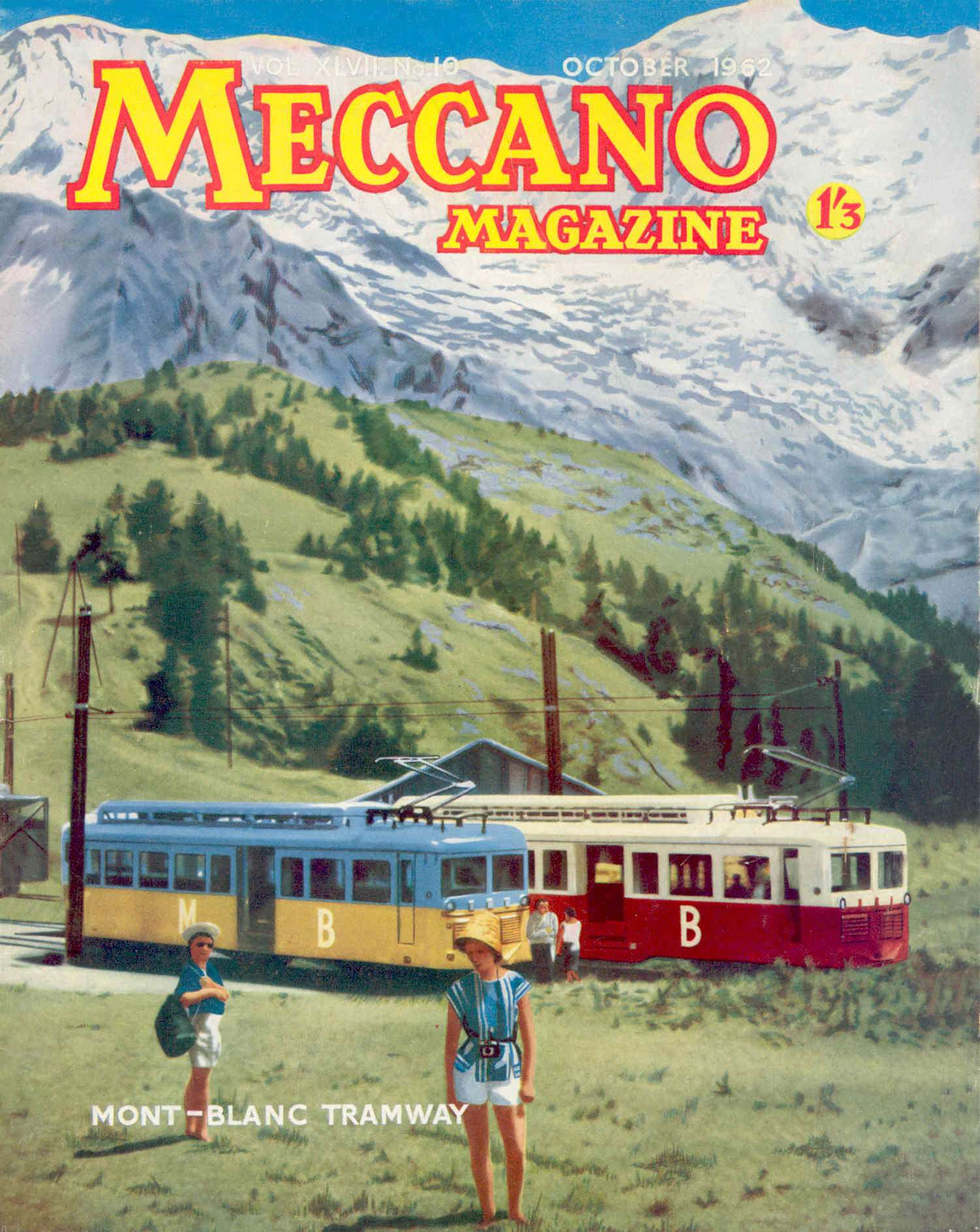
VOL. XLVII. No. 10 OCTOBER 1962

MECCANO MAGAZINE

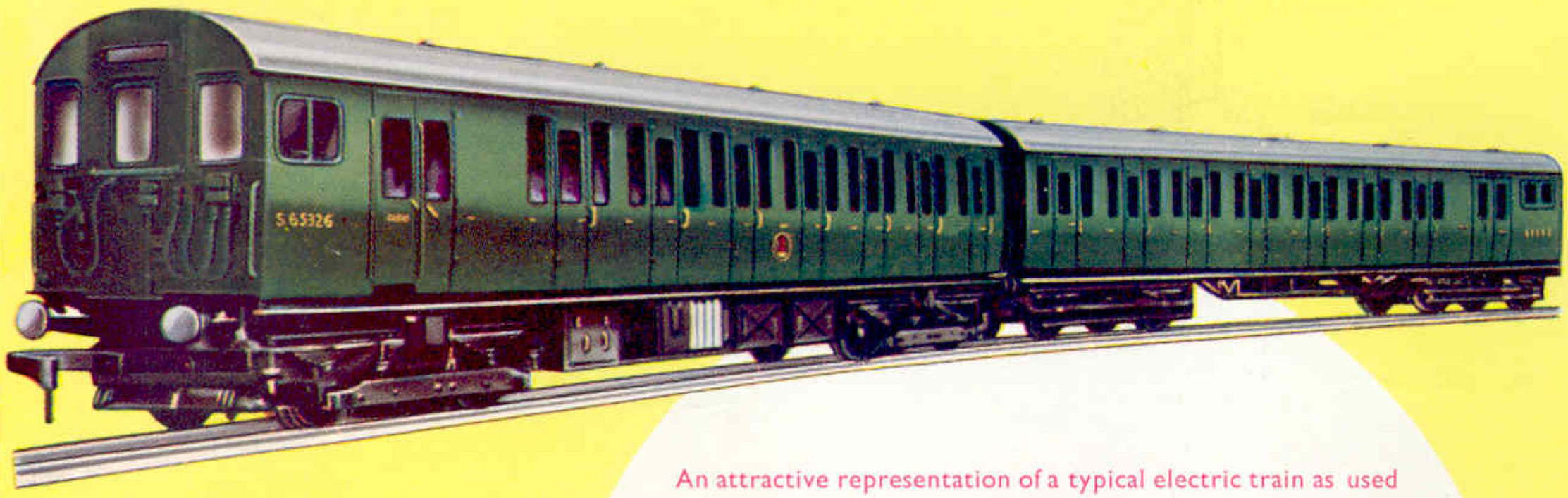
1/3



MONT-BLANC TRAMWAY

NEW

No. 2050 SUBURBAN ELECTRIC TRAIN SET



An attractive representation of a typical electric train as used on many B.R. suburban routes. The set consists of No. 2250 Brake–Second Motor Coach, with power bogie having the Ring Field Motor, and No. 4150 Brake–Second Driving Trailer. The vehicles have strong metal sides and bases, moulded ends, roofs and underframe details.

Brake–Second Motor Coach No. 3250 is available for Three-Rail layouts. Driving Trailer No. 4150 will run on Two-Rail or Three-Rail track.

U.K. PRICE	£	s.	d.
No. 2050 Suburban Electric Train Set	5	18	0
No. 2250 Electric Motor Coach (Two-Rail) ..	4	1	6
No. 3250 Electric Motor Coach (Three-Rail) ..	4	1	6
No. 4150 Electric Driving Trailer Coach	1	1	0

Hornby DUBLO

MADE AND GUARANTEED BY MECCANO LTD.

AVAILABLE LATER OVERSEAS

SUPER-DETAIL *Rolling Stock*

. . . unsurpassed for detail, strength & quality

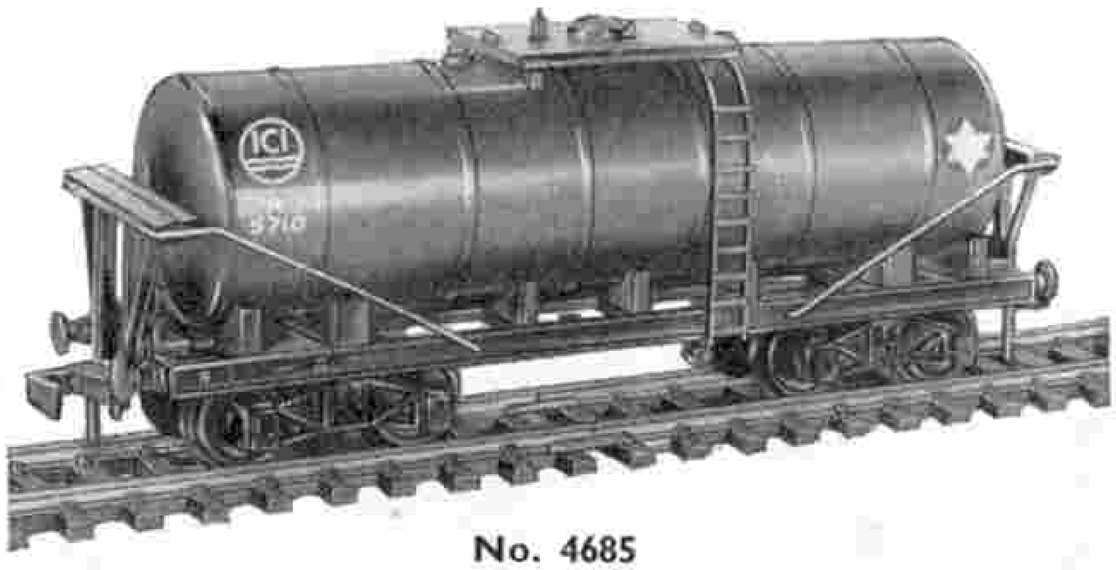
To be sure Hornby-Dublo "Super-Detail" rolling stock is the finest of its kind ever produced, each vehicle has a superbly-detailed moulded body, while nylon wheels ensure smooth, trouble-free running. Suitable for "00" gauge 2-rail and 3-rail systems. See the growing range NOW at your dealers.

No. 4658 "PRESTWIN" SILO WAGON

The No. 4658 "Prestwin" Silo Wagon reproduces a special-purpose wagon of unusual shape for carrying sand and other powdery loads. Details such as fillers, pipes and valves are modelled, as well as the catwalk and ladders. The die-cast base has dummy "cut-out" brake gear, and brake cylinder.
Length $3\frac{5}{8}$ in. U.K. Price **8/6**

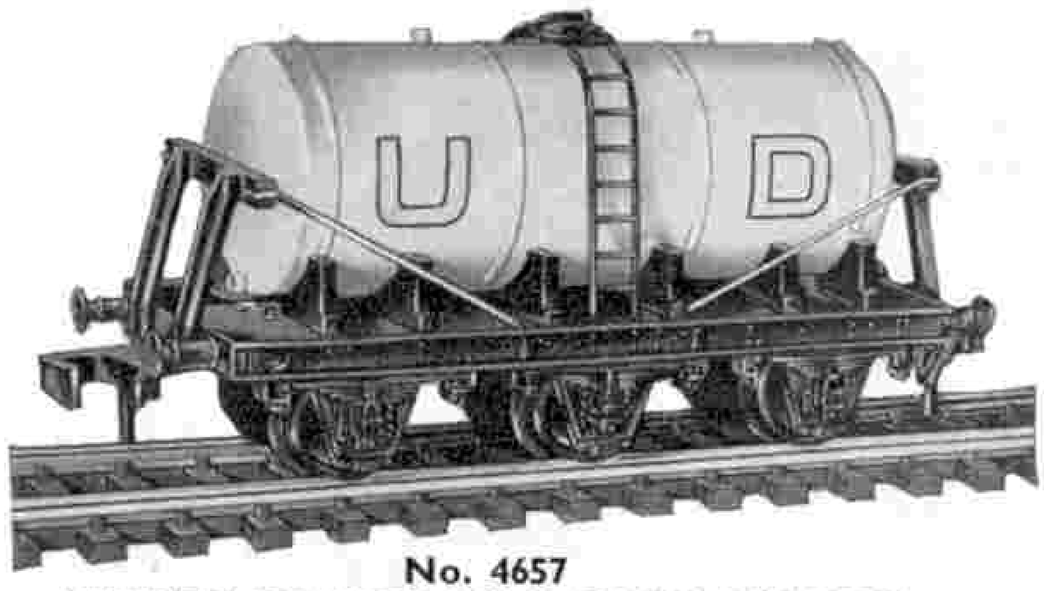
No. 4656 16-TON MINERAL WAGON

The brown finish of the No. 4656 16-ton Mineral Wagon—a welcome variation of the No. 4655 Mineral Wagon familiar in grey—shows that the vehicle is based on the many British Railways mineral wagons fitted for power braking. Moulded bodywork, die-cast base with "cut-out" brake gear, nylon wheels.
Length $3\frac{1}{2}$ in. U.K. Price **5/9**



No. 4685
I.C.I. CAUSTIC LIQUOR BOGIE WAGON

The first bogie tank wagon in Hornby-Dublo, representing a high-capacity vehicle for carrying caustic liquor. The accurately-modelled die-cast underframe shows "daylight" below the moulded tank, which is attractively finished in I.C.I. "Transport Blue" and is complete with the owners' emblems and other markings.
Length $5\frac{3}{4}$ in. U.K. Price **12/6**



No. 4657
UNITED DAIRIES MILK TANK WAGON

The No. 4657 United Dairies Milk Tank Wagon is the first six-wheeled item of freight rolling stock in Hornby-Dublo. With its neat, moulded tank and die-cast base, it represents an up-to-date vehicle of large capacity for the rail transport of milk in bulk.
Length $4\frac{1}{8}$ in. U.K. Price **11/-**

Hornby DUBLO
ROLLING STOCK

MADE BY MECCANO LIMITED

WADDINGTON'S

FORMULA I

PLAY FORMULA 1, the exciting new game already played by top racing car drivers. You can be a driver yourself when playing this game and experience all the thrills and hazards of a Grand Prix circuit. You decide what speed you go and you decide when you stop at the pits, and if you make correct decisions you WIN, but if not, you are liable to spin off and lose valuable time. Try your skill with Formula 1.

21/-

THE GREAT CAR RACING GAME

BY THE MAKERS OF
"MONOPOLY"
REGD. TRADE MARK

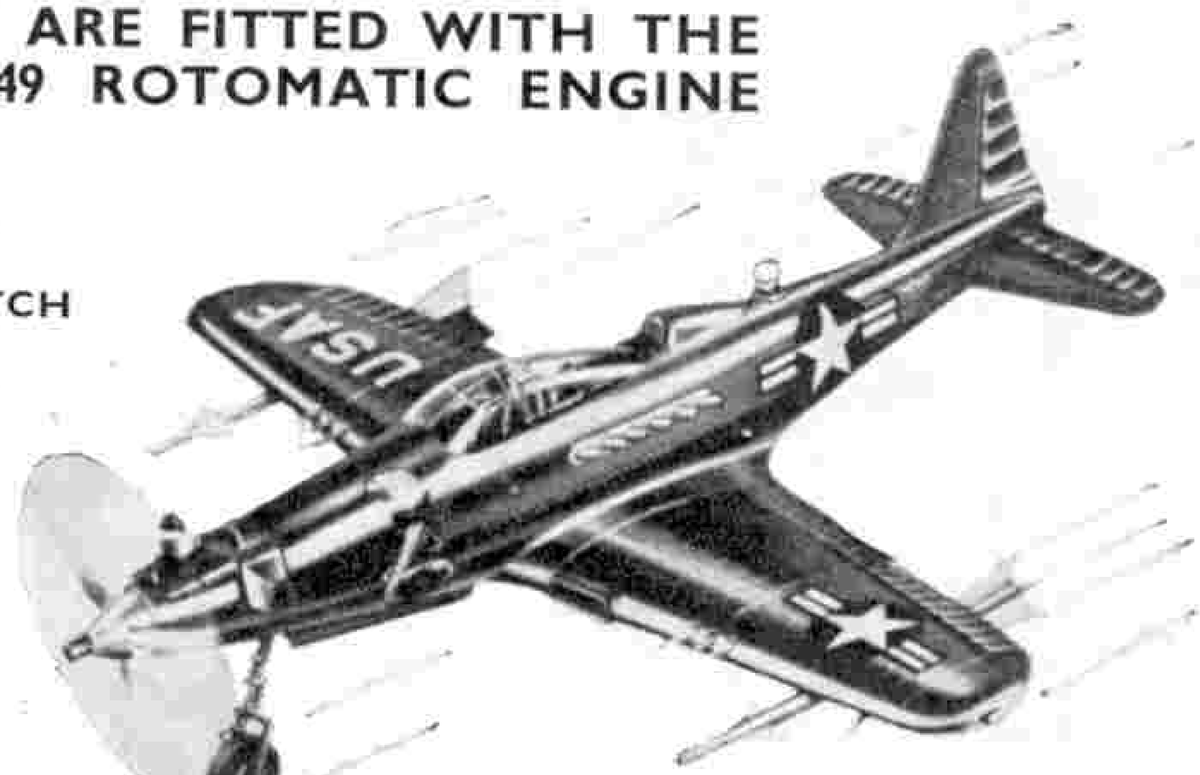
WADDINGTON'S

Ready-to-Fly WEN-MAC MODELS

ALL MODELS ARE FITTED WITH THE WEN-MAC ·049 ROTOMATIC ENGINE

Buy one and fly it straight away!

Easiest starting engine in the world! Features original AUTOMATIC CLUTCH STARTER. Complete with nylon propeller. 39/4



ROCKET FIRING AIRACOBRA

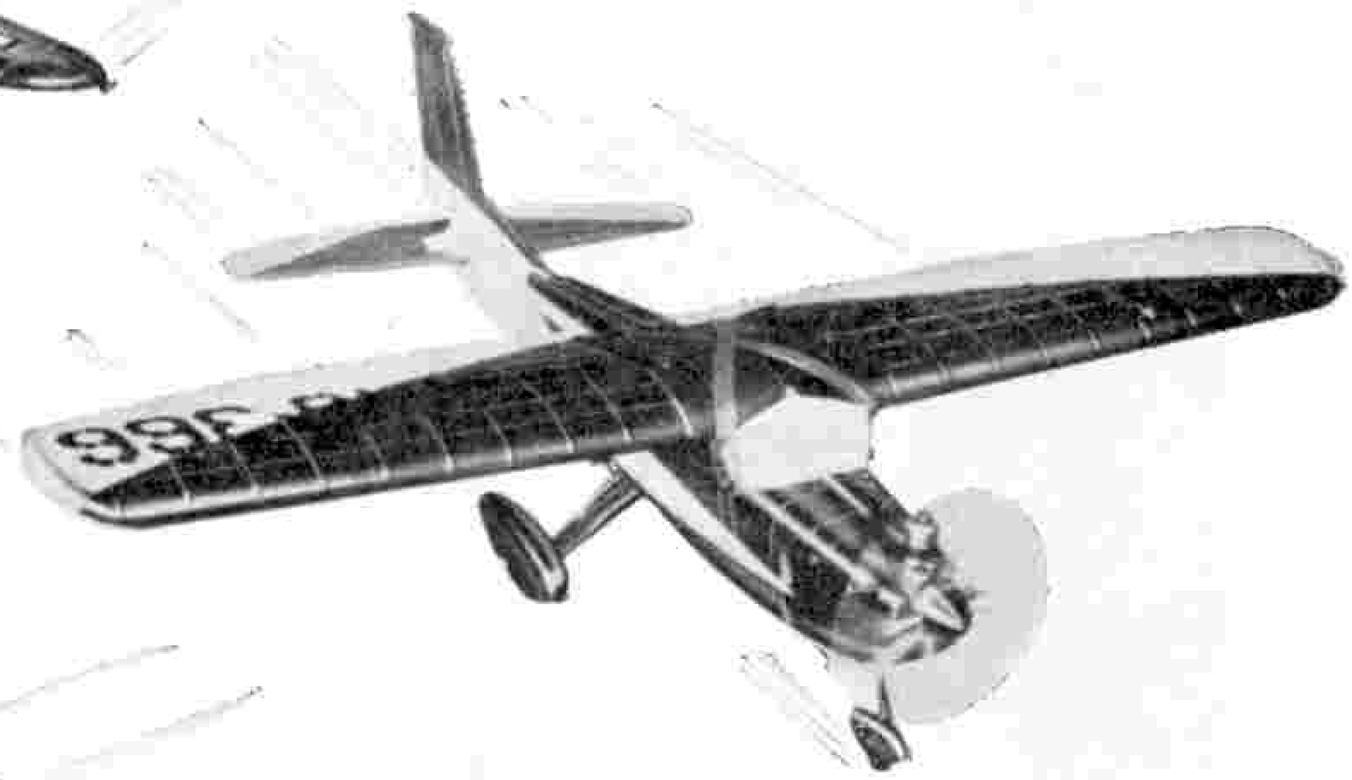
First model which fires two rockets whilst flying. Removable engine cowl; hinged cockpit canopy, handle and lines, day-glo navigation light. Very realistic cockpit detail. Wing span 24".

£5 · 19 · 8

ARMY A-24 Attack Bomber

Scale replica of a famous 2nd World War plane. Drops bomb. Detailed 2-seat cockpit. Ideal for beginner or expert. Comes complete with flying lines and handle. Wing span 22".

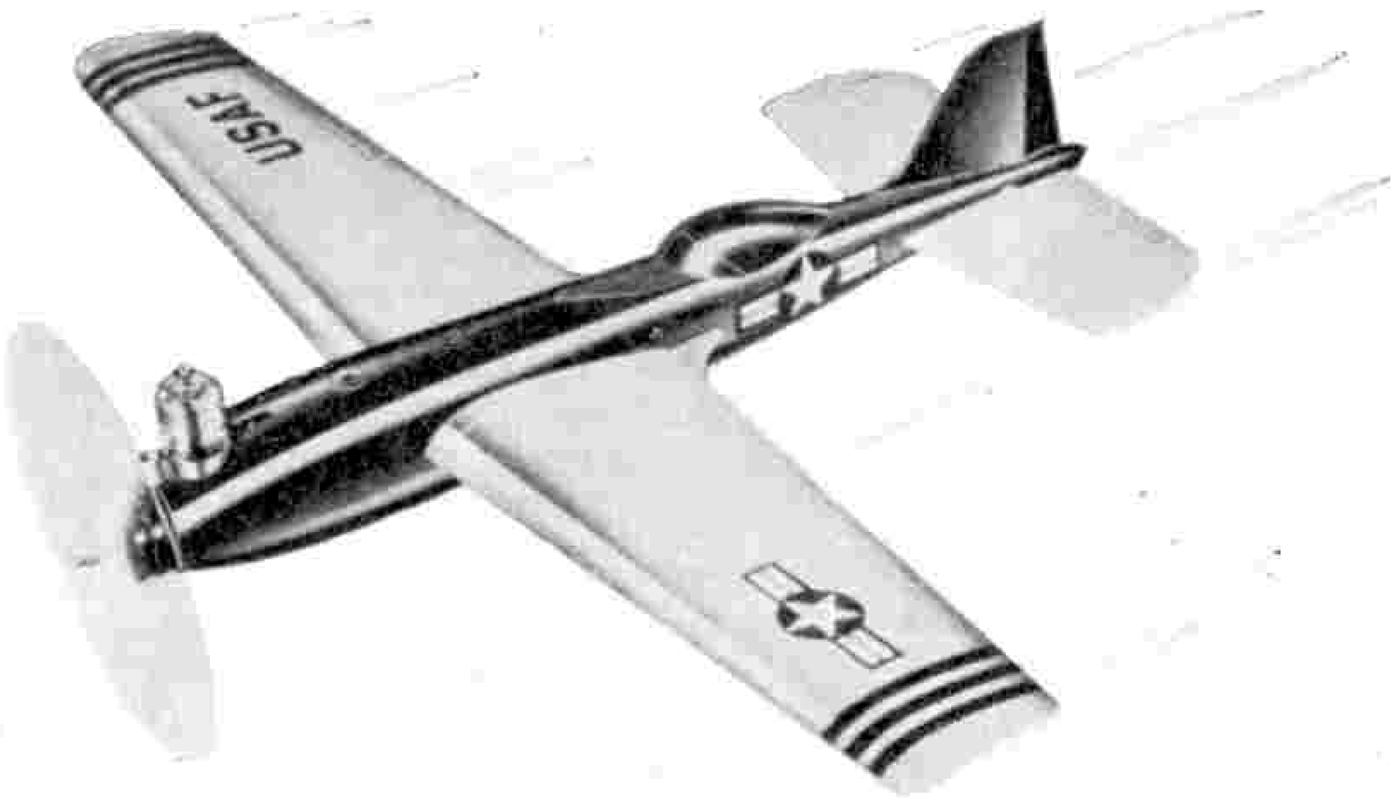
£5 · 15 · 0



CESSNA 175 Basic Trainer

Ideal plane for the beginner. Features tricycle landing gear with balloon tyres; big elevon for positive control and Duracrash plastic airframe. Handle and lines included. Wing span 30".

£5 · 5 · 0



SUPER TRAINER

The exciting new WEN-MAC SUPER TRAINER with Vari-speed prop. Flies at 3 speeds. Complete with flying lines and handle. Wing span 17".

£3 · 9 · 11

FROM YOUR LOCAL MODEL OR TOY STORE

Sole Distributors

KEIL KRAFT

WICKFORD, ESSEX

MILES MORE FUN ON A

DAWES

. . . the cycle with all the features that make cycling so pleasurable. 5 or 10 speeds . . . smooth running . . . smart colours and finish —PLUS the added safety factors of low saddle position and powerful brakes.

Ask your Dealer for the latest DAWES Catalogue and take your pick!

TWO NEW DAWES:

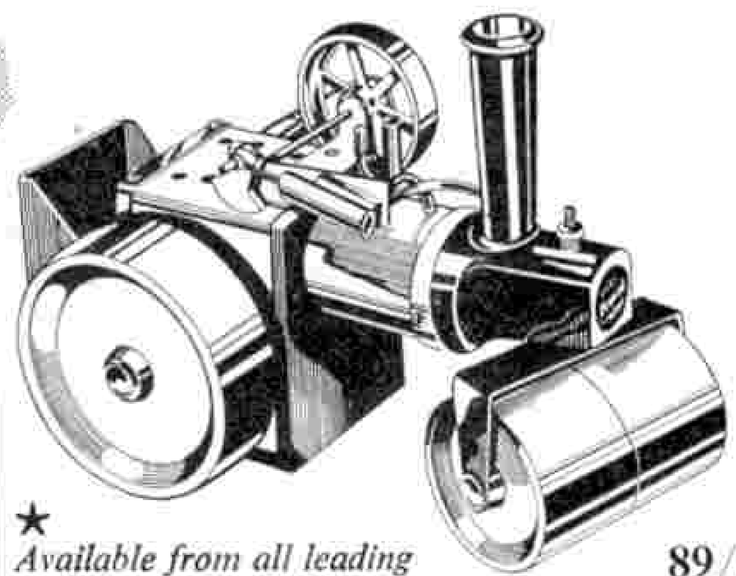
MODEL 12S "SUPER D'ARTAGNAN"
Fully brazed frame, 19½ × 26 in., with cut away Sports lugs, finished in red, with Sheen Blue guards, white panel, "GLISTEN" band on seat tube, and white rubber pedals. **Price £18. 19. 6.**

MODEL 4 "DYNAMITE"
Similar little sportsman style, with fully brazed frame 18½ × 24 in., with cut away Sports lugs, finished in Flamboyant Lime Green with contrast guards, and white-sided wheels. **Price £17. 19. 6.**

DAWES CYCLES LIMITED
WHARF ROAD, TYSELEY, BIRMINGHAM 11

This real Steam Roller

will run under its own steam or can be used to drive your own Meccano models. It will travel about a quarter of a mile in ten minutes run on one filling and is supplied with extension steering rods for easy manoeuvring (steering may be pre-set for free running.)



Mamod
STEAM ROLLERS

★ *Available from all leading toy and sports shops — get one now and be in on the new craze !*

89/6 inc. tax

MALINS (Engineers) LTD. · THORNS WORKS · THORNS ROAD
QUARRYBANK · BRIERLEY HILL · STAFFS. Tel.: LYE 2244/5

Model it in **'Plasticine'**

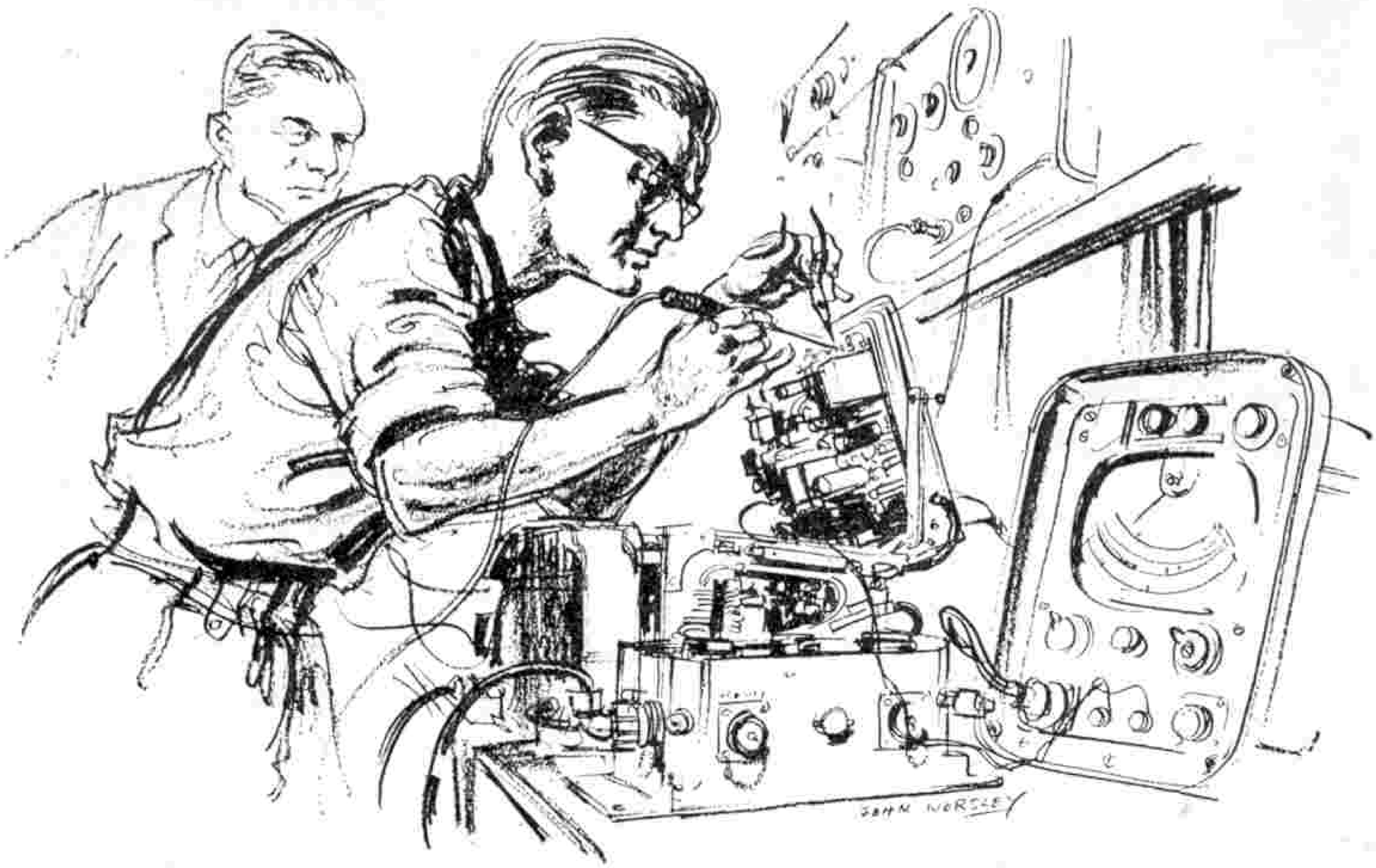
Regd. Trade Mark

The best results are obtained easily and quickly if you use 'Plasticine'—the world-famous modelling material. For realistic figures and natural scenic effects you cannot beat it. Obtainable at all good stores, toy shops, British Home Stores and Littlewoods.

SPECIAL TRIAL OFFER
We will send you 4 lb. 'Plasticine' (any colour) with the booklet 'Plasticine' modelling for Amateurs for 10/- post free (U.K. only).

Sole Manufacturers:
HARBUTT'S PLASTICINE LTD.
Bathampton . Bath . Somerset

ARE YOU LEAVING SCHOOL?



DO ELECTRONICS INTEREST YOU? If so, you're the sort of person the Modern Army's looking for. Between the ages of 14½ and 16½, you can start on a top-line career with an Army Apprentices School—*and you're paid as you learn.*

Board, lodging and uniforms are free, with two months' paid holiday a year. After your training, you can earn up to £20 a week.

A variety of electronic trades are included in the forty trades you can learn as an Army Apprentice. Each one trains you for a first-class career in the Modern Army; that means plenty of adventure, sport, new friends, new countries, good pay. If you're interested, you can find out more about it by posting this coupon today.

Applications for the next entry in January must be sent in by November 12th or earlier.

TO THE WAR OFFICE (MP6), LONDON, S.W.1.
Please send me full details of Army Apprentices without obligation

NAME ..... AGE .....

ADDRESS .....

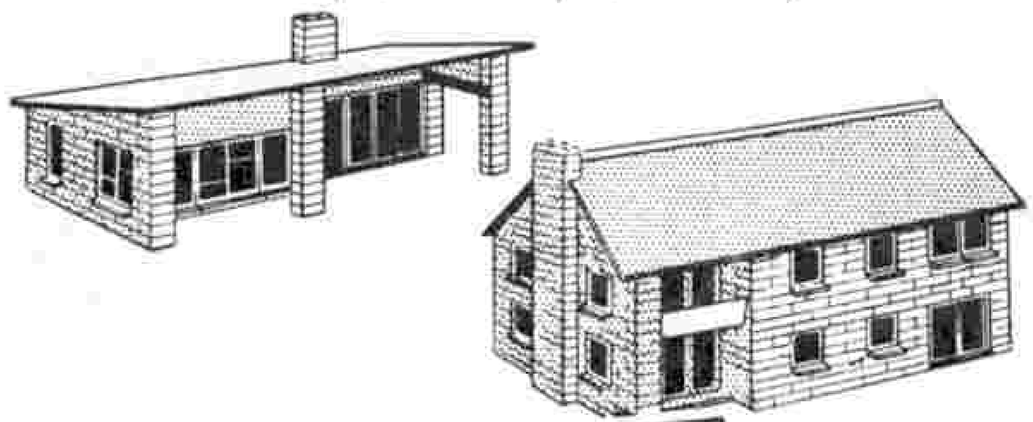
.....

AA12/QP

"build modern!" WITH REAL BRICKS AND MORTAR

What exciting up-to-date building you can do with Contemporary Brickplayer. Each kit contains real bricks, real cement and a wide range of models to build with them. Designed to '0' gauge scale by architects to look exactly true to life. Roofs, windows, doors, plans, full instructions—everything's complete. You can make permanent models or dismantle them and re-use bricks and other components.

CONTEMPORARY BRICKPLAYER KITS
A—19/9; B—28/3; C—54/3



CONTEMPORARY
BRICKPLAYER

WIN A PRIZE! £21·0·0 £10·10·0 £5·5·0
also consolation prizes are offered in the **BRICKPLAYER** contest

At good toyshops, hobby shops, departmental stores, etc.

