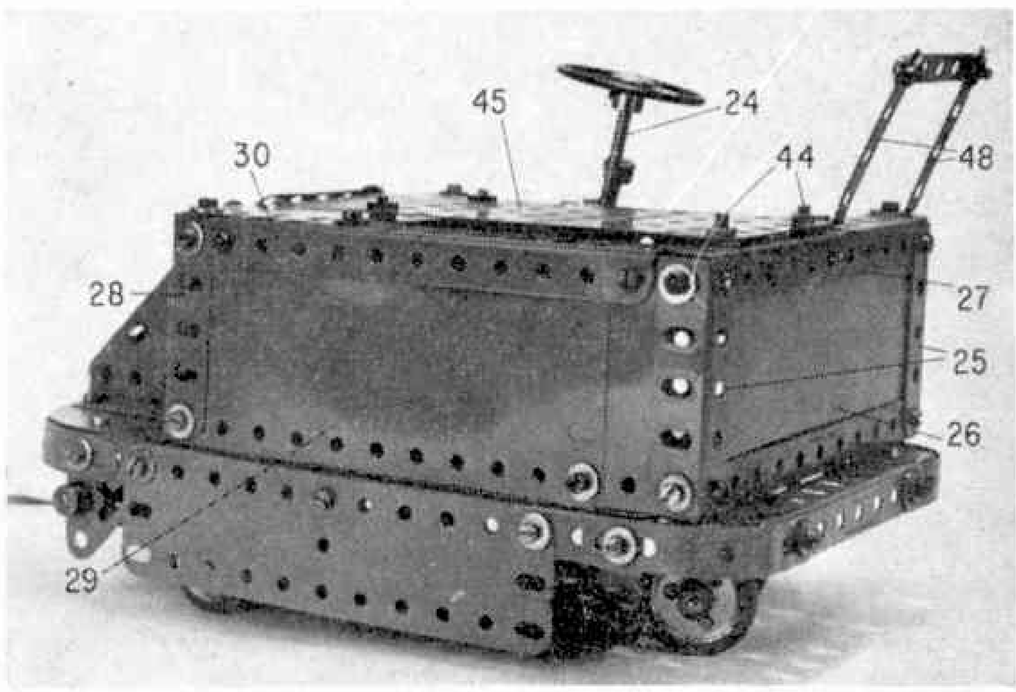
Turning to the E15R Motor, a ¾ in. Pinion 17 is mounted on the rear-pointing end of the output shaft, this Pinion meshing with a 50-teeth Gear Wheel on a 2½ in. Rod journalled in the Motor sideplates. Also mounted on this Rod, between the Motor sideplates, is a ½ in. Helical Gear which meshes with another similar Helical Gear 17a on a vertically-mounted 3½ in. Rod. This Rod is held by Collars in Flat Girder 3 and in an Angle Bracket bolted to the centre of a 1½ × ½ in. Double Angle Strip which is in turn bolted to the upper corners of the Motor sideplates. The Rod, itself, projects downwards through the Flat Girder and on its lower end is fixed a further ½ in. Helical Gear 18 which meshes with Helical 16. This completes the drive linkage to the sweeping-brush assemblies, but it is best to leave the actual brush assemblies till the last.

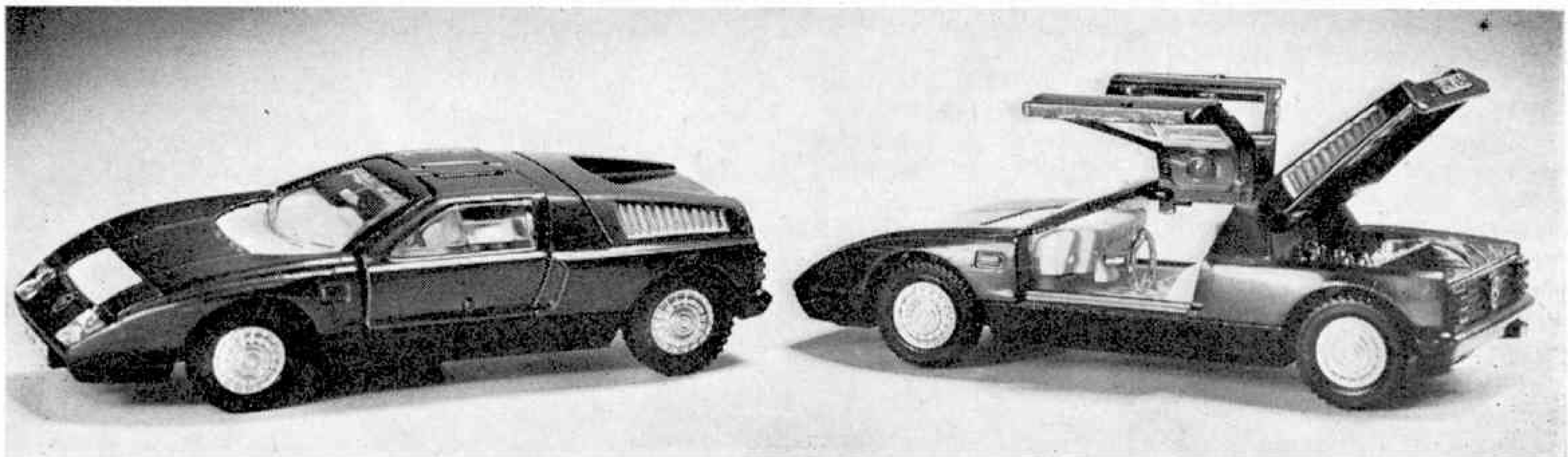
TO BE CONTINUED



Above : An underside view of the model showing the layout of the chassis, the steering linkage and the drive to the sweeping brushes.

Below : In this view of the Platform Sweeper, construction of the left-hand side and rear of the body is clearly shown.





With " gull-wing " doors and engine cover open, the Dinky Merc. shows off its intricate detail; with them closed, it takes on the sleek, high-speed lines of a true speedster.

DINKY TOY NEWS

by Chris Jelley

Two new action-packed Dinky Toys make their debut this month, the Monteverdi 375L from Switzerland and the Mercedes-Benz C111 from Germany

HOW WOULD YOU LIKE TO OWN the fabulous Mercedes-Benz C111 ? I would, and no doubt you would, also, but I am afraid that there is no chance of it ever happening. The closest we will come to it is the lastest Dinky release, No. 224 Mercedes-Benz C111—the real car isn't for sale ! In fact, the only way any of us would be likely to even travel in the car would be to sign on as a top engineer with Daimler-Benz in Stuttgart, manufacturers of Mercedes-Benz vehicles, the reason being that the C111 is produced by Daimler-Benz purely as a " research and development sports car ". It is not planned to be put into general production and so there will not be any about, that we might have the chance of travelling in.

A research and development car is, in effect, a travelling testbed, used for trying out and developing new designs or ideas worked out by the back-room boys of the motor industry. The C111 certainly qualifies as a test-bed as it not only presents a completely new body shape for Mercedes-Benz, it is also driven by a revolutionary power plant—the unique rotary Wankel engine !

Followers of developments in the engineering world will know something of the Wankel engine. For those who do not, however, a Wankel is, in very simple terms, an engine which, instead of having pistons working inside cylinders as in " normal " engines, has a three-lobed rotor (taking the place of the piston), revolving inside a special chamber. In a piston engine, the ignited fuel drives the piston up and down in the cylinder, but then a whole system of cranks and connecting rods, etc. is required to convert this reciprocating motion into rotary motion to drive the wheels through the gearbox. In a Wankel engine the ignited fuel drives the rotor round and round, imparting rotary motion right at the beginning. Thus, there is no need for all the bulky motion-converting equipment and so the wankel engine becomes not only more efficient, but also much smaller in size for the same power output. The rear-mounted rotary engine fitted to the C111, for example, is a three-chamber unit which develops the remarkably high power output of approxi-

A close-up view of the Merc's engine compartment showing the finely-detailed reproduction of the real car's revolutionary Wankel engine.

mately 330 H.P. at 7,000 r.p.m. to give the car a top speed in excess of 160 m.p.h. yet it is less than half the size of a comparable piston engine !

Turning to the Dinky Toy, this does not of course carry a working engine, but it is fitted with an amazingly well-detailed reproduction of the original's Wankel unit, tucked away in the rear engine compartment beneath a snugly-fitting boot lid. All the sleek, high-speed lines of the original are faithfully reproduced in the model, the air of realism being further increased by such additional features as opening " gull-wing " doors, glazed windows, seats, steering wheel and facia panel, this last sporting an impressive array of " dials " represented by recesses in the facia moulding. As it is only to be expected on a Dinky sports car, Speedwheels are fitted as standard, the final touches being supplied by " glass " headlamps, German-style number plates and the Mercedes 3-pointed star emblem carried at front and rear. My review sample is finished in a beautiful deep flamboyant red gloss with black base, white interior and gold engine—very pleasing to look at, but much better to own !

Swiss beauty

Released with the Merc. is Dinky Toy No. 190, based on the Swiss Monteverdi 375L. Monteverdi is not a familiar name in Britain, but in its native Switzerland it is as well-known as Ford in this country. Monteverdi, or Automobile Monteverdi to give it its correct title, is only a small company by our standards, but it is none-the-less the only native car-manufacturing company in Switzerland and, as such, has a special place in the hearts of all Swiss nationals. The cars it makes, too, although produced only in limited numbers, are something to be proud of and this is a feeling which will soon be associated with the Dinky version of the Monteverdi 375L.

The real car is beautifully-shaped—long, low and sleek—and the new Dinky captures the beauty with its accurately reproduced casting form. Added to this, it is packed with action features including an opening bonnet covering a detailed engine, an opening boot lid and two wide-opening doors, with plated interior door panels and window surrounds. These last give access to a fully fitted-out interior complete with seats, facia panel and steering wheel. Even the backs of the front seats tip forwards !

Mounted on the outside of the left-hand door is a streamlined racing-type rear-view mirror, while twin amber-coloured jewelled headlamps are inset into the silvered radiator-grille. As on the Mercedes, Speed-wheels are fitted as standard. Swiss number plates appear at front and rear, with the finishing being supplied by an immaculate colour-scheme again of flamboyant deep red body, but this time on a bright-plated base. The interior moulding is white, set off by a black steering wheel. All in all—a quality model and one, I might add, which I would go a long way to buy—if I didn't get a free sample !

In real life, the Monteverdi company, as I have said, is small by British standards and, in fact, produces only some 60 cars a year. The 375L is not its only model—there are also the 450SS and 375S—but it is obviously the one in which we are interested here. Classed as a touring car, it is built in Basle, Switzerland with components drawn, not only from Switzerland, but from several other countries throughout the world, including Britain. Power is supplied by a massive American Chrysler V-8 engine of 7,206 c.c. capacity which develops though a Chrysler Torque-Flite Hi-performance automatic transmission system to the rear wheels, giving the car a top speed in excess of 150 m.p.h.

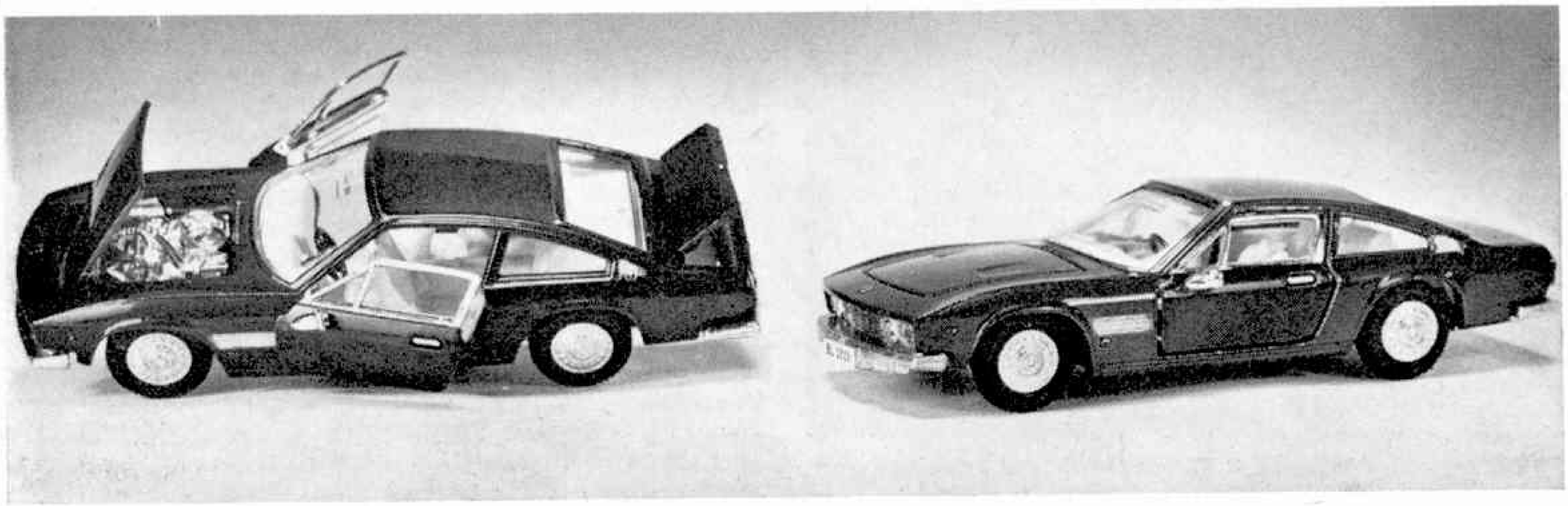
General performance is staggering, the car accellerating from 0 to 60 m.p.h. in 6.3 seconds and from 0 to 100 m.p.h. in only 16 seconds ! Even after this speed, when most fast cars' accellerating capabilities drop off significantly, the Monteverdi bounds forward: 100 to 120 m.p.h. in just 8.9 seconds and little more than this to carry on to 140 m.p.h. That's travelling! Mind you, it's thanks to Britain that the car stops quickly and efficiently from these speeds. British Girling disc brakes are fitted all round.

Overall, the 375L is a magnificent car, but there is one small thing that will prevent it becoming a popular buy—it costs around £10,000 !

WOULD YOU LIKE TO WIN A DINKY TOY ?

Every month we have 50 Dinky Toys to give away to the first correct answer to our simple Competition . . . . For further details turn to page 45

Packed with action features, the new Monteverdi 375L is one of the finest models to be added to the Dinky range.



CHECKPOINT RoSPA HOUSE . . . *described by* TREVOR HOLLOWAY

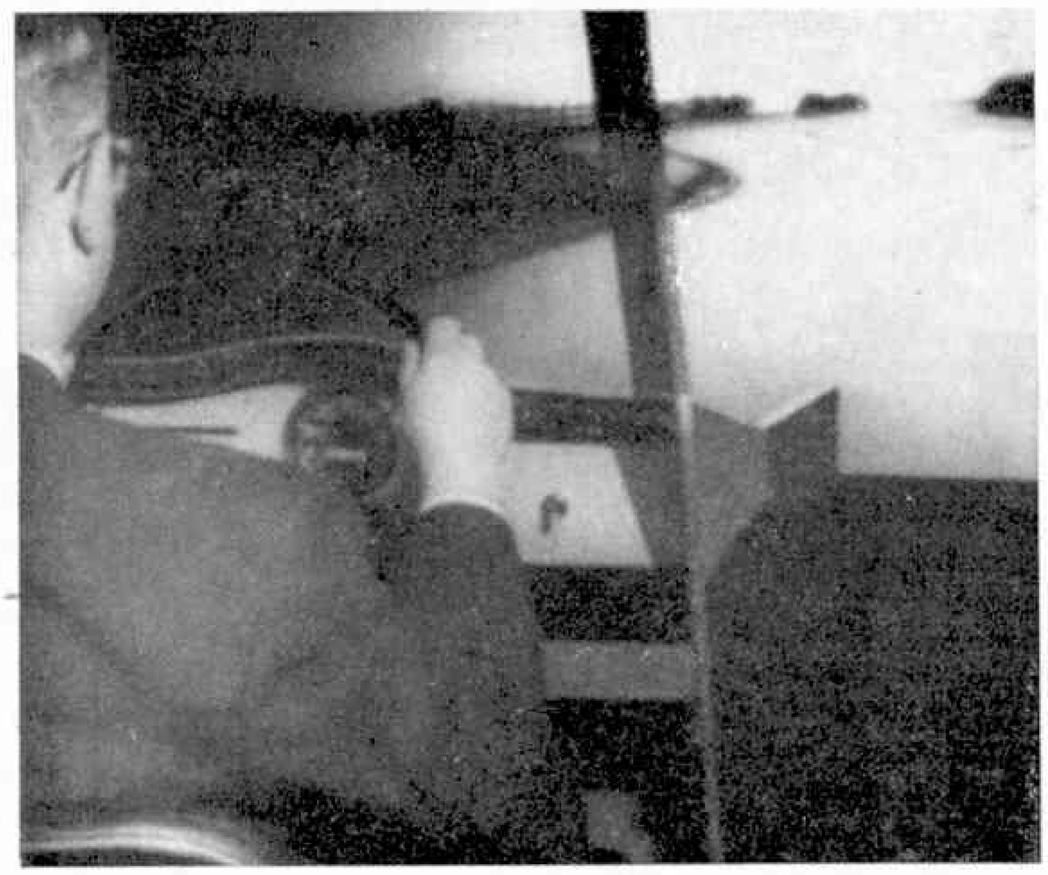
By means of magnets operated under the table-top, a variety of situations can be easily set.

THERE ARE ALREADY ABOUT 14 MILLION VEHICLES of all types on our overcrowded roads and production for the home market can be expected to increase this total by at least another half-million during the coming year. It is obvious that training in road safety matters will become progressively more vital as time goes on.

Picture a city or town with a population around 350,000—say Nottingham, for example. Suppose that in one year every man, woman or child in that town were killed or injured. At least that number are killed or injured on the roads of Britain every year.

Unfortunately, despite its urgency, road safety is not the easiest of subjects to put over effectively and all too often interest is difficult to maintain. Not so, however, at RoSPA House, Britain's unique road safety training centre and exhibition, within a stone's throw of Hyde Park Corner, in London. This is no dry-as-dust museum-like place where all you see is an array of posters and slogans warning one of the perils of bad 'roadmanship'. It is a live-wire, exciting place, with working models, animated visual aids and hundreds of intriguing button to press—all designed to give sound advice to every class of road user—motorists, cyclists and pedestrians alike.

It should not be imagined that RoSPA House is merely a trainnig centre for school children—taxi drivers, long-distance lorry men and even racing drivers all drop in from time to time to check up on their skills. Far too many road users imagine that because they have accident-free records they are a breed apart, immune to the disasters which befall those less gifted.



Seated at the controls of the driving simulator, the driver has the illusion of driving along country roads.

But—how do they *know*? Without an independent check they have no basis for comparison, no means of knowing whether there is a chink in their armour, a habit which will betray them, a fault in technique which might make all the difference between a hit or a near miss.

Hence the need for a checkpoint such as RoSPA House. This is the place where every conceivable aspect of safe driving is visually demonstrated through the medium of the most complex assembly of checking devices and visual equipment ever assembled in one centre.

Here, with the aid of trained instructors, faults in visual standards or automotive responses are readily detected and passed on for the benefit of those who take advantage of those facilities. No one, however good and experienced, can fail to obtain some benefit from a visit.

Let's take a brief tour of this fascinating centre. Incidentally, it was founded and equipped by the Royal Society for the Prevention of Accidents (hence the name RoSPA) with the assistance of the Silver Jubilee Fund.

The ground floor is dedicated to the driver and learner/driver. Press the button of Unit 1 and we shall be shown the peak ages at which each class of road user is most affected by fatal accidents—children under five, cyclists in their teens, motor-cyclists in their early twenties, drivers in their middle twenties and, as might be expected, elderly pedestrians.

By pressing the buttons of Unit No. 2 we can turn the pages of a large-scale reproduction of the articles of the Highway Code.

Nearby is a very popular exhibit—an animated sectionalised motor-cycle. The cut-away sections enable us to see exactly how the various parts of the machine function and their relation one with another. Equally popular with visitors is the sectionalised car chassis. Place a penny in the slot and the working parts will be set in motion.

The whole unit in the Model Room is intended primarily for detailed instruction under expert guidance and the animated sections, being controlled by delicately balanced mechanisms, can only be operated by an instructor. Even so, the casual visitor can learn much by studying the situations portrayed—right-hand turn, cross-roads, keeping distance, going back and so on.

One of the most hard-working pieces of equipment at RoSPA House must surely be the advanced cycle trainer on which boys and girls are tested by an instructor. A number of situations are illuminated on a screen and the trainee's knowledge of what to do in regard to traffic lights, pedestrian crossings, various road signs and in an emergency, can be tested. Reaction time is measured and also the actual overall distance travelled before coming to a standstill.

Another popular unit is No. 35, the Universal Trainer. In this static car, with the aid of an instructor, the visitor, whether a driver or not, can be tested for reaction time. That is the time taken for the brain to convey its call for action to the foot. Under ideal conditions, with properly inflated tyres and correctly adjusted brakes, from 30 m.p.h. you would travel at least another 45 ft. before coming to a halt.

The General Exhibition section is on the first floor and here the button-pusher fan can really go to town. Unit 39 is sure to catch your eye. A model village, complete with roads and the normal traffic hazards, is laid out on a board. A control panel in front of the model displays a variety of road signs, each with its particular button. Object of the exercise is to route a red model car through the village by pressing the appropriate button. The car can only be made to proceed if the correct button selections are made.

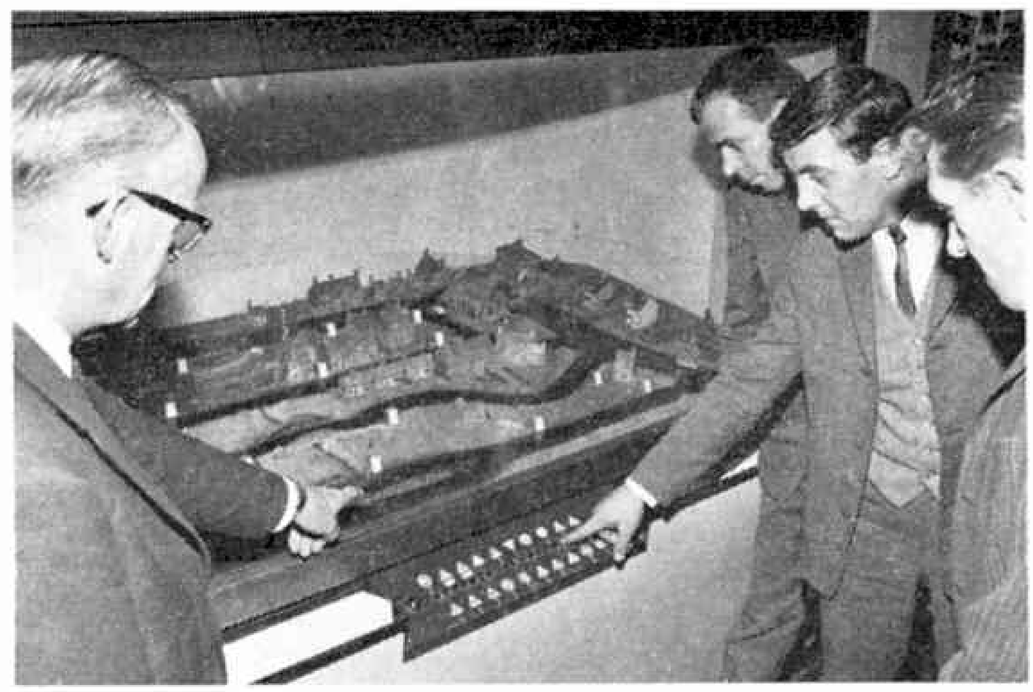
Other buttons around the room reveal faults made by cyclists, drivers and pedestrians. There's a " What's Wrong Here ? " button, with another button to give the correct answer. Unit No. 44 is a Road Sign Quiz. First select one of the road signs illustrated and press its button. Then decide which title is appropriate to the particular sign. A green light glows if you are correct and a red if you are wrong.

A party of schoolgirls checking up on their knowledge of road signs.

Be sure not to miss the Magnetic Table unit. If you are fortunate to be present when a class of children is under instruction you will appreciate the usefulness and popularity of the table as a teaching aid. Incidentally, it was invented by a member of the Metropolitan Police Force. The table-top is laid out as a busy four-way road junction, complete with traffic lights and various other road signs. With the aid of magnets operating under the table the instructor in charge can animate model cars, buses, pedestrians and cyclists just as he pleases, thereby demonstrating almost any type of traffic problem and illustrating examples of good and bad roadmanship.

The upper floors at RoSPA House have elaborate equipment for more advanced and individual training than so far dealt with. There are ingenious devices for testing a driver's field of vision and his ability to judge distance and speed.

Of special interest is the Driving Simulator. This is to the conventional car as the Link Trainer is to aircraft. Seated at the controls, which are exact replicas of those encountered in the average small car, the driver can experience the sensation of driving along



If the correct buttons operating road signs are not done correctly the car will not advance.

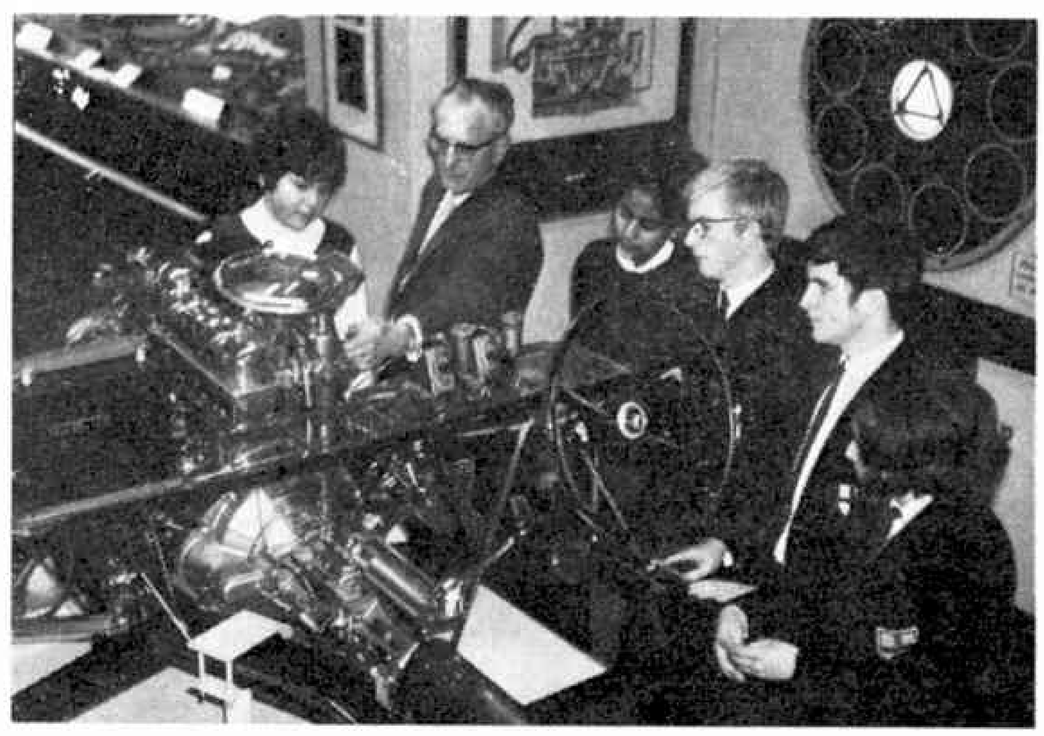
country roads, choosing and altering direction at will, although in fact the car in which he or she is seated remains static. The illusion is achieved by the projection of a model roadway on to a screen facing the driver, the movement being controlled by motors connected electrically to the accelerator pedal and steering wheel, and being faithfully reproduced on the screen.

The primary purposes of this device are to enable the learner/driver to acquire confidence at the controls without distractions encountered on the road; to test reaction to sudden emergency; and to detect any bad habits an experienced driver may have acquired over the years of driving.

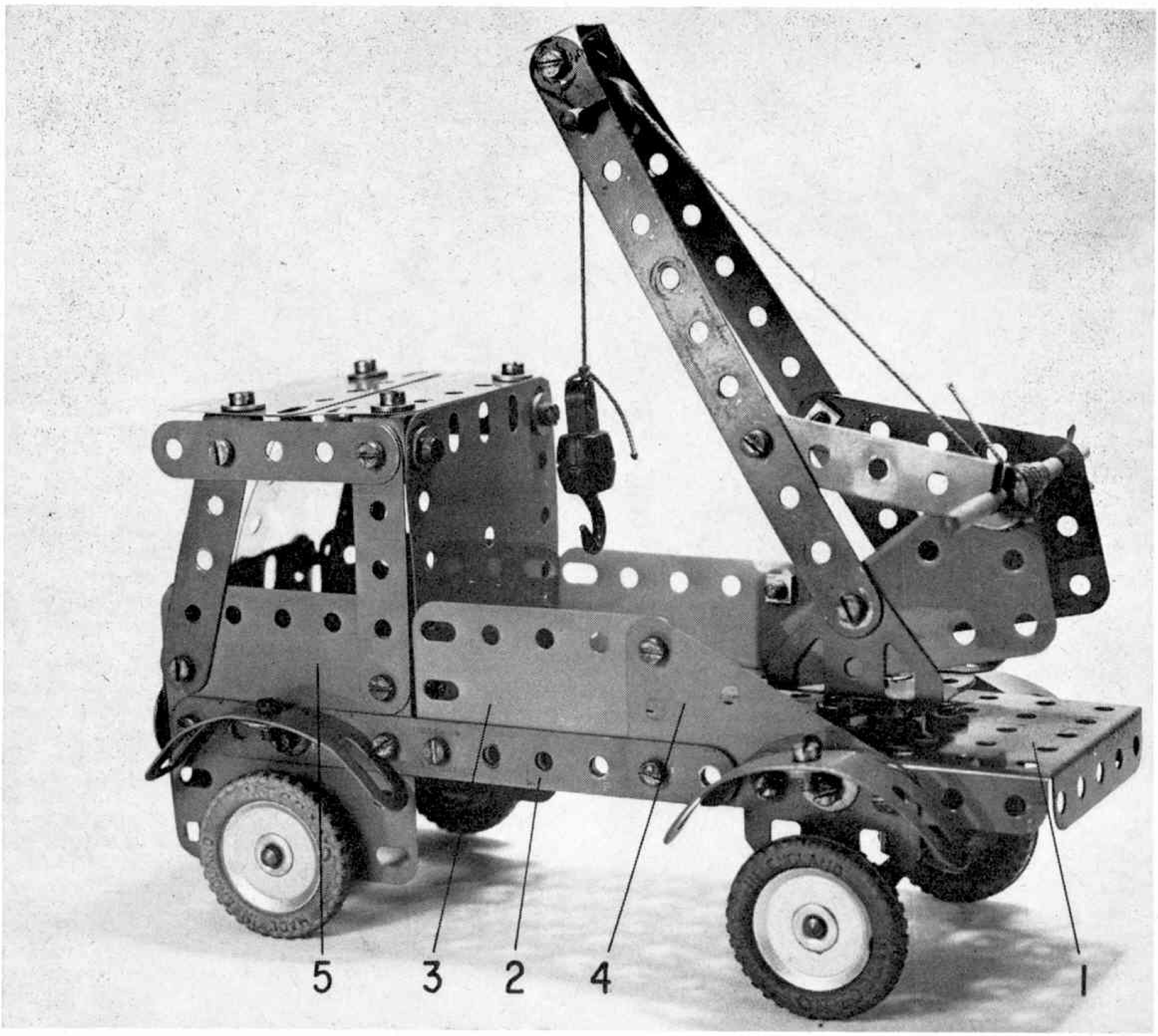
The centre also has its own cinema, theatre and lecture hall. A wide range of road safety films are shown catering for all age groups and classes of road user. Films are also loaned to Road Safety Committees all over the country.

Apart from the many visitors who come to RoSPA House from all over the world, an increasing number of industrial firms and organisations have realised the positive value of the centre's facilities and are taking advantage of them in an effort to improve their accident records.

The address of RoSPA House is 17, Knightsbridge, Hyde Park Corner, London S.W.1. At the time of writing, hours of opening are: Mondays to Fridays 10 a.m. to 7.30 p.m.; Saturdays 10 a.m. to 5 p.m.



This sectionalised chassis enables members of a school party to see the functions of every working part in action.



BREAKDOWNS RECOVERED

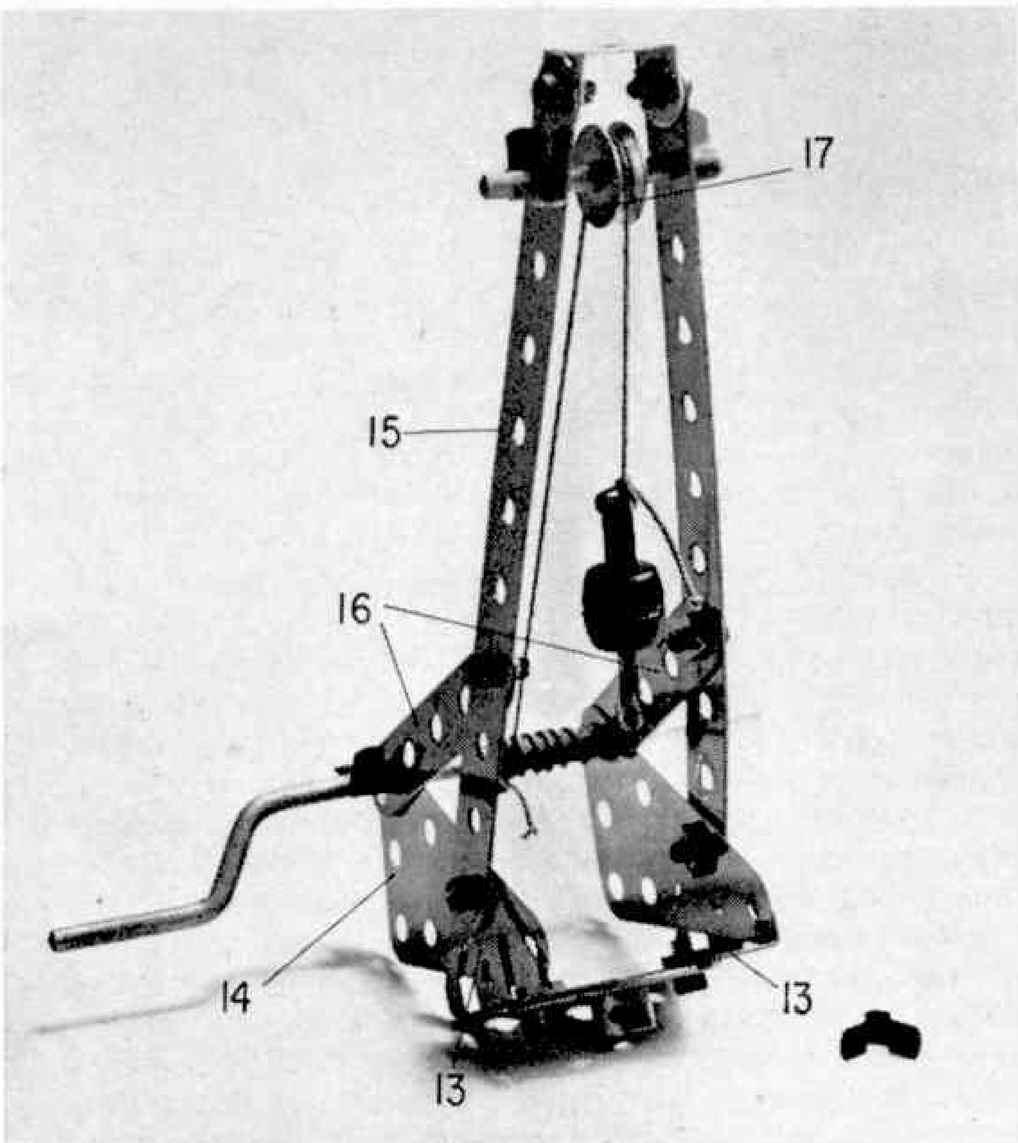
With this little Breakdown Truck built from a no. 4 Set and described by *SPANNER*

UNDENIABLE IS THE FACT that half the joy of working with Meccano is in the building of the models. With many modellers it doesn't even matter a great deal what a model will do, when completed, the important thing being that the model has been successfully finished. Indeed, it is not unknown for an advanced modeller to spend many months building up a complicated construction, only to dismantle it and start on something new as soon as it was finished!

Be that as it may, the pleasure of building—particularly for younger modellers—can still be greatly increased by models which, when finished, actually "work". The Breakdown Truck described here is such a model, and is one which has been specially de-

signed for youngsters, being built from the contents of a No. 4 Meccano Set. Construction is not difficult, the chassis consisting of a $5\frac{1}{2} \times 2\frac{1}{2}$ in. Flanged Plate 1, each side flange of which is extended five holes forward by a $5\frac{1}{2}$ in. Strip 2, at the same time fixing a $2\frac{1}{2} \times 1\frac{1}{2}$ in. Plastic Plate 3 and a $2\frac{1}{2} \times 2\frac{1}{2}$ in. Triangular Flexible Plate 4 in place, as shown.

Bolted to the protruding section of each Strip 2 is a $2\frac{1}{2} \times 2\frac{1}{2}$ in. Flexible Plate 5, the Strip crossing the centre of the plate and the front securing Bolt fixing a $2\frac{1}{2} \times \frac{1}{2}$ in. Double Angle Strip between the sides. Fixed to this Double Angle Strip is a $2\frac{1}{2} \times 2\frac{1}{2}$ in. Plastic Plate 6, the securing Bolts being fitted with $\frac{3}{4}$ in. Washers 7 to represent headlamps. Two $2\frac{1}{2}$ in. Strips 8 and 9 are bolted, in the positions shown, to each Plate 5, their upper ends being connected by another $2\frac{1}{2}$ in. Strip, the front securing Bolt of which holds a $2\frac{1}{2} \times \frac{1}{2}$ in. Double Angle Strip in place, the rear Bolt holding an Angle Bracket. Secured to these

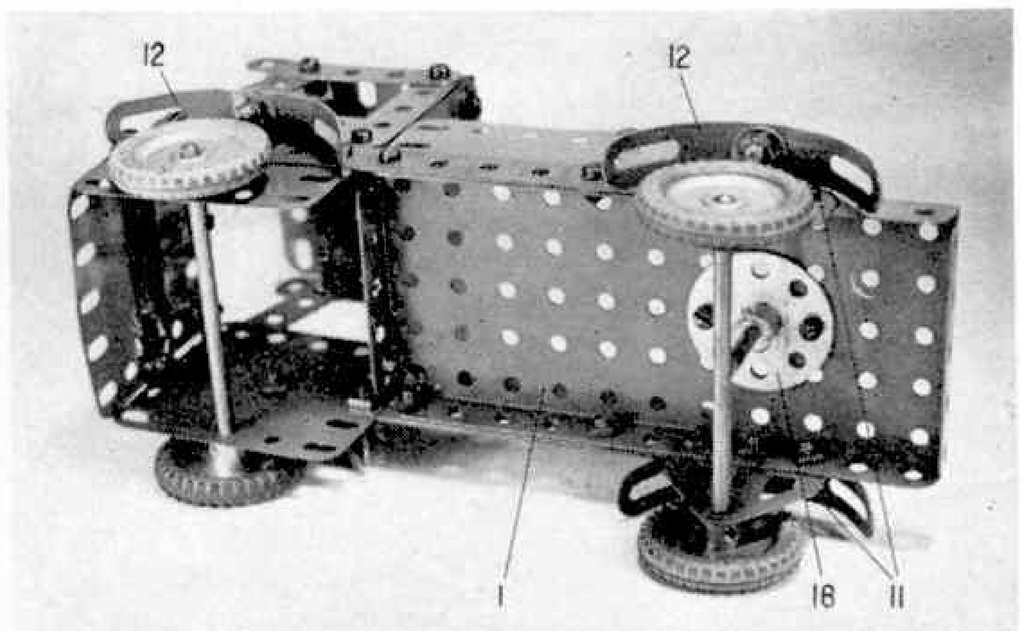


The lifting winch as it appears when removed from the rest of the model.

Angle Brackets at each side and to the Double Angle Strip is the cab roof, supplied by two $2\frac{1}{2} \times 1\frac{1}{2}$ in. Flexible Plates 10, overlapped one hole.

A windscreen is built up from two $2\frac{1}{2} \times 1\frac{1}{2}$ in. Transparent Plastic Plates, overlapped one hole and bolted to Plastic Plate 6, while all four wheels are supplied by 1 in. Pulleys with Motor Tyres fixed on axles provided by $3\frac{1}{2}$ in. Rods. The front axle is mounted in the lower central holes in Plates 5, whereas the rear axle is journalled in the appex holes of two Flat Trunnions 11, bolted to the side flanges of Plate 1. Mudguards are supplied by Formed Slotted Strips 12, attached by Angle Brackets to the side of the model.

This brings us to the lifting winch which, again, is very simple in design. Two Trunnions 13 are bolted, in oposite positions, to the face of an 8-hole Bush Wheel, a $2\frac{1}{2} \times 1\frac{1}{2}$ in. Triangular Flexible Plate 14 and a $5\frac{1}{2}$ in. Strip 15 in turn being bolted to each Trunnion.



An underside view of the model showing the simple construction of the chassis.

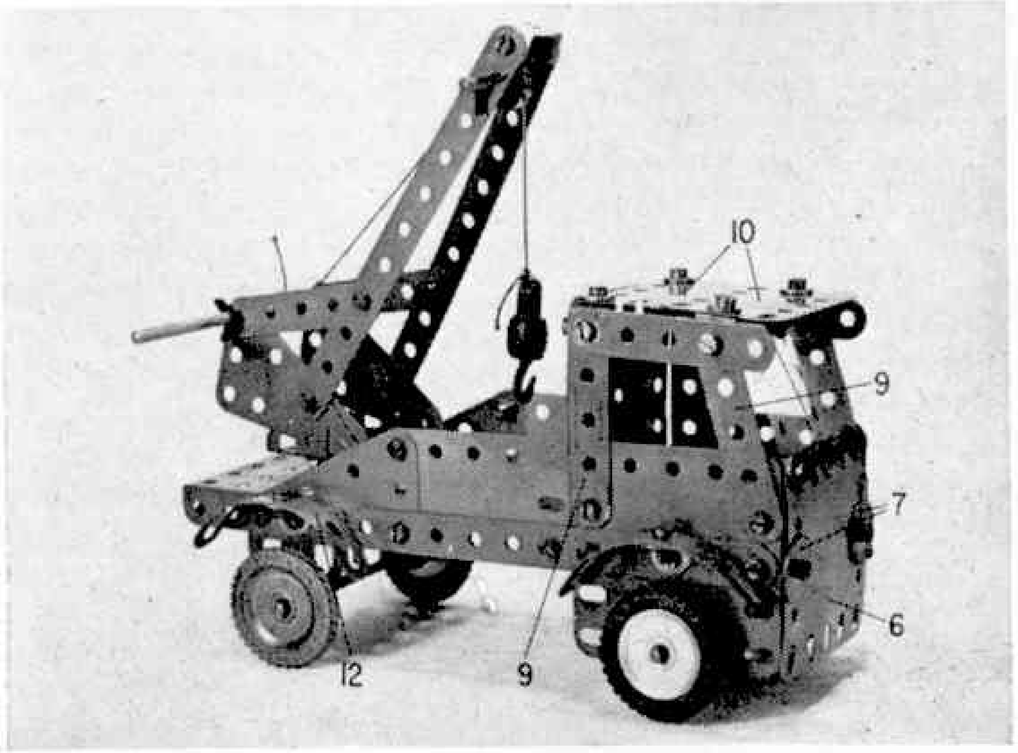
Note that Strips 15 are angled rearwards, strengthening stays being provided by two $2\frac{1}{2}$ in. Strips 16, one end of each of which is bolted to one Strip 15 through its fourth hole, the other end being held on a $3\frac{1}{2}$ in. Crank Handle journalled in the upper corner holes of Triangular Plates 14. The Crank Handle is fitted with a Cord Anchoring Spring and is held in place in its bearing by Spring Clips.

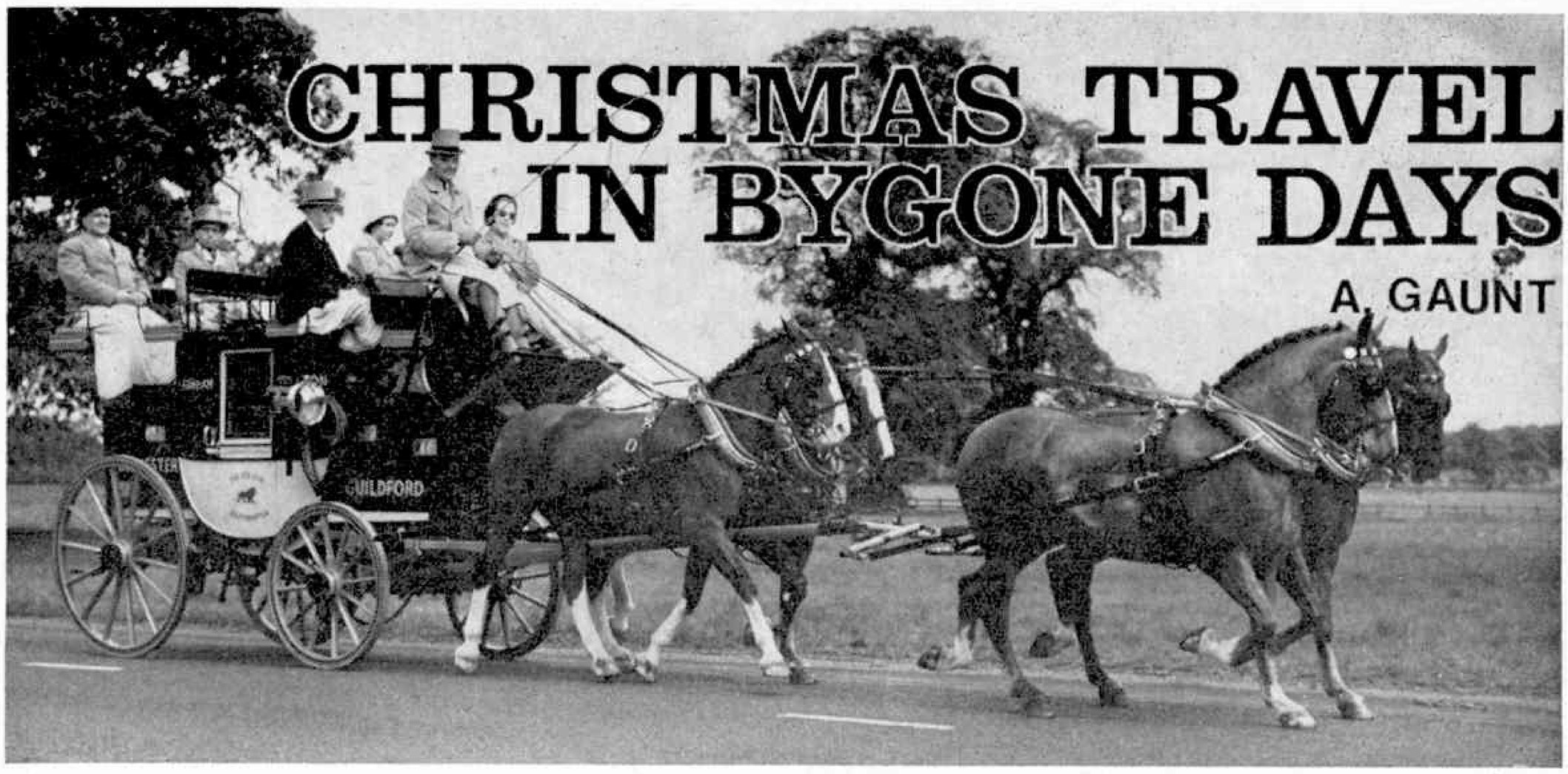
The upper ends of Strips 15 are joined by a Double Bracket, while journalled in the second holes in the Strips is a $1\frac{1}{2}$ in. Rod, carrying a $\frac{1}{2}$ in. loose Pulley 17, the Rod itself being held by Spring Clips. The winch is then held by another Spring Clip on a 2 in. Rod fixed in the boss of a second 8-hole Bush Wheel 18 bolted to the underside of Flanged Plate 1. This Rod of course passes, free, through the boss of the Bush Wheel to which Trunnions 13 are secured. A length of Cord is then tied to the Cord Anchoring Spring on the Crank Handle, is taken over Pulley 17 and finally fitted with a Loaded Hook—and the model is finished.

PARTS REQUIRED

4—2	2—24	1—52	2—188
8—5	5—35	1—57c	2—190
9—11	54—37a	2—126	2—193
2—12	54—37b	2—126a	2—194
1—18a	10—38	4—142a	2—194a
1—19g	2—38d	1—176	4—215
4—22	2—48a	2—188	4—221
1—23			

This view of the Breakdown Truck shows how successfully just a few parts can be used to build up a very realistic shape.





CHRISTMAS TRAVEL IN BYGONE DAYS

A. GAUNT

Arthur Gaunt describes for readers the troubles and delights of Christmas Travel many years ago . . . .

INCREASED TRAIN SERVICES and busier roads have become a common feature of Yuletide in recent years, yet our highways were by no means devoid of traffic at this season in earlier centuries. " Highways " is perhaps an exaggerated description of the rutted tracks which served travellers in Britain for a long period, yet despite the discomfort and inconvenience, many people made protracted journeys at Christmas, to visit relatives or return home from distant parts to attend the festivities.

Those were the days of stagecoaching, when a network of services linked our main cities and towns, offering transport which at best was rarely pleasant and which could be dangerous at its worst. At Christmas, not only was there a greater risk of being waylaid by highwaymen, who expected to make a rich haul from heavily laden travellers, but the weather created further hazards.

Instances of coaches being snowed up for days, overturned by gales, or swamped by floods were not uncommon. At Yuletide, 1836, fourteen mail coaches were abandoned on the roads around London alone, as a result of blizzards. A coach carrying passengers and mail from Brighton to London fell into a deep snowdrift, and the guard set off for help. But when he returned, coach, horses, and passengers had all vanished ! After much difficulty they were found, but the coach could not be extricated, and the loyal guard had to saddle one of the horses so that he could continue the journey to the City with his precious mail. He did not arrive until two days later. The passengers, who had struggled to an inn, did not reach their destination until a week had elapsed and a relief coach had managed to get to them.

Inns had an important role in the stagecoach services. In addition to providing meals for passengers, they served as changing posts for horses, and many of these ancient hostelries which survive today still incorporate stables. Typical is the " Crown," at Boroughbridge, on the Great North Road. When it was in use as a stagecoach halt, as many as forty horses were normally kept there to replace the tired ones arriving with coaches on the way to or from London, or serving the route to Leeds and Lancashire. A quaint old inn on the alternative West Coast route between England and Scotland can be seen near Kirkby Lonsdale, Westmorland. It is the oddly-named Whoop Hall Inn, founded more than 250 years ago, to cater for stagecoach travellers. Running schedules were often so tight that passengers had to have their meals during the 20 minutes or so needed for changing the horses, and travellers in those days were known for lavish tipping—so much so that the staff of coaching inns did not always receive wages. It is recorded that at some such hostelries, like the Angel, Wetherby, employees paid the host for the privilege of working there at Christmas !