POST TODAY

To: J. W. SPEAR & SONS LTD. (Dept. M), Enfield, Middlesex.
Please send leaflet describing Brickplayer and name and address of nearest stockist.

Name .....

Address .....

.....

BUYING A TRAIN SET?

YOU can join our Club. **YOU** can do it by post. **WE** will help all we can.

Set of catalogues for Hornby, Trix, Tri-ang 00 and TT with some track layouts and leaflets of suitable power units, **3/3** post free.

MODEL RAILWAY SPECIALISTS

KING CHARLES SPORTS CENTRE
RAILWAY HOUSE
King Charles Street
Leeds 1
Tel: 26611

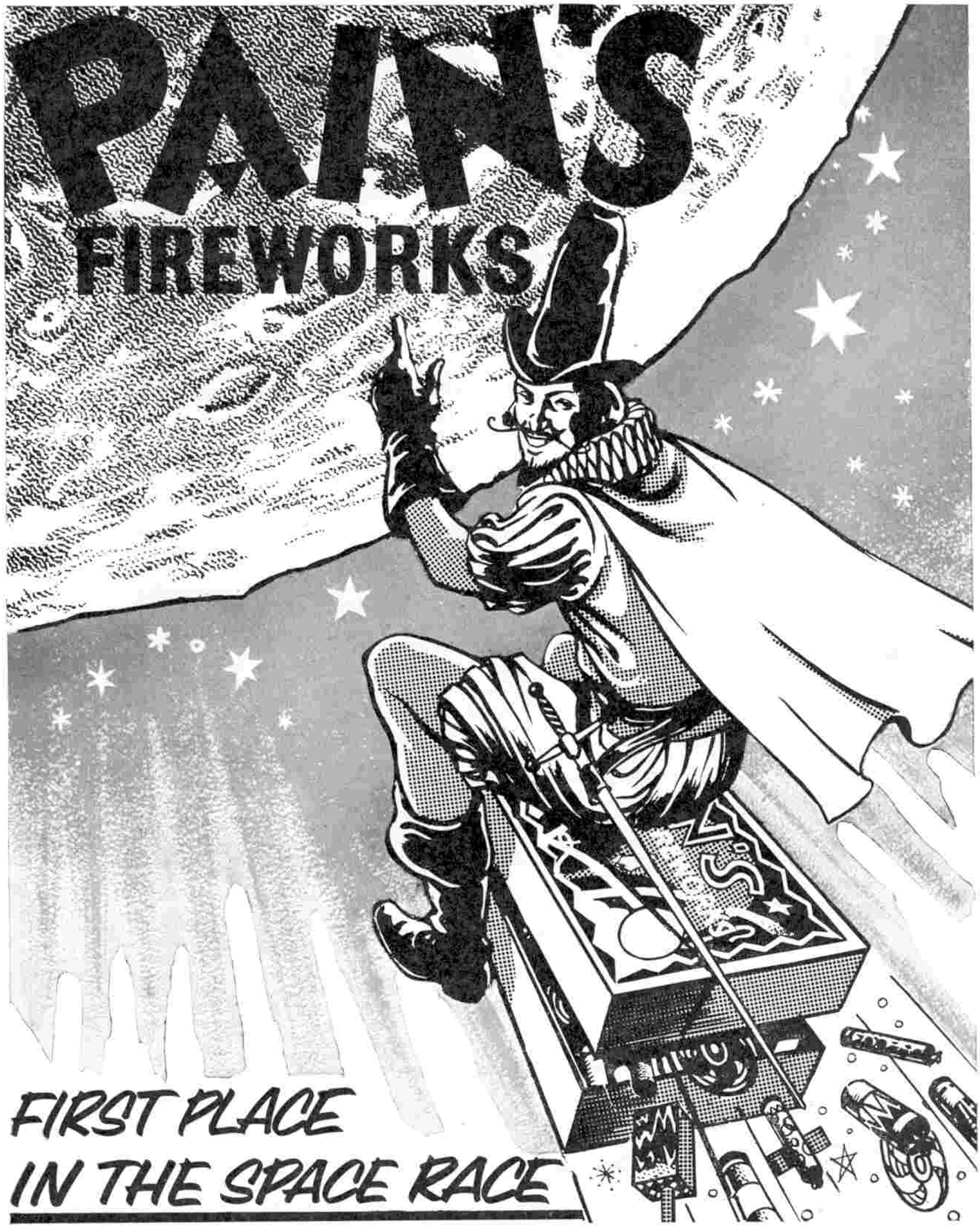
Patrick Moore's
The
Observer's
Book of
ASTRONOMY

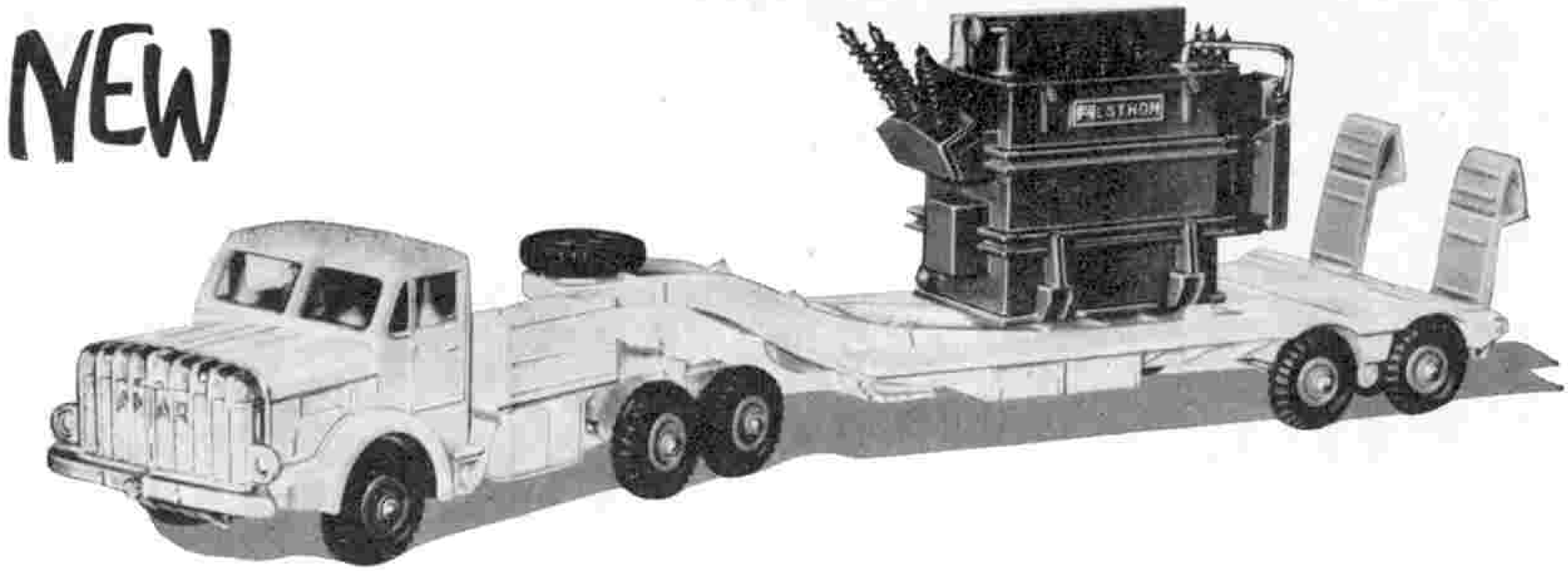
THE SUN
MOON
PLANETS
COMETS
AURORAE
SHOOTING STARS
SPACE ROCKETS

14 Colour plates, 50 halftone photographs and many star charts. **5s. net**

FROM ALL BOOKSELLERS

FREDERICK WARNE
CO. LTD.
1-4 Bedford Court, London W.C.2


PAPA'S
FIREWORKS
FIRST PLACE
IN THE SPACE RACE



It's loaded . . . for your enjoyment

Loads of fun are offered by this attractive articulated model, and its interesting freight. It consists of the Thornycroft Mighty Antar Tractor with detachable semi-trailer. The trailer has hinged ramps which carry safety markings. Provided with the vehicle in easy-to-assemble plastic kit form is a realistic model of a French-type 5,000 KVA transformer which forms an impressive load. When the base of the transformer is removed the additional items to complete it will be found inside a polythene bag. The vehicle cab contains a driver and is fitted with windows.

DINKY SUPERTOYS No. 908 MIGHTY ANTAR WITH TRANSFORMER

Length 13¼ in. U.K. Price **21/–**

Calling Doctor Kildare!

Here's a real American-type ambulance—the Criterion! It's big-built, roomy and streamlined and it's provided with patient and stretcher and there are two seats for nurses. In the front seat are uniformed driver and attendant. Red light and siren are on the roof and the ambulance has smooth-gliding 4-wheel suspension and Prestomatic steering. Be one of the first to own a Superior Criterion Ambulance!

DINKY TOYS No. 263 SUPERIOR CRITERION AMBULANCE

Length 5 in. U.K. Price **8/6**

DINKY TOYS & DINKY SUPERTOYS

MADE IN ENGLAND BY MECCANO LIMITED

MECCANO MAGAZINE

Volume XLVII No. 10 October 1962

Registered at the G.P.O., London, for transmission by Canadian Magazine Post.

EDITORIAL AND ADVERTISING OFFICES:
LIVERPOOL 13, ENGLAND.
Telegrams: "Meccano, Liverpool."

Editor:
GEOFFREY BYROM

Asst. Editor:
ERNEST MILLER

OUR editorial picture this month shows the *Northern Star*, built at the Walker Naval Yard of Vickers–Armstrongs (Shipbuilders) Limited and the latest in a long line of ships to be constructed at that yard for the Shaw–Savill Line and its associated companies. The link between the shipyard and this ship-owning group goes back 32 years to the *Monarch of Bermuda*. A description of the *Northern Star* by Gordon Woosey appears in this month's *M.M.* In addition, I am indebted to the Managing Director of Vickers–Armstrongs shipyard company for further information about this fine new vessel. She follows closely on her predecessor *Southern Cross*, having one-class accommodation with her machinery aft, leaving a very large area of open deck for passenger facilities. In appearance the ships are thus very similar, although recognition experts will quickly note the deck cranes and the tapered derrick posts forward, differences in screening forward and abaft the bridge, and differences in shape at the stern.

For *Northern Star* the builders carried out extensive model tests at their own Ship Model Experiment Tank at St. Albans, where careful investigations were made into the optimum hull form. The final form selected has a conventional Vee-bow, for it was found that in the service speed range 18½ to 19½ knots bulbous bow forms required slightly more shaft horse power, although showing a marked reduction in power at the trial speed of 22 knots.

Northern Star is the largest all-welded passenger vessel to be built on the Tyne. Following the builders' normal practice, the hull structure was mainly pre-fabricated in the assembly shop under ideal working conditions, and erected on the berth in units weighing up to 30 tons each.

Readers whose specific interest is Meccano will be glad to see from this month's Club and Branch News, which covers two pages instead of the usual page, that even in these days of television and other attractions progress is being made with Meccano Clubs. Tributes to the value of Meccano in many aspects of life constantly reach this office but it gives me special pleasure when I know that Meccano has helped someone to find a new zest in life. Recently I had a letter from a correspondent in which he said he was recovering from a very serious road accident. In his fight back to health he turned again to the hobby of Meccano that he followed as a youth. "My doctor" he writes "confirms that my return to Meccano has helped me to regain a full interest in life." I wish him a quick return to complete health.

THE EDITOR

Next Month: WINDMILLS OF THE WORLD

THIS MONTH'S CONTENTS INCLUDE—

	Page
THE STORY OF THE SWINDON "KINGS" .. .. By Leslie Norman	386
ARE THERE TOO MANY HIPPOS? By David Gunston	390
JUST A MATTER OF TIME .. By Arthur Gaunt	394
BRITAIN'S LAST AIRSHIP .. .. By Hamilton Tyler	397
MEET THE GEMINI .. .. .. By Ian Balderstone	400

OUR FRONT COVER

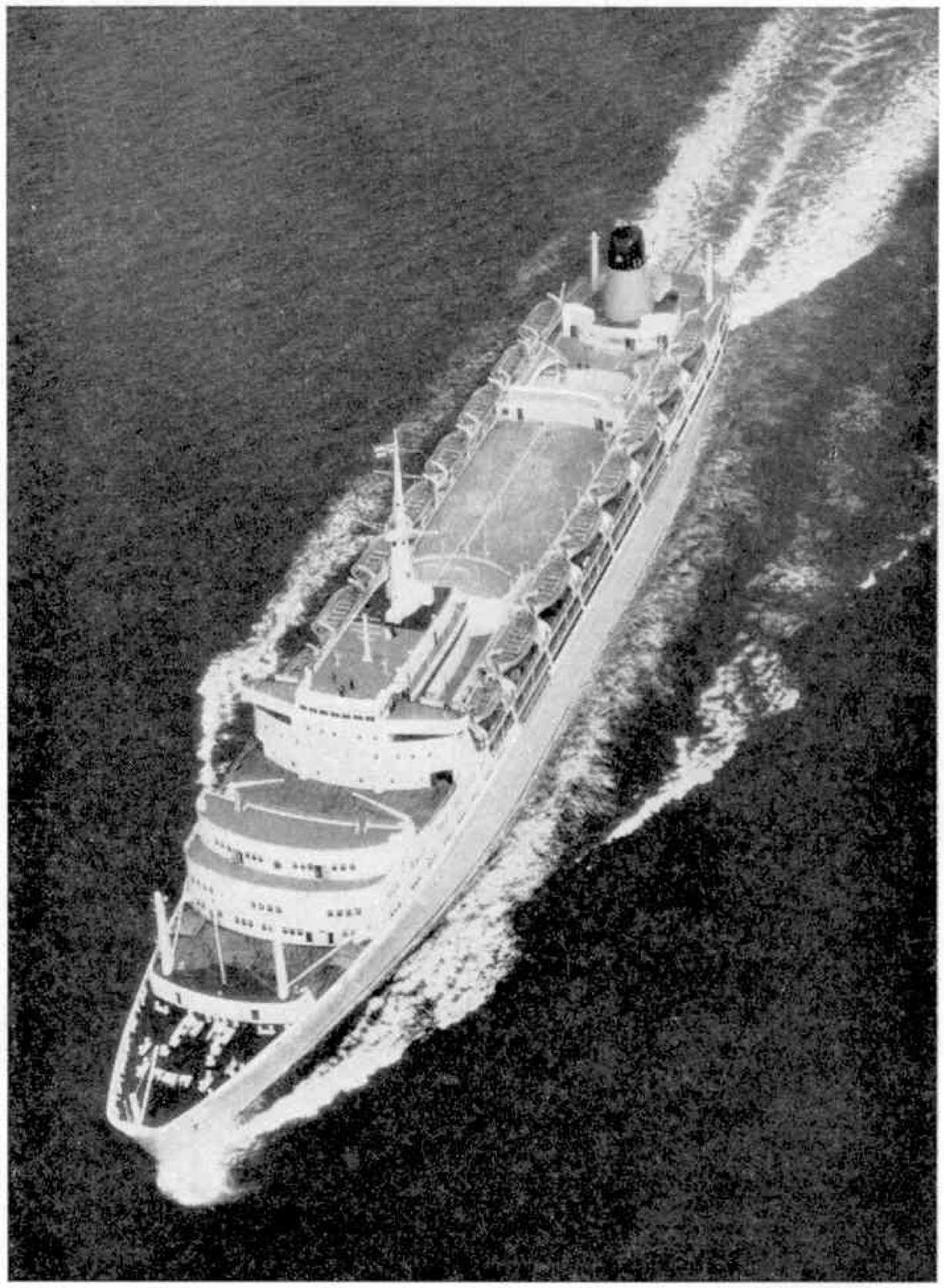
Mont Blanc in the French Alps is world famous, but it is not so widely known that visitors to the region can ascend part of the massif by means of an electric tramway. This line, known as Le Tramway du Mont Blanc, commences at St. Gervais and, after a picturesque course of about seven miles, terminates near the Bionnassay Glacier. It is a rack railway, once steam operated but now electrified on the overhead wire system.

Our cover illustration this month shows two of the cars at the upper terminal of the tramway, with the glacier also visible in the picture.

"NORTHERN STAR" —A FINE NEW PASSENGER LINER

THE biggest all-welded passenger vessel ever to be built on the Tyne, the new Shaw Savill passenger liner *Northern Star*, sailed from Southampton on her maiden voyage, on July 10, and added another touch of complete modernity to Britain's mercantile fleet. Under the command of Captain L. H. Edmeads, she set sail on a round-the-world cruise, and so joins her sister ship *Southern Cross*, whose success has been so outstanding in trans-world services.

Launched by the Queen Mother on June 27 last year, *Northern Star* was built at the Walker-on-Tyne naval yard of Vickers–Armstrongs and she will make four round-the-world voyages each year from Southampton, sailing east-about and calling at Las Palmas in the Canary Islands, Cape Town and Durban in South Africa, and then at the Australian ports of Fremantle, Melbourne and Sydney.



A striking aerial view of S.S. "Northern Star".

By GORDON WOOSEY

The return voyage takes the vessel first to New Zealand, with a call at Wellington and sometimes Auckland, and then to the Pacific Islands of Fiji and Tahiti, before she travels across the Pacific to the twin cities of Balboa and Panama.

After voyaging through the Panama Canal she will call at Curacao and Trinidad, and finally will sail across the Atlantic to her home port of Southampton, having travelled 27,324 miles in 77 days. She has been designed specifically to carry passengers only, all of one class, and no space is available for cargo.

Fitted with Denny Brown stabilisers, *Northern Star* has an available speed of 21 knots from her 22,000 horse power engines. She has an overall length of 650 feet, and a maximum breadth of 82 feet 3 inches, and her gross tonnage is 24,733. With her machinery tucked away aft, full advantage has been taken of the unobstructed 'tweendeck spaces to achieve the most efficient layout of passenger cabins and associated facilities. Extensive use has been made of Formica for lining cabins and alleyway bulkheads, and the use of plastics is also a considerable economic advantage for apart from durability, only an occasional wipe down is needed to restore original appearance, and this is a factor of great importance in keeping maintenance times down to a minimum.

In the cabins themselves five different decorative schemes have been used, and these have been planned in such a way that no two adjacent cabins are the same. All inboard cabins have a system of artificial daylight installed, controlled by a master clock, which automatically switches these lighting points on at five per cent. power, increasing to full output over a period of half an hour. Thirty minutes after reaching their maximum the lights are automatically switched off, having duly encouraged the occupants of the cabin to "rise and shine". Considerable use has also been made of fluorescent lighting in accommodation for both passengers and crew, and air conditioning is installed in all accommodation.

The public rooms provided for the comfort and entertainment of the passengers are mainly confined to the lounge deck. On this deck are six separate rooms with approximately 40,000 square feet of floor space.

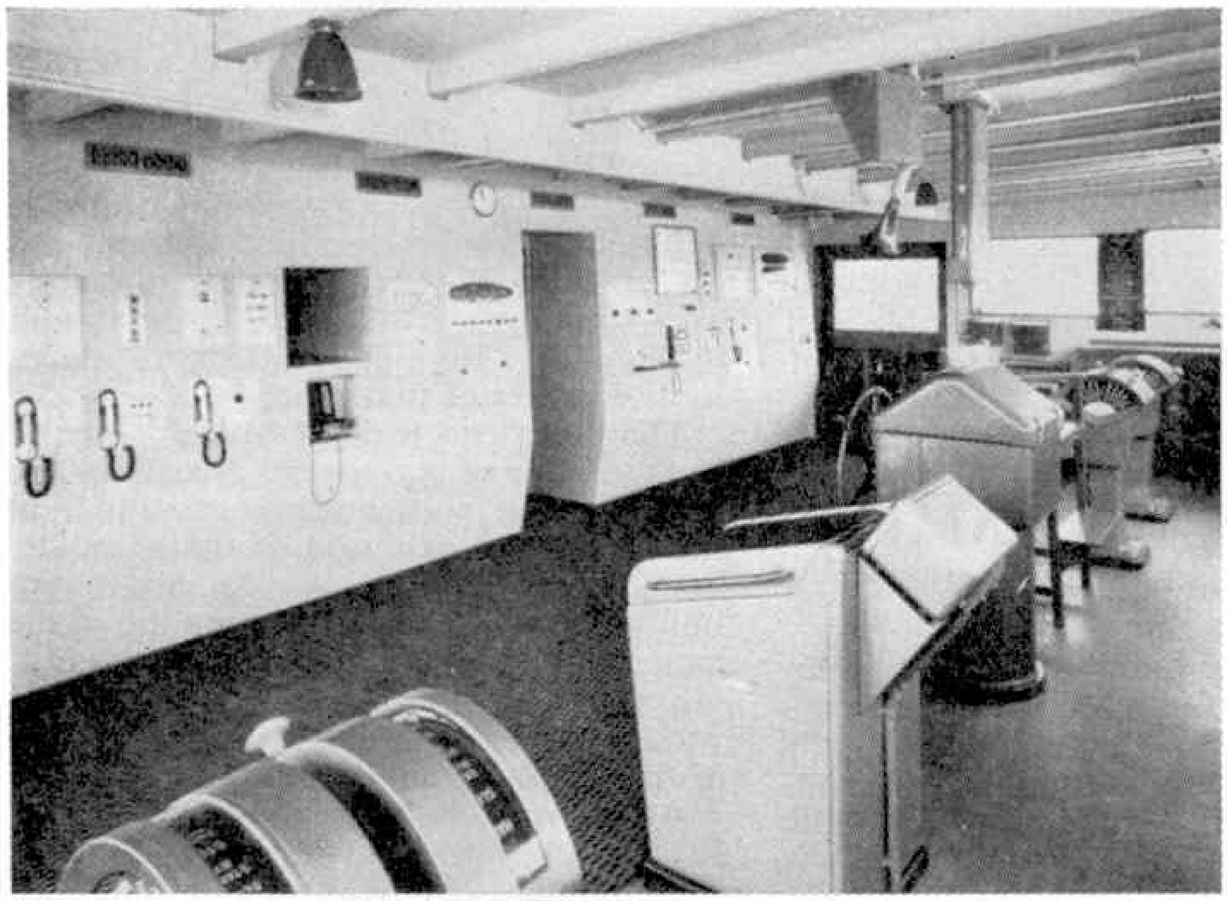
One of the most striking rooms is the Forward Lounge with its numerous armchairs and settees in a harmonious setting of soft colours, providing the passengers with a feeling of elegant luxury amid restful surroundings. This room extends the full width of the ship and has a raised dais at the forward end which provides an attractive sitting-out area, or a platform on which the ship's orchestra can play. Also incorporated in the decoration of this room are two Chinese vases each four-and-a-half feet high which once were to be found in the main lounge of the *Dominion Monarch*.

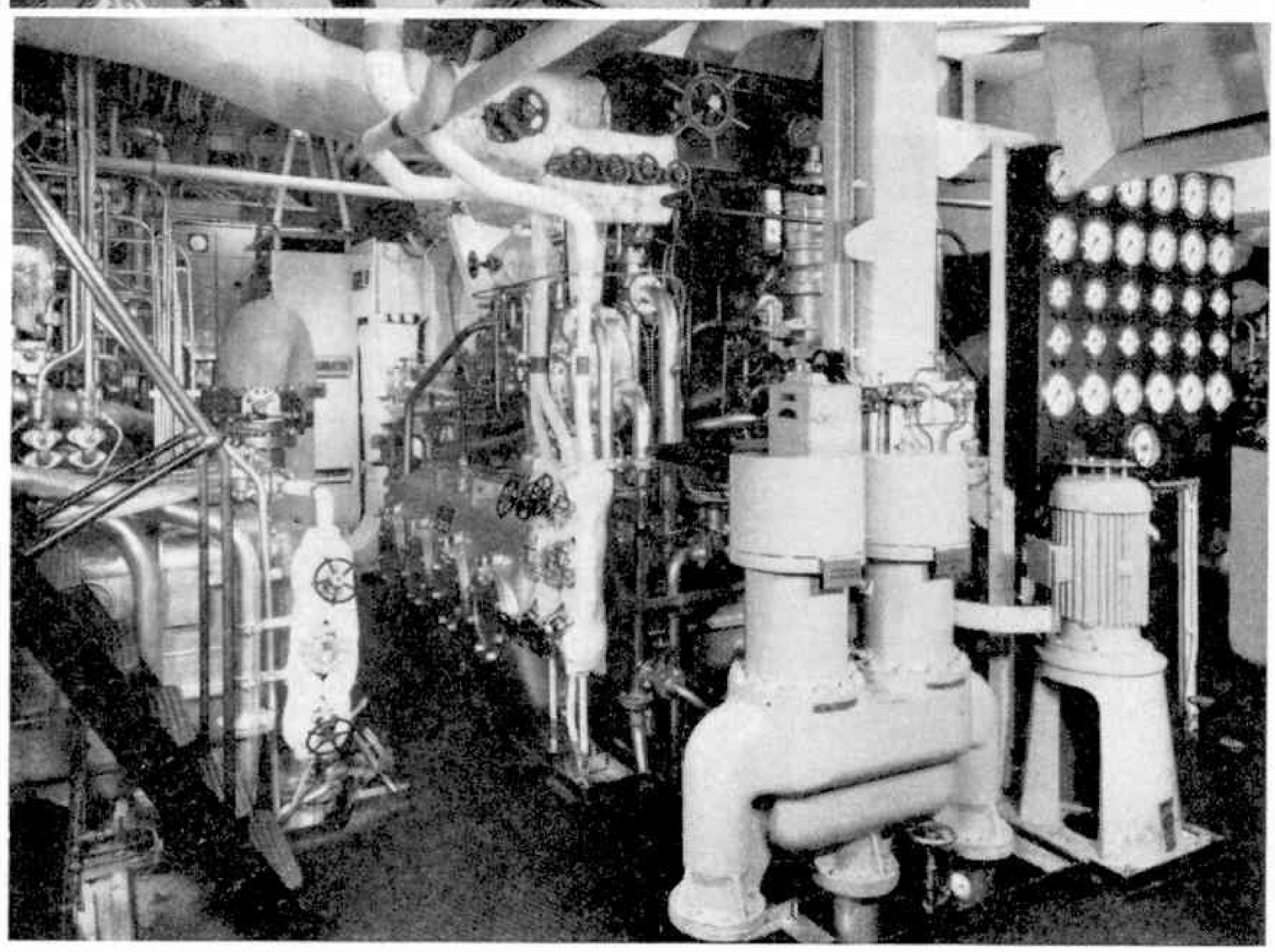
The Library is a most attractive room on the starboard side and offers a selection of some 3,000 books. It is here that the charming picture of Wellington, painted by the famous New Zealand artist, Peter McIntyre, hangs. This slides away into a hidden recess to reveal an altar. It is intended that this room shall be used, when appropriate, for religious gatherings.

On the port side, the comfortable chairs and desks in the Writing Room are arranged in a practical manner, ensuring a sense of privacy. Carpeting from wall to wall ensures silence. A most original painting by the Australian aborigine Alvert Namatjira, entitled "Ghost Gums, MacDonnell Range", is part of the decor of this room.

The Smokeroom walls are panelled in aspen veneer, with rosewood as a contrasting timber. Heavy yellow Thai silk curtains provide a splash of colour. The coffee tables have laminated plastic tops with a design taken from a piece of Maori carving. Let into the forward bulkhead are two decorative fibreglass panels each of which incorporates original drawings of seabirds which passengers may expect to see during the journey. A further feature of this room is a magnificent Commonwealth Clock which is thought to be between 80 and 100 years old. The main dial registers Greenwich Mean Time and subsidiary dials tell the time at the following centres: Calcutta, Cape Town, Colombo, Delhi, Dublin, Edinburgh, Kingston (Jamaica), Melbourne, Ottawa, Shanghai, Sierra Leone and Wellington.

The Cinema Lounge, with a ceiling more than 18 feet high, will impress any visitor. This room is exceptionally spacious, offering seats for a total of 600 people at film shows, including 200 in the tip-up seats on the balcony. Other activities that will take place in this room include gala-night dances, closed circuit television shows and concerts. It will be in use as a lounge during the early part of the day. Sunday Church services and orchestral concerts will take place in the same room, the high ceiling of which depicts the night sky. Specially-designed lights are incorporated to represent the constellations of the Great Bear and Little Bear, with the North Star as the focal point. An electric organ is housed on the stage.





The spacious lines of the Wheelhouse are clearly shown on the left. Below: A view of the new passenger liner's Generating Room. Pictures by courtesy of the Shaw Savill Line.

The sixth public room is the Tavern, and this will be most popular in the evenings. Here are fitted special wooden stalls designed for seating small parties of four or groups of up to twelve or more, and fitted with decorative plaques giving them names of old English inns. The Tavern atmosphere is conveyed by the almost exclusive use of wood as decoration; even the ceiling is of slatted boards of Douglas Fir.

Other special features provided for the comfort of the passengers include a Keep-Fit Room containing the latest gymnasium equipment—wall bars, punch ball, cycling machines, and wrestling mats. A Recreation Room provides for the older children who wish to listen to gramophone records, play table tennis or dance, while the Infants' Room is under the supervision of a qualified children's nurse who will look after the very small travellers, with the aid of such attractions as swings, slide, sandpit and paddling pool.

In addition to all this *Northern Star* has no fewer than five swimming pools. The main pool is 30 feet long and is flanked on either side by a shallow pool for the non-swimmers and children.

Two identical restaurants, one forward and the other aft of the centrally-placed galley, will serve a total of 750 people at each of the two sittings, passengers sitting at tables for two, four, six and eight people.

Situated amidships on the port side of the main deck is the most modern and efficient hospital of its type, a sea-going miniature of one of the great British hospitals ashore. Three pleasant wards are staffed day and night by nursing sisters. There is also a fully-equipped operating theatre with an adjacent private recovery ward of its own.

A Launderette containing twelve washing machines and six tumbler dryers is situated on the lower deck for the use of passengers.

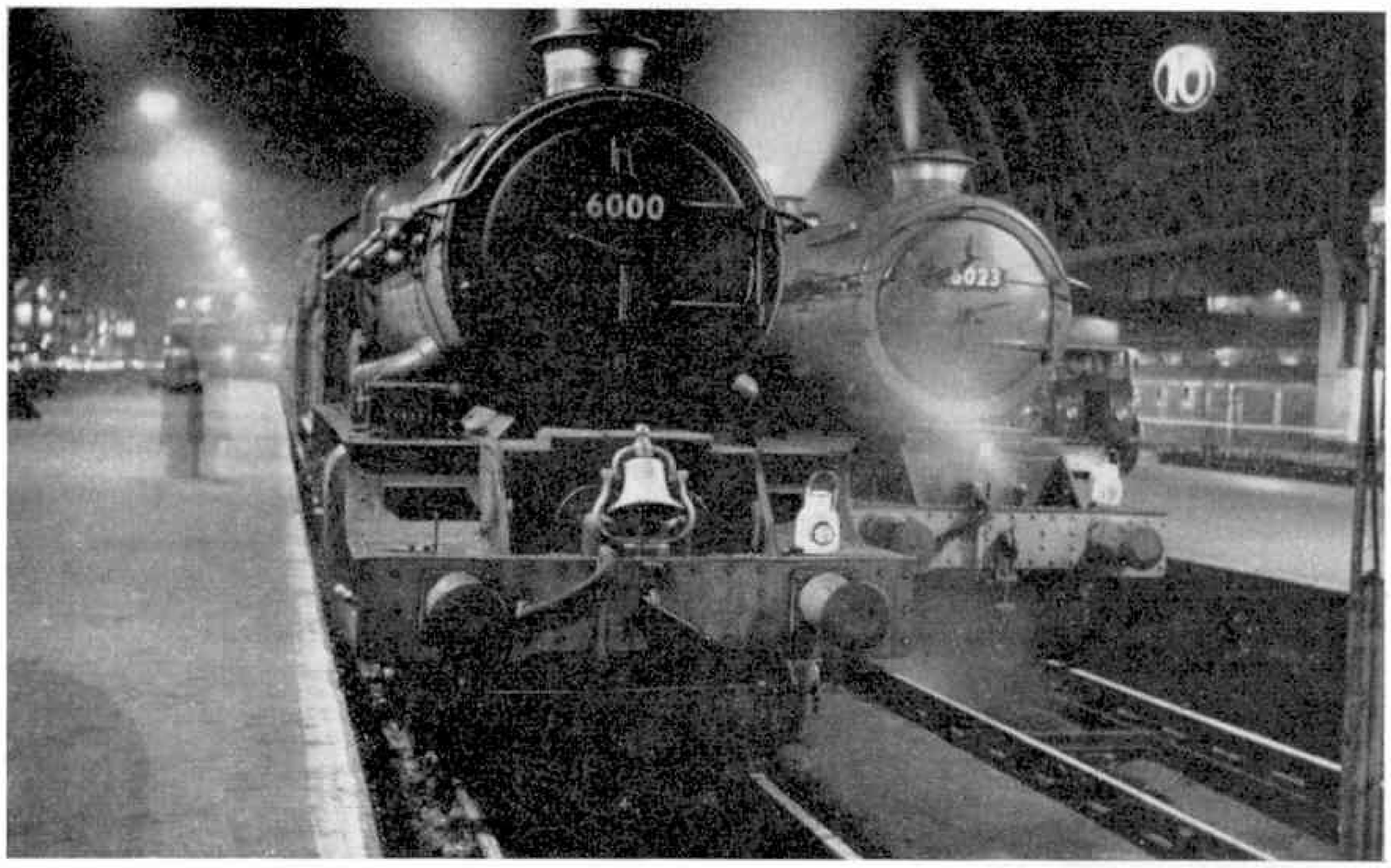
Fitting out a vessel of this nature, which carries more than 1,400 passengers, involves large numbers of a thousand-and-one different articles. The following list gives but a few such items required for the *Northern Star:*

Plates	27,000	Spoons	8,000
Cups	12,500	Tea Pots	1,150
Saucers	12,500	Coffee Pots	550
Glasses	24,000	Jugs	600
Knives	4,500	Sheets	8,000
Forks	3,500	Pillow Cases	8,000
Linen Table Napkins	6,000	Table Cloths	1,600
Blankets	4,800	Coat Hangers	2,500
Mattress Covers	3,600	Dress Hangers	2,500

With all this for the comfort of her passengers there is no doubt that *Northern Star*, with more than an acre of deck space for sunbathing, swimming and games, will offer a world of sun and relaxation the equal of that provided by any one-class tourist liner afloat.

THE STORY OF

The Swindon "Kings"



THE decision made by British Railways last year to preserve the W.R. 4-6-0 No. 6000 *King George V*, and various other steam locomotives still in service, must have been welcomed by many people. Although other Swindon 4-6-0s are preserved already —examples are No. 4003 *Lode Star*, of 1907, and No. 4073 *Caerphilly Castle* of 1923, the first of its class—few will quibble at the decision to preserve the pioneer "King". It represents the final development of the 4-cylinder 4-6-0 design originated by the "Stars" of 1907, of which class *Lode Star* is a member, and carried to a further intermediate stage in the Castles.

Individually, No. 6000 has the special claim to fame that, soon after its construction in 1927, it went to America and represented not only the G.W.R. but Great Britain too by taking part in the "Fair of the Iron Horse" organised by the Baltimore and Ohio Railroad to celebrate its centenary. The appearance and performance of the engine aroused much favourable comment.