Coaches carrying mail were particularly subjected to a strict timetable, and the postboys riding at the back of the vehicles blew their horns not only to clear the way of other traffic but also to let tollgate keepers know that a mail coach was approaching, so that there would be no unnecessary delay at that point. These were colourful, boisterous days of travel, as revealed by novels written around coaching, such as Dickens's *Pickwick Papers*. His *Nicholas Nickleby* describes how the hero of the story made an uncomfortable journey to Yorkshire by stagecoach in wintry weather, and the George Inn, Grantham, is one of the halting-places appearing in the story. Colourful names helped to enliven the services, for there were coaches called Quicksilver, Flying Machine, Defiance, Telegraph, and Tally-Ho. The young hero of *Tom Brown's Schooldays* travelled in a Tally-Ho stagecoach to Rugby. The

coaches carrying mail were especially resplendent, being emblazoned with the royal coat-of-arms, and the coachmen and guards wore gold and scarlet uniforms.

An interesting point is that the titles of many of our present-day newspapers (Telegraph, Express, Mercury, and so on) arose from the names of the coaches which delivered them to distant places in the early days of the newspaper industry. But, comparatively speaking, the early stagecoaches rarely lived up to the names given to them. Today you can reach Salisbury by express train from London in a bare 2 hours. In the seventeenth century it took two days to make the 83-mile journey, and when a coach proudly called Flying Machine began running from London to Exeter, it took nearly five days to get to the Devonshire city.

The "Pullman" services of those times charged 3d. or 4d. per mile, whereas the slower, heavier coaches had a fare of only 1d. per mile—compensation for their average speed of a mere 3 m.p.h. Typical of the lumbering, long-distance stagecoaches 200 years ago was a Flying Machine linking Colchester with London. It carried 22 passengers, but only eight rode inside, the others being seated on wooden benches on top and at the rear, where they had to brave the elements. Christmas journeys can hardly have been pleasant!

Rivalry between the various coach owners resulted in a progressive reduction of the time taken on scheduled journeys. Thus, anyone going from London to Edinburgh for Yuletide in 1832 could count on reaching the Scottish capital in just over 42 hours—weather and other uncontrollable circumstances permitting. In 1836, an Express left Leeds for London at 10 a.m. each day, and by continuing through the following night it was able to reach London by 9 a.m. the next day. This Leeds Express stagecoach was one of the last to go out of service, not being withdrawn until the city was linked with the Metropolis by railway.

London still has one of the most important starting-points for stagecoach services in those days, the George Inn, Southwark. The passengers boarded the vehicles in its spacious courtyard, and left through the archway leading to the main road outside. Souvenirs of that era are not confined to inns, however. Old mileposts associated with stagecoach travel remain at many places. No doubt Christmas travellers looked out for the one outside the Orleans Arms, near Kingston-on-Thames, this pillar telling them the distance to and from several places on the London-Portsmouth road. Just beyond Kirkstall Abbey, on the outskirts of Leeds, stands an obelisk which was often pointed out by stagecoach drivers as marking the exact halfway point between London and Edinburgh. It is not quite equidistant now, owing to changes along the Great North Road, but the metal plate quoting the distance from the two capitals as precisely 200 miles has not been removed.

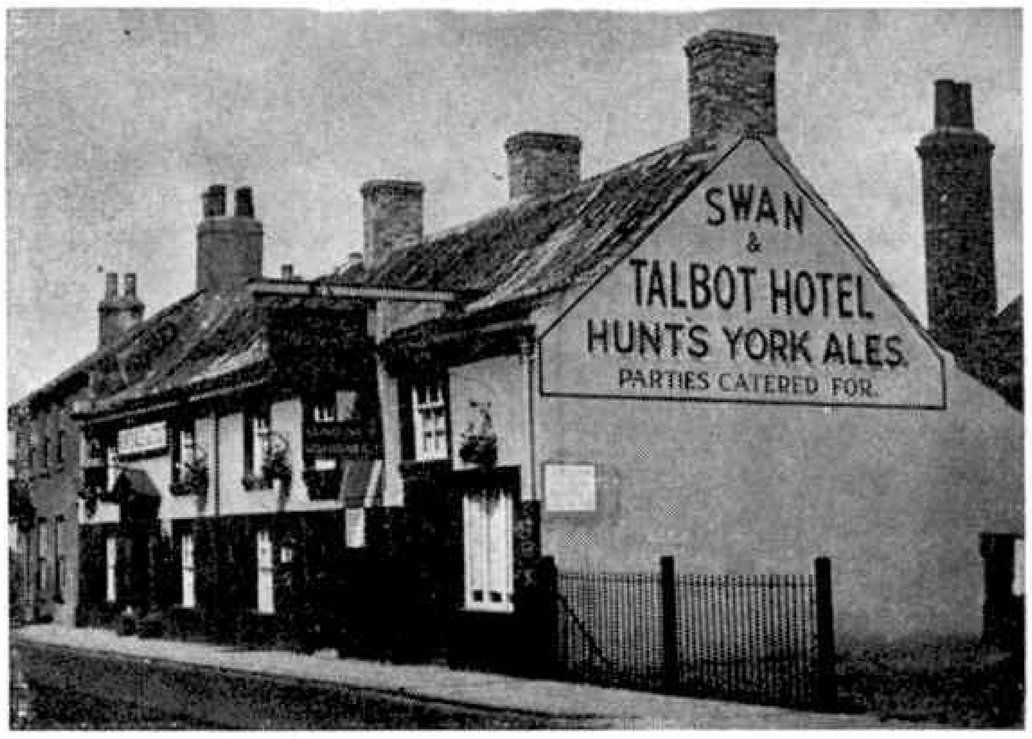
Quite a different kind of memento occupies a small railed enclosure near Trecastle, Beconshire. It marks the spot where a stagecoach ran out of control and overturned in 1835, and bears a long inscription describing the accident, warning the drivers of such vehicles, and describing how the memorial was paid for. Even today, horse-drawn transport of this type can be seen on our roads. One or two examples operate as tourist attractions. During the summer months a coach-and-four starts from a Nantwich inn and carries its passengers round the beautiful Cheshire countryside, and a similar vehicle sets out on a tour of London, passing Buckingham Palace, the Houses of Parliament, Westminster Abbey, and other historic spots.

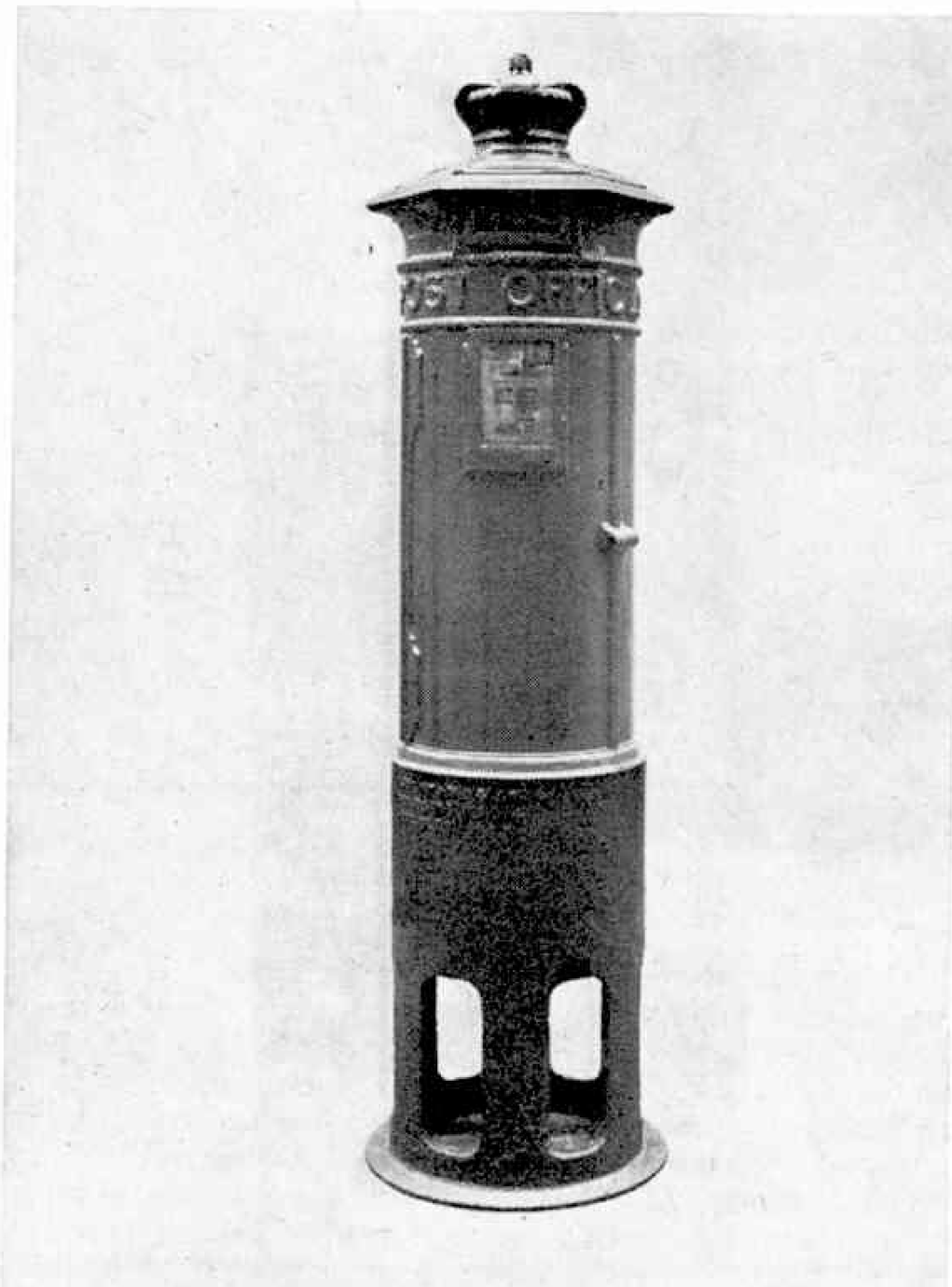
The Kings Arms, Amersham, an old inn, which was a halt for stagecoaches travelling to and from London.

A longer stagecoach run has Hampton Court Palace as its destination. A further example of the old days of travel is the Red Rover, a coach which started running between London and Southampton in the early nineteenth century. It ran from a Fleet Street inn to the Red Lion at Southampton, taking eight hours for the journey. This relatively fast time for those days was achieved by using eight or nine teams of horses. The Red Rover was the last stagecoach to run regularly on that particular route, and finally went out of service in 1843. The coach was given to Watney Mann Limited, the brewers, in 1950. Restored to its old splendour and made roadworthy again, it has since re-run its original route several times, the last occasion being in 1964. Today, it is seen regularly at horse shows and exhibitions all over the country.

These present-day vehicles are historic links with the period when Christmas travel took a different form to the 20th-century system. The hardy souls who went by stagecoach at this season no doubt enjoyed the delights of Yuletide more, having paid the price of a journey which could hardly be described as a pleasant experience.

The Swan and Talbot, Wetherby, Yorkshire. In stagecoach days travellers tipped so lavishly that staff relied solely on this as a source of income.





A special pillar-box designed for Liverpool in 1863.

DON'T FORGET THE POSTMAN

Peter Smith describes the early years of the Postal System

SINCE THE MIDDLE OF THE NINETEENTH CENTURY, when the first Christmas Cards were produced, the Post Office has had to cope with its annual 'Christmas Rush'. This involves over 1,000,000,000 postal packets, which are dropped into Britain's 93,000 pillar boxes. These familiar red letter boxes are now being gradually replaced by shorter, fatter, and easier-to-empty boxes.

At first our letters had no envelopes, and addresses had to be written on the outside of the sealed letters. The fact that few of our streets were named and even fewer houses numbered made our early postman's job very difficult. It wasn't surprising for him to be faced with the job of delivering a letter to "Mistress Mary Hawkins, at the house of a chandler in an alley near the sign of the Red Bear next to the Fleet Bridge in the City of London." People still tend to forget addresses sometimes these days, and today's postmen often have to work out special directions before they can deliver the mail. An address such as "To the occupier of the farm below the vicarage on the left of the lane opposite the church, Longdon-on-Tern, Wellington, Shropshire" is fairly easy to follow. A more complicated address ran "Lat. 50 deg. 47 mins. 25 sec. North. Long 1 deg. 6 min. 25 sec. West," but in true Post Office tradition the letter reached its destination.

In the early days of the postal service, postal dues, based on the number of sheets in the letter and the distance the letter was carried, were paid by the recipient. The famous Penny Post began on January 10th 1840, and it is said that one of the reasons which prompted its originator, Sir Rowland Hill, to begin this scheme was the story of an incident which took place in the Lake District.

When a letter was delivered to a woman there, she simply held it up to the light and handed it back to the postman, refusing to pay the shilling postal fee. As this was happening, the poet Coleridge was passing by, and he paid the postman and gave the woman her letter. The woman was grateful, but she told the poet he needn't have paid for the letter because it was from her brother, and she knew everything was all right. She then went on to explain that she had an arrangement with her brother for passing on news. If all was well, her brother sent a blank sheet which she could see by holding it up to the light, thus making it unnecessary for any payment to be made.

Another trick used by a clever Scotsman who came to work in London was to send envelopes addressed to his wife in Glasgow either as Mrs. MacDonill or Mrs. MacDonwell. instead of the real name, Mrs. MacDonald. Simply by looking at the envelope, the woman could see her husband's state of health, and then calmly inform the postman the letter was not hers, and thus avoid paying.

With the introduction of the penny post in 1840, there was a considerable demand for better posting facilities. But, because we tend to take the postal service so much for granted these days, it is difficult to imagine the uproar which has been caused by some of the original boxes when they were first introduced.

The Post Office was pressed to follow the examples of Continental countries by installing roadside posting boxes. France had had these boxes as early as 1655 but, as postal fees were so high, only the nobility could afford to use them, and the poorer folk had enjoyed themselves by dropping mice in them. Belgium, too, had pillar boxes before Britain and, surprisingly enough, the first box in the British Isles was situated in the Channel Isles.

This was mainly due to the work of the famous author, Anthony Trollope, who was a Surveyor's Clerk at the time. He proposed that a system, similar to the one operating in France should be tried in St. Helier, Jersey. His report to the Postmaster General stated, "At present there is no receiving office in St. Helier. Postage Stamps are sold in every street and, therefore, all that is wanted is a safe receptacle in every street." He enclosed a map of the town, suggesting four possible sites.

On November 23rd, 1852, four roadside letter boxes were opened, and in December the Postmaster of St. Helier wrote enthusiastically to the Post Master General, " The roadside letter boxes work satisfactorily. I feel assured that their introduction into England would be followed by the most beneficial results."

The first town on the mainland to have a post box was Cheltenham in 1854, and their success here led to boxes being erected in Edinburgh and, in 1855, in London. On April 11th, six boxes were opened to the public, situated at Fleet Street, The Strand, Pall Mall, Piccadilly, Grosvenor Place and Rutland Gate. Before long, boxes were springing up all over the country, almost everyone a different size and shape. Local country craftsmen produced well made attractive ones, whilst others were simply empty barrels with an opening for the letters, or some were simply hollowed out tree trunks. Some had the slit for the letters in the top, which were quite useful until it rained. The early London boxes contained the distance in miles, furlongs and yards from the nearest Post Office.

Because of the great variations in shape and size, some attempt had to be made to produce a uniform posting box for the whole country. When the Post Master General ordered the London design for all pillar boxes in 1857, not everyone liked this type so, in 1859, a cylindrical pillar box was introduced. Then, in 1864 and 1866, another type, a hexagonal design, known after its designer, J. W. Penfold, was introduced. Unfortunately, these were not a success for, despite their pleasing design, large letters frequently became jammed in the corners of the boxes. Eventually, in 1878, the plain cylindrical shape boxes were brought back and, except for a few minor changes, they have remained the same.

At this time also, red was adopted as the standard colour for pillar boxes. Early in 1874, boxes in Trafalgar Square, Pall Mall, St. George's Square, Belgrave Road, and Sussex Place, Regents Park, were experimentally painted red instead of the more usual dark green. It was felt that dark green was rather dingy, and the new colour would make the boxes more easily distinguishable. Later in the same year, red was adopted as the standard colour for all London pillar boxes. The change in colour for boxes throughout the rest of the country came as and when the boxes required repainting, a process which took ten years to complete.

One person, however, objected to the new ' official colour.' He was Lord Chief Justice Coleridge who, when he saw the pillar box outside his London house had been painted red, immediately ordered his servants to repaint the box blue and gold—to match his railings. When this happened, the Post Office promptly had the box painted red once more, and sent the Judge a bill to cover the cost.

The first Post Office appeal to ' Post Early for Christmas ' came in 1881, after a nation wide competition for Christmas card designs had been held, and which had attracted more than a thousand entries. Not everyone approved of the idea of these new cards though, because one irate correspondent to ' The Times ' commented on ' the delay of legitimate correspondence by childrens' greeting cards.' Today, the Post Office employs over 150,000 additional postmen and women to cope with the increased mail. The public are exhorted to ' Post Early ' and ' Wrap Securely ' but, despite the 60,000 miles of wrapping paper and 700,000 miles of string which are used, it is still a heartbreaking sight to see some of the damaged parcels which inevitably arrive every year in the sorting offices.

Above : A non-standard Pillar Box designed over 100 years ago, in 1856.

Below : A Standard Pillar Box designed and in use between 1866-1879.

Hawker Siddeley Harrier V-STOL fighter, in the markings of the U.S. Marine Corps, carrying 8,000 lb. of bombs.

AIR NEWS

by

John W. R. Taylor

" Baby " Born in a Cellar

If you are an aircraft spotter living anywhere near Wycombe Air Park, in Buckinghamshire, you will probably have seen a tiny red and ivory Jodel Bébé lightplane, registered G-AVPD, flying happily around the airfield. Like most Bébés, 'PD was built at home by its young pilot, Stuart McKay. The cost was only £350 in cash, plus another £100 for the 1,500 c.c. Volkswagen motor-car engine, which was converted by Don Peacock to give 45 h.p. as an aero-engine; but this takes no account of the immense number of hours of careful, painstaking work that went into the wooden airframe.

Mr McKay is Editor of *Popular Flying*, the magazine of the Popular Flying Association which does so much to encourage and help anyone who builds his own aeroplane in Britain. He spent about three years studying various designs before settling on the Bébé because it would be simple to build, could utilise a Volkswagen engine, and would be cheap to operate and easy to fly. His " A " level G.C.E. in woodworking gave him all the skill required to make the wooden structure, and most of the work could be done with ordinary carpentry tools as the whole thing is bonded together with Aerodux glue.

The first piece of wood was cut in the loft at the home of Mr. McKay's parents, at Heston, on August Bank Holiday 1965. By April 1966 some of the assemblies were outgrowing the loft, a bedroom and a garden shed; so all work was transferred to a cellar in Twickenham. This was fine until the time came to move the finished components outside. In the end, with the permission of a sympathetic landlord, the operation was made possible by removing three floor joists, some floorboards, a staircase and an outside lamp-post, and re-routing a number of electrical cables.

When the parts of 'PD emerged into the street, on October 22, 1966, it seemed as if the whole neighbourhood had turned out to see them. They were taken on a glider trailer to the BEA Engineering Base at London Airport, Heathrow, where the Corporation's chief engineer gave permission for the structure to be covered with fabric and doped, the instruments and engine to be installed, and the engine runs and taxi trials to be carried out.

The British Airports Authority was equally co-operative. A swathe was cut in the grass beside one of the airport's main runways; a crash wagon was parked nearby in case of accident, and at thirteen minutes past seven on the morning of June 14, 1969, the Bébé became one of the smallest aeroplanes ever to take off from Heathrow, bound for Wycombe Air Park (Booker). The pilot on this first flight was Captain John Ellis of BEA. A month later, on July 20, Mr. McKay took his little aeroplane up for the first time.

Since then, he has logged some fifty flying hours in it. Cruising speed has worked out at about 86 m.p.h. and fuel consumption at 2.25 gallons an hour. So, with a tank capacity of 8 gallons, 'PD can fly safely for about three hours or 250 miles non-stop. Stalling speed is under 30 m.p.h. and it can be dived at 124 m.p.h. It is, therefore, quite an exciting little aeroplane to fly, and very safe.

Alas, at the moment the fuselage is back in Mr McKay's front room at home, following an argument with a motor car on the ground. But repairs should be completed by the Spring; so if you spot a little red and ivory Jodel in the air next summer, and its registration is G-AVPD, you will know that you are watching the only Bébé ever " born " in a cellar in Twickenham.

The Jodel Bébé; this tiny aircraft is powered by a Volkswagen car engine.

Rolls-Royce Airbus

A few days after this issue of *Meccano Magazine*

closes for press, in November 1970, the Lockheed 1011 TriStar should make its first flight at Palmdale, California. Unlike its competitor, the McDonnell Douglas DC-10, which flew on August 29, the TriStar is Rolls-Royce powered. Two RB.211 turbofans, each giving 40,600 lb. of thrust, are mounted in underwing pods, with a third engine of the same type in the rear fuselage, supplied with air from an intake at the base of the tail-fin.

The 178 ft. long TriStar will cruise at more than 600 m.p.h., carrying anything from 244 to 345 passengers in a cabin nearly 19 ft. wide and 8 ft 2 in. high. Companies which have ordered it include Eastern Air Lines, Delta Airlines, TWA, Air Canada and Air Jamaica.

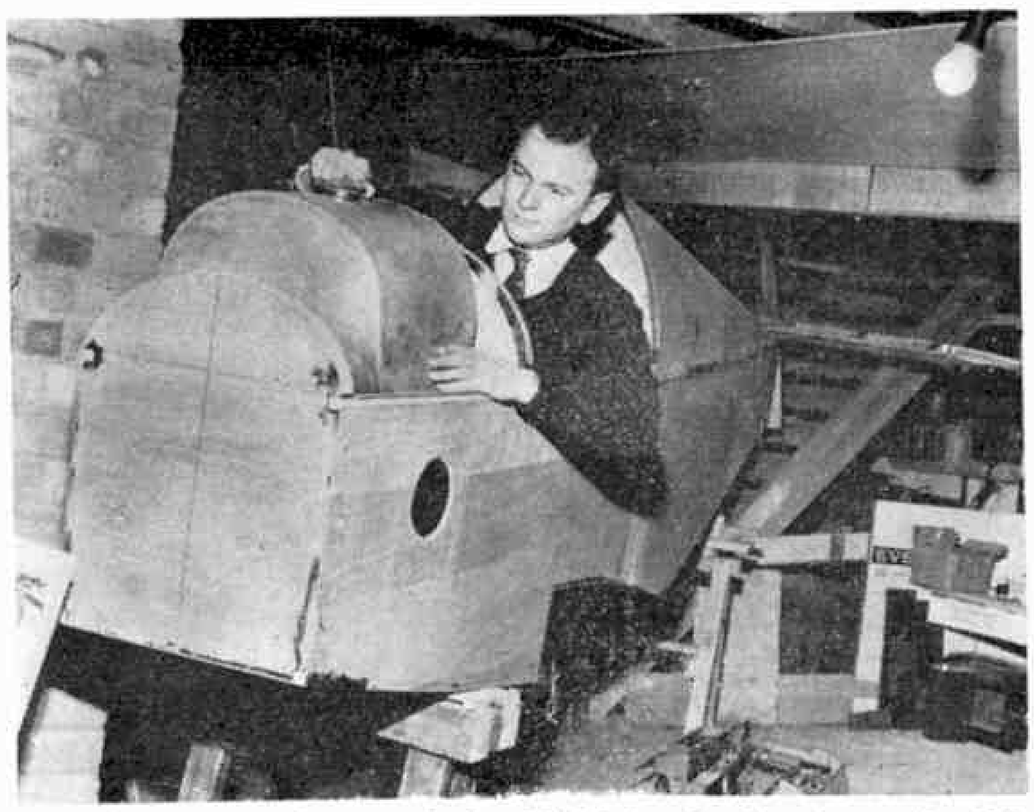
Top U.S. Award for R.A.F. men

Two R.A.F. squadron leaders have been awarded the Harmon International Aviator's Trophy for their part in the 1969 *Daily Mail* Transatlantic Air Race. They are Tom Lecky-Thompson and Graham Williams, both of whom flew Hawker Siddeley Harriers.

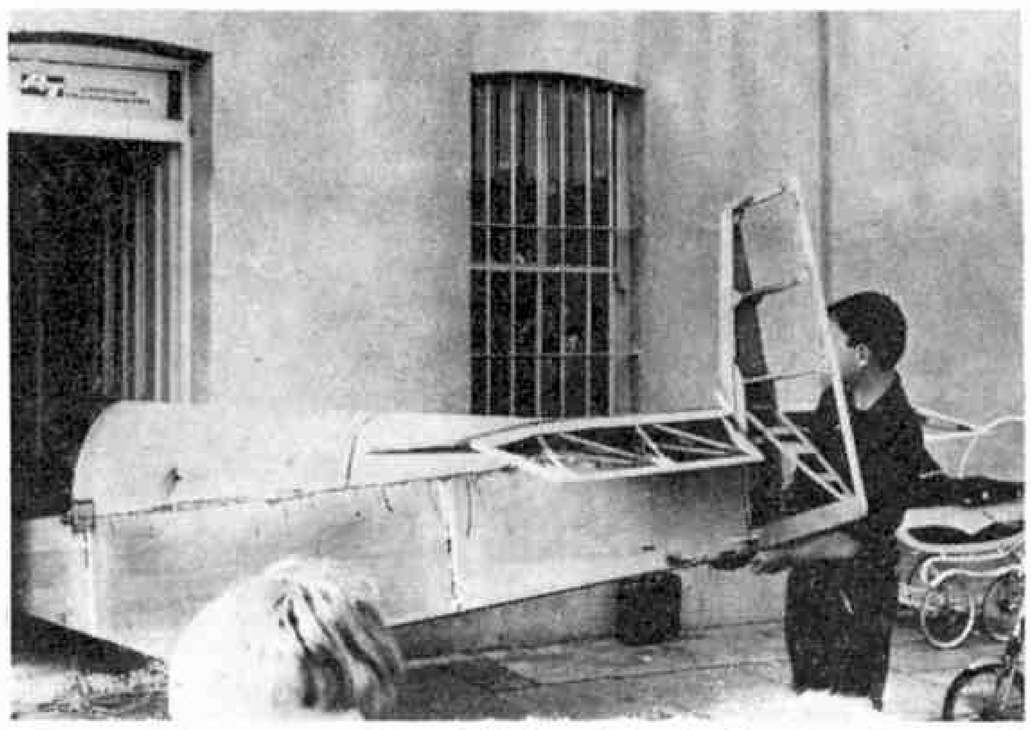
Awarded annually, the Harmon Trophy goes to the world's outstanding pilots for feats of individual skill contributing to the art and science of flight. A measure of its importance is that the trophy is usually presented personally by the President of the United States, in the White House. Past winners have included Charles Lindbergh, Amelia Earhart, André Turcat (now chief French test pilot on the Concorde) and Britain's Amy Mollison, Jean Batten and John Cunningham. So the R.A.F. men join a distinguished company.

Squadron Leader Lecky-Thompson took off vertically from a coal-yard at St. Pancras, London, on May 5, 1969, flew non-stop across the Atlantic and made a vertical landing 5 hours 57 minutes later on New York's Manhattan Island. It was the first time in history that a fixed-wing jet had landed in Manhattan.

Several days later, Squadron Leader Williams took off vertically from Manhattan in another Harrier in such bad weather that even helicopters were not flying. He touched down at St. Pancras 5 hours 33 minutes later. Both aircraft were refuelled in flight over the Atlantic by Victor tankers of R.A.F. Strike Command.

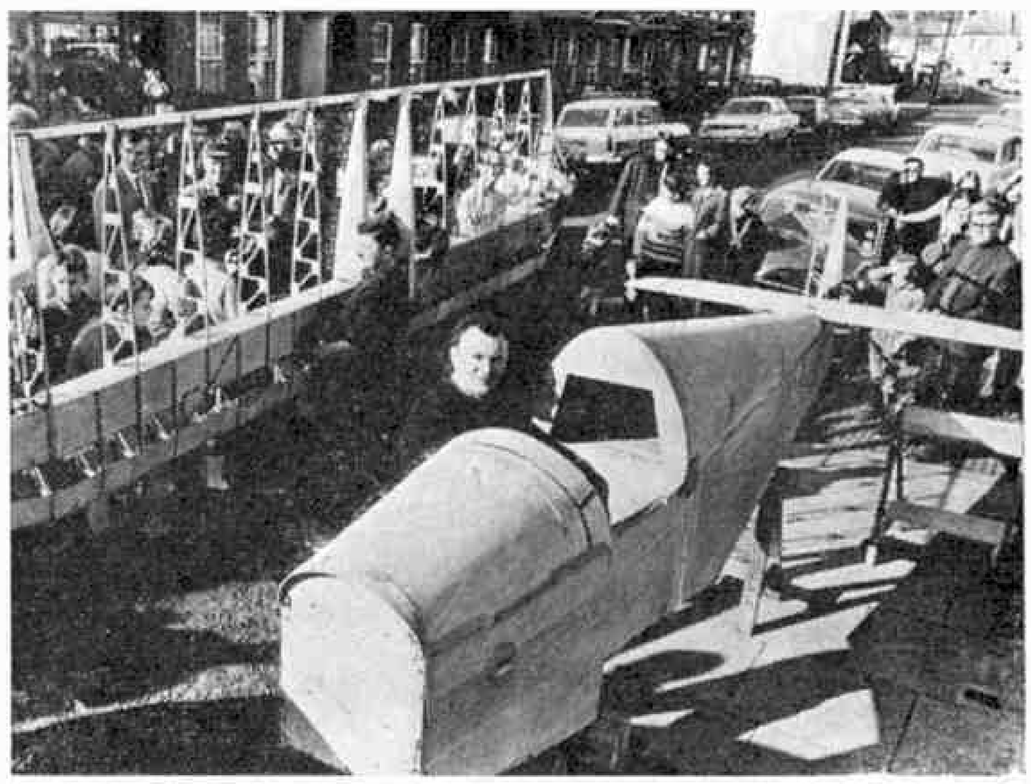


The simple ply frame of the Bébé is clearly shown in this photograph. The fuel tank is being lowered into position.

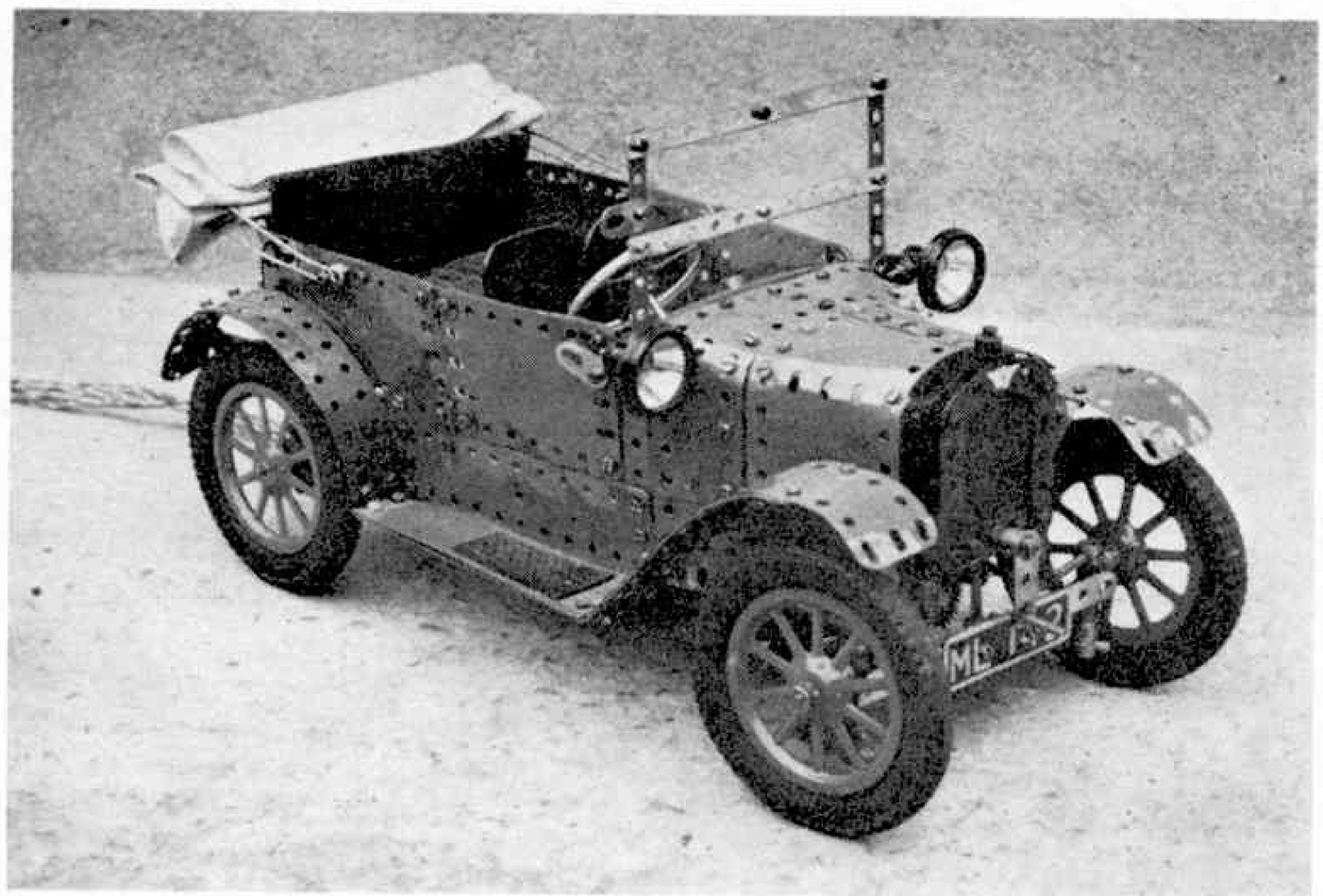


With a clearance of only a hairsbreadth, the fuselage is brought out of the cellar.

Building the Bébé's wing in a cellar at Twickenham.



The whole neighbourhood turned out to see the Bébé when it first emerged from the cellar.



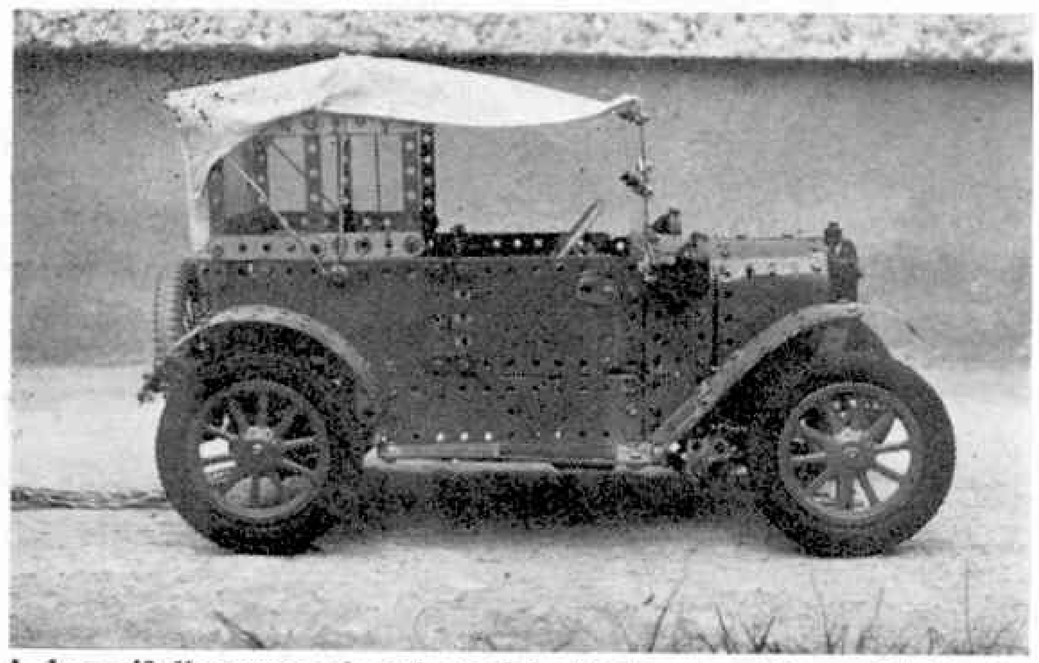
AMONG THE MODEL BUILDERS

This month SPANNER describes a superb working model of an Austin 7 tourer and a fully operating Tower Crane

Early Austin 7

TO THE NON-MECCANO ENTHUSIAST, the sight of a Meccano Set does not mean too much, but to the true enthusiast, it no doubt conjures up visions of hundreds of realistic working models. No matter how many models flash through the mind, however, most serious modellers have an ambition to build at least one special model which is quite unique and one modeller who has realised this ambition beyond a shadow of doubt is Mr. Michael Edwards of Stanmore, Middlesex. Mr. Edwards is the builder of the superb early-model Austin 7, illustrated here.

When Mr. Edwards sent me a couple of photographs of the model several months ago I immediately fell for it and I am sure that all Meccano-minded M.M. readers will echo my sentiments. The model is certainly unique, not only because of its detailed realism, coupled with the fascinating prototype on which it is based, but also because it is totally remote-controlled: steering drive and even the lights—in fact, the lot ! Construction is *almost* entirely in Meccano, save for the hood, seats, running boards and a small battery-powered motor controlling the steering. The best person to describe the model is Mr. Edwards himself, and my thanks go to him for providing the following interesting details :



A beautifully-proportioned model of the marvellous old Austin 7, designed and built by Mr. Michael Edwards of Stanmore, Middlesex. Powered by an E15R Motor, it is fully remote-controlled—including the steering !

" The chassis (writes Mr. E.) is built up of four Girders, held together by a floor consisting of a Meccano Plate. The two outer Girders are angled to give the body its shape and extend backwards to provide supports for the two back coil springs. The two middle Girders extend forward to support the engine and also to house the transmission mechanism.

" Both axles are complete sub-units and are detachable. They support the car with coil springs, the front springs being visible in the front-view photograph. The axles are each held in place by one vertical Rod and two horizontal Rods, loosely attached to the chassis, the former Rods preventing sideways movement and the latter preventing lengthways movement. Thus full vertical movement is allowed while keeping the axles in place.

" Steering is operated by a small battery motor, operating " push-pull " cords attached to each front wheel assembly. The controlling Rod is driven by a Driving Band from the motor and winds or unwinds the cords, so acting on one or the other road wheel, as required."

Concerning the transmission, Mr. Edwards made

use of the speed governor he designed himself and which was featured in the December 1966 M.M. "I used the same governor", he says, "But instead of it changing the gears, it causes a Socket Coupling to engage or disengage with the drive. In this way, the drive is automatically cut off when the engine slows and the governor weights contract. The point of engagement of the drive relative to the speed of the engine can be precisely determined by compressing the small coil spring by varying amounts; the more it is compressed, the faster the engine will have to go to effect any horizontal movement on the connecting rod. I found it best to have a weak compression, otherwise the drive will not engage under power when it has the weight of the car to propel.

"Regarding the Motor itself (an E15R), I found it necessary to remove the reversing switch so that (a) it could be wired to the remote-control centre and (b) to make room for the dashboard—the car has such a snub bonnet! I extended the wires between the switch and the Motor the length of the lead—hence the many wires to be seen. Two of these wires carry power to the lighting system, made up of two headlights and one red rear light, the latter on the right of the rear number plate. The bulbs are miniature 12 volt units with $\frac{1}{8}$ in. diameter, while the headlights are made from two torch reflectors stuck together, with glass fronts from the original torch. A miniature bulb holder forms the centre of each, holding the tiny bulb.

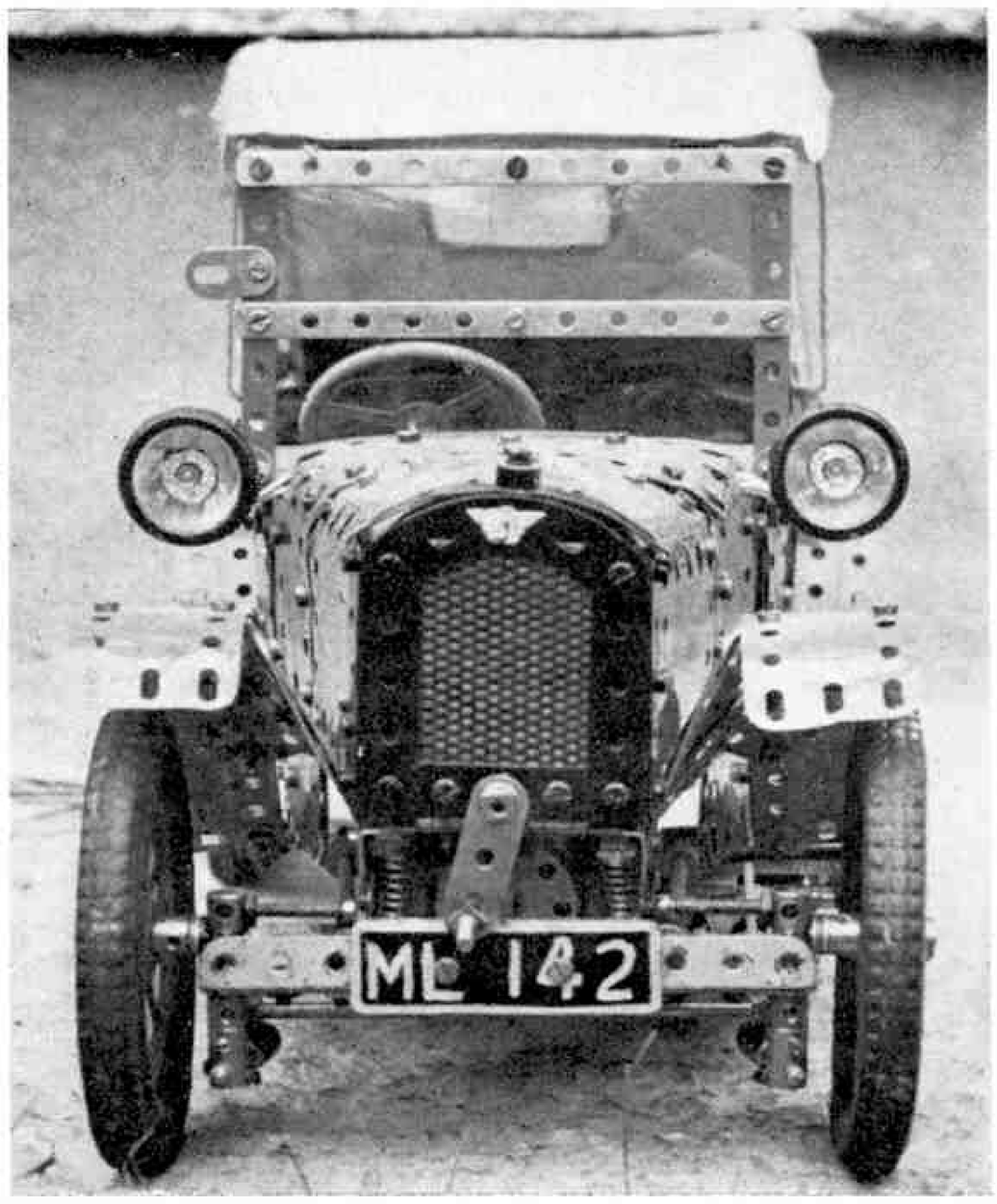
"For the sake of realism I have not adhered completely to Meccano parts. The front seats are made of plastic sheet, cut and moulded to shape, and the rear seats are of leather. The hood is of canvas, supported by wire, and the windows are of sheet acetate, the side windows being detachable. The number plates and running boards are, again, of plastic, while the radiator-grille is of wire mesh.

"Finally, the car is light enough to work, without strain, with the one gear ratio on a flat surface or thin carpet, the gear ratio of 48 : 1, giving quite a reasonable speed. A drop of oil on all the moving parts increases the efficiency and makes it work much better. The bonnet, incidentally, hinges completely forward so that the Motor can be serviced.

"Well, that just about covers it. . . ." It does, indeed, Mr. Edwards—and very well, too. Many thanks!

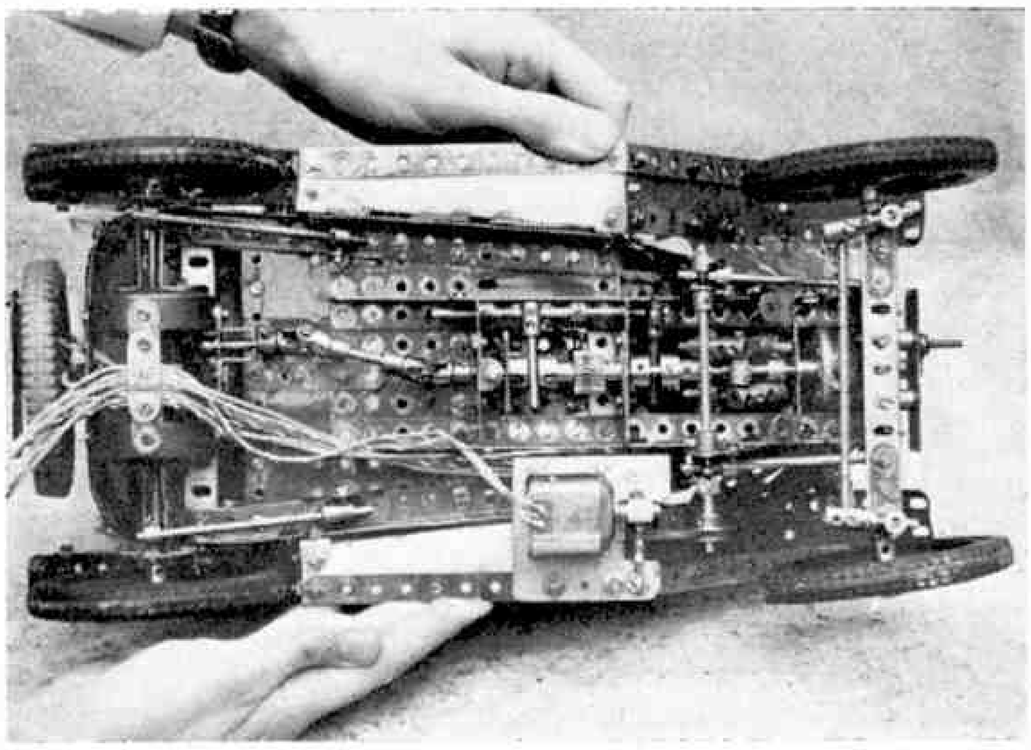
Tower crane

Giving Mr. Edwards' model the space it so obviously deserved has not left me with much room for anything else, but I just have sufficient space remaining to draw your attention to a Tower Crane constructed by Carlos Read of London, a photograph of which will be shown next month. This shows young Carlos Read with a very well-proportioned Builder's Crane he has produced, the Crane being closely modelled on an actual crane operating on the Pantechnicon Site, just behind his parent's London Flat. As Carlos, himself, says, "The model reproduces all the movements of the original: the traverse of the trolley, the raising and lowering of the pulley block and the rotation of the boom. The tower, made from $24\frac{1}{2}$ in. Angle Girders overlapped with $18\frac{1}{2}$ in. Girders, is $3\frac{1}{2}$ in. square in cross-section and braced with $5\frac{1}{2}$ in. Strips. It is securely mounted on a rectangular base of $12\frac{1}{2}$ in. Angle Girders and the driver's cabin, with transparent windows, is built into the top. The boom is carried on a 4 in. ball thrust bearing. For the greater part of its length it is of the cage construction shown in the photographs and is $2\frac{1}{2}$ in. wide with a $4\frac{1}{2}$ in. wide extension at the rear to carry the gearbox and E15R Motor."

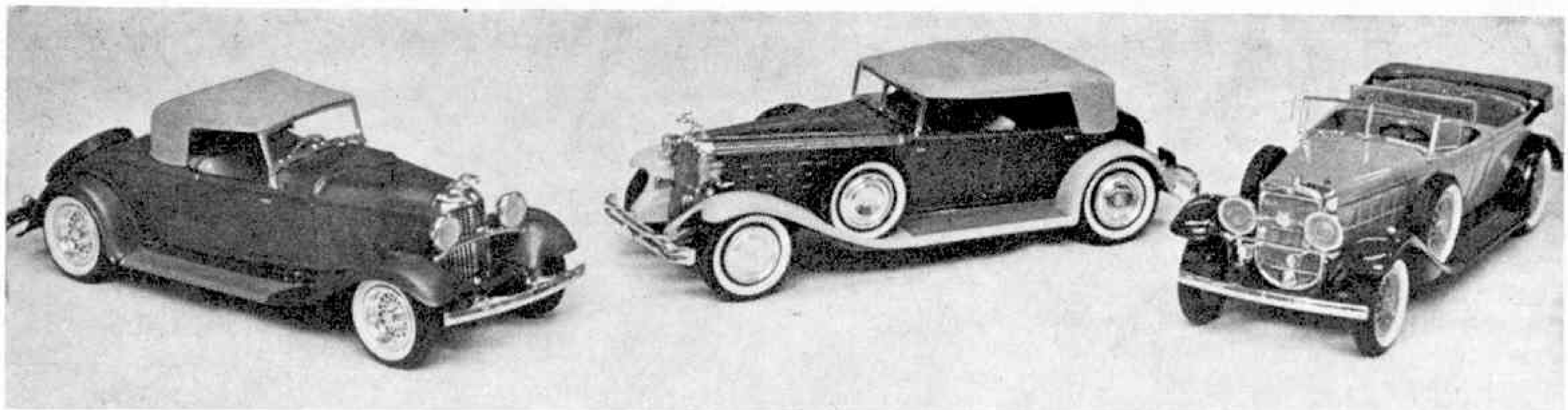


One of the few non-Meccano parts used in the Austin 7 is a sheet of wire-mesh, representing the radiator-grille. The realistic effect it gives makes up for the fact that it is not Meccano!

Carlos goes on to explain that the drive transmission mechanism and cord arrangements are very similar to those used in the No. 10 Set Block-setting Crane Leaflet, the former being suitably modified to suit his own needs. This is an excellent example of how ideas presented in official Meccano instructions literature can be "borrowed" for use in other models, only a little suitable rebuilding usually being necessary—and sometimes none at all! There's no point designing new mechanisms when existing units can be adapted to do the job just as well! Be that as it may, however, congratulations on a very good model, Carlos.



An underside view of the model showing the drive system. Note the small electric motor controlling the steering and the governor which automatically disconnects the drive when the speed drops below a certain level.



16 year old Michael Day describes how Readers can start and maintain a. . .

MODEL COLLECTION

IN THIS ARTICLE, I plan to take the reader very quickly through the *major* points of forming a plastic kit collection for display, and also mention the points of maintaining such a collection.