Told by "M.M." Staff Writer LESLIE NORMAN

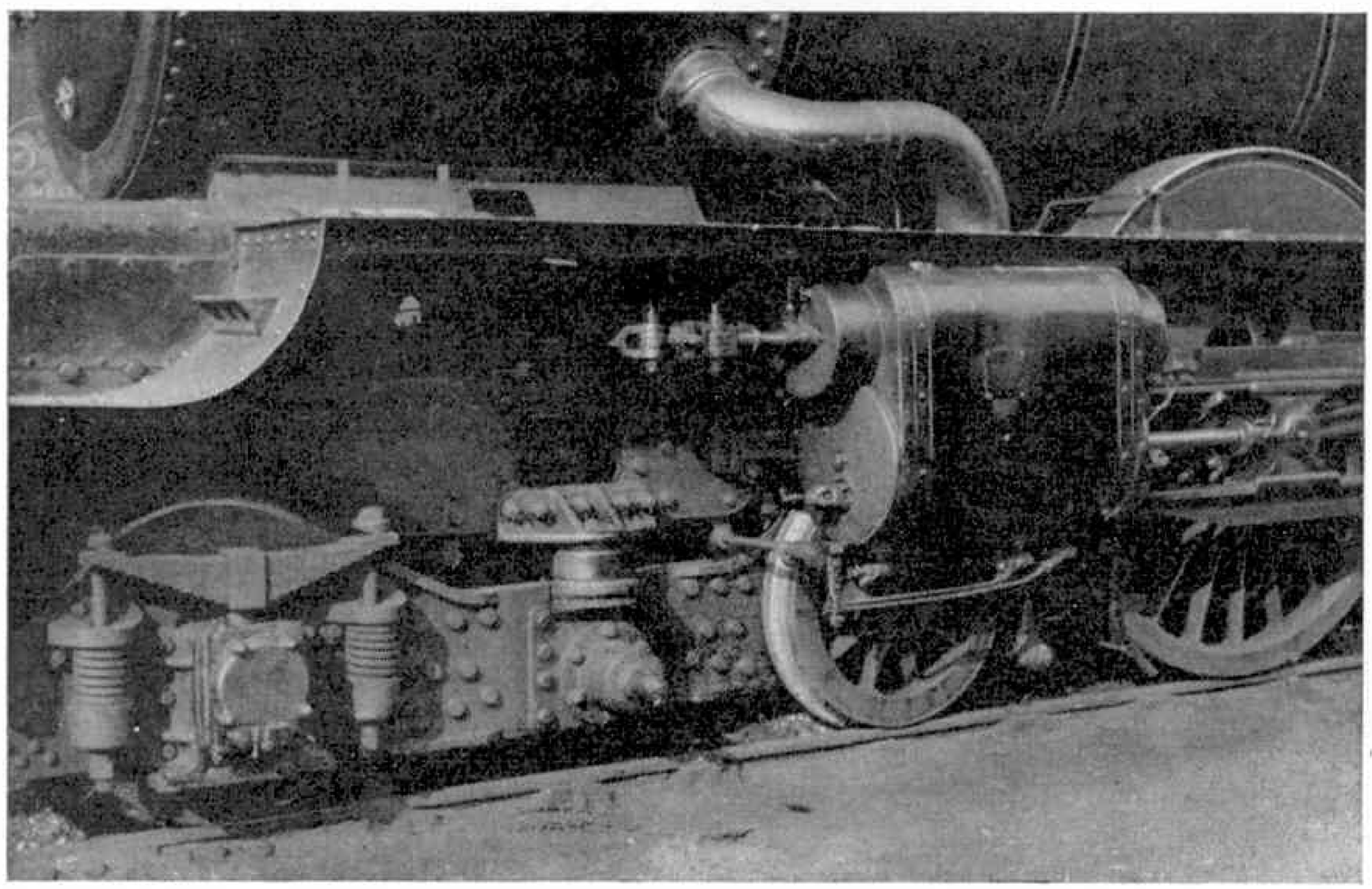
"*It's not a locomotive, but an automobile*"—to quote the comment of the Baltimore and Ohio men—is a measure of the way in which the closely-knit mechanical design, combined with the pleasing and well-finished exterior, impressed itself on American observers accustomed to the rugged strength and impressive character of U.S.A. steam motive power of that time.

The American trip led to the "award" to the engine of two medals struck for the occasion and subsequently mounted on the side of the cab, and of the specially-inscribed bell which is seen above the buffer beam in the picture at the top of the page. No engine, not even a distinguished visitor, may run on U.S.A. railroads without the bell that is a legal requirement in that country.

Actually, there were already in Great Britain bigger and heavier express engines than the new G.W.R. 4-6-0 in the shape of the Gresley Pacifics of the L.N.E.R., but with the introduction of the King class the G.W.R. could claim to have the most powerful express locomotive seen here up to that time. Certainly, on the basis of theoretical tractive effort, calculated by means of a formula incorporating various basic dimensions, the Kings had the advantage over their British contemporaries. Their tractive effort of 40,300 lb. was due in some measure to the high working pressure of 250 lb. per square inch adopted for the Swindon design. This represented an advance even on previous G.W.R. practice, which had favoured 225 lb. for some 20 years before.

The Kings of 1927, as was also the case with the Castles of 1923, represented a direct and enlarged development of the original 4-cylinder design evolved during the time when G. J. Churchward was Chief at Swindon. It was Churchward who laid down the standard locomotive programme for the G.W.R. that provided Swindon engines with characteristics they have borne ever since. He gave them boilers with a high working pressure, with tapered barrels and Belpaire fire-boxes. To secure the fullest possible expansion of

Above: A pair of Kings, No. 6000 "King George V", with bell, and No. 6023 "King Edward II" side by side after arrival at Paddington. Picture by David Sellman. Below: The characteristic front-end features of the King class locomotive including the unusual bogie are well shown in this striking close-up view by H. G. Forsythe.



No. 6001 "King Edward VII" bound from Birmingham to Paddington brings a train through Saunderton cutting. The up and the down tracks follow separate courses for some distance between Princes Risborough and Saunderton. Photograph by the late F. Spencer Yeates.

steam in the cylinders he made the piston stroke long in relation to the diameter and provided long-lap piston valves with direct ports and passages, resulting in free running and economical performance. That his designs could be developed by his successors without really departing from the original principles is a tribute to the soundness of his work.

Increased capacity

In addition to the higher working pressure, the cylinder diameter was increased by a fraction to 16¼ inches. Loading gauge restrictions prevented any greater enlargement in this direction, but the cylinder capacity was further increased in a manner that followed the Churchward precept, by making the piston stroke longer—28 inches—in relation to the bore.

The much enlarged boiler, compared with that of the Castles, followed the traditional pattern, having a tapered barrel with a maximum diameter of 6 feet, and with Belpaire fire-box sides and crown tapering outward and upward respectively to meet it. It retained the moderate superheating surface favoured by the G.W.R. for many years, with sixteen flue tubes and superheater elements disposed in two rows.

In the Swindon 4-cylinder design the drive from the inside and the outside cylinders respectively is divided. The inside cylinders are set forward between the frames to a position approximately above the leading bogie axle, and they drive on the crank axle of the leading pair of driving wheels. The outside cylinders are correspondingly set back over the rear bogie wheels and their crossheads are connected to the crank pins of the intermediate driving wheels. The movement of the piston valves is effected by means of Walschaerts gear. The layout of the cylinders makes it readily possible for the valve gear which is situated on each side, between the frames, to drive not only the inside piston valve—to which it is directly connected—but also to move the corresponding outside piston valve by means of the rocking lever connection clearly shown in the bottom picture on page 386. The design and arrangement of the rocking levers and their connections to the valve spindles is typical of the care given to details in Swindon practice.

As the driving wheels of the Kings were made 6 feet 6 inches in diameter, compared with the 6 feet 8½ inches of earlier G.W.R. express engines, the horizontal centre line of the motion became lower. This resulted in a reduction of two inches in the diameter of the bogie wheels to three feet in order to obtain sufficient clearance between them and the cylinders.

Faster timing

Another front-end feature is that the axleboxes of the bogie, which has a long wheelbase, are independently sprung, a point of difference from other Swindon 4–6–0s. This influenced the design of the bogie itself, for the axleboxes and springs of the leading bogie axle are mounted outside the frames and wheels, while those of the rear bogie wheels are inside the frames. The bogie side frames are, therefore, inside the rear wheels, but outside the front ones, and are joggled in two places to secure this effect, with the unusual result clearly seen in the striking view at the foot of the previous page.

Incidentally, the operating authorities of the G.W.R. were not slow to take advantage of the increased capacity of the new Kings, for in the winter of 1927, the timing of the *Cornish Riviera Express*, non-stop from Paddington to Plymouth, was reduced by seven minutes to an even four hours, resulting in an average speed of 56.3 miles per hour. In those days a 14-coach load in winter was the rule, totalling about 530 tons full as far as Westbury, where, as at Taunton and Exeter, slip coaches were detached. After Exeter a tonnage of some 395 remained to be taken over the more difficult South Devon section following.

The increased weight of the Kings, due to their enlarged design (89 tons in working order, with the higher axle loading of 22 tons 10 cwt. on each of the coupled axles) caused the class to be restricted to certain routes. So for many years they appeared only on Plymouth, Bristol or Wolverhampton trains from Paddington. But, in the latter part of 1960, six were allocated to Cardiff and were used on South Wales expresses such as the *South Wales Pullman* and *The Red Dragon*. Kings had been seen in South Wales before, but until this allocation to Cardiff none had been stationed in that district.

The Kings formed the mainstay on the heaviest turns of duty on Plymouth, Bristol and Wolverhampton roads for many years and in due course passed into the hands of British Railways. A King took part in the (*Cont. on page 417*)

ROAD AND TRACK

Surtees Is Making Great Headway

Transverse engine, front-wheel drive, independent hydrolastic suspension and disc brakes on the front are features of the new Morris 1100 pictured here.

TO switch from racing motor-cycles to Formula One Grand Prix cars is not as easy as most people seem to think, even for a World Champion. High-speed motor-cycles are, of course, extremely sensitive machines and a rider needs to develop an extremely fine sense of balance to master them, a balance that will also stand him in good stead when handling Grand Prix cars. But the technique of limit cornering on four wheels is very different, although in both cases the handler relies largely on split-second timing of throttle openings, and actually controls his machine through fast corners with the throttle, hence the importance of a good sense of balance.

A skilled racing driver can slide his machine with a reasonable safety margin in a manner that would be suicidal on two wheels; therefore it takes quite a lot of practice even for a World Champion motor-cyclist to find the safe limits through many different types of bends. I am very impressed by the speed with which John Surtees has developed a technique for car racing that is also beginning to pay off.

After the fourth World Championship event, the French Grand Prix, he was seventh in the championship table with a total of seven points against Graham Hill's sixteen. Then he suddenly began

By JERRY AMES

to move up, finishing second in both the British and German Grand Prix, which took him to third place in the Drivers' World Championship, just two points behind Jimmy Clark. With only three more events to be run at the time of writing—the Italian, U.S.A. and South African Grand Prix—Surtees has quite a sporting chance of becoming World Champion this year, although he really intends to make his attempt next season.

Handling of his car, the Formula One Bowmaker-Lola was disappointing until a few weeks ago. Now it is much improved and is giving Surtees a splendid opportunity of showing how well he can drive.

During a talk I had with him shortly before the start of the British Grand Prix at Aintree, Surtees told me that to achieve the results he was after it was necessary for him to develop his car handling technique along with the machine, which is why he will stick to the Lola for next season, despite tempting offers from abroad.

An experimental Lola for the 1963 season has already been constructed. In addition to considerably modified suspension it has stressed skin body-chassis stiffening at the centre. This car, with Surtees at the wheel, should be a forceful combination to meet the new Japanese Honda, due to appear in Formula One racing next year. Ferrari has also promised his drivers a completely new car.

Run in conjunction with the British Empire and Commonwealth Games, the important Australian Grand Prix, although not yet a World Championship event, moves this year from the Sydney area to Perth, in Western Australia. It takes place on November 18, a date conveniently sandwiched between the U.S.A. and South African Grand Prix, which will give the leading British and continental drivers time to call in at Australia. I expect BRM, Cooper, Lotus, Lola and possibly Ferrari to send cars.

With exciting new models appearing, interest is warming up for the Paris and London Motor Shows. Those two giants of the British motor industry, BMC and

Important new mechanical changes to improve performance and save money have been made to the Ford Capri (pictured right) and the Ford Classic. Below: The Aston Martin DB4—a 142 m.p.h. four-seater car, a road test on which is described in this month's notes.

Racing Personalities
LORD NUFFIELD

Lord Nuffield, now in his 85th year, was once a champion cyclist before he became famous as one of the world's outstanding car manufacturers.

FEW people realise that Lord Nuffield once tried his hand at car racing, and with success. Back in 1908 (long before he became a car manufacturer), his first attempt was the University Club's hill climb, staged over Dashwood Hill, near High Wycombe.

Although not a member of the club, W. R. Morris as he then was, had been invited to take part. His machine, an Enfield, tuned and prepared by himself, was one of a number of cars he frequently hired out to undergraduates. On paper it did not seem to stand much chance against the rakish looking machines competing that day, but knowing his car, he decided to take a gamble. It came off.

Instead of going up and down through the gearbox, like other competitors, he remained in bottom gear all the way and stormed up the half-mile hill, with its one in six gradient, to put up the fastest time of the day. The cup he received, engraved with the date, is one of his most cherished possessions.

Soon after becoming a fully-fledged car manufacturer, W. R. Morris decided it was a good thing to prove his cars in competition. Six of the new Morris Oxfords were accordingly entered in the London–Edinburgh Trial, run during the Whitsuntide holidays of 1914, and all won Gold Medals—but it was a near thing. The smart coupé driven by W. R. M., and navigated by Mr. Henry Galpin had the misfortune to break a speedometer cable just before Grantham. As the event was run to a strict schedule, there was no time to fit a new cable, even if one could be obtained, so to maintain the required average of 20 m.p.h. they checked the speed of the car between milestones for the remainder of the route. Their timing was so accurate that the total error, confirmed by four secret checks, was only 1 minute 47 seconds. For this remarkable feat they won a special cup presented by "The Light Car".

W. R. Morris was soon too busy building cars to take part personally in many competitions, but years later he gave a great deal of encouragement to Cecil Kimber and those wonderful M.G.s that did so much to develop and publicise the sporting side of Morris Motors; and what is more he insisted that similar machines were always available to customers. Even today Lord Nuffield still likes to hear about the success of the Competitions Department at Abingdon.

It is an oft-told tale that William Richard Morris began his motoring career making bicycles, but I wonder how many know that the very first bicycle is still in existence and runs beautifully after 54 years.

He was also a champion cyclist and winner of many races from one to 50 miles. In 1904 the retired champion came back again to win the Oxford Wheelers' mile sprint and 50-mile race.

Today at the age of 85 (he was born at Worcester in October 1877) this great pioneer of the British motor industry lives quietly in his house at Nuffield, not very far from the vast workshops and business he created.

(Continued on page 424)

Fords, have some exciting models up their sleeves.

I have already put in about 400 miles on the new front wheel drive Morris 1100. Its top speed is 78 m.p.h., but a great asset is the high gearing which permits sustained motorway cruising speeds of 70 m.p.h. without over-stressing or reducing the life of its 1,098 cc. four-cylinder o.h.v. pushrod engine. Servicing is reduced to four greasing points needing attention at 3,000 mile intervals, while the sealed cooling system needs no routine topping up.

Its wonderful suspension, combining the advantages of rubber and linked hydraulics, does away with conventional shock absorbers and provides the safest and smoothest ride of any small car I have driven. Most of the performance comes in during the middle and upper speed ranges: from 45 m.p.h. to 70 m.p.h., the little car fairly romps away, but for lively acceleration from low speeds it is essential to make good use of the four-speed gearbox, which has an improved baulk ring type synchromesh, easy and quick to operate.

Maximum speed in the lower gears allows 26 m.p.h., 41 m.p.h. and 63 m.p.h.; acceleration is pretty good—standstill to 50 m.p.h. takes 15 seconds—while 60 m.p.h. can be reached in 22 seconds. Brakes are vastly superior to those on the Mini. Testing for fade I made ten crash stops from 60 m.p.h. in quick succession without any sign of deterioration. Discs are used at the front.

This year, Morris Motors celebrate their Golden Jubilee and without any question the new Morris 1100 is their finest car after 50 years of specialising in vehicles for the family driver. Curiously enough, the Morris 1100 has slightly smaller overall dimensions than the Minor 1000, yet it can seat five people. It is fantastic value, nicely finished, and I would say will be one of the most sought after cars of the year. Its leech-like road holding is helped by the excellent new Dunlop C.41 tyres.

Talking of tyres, have you ever driven a car on an ice-rink? I did so recently, at the Queen's Club Ice Skating Rink in London. The cars were ordinary Mini-Minors, and the object of the exercise was to compare the handling of conventional Dunlop tyres with a special ice tyre the firm is developing. The new tyre has thousands of tiny wires embedded in the tread which give a most incredible grip on ice, whether accelerating or braking. To end the show Dunlop test drivers held a tug-of-war on the rink between two Minis, each trying to pull the other in opposite directions. The car fitted with the new ice tyres won without difficulty.

(Continued on page 424)

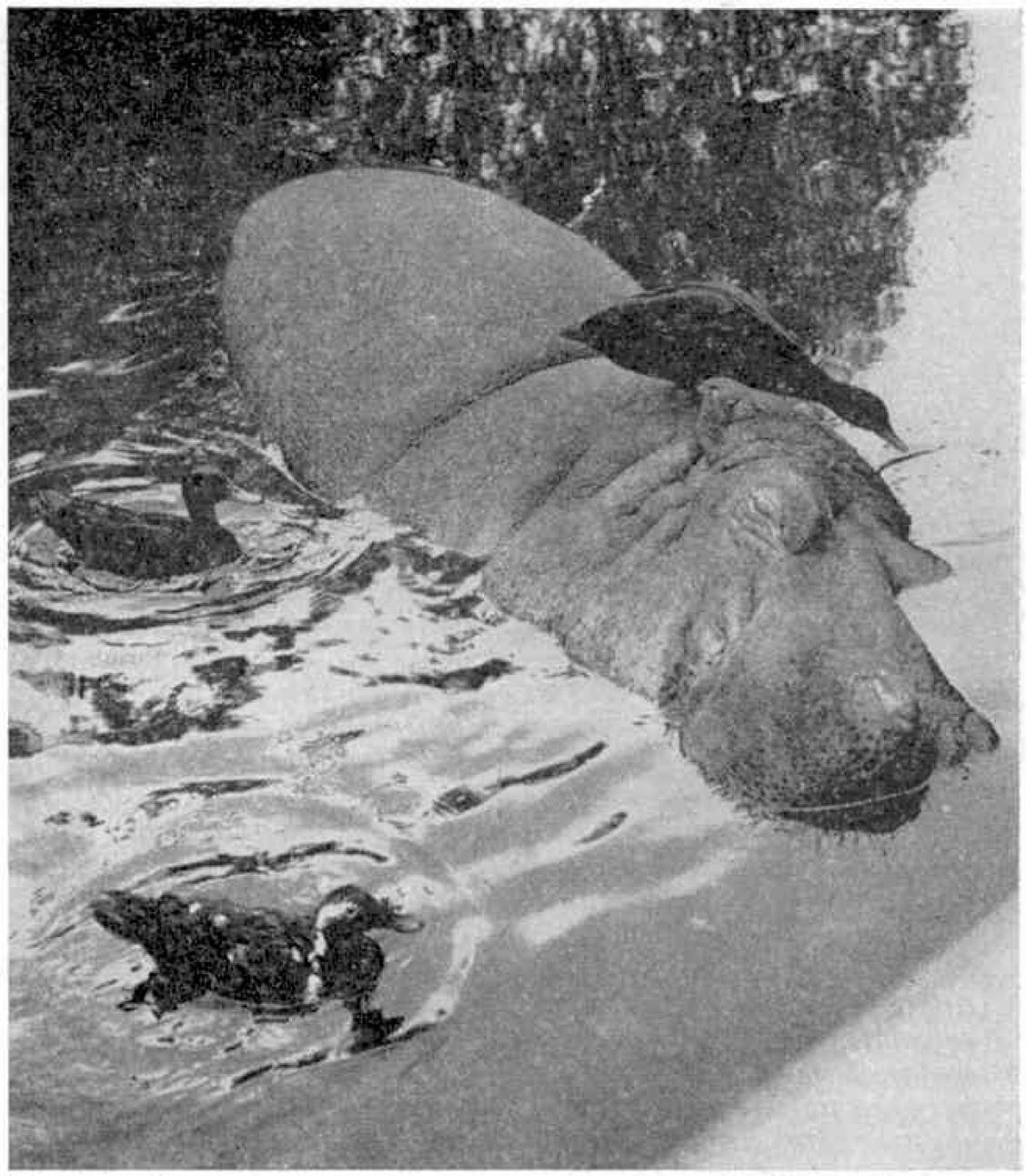
Ice rink test, one car leaps ahead on the ice while the other still struggles on the starting line, unable to get a grip. The leading car is fitted with the new ice tyres made by Dunlop, the tread of which is made of rubber containing shredded steel wire which bites into the ice.

One of Nature's biggest creatures, once near to extinction, is now thriving under protection in Equatorial Africa. In this article, the author poses the question . . .

ARE THERE TOO MANY HIPPOS?

A WORLD with too many hippopotami presents a strange, even an alarming, picture. Yet, if present trends continue it may indeed come about. For thanks to recent conservation measures in Africa, hippos have been freed from destruction and are responding by multiplying at a highly unexpected rate.

By DAVID GUNSTON



Hippopotami are often apparently docile beasts. This one certainly does not appear to be worried about the fact that it is carrying a duck on its back.

All round Lakes George and Edward in the Queen Elizabeth National Park, in Uganda, hippos have been given their ideal living conditions, and in the absence of their natural enemies—including man—they are thriving there. Indeed, in an area some four miles wide surrounding Lake George and the channel connecting it to Lake Edward, utter destruction of the soil and vegetation is being caused by vast teeming herds of prosperous hippopotami.

Wallowing in the mud and trampling the lake shores, they are speedily reducing this area and beyond to one great, squelchy, impenetrable, useless swamp. Native crops have disappeared, and the soil itself is being trodden into nothingness.

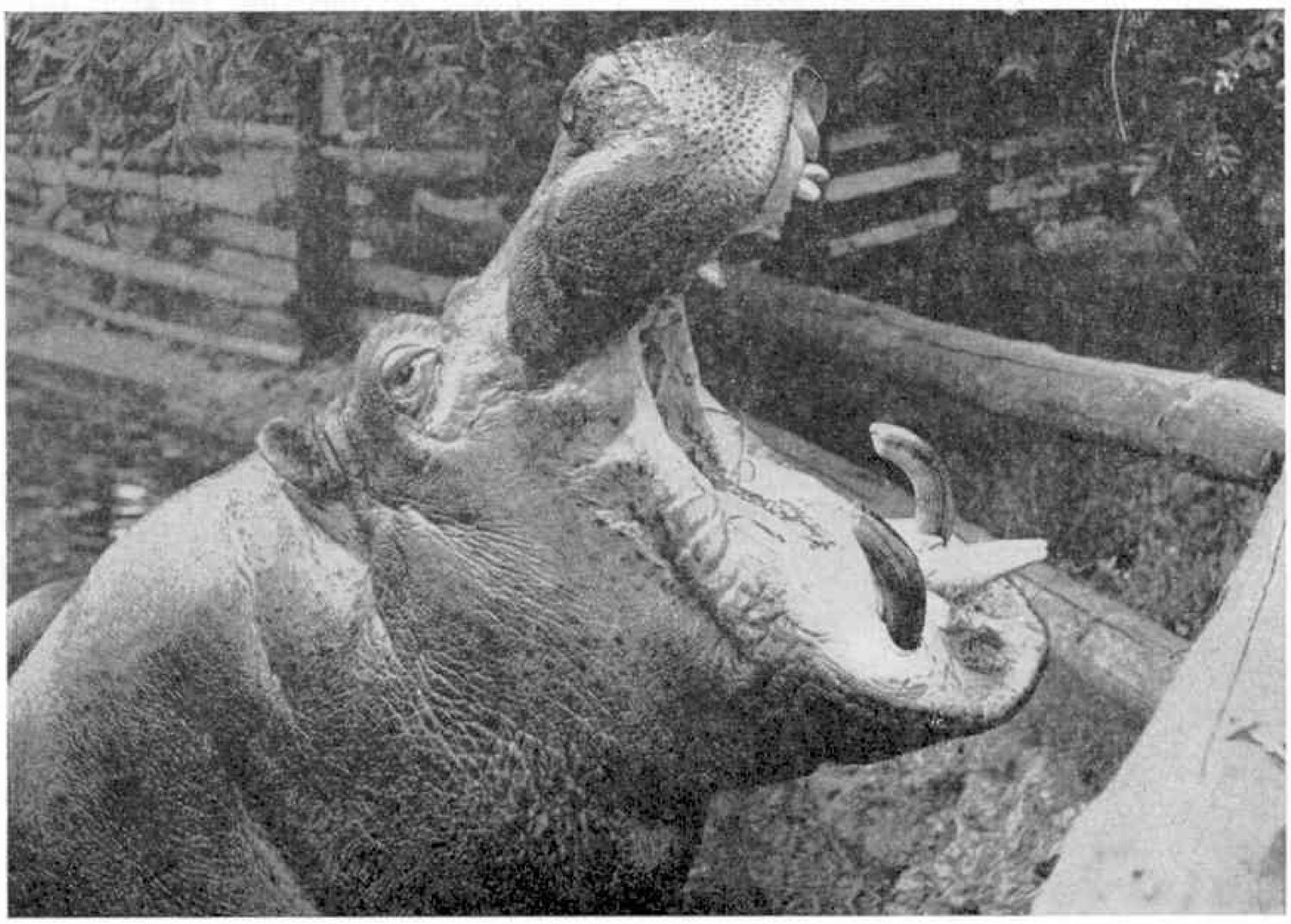
So serious has the situation already become locally that a skilled hunter has been employed on a government contract to shoot off between 600 and 800 hippos that have been over-grazing land to the north of Ankole, in the big National Park animal reserve there. And these were creatures for the future survival of which fears were expressed only a few years ago!

* * * *

Such is the result of unplanned animal preservation, which offers complete protection to one species without taking into account the effect of its likely increase upon everything else in the area. But it also shows the vigour and powers of adaptability of a very interesting creature, the world's largest surviving land mammal next to the elephant.

It has been half-seriously suggested that the surplus hippos of present-day Uganda might be systematically "cropped" to provide

Ever felt like quarrelling with a hippopotamus. This will put you off the idea if you have. This is an impressive dental display and Henry the Hippo can add weight to his arguments, too—three tons of it, in fact.



a source of lard, a commodity scarce in Central Africa. Certainly the hippopotamus carries a lot of fat. A fine adult specimen standing some five feet tall and measuring twelve to fourteen feet in length may easily weigh more than four tons. Over the body grows an inch-thick hide, completely devoid of hairs save at the tip of the thin, 20-inch-long tail.

* * * *

Formerly plentiful in Egypt, the hippo now lives only in Equatorial Africa. It once ranged as far as the Jordan Valley and, if present indications are anything to go by, it might well colonise other areas if encouraged. It is thought to be the behemoth, the "great beast" of Biblical days, described so vividly in Job XL, 15. Even earlier, hippos must have ranged far and wide over the earth, for fossil remains have been found in England and equally northerly latitudes.

Exterminated in many cultivated regions of Central Africa, hippos need never be feared in danger of becoming extinct again. Given a broad, sluggish river with adjoining swamps and lakes, they thrive if left alone and allowed to bask and wallow where they will, feeding chiefly on aquatic vegetation. In spite of their clumsy appearance, hippos are nimble enough in the water, and can descend river banks with surprising ease.

* * * *

Lying just submerged in the water, with only nostrils and eyes visible, a hippo may remain almost motionless for hours, keeping cool in the slimy water, keeping free of flies, resting and enjoying its strange life. Then, when hunger calls, it sinks heavily to the bottom where it wades along uprooting water-plants with its incisor teeth, which develop into huge tusks (record length 48 inches). Usually, these underwater foraging excursions may last for ten or fifteen minutes, sometimes less, but they can be very much longer on occasion. A tame specimen in a zoo—and they are easy animals to keep in captivity, surprisingly enough—was once frightened by a dog that entered its enclosure, and so it stayed submerged for a full half-hour. With nostrils and short ears closed in whale-like fashion, it has sufficiently capacious lungs to remain in comfort under water for such periods.

* * * *

The name hippopotamus comes from the Greek (*hippos*, horse, and *potamos*, river), but although to the Ancients this animal was the river-horse, in reality it is a kind of pig, wholly vegetarian in habit.

Basking hippo herds may contain between twenty and forty animals, or up to 300–400 on occasion. Bask, feed; bask, feed—that is the daily routine, but at nightfall the animals often emerge from the swamps and forage on land for grasses and shrubs. It is then that they incur human wrath, for they journey several miles each night and may encroach upon sugar and other plantations.

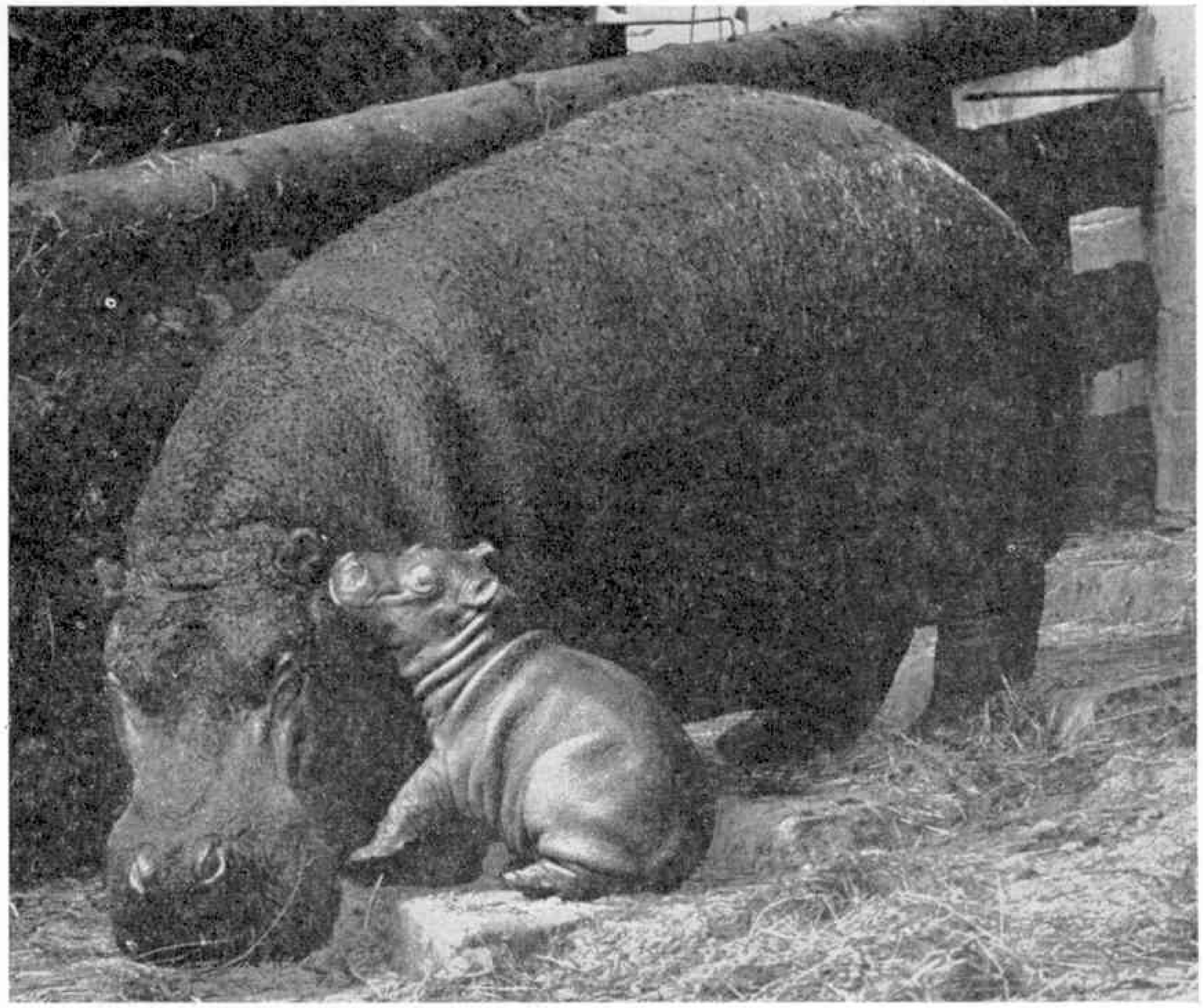
Before state protection was accorded these water-loving mammoths, natives in some areas would kill them and then eat the flesh. The tusks are valued everywhere, however, and are said to be harder than ivory.

* * * *

Huge, ugly, silent and seemingly docile, the hippopotamus is, in fact, a quarrelsome customer among his own kind. Males habitually attack older or weaker members of their sex, and rivalries are always present in those vast, yawning herds in the river water. The females are smaller and more timid, but when they have their calves with them they will defend the babies with terrible fury if approached.

Fighting hippos rarely interfere with man unless he in his turn gets mixed up in their bitter feuds. But boatmen foolish enough to invade a sleeping herd, or to surprise a single dozing beast, will immediately find that the traditional timidity of the hippopotamus towards human beings is but a myth. No holds are barred by a frenzied hippo; it will pound, smash, toss and batter boat and occupants with incredible fury.

So too many hippos are not really a desirable aim, although Africa would never be complete without its behemoths. Here, as in all nature, balance is essential.



A mother happy with her baby which was only ten days old when this photograph was taken.

"Youth In Winter"

Contest For Teen-age Photographers

A new national photographic competition for members of youth clubs and other organisations catering for the under-twenties is announced by the Photographic Information Council—organisers of the successfully established National Challenge Trophies competition for school camera clubs.

Prizes totalling £350 are offered for sets of four black-and-white photographs taken during the winter months which best illustrate the theme *Youth in Winter*. There is no entry fee, and awards will be made both to the young photographers and to their clubs.

Entries will be judged for originality as well as for clean technique and presentation, and any subjects may be chosen.

Entry forms may be obtained from: The Photographic Information Council, Wardrobe House, Wardrobe Place, London E.C.4.

The Council is offering to all youth organisations copies of two booklets, *A Guide to Forming a Camera Club* and *Any Time is Camera Time*, the latter an illustrated publication which gives suggestions for all-the-year-round photography. A newsletter for youth clubs and organisations interested in photography is being produced and will be forwarded regularly on request.

Gnats Thrive Among The Northern Snows

PROOF of the toughness of Folland's little Gnat single-seat fighter is that it is giving equally good service under the blazing hot sun of India and on the snow-covered airfields of Finland. A representative of Bristol Siddeley Engines, makers of the Gnat's 4,700 lb. thrust Orpheus turbojet, visited No. 21 Squadron of the Finnish Air Force recently and brought back the pictures on this page. They were taken at an airfield a few miles north of Jyvaskyla, which is itself about 150 miles north of Helsinki, the capital, in the middle of a vast area of lakes.