It is always the ambition of every beginner to attain a high standard of finish straightaway, but I am afraid this is usually impossible, as such a standard can only be reached by constant practice. Thus, I believe it is a good idea to commence with the easier models first.

Before a collection can be started, you must STOP and THINK. Do not go straight to the shops and buy the " best " looking model in stock, but ask yourself these questions :

1. What is my favourite modelling subject ?
2. Are enough of these models available for a collection ?
3. Can I afford to buy the models (very important!).

As an idea, a good subject which would fit these three rules is plastic model aircraft. Others are model ships, cars and military vehicles. Space Vehicles seem to be a new line, but I have a feeling such models, though impressive, will prove too expensive for many pockets.

Let us assume that you have chosen aircraft for your subject. (The following principle, however, would apply to any collection.)

STOP and THINK again !

1. What scale ? e.g. 1/44, 1/100, 1/72, or 1/48 ?
2. What type of aircraft ? e.g. airlines, light civil, military or helicopters ?
3. What period ? e.g. World War I, World War II, modern ?

At this moment, you may be thinking that this is too much of a specialisation. However, today there is such a myriad of models on the market that unless one DOES specialise, he is likely to build up a collection rather like a " liquorice all-sorts " box, with no central theme, scale, or period. Believe me, such collectors live to regret this !

Some readers may have been to a local Air Display, and seen the History of Air Power collection. This enormous collection of nearly 2,000 models is the product of only two men, who started right from scratch over seven years ago with a few plastic model kits—and look what has grown from that ! This is a good example of what keen collectors can achieve, and you might note that the above three rules have been applied to the collection throughout.

Now we have decided what type, scale and period of aircraft model we are going to collect—STICK TO IT. Do not decide to change again, because if you are equipped with a perfectly normal human nature, you will wish you had not changed your mind a little later, and this will cause a great waste of money, not to mention frustration !

Right, you have bought your first models for the collection you are about to begin. If you are like most modellers, you will be planning to make this an excellent model, right down to the finest detail. Well, to achieve this you must have some elementary tools, and be capable of exercising PATIENCE.

Tools

From the beginning it is essential to have a good strong modelling knife with a *sharp* blade, a pair of tweezers with pointed ends, wet and dry sandpaper of " fine " and " fine/medium " grades, plastic filler, and a good paint brush with a large end, and one with a fine end. With these, your first result should be fairly good, if you apply one other ingredient already mentioned—PATIENCE !

Too many models are spoilt by rushing, and the final result is usually a botched-up mess. Take time, wait for glue and paint to dry, and sand down any unwanted marks—but these elementry points later.

As you progress into model making, you will realise that other tools come in handy; the following are only a guide for the beginner :

The modelling knife must always be kept sharp. New blades are not very expensive at all to buy, so

there is no excuse ! I recommend the Swann Morton Unitool, as this combines three blades in one knife.

The tweezers help you to place transfers in exactly the correct place, and allow you to glue on the small fiddly bits without gluing up your hands and subsequently the model. The pointed ends allow access to otherwise inaccessible places.

The sandpaper should be wet and dry, because when used slightly wet, the plastic residue will not clog the paper up, and it will always have a good cutting surface.

Plastic filler has an obvious use; unsightly gaps in joints are easily filled up with the substance, and if properly applied and sanded down, no one can ever tell the difference after painting.

Paint brushes, one fine and one for general application, are usually necessary. They must be of a good quality, otherwise you will get hairs coming away from the head and spoiling the paint work.

Paint: Both Humbrol and Airfix manufacture excellen paint, both gloss and matt, for use in plastic modelling.

Finally, do not forget the golden rule—PATIENCE!

Research

Research is important, as most manufacturers particularly in the older models, did not include the smaller bits and pieces such as aerials, cockpit detail, undercarriage struts, etc., which make the model really worth building. These parts you will have to find for yourself, by looking at the relevant photographs on the subject.

Unless you are luckily near to an airfield, you will have to obtain your photographs from published sources, and so, why not start a collection of aircraft photographs (or, of course, car, ship and military vehicle photographs), cut out of magazines and newspapers. File these away in alphabetical order, and I am sure that within the year, if you search properly, you will have amassed a fair sized collection well worth the effort.

Also, there are a number of cheap publications and magazines on the market, which are always worth buying for their excellent photographs. My own collection has been built up solely from published photographs, so let's see what you can do !

Display

Right, now you have decided what to buy, obtained your tools, and researched your subject. With the necessary patience you have built a really fine model, which you wish to display in an appropriate place.

Where plastic model aircraft are concerned, you can if you wish, display them in a simulated in-flight condition, suspended from the ceiling of your room. However, this is not very satisfactory :

1. It will make a mess of the ceiling.
2. Only limited views of the aircraft can be seen.
3. Dust will soon attack the model.

In my view, it is perhaps best to build a cabinet of simple design. However, do NOT worry ! Such a cabinet will make an inroad into anybody's savings, but it is not ESSENTIAL, only desirable. In other words, you need only build such a cabinet when you realise it is necessary, and when you can afford it ! The whole essence of plastic model-making is its comparative cheapness.

To get back to the point, the cabinet should ideally have many shelves and a sliding glass (or perspex) front, which can be screwed to the wall as a permanent fitting, and added to if wished unit by unit as the collection grows.

Such a cabinet would be very cheap and simple to build if you have an elementary knowledge of woodwork.

When a large collection is built up, you will find that you have taken over every available space, and you will now have to start selecting models for display and pack the others away until needed.

Thus rotating the display, you will have a mammoth problem of how to store the temporarily unwanted models. The best method is to put the model in a sealed-up plastic bag. This will prevent the model deteriorating, and if any parts become loose or fall off, they will be kept in the bag and not lost. Then, put the bagged model in a small box which is lined with tissue paper to protect it, and label the box with the models names and other relevant detail.

The best plastic bags for the job can be found in Woolworth's. They are " food bags ", and a large amount can be bought for 2/6d.

Looking after your models

Once built and displayed, you will find that your once beautiful models begin to deteriorate, and take on a " sad " appearance, and parts begin to fall off. The main reason is usually DUST and to prevent it you must clean your models regularly.

The larger models can be simply washed in lukewarm water, with a slight touch of detergent to help. Soap and water can be used, but you must take care not to lift the transfers.

Smaller models are most difficult, especially biplanes. The best thing for these is to buy a 1in. paint brush with springy hairs, which will flick off dust particles very easily.

On gloss-painted models, varnishing the transfers helps a great deal, as they will last as long as the model (a long time !) and will not have to be replaced.

How many readers can say that their first model is as good as the ones at present ? It is perhaps vital that you maintain a standard of modelling.

Perhaps once a year, it is a good idea to ' weed out ' any models which are unsatisfactory, and give them a face lift. It is also a good opportunity to add more detail to them after receiving further information, transfers especially in this case !

If the model needs a thorough rebuilding instead of patching up, do not despair. The right tools combined with patience will produce a model as good as, if not better than the original.

Finally, if the model has become really useless, do NOT throw it away, as it represents a great deal of time and hard labour. Why not cannibalise the parts for the spare-parts box.

The spare-parts box ? This is an excellent part of the modeller's " set-up ". In the box, any parts from old models, or the altrenative parts from various kits are put. When you want to convert a model, or add detail to it the necessary bits can usually be found in the spare-parts box. It is an invaluable item !

Conversions

Getting hooked on plastic modelling is easy, and enthusiasts soon want to start making something different even if it is only changing the transfers of a model.

Research, tools, the spare-parts box, and patience can all be combined in this process, and I always believe that experience is the best guide in this ' field '.

However, a German firm known as Airmodel have

marketed conversion kits for some Airfix models. These kits are rather expensive 5/- to 8/-, but are of tremendous use. The kits contain all the necessary pieces to make, for example, the Airfix Me.262 fighter into a two-seater Me.263 1.a/U.1 night-fighter, which is very impressive with a large cluster of aerials on the nose.

In summing up, I must repeat that this article is only meant as a general guide for the beginner to one of the most fascinating and popular hobbies of our time. If I was asked what the best ingredients to success in the hobby are, I would reply without a doubt PATIENCE and EXPERIENCE !

Remember also, that it is not only the building and the research that provides the fun, but also the satisfaction of the completed model, and the enjoyment in looking after the models and adding detail as new information becomes available.

I hope that many starters will soon capture the creative feeling, and begin to build up a large collection of their favourite kits. Good luck in your new hobby !

Basic plastic modelling hints for complete beginners

1. It is advisable to paint all the small parts before assembly whilst still on the sprue. Alternatively, attach the part to a pin, and then paint it—this way you can paint *all* surfaces.
2. If parts do not fit, for example a wing root or wheel-axle assembly, shave off any excess plastic with a modelling knife.
3. Use rubber bands and/or clothes-pegs to hold large gluing surfaces together when drying.
4. Shave off and then sand down any unwanted " flash " (excess plastic) and also the glue which oozes out of the cemented joints. Restore the finish by lightly rubbing with metal polish.
5. DO NOT forget to use tweezers for small parts, and use a pin to apply cement to tiny surface areas such as wheel axles and the propeller boss.
6. When painting, to achieve a straight line use Sellotape as a form of masking tape.
7. Remember : Apply PATIENCE.

Wait for all glue and paint to dry before attempting further assembly, obey the instructions to the letter, read all the instructions before assembly, and attempt a dry " dummy " run so that you become aware of any tricky parts.

THIS IS IMPORTANT !

A Visit to SWINDON RAILWAY WORKS

by W. H. Owens

SWINDON IS ONE OF THE OLDEST CENTRES of railway industry in the world. In 1841, when Brunel completed the main line from London to Bristol, the directors of the Great Western Railway authorised " an engine establishment at Swindon commensurate with the wants of the Company, where a change of engine may be advantageously made and the trains stopped for the purpose of passengers taking refreshment. . . ."

The Swindon establishment was to include repair shops for the G.W.R. Locomotive Department. Within two years the original locomotive works—built largely with stone excavated from Box Tunnel further down the line—were in full operation. In 1869 the Carriage and Wagon Works were opened. Thereafter the combined railway works grew steadily, as the G.W.R. network spread over the West of England and South Wales, until, by 1921, they covered almost half a square mile and employed 13,500 people.

At Swindon were built some of the most famous of all British main line locomotives, namely, the " Castle " class, first produced in 1923, and the " King " class which, when introduced in 1927, were the most powerful locomotives in service in this country. Both these classes continued operating as express locomotives right to the end of the steam traction era.

After the nationalisation of the railways in 1948, many of the new standard locomotives were built at the Swindon Works. In fact, it produced the very last steam locomotive for British Railways—the 2-10-0 No. 92220, " Evening Star ", which left the works in March 1960. By that time the Diesel Age of the railways was already under way.

Diesel traction introduced an entirely different type of machine and, consequently, different techniques from those which had been followed in the locomotive works for well over a century. Nevertheless, the Swindon railway workers responded to the new challenge, and soon adapted their skills.

A long line of diesel locomotives were successfully turned out. These began with the D.800 Class, going on to the larger, more powerful D.1000 Class of 2,700 h.p. locomotives. 200 h.p. diesel mechanical, and 350 h.p. diesel electric shunting locomotives were also built. The last locomotive ever to be built at Swindon —an 0-6-0 type 1 diesel hydraulic locomotive—left the works in Ocober 1965.

Today the resources of the railway works, which were considerably reduced in size by modernisation in the mid 1960's, are concentrated on the overhaul and repair of diesel hydraulic main line locomotives, English Electric 350-400 h.p. diesel electric shunting locomotives and all types of rolling stock. The manufacture of new components associated with these repairs also accounts for much activity.

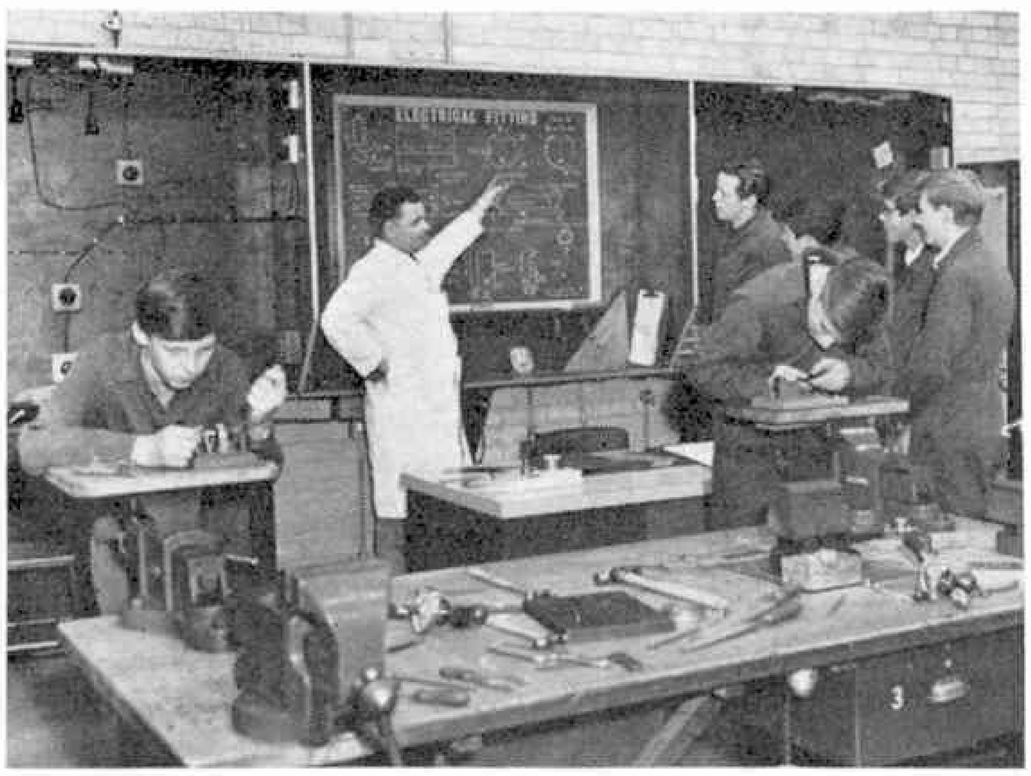
No new rolling stock is now built at Swindon, but a number of staff are engaged in the manufacture of parcels trolleys (officially known as British Railways Universal Trolley Equipment) used throughout the system. The works has its own modern school for

trainee craftsmen entering the various sections.

For the visitor, one of the most impressive parts of this railway works is the locomotive erecting shop. Here powerful main line diesels, and other locomotives, are cleaned and stripped down for overhaul and repair, and afterwards re-erected again. In the old days of steam, locomotives were moved into the appropriate repair bays on traversing tables having integral electrically powered capstans. Now, the main line diesels, being considerably larger, are removed from their bogies and moved by 100 ton overhead cranes. Other locomotives and heavy equipment are dealt with by the traversing tables.

When a locomotive arrives for overhaul, it first undergoes a thorough inspection and then has its oil and water system drained. Lifted from its bogies, the parts are externally cleaned by high pressure spray jets. After stripping down, repairs to the power unit and other components are carried out in the various specialist shops around the works. All components, each individually tested, flow back to the erecting shop in a pre-determined sequence, where the restored locomotive is put together, repainted and made ready for another period of service.

Overhauls to main line diesel locomotives are normally carried out every five years. In some cases, however, more frequent visits to the works may be necessary.



Craft trainees under instruction in the works Training School.

All types of diesel engines, from the most powerful 16 cylinder 1700 h.p. Maybach MD870 main line diesels down to the A.E.C. and Leyland 150 h.p. engines that power multiple unit railcars, are overhauled and repaired in what was once the iron foundry of the old locomotive works. Components arriving in this modernised shop are first spray cleaned externally to remove traffic dirt, and afterwards cleaned in a huge washing machine and degreasing tanks.

In the overhaul section of the engine shop there are manually operated vertical and horizontal turnover stands which simplify the inspection and repair of heavy components and sub-assemblies. A separate small shop is equipped for the repair of locomotive fuel pumps and injectors.

The running-in and testing of engines after overhaul is obviously of vital importance. Swindon works has one of the most up-to-date diesel testing stations in this country, if not in the world. Engines are mounted in test cells, and are rigorously tested under load conditions, up to full power, before being passed

Diesel Testing Station. View of No. 1 engine cell from control room showing 1,700 h.p. Maybach engine on test.

to the erecting shop or motive power depots.

Other sections of the works have been modernised and extensively re-equipped to carry out all the specialist jobs involved in maintenance of railway rolling stock to today's very high standards of safety and efficiency.

There is a brake equipment shop handling all the components of air and vacuum brake systems used in diesel locomtives; a train heating shop dealing with repairs to carriage warming apparatus and pre-heater units for diesel engine cooling water systems. In the wagon shop, repairs are carried out to freight vehicles and rail-road containers; and in the bogie and wheel shops complete overhauls are given to bogies, final drive gearboxes and wheel and axle assemblies.

In other works section, one has an unfamiliar view of railway passenger coaches stripped down to the bare skelton before re-assembly and final spray painting in the adjacent paint shop.

Contrasting with the repair shops is the non ferrous foundry with its roaring furnaces, swinging buckets of molten metal and craftsmen making certain moulds by hand. This survival from the old locomotive works has been completely modernised to produce the entire supply of non-ferrous castings used throughout the British Rail network.

Main Line diesel locomotives under repair in the erecting shops.

OPERETTAS ON STAMPS

by James A. Mackay

THE OPERETTA, A FORM OF MUSICAL ENTERTAINMENT midway between the opera and the 'musical' of the present day, is inseperably associated with the decadence of the great European powers towards the end of the last century. Musical experts see in the operetta a social link with the pomp and glitter of the monarchies of Europe in the period before their decline. The operetta paints a glorifying or satirical picture of the world of emperors and queens, of princes and countesses.

The declining years of the French Empire under Napolean III were the heyday of the musicals of Offenbach. With their coquettish tunes Gilbert and Sullivan wrote charming parodies of life in Victorian England. The establishment of the republic in Spain marked the end of the Zarzuela musical while the downfall of the Habsburg monarchy in Austria-Hungary coincided with the end of the splendour of the so-called Ringsrrasse Period in light musical entertainment.

For a period of about 65 years (from 1865 to 1930) the operetta was one of the main features of the cultural and social life of Vienna. The first performance of an operetta was a great social event and one premiere followed another at break-neck pace. The operetta was the favourite music of the younger generation and, as such, generally had romantic love as its theme. The music was light-hearted and gay, the work of brilliant composers whose names are household words to this day. The captivating charm of an already declining world found its expression of greatness and splendour in the Viennese classic operetta. From Johann Strauss, to Franz Lehar, from Carl Millocker to E. Kalman, from Suppe to Oscar Strauss and from Carl Zeller to Robert Stolz, the music of the Viennese operetta conquered the world. Characters from operettas by Millocker (the Bettel Student), Franz Lehar (The Merry Widow) and Oscar Straus (The Waltz Dream) were featured on three Austrian stamps issued earlier this year.

What had been French wit and parody in Offenbach's musicals had become a smiling and laughing but originally serious sentiment in the Viennese operettas. It embodied Viennese wit and gaiety and charm, carrying them around the world, although the scene was more often set in Paris, Hungary or Poland than in Vienna itself. There is an escapist quality about these Ruritanian settings where prince charmings court peasant girls to the lilt of the polka or, more often than not, the three-four rhythm of the waltz.

Johann Strauss the younger (1825-99) was undoubtedly the greatest of the Viennese operettists and has been immortalised as the Waltz King. For some peculiar reason his father, Johann Strauss the elder, tried to keep his son from music, and little Johann had to learn the violin in secret. When the father deserted his family Johann was able to follow his musical inclinations and made his debut as a coffee-house counductor in 1844. After the death of his father five years later he was unrivalled among the musicians of the Viennese cafes. His best music was written after 1864 when he married Henrietta Treffz. She was the inspiration for such gems as the Blue Danube and Tales from the Vienna Woods. The centenary of the Blue Danube Waltz was celebrated by Austria in 1967 with a 3 schilling stamp showing a dancer holding a violin. Johann Strauss himself was portrayed on an Austrian stamp released in 1949 (commemorating the 50th anniversary of his death), while a scene from his greatest masterpiece, the operetta *Die Fledermaus* (the Bat), appeared on a 1.50 schilling stamp issued in September of this year.

This stamp was one of a second series paying tribute to the great operettas which made Vienna world-famous in the closing decades of the nineteenth century. In the last decade, during the Naughty Nineties, Dr. Carl Zeller composed *Der Vogelhandler* (the bird-handler) and the principal character from this operetta forms the subject of the 2sch. stamp in the present series.

The operetta lingered on after the Habsburg monarchy came to an end in 1918. Between the world wars Vienna managed to retain something of her past vivacity and this was the period in which Robert Stolz composed his light romantic operetta *Zwei Herzen im Drei-viertelpunkt* (two hearts in three-four time). The lovers waltzing in strict tempo are shown on the 3.50sch. stamp of the series. But the operetta as a durable art-form was doomed. First the advent of the talking cinema then the arrival of the Nazis in 1938, sounded its death-knell. Many of the composers and most of the librettists (who write the words) were of Jewish extraction and either fled the country or perished in concentration camps.

Today the best of the operettas are remembered and performed regularly, but many of the others have vanished from the memory. In the period from 1858 to 1938 more than 1,100 different operettas were produced in Vienna, about half of these making their debut between 1908 and 1923 while no fewer than 36 were premiered in 1909 alone. Most of the theatres in Vienna staged operettas regularly and some of these, such as the Burgtheater and the State Opera House, have also appeared on Austrian stamps.

GREAT MECCANO COMP!

£££'s TO BE WON.... MECCANO SETS TO BE WON! MECCANO PARTS TO BE WON

Long has it been the practice of Meccano Magazine to run at least one Meccano model-building competition each year and the time has now arrived for the very latest contest to be declared open. Open it now is, therefore, but read on carefully, because, this year, the contest rules are different: IT MUST BE POSSIBLE TO BUILD ALL MODELS WITH THE CONTENTS OF A CURRENT STANDARD MECCANO SET BETWEEN 1 AND 7.

We are aware that this rule may upset a few readers, but we believe that, for this contest at least, it has certain advantages. It will, for instance, give an equal chance of success to those younger modellers who only have a single Meccano Set to work from; those who have not had a chance to build up a whole supply of useful extra parts. Equally important, it will present a greater challenge to those lucky modellers who do own a huge stock of parts and who can consequently build highly detailed and complex constructions. We all know it's harder to build a model from a specified number of parts than from an unlimited stock!

PRIZES GALORE!

As usual, entrants will be split into two Sections, A and B, Section A being for entrants under 14 years of age on the competition closing date and Section B for entrants aged 14 or over on that date. Each Section will, in turn, be split into ten sub-sections numbered from 1 to 10, the sub-section number depending on the Standard Meccano Set with which the submitted model is built. Three prizes will be awarded in each sub-section, with sub-sections 3, 4 and 5 being given priority and receiving the higher prizes. First prize in each sub-section will be in cash, second prize will be a Meccano Set and third prize will be a selection of Meccano Parts, the Parts to be chosen by the winner, himself.

In Section A, the first prize in sub-sections 3, 4 and 5 is £5 cash, the second prize being a No. 4 or equivalent-value Meccano Set and the third prize, 30/- worth of Meccano Parts. Winners in sub-sections 1, 2, 6 and 7 will receive £4 in cash, the second prize being a No. 3 or equivalent-value Meccano Set and the third prize being 20/- worth of Meccano Parts.

In Section B, the first prize in sub-sections 3, 4 and 5 is £7 in cash, with a No. 5 or equivalent-value Meccano Set as second prize and £2 worth of Meccano Parts as third prize. Winners in sub-sections 1, 2, 6 and 7 will receive £6 in cash, the second prize being a 3M or equivalent-value Meccano Set and the third prize being 30/- worth of Meccano Parts.

HOW TO ENTER

Any number of entries can be submitted for the competition, *provided each model can be built with the contents of a current standard Meccano Set between 1 and 7*, and different entries can fall into different sub-sections. Any kind of model is eligible for entry, unless taken direct from a Meccano Manual, and all will be judged on their individual merits. The models, however, must be your own, unaided work.

Once you have built your model, obtain a good photograph of it, or, failing this, a reasonably detailed sketch. It is also advisable to include a short description of the main features of the model with your entry, mentioning any points of interest you would like brought to the attention of the judges, but the actual model, itself, must not be sent. A list of Sales Numbers and quantities of the Meccano Parts used in the model will also be required.

In entering the Contest, write your name and address on the back of each photograph or drawing, together with the letter A or B, depending on the age Section in which you qualify, followed by the number 1 to 7, according to the Meccano Set with which the model can be built, and forward to: Model-Building Contest, Meccano Magazine, Binns Road, Liverpool L13 1DA. *The competition closes on March 31st for competitors in the U.K. and Ireland and one month later, on April 30th, for overseas competitors.*

Prize-winning entries become the property of Meccano Tri-ang Ltd., but unsuccessful entries will be returned if accompanied by a suitable stamped-addressed envelope or, in the case of overseas entries, a self-addressed envelope and the appropriate International Reply Coupons. Entries can be accepted only on the understanding that Meccano Magazine will not be held responsible for any entry damaged or lost and that the judges' decisions are final. No correspondence relating to unsuccessful entries can be considered.

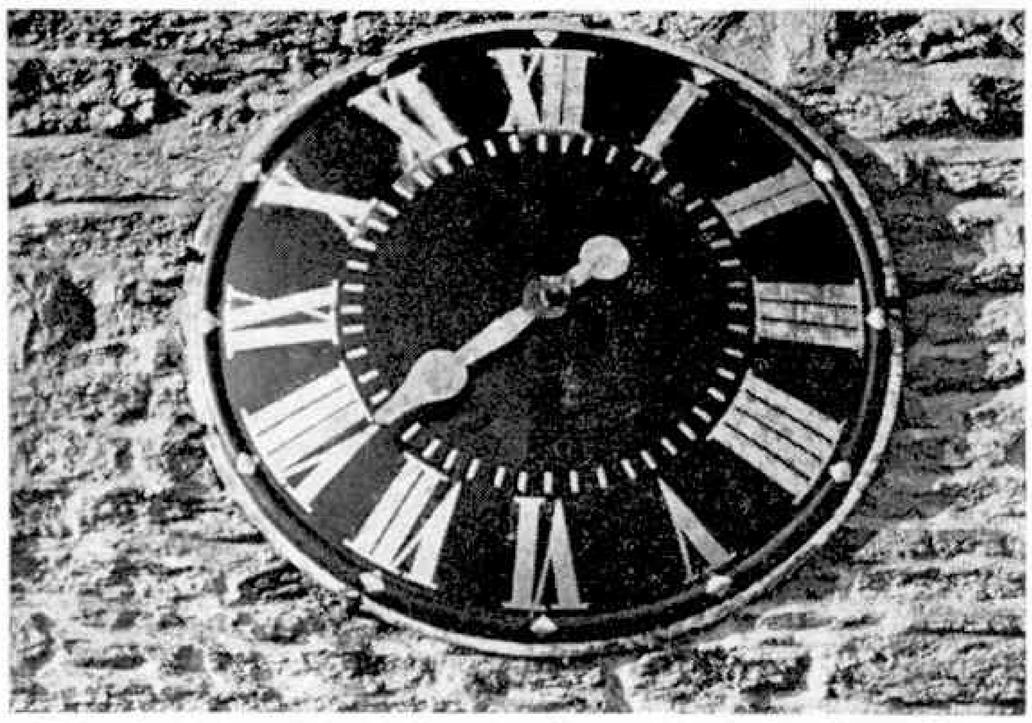
SET CONTENTS LISTS

To aid prospective entrants who are unsure of the contents of the various current Meccano Sets, we will be pleased to supply a Set Contents List upon request. Simply send a stamped-addressed envelope or appropriate International Reply Coupons to: Meccano Magazine, Northern Office, Dept. SCL, Binns Road, Liverpool L13 1DA.

SPECIAL BONUS

As a special bonus we are prepared to feature suitable interesting model entries in Meccano Magazine in due course, provided that sufficient details of the models can be supplied by the builders to enable full constructional articles to be prepared. The necessary information would not be required until after the competition has closed, therefore, if you are interested in seeing your model featured in full, it is advisable to either keep the original model built up, or to at least keep sufficient constructional notes to enable the model to be re-built at a later date.

Models chosen for inclusion in the Magazine will not necessarily be drawn from prize-winners only. Usable unsuccessful entries will also be considered and the builders of all models used, whether prize-winners or not, will receive a publication fee, calculated at our standard rates. The builders of models in which we are interested will be contacted shortly after the competition closes and, if they subsequently wish to have their models featured and are able to supply the original model, or sufficient re-building information, we will be delighted to hear from them. Final decisions on publication, however, can not be taken until we have been able to see or rebuild the models. We will, ourselves, prepare the final features.



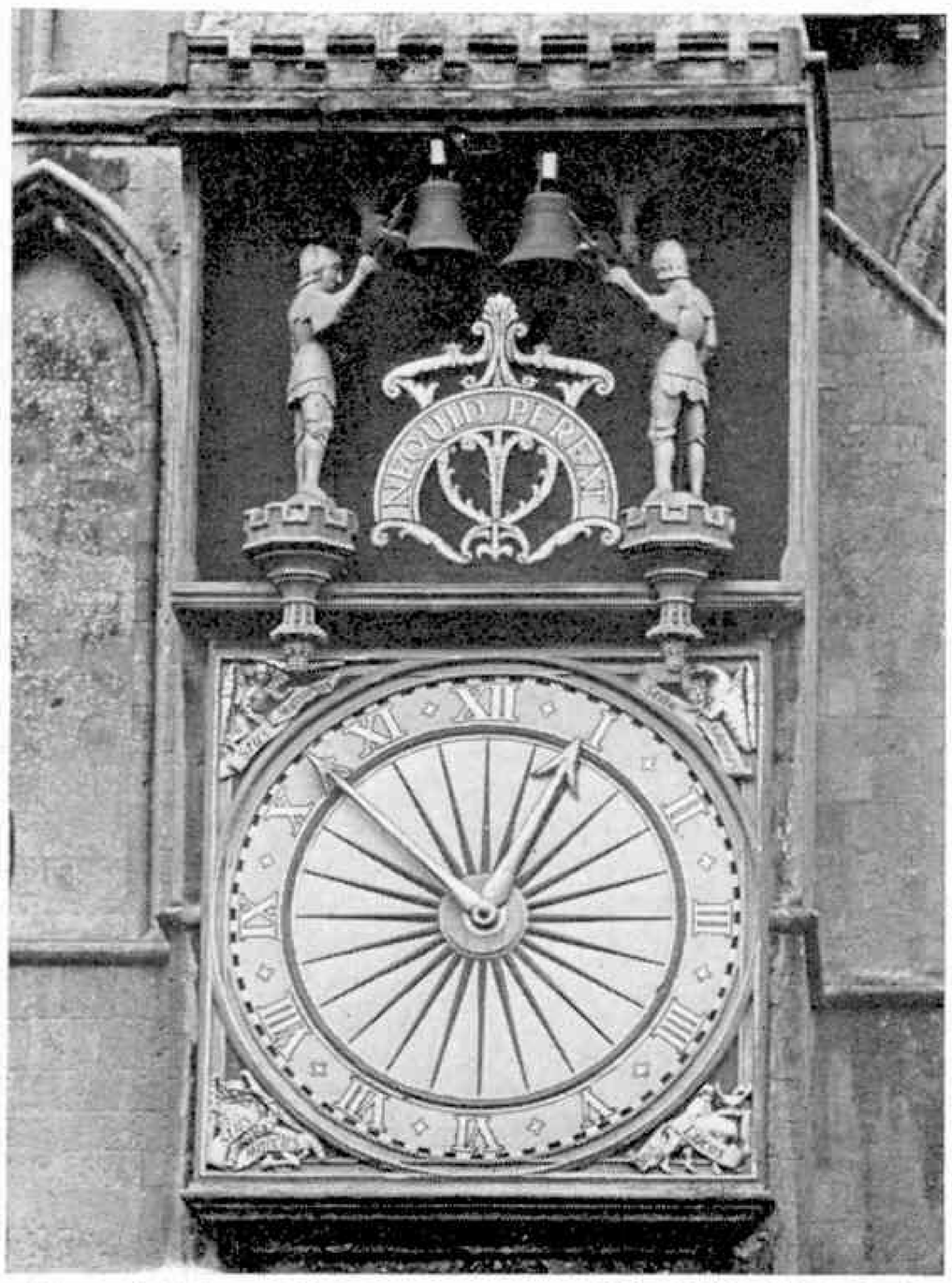
The single-handed clock at Lydbury North in Shropshire.

BRITAIN'S CURIOUS CLOCKS

described by G. H. Haines

THE FIRST TIME YOU TAKE A CLOCK to pieces you are struck by the complicated and ingenious mechanism—even if it is only a cheap modern alarm clock. It is therefore surprising to discover that some of the earliest clock makers made instruments which showed much other information in addition to the time. And it must be remembered that at the period when these clocks were made all the gears had to be cut by hand, so that many of them are wonderful examples of craftmanship.

One of the oldest is the famous clock in the cathedral at Wells in Somerset. The face of this has a number of rings. The outermost is marked with the twenty-four hours and a large gilt star representing the sun moves round to act as an hour indicator; the next circle is numbered from one to sixty for minutes and a silver star moves round as marker; finally the central dial moves round to show the age and phase of the moon. Not content with this display of information, there is also a turret above the clock face out of which knights on horseback emerge on the hour and engage in a tournament, and to the right of the clock there is a figure known as Jack Blandifer which sounds the quarters with its feet on a bell. Outside the cathedral there is another clock face with two knights who sound the quarters. This clock was made about 1392 and the original works are now in the Science Museum, having been replaced in 1838.



These knights strike the quarters outside Wells Cathedral.

The display of the Wells clock is outdone by the clock at Hampton Court which was made for Henry VIII in 1540. This has a dial 7 ft. 10 in. in diameter with three separate copper discs which revolve at different speeds. The clock shows the month, the date, the day of the week, the number of days since the beginning of the year, the hour, the sign of the zodiac, the age and phase of the moon and—for good measure—the time of high water at London Bridge !

In Exeter Cathedral there is an astronomical clock on simpler lines which is reputed to have been made about 1376 and which shows the hour and the age of the moon. Above this is a separate dial added in 1760 which shows the minutes.

In contrast to these complicated affairs some early clocks have dials with only one hand—typical examples can be seen at Bishops Castle and Lydbury North in Shropshire and at Coningsby in Lincoln. There is also a single handed clock at St. Mary Steps in Exeter. This has a clock jack which bows at the hour and is often said to represent King Henry VIII, but the vicar of the church told me that it is actually a local character known as Jack the Miller.

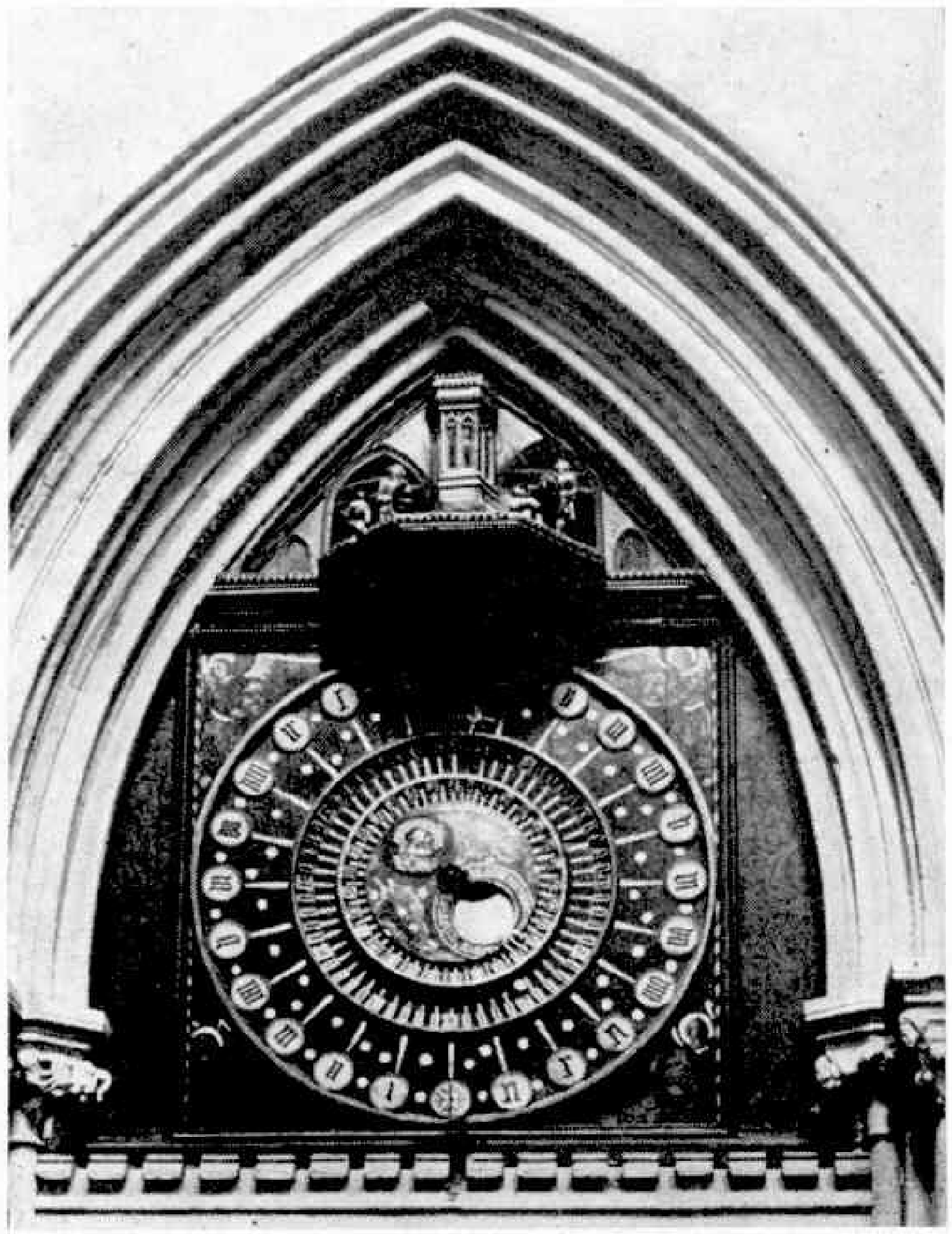
Many early clocks have these figures which strike the hours or quarters and are known as Jacks. The clock at Rye in Sussex, which is the oldest church turret clock still to have its original works (it was made in 1560) has two cherubs acting as jacks—the

originals were fitted in 1760, but they have been much restored since then.

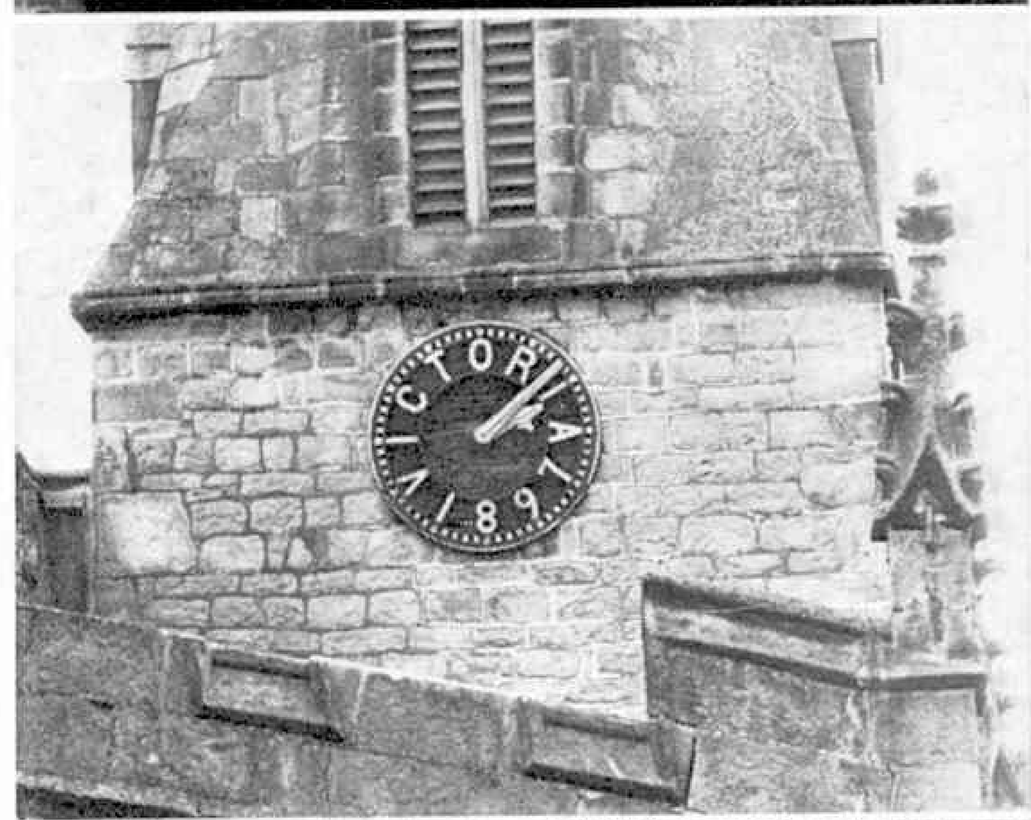
Recently there have been several modern clocks with interesting jacks. At Coventry Lady Godiva rides on a white horse every hour, while Peeping Tom peeps out from a window above; in London the figures of Mr. Fortnum and Mr. Mason appear in period dress on a clock outside the well-known store which they founded; and at Crawley in Sussex there is a parade of model vintage cars at the hour while the clock plays the theme tune from the film 'Genevieve'—a really modern touch !

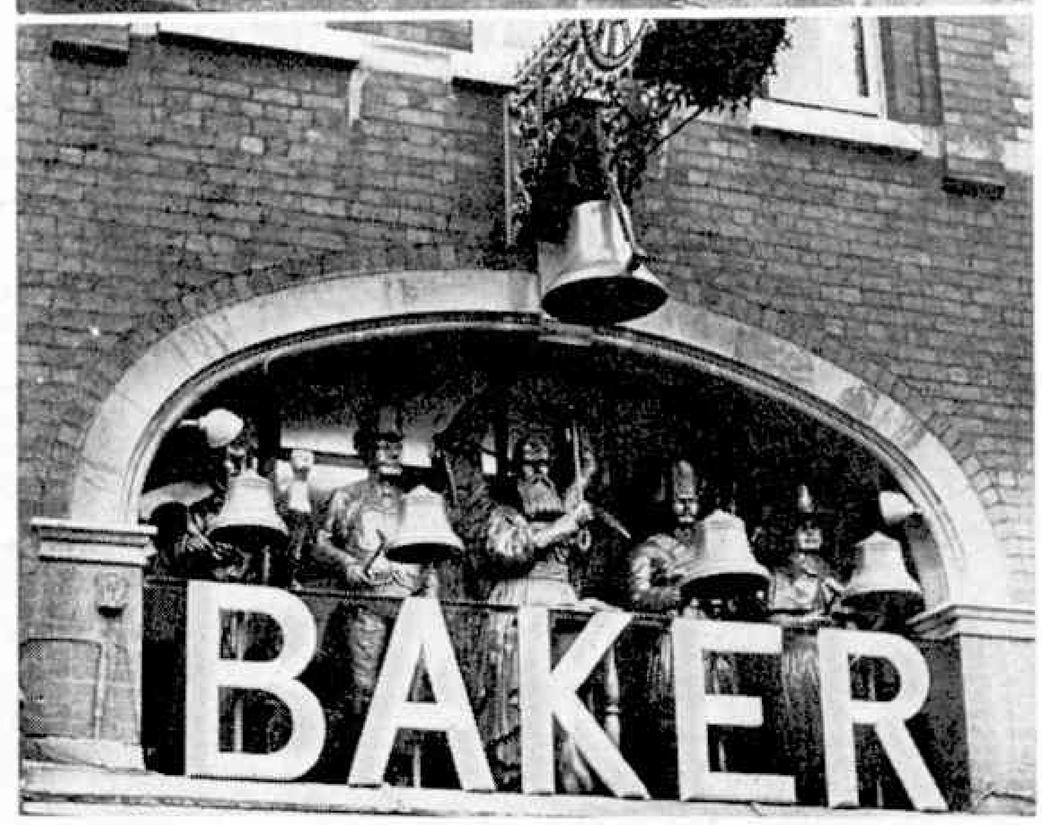
Some of the most modern clocks dispense with dials and have panels in which the time is shown in numerals —10.59, for instance—making it very easy to tell the time. But the makers of some of the earlier clocks went to the opposite extreme and made it very difficult to read the time. One of the faces of the church clock at Baslow has the words 'Victoria 1897' round the dial. This was erected in commemoration of the Queen's Jubilee, but a young child just learning to tell the time must be very puzzled to know what "A past R" is ! At Buckland in the Moor, in Devon, the clock has 'My Dear Mother' round the dial instead of numerals. This was erected in memory of the donor's mother.

Even more fanciful is the clock at Wootton Rivers in Wiltshire which has "Glory be to God" round the dial and which has chimes arranged so that they change each hour so that when you hear the quarters struck you can tell the hour from the tune they play—if you can remember the 'code'. This is a most ingenious affair which was not made by a clockmaker, but by the village handyman, Jack Spratt. At the time of the coronation of King George V the village



The clock in Wells Cathedral shows the age and phase of the moon as well as the time.

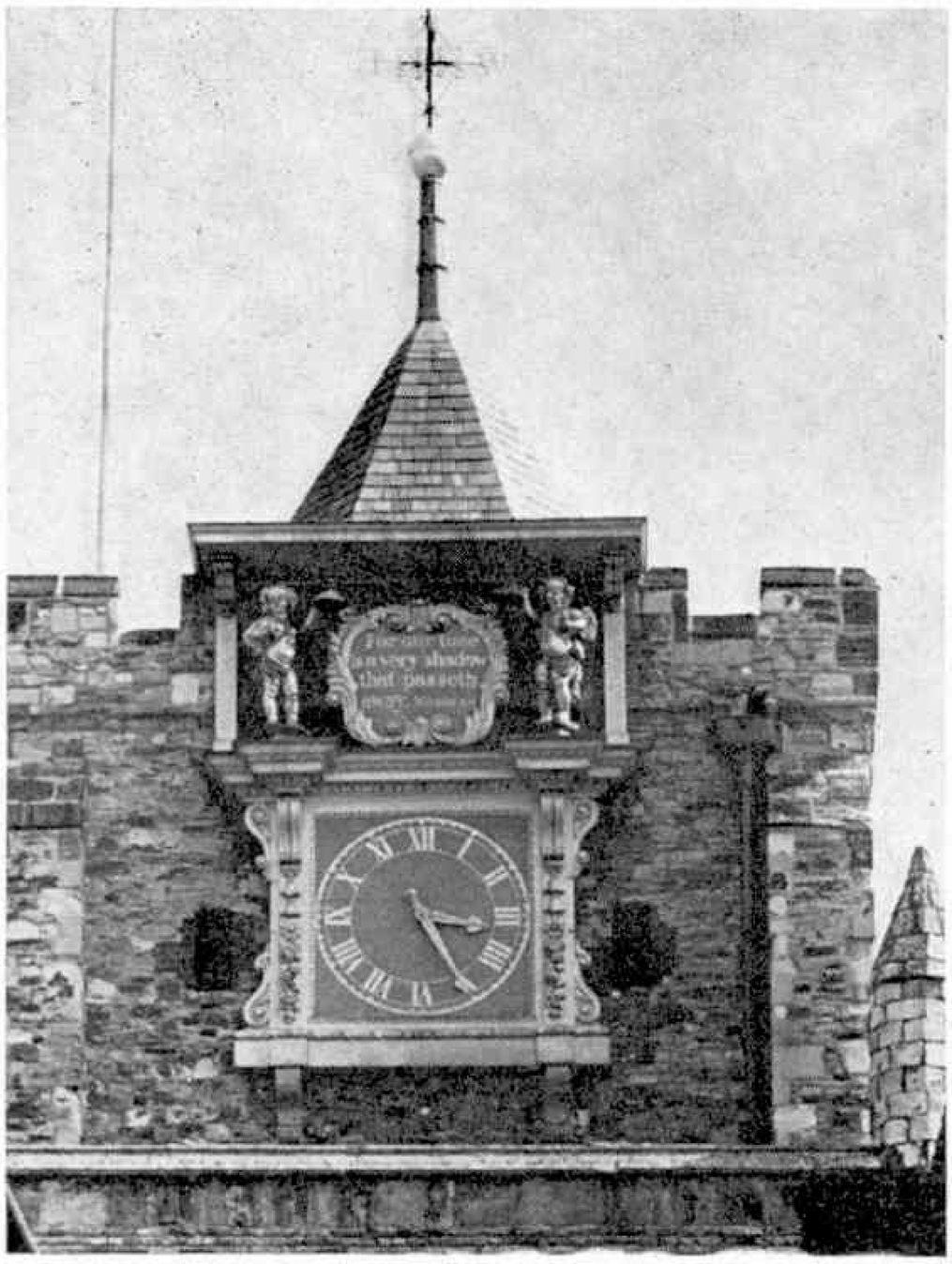




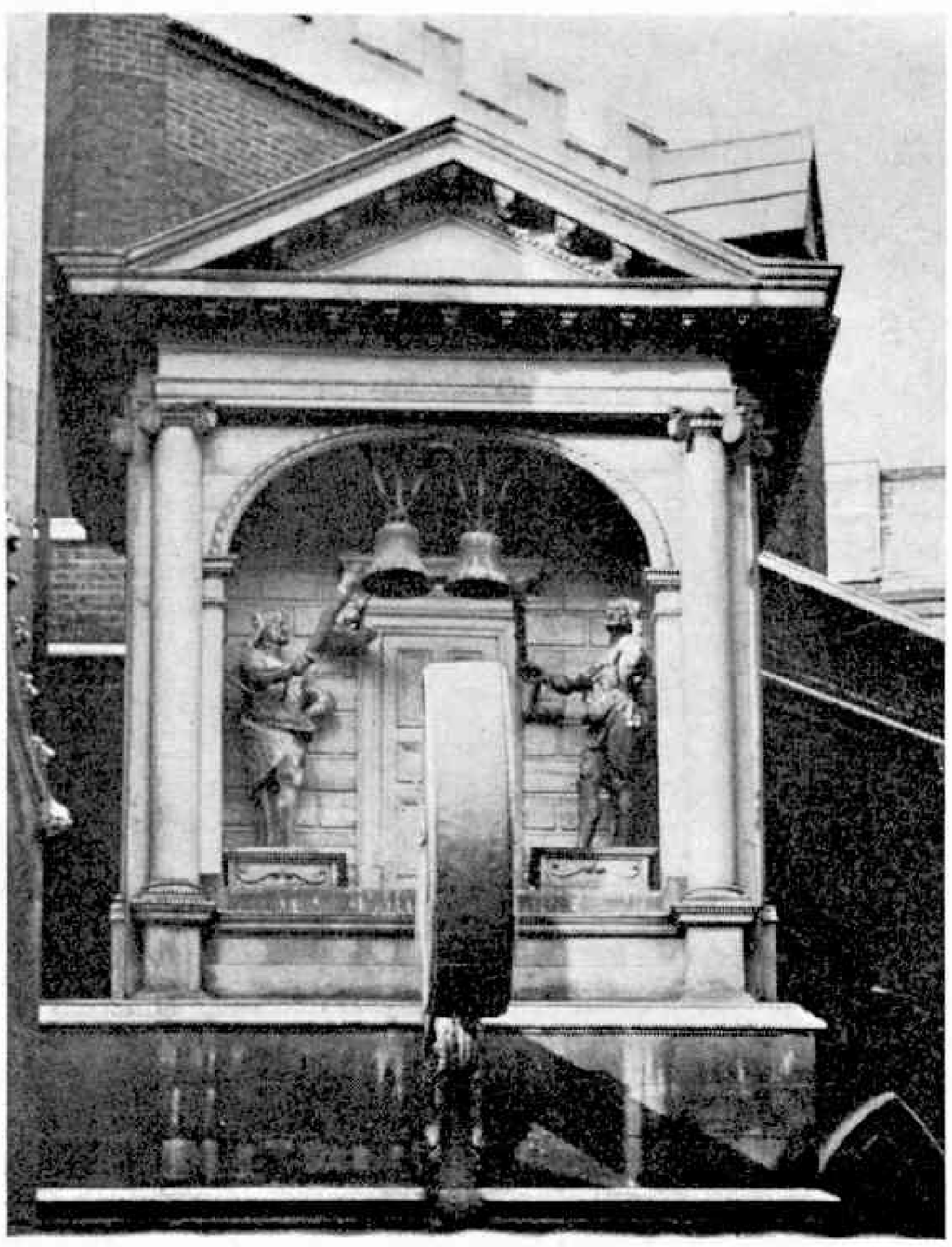
Top : In Coventry, Lady Godiva rides out on a white horse and peeping Tom peeps at each hour.