Except for ten Vampire fighter-bombers, the twelve Gnats of No. 21 Squadron are the only combat aircraft operated by the Finnish Air Force. They were delivered between 1958 and 1960 and are very popular with their pilots. Before joining the squadron, each pilot logs some 250–300 hours of flying training, including 100 hours on Vampire and Magister jet trainers. Not until he has put in a further 50–100 hours in the Gnat, with the emphasis on navigation and weapon firing, is he considered fully trained.

AIR NEWS
By
John W. R. Taylor

It is easy to see why skill in map-reading and radio navigation is essential when one flies over Finland with both the land and the country's 70,000 lakes blanketed in snow!

Two of the aircraft at Jyvaskyla are of special interest. The first is the only reconnaissance Gnat in the world, with three Vinten 70 mm. cameras mounted behind glass windows in its nose; the other, parked among trees by the entrance to the airfield, is one of the last surviving examples of the famous Bristol Blenheim Mk. 4 light bombers of World War II. This particular machine still bears the old-type pale blue swastika insignia of the Finnish Air Force and stands as a reminder of the "Winter War" of 1939–40 when it operated against the Russian invaders. It was flying as recently as 1957.

TIRED TRAVELLERS

Few airline passengers are so tired that they eat nothing during a 12,700-mile flight, but Canadian Pacific Airlines carried two such travellers this summer, from Auckland, New Zealand, to Edinburgh.

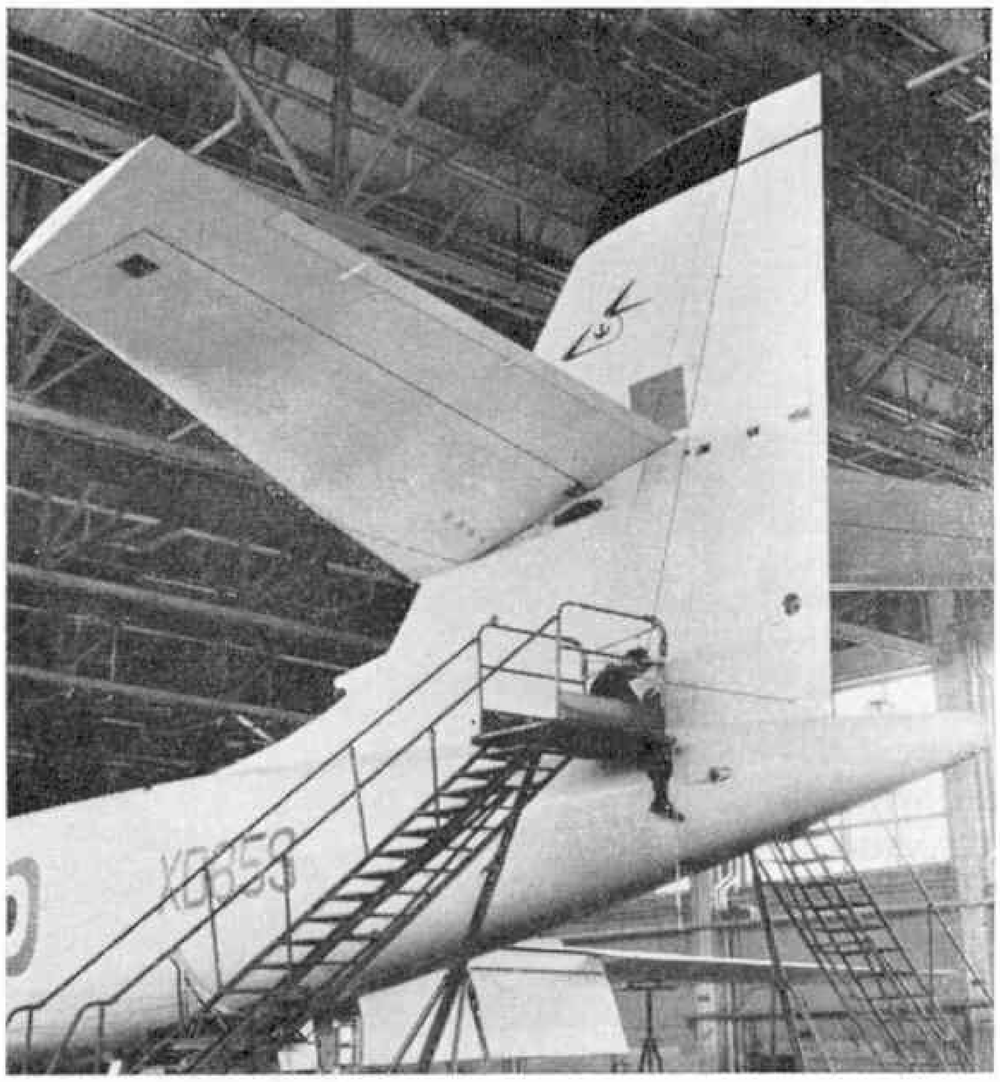
They are two-foot-long Tuatara reptiles, the last living link with the great Dinosaurs of pre-historic times. One was on its way to Edinburgh Zoo, the other to a German animal expert, Dr. Robert Mertens of Frankfurt. The reason for their fast was that they were in hibernation at the time of their journey. However, C.P.A.L. took care of their other needs by giving the scaly creatures a series of refreshing shower baths during stops at Honolulu, Vancouver and Amsterdam.

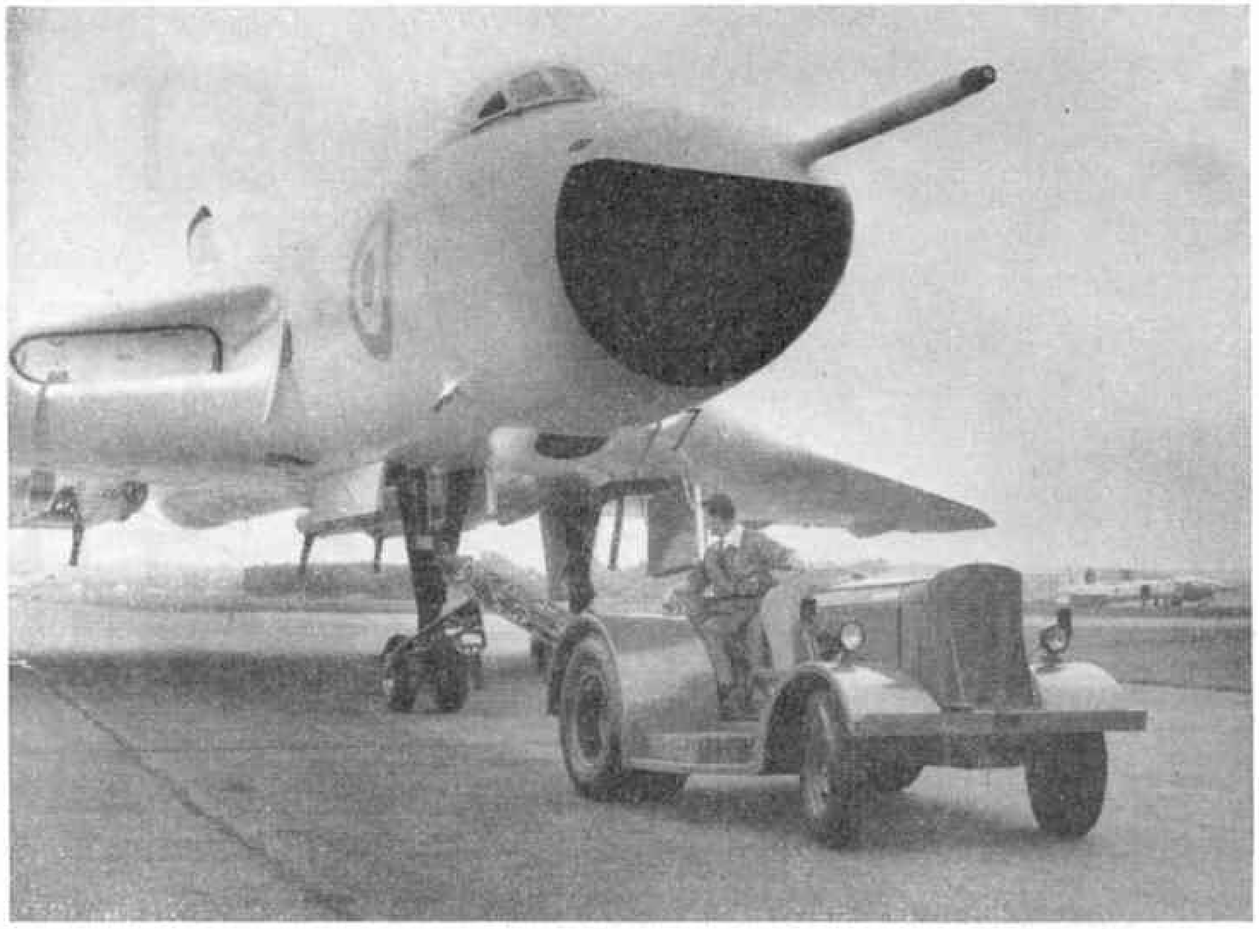
NEED FOR SPACE-MEN

Because the first men to venture out into space are Americans and Russians, it is easy to feel that Britain is being left behind in one of the greatest adventures of all time. A very different picture was painted recently by Marshal of the Royal Air Force Sir Thomas Pike, Chief of the Air Staff, when he spoke to cadets at the Royal Air Force College, Cranwell.

"The future in the R.A.F.", he said, "is an exciting prospect. In the course of your career the spectacular advance in the air and also in space will certainly continue. Vertical take-off will become commonplace, ramjets and atomic power may revolutionise our propulsion systems. We shall certainly be adventurous in space and you can be sure that we shall need manned vehicles there just as we shall need them in the atmosphere. The black box and push-button will never re-

Top picture: In winter, the Gnat fighters of No. 21 Squadron, Finnish Air Force, operate in temperatures as low as minus 20 or even 30 degrees Centigrade, which calls for brisk handling of the aircraft on the ground. Below: This Bristol Blenheim Mk. 4 stands as a memorial to the "Winter War" of 1939 at the entrance to the airfield at Jyvaskyla.





Above: The David Brown Turbo Taskmaster Super Diesel aircraft-towing tractor handles an Avro Vulcan V-bomber with ease at Farnborough. Left: The unique badge on the tail unit of the Valiant bomber referred to in these notes.

place the ingenuity and flexibility that you will be able to bring to bear on the many problems that will face us."

So, if any of you want to be space-men, here's your chance!

AEROPLANE ASTRONAUT

Talking of space-men, the fifth pilot to earn his astronaut's "wings" in America did so not in a Mercury manned satellite, but in the remarkable North American X–15 rocket-powered research aircraft.

It was agreed some time ago that space begins at a height of 50 miles, so Major Bob White of the U.S.A.F. joined the select company of Shepard, Grissom, Glenn and Carpenter when he soared to a record height of 314,750 feet (59.6 miles) in X–15 No. 3 on July 17. The 57,000 lb. thrust engine burned for 84 seconds, accelerating the X–15 to a speed of 3,784 m.p.h. The ten-minute flight carried the aircraft 280 miles, its longest hop yet.

Another record had been broken earlier, on June 27, when Joe Walker of the N.A.S.A. reached a speed of 4,159 m.p.h. more than six times the speed of sound, in an X–15. This was faster than the aircraft was ever expected to fly and resulted from the fact that on this occasion its engine kept operating for 89 seconds, five seconds longer than usual.

The flights on which such records are established are not mere stunts. For example, the whole purpose of Walker's flight was to bring the X–15 back into the denser layers of the atmosphere with its nose cocked up at 23 degrees to see what effect this would have on stability. The results are important, because future space-craft are expected to re-enter the atmosphere at this kind of angle, using their wings as brakes to reduce their high orbital speeds.

GROUND-LEVEL EXPORTS

When we think about aviation exports, we usually picture aircraft and aero-engines, plus perhaps the occasional radar installation; but British industry provides much more than these things for the airlines and air forces of the world.

Take tractors—not so exciting as jet-fighters, but where would the fighters and other aircraft be without tractors to tow them around, as shown in the picture on the right. This particular vehicle is a David Brown Turbo Taskmaster Super Diesel and it can haul aircraft weighing up to 180,000 lb. at 10 m.p.h.

Taskmasters are used by no fewer than twelve air forces and naval air arms, sixteen airlines and eight aircraft manufacturers. Sales in the past year have included 34 to the Royal Air Force, 38 to the Royal Netherlands Air Force and 25 to the Royal Norwegian Air Force.

BIGGEST AIR FREIGHT

There are few ways of losing money more quickly than to have a large transport aircraft sitting on the ground doing nothing. So it was quite serious when a Canadair Forty-Four freighter struck an obstacle while landing at Wake Island, in the Pacific, and was clearly out of action until it could be fitted with a new tailplane.

The tailplane of a Forty-Four spans 54 feet and nothing so big had ever before been carried by air. The answer to what looked like a costly predicament was another Forty-Four.

Because the entire tail of this aircraft can be swung to one side, allowing long and bulky loads to be pushed straight into the rear of the cabin, the Forty-Four had no difficulty in carrying the spare tailplane. The first 2,530 miles, from Montreal to San Francisco, were covered in a Forty-Four belonging to Seaboard World Airlines. From there, the tailplane was flown the remaining 4,390 miles to Wake Island on board a similar aircraft of Slick Airways.

These two airlines are so pleased with their Forty-Fours that they have each recently ordered two more, bringing total civil sales up to 21.

BADGE FOR TANKERS

The badge on the tail unit of the Valiant bomber shown in the left illustration on this page must be unique among the world's air forces, as it includes the well-known "trade mark" of a private company.

In this case the honour is well-deserved, for the company is Flight Refuelling Ltd. Founded by Sir Alan Cobham, it pioneered the technique of topping up the tanks of one aircraft from another, tanker, aeroplane in flight. The aircraft in the picture is a Valiant of No. 214 Squadron, the R.A.F.'s first specialised tanker unit, whose own diving bird badge appears in the middle of the two symbolic aircraft, linked by a refuelling hose, in the Flight Refuelling badge.

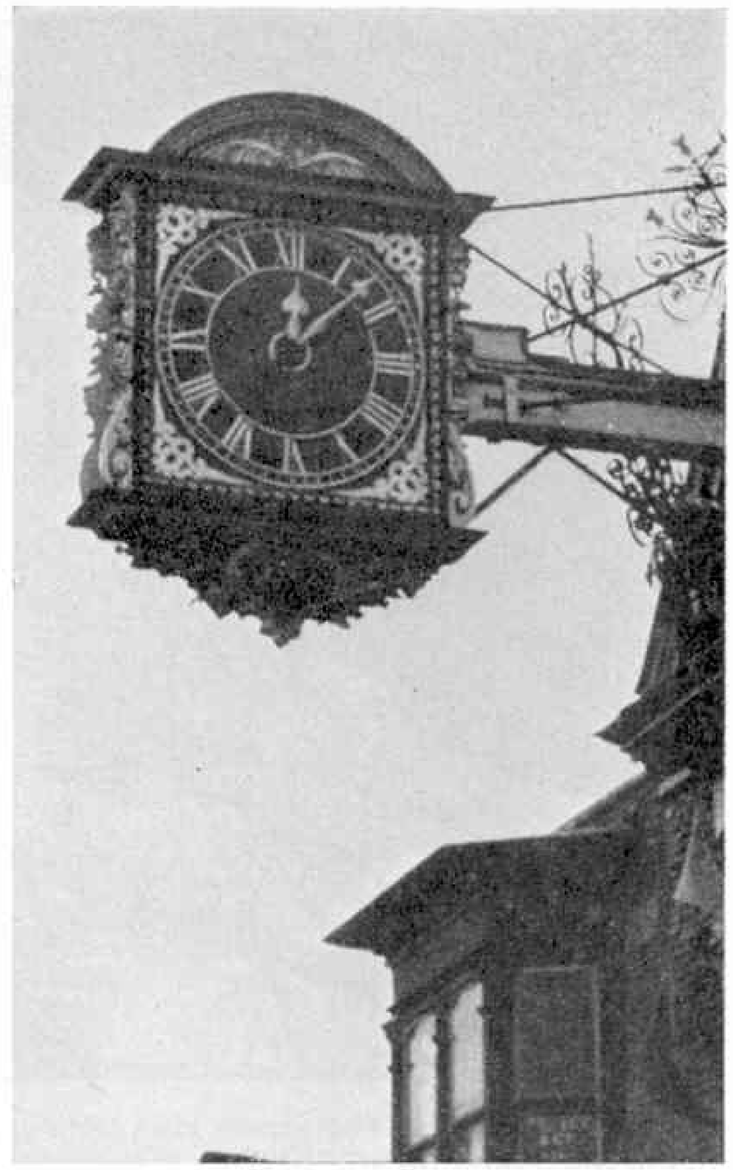
BEATS WINDSCREEN WIPERS

No windscreen wiper yet devised is capable of coping with rain on the windscreen of an aircraft coming in to land or flying low at around 250 m.p.h.; but scientists at the Royal Aircraft Establishment, Farnborough, have found a way of "smashing" the raindrops before they reach the glass.

Jets of warm air, taken from the aircraft's turbojet engine compressor, project a current of air a foot in front of the screen to split the drops into vapour. More jets, directly in front of the wind-

(*Continued on page 424*)

JUST A MATTER OF TIME



This fine old clock hanging outside Guildhall at Guildford, Surrey, was made by a newly-arrived clockmaker in the town to show his skill.

HAVE you ever tried to imagine what modern life would be like without clocks? Of course, there have not always been such things, and in bygone days sundials were used to tell the time of day. But it is hard to understand how people managed when the sun failed to shine, and it is even more difficult to picture our cities and villages without their public clocks on church towers. We rely on them many times each day, and our train and bus services could not be run properly unless we had timepieces for everyone to see. But not all these clocks are alike, and you may come across some unusual examples.

Our earliest public clocks did not all show the time on a dial, but told the hour merely by striking on bells. Quaint figures struck the bells with hammers and were sometimes fitted with mechanism which caused them to perform antics. A number of these clock jacks (as they are called) are still to be seen, although in most cases there is now a dial as well.

Three curious figures strike the hours and quarter-hours alongside a clock outside a shop at Stockport. One of them represents Father Time with his scythe, another is dressed like a sailor, and the third wears military uniform.

Another clock worth seeing for its jacks is that over the porch of All Saints' Church, Leicester. Two tiny gilded men

By ARTHUR GAUNT

in old-time costumes wield mallets with which they strike small bells every fifteen minutes.

More remarkable still is a clock over an arch in Kingley Street, London, for there the figure is that of St. George. He rides round and round and slays a dragon at each stroke of the hour bell.

The oldest performing clock in Britain is believed to be in Wells Cathedral, Somerset. It was made more than 550 years ago and still presents an entertainment every quarter of an hour. In a recess above the timepiece are four knights on horseback, while near at hand sits a smug little man, made of wood and dressed in the costume of bygone days. He strikes the hours by kicking his heels against two bells. This is a signal for the knights to come out and do battle. As they ride round they swing their swords, and some of them are knocked back in their saddles. The thrilling tournament ends when the seated figure stops striking the bells.

The 24-hour clock outside Greenwich Observatory (left) is almost unique as a public timepiece, for very few have a seconds dial as this has. Pictured at the top left of the page is a clock well known to all who live and work on Merseyside. It is the clock on the impressive Liver Building which faces the River Mersey and is one of Liverpool's most famous landmarks. Picture: George Wilkinson. All other illustrations are by courtesy of the author.

The Wells clock has no hands to show the time, but does have a dial marked with 24 hours instead of the usual twelve. Two stars move round the dial to show the hours and minutes. It is also an astronomical clock, giving the date and the phases of the moon. The original works are now in the South Kensington Museum, London.

Other astronomical clocks include a colourful one at Hampton Court Palace, London. It stands over one of the gateways and was made for Henry the Eighth.

A fine clock of this type which has been in York Minster since the end of World War II has a sun which rises above an horizon each morning and sets behind it every evening at the actual times of sunrise and sunset. The moon and various planets are also shown, and they move in exactly the same way as the real ones.

* * * *

A unique timepiece is in the wall just outside the entrance to the Royal Observatory, Greenwich, London. Not only does the dial show 24 hours instead of the customary twelve, but there is a seconds dial, too.

Guildford, Surrey, also boasts a famous clock. It is outside Guildhall and was made in 1683 by a man named Aylward. He came to the town hoping to start a

clockmaking business, but before being allowed to do so was required to demonstrate his skill. This he did by designing and making the clock just mentioned. His workmanship was so good that the timepiece is still accurate.

Some of our early clockmakers, however, seem to have been unable to make clocks possessing two hands or pointers. Thus you may come across a few examples which have only an hour hand. Best-known of these is at Coningsby, Lincolnshire. Its dial is so huge that you can tell the time to within five minutes by carefully noting the position of the single hand, and the mechanism is operated by huge blocks of stone hanging from ropes.

* * * *

A clock which has no face at all is in the church tower at Marston Magna, Somerset. To get to know the time from this you have to wait until it strikes. It was made by the village blacksmith 250 years ago.

There is even a church clock which strikes thirteen! This is at Worsley, near Manchester, and it always registers that number of strokes instead of striking one o'clock. The reason for this is that when, about 200 years ago, workmen were constructing the nearby canal, they were often in trouble for taking too long a break for their mid-day meal. They complained that they could not hear one o'clock striking. Because of this the mechanism was altered so that the clock would strike thirteen, and so the workmen had no excuse for a late restart.

A curious modern astronomical clock in York Minster. It shows the position of the sun, moon and other heavenly bodies.

A few church clocks have mottoes, such as the one at Whixley, near York. Below the dial appears:

I serve thee here with all my might,
And tell the hours by day and night,
Therefore example take by me,
And serve thy God as I serve thee.

A clock which has undergone adventures is in the tower of Rustington Church, Sussex. It was found on a garden scrapheap after being thrown out of the old church at Great Bedwin, Wiltshire. It had served the inhabitants of that place for 200 years and they considered it worn out. But a man from Rustington saw it, bought it for only two pounds, and managed to instal it in the church at his own village. After being carefully cleaned and re-set, it worked almost like new.

In Sussex is also the longest clock pendulum in Britain. It is connected to the works of the parish church clock at Rye, and is eighteen feet long. Its extraordinary length means that it juts through the ceiling and swings to and fro in full view of the people attending service.

Although there are many unusual clocks in existence, probably the strangest way of telling the time is by means of a time-ball. You can still see this old-fashioned idea in operation near London. A tall pole above Greenwich Observatory carries a large ball which is raised to the top of the pole just before 1 p.m. each day. Then, exactly on the hour, the ball is released so that it drops down the pole.

In former days sailors aboard ships on the Thames used to watch through their telescopes for the dropping of the ball, so that they might set their clocks and watches to the exact time. Nowadays, mariners have other ways of doing this, such as the radio time signals and other checks. But the Greenwich time-ball is still released daily as an historic custom.

The clock in the tower of Whixley Church, near Harrogate, carries beneath it a verse which is quoted in this article.

RAILWAY BOOK REVIEW

In view of the interest being taken nowadays in the light railways of various gauges in this country it was a good idea on the part of the B.R. (Eastern Region) Staff Railway Society to compile their *Light Railway Guide and Timetable*. This includes notes, maps and timetables relating to the narrow gauge Ravenglass, Romney, Festiniog, Talyllyn, Vale of Rheidol and the Welshpool Lines, as well as the standard gauge Bluebell Line and the Isle of Man Railway.

It is most useful to have these details included in a single publication, which appeared just in time for summer holiday visits, for the lines concerned operate during the summer season only. Unfortunately this was too late for reference in the *M.M.* before this issue, but no doubt many readers will wish to obtain copies, which are available for 2/– each by post from H. Leah, 61 Worcester Road, London E.17.

Bassett-Lowke's New Catalogue

The Bassett-Lowke Catalogue of Models (Bassett-Lowke Ltd., 2/6) contains in its 192 pages an amazing variety of miniature railway and other hobby equipment. Train sets and separate items in 00 gauge, including the Hornby-Dublo range, are well covered and in addition there is other equipment of various makes, including track and accessories, assembly kits and separate parts.

Locomotive motors, lineside scenery and an extremely varied range of equipment is offered as well as a selection of publications on miniature railway planning and building. Railway material in TT gauge also is listed, and in addition there are sections covering stationary steam engines, miniature boiler fittings, aircraft and miniature ships, as well as suitable engines for them. Ship fittings and kits for the assembly of varied craft are included as well as cars and trackside features for motor racing in miniature.

Microscopes and transistor radios conclude the contents of this comprehensive pocket-size handbook. Copies are obtainable from Bassett-Lowke Ltd., 18–25 Kingswell Street, Northampton.

ANIMAL STUDIES

PATIENCE in large measure—that is what you must have if you want to photograph animals, wild or domestic.

Wild life photography is a very specialised subject and to photograph the more timid—or dangerous—kinds of animals and birds,

SPECIALLY FOR PHOTOGRAPHERS

By H. G. Forsythe

"hides", automatic cameras with telephoto lenses and other special equipment are needed. In spite of this, much successful animal photography can be done with everyday cameras and accessories.

Look, for instance, at the picture below of the swan and her cygnets. This was taken with an ordinary camera, and all the photographer needed to do was to wait on a low bridge over the stream until the family drew near. Naturally, he kept still, so as not to frighten the swan away, and he was watching through the viewfinder for the right moment to press the shutter release.

"Dear Sir, With reference to the last consignment of cats' meat . . ." Pet pictures like this need lots of patience and a quick eye for the right moment at which to press the shutter release.

Opportunities for wild animal photography abound at zoos, but here again patience is essential. The photographer must wait until the animal takes up a suitable position. Here the larger animals are easier to photograph successfully.

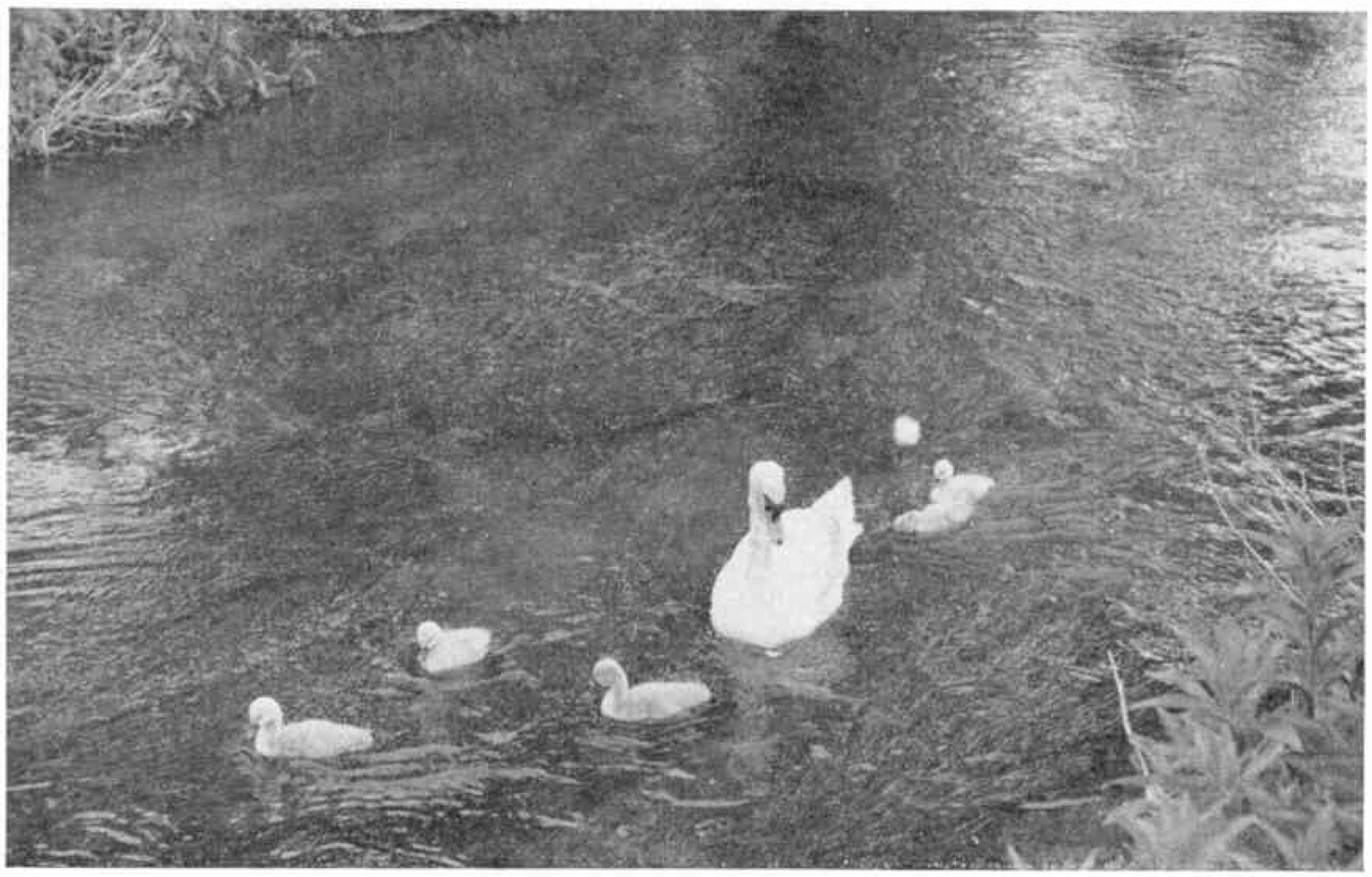
In order to stop as much movement as possible use as fast a shutter speed as you can. This means that, especially in dull weather, a faster than usual film, such as Ilford HP3, should be used.

Pets make wonderful subjects for pictures. Your approach to your pets will depend very much on the kind of pet you have and his temperament. Cats, for instance, are very independent creatures and you must be prepared to spend a lot of time watching, waiting and coaxing to get your pictures. Dogs, on the other hand, are often more co-operative and can often be made to "sit" for their portraits. You will find that sometimes pets just will not co-operate, and will run away and hide when you are trying to coax them into the right position. When they are in this mood, the best thing to do is to wait for another time.

Small pets, such as mice, make interesting pictures in their cages, especially if the cage has a glass front. You will need to move in close, however, and positive supplementary lenses to enable you to take close-ups may be needed.

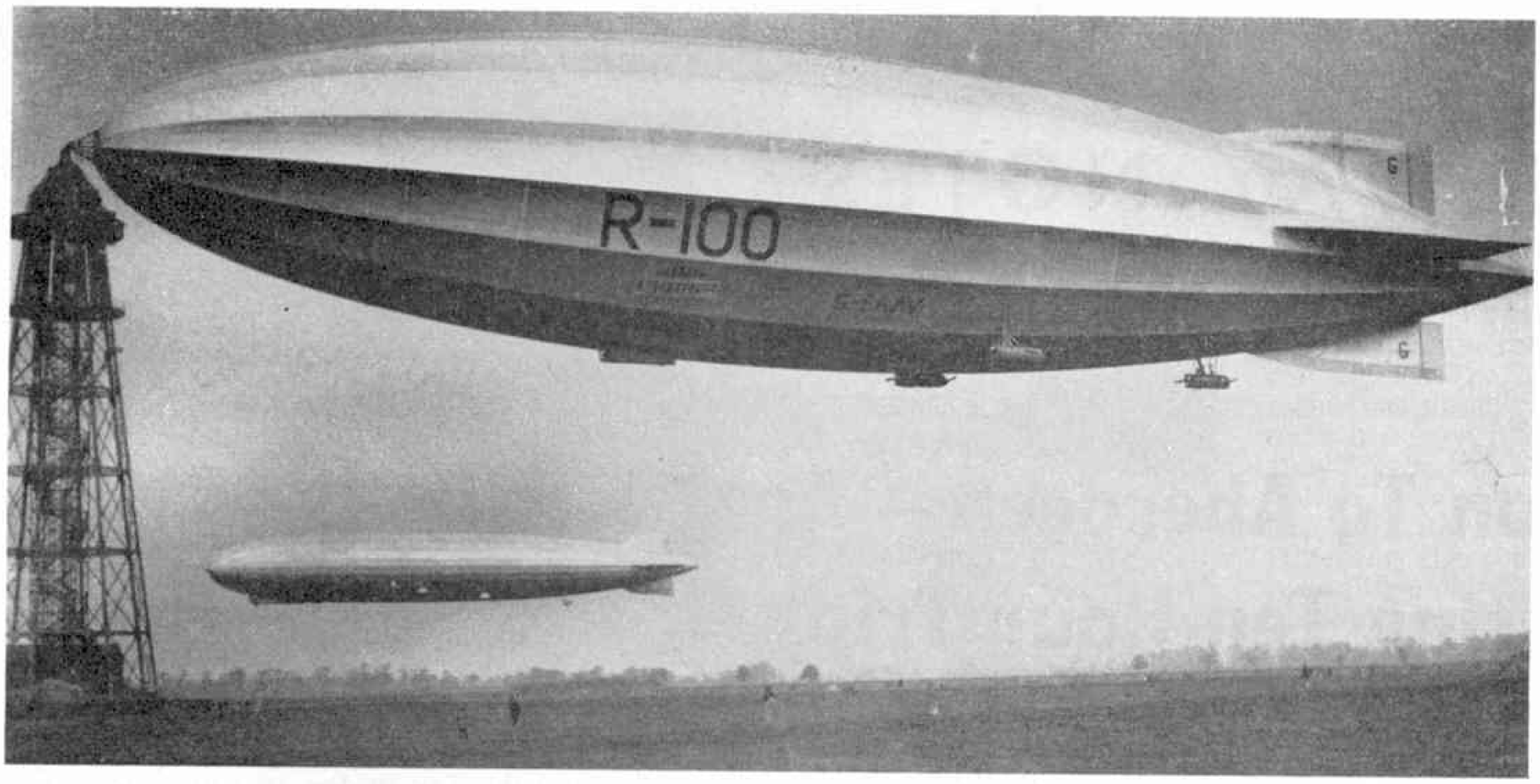
These same supplementary lenses can be used to photograph your best Meccano models—our subject for next month.

This attractive type of picture can be obtained with the simplest equipment.



* * * *

Coronet Limited tell me of an interesting offer they are making to camera enthusiasts. Before the last war, millions of box cameras were made and sold at 5/6 (Kodak, Coronet and Ensign). These cannot be used for colour snapshots or flash photography. Coronet are offering a trade-in value of 20/- for such old cameras of any make, as part payment for a new up-to-date camera which will take colour pictures and is also synchronised for flash. You can obtain details by writing to Coronet Ltd., 308 and 310 Summer Lane, Birmingham 19.



The R 100 at Cardington, April 1930. In the background is the German airship "Graf Zeppelin" arriving after her flight from Friedrichschafen. Radio Times Hulton Picture Library photographs.

HAMILTON TYLER TELLS THE STORY OF

Britain's Last Airship

ALL National Servicemen who served with the Royal Air Force and registered after June 19, 1953, first attended the Initial Reception Centre at Cardington (Shortstown) in Bedfordshire, and doubtless they can still remember the two gigantic buildings which overshadowed their living quarters. The buildings are each 812 feet long, 180 feet wide and 158 feet high, the last remaining airship hangars in Europe, and possibly in the world. Once the home of the dirigibles R 100 and R 101, they now house a meteorological balloon unit.

The R 101, designed at Cardington, and the R 100, built at Howden, in Yorkshire, provided the finale for British attempts to dominate the world with lighter-than-air craft.