Centre : This clock at Baslow commemorates the Jubilee of Queen Victoria.

Lower : Above a jewellers shop in Gloucester are clock jacks in the costumes of the countries of the British Isles together with Father Time himself.



The oldest church turret clock still with its original works at Rye.



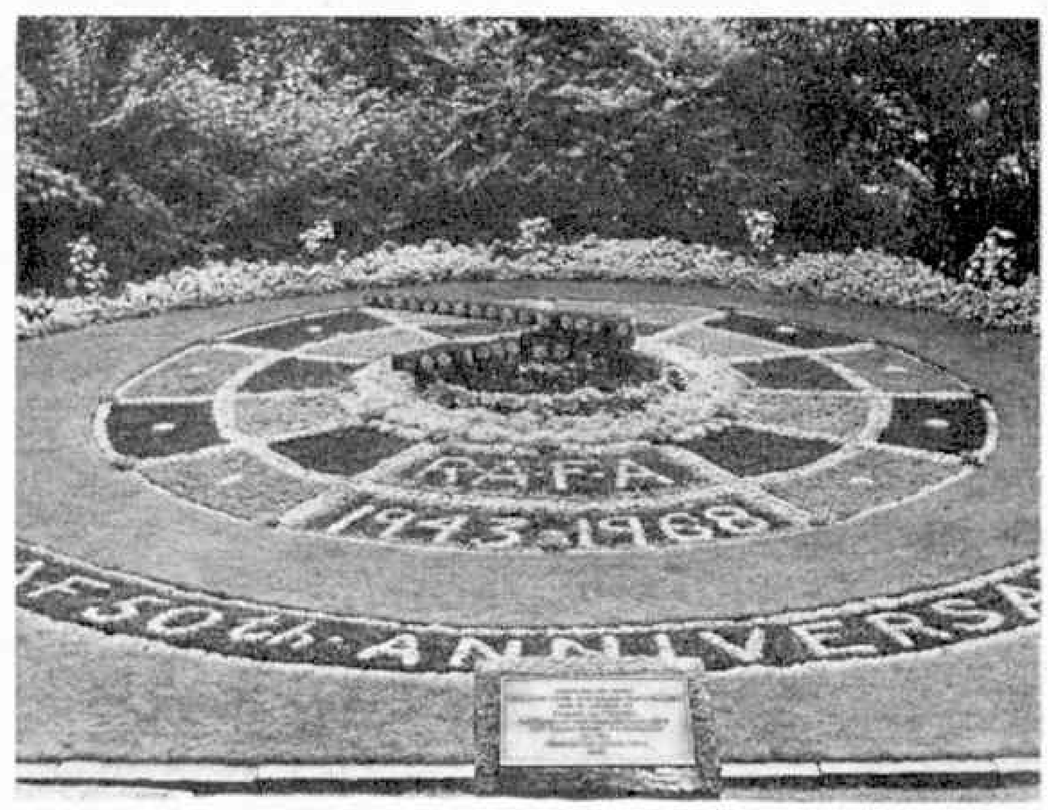
Many people passing along Fleet Street in London fail to see these clock-jacks at St. Dunstans church.

folk wanted to erect a clock in commemoration, but they could not raise enough money to purchase one. Jack Spratt who had taught himself something about clocks said that if they brought along their scrap metal and broken machines he would make a clock for them. He then set about using old wheels and parts of farm machinery to build this clock. He recorded his efforts in a long poem, part of which runs :

" The steel pinions I made with spindles of bikes,
A sledge hammer hits the bell when the clock strikes.
On one of three dials is ' Glory be to God '.
I used a broom handle for the pendulum rod.
It has 66 lb. of lead for its bob,
My wife melted that and it was a hot job."

From which you will see that Jack Spratt was better at clockmaking than writing poetry.

There are several other home-made clocks about the country—there is one at Tirley in Gloucestershire which is said to have stopped when its maker died, and was later repaired by an enthusiast who came to look at it. There is another example at Eldersfield in Worcestershire. The works of these clocks are, of course, on a large scale, but they still required very skilled and patient work and they are good examples of the unsuspected abilities of local blacksmiths.



One of the floral clocks is at Leamington Spa.

Another ingenious type of clock is the floral clock seen in parks and other public gardens. These are usually planted with new flowers each year—often arranged to commemorate some special event of the year, but the basic mechanism is retained. The first of these is said to have been made in 1904 for Edinburgh and its works were adapted from the mechanism of an old clock removed from a church. This clock has a cuckoo call to sound the hours and this was originally arranged by fitting two miniature organ pipes and a small bellows, but now an electronic device is used.

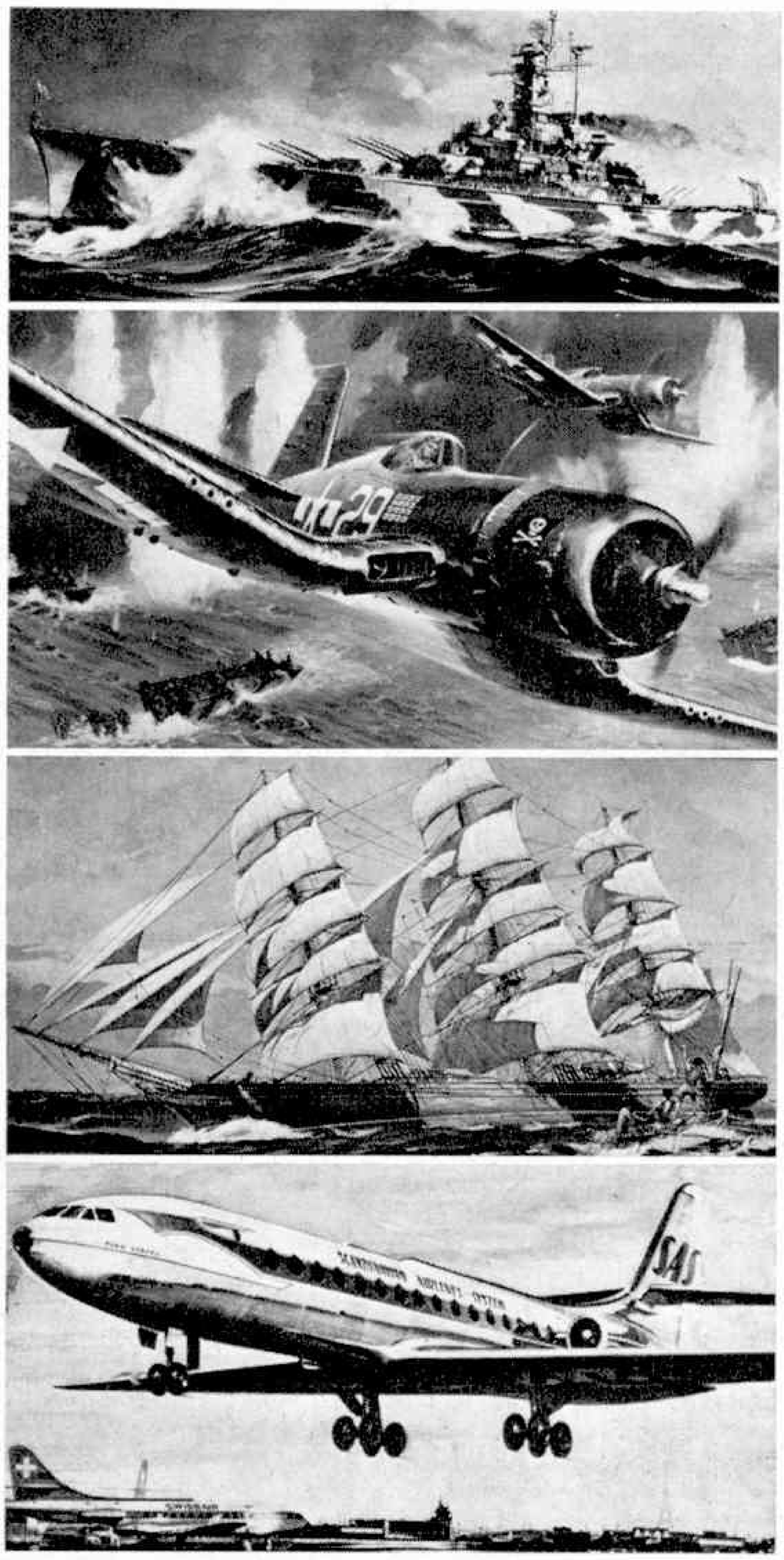
The firm which made this clock has also made most of the others in Britain as this is a rather specialised job—the minute hand when planted, together with its counterweight, can weigh as much as 56 lb.—or even more after heavy rain.

Surprisingly many people fail to notice the curious features of clocks and their dials—giving only a casual glance and noting the positions of the hands. It pays to give a longer look to make sure that you don't pass one of these special timepieces.

Unfortunately, model tank building for the Model Engineer Exhibition has filled our plastic kit building time this month and so we have not had the opportunity to construct any of the kits we review here this time. It always seems to happen that when there are pressures on time more kits arrive than have done in previous months when we would have welcomed the opportunity for some building! However, we have found time to have a good look at the kits mentioned below and herewith are our opinions.

New kits from Revell

A further five releases from Revell this month, who seem to be widening their range lately, which with Christmas coming certainly helps with present buying for relatives and friends.



The new releases from Revell : Top, USS Alabama. Above Centre, 32nd scale Corsair. Below Centre, Clipper Ship Thermopylae. Lower, SE 210 Caravelle.

HAVE YOU SEEN ?

U.S.S. Alabama :

The first we received is a 1/720th scale model of the U.S.S. Alabama finished in, naturally enough, battleship grey plastic. The kit contains just enough parts to make it interesting, but not so many as to make it a difficult one for younger modellers. The deck, for instance, is a one piece moulding complete with most of the superstructure and the hull in only three parts, the main hull itself and two side pieces. The length of the finished model is over 11 in. and features a few moving parts such as gun turrets and aircraft. The price of this one is a very reasonable 9/9d.

Douglas DC-9 Airliner :

Civil aircraft seem to be coming increasingly popular and this new one at 1/120th scale is certainly a very appealing little model. Finished in a beautiful metalic-silver, it really needs no painting just the addition of numerous transfers which are supplied. As with the U.S.S. Alabama there are not a great deal of parts here, so another ideal one for the youngster. The price of this one is also 9/9d.

SE 210 Caravelle :

A second new aircraft from Revell is yet another civil airliner, this time to a scale of 1/100th and with the addition of rotating under carriage wheels. The model is moulded in white plastic and, although contains a few more parts than the Douglas DC-9, is once again a recommended one for the younger and less experienced builders. The price of this one too is 9/9d.

Clipper Ship " Thermopylae " :

Another addition to the already popular range of big kit ship models, which included the *Cutty Sark* and *Mayflower*, is this new one from Revell, " Thermopylae ". This is a model for the true enthusiast and contains a wealth of moulded parts in beige, black and white. A complete set of beautiful sails formed from thin cream styrene sheet are also included and various bobbins of cottons to construct the rigging. For lovers of sailing ships the " Thermopylae " will be a very welcome addition to the range. Considering the amount of parts included a price of 42/0d. seems to be very reasonable for this beauty.

Vought Corsair

A 1/32nd scale model of the famous American Naval fighter of W.W.2. This is an exceptionally well detailed kit with complete cockpit detailing, etc. At 19/9d. excellent value for the more experienced modeller.

New Airfix Kits

Blohm Und Vos B.V. 141 B

Another 1/72nd scale model to join the already impressive aircraft kits from Airfix is this model of a very unusual aircraft. Finished to Airfixes usual very high standard of moulding and complete even down to the Pilot, Observer and Gunner, the finished model is 7½ in. long and has a wing span of 9½ in. The undercarriage can be assembled in either the down or retracted position and the propeller rotates. Painting instructions and a full set of transfers are all included in the very modest price of 6/0d.

The High Chaparral :

Just about everyone, we are sure, must have seen the " High Chaparral " series on B.B.C. television and Airfix have produced a delightful box of western figures including well-known figures such as John and Victoria Cannon, Manolito, Boy Blue and Buck Cannon. In addition, there are cowboys on horse-back, some running, some falling and others in characteristic stands with 6-shooters at the ready. Although in OO-HO scale, which means that they are under 1 in. tall, these figures are excellently detailed and there are no less than 42 in the box for the modest price of 2/11d.

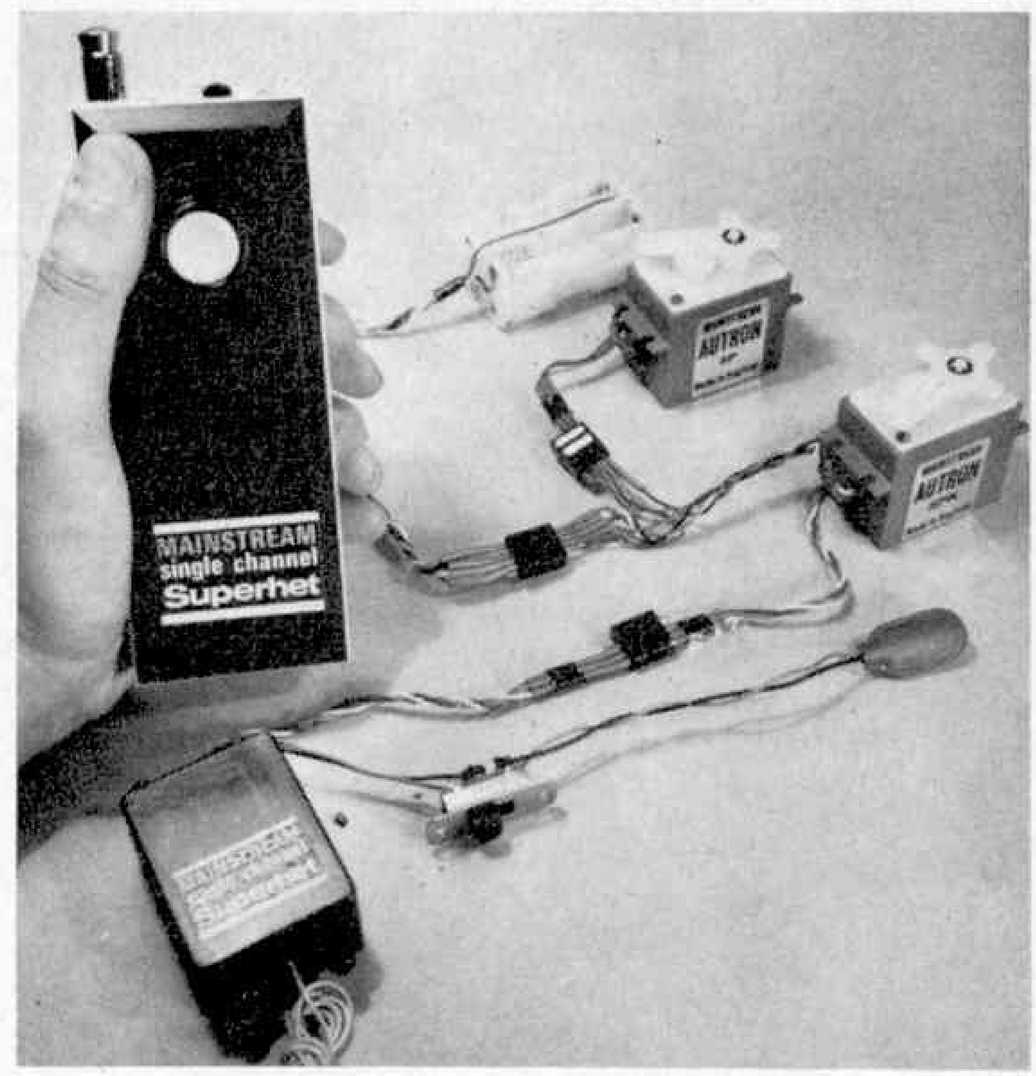
Mainstream Hovercraft

This very unusual kit built up from the balsa and plastic parts provided and with the addition of a small diesel or glow engine up to 1 c.c., produces a working model Hovercraft which will hover and travel over the ground just like the real thing. Comprehensive instructions are included in the kit, as well as providing an amusing model, gives the builder a good idea of exactly how a Hovercraft works and some of the problems involved in this, the most modern form of travel. The kit is reasonably priced at £1.

A new Single-Channel outfit

It is not often that we get the opportunity to review radio controlled systems in *Meccano Magazine* and so the arrival of the latest product from Mainstream in this field came as a very pleasant surprise.

It is a new Single-Channel Superhet system (this means it will operate with other single-channel outfits in the area, without interference providing that they are on the same frequency) and is particularly



suited to small model boats. The units comprise of a small slim-line transmitter of very simple shape with a large micro-switch button and this is matched to a small superhet receiver. The two servos supplied are capable of giving left/right and neutral to the rudder and idle/half and full throttle position to the motor. Small plugs and sockets are fitted throughout making assembly simple and straightforward and should the need arise, parts can be removed quickly and simply from any installation. The system is available through local dealers but in case of difficulty we suggest readers contact the manufacturers, Mainstream Limited, Hallam Street Works, Hallam Street, Stockport, Cheshire. Prices are as follows :—Complete system £22 6. 0d. Transmitter/receiver £13 8. 0d., 3 position servo (3PN), £3 15. 0d., 2 position servo (2PN) £2 0. 0d.

car outline COMPETITION

50 Dinky Toy Models to be Won!

Fill in the form opposite and simply send it in to *Meccano Magazine*, Comp', 13-35 Bridge Street, Hemel Hempstead, Herts., marked "Car Outline Competition" *or* if you don't want to cut your magazine just jot down your answer on a postcard and *don't* forget your address!

The first 50 correct entries received will be sent a model of the vehicle illustrated.

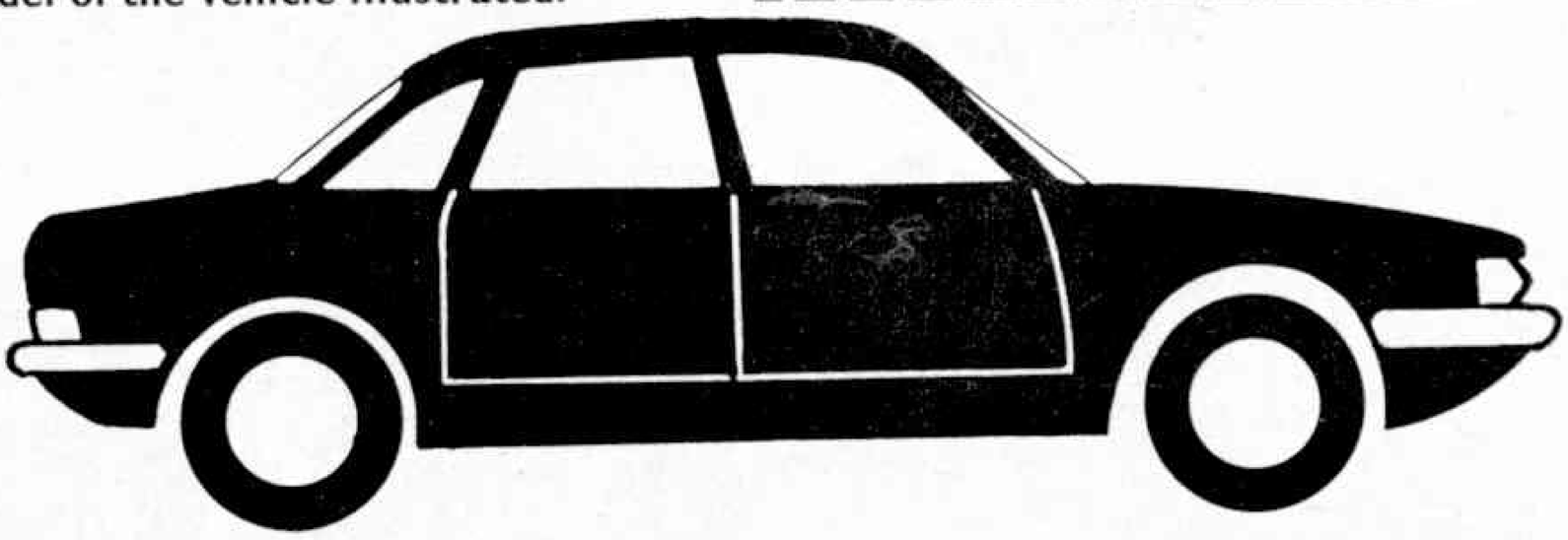
The vehicle illustrated is.....

.....

Name..... Age.....

Address.....

.....



DINKY TOY WINNERS!

Below is a list of the winners who correctly identified last month's silhouette and were the first to send their entries to the *Meccano Magazine* Office. To those of you whose entries were wrong, or didn't perhaps get them off to us quickly enough, don't despair, but have another try this month. The last month's car was, of course, an Aston Martin, DB6.

Winners.

A. Drake, Cambridge. J. Blatch, Firle, Sussex. A. M. Teaz, Glasgow. C. S. Thompson, Petts Wood, Kent. A. Moneath, Windlesham, Surrey. P. Simpson, Harpenden, Herts. T. Palmer, Arnold, Nottingham. J. Clough, Swansea, Glam. P. Goddard, Barnstable, Devon. I. Thomson, Ruislip, Middx. C. Sleightholme, Angmering on Sea, Sussex. M. Prior, Malvern, Worcs. M. Johnson, Southshields, Peterborough. D. Blake, Cholsey, Berks. R. Jordan, Rainham, Kent. K. Cowley, Sheffield. N. Chanarin, Kew, Surrey. J. Mather, Bradford, K. Freer, Rochdale, Lancs. J. Tomkins, Defford, Worcs. S. Cummings, Horsham, Sussex. R. Preston, Farnborough, Hants. T. Aust, Combe, Oxford. G. Saunders, Southampton. I. Shergold, Reading, Berks. G. Hoard, Hastings, Sussex. N. Hedges, Chester le Street. E. Ainscow, Penrith, Cumberland. R. Parkhurst, Blandford, Dorset. M. Farrar, Bradford, Yorks. P. Butt, Salisbury, Wilts. T. Moore, Crowborough, Sussex. P. Goode, Coventry. S. Sutton, Maldon, Essex. A. Turner, Nr. Horsham, Sussex. G. Doule, Sidmouth, Devon. A. Comber, Basingstoke, Hants. D. Buss, Ingatestone, Essex. S. Parker, Bridlington, Yorks. J. Marriott, Wetherby, Yorks. N. Mason, Tremadoc, Caerns. W. Vevers, Mussleborough. C. Smith, Wokingham, Berks. P. Richardson, Gomersal, Yorks. M. Izzard, Clophill, Bedford. D. Reed, Aylesbury, Bucks. M. Pearson, Alton, Hants. C. Taylor, Upper Norwood. R. Hellier, Crewkerne, Somerset. A. Farell, Birmingham.

THE REPLICA OF ASSOCIATION FOOTBALL

Here is a game where victory or defeat depends upon the skill of the player with fingertip control. COMPLETE with goals, balls and teams available in all League Club colours. Played with 22 miniature men. All the thrills of League, Cup and International Football; dribbling, corner, penalty kicks, offside, goal saves. PRICES **24/- 54/-**

NEW SUBBUTEO *CONTINENTAL* editions with 00 Scale Teams, hand-painted in all League colours, on duotone coloured bases.

WORLD CUP **158/-** INTERNATIONAL **128/-**
FLOODLIGHTING **98/-** CLUB **68/-** DISPLAY **32/6**

Please ask at your local Sports, Toyshop or Department Store. In case of difficulty write for literature and list of stockists to

SUBBUTEO

Dept. 5 Langton Green, Tunbridge Wells, Kent.