Work began on the R 101 in 1927 and it first appeared on the mooring mast, which was the only one of its kind ever erected in Britain, two years later. After making its first flight of five hours, in October 1929, over the centre of London the R 101 became a daily feature in the life of people living near Bedford, and those of us who remember her can still visualise a large grey and silver egg-shaped dirigible—the colour changing as the sun was reflected—floating gracefully through the sky. Sometimes she was accompanied by the noise produced by her engines, but often appeared to move soundlessly when the echo was carried away by the wind.

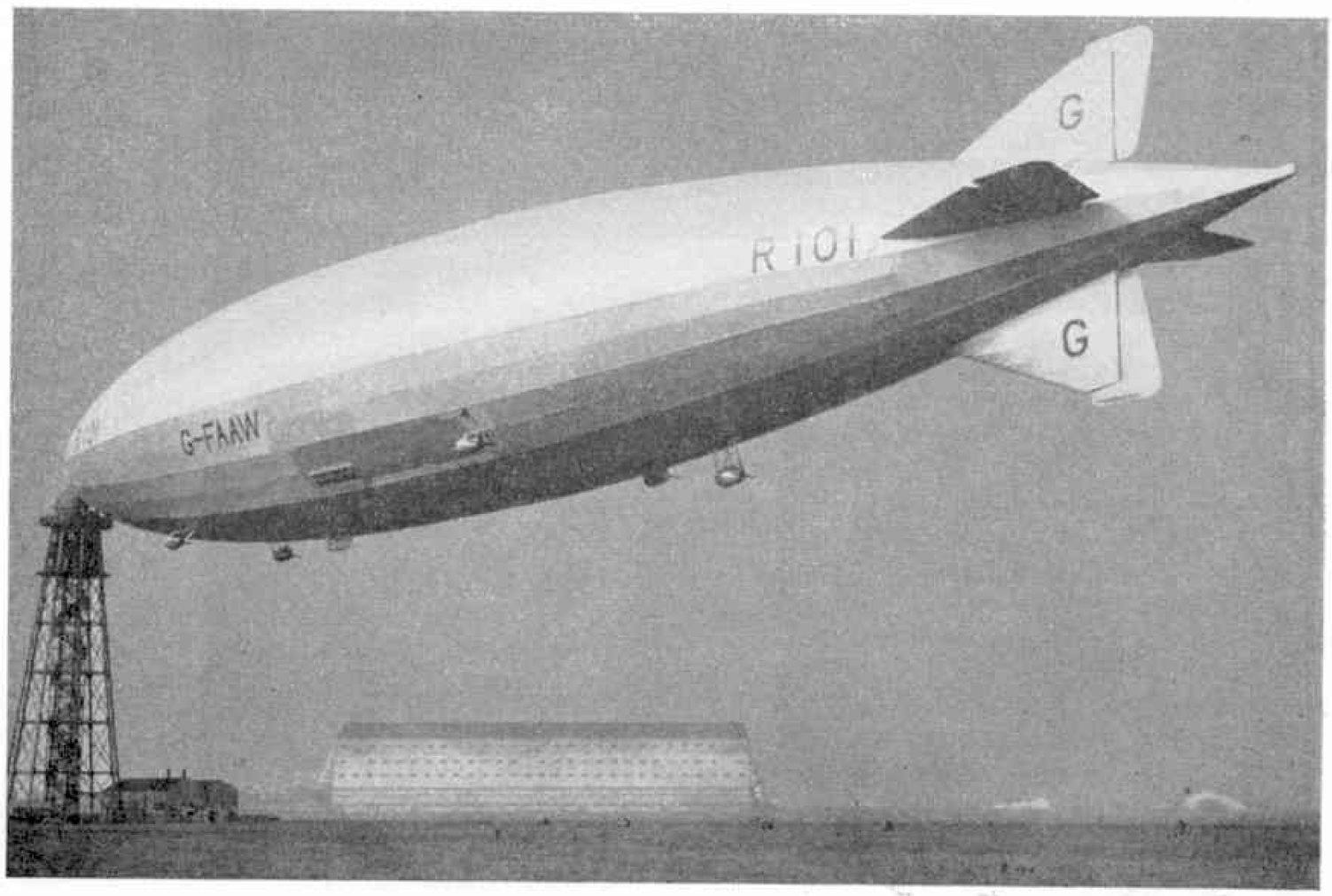
The month following the flight over London, the airship journeyed to the Isle of Wight and back, a trip which took fourteen hours. It was followed later by a 30-hour journey over Britain.

All seemed to be well, and when the airship appeared over Hendon during the air pageant many of the spectators who, unlike myself, were seeing the airship for the first time were enthralled. But it was during the flight to Hendon that there were some misgivings. Apparently the gasbags were causing friction with the metal parts and it was decided to insert an extra bay.

Thus R 101 was grounded for three months. However, on April 26, 1930, it was possible to compare the graceful lines of Britain's two airships with the long cigar-shape of the German dirigible the Graf Zeppelin which had arrived at Cardington that day, having flown from Friedrichschafen, a distance of approximately 650 miles, in ten hours.

In October 1930, R 101 set out for India carrying altogether 54 crew and passengers

(*Continued on page 424*)



The R 101 at her mooring mast at Cardington, prior to setting out on her ill-fated maiden flight to India, in October 1930.

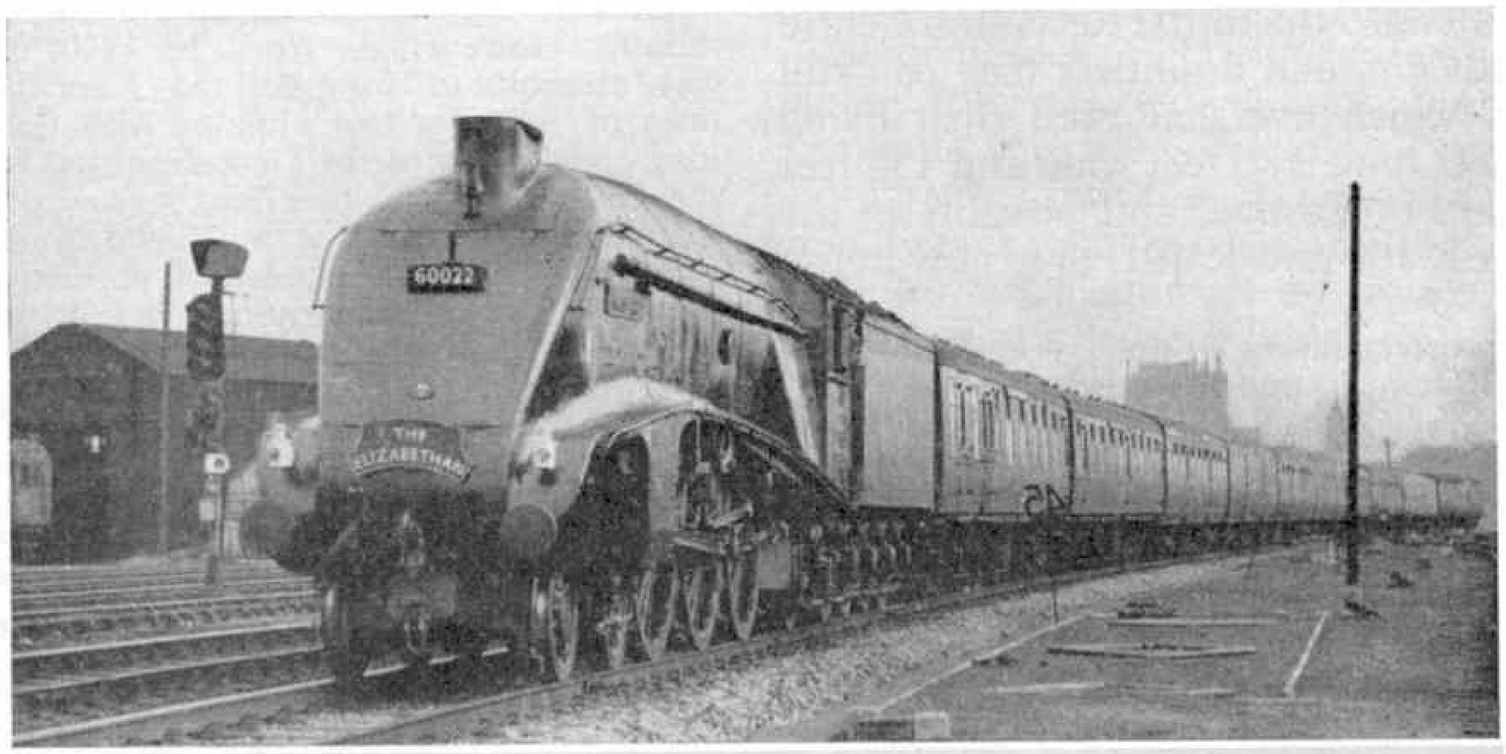
RAILWAY NOTES

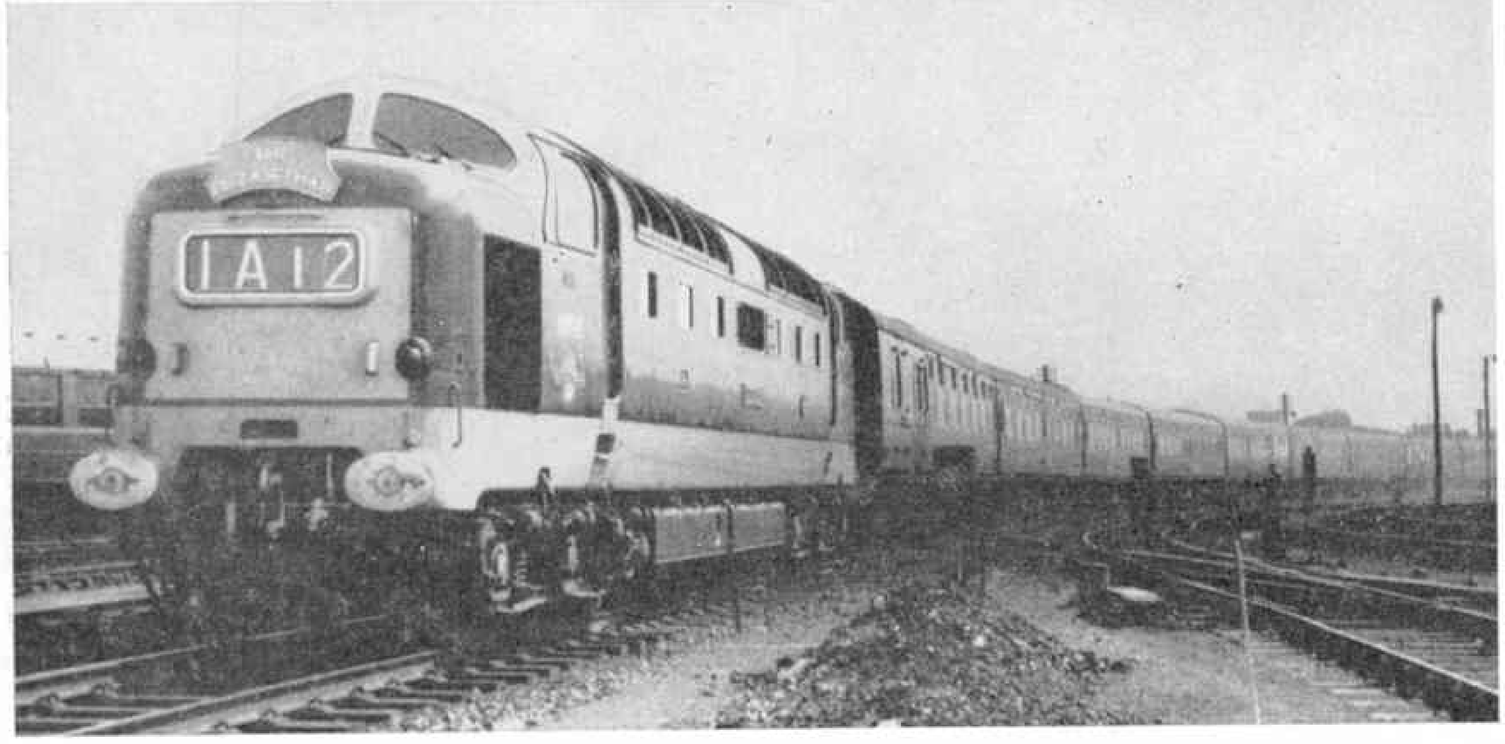
Contributed by R. A. H. Weight

London To Aberdeen — An Exciting Ten-Hour Trip

IT is now possible to cover by day what is usually regarded as the whole length of the Anglo-Scottish East Coast route between London (King's Cross) and Aberdeen, 523 miles, under most comfortable conditions within ten hours, either by through carriage or changing at Edinburgh (Waverley). South of the Scottish capital one of the new six-hour "flyers" is used, or the six hours nineteen minutes northbound *Talisman* connecting promptly with the 2.30 p.m. express from Waverley to Aberdeen.

A motive power contrast on "The Elizabethan" is provided by these photographs from C. Ord. (Upper) The last down "Elizabethan" of the 1961 season, steam-hauled by No. 60022 "Mallard". (Lower) A shot of the train passing York, diesel-hauled by No. D 9012 "Crepello".





At many points north of Newcastle the line runs close to the coast, so that on the right, travelling towards Aberdeen, there are many fine vistas of sea, cliffs, islands, marine activity, surrounding hill scenery and so on. Famous big bridges over wide salt-water estuaries are crossed, such as the Royal Border Bridge, between Tweedmouth and Berwick-upon-Tweed, the Forth Bridge, not far north of Edinburgh, and the Tay Bridge, two miles long and taking over four minutes to traverse on a sweeping curve just south of Dundee. All command widespread views, and they are also impressive constructional feats of many years ago.

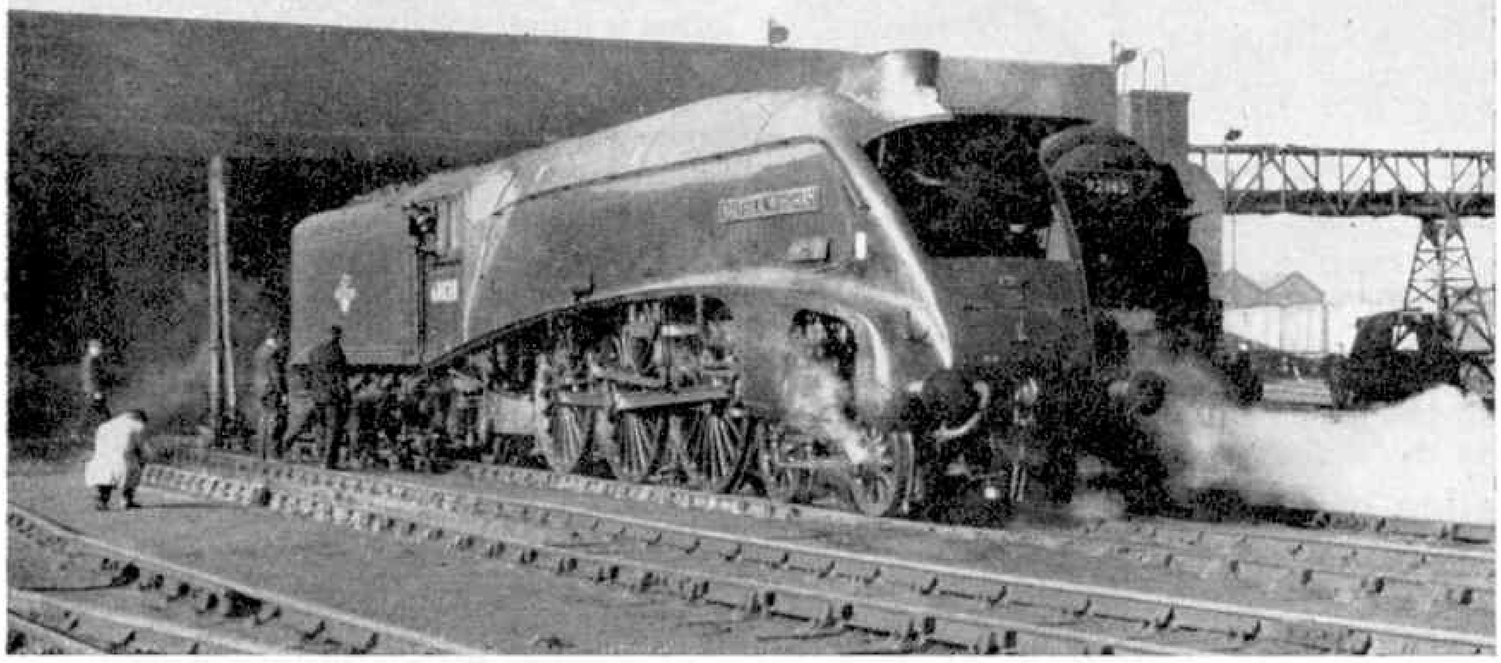
In August last, I left King's Cross at 9.30 a.m. in *The Elizabethan*, the summer express running in advance of the *Flying Scotsman*. It was a handsome, almost-full eleven-coach train weighing, say, 420 tons including passengers, luggage, staff and stores. Deltic diesel-electric locomotive No. D9002 was going through to Edinburgh on a six-hour timing and it made decidedly the fastest run I had experienced with anything like that load!

Along an undulating course previously described in these notes, including some lengthy slowings and periods when the locomotive was obviously being worked easily, we covered nearly 74 miles in the first hour, 140 miles in two hours and 201 in three, passing Grantham and York, with several minutes in hand, in 91 minutes (105½ miles) and 167 minutes (188 miles) respectively.

South of Doncaster 75 m.p.h. was averaged for 140 miles, with a maximum of 98–99 m.p.h.! With full power, remarkable minimum uphill speeds included 77 m.p.h. at the top of the rise through the London outskirts, around 80 at the famous Stoke Summit signal box, Lincs., and on the lesser climbs after Huntingdon and Tuxford. There were some more "90's" later in the journey to regain as much as possible, following severe signal and track-repair slacks between Pilmoor and Darlington.

After careful negotiation of the curves over King Edward Bridge, high above the Tyne, we stopped at Newcastle at 1.33 p.m. With steam haulage, on the London–Edinburgh world-record non-stop run, corridor tenders allowed the enginemen to be changed at speed. This no longer

Our heading block, from a photograph by D. Denison, shows A4 No. 60008 "Dwight D. Eisenhower" leaving King's Cross.



Top picture shows No. 67745, a 2–6–4 Tank of class LI, on an outer suburban train near Greenwood, before the Hadley Wood widening scheme began. Photograph by R. F. Roberts. Below: Steam at King's Cross Motive Power Depot, as pictured by J. A. Fleming. No. 60028 "Walter K. Whigham", and 9F 2–10–0 No. 92145 stand side by side.

applies, so a short stop is made at Newcastle to change crews. A few passengers also joined, or alighted, as I did. The aim was to be at Newcastle in four hours—268 miles in 240 minutes—or a little less as sometimes achieved; and this would certainly have been accomplished but for the signal delays on the N.E.R. Before taking the following *Flying Scotsman* from Newcastle I had an opportunity to enjoy a chat with my friends Driver A. H. Davis and his assistant, Brian Graves, of King's Cross Shed, who had been in charge "up in front" of the Deltic from London and handed over at Newcastle to a Scottish crew.

HISTORIC EXPRESS

The 10.0 a.m. from King's Cross, running 30 minutes behind *The Elizabethan* on practically the same fast timing and with a very similar load, again well-filled, ran in exactly at 2.0 headed by No. D9018, *Ballymoss*. Never until this year had trains been scheduled from Newcastle to Edinburgh, 124½ miles, in less than two hours but now the quickest allowance is only 116 minutes (115 southbound). Although we took just over two hours this was my fastest time for the course.

Soon after starting, slightly late, from Newcastle, there was an extra slowing near Killingworth, close to the scene of George Stephenson's pioneer experiments with steam power.

Forty miles further on, when approaching a famous coastal stretch, we were stopped at Chathill, where signals were out of action and various renewals were being effected after a freight train mishap, so about nine minutes were lost. Maximum speeds up to 90 m.p.h., and an average of 70 for 60 miles uphill and down, enabled some of the deficit to be recouped. So, at 4.5 p.m. we were running into the famous Waverley Station, a vast network of lines and platforms located in a rocky valley, the *Scotsman* having maintained an overall average of 64½ m.p.h. from London.

For many years within my memory this historic express, starting each way at 10.0 a.m., took more than eight hours. Gradual speeding up before and after the last war cut the time to about seven hours. Now it is down to six hours and should arrival at King's Cross or Waverley be a few minutes early it would be possible to join the six-hour afternoon *Talisman*, leaving each end at 4 p.m., and so make the rather hectic round trip of nearly 800 miles in no more than twelve hours!

The two front coaches of the *Scotsman* go through to Aberdeen and I rode in the leading one. After an interval they were attached to the front of the 5.0 p.m. three-hour fast train from Waverley. Actually they were in the "Granite City" at 7.57, within ten hours of leaving London, but there had been plenty of time intermediately for me to have a look round on the station in Edinburgh, and I also went up into the always-impressive North British Hotel and adjacent Princes Street Gardens. Including a half-hour's spell in Newcastle Station as well I was afoot in London and Aberdeen within ten and a half hours!

EDINBURGH TO ABERDEEN

The route from Edinburgh onwards to Aberdeen is a very hard one, abounding in sharp curves, steep and rapidly-changing gradients, speed restrictions and so on. It has been the scene of fine work in all weathers in the course of years by steam locomotives of the former North British Railway 4–4–0 and 4–4–2; L.N.E.R. 4–6–2 and 2–8–2, and other types, sometimes under tough conditions with the likelihood of gales. In August last No. D265, 2,000 h.p. Type 4 diesel-electric locomotive was at the head of my nine-coach train, and for the most part appeared to have the task well in hand, with stops at Dundee, Arbroath, Montrose, Stonehaven, all made within a minute of booked time. Speeds, varying greatly, were roughly between 40 and 78 m.p.h., actually less than 40 initially over the Forth Bridge, and on the climbs and curves on each side of it.

It was an interesting and attractive journey in cloudy conditions, although with fair visibility for much of the way and deserving a fuller description had space permitted. A substantial high tea was served in relays by a cheerful and willing restaurant car staff, just as the four-course lunch had been earlier in the day aboard *The Elizabethan* and *The Flying Scotsman*.

LOCOMOTIVE CHANGES

Additional naming of main line diesel locomotives lately announced have included: Nos. D1005–7 respectively *Western Venturer*, *Western Stalwart*, *Western Talisman;* No. D1035 (built at Crewe) *Western Yeoman;* Nos. D864–5 completing a series: *Zambesi*, *Zealous;* all Western Region type new construction with hydraulic transmission. Type 4 diesel-electric allocated to L.M.R.; No. D163, *Leicestershire and Derbyshire Yeomanry;* Nos. D215–7, *Aquitania*, *Campania*, *Carinthia;* D225, *Lusitania;* D231, *Sylvania;* D234–5, *Accra*, *Apapa*—continuing the "Liner" series.

A powerful new Co–Co diesel express locomotive, of similar appearance to the

(*Continued on page 410*)

MEET THE GEMINI

INGENIOUS SOLUTION TO A MODERN TRANSPORT PROBLEM

MUSKEG is a spongy, matty bog stretching in a belt from Newfoundland to Alaska and covering about one-seventh of the whole of Canada's land area. This half million square miles of muskeg, a legacy of the retreating ice of the Pleistocene Age, is one major problem area frustrating the development of Canada's Northland.

By

Ian S. Balderstone

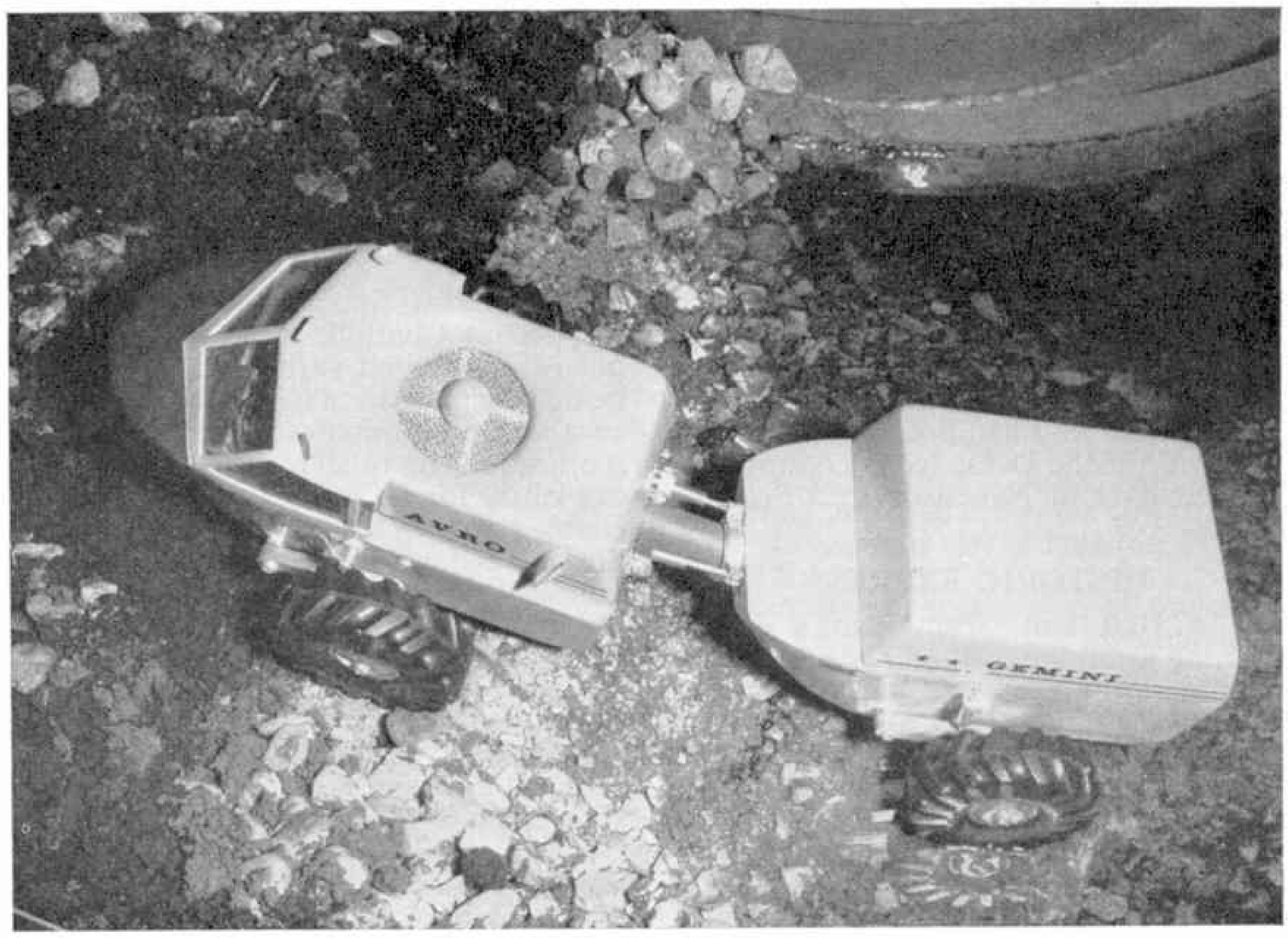
Passable with vehicles during the freeze-up which lasts for about six months, muskeg is reduced to a squelchy morass, after thawing out, in which wheeled vehicles quickly bog down. Some success has been obtained with tracked vehicles operating in muskeg as a result of the lower ground-bearing pressure these vehicles exert. However, track wear and maintenance, higher initial cost and low speed of operation continue to plague tracked vehicles.

A Canadian aircraft firm has come up with what might prove to be a brilliant solution to this problem which is slowing up development of the Canadian Northland. They propose to build a vehicle called the GEMINI (Ground Effect Machine In Northern Industry) which is half hovercraft and half truck. It is, in fact, an articulated twin vehicle embodying principles developed from the company's vertical take-off and landing research programme.

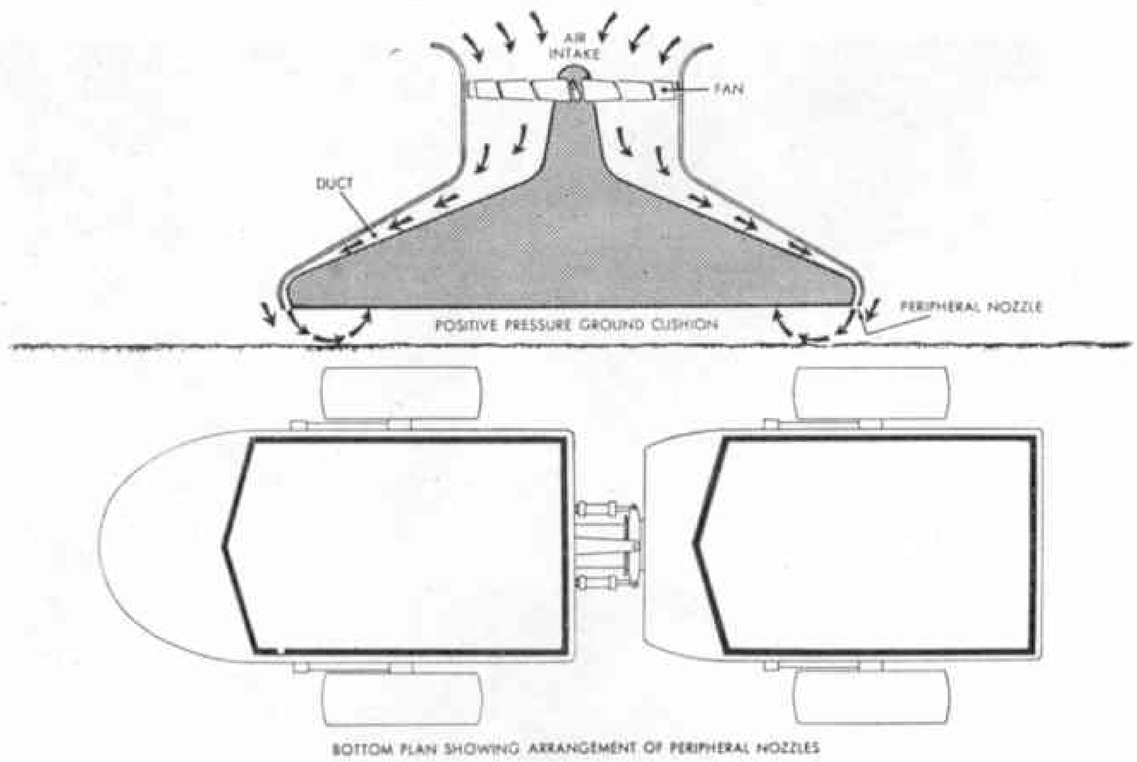
The GEMINI is propelled by four driven wheels in contact with the ground which are relieved of the normal vehicle weight by the use of a ground cushion. The wheels of the vehicle are loaded only sufficiently to provide traction for propelling the vehicle. The amount of traction required with the ground cushion operating is greatly reduced since the vehicle is supported on a cushion—or bubble—of air giving a very low frictional resistance to motion. GEMINI is one of a family of ground effect machines and much bigger versions using the same principle are possible.

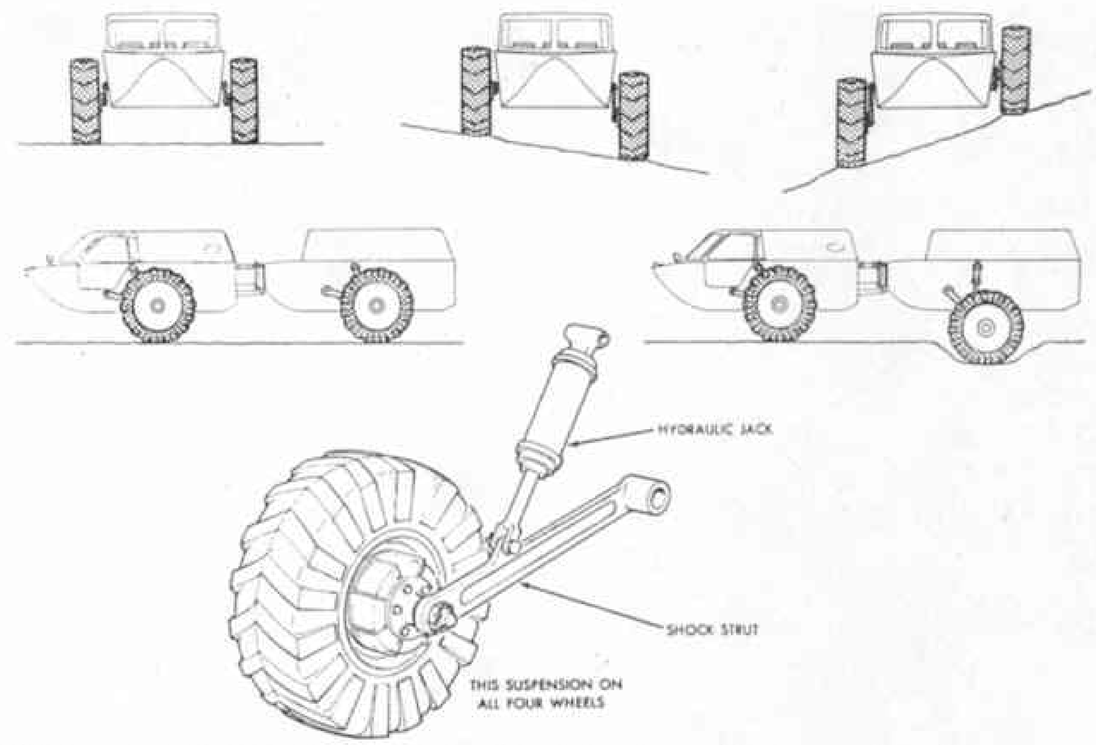
The gross weight of this fascinating machine is 8,000 lb., with a payload of one ton. Its cruising speed travelling across country is about 35 m.p.h. The front unit of the twin vehicle contains the 250 h.p. gas turbine engine driving a fan mounted in the top of the vehicle. The fan supplies air which is ducted to slots around the base of each unit of the vehicle. The air curtain created supplies and contains the air cushion beneath the vehicle.

The cushion distributes the weight of



The ingenious GEMINI was developed by the Avro Aircraft Division of A. V. Roe Canada Limited, and has a payload of one ton. An artist's impression of the vehicle traversing rough country appears at the top of the page. Right: This model of the GEMINI gives a clear indication of its outline and shows the fan intake in the top of the front unit.





This series of drawings illustrates the principles on which GEMINI operates. The two drawings on the left show the air intake and the ground cushion effect, together with the arrangement of the peripheral nozzles, while the illustrations on the right demonstrate the wheel suspension system. From these it can be seen how stability and control are provided by the four wheels which remain at all times in light contact with the ground. When travelling over conventional roads the vehicle operates in the normal manner, the fan being employed only when difficult terrain is encountered.

GEMINI so effectively over muskeg that a footprint pressure only one quarter that of a human being is produced with, consequently, a minimum of terrain sinkage.

Forward propulsion, stability and control are obtained from the four wheels in contact with the ground. Each wheel is powered by a separate hydraulic motor located in the wheel hub and the hydraulic motors are supplied from a central hydraulic pump driven by the gas turbine engine. GEMINI is power steered through the articulated joint between the front and rear units of the vehicle. Similarly, the back of the vehicle can be "broken" hydraulically to permit the machine to follow abrupt changes in terrain contour.