Build a transistor radio in an evening

- learn about radio and electronics at the same time

There's no complicated soldering with the Radionic X30 Kit. The components plug in and your radio will work straight away. Build 33 fascinating experiments : a printed circuit transistor radio, a burglar alarm, a morse code buzzer etc. Radionic kits are safe – they're battery operated. The X30 and more advanced Radionic Kits can help you with your exams too. Send off this coupon today.

TO: RADIONIC PRODUCTS LTD., MM 4
St. Lawrence House, Broad Street, Bristol BS1 2HF
Please send me full details of all Radionic Kits/please send me one Radionic X30 kit at £7 19s. 6d. (*Delete where inapplicable.*)

Name _____

Address _____

_____

RADIONIC
RADIO & ELECTRONICS CONSTRUCTIONAL KITS

FROM WEBLEY

YOUR OWN AIR GUN SHOOTING GALLERY!

£9-19-6 INC. P.T. MADE IN USA

Here's a new way to really improve your marksmanship — and to give you and your family hours of enjoyment. It's got everything : a bell target, two spin targets, and moving hare and partridge targets — all in a specially designed housing that safely traps your pellets. Every type of target, in fact, to really sharpen up your shooting skill. Every gallery includes a comprehensive instruction booklet, enabling you to erect it on a "do-it-yourself" basis together with a generous number of spare targets. Go and see it now at your local Webley dealer, or write to us and we'll send you all the details.

WEBLEY

The gallery which is made in the U.S.A. to Webley specification is for use with Air Guns only. The moving targets are operated by 240/250 A.C. motor and the connection is by 13 amp. fused 3 pin plug.

WEBLEY & SCOTT LTD

(incorporating W. W. Greener Ltd.),
Dept. E271, HANDSWORTH, BIRMINGHAM B21 8LU

Complete Course in Single Channel Radio Control

3 32-page booklets on Single Channel Radio for model : AIRCRAFT BOATS CARS

3 Full size working drawings for model radio-controlled AEROPLANE "CRACKER" 44in span for .8-1.5c.c. sports flyer

BOAT "CORKER" 21½" L.O.A. cabin cruiser for electric power and detailed building and operating instructions

CAR "CA'CANNY" a modern freelance GP design for electric power plus conversion drawings for 2 plastic car kits

ALSO Membership application form for Meccano Magazine Modellers' Club Radio 4-2

A complete course in single channel radio control

VALUE OVER 12/6, BARGAIN PRICE AT 5/- plus 6d postage

FROM

Model & Allied Publications Ltd. 13-35 BRIDGE STREET, HEMEL HEMPSTEAD

Military Modelling

FIRST ISSUE DECEMBER 28

NEW! NEW! MAP **HOBBY MAGAZINE**

This exciting new addition to the M.A.P. range of Hobby Magazines is specially prepared to meet the needs of all Military Modelling enthusiasts. Scale drawings, topical features, reference articles, reviews, reports and modelling data will be part of the monthly routine orders. Departments like "On Parade" and "Present Arms" will convey latest news of vital interest to Collectors and Wargamers. First issue features include pictorial reports on the B.M.S.S. International Competitions for miniature figures; the N.A.F.V.S. and Essex Wargamers' Convention, and the film epic "Waterloo." Royal Flying Corps colours; Naval modelling; kit mods on the Airfix Pzkw VI Tiger I (Ausf H) ; How to get started in model soldiery—plus a market survey of new books, kits and figures. Don't miss your copy!

Monthly **3/- (15p.)**

MODEL & ALLIED PUBLICATIONS LTD.
13/35 Bridge Street, Hemel Hempstead, Herts.

Place your order NOW!
at your local Model Shop or newsagen

CLASSIFIED ADVERTISEMENTS

PRIVATE: Minimum 18 words 6s. and 4d. per word for each subsequent word.
TRADE: Minimum 18 words 12s. and 8d. per word for each subsequent word.

Box numbers count as six words when costing this advertisement. When addresses are included these are chargeable at the same rate (4d. or 8d.) per word as the remainder of the advertisement. Copy and box number replies should be sent to the Classified Advertisement Department, MECCANO Magazine, 13-35 Bridge Street, Hemel Hempstead, Herts. Latest copy date for insertion in the February issue, December 3rd.

FOR SALE

154 Meccano Magazines, February 1942 to December 1955. Some missing. Offers to—I. Clapham, Box 13, Kimbolton, North Island, New Zealand. K

For Sale. British and French Dinky toy army vehicles. Very good condition, reasonable prices. Ring—Crowther 01-459 3272. K

Tri-ang Hornby Train Set OO. Ten yards track, two transformers, two L.H. points, two R.H. points, two Y points, two shunters, assorted rolling stock. Good condition, £7.—Box No. 50 (Bucks), Meccano Offices, Hemel Hempstead, Herts. K

Dinky Planes, pre-1950, Albatross, Junkers 90, Empire, Viking, ten others. Fine condition, offers, list.—Ridley, Trenillocs, St. Columb, Cornwall. K

For Sale. PRE-WAR products, Meccano Ltd. S.A.E.—10 Haylynn Street, Glasgow W.4. J/K

"M.M.s" 1916-1942. Available/Wanted. £40 (minimum) offered for complete set.—Lambert, 60 Salhouse Road, Rackheath, Norwich. K/O

"Rubber Stamps" made to order. For sale "Printing Set Outfits," for making posters, displays, price tickets, etc. (including new pence).—G. Fenton, 1 Jefferson Close, West Bromwich, Staffs. Tel: 021-556 3798. T/C

TRADE

South London Trams. 6 postcards 4s. 6d. post free from—Collectorcards, 25 Birdhurst Rise, Croydon CR2 7EG. K

Thousands of Civil and Military. Vintage and Modern. Lists 2s. 4d. Write—Aircraft Photographs, Ainsdale, Southport. K

WANTED

6s. Offered for February 1970 M.M. Also wanted—Emebo motor, powerdrive, electrical parts.—Learner, 203 Goldhurst Terrace, London, N.W.6. Tel: 01-624 9779. K

Urgent! Collector urgently requires Aurora large Frankenstein kit, will accept made up. Also other Aurora popular hero and monster kits. Good prices paid. Contact—Haywood, 01-937 6611, or write 27 Kelso Place, London, W.8. K

Meccano Super Model Leaflets Nos. 5, 11A, 16A, 19A, 28 (with 167) and 37. Meccano Magazines, Nos. 1, 3, 4, 5, 6, 7, 12, 16, 17, 18, 19, 20 and 21. Cash or exchange other S.M.L. (inc. 1A & 4) and M.M.s (from 1922). Many other items of obsolete literature and parts available for exchange/sale. Offers/enquiries to—W. R. Inglis, 219 Blackburn Road, South Blackburn, 3130, Victoria, Australia. KLM

Wanted. PREWAR products, Meccano Ltd., German/French tinplate trains, cars, anything/any condition, almost!—Abercorn, 1 Chrichton Street, Glasgow N.1. J/K

Pre-War to 1950. Dinky, Tootsietoys and Tinplate model vehicles. Any number purchased.—Pinnock, 10 Hurstville Drive, Waterlooville, Hants. Tel.: 2958 (evenings). A-K

Pre-War model trains sought by Lowke, Marklin, Bing, etc. O or larger also tinplate toys.—10 Church Hill, Patcham Village, Brighton. 553940. T/C

Collector Urgently Requires for surprisingly high prices, any unusual cast iron and tin toy childrens' money-boxes made before 1950. I particularly want a "Footballer" money box, a "Tommy," "Queen Victoria," "Wimbledon," "Grenadier," "Volunteer," "John Bull," Sentry (tin), Giant, Clown, "Hoop-la," "Robot" (aluminium), Musical Bank, etc., but will consider any kind of money-boxes, especially those with working parts and moving figures. Exchange also considered against old toys, pre-war Meccano, etc. All letters answered so please write if you can help.—Haley, 5 Flushouse, Holmbridge, Nr. Holmfirth, Huddersfield HD7 1QD. H/S

GENERAL

Watch Out for announcement concerning the 1971 supplement to the Dimmock-Jackson Checklist of Dinky Toys Aircraft. Now in preparation, this will include exciting new information gathered during the past 12 months since original production of the Checklist. Enquiries with S.A.E. please to—Alan Dimmock, 2 Wynter Road, Bitterne, Southampton, SO2 5NY. K

GREAT BRITAIN
2/6, 5/- & 10/- 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

CHEMICALS & APPARATUS
Exciting Experiments in your own
HOME LABORATORY!
You can now buy Chemicals and Apparatus—spend what you like—and build up your own LAB. Students everywhere are now sending for their supplies. **Direct from Suppliers!**
Send 6d. Stamps NOW for Latest List and Order Form.
(Overseas enquiries welcomed).
P. X. TECHNICAL SUPPLIES
53 ELDON STREET, SHEFFIELD S1 4GX

RADIO
S.A.E brings free brochure. An introduction to R/C control and details of the world's best single channel tone guidance system. Over 5,000 in current use throughout the world, quantity produced and fully guaranteed for best range and quality at only **£13.** Complete 6 and 10 channel Multi Reed outfits with or without Servo Packs, from **£35½.** Digital three, four, five and six channel Proportional equipment from **£110.** Good selection of second-hand Radio always in stock.

VISIT THE LARGEST MODEL STOCKISTS IN THE COUNTRY
★ STAFFED BY EXPERTS ★ PART EXCHANGE ★ H.P. FACILITIES ★ MAIL ORDER INCLUDING OVERSEAS ★
ORDERS UNDER £3 POSTAGE & PACKING 5/-
Isleworth, Weston and Wakefield open Monday to Saturday. Leicester closed Monday. All shops open until 8.30 p.m. Friday.
WE SERVICE ALL RADIO EQUIPMENT WE SELL

KITS, ENGINES, ACC.
We stock all current Kits, Engines and Accessories. We hold large stocks of Balsa and plywood as well as engine spares radio parts and kits of parts.
We always have bargain lines as well as a good selection of second-hand Boats, Aircraft, Marine and Air-cooled Engines

560 0473 ***RADIO CONTROL SUPPLIES*** LEIC. 21935
581 LONDON ROAD, ISLEWORTH, MIDDX. 52a LONDON ROAD, LEICESTER
53 BRADFORD ROAD, WAKEFIELD WAK 77363 1, THE CENTRE, WESTON-SUPER-MARE WESTON 6600

PLANES BOATS CARS TRAINS MECCANO

MODEL SHOP DIRECTORY

M denotes Meccano accessory and spare parts specialists

AYLESBURY

Tel: 85752

TAYLOR & McKENNA

46 FRIARS SQUARE

BATH

Tel: 60444

CYRIL HOWE'S
CHEAP STREET
BATH, SOMERSET

The Model Shop of the West for all your modelling requirements. Aircraft, Boats, Engines, Radio Control. Expert advice available. M.A.P., Meccano Sets, spares, etc.

BIRMINGHAM

Highbury 3237

KINGS HEATH MODELS
5 York Road, Birmingham 14.

Everything for the modeller: Boats, Cars, Planes, Railways, Kits, etc. Meccano sets and reasonable stocks of spares.

BLACKPOOL

Tel: Blackpool 24061

BATESON'S SPORTS DEPOT LTD.,
56 ABINGDON STREET,
BLACKPOOL.

Complete Stocks all through the Year.

CARLISLE

Tel: Carlisle 23142

PALACE CYCLE STORES,
122 BOTCHERGATE,
CARLISLE.

Meccano Stockists for Airfix, Dinky, Matchbox, etc.

CHATHAM

Tel: Medway 45215

W. PAINE & CO. LTD.,
168 HIGH STREET,
CHATHAM.

M

CREWE

Tel: Crewe 55643

EVELYN WILSON,
86-88 MARKET STREET,
CREWE, CHESHIRE.

Meccano Sets — Accessories and Spares — Hornby Tri-ang Train Sets — Accessories and Spares — Frog Kits.

HEMEL HEMPSTEAD

Tel: 53691

TAYLOR & McKENNA

203, MARLOWES

M

KENT

Tel: Erith 32339

DERRETT (TOYS) LTD.,
52/54 ERITH HIGH STREET,
ERITH, KENT.

Aircraft, Boats, Fibreglass Hulls, Tri-ang Hornby, Lima, H.O., H. & M. Units, Scalextric, Airfix, Riko, Pactra, Plastic kits, Minitanks, Marquetry. Prompt Mail Order Service.

KENT

Tel: Dartford 24155

MODERN MODELS LTD.,
49/51 LOWFIELD STREET,
DARTFORD, KENT.

For all your modelling requirements. Radio/Control, Aircraft, Boats, Cars, Railways All leading makes from The Shop with the Stock. Prompt mail order service.

LEEDS, 1

Tel: 25739

BRADFORD MODEL RAILWAY CENTRE,
23 ALBION PLACE,
(Off Briggate).

The North's Leading Model Railway stockists in OO and N gauges. Branches at Cloth Hall Street, Huddersfield and Frizinghall, Bradford.

LEICESTER

Tel: Leicester 21935

RADIO CONTROL SUPPLIES
52 LONDON ROAD
Mail Order Specialists.
Closed Monday.
Open until 8.30 p.m. Friday.
The Showroom of the Midlands with full R/C service facilities.

LIVERPOOL

Tel: 709-7562

LUCAS'S (HOBBIES) LTD.,
7 TARLETON STREET,
LIVERPOOL 1.

HOBBIES or everything the model maker requires. Aeroplanes, Cars, Chemistry Sets, Railways, Meccano Building Kits, Instructional Toys, also a selection of Games, Dolls and Soft Toys.

LONDON

Tel: Regent 1846

JEREMY,
16 PRINCES ARCADE,
PICCADILLY, LONDON, S.W1.
MECCANO ACCESSORY AND SPARE PART SPECIALIST.

M

LONDON

Tel: 01-560 0473

RADIO CONTROL SUPPLIES
581 LONDON RD., ISLEWORTH, MIDDX. Mail Order Specialists
Open each weekday and until 8.30 p.m. Fridays.
Largest R/C stockists in the country.
Own R/C service centre.

LONDON

Tel: Mill Hill 2877

H. A. BLUNT & SONS LTD.,
133 THE BROADWAY
MILL HILL, LONDON N.W.7.

M

MANCHESTER

Tel: Blackfriars 3972

THE MODEL SHOP
7-13 BOOTLE STREET,
OFF DEANSGATE,
MANCHESTER 2.

THE NORTH'S LEADING MODEL, HOBBY AND TOY SHOP. MECCANO SETS AND SPARE PARTS A SPECIALITY.

M

NEW ZEALAND

BUNKERS LTD.,
P.O. BOX 58,
HASTINGS.

(Mail orders from all countries welcomed.)

M

READING

Tel: Reading 51558

READING MODEL SUPPLIES
5 Chatham St. Car Park, Oxford Road,
READING, BERKSHIRE.

BERKSHIRE'S MODEL CENTRE
You can drive right to us.

ST. ALBANS
Tel: 59234

BOLD & BURROWS LTD.,

19-23 CHEQUERS STREET, ST. ALBANS, HERTS.

Meccano Sets and Spares.

STOCKTON-ON-TEES
Tel: 67616

LESLIE BROWN

95 HIGH STREET STOCKTON-ON-TEES, TEESSIDE TS18 IBD

Super Toy and Model Store. Meccano Range and Spare Parts. Mail Orders welcome.

M

WATFORD
Tel: Watford 44222

CLEMENTS,

THE PARADE, WATFORD.

Always a comprehensive range of Meccano Sets, Accessories and Dinky Toys.

SCARBOROUGH
Tel: 65005

"PAT NURSE"

87 COLUMBUS RAVINE SCARBOROUGH, YORKS.

Toys and models store. Meccano spares dealer.

Mail and telephone orders welcomed.

SURREY
Tel: Camberley 5926

JOYLAND,

56 HIGH STREET, FRIMLEY, SURREY.

Full range of Meccano and Spares Tri-ang-Hornby Railways, Scalextric, Lego

Largest selection of toys and games in the area.

M

WELWYN

H. A. BLUNT & SONS LTD.

38 FRETHERNE ROAD WELWYN GARDEN CITY, HERTS.

Complete range of model aircraft, engines and accessories, boats, cars and railways.

M

SCARBOROUGH
Tel: 3223

"WALKERS"

15 ST. THOMAS STREET, SCARBOROUGH, YORKS.

Meccano and Dinky Toy Specialist.

Mail orders welcomed.

WAKEFIELD
Tel· 77363

RADIO CONTROL SUPPLIES

53 BRADFORD ROAD WAKEFIELD, YORKS

Closed all day Monday
Open until 8.30 p.m. Friday
Largest R/C stockists in the country.

WESTON-SUPER-MARE
Tel: Weston 6600

RADIO CONTROL SUPPLIES
1 THE CENTRE, WESTON-SUPER-MARE, SOMERSET

Open until 8.30 p.m. Friday.
Largest R/C stockists in the country.
Own R/C service centre.

MECCANO MAIL ORDER SPECIALISTS

3M Motorised Set **£3 15s. 0d.** Mechanisms Set **£2 12s. 6d.**
4M „ „ **£5 9s. 0d.** Super Tool Set **18s. 11d.**
GEAR SET **£1 17s. 6d.** Electronic Control Set **£4 0s. 0d.**
Hand Generator **£1 7s. 0d.**
5ME Electronic and Motorised Electronic Control Set **£11 19s. 0d.**

All sets, Conversion sets and Motors in stock.

FULL RANGE OF SPARES ALWAYS AVAILABLE.

S.A.E. for List. P. & P. Extra up to £5. Over £5 post free U.K. only.

JOHN W. BAGNALL LTD.
SALTER STREET, STAFFORD. Tel 3420

BECKS — FOR YOUR HOME

LABORATORY APPARATUS & CHEMICALS

Visit our showroom to see our large range of equipment.

Restock your chemicals at only 1/- each.

Varied selection of Chemistry & Biology books. Send for our booklet 'Experiments in Chemistry" at 2/- *post paid.*

Complete Dissecting Kit only 56/0d. *post paid.*

Quick parcel service send large SAE for price lists.

A. N. BECK & SONS SCIENTIFIC (M.M.)
147 HIGH ROAD, SOUTH TOTTENHAM, N.15 6DQ
Tel: 01 800-7342

LOOK, IT COSTS YOU NOTHING

To find out more about the many interesting products advertised in this issue of MECCANO Magazine, just tick the squares against the name of the advertiser from whom you would like to receive more product information and post it to: Advertisement Information, Meccano Magazine, 13/35 Bridge Street, Hemel Hempstead, Herts.

JANUARY COUPON

- ☐ Meccano
- ☐ Humber Oil Co.
- ☐ Mainstream Products Ltd.
- ☐ Meccano Ltd. (Dinky)
- ☐ Junior Army
- ☐ Webley & Scott
- ☐ Radionic Products
- ☐ KeilKraft
- ☐ Radio Control Spec.
- ☐ Subbuteo Sports Games
- ☐ M. Mole & Son
- ☐ A.S.I. Ltd.
- ☐ Concord Electronics
- ☐ J. W. Bagnall
- ☐ A. N. Beck
- ☐ Hammant & Morgan

Name.....

Address.....

.....

flying saucers..

...part of the Humbrol invasion!

For years now Humbrol products have been landed all over the world! In the forefront of their invading forces was the famous tinlet of enamel which quickly established itself as the leader, followed by an army of adhesives, brushes, dopes, fillers, craft knives, fuel proofers, thinners, tinlet palettes, self powered spray guns... and aerosol enamels (you see the top of one just coming in to land in the picture).

Use Humbrol's out of this world products - available at model shops all over the planet.

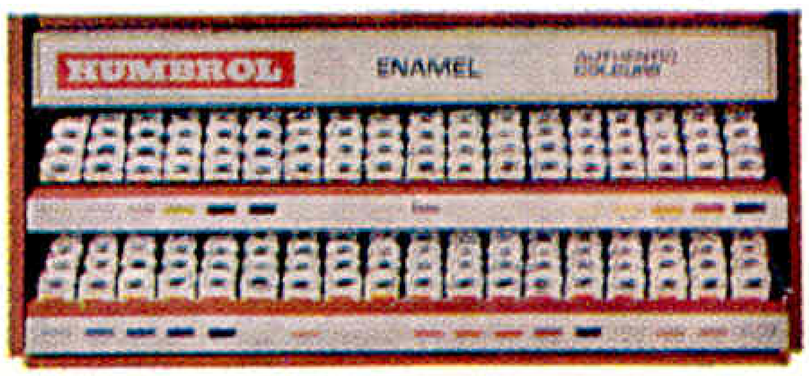
All Humbrol enamels are non-toxic; have great covering power and dry rapidly to a professional finish.

Spare palettes now available with or without lids.

HUMBROL

HUMBROL · HULL · YORKSHIRE

LOOK FOR THE LOCKER!



Printed in Great Britain by Electrical Press Ltd., Maidenhead, Berks., for the Proprietors, Model & Allied Publications Ltd., 13/35 Bridge Street, Hemel Hempstead, Herts. Published by the Argus Press Ltd., 12/18 Paul Street, London, E.C.2, to whom all trade enquiries should be addressed. Registered for transmission by Magazine Post to Canada.

Win the "Battle of Britain" with DINKY TOYS®

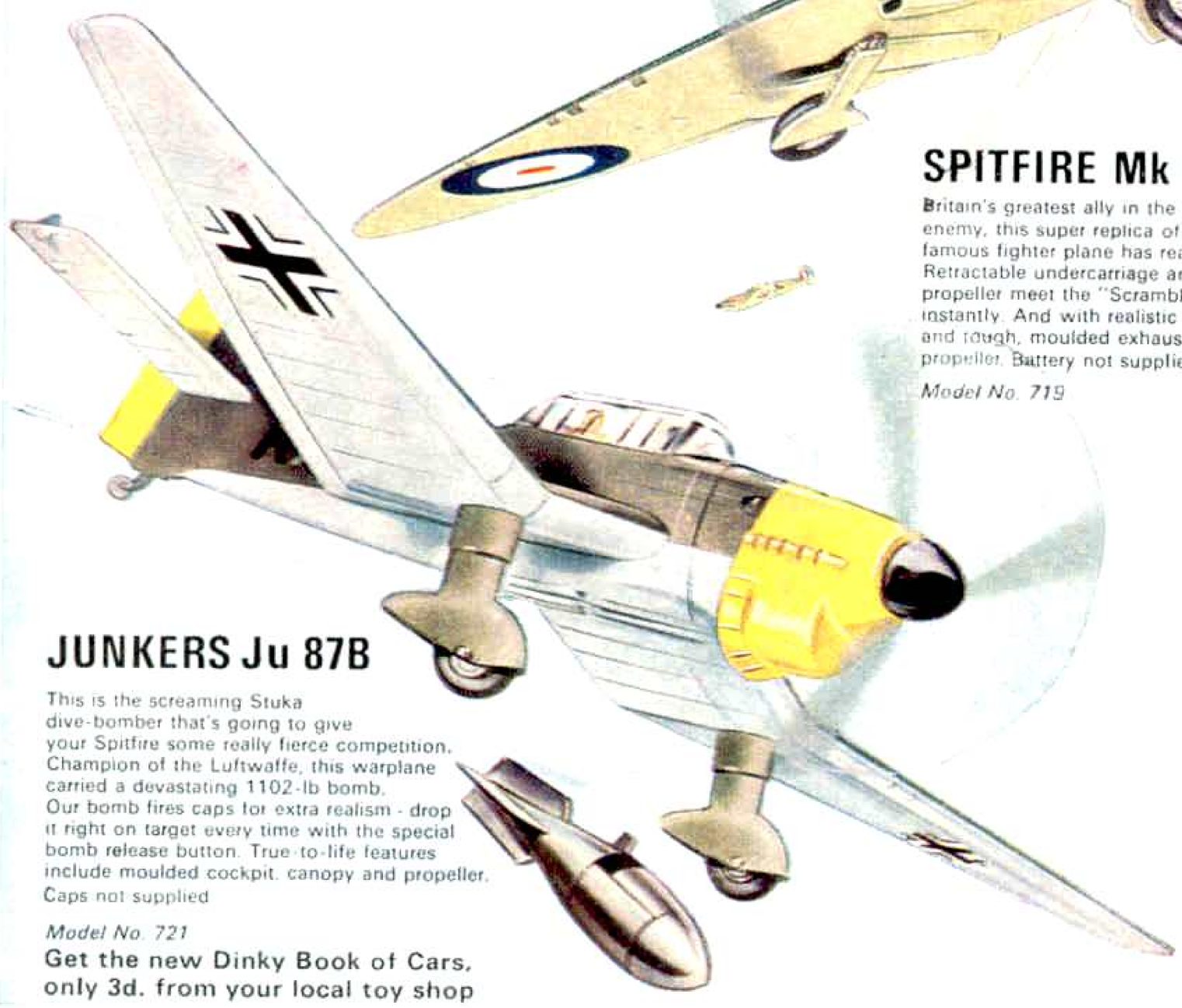
© Spitfire Productions Ltd., 1969

Two dog-fighting warplanes direct from the epic film

SPITFIRE Mk II

Britain's greatest ally in the battle with the enemy, this super replica of our most famous fighter plane has real working features. Retractable undercarriage and battery-driven propeller meet the "Scramble" command instantly. And with realistic transparent canopy and tough, moulded exhaust pipes and propeller. Battery not supplied.

Model No. 719



JUNKERS Ju 87B

This is the screaming Stuka dive-bomber that's going to give your Spitfire some really fierce competition. Champion of the Luftwaffe, this warplane carried a devastating 1102-lb bomb. Our bomb fires caps for extra realism - drop it right on target every time with the special bomb release button. True-to-life features include moulded cockpit, canopy and propeller. Caps not supplied

Model No. 721

Get the new Dinky Book of Cars, only 3d. from your local toy shop

leaders go for

DINKY TOYS

the tough, action-packed models