There is almost no end to the tricks one can play in this unique vehicle. For instance, each of the four wheels can be raised or lowered independently (see sketch above) to maintain the vehicle on an even keel on side slopes and to increase traction in deep muskeg. It is also amphibious, enabling it to cross streams, rivers and lakes without delays.

* * * *

One of the most interesting features of GEMINI is that it differs from other ground effect machines in using wheels for propulsion, stability and control instead of deflected air. The latter system is more costly in power and poses tricky stability and control problems in cross winds and along slopes.

Extensive use of lightweight aluminium alloys in the construction of GEMINI allows the maximum ground cushion depth to be developed for the minimum power. The vehicle generates its own electric and hydraulic power for services and provides a heated and air-conditioned environment for the crew. Over roads and other firm surfaces the machine, of course, operates in a conventional manner, using the four driven wheels only with the ground cushion unit "off".

This remarkable unit is aimed at breaking the muskeg barrier which separates the developed southern fringe of Canada from the vast mineral wealth in the far north of the country. In this role, GEMINI will combine ground transportation for exploration and survey crews with the utility of a one-ton truck. There can be no question that its introduction will help to speed the industrial expansion of the fastest growing country in the British Commonwealth of Nations.

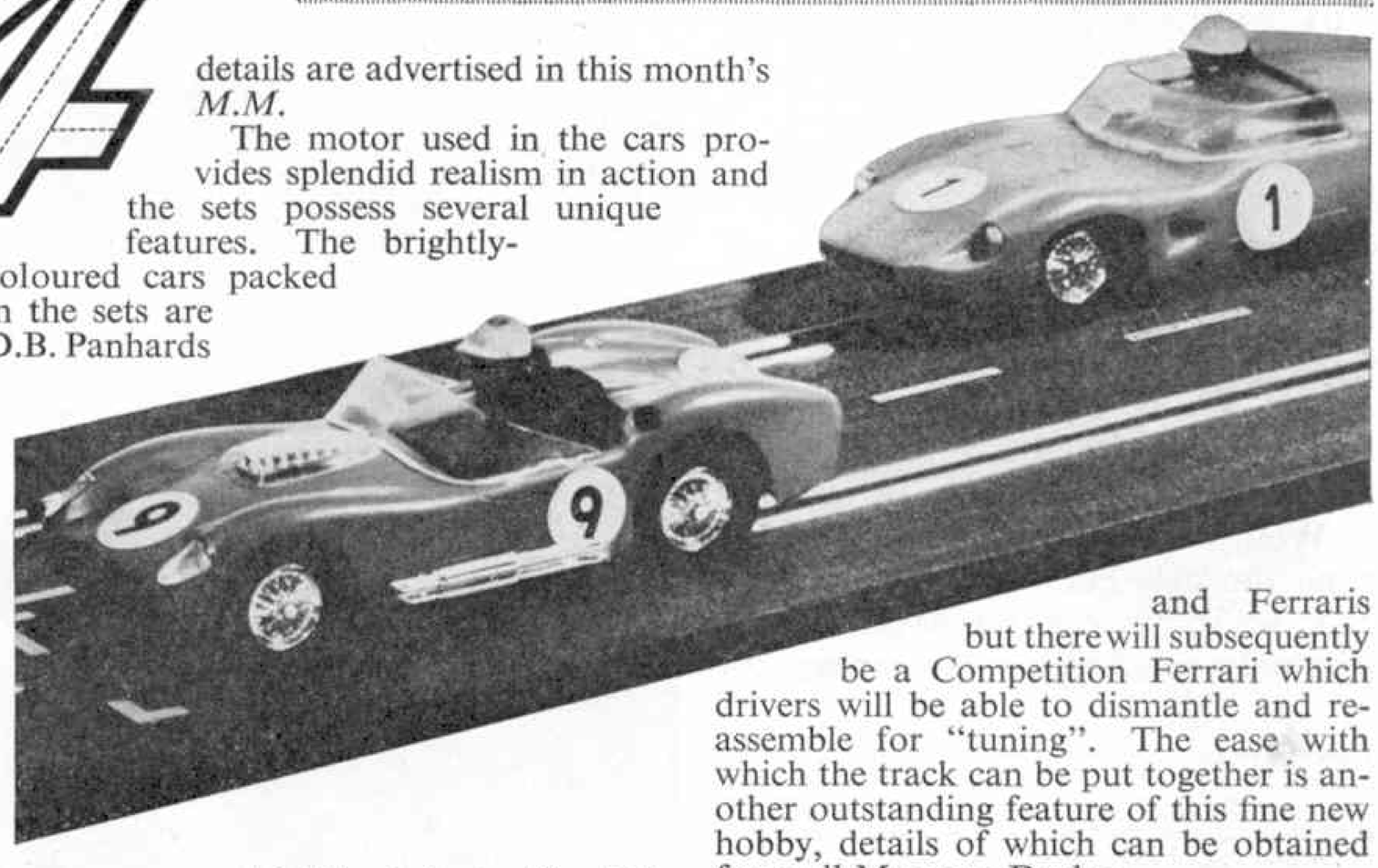
CIRCUIT 24

EXCITING NEW RACE GAME

THE enthusiasm of many *Meccano Magazine* readers has been fired by the announcement of details regarding the new car racing game "Circuit 24" which is being introduced into the Meccano range of products. It represents the famous Le Mans 24-hour Circuit and is an exciting game in which all members of the family can take part, with dad and mum joining in the fun and testing their skill against the juniors.

"Circuit 24" will be available in three different-priced sets, all *complete* with power unit, and separate accessories will be available so that thrills can continue to grow as the track itself expands. Full details are advertised in this month's *M.M.*

The motor used in the cars provides splendid realism in action and the sets possess several unique features. The brightly-coloured cars packed in the sets are D.B. Panhards and Ferraris but there will subsequently be a Competition Ferrari which drivers will be able to dismantle and reassemble for "tuning". The ease with which the track can be put together is another outstanding feature of this fine new hobby, details of which can be obtained from all Meccano Dealers.



A fight for the lead on Circuit 24.

NOW, OPENING DOORS! A FINE NEW SPORTS CAR

REGULAR readers of these pages may remember that early in 1959 Meccano Limited accomplished a unique achievement in planning the release of the Dinky Toys model of the Triumph Herald to coincide with the appearance of the actual car.

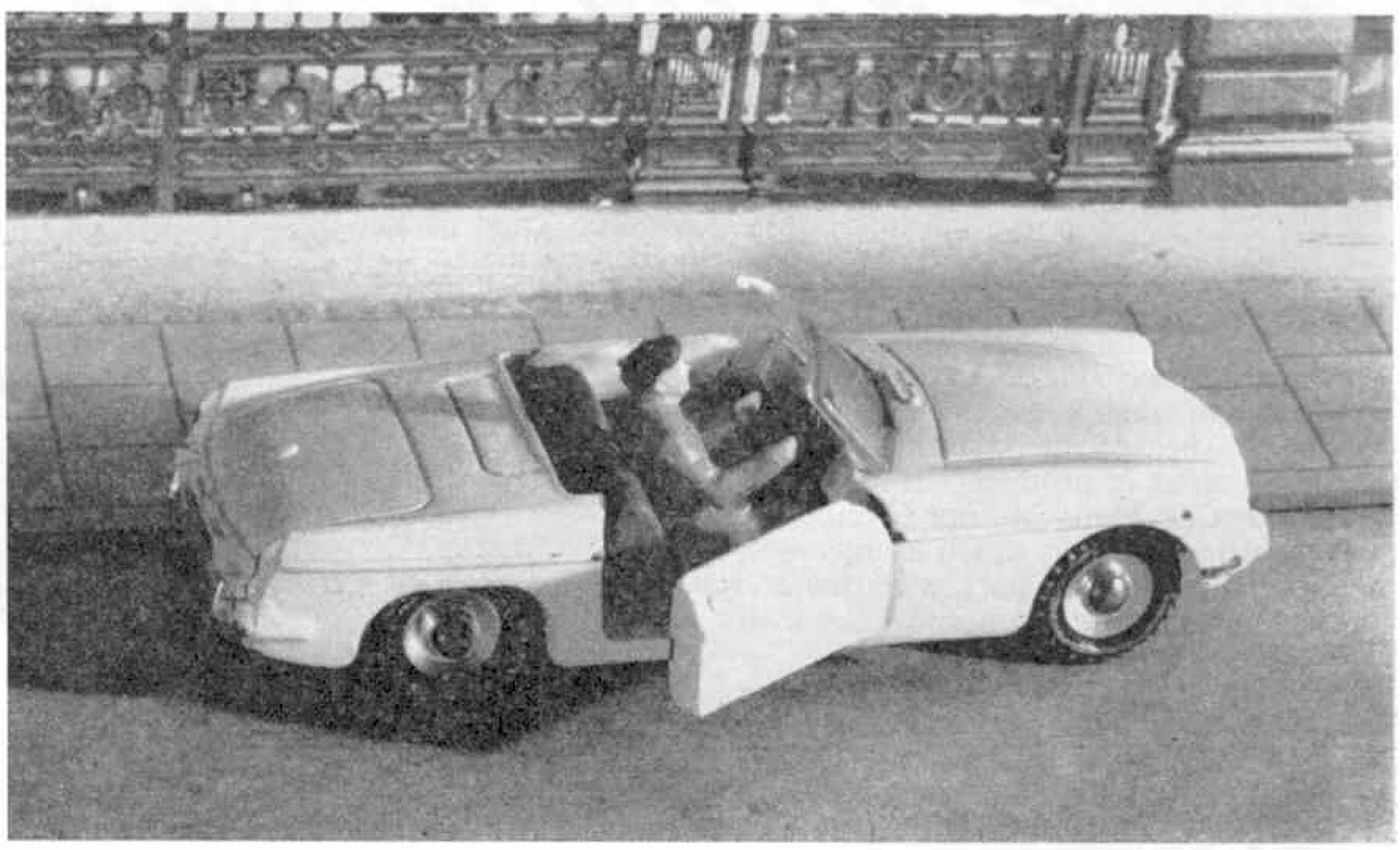
Well, we have done it again! This time the new car in question is the B.M.C. sports car, the MGB, which was only released on September 20.

DINKY TOYS NEWS

By THE TOYMAN

WHAT A MONTH FOR COLLECTORS . . .

In addition to the striking MGB Sports Car referred to in our headline two other outstanding models have now been added to the Dinky Toys range. One is the Cadillac 62, a breathtaking interpretation of an exciting car, painted in a new iridescent finish. The other is a Supertoys Transporter with portable Transformer. Read all about them in this article.



Pictured in an appropriate setting at the top of the page is the Dinky Toys MGB, based on a fine new sports car the details of which were only released to the public late last month. On the right is a close-up of the new model and both pictures illustrate the car's opening doors.

Gleaming in the new Polychromatic finish is the Cadillac 62. Its truly elegant shape, with graceful fins and wide front grilling, is shown in the close-up on the left. Below: The Cadillac, fitted for left-hand drive, is pictured in the sort of setting one associates with American highways.

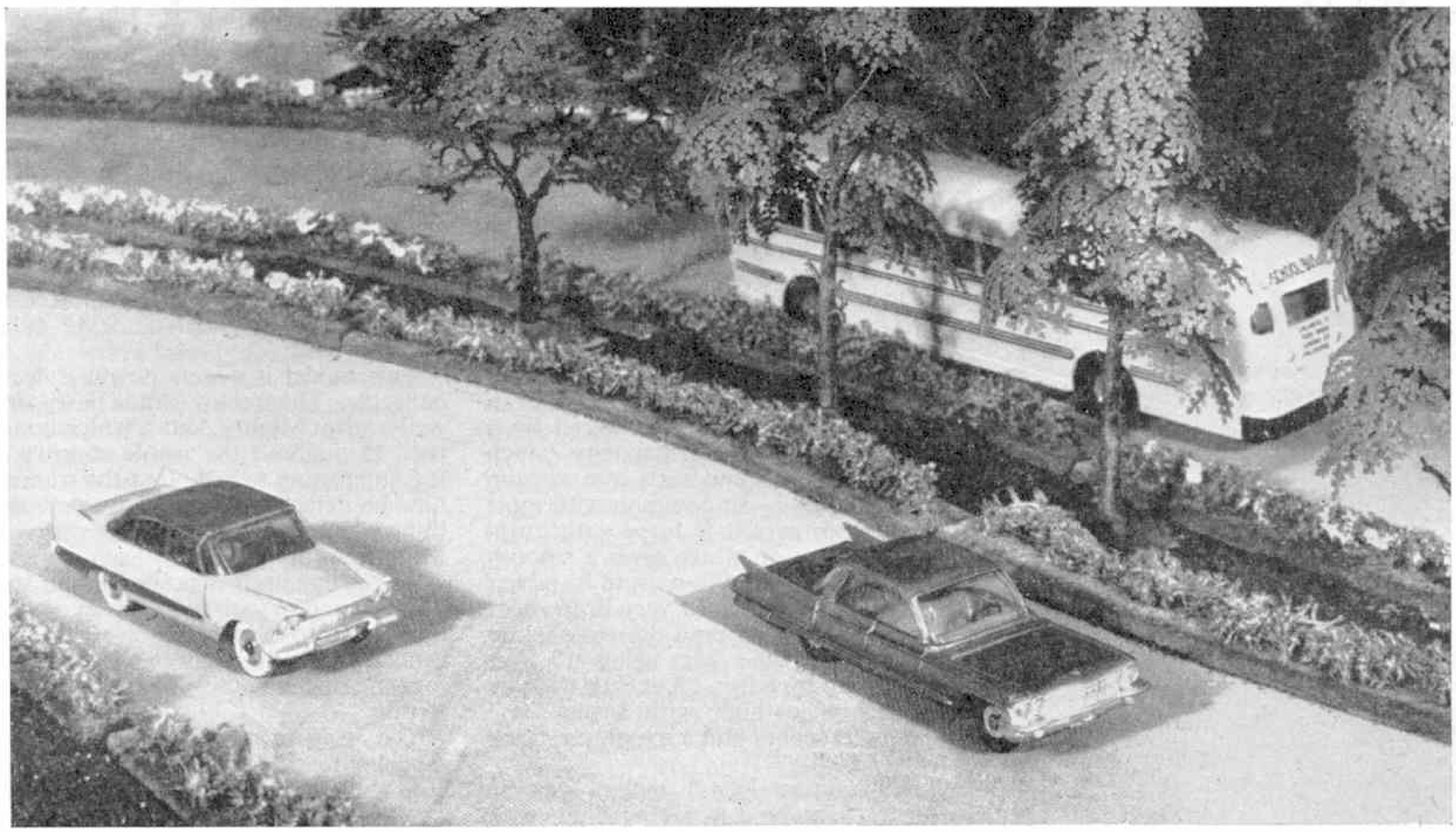
Not only was our identical miniature officially released on exactly the same day, but it also appeared simultaneously, by special arrangement, in twenty different countries throughout the world.

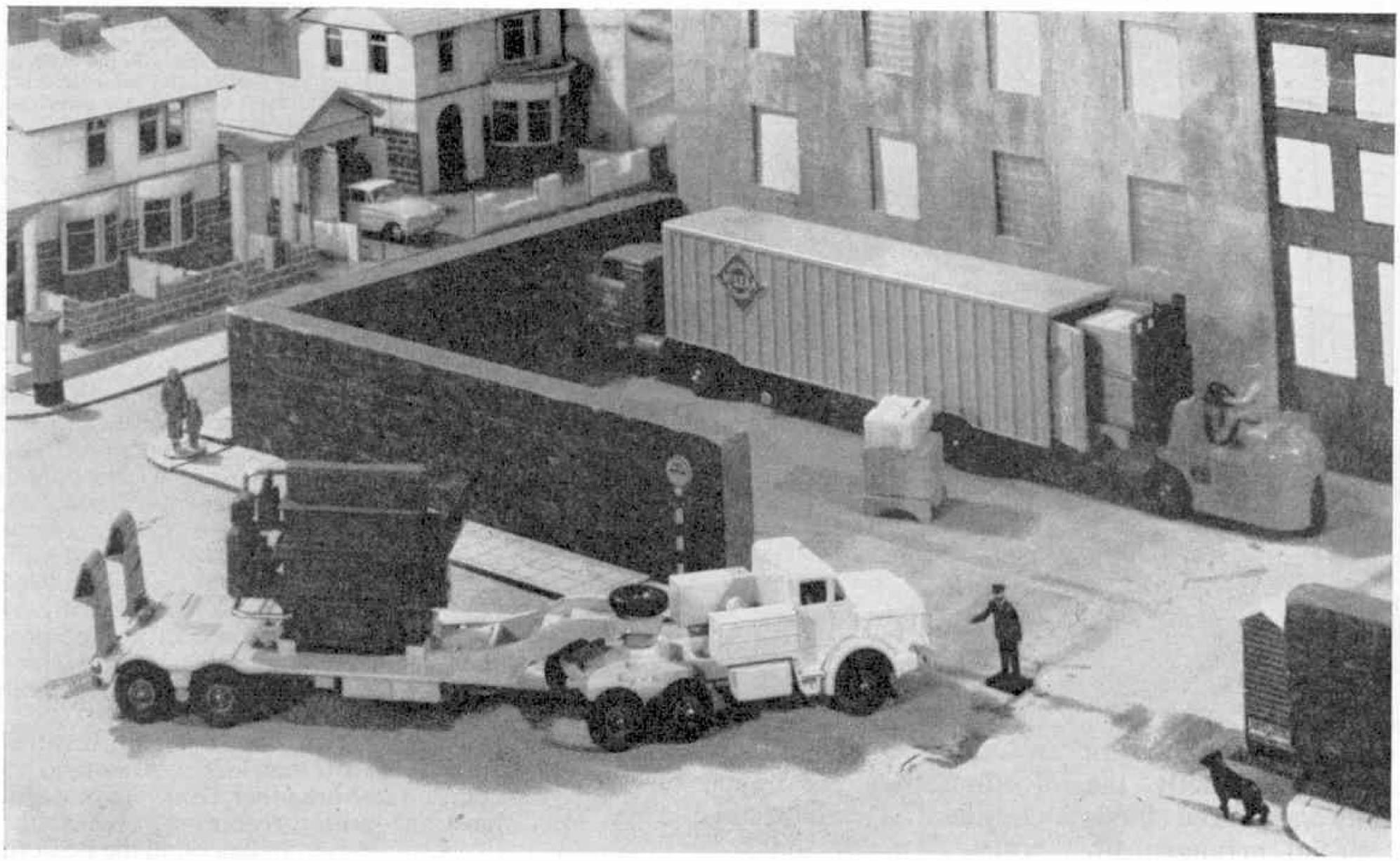
This is surely something approaching a record and strongly reflects the high level of co-operation which exists between the British Motor Corporation and ourselves. A release of this nature calls for the interchange of the most exact information, a great deal of it of a confidential character and, of course, it means that some considerable time before the real model is seen hustling along the road important details have to be known to certain keymen at Meccano.

I stress this point chiefly because I constantly receive letters from correspondents who appear to think that the production of a Dinky Toys model is a matter of short-term planning and that we can turn one out in about a fortnight! In point of fact the planning of each model is so minute and so meticulously detailed that a far greater period than a fortnight must elapse before the new vehicle passes from the drawing board stage, through the production sequences and into the Stock Room for distribution to Dealers.

I began these notes by likening the MGB (No. 113 in the Dinky Toys list) to the Triumph Herald in regard to the precisely-timed nature of its release to the public, and no doubt many readers will recollect that the Triumph Herald was one of the first Dinky Toys models to be fitted with suspension. Suspension itself has been further developed much more recently by the addition of fingertip steering, and now comes another completely new extra which is one of the most attractive features of the new MGB—opening doors.

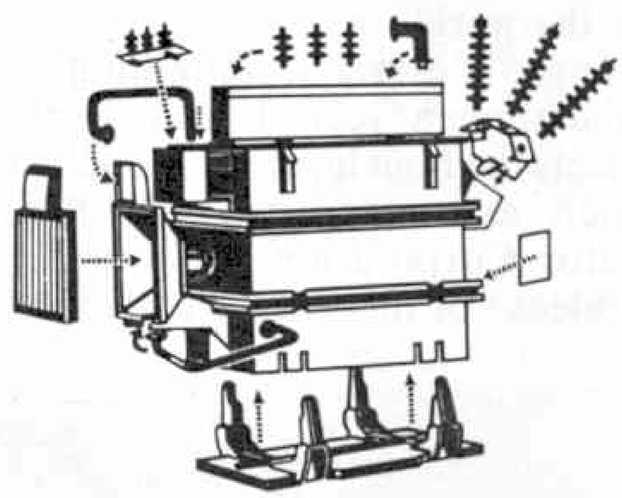
Yes, this is our first model to be fitted with doors of this kind. Although, of course, there are other Dinky Toys which have an opening rear door, such as the new Criterion Ambulance and the Bedford Pallet-Jekta Van. On the MGB, however, the doors are spring-loaded so that they remain open or closed as required without moving loosely about. The model is finished in attractive ivory of the exact B.M.C. shade with deep red upholstery, and carries a driver, hatless and wearing a neat light-grey suit. He can be removed from the driving seat if necessary. A dashboard and gear lever are fitted and





Turning into a factory yard carrying a Transformer is the Dinky Supertoys Transporter. Vehicles already in the yard are the Tractor Trailer McLean and the Coventry Climax Fork Lift Truck. Note the use of Bayko for background effect.

The drawing below shows how the various components of the new Transformer are fitted.



detail includes simulated door handles and window winders on the inside of the doors.

You see the model illustrated at close quarters and in scenic fashion in our first two pictures this month. Additionally, this fine little car has all the other Dinky Toys features—four-wheel suspension, windscreen, steering wheel and fingertip steering. The model is approximately $3\frac{3}{8}$ inches long and is $\frac{15}{16}$ inches wide, having a wheelbase of $2\frac{1}{16}$ inches, and front and rear tracks of $\frac{15}{16}$ inches.

Usually, when we produce a new model I provide technical details of the actual vehicle but on this occasion I am unable to do so. These notes are written about a month ahead of publication date so that all will be ready in time for printing and, even as I write, the actual technical details of the MGB have still not been released to the public. No doubt these figures will be available from another source as you read these notes, but I will try to include a quick summary of them in next month's notes.

This really is a bumper month for Dinky Toys collectors and the next new car to be introduced emphasises a further new aspect of Dinky Toys. The model is the American counterpart of the English Rolls-Royce—the Cadillac 62 (Dinky Toys No. 147) and the new innovation is the strikingly attractive colour finish known as "Polychromatic". In this case the colour is Kingfisher Blue. The model is fitted with fingertip steering, windows, interior fittings and 4-wheel suspension and, in my opinion, the new finish is superb.

The actual vehicle is manufactured by the Cadillac Motor Car Division of General Motors Corporation, Detroit, Michigan, U.S.A., and is powered by a V-8 engine of 6384 cc. capacity which develops 345 b.h.p. and has a compression ratio of 10.5 to 1. In common with most big American cars it is fitted with automatic transmission which gives a smooth ride in all traffic conditions, and its power steering and brakes need very little effort to operate them. Overall dimensions are typically large, the car being 18 feet 6 inches long by 6 feet $7\frac{9}{10}$ inches wide by 4 feet $6\frac{4}{5}$ inches high, with a wheelbase of 10 feet $9\frac{1}{2}$ inches and a maximum track of 5 feet 1 inch.

Our miniature is $4\frac{7}{16}$ inches long by $1\frac{5}{8}$ inches wide by $1\frac{3}{16}$ inches high, with a wheelbase of $2\frac{3}{4}$ inches. It should prove another welcome addition to all enthusiasts' collections.

The last new miniature for this month, but certainly not the least—in size at all events it is bigger than both the previous ones together—is the Transporter with Transformer, numbered 908 in our Supertoys list.

This model is a definite must for the collector. The tractor unit is based on the well-known Mighty Antar, which is widely used throughout the whole country, and it is interesting to note that the trailer can now be detached from the tractor, something which could not be done with earlier Mighty Antar models.

The Antar itself is powerful and sturdy in construction with twin driven rear axles mounted on a special bogie unit. It is capable of hauling extremely heavy loads for long distances over rough and difficult terrain.

The transformer supplied with the model is made from high-impact polystyrene and is in a kit form consisting of the

(*Continued on page 424*)

A Dinky Toys enthusiast from Yorkshire is F. McClure of Dinnington, near Sheffield.

RAILWAY STATISTICS

● *Do you know how many tons of coal were used by British Railways' locomotives last year, how many passengers the railways carried, how many railway bridges there are in Britain or how many level crossings? These figures, and other fascinating details about this country's railroads are given by the author of this article.*

FOR years while travelling with British Railways I have wondered how many tons of coal were consumed by their hungry steam locomotives, now fast disappearing. Recently I was able to find out: A "vital statistics" investigation revealed some intriguing figures. In 1961 for instance, 7,797,000 tons went into locomotives. A tonnage of 250,000 steel rails was used, while iron and steel scrap salvaged amounted to 538,410 tons.

The next time you have to wait for a train remember there are 23,000 passenger trains operating in Britain throughout the week. Passenger stations total 4,709 and the total army of passengers carried by rail last year was 1,024,951,000.

By Kenneth Rawnsley

Freight plays its part . . . 238,177,000 tons of goods were carried, coming out of 4,152 freight stations and 867 marshalling yards. Locomotives are fascinating—I am a diesel fan myself—and altogether last year, 15,028 locomotives served the nation, 11,691 being steam, 158 electric and 3,179 diesel. There were 37,849 passenger coaches in use, with a total seating and berth capacity of 2,203,210.

While a mile is a mile no matter how you walk it, I have often walked parallel to a railway . . . and it always seems a long way! Total miles of standard gauge track in this country are 48,889, and route miles 18,214. Even though there may not be as many bridges in Britain as in America we have 63,100 all told.

Tunnels are in the minority—only 1,049, while level crossings number 24,368. Signalling is a complicated, yet most interesting aspect of railway working and with about 9,000 boxes, 14,000 colour-light signals, 44,000 track circuits, 120,000 telephones, 500 telephone exchanges, 270,000 miles of telegraph wires, 532,000 telegraph poles and 500 public-address installations to keep in order, the engineers work round the clock.

I always used to think that St. Pancras was a big place, yet Clapham Junction holds the title of Britain's largest station covering 27¾ acres. Waterloo and London Bridge have the greatest number of platforms—21. Manchester owns 2,194 feet of platform—the longest in the country. Bristol is famous for operating the biggest freight station—15 acres. The busiest junction is at Clapham which handles more than 2,000 trains every 24 hours. Highest portion of railway line in Britain is 1,484 feet above sea level, at Druimuachdar, and the longest single stretch of track between two stations runs for 21 miles, from York to Malton.

There are other aspects of railway working we do not always think about. British Railways own and operate 36 hotels, the total turnover from which last year amounted to £9,000,000. Refreshment services are operated at 339 stations, helped out by restaurant car services on more than 700 regular trains. In addition to these some 3,000 restaurant or buffet car trains are run every year for private parties, relief and excursions.

A new kind of light refreshment service in the form of a miniature buffet in second-class coaches has recently been developed. The first express to use these coaches was the *Flying Scotsman* on the King's Cross to Edinburgh run.

And if your mother thinks her washday is heavy, consider Britain's railway laundries—last year they coped with 35,000,000 pieces of linen.

Pullman Cars were first introduced to Britain from New York in 1874 and the Pullman Car Company Ltd. was registered in 1882. British Railways acquired the controlling interest in the company in 1954. At the moment there are 217 Pullman cars operating, including 36 of the latest de-luxe cars which make up the diesel Pullman trains running between London and Manchester, Nottingham, Bristol, Birmingham and Wolverhampton.

During the last twelve months, 238 million tons of freight was handled by our railways—nearly a million tons every working day of the year. Nearly half of this was coal traffic and more than 70 per cent. of the total deep-mined coal was carried by rail. Added to this were 54,000,000 tons of ore, and other minerals and more than 38,000,000 tons of merchandise traffic, to say nothing of 88,000,000 consignments by passenger train.

The call for higher capacity wagons is steadily increasing. Among the larger vehicles in use on our railways 13,172 are mineral wagons, each with a load-carrying capacity of over 25 tons. The total capacity of all wagons used is more than 14,000,000 tons.

We do not see railway horses these days; with a fleet of 14,817 motorised vehicles we do not need them! What struck me as unusual was to find that the railways only have 47 tractors.

More than 5,100,000 passengers, 296,000 head of cattle, 328,000 vehicles and 2,000,000 tons (*Continued on page 424*)

CALLING ALL BUS SPOTTERS

Westward Ho—With Vic!

YOU do not have to be on the Isles of Scilly for long before you come across people talking about Vic. Although four of the five inhabited islands in the archipelago have no public transport this is certainly not true of the largest and most populous island—St. Mary's. It was Vic Trenwith, who claims to be descendant of the last woman to be executed by drowning at Bishop's Rock, who shipped over the first coach in the hold of the old *Scillonian* in 1938. This was a rare breed—a 14-seater Willys (YA 9005). It was used

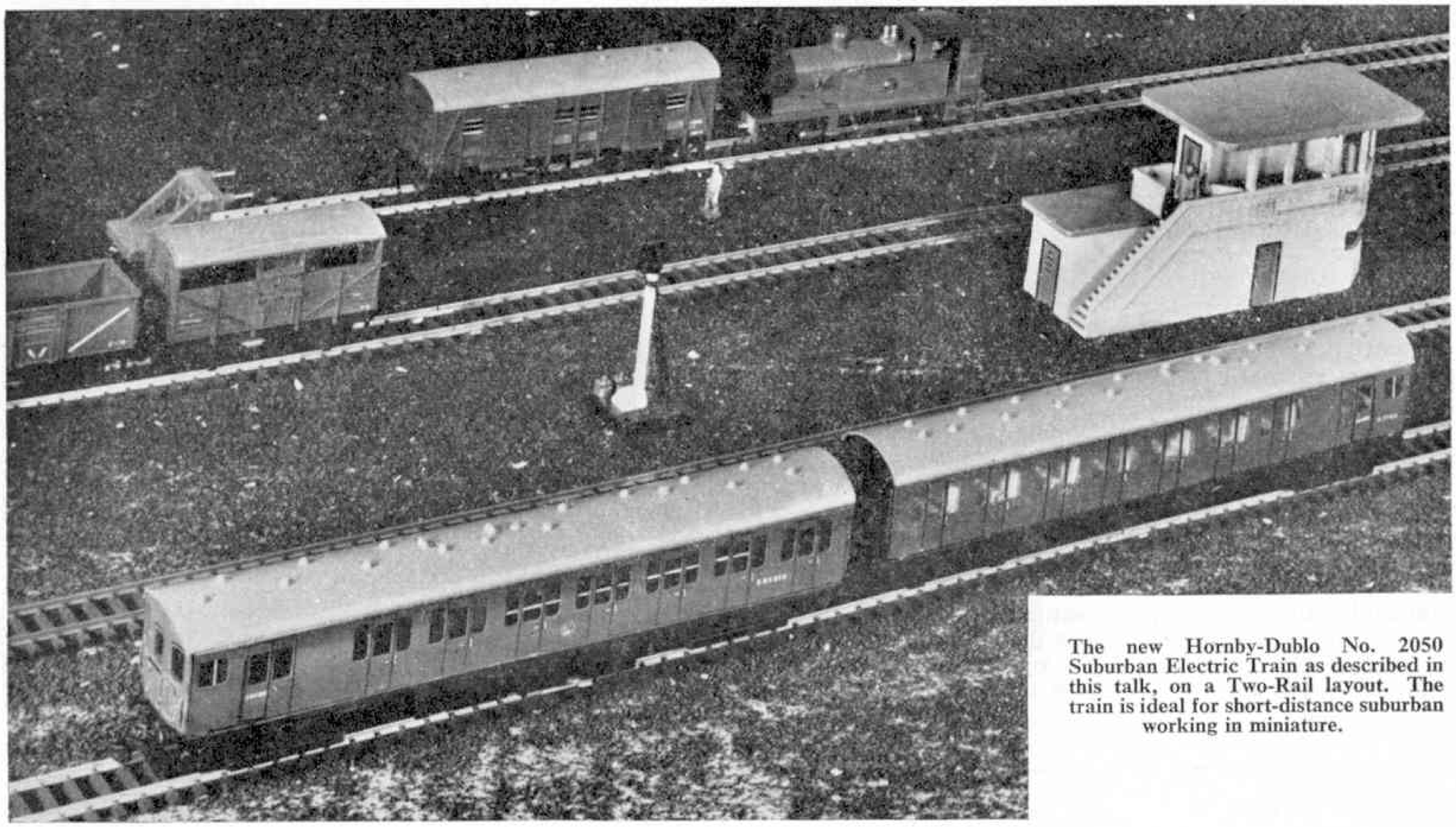
By DAVID KAYE

to convey passengers between Hugh Town and the Airport, from which planes departed for St. Just, in Cornwall, which is 20 minutes flying time away. Then came the war, and it was not until eight years later that this solitary p.s.v. was joined by a Dodge Z (CCV 936). By this time Vic

Blue and Cream Coaches' Bedford WTB (BDL 92) with its original Duple body standing in Bank Square, Hugh Town, waiting to take passengers to the Airport to connect with a B.E.A. flight to St. Just. Photograph: D. Kaye.

had gone into partnership with Ron Perry, the firm being known as Blue and Cream Coaches. However, it was Vic's nephew, J. Townsend, who conceived the idea of doing a circular tour of St. Mary's, and for this purpose he brought over from the mainland a forward control Dennis "Mace" (KY 6992). Three years later he sold out to Mr. J. Williams, who added a Bedford WTB (CUW 82) to his rival Red and Cream Coaches.

In 1955, Blue and Cream Coaches absorbed the Red and Cream Coaches, (*Continued on page 425*)



The new Hornby-Dublo No. 2050 Suburban Electric Train as described in this talk, on a Two-Rail layout. The train is ideal for short-distance suburban working in miniature.

New Suburban Electric Set In Hornby-Dublo

OVER the past twelve months or so I have been able to describe in these pages details of new electric-type, steam-type and diesel-type Locomotives that have been introduced into the Hornby-Dublo range. The electric-type locomotive is, of course, the attractive BB 16000 S.N.C.F. model made by Meccano (France) at Bobigny, near Paris, which is suitable for running on Hornby-Dublo track and for coupling to the standard Hornby-Dublo rolling stock.

In steam we have had the Two-Rail and Three-Rail Locomotives *Barnstaple* and *Dorchester* respectively of the S.R. West Country class, while among the diesels there have been the Co–Bo Diesel-Electric, and the Co–Co Deltic finished in the livery adopted for the real Type 5 engines.

Now, we are introducing another fine new model in the shape of a multiple-unit electric train. It is No. 2050 Hornby-Dublo Suburban Electric Train Set, consisting of an Electric Motor Coach and a Driving Trailer.

This latest attractive addition to the Train Sets in the Hornby-Dublo Two-Rail System is representative of the type of suburban electric trains standardised by B.R. for use on many routes with conductor rail electrification. It meets a need for short-distance suburban traffic and there is little doubt that it will be found most useful on many Hornby-Dublo layouts.

THE H.R.C. SECRETARY DESCRIBES A NEW TRAIN SET

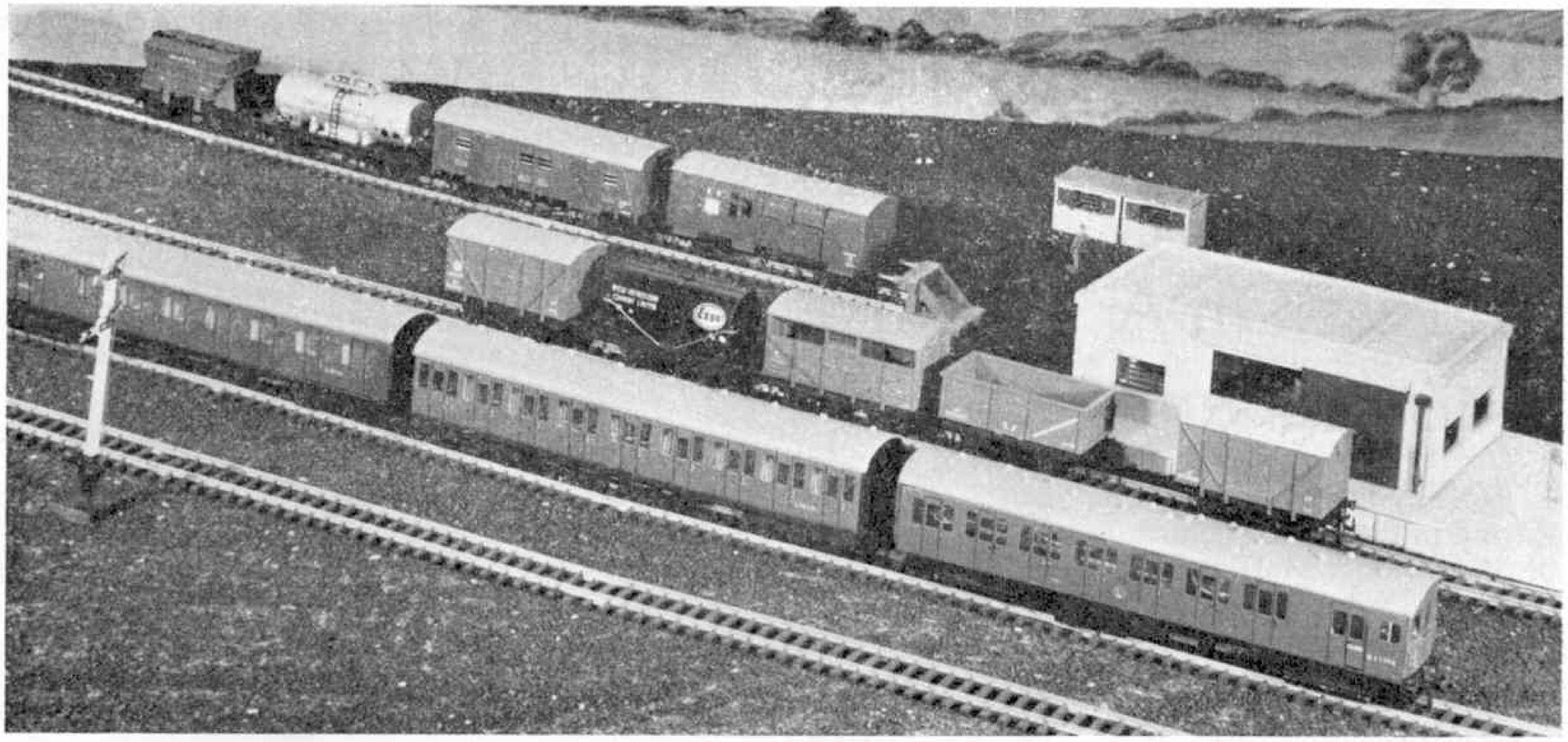
The term multiple-unit, mentioned previously, means that in actual practice there can be several powered vehicles distributed through a given train, and these can all be controlled together from the driving compartment either in a motor coach or a driving trailer by one motorman, as the electric train driver is usually called.

In the Hornby-Dublo Suburban Electric Train there is actually only one powered vehicle, the Electric Motor Coach, and this represents a motor brake-second, with seven passenger doors in each side. The Electric Driving Trailer Coach also is a seven-door brake-second. There is a section for luggage and the guard, and beyond this, at the outer end of each vehicle, comes the motorman's compartment. This compartment has windows in each side, while a good view ahead is provided by three windows across the end of the vehicle. All the windows are "glazed" with clear plastic.

At the leading end of the Electric Motor Coach is the power bogie, and in view of the fine performance record of the Ring Field motor you will not be surprised to learn that this form of motor has been applied to this bogie. The smooth and rapid acceleration characteristic of electric trains, and easy travel at cruising speed are, therefore, ensured. The general assembly characteristics of the motor are made clear in the instructions booklet and the details given in this should be carefully followed by all enthusiastic Hornby-Dublo "motormen".

The bogie side frames show a remarkable degree of detail, axleboxes, springs, and other fittings being well reproduced. To round off the "electric" characteristics dummy shoe beams are fitted to each of the moulded bogie side frames on the Motor Coach, and to the bogie at the driving end of the Driving Trailer Coach.

From the construction point of view both vehicles follow the standards now usual in Hornby-Dublo coachbuilding, strong tinprinted bodysides being erected



on stout metal bases, the well-detailed roofs and ends being plastic mouldings. On the driving ends of the two vehicles, the array of jumper cables, sockets and protective housings usual on electric train stock are modelled in a realistic manner. Underframe details—and there are plenty on electric trains—such as battery boxes, resistance frames, compressors and so on, are well modelled, too, and the vehicles are complete with buffers and the standard Hornby-Dublo automatic couplings.

An interesting detail in the finish of the bodysides, which look well in their attractive shade of green, is that the Motor Coach carries a representation of the B.R. emblem, since it is a powered vehicle, but the Driving Trailer does not.

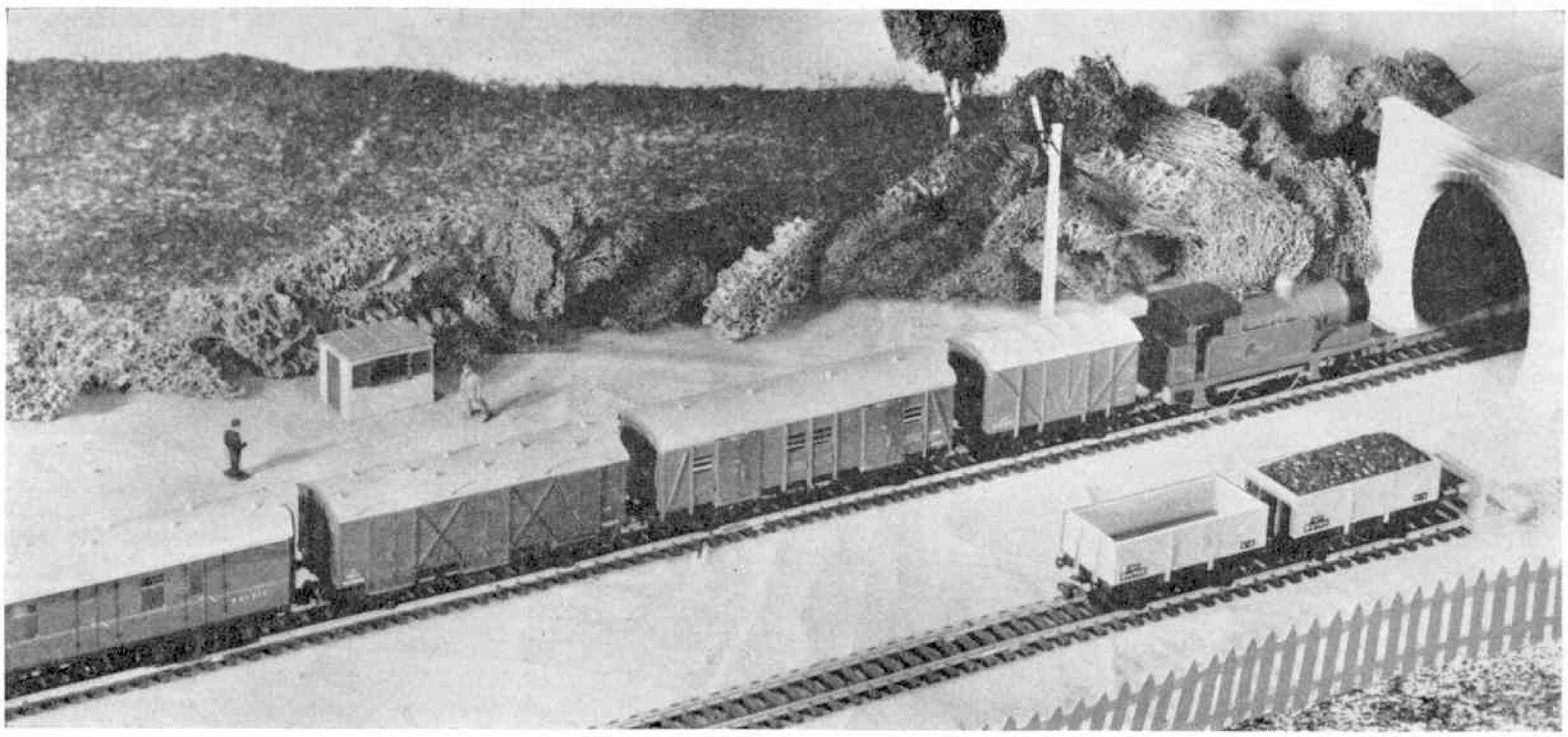
A train of this kind has the useful property of being able to operate in either direction as required. There are no reversing movements, no running round operations or anything like that. On arrival at a terminus the train is ready to move out again in the opposite direction with the minimum of delay. In real life the motorman simply walks from one end to the other, unless another man takes over for departure, leaving the first one to do the same with the next train to arrive.

Above: The standard two-car set is readily strengthened by the addition of a No. 4081 Suburban Coach, the green livery of which exactly matches that of the new Train Set components. (Below) Approaching the Tunnel, the Hornby-Dublo 0–6–0 Tank Locomotive is hauling a train of miscellaneous vehicles, including General Utility, Fruit, and Passenger Brake Vans.

While the standard two-car unit will be satisfactory on many layouts, and certainly will not require a great deal of platform space, a point that will be appreciated by many to whom space restrictions are a constant problem, there is little doubt that a lot of Hornby-Dublo owners will wish to extend the train, or "strengthen" it, to use a real railway term. For this purpose a Second Class Suburban Coach, in green (No. 4081), described in the *M.M.* last April, is just the thing. Its design, contours and colour make it a perfect match for the vehicles in the Train Set and a very pleasing three-car unit can be assembled in this way.

For those who have plenty of platform, and siding, length available a four-car train is a possibility, two No. 4081 vehicles being used for strengthening purposes. A total of four cars would, in fact, be the maximum load recommended with a single Motor Coach. The fact that

(*Continued on page 410*)

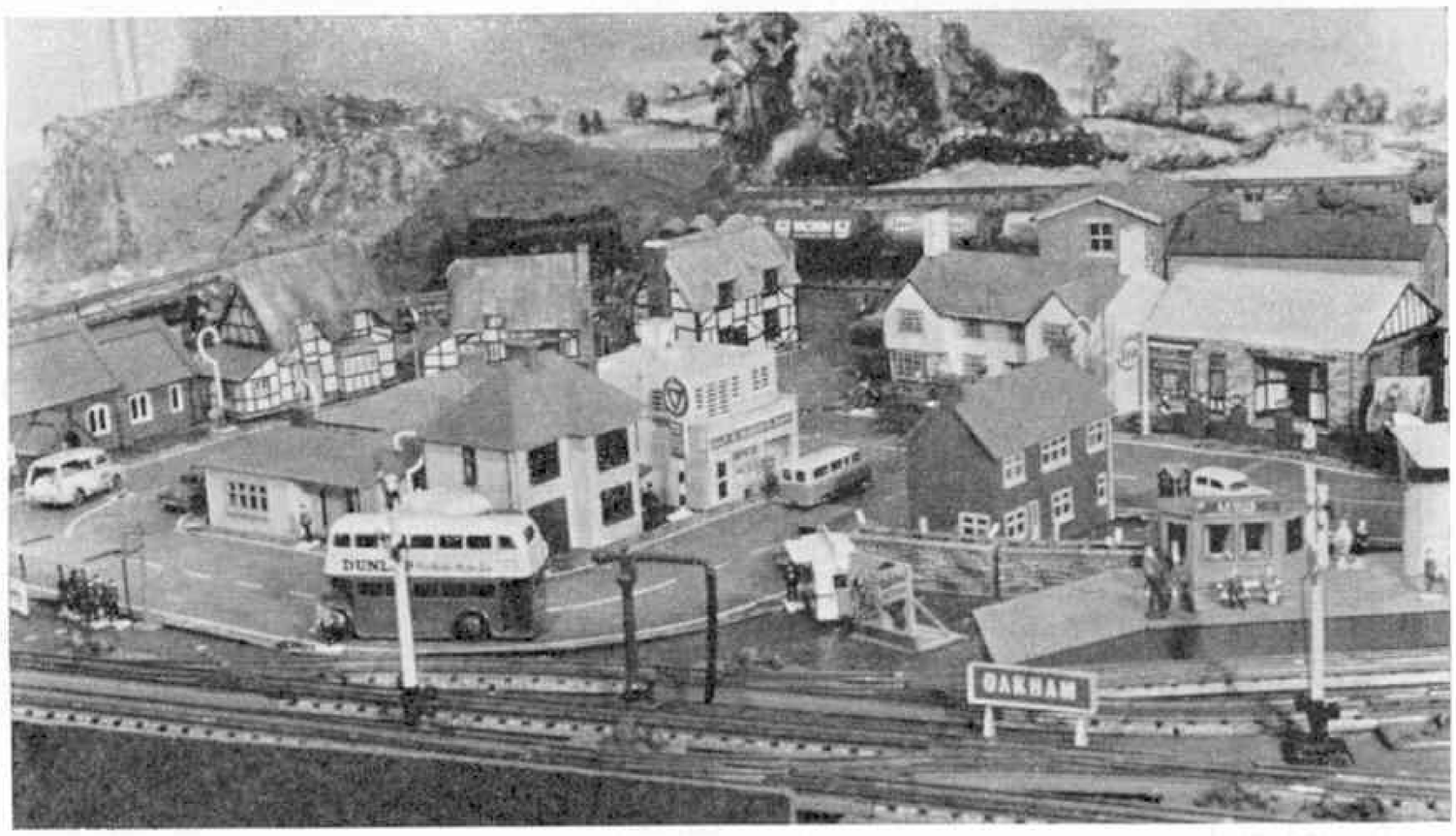


TOWN PLANNING YIELDS TO RAILWAY NEEDS

Ten Years of Progress On A London Scheme

THE Hornby-Dublo layout appearing in these two pictures is that of *M.M.* reader Martin Critchley, of South Woodford, London E.18 and it has been in course of development for some ten years.

Hornby-Dublo 3-Rail Feature By "Layout Man"



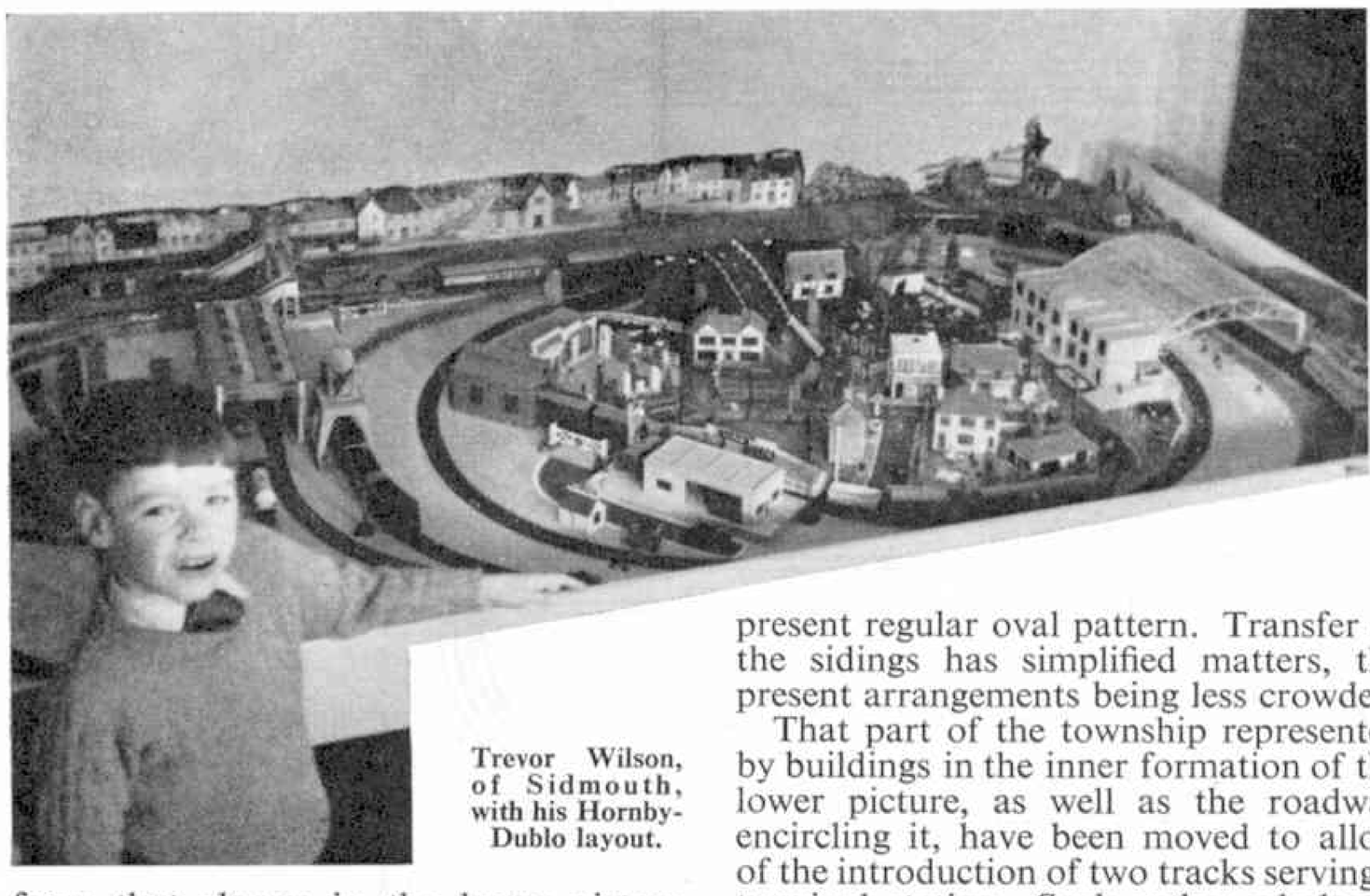
The notes that follow describe the system in its present state, which has been reached as the result of gradual progress. Since the photographs were taken alterations have been made, as we shall see later, but the layout is still of the same general character.

The railway system is arranged on a base of chipboard, well framed with timbers of two-inch square section supported on stout legs anchored to the framework by means of metal brackets. The whole forms a solid base and the nature of the board allows it to absorb much of the vibration and noise made by the running trains. The board is nine feet long and for much of its length is six feet wide. It narrows gradually to a width of four feet, with the result that its outline can be described as pistol-shaped.

There are two main tracks, the outermost of which follows the general shape of the baseboard, and this circuit, which incorporates a gradient section, is used only for freight traffic of all classes. The inner track is now oval instead of following, as it did previously, the general outline of the outer one. It still remains parallel to it except where the outer track makes its way round the "butt" of the pistol, and descends from a higher level.

Within the same general area there is now a goods depot, an oil refinery, and a series of sidings, the arrangement being different

Scenes on the layout of "M.M." reader Martin Critchley, of South Woodford, described on this page. Top: The railway encircles "Oakham" and a train of tank wagons can be seen in this picture behind the houses. Left: View across the township of "Oakham", with oil refinery, goods depot and yard beyond the station.



Trevor Wilson, of Sidmouth, with his Hornby-Dublo layout.

from that shown in the lower picture which, as pointed out previously, represents a slightly earlier state of affairs. Formerly, as is evident from the centre of the picture, the sidings were grouped to run parallel to one another. Now, reduced in number, they occupy roughly the area between the train of tank wagons and the tall crane. The inner main line, which is that running straight past the water column and in front of the notice board bearing the name *Oakham*, has been projected across the area where the sidings used to be and goes on to complete its present regular oval pattern. Transfer of the sidings has simplified matters, the present arrangements being less crowded.

That part of the township represented by buildings in the inner formation of the lower picture, as well as the roadway encircling it, have been moved to allow of the introduction of two tracks serving a terminal station. Such rather wholesale removal of house and other property is much more easily arranged in miniature than in real life! Presumably the citizens of *Oakham* have not complained about the change, as they are now served by a businesslike station right by the main street. This station replaces an older smaller structure originally situated toward the rear of the town, roughly where the tank train is shown in the upper picture. The station is a two-platform affair from which trains can depart to join the main line. After a given number of circuits of the inner main track they can make their way back to the station by means of a reverse loop connection.

The inner platform road, after making connection with the reverse loop, is extended to form a spur where locomotives can stand between duties. There are five locomotives on the line, one of which, the original 0–6–2 Tank with which the railway began, is not now in traffic. The other locomotives consist of a 4–6–2 *Silver King* for long-distance trains, with a Type 1 Bo–Bo Diesel and a 0–6–2 Tank sharing the more intermediate duties, both passenger and freight. A Diesel Shunting Locomotive is a useful member for working within the fairly restricted space available for sidings.

Corridor Coaches in B.R. red and cream livery are in use and at the time of the preparation of these notes it was anticipated that two Hornby-Dublo Sleeping Cars would be added in due course. A very good variety of freight rolling stock is available, tank wagons being prominent in view of the presence of the oil refinery among the lineside effects.

Apart from the various buildings which have been built up, partly from raw materials such as veneer strip and brick paper, and partly from kits available nowadays, the lineside includes scenic and similar effects, one corner of the layout board incorporating a built-up section forming a tunnel, while hillsides are modelled elsewhere as well. The background scenery, shown in the upper illustration, is very effective. This background

(*Continued on next page*)

Double Track - Double Loop

FOR THE TWO-RAIL ENTHUSIAST

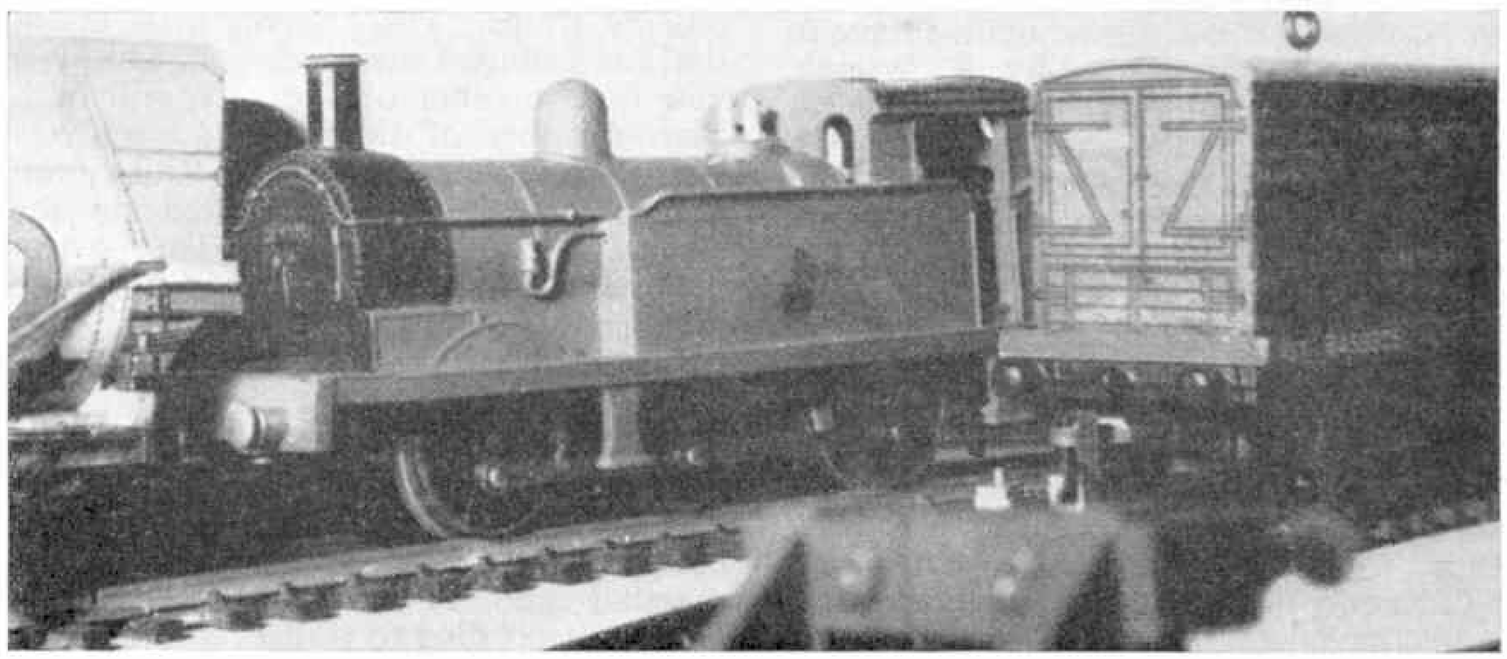
THE Two-Rail double track layout shown in our diagram this month is a fascinating one, which will allow quite a number of interesting train movements to be carried out. Basically the layout consists of a large double track oval, but has in addition two inner loop lines. Both these loops have sidings leading from them. The layout will fit on a baseboard measuring eight feet six inches by six feet six inches.

Trains on the outer track are intended to run in a clockwise direction and those on the inner track anti-clockwise. By following this rule on the inner track shunting operations, or the detaching of vehicles from a train in the various sidings, can be carried out by a backing movement.

By "LINESMAN"

This ensures that an engine does not run into a siding and end up at the buffer stops, unable to get out again. A train could start its journey from one group of sidings, traverse the system numerous times and then finish its run by backing into another group of sidings or even returning to the point where it started if desired.

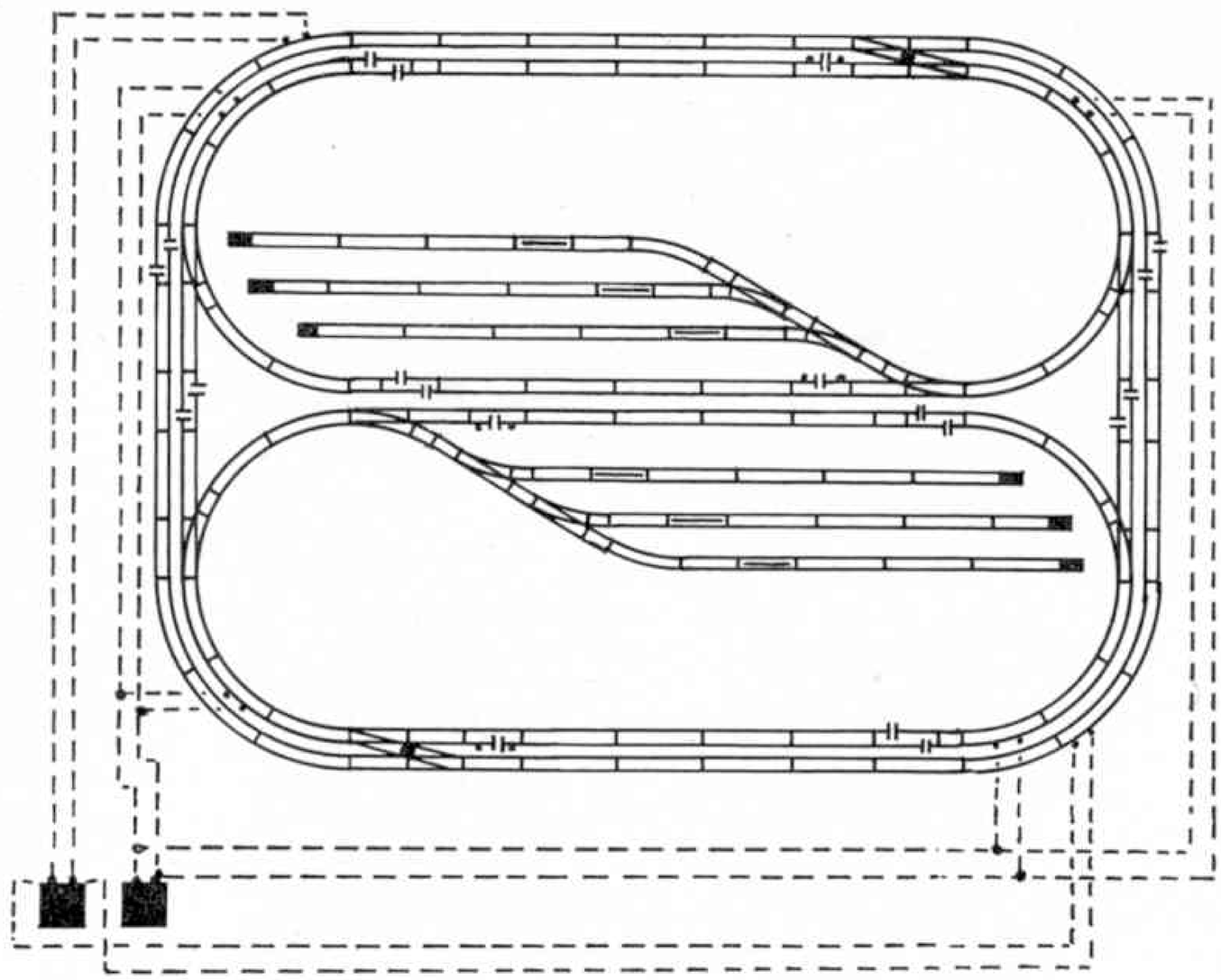
It is necessary to have two power control units to work the layout so that independent control of the two trains each on its own main track is afforded. The usual isolating sections are provided so that an engine can be held on a section of main line while another carries out shunting movements, or travels from one set of sidings to another by traversing part of the main line. An engine held in this way must stand between the Single and Double Isolating Rails. The wiring for the Single Isolating Rails is shown in the small sepa-

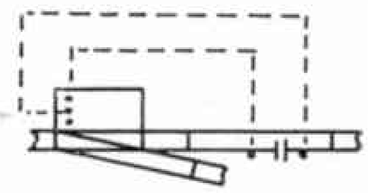


A realistic shunting scene on the Two-Rail Hornby-Dublo layout of Alfred Horn, of Grimsby, where an 0-6-0 Tank is busy sorting Wagons.

ITEMS REQUIRED

18 Curved Rails .. 2710
10 Curved Rails, Large Radius .. 2719
4 Curved Terminal Rails with Suppressor 2714
2 Curved Terminal Rails with Suppressor, Large Radius .. 2721
10 Curved Quarter Rails 2712
54 Straight Rails .. 2701
10 Straight One-Third Rails 2703
20 Straight Two-Third Rails 2702
6 Uncoupling Rails 2745
4 Straight Two-Third Single Isolating Rails 2738
8 Straight Two-Third Double Isolating Rails 2739
8 Right Hand Switch Points 2728
6 Left Hand Switch Points 2729
6 Buffer Stops .. 2450
2 Power Control Units





WIRING OF SINGLE ISOLATING RAIL

rate diagram alongside the main track plan.

Where Points form crossoevrs from one main track to another, insulating gaps must be provided. These gaps can be arranged by carefully removing the metal fishplates from the curved arms of the Points, and replacing them with nylon fishplates. This ensures that current cannot pass from one track to the other, but this does not mean that a train cannot do so. When a train is intended to use a crossover, the receiving track should be clear of another train, unless it is standing in an electrically isolated section, and the control unit knob or handle must be preset so that current is available to the engine as it passes over the rail joints which have nylon fishplates. The position of each insulating gap is indicated by a black dot on the track diagram.

Town Planning Yields to Railway Needs

(*Continued from page 409*)

is built up partly of printed scenic sheets pasted to the wall, the latter being previously coloured to provide sky effects.

Hill sections and similar terrain have been arranged by means of plaster laid over wire netting and canvas, stretched over suitably-shaped wooden frames. Foam rubber sheets represents grass banking and at one point a cliff face has been simulated by the use of a piece of rough, deeply-channelled tree bark.

We turn now to another layout that has seen some changes in recent times. In the upper picture on page 409, we again meet Trevor Wilson, of Sidmouth, whose layout as it was then was described in the *M.M.* of November 1960. Once again I have to thank Trevor's mother, Mrs. K. Wilson, for the photograph and for the notes that follow concerning the progress of the line. The whole layout was taken up last autumn and relaid in a different manner, space being made for a miniature village in order to add some lineside realism. It is clear that Mrs. Wilson has been a prime mover in the re-organisation of the line, trying first one way then another of arranging the various components. This enthusiastic lady confesses that attention to the railway still makes inroads on her time!

Trevor's birthdays, and similar occasions, have had the result of adding two further diesel locomotives to the stock, a Co–Co Diesel and a Diesel Shunting Locomotive respectively. In choosing these Trevor has maintained an independent outlook and is obviously up-to-date in his views, for the rest of the family still prefer steam-type engines. A Breakdown Crane also has been brought into service, while a goods depot and a terminal station have been assembled from the respective Hornby-Dublo kits.

I was interested to hear that the Wilson family spend quite an amount of time, when the weather is favourable, alongside the W.R. main line on the well-known sea wall stretch between Dawlish and Teignmouth and they are in the habit of making cine-camera recordings of all kinds of passing trains. There seems little doubt that the youngest member of the family, a new little brother of Trevor's, will be a keen member of the miniature railway staff in due course, as a Two-Rail circuit has already been incorporated on the layout board for his benefit. This part of the railway will, of course, be quite independent from the rest.

Now a Suburban Electric in Hornby-Dublo

—(*Continued from page 407*)

the standard Hornby-Dublo automatic couplings are fitted makes it easy to marshal and re-marshal the different vehicles according to traffic requirements. Various combinations are possible since the Driving Trailer is a non-powered vehicle which could form part of a strenthening unit added to an existing standard two-car train. Whatever the final assembly, it is, of course, necessary to have a Motor Coach at one end of the train and a Driving Trailer at the other, with the motorman's compartments at the outermost ends.

Those who have Three-Rail layouts will be glad to know that the Electric Motor Coach is available separately for Three-Rail running as No. 3250. The non-powered No. 4150 Driving Trailer is suitable for Three-Rail or Two-Rail operation.

Railway Notes—(*Continued from page 399*)

Deltic sponsored by the English Electric Company, has been running trials on the L.M.R. It is temporarily No. DP2.

More diesels of various types are entering service. The Peak class Type 4 units recently completed at Derby or Crewe Works included a batch numbered D166 upwards allocated to Gateshead (Newcastle) depot for service on the N.E.R. and East Coast route, together with more for the Midland Division, L.M.R.

Nos. E3068–70 of the Bo–Bo, 3,300 h.p. overhead electric type were added to stock for the Crewe to Manchester or Liverpool services.

A VETERAN MOTOR CAR IN MECCANO

By "Spanner"

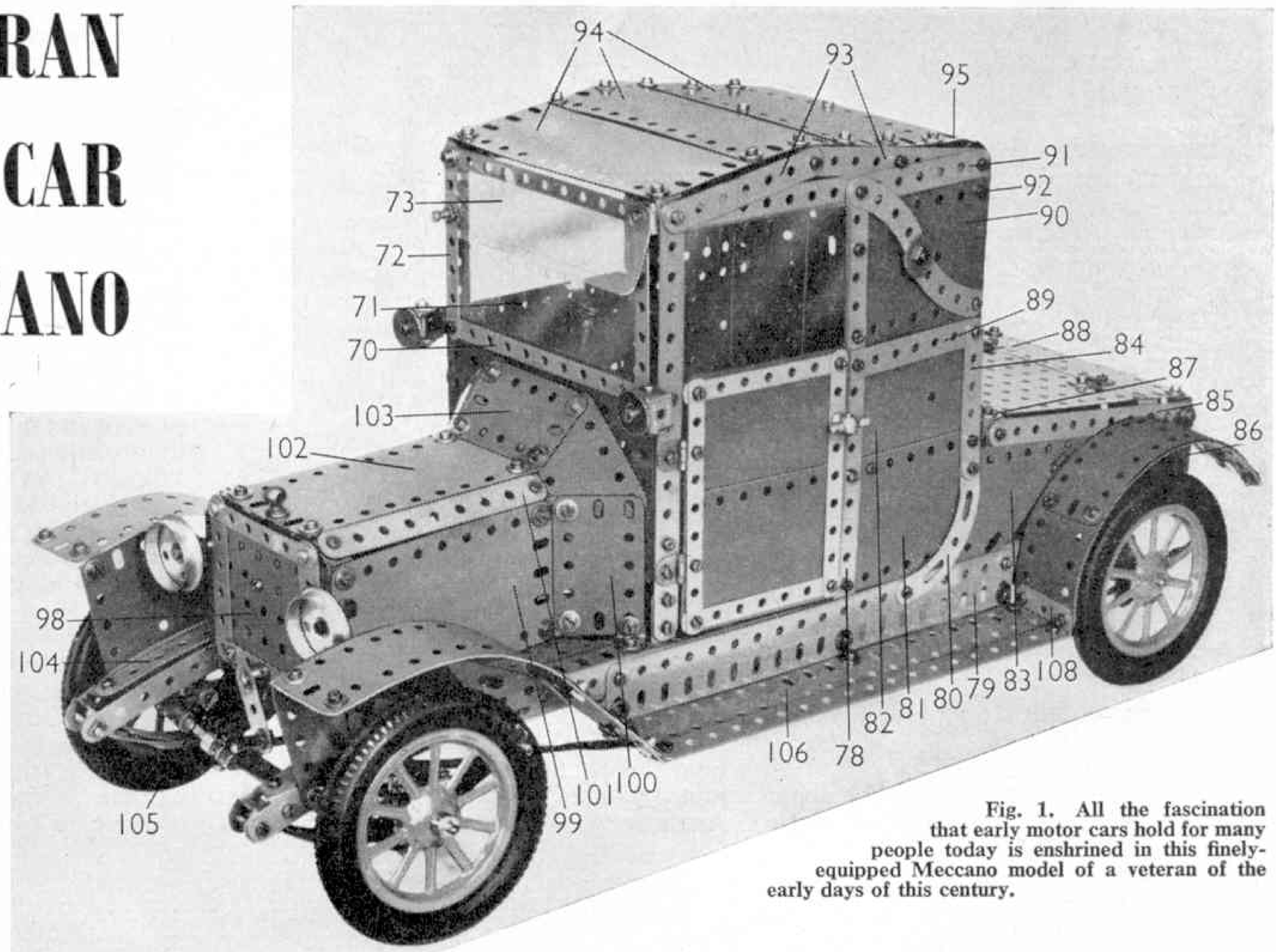


Fig. 1. All the fascination that early motor cars hold for many people today is enshrined in this finely-equipped Meccano model of a veteran of the early days of this century.

THE quaint early motor car shown in Fig. 1 provides an attractive subject for the more advanced model-builder. The Car is complete with a well-detailed chassis, including gear-box, clutch, differential, etc., and its construction is just the thing to while away long dark evenings indoors, in a pleasant and instructive manner.

Each side of the chassis consists of two 12½″ Angle Girders 1 bolted together to form a channel section. The side girders are held together by a 5½″ Narrow Strip 2 and a 5½″×2½″ Flat Plate 3. The front ends of the Girders are extended by 5½″ Curved Strips 4. Each inner 5½″ Curved Strip 5 is secured to the upper Girder by two Angle Brackets. Two of the bolts that secure the Curved Strips are also pivots for the Fishplates 6 and should be lock-nutted. The main frame is extended over the back axle by 2½″ Curved Strips 7 bolted together as shown. The rear Springs 8, consisting of a 5½″, a 4½″, a 3½″ and a 2½″ Strip, are bent and attached to the Angle Girders 1 by a ⅜″ Bolt and an ordinary nut and bolt.

The front springs are of the semi-elliptic type, and each consists of a 5½″, a 4½″, a 3½″ and a 2½″ Strip placed one upon the other and slightly bent. To each end of the 5½″ Strip is secured a Double Bracket. The rear ¾″ Bolt is pivotally attached to the Fishplates 6, whilst the front Double Bracket is mounted on a ¾″ Bolt passed through the 5½″ Curved Strips 4 and 5.

FOR ADVANCED MODEL-BUILDERS

Steering and Rear Axle

The fixed front axle 9 consists of two 5½″ Strips overlapped nine holes and supporting at each end a Crank 10 that carries a 1½″ Rod on which is placed three Washers, a Coupling 11 (in the centre hole) and a Collar. Fastened in the Coupling are two 1½″ Rods 12 and 13. At each end of a 4½″ Rod 14 a Swivel Bearing is fixed and this is also secured to the Rods 12 and 15. To the 2″ Rod 15 is secured a Coupling 16 that carries a 1½″ Rod 17 supporting a Swivel Bearing between two Collars. A 5½″ Rod is fastened in the Swivel Bearing and with a Collar is attached to a Fishplate fixed to the 1½″ Bevel Wheel 18 mounted on a 1″ Rod 109. A 1″×½″ Double Bracket bolted to the Angle Girder 1 forms the bearing for Rod 109. A Washer is placed between the Double Bracket and the Bevel Wheel.

A Coupling is fitted with a 1½″ Rod carrying at each end a Collar 19. These Collars are held in place by the 1″ Screwed Rods 20, by means of which the Coupling is secured to a 1½″ Bevel Wheel 21. Between the Coupling and the Bevel, a ¾″ Contrate Wheel 22 is fitted on a 5″ Rod 23, two Washers being used for spacing. The 3½″ Rod 24 has a ¾″ Contrate Wheel fixed to it and it journals in the Coupling. The planetary pinions are now fitted. Each of these consists of a ¾″ Pinion placed boss outwards on a Pivot Bolt secured to the Coupling. The Pinions mesh with the ¾″ Contrates on the axles. Two Washers are placed on the Rod 24 before putting the Boiler End 25 in position. A Collar and two Washers are placed on the Rod 23 before adding the Boiler End 26. The Double Angle Strips 27 and 28 are bolted to the Boiler Ends before joining them together by the 2″ Strips 29. The 2″ Strip supporting the Double Bent Strip 30 is spaced away from the Boiler Ends by one Washer. On the 1½″ Rod a ½″ Bevel Wheel 31 and a Universal Coupling 32 is secured. The rear axle is now attached to the springs 8. Each pair of Double Angle Strips is joined together with a 1½″ Strip that forms a bearing for the Rods 23 and 24.

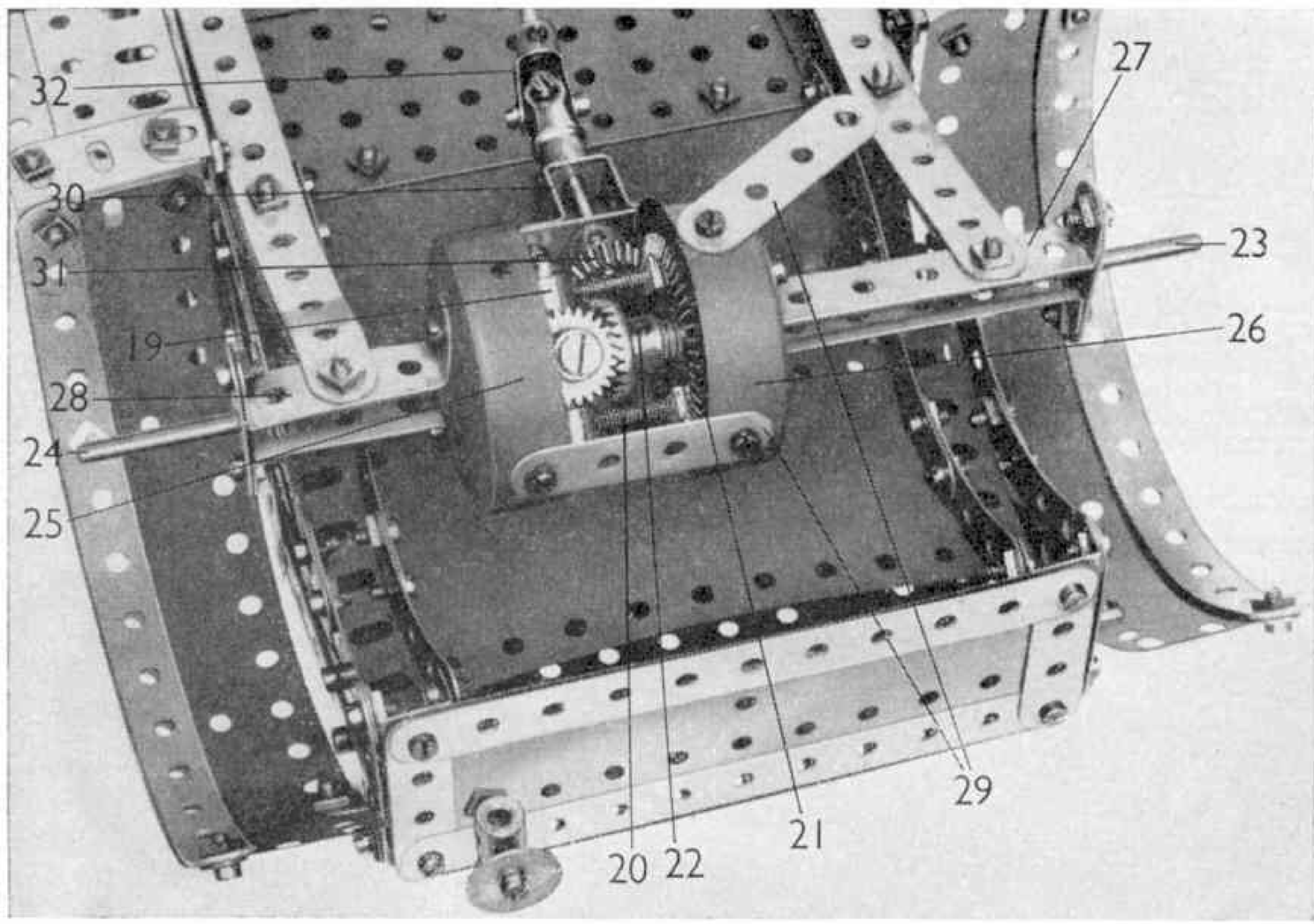


Fig. 2. An underneath view of the rear end of the chassis, showing the back axle and differential.

The Gear-box

The $4\frac{1}{2}''$ Strip 33 is fastened to the upper Angle Girders 1 by $\frac{1}{2}'' \times \frac{1}{2}''$ Reversed Angle Brackets. Two $9\frac{1}{2}''$ Angle Girders 34 are bolted to the latter and they are attached to the Angle Girders 1 by a $1'' \times \frac{1}{2}''$ Angle Bracket and a $2''$ Strip 35. A $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 36 joins them at the front. An E15R Electric Motor is secured to the Angle Girders 34 by two Angle Brackets at the flange side and two $\frac{3}{8}''$ Bolts, with three Washers on each, at the other side. Two Fish-plates on each Angle Girder hold the $4\frac{1}{2}''$ Strips 37 and 38, which are joined by a $2\frac{1}{2}'' \times 1''$ and a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 39 and 40. Two $1'' \times 1''$ Angle Brackets 41 and 42 are bolted to the Strip 38.

A $3\frac{1}{2}''$ Rod 44 is journalled in an Angle Bracket bolted to the Double Angle Strip 36 and it carries a Contrate Wheel 45, a $1''$ Pulley with Rubber Ring 46, and a Collar 43. The end of this Rod goes $\frac{3}{16}''$ into the Bush Wheel held in the Socket Coupling 47. The Socket Coupling is free on the $4''$ Rod 48. A Coupling 49 with a $\frac{1}{2}''$ Bolt screwed in tight is fixed to the Rod 48 with a Compression Spring between it and the Socket Coupling. Secured to this Rod is a $\frac{3}{4}''$ Pinion 50 and a $1''$ Gear Wheel 51. A Collar is fastened on the end. The $3''$ Rod 52 carries a 50-teeth Gear 53, a $1''$ Gear 54, a $\frac{1}{2}''$ Pinion 55, a $\frac{1}{2}''$ Pulley, and a Universal Coupling. The lay-shaft is a $6\frac{1}{2}''$ Rod 56 carrying a $\frac{1}{2}''$ Pinion 57, a $1''$ Gear 58, a $\frac{3}{4}''$ Pinion 59, a Collar 60, a $1''$ Gear 61 and a 50-teeth Gear 62. The Gears and Pinions are placed on their shafts as shown and provide three forward and reverse drives, with a neutral position.

Two Angle Brackets are bolted in the third hole from the back of the Angle Girders 34 and they support a $2\frac{1}{2}''$ Rod carrying the Coupling 63 and a Crank that

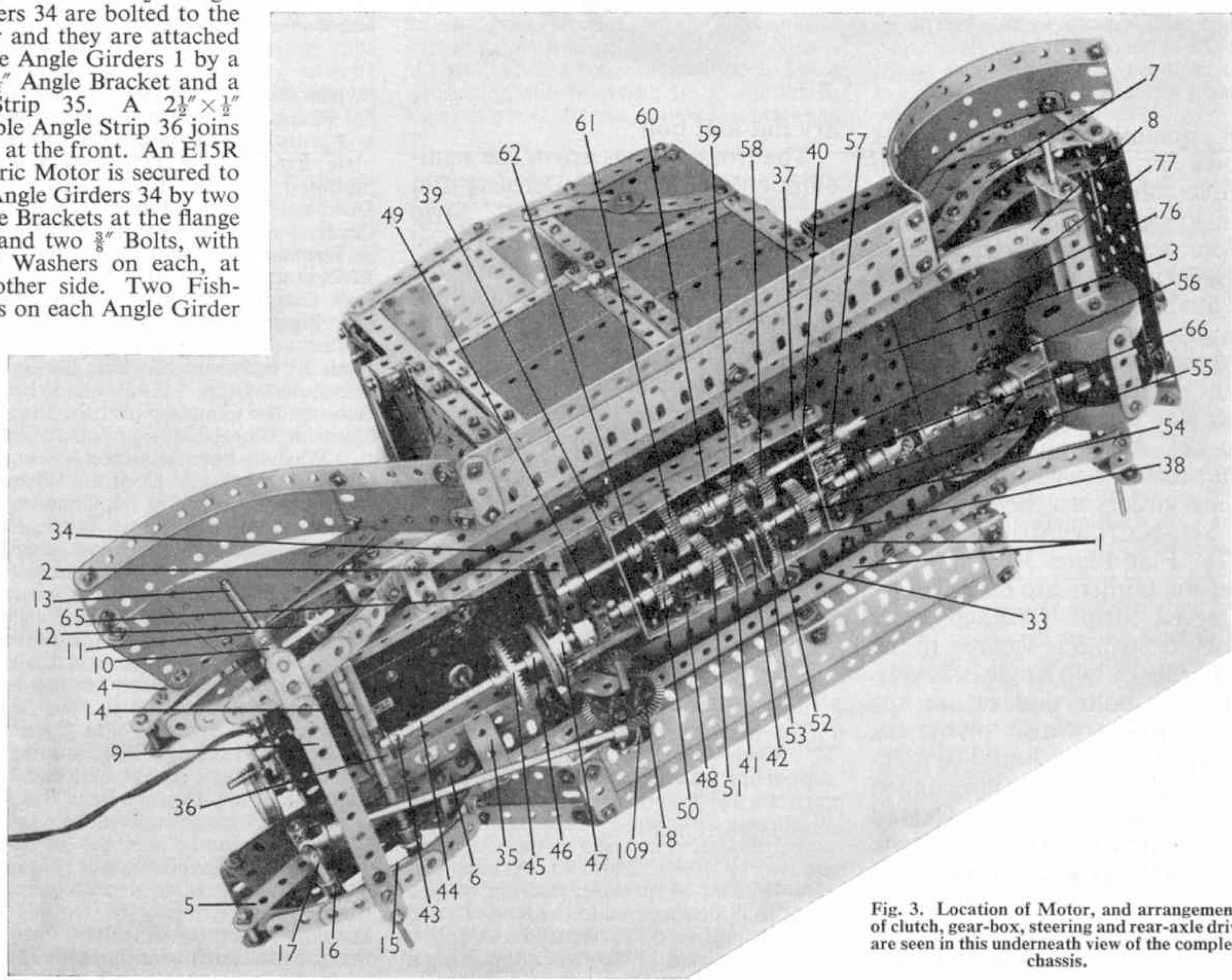


Fig. 3. Location of Motor, and arrangements of clutch, gear-box, steering and rear-axle drive are seen in this underneath view of the complete chassis.

is connected to the Collar 59 by a nut and bolt, the nut locking against the Collar. A $1\frac{1}{2}''$ Rod carrying a Handrail Support, is fixed in the Coupling 63. Two $2\frac{1}{2}''$ Stepped Curved Strips 64, spaced apart by two Washers, are bolted to $1'' \times 1''$ Angle Brackets. One of these is secured to the $4\frac{1}{2}''$ Strip 33 and the other to a $3''$ Strip bolted in the fifth hole of the Angle Girders 34. In the tenth hole from the front, two more Angle Brackets are bolted and in them is placed a $3''$ Rod 65. Pivoted between Collars, one on the inside and one on the outside of the Angle Girders 34, are two $2\frac{1}{2}''$ Curved Strips, the inside having a Threaded Pin that engages with the Socket Coupling. Both Strips have Angle Brackets bolted to them to represent the pedals. The Coupling 49 is adjusted so that the Bush Wheel presses against the Rubber Ring on the $1''$ Pulley 46.

For the reverse gear a $\frac{1}{2}''$ Pinion 66 revolves freely on a $\frac{3}{4}''$ Bolt fastened by two nuts locked to the Double Angle Strip 40. The following Gears and Pinions mesh together to give the different gear changes: Reverse: 50, 62, 57, 66, 57; 1st Gear: 50, 62, 59, 53; 2nd Gear: 51, 61, 59, 53; Top Gear: 51, 61, 58, 54. The two Universal Couplings are connected together by a $1''$ Rod.

The Motor Drive

A $\frac{7}{16}''$ Pinion secured on the uppermost end of the armature shaft engages with a 60-teeth Gear Wheel on a $2\frac{1}{2}''$ Rod. On the lower end of the Rod is placed a $\frac{1}{2}''$ Pinion spaced away from the Motor by three Washers. The $1\frac{1}{2}''$ Contrate Wheel 45 is adjusted to engage with the $\frac{1}{2}''$ Pinion.

The Car Body

A $1'' \times \frac{1}{2}''$ Angle Bracket 67 is attached to the Angle Girders 1 using the same Bolts that secure the Narrow Strip 2. These are extended by $7\frac{1}{2}''$ Strips 68. A $5\frac{1}{2}'' \times 3\frac{1}{2}''$ Flat Plate 69 is bolted to the Strips 68 by Angle Brackets. To the top of the Flat Plate is bolted a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Transparent Plastic Plate 71 edged by $5\frac{1}{2}''$ and $3\frac{1}{2}''$ Narrow Strips 70 and 72. A $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Transparent Plastic Plate 73 is fixed in position and rests on the $\frac{3}{8}''$ Bolts locked to the $3\frac{1}{2}''$ Narrow Strips. The side lamps, built with three Double Brackets and a $\frac{3}{4}''$ Washer are attached by Angle Brackets. Two $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flat Plates 74 and a $3'' \times 1\frac{1}{2}''$ Flat Plate 75 are placed in position. To complete the floor, a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate 76 is attached to the Plate 3 and a further $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate 77 is fastened by Obtuse Angle Brackets to Flexible Plate 76. A $9\frac{1}{2}''$ Flat Girder 79 is bolted to the Angle Girders 1, the $3''$ Stepped Curved Strip 80 also being added. To the Flat Girder is bolted the compound strip (a $7\frac{1}{2}''$ and a $3''$ Strip) 78. A $3\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate 81 and a $4\frac{1}{2}'' \times 2\frac{1}{2}''$ Red Plastic Plate 82 are attached to the strip 78.

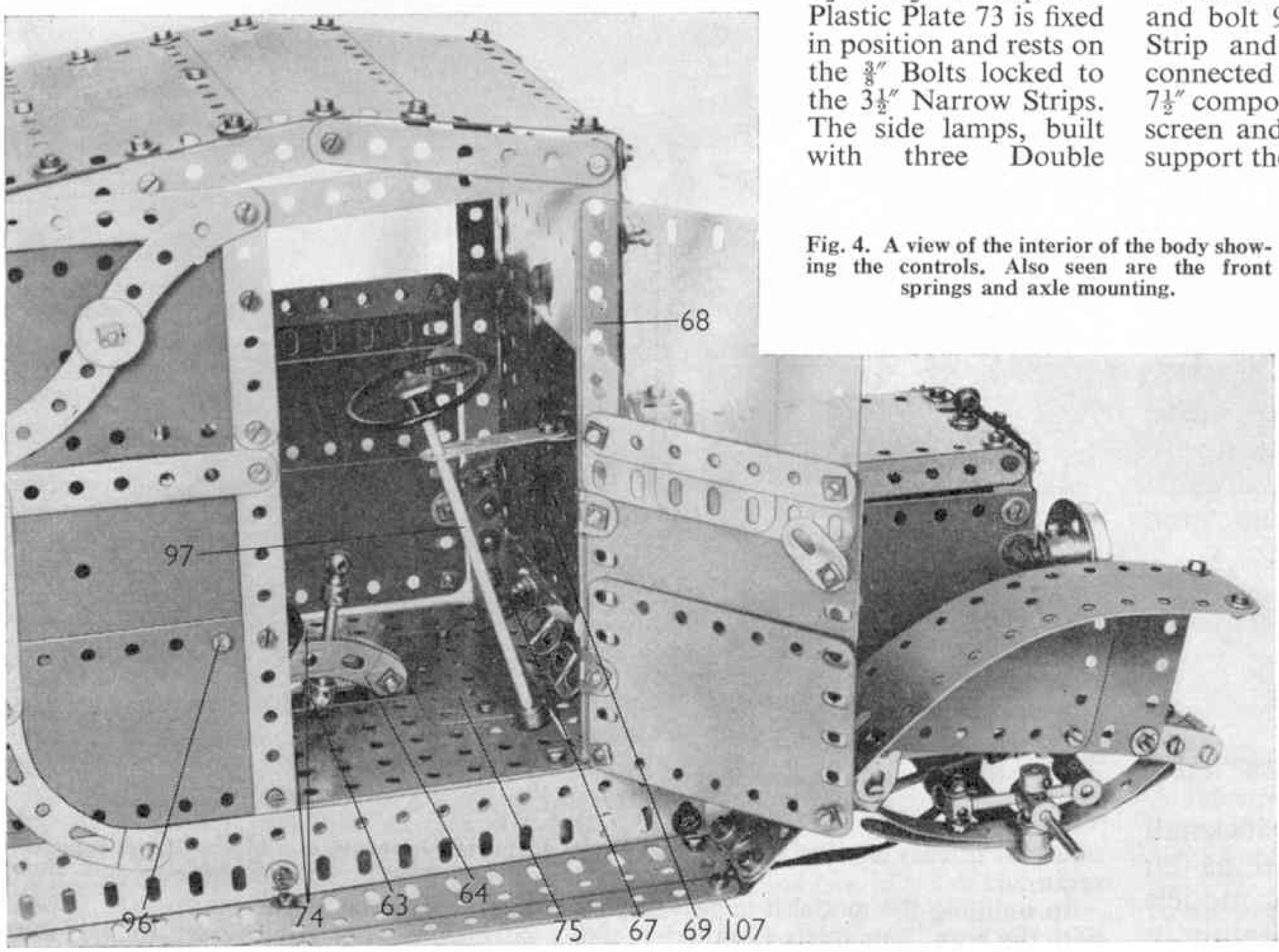


Fig. 4. A view of the interior of the body showing the controls. Also seen are the front springs and axle mounting.

The bodywork is extended by a $3\frac{1}{2}'' \times 2\frac{1}{2}''$ Triangular Flexible Plate 83 and two $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Triangular Flexible Plates that form the wheel arch. These Plates are edged by $5\frac{1}{2}''$ and $2''$ Strips 85 and 86. A $5\frac{1}{2}''$ Angle Girder 87 is bolted across the car and the Strips 85 are attached by Angle Brackets. The rear of the boot is a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate edged by Strips and fastened with Angle and Double Brackets. A Coupling and a $\frac{3}{4}''$ Washer held by a $\frac{3}{4}''$ Bolt and two nuts, represents the tail light. A $5\frac{1}{2}'' \times 3\frac{1}{2}''$ Flat Plate hinged to a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate 88, completes the "boot", which is fitted with a lock similar to the door lock. The Flexible Plate 88 is fastened to the body of the car by a $5\frac{1}{2}''$ Angle Girder at the rear and by a $5\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip inside the "boot". Around the edges of the Red Plastic Plate 82 a $3''$ and a $3\frac{1}{2}''$ Strip 84 and 89 are bolted. Another $4\frac{1}{2}'' \times 2\frac{1}{2}''$ Red Plastic Plate 90 is secured to the Strip 78.

Inside the car, and secured by the nut and bolt 92, is a $5\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip and also a $5\frac{1}{2}''$ Strip, which is connected to the back of the Strip 84. A $7\frac{1}{2}''$ compound strip 91 supports the windscreen and door jamb and the Strips 93 support the roof. Three $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plates 94 and a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Red Plastic Plate 95 are attached by Angle Brackets to form the roof. Two $2\frac{1}{2}''$ Curved Strips bolted together, with the addition of a $\frac{3}{4}''$ Washer, are fastened to the side of the car. A $4\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate joins together the Red Plastic Plates 82 at the rear of the cab. The Plates 90 are extended by $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates and these are joined together by a $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Transparent Plate. A $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Red Plastic Plate is fixed to the Plates 90 and 95. A $5\frac{1}{2}''$ Strip is bolted on the back in line with the Strips 89 and is slightly bent at each end. On the inside of the car a $4\frac{1}{2}''$ Strip and two Fishplates strengthen the joinings of the Flexible and Red Plastic Plates.

Two $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plates are joined together by two Obtuse Angle Brackets in their centre holes. On the front of the first mentioned Plate three $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Curved Plates are bolted. The completed seat is attached by Angle Brackets on the Bolts 96.

A $6\frac{1}{2}''$ Rod 97 is passed through a $2''$ Strip that is fastened to the $5\frac{1}{2}'' \times 3\frac{1}{2}''$ Flat Plate 69 by an Angle Bracket, and it also passes through the Plate 74. A Steering Wheel is secured to the upper end and a $\frac{1}{2}''$ Bevel Wheel that engages with the $1\frac{1}{2}''$ Bevel Wheel 18 is fixed to the lower end. Collars hold the Rod in position.

The flanges of a $3\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate 98 are extended by a $4\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate 99 and to this is attached a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate 100. A $5\frac{1}{2}''$ Strip 101 and a $4\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate 102 are attached with Obtuse Angle Brackets to the bonnet sides. Again with Obtuse Angle Brackets a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate 103 is attached. The Plates 100 and 103 are joined together by $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Red Plastic Plates. A Handrail Support represents the radiator cap. Two $3''$ Strips and a $3''$ and a $2\frac{1}{2}''$ Narrow Strip are bolted to the Flanged Plate 98.

(*Continued on page 415*)

MARINE ENGINE DRIVEN BY EMEBO MOTOR

An Attractive New Model

THE new Meccano Emebo (battery-operated) Electric Motor, which made its appearance in the shops recently, has already proved immensely popular. Its small, compact design, coupled with amazing power and economical running, gives it a strong appeal to Meccano enthusiasts.

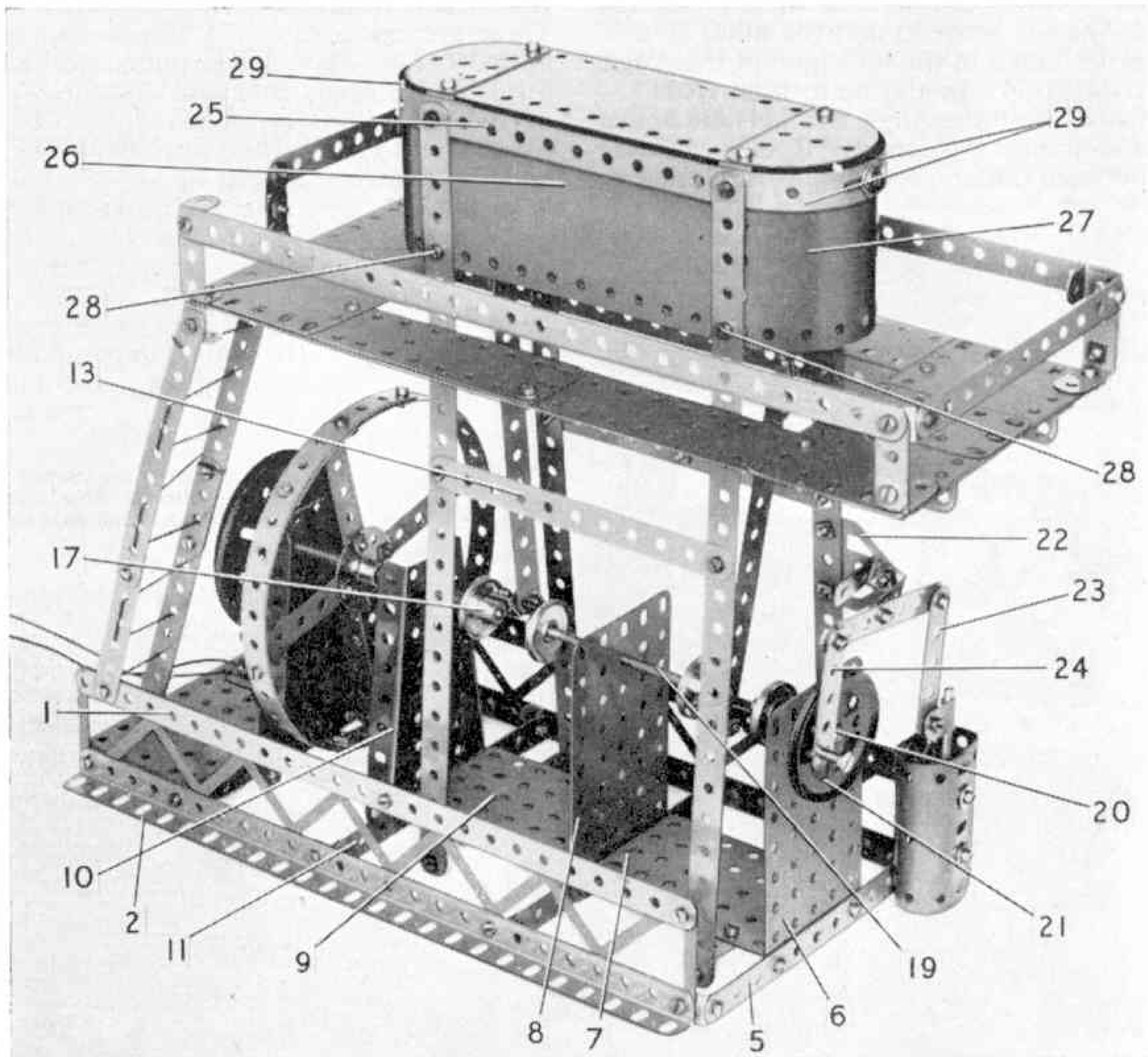
Designed primarily to drive models built from Outfits up to No. 6, it will also operate suitable types of models built from even larger Outfits. In addition, its small size enables it to be used as an auxiliary motor in large models such as cranes, which contain a number of different movements. For example, in a large Hammerhead Crane, an Emebo Motor and battery could be used to drive the bogie along the boom, while the load hoisting and travelling movements could be operated by the larger E15R type Motor.

By "Spanner"

In view of its adaptability, therefore, the Emebo Motor makes a very useful addition to the collection of even advanced model-builders who possess one or more E15R Motors. Further, in small and medium size model vehicles the Emebo Motor and its operating battery can be housed comfortably on the vehicle itself, thus making it a self-contained unit and obviating the trailing feed wires that are normally necessary when the E15RMotor is used in a model of this kind.

An example of a stationary type of model fitted for Emebo Motor drive is the Marine Engine shown on this and the facing page.

The model itself is quite an attractive one and is easy on the number of parts required.



This working model of a Marine Engine is powered by the new battery-operated Meccano Emebo Motor.

In building the model it is best to start with the base. For this a 12½″ Strip 1 and a 12½″ Angle Girder 2 are bolted to a 12½″ Braced Girder to form one side, which is then connected to another similarly constructed side by a 5½″ × 2½″ Flanged Plate 3 and three 5½″ Strips fitted with an Angle Bracket at each end. Next, a Flanged Sector Plate 4 is attached to the Flanged Plate 3, and to the Strip 5 are bolted a 4½″ × 2½″ Flat Plate 6 and a 3½″ × 2½″ Flanged Plate 7. A further 4½″ × 2½″ Flat Plate 8 and a 3½″ × 2½″ Flanged Plate 9 are bolted to the centre 5½″ Strip. The Flanged Sector Plate 10 is fastened to the 5½″ Strip 11, which also supports the Plate 9, and to each of the Flanged Plates 7 and 9 is fixed a 3½″ × ½″ Double Angle Strip 12, with 12½″ Strips bolted to their lugs. A 5½″ Strip 13 braces two of these Strips whilst a compound strip 14 braces the other two.

Flywheel and Crank Shaft

Four 2½″ Strips with Angle Brackets attached to one end are fixed to an eight-hole Bush Wheel, and two 12½″ Strips, bent as shown, are bolted to the Angle Brackets to form the flywheel. These Strips are overlapped seven holes at each end and the whole assembly is mounted on a 5″ Rod 15 together with a 3″ Pulley 16. A 1″ Pulley 17 with an Angle Bracket attached to its boss, is fastened to the other end of Rod 15. It is best to build the Pulleys and Angle Brackets in pairs as it is essential that they are aligned correctly. Two Angle Brackets are bolted together through their round holes and then two 1″ Pulleys with boss are placed on a Rod, their bosses facing each other. Next, a bolt with a nut on it is passed through the elongated hole of the Angle Bracket without securing it to the Rod. The nut is then tightened down to hold the Angle Bracket securely. The bolt holding the Angle Brackets together is then withdrawn and a ⅜″ Bolt with nut is tightly fixed to one Angle Bracket. A 5½″ Strip 18 is placed on the shank of the Bolt and the whole is lock-nutted to the other Angle Bracket by two nuts, one each side of the lug. When this assembly is fitted in place in the model the Angle Brackets should now be exactly in line.

One crank assembly of the type just described is fixed in place as shown,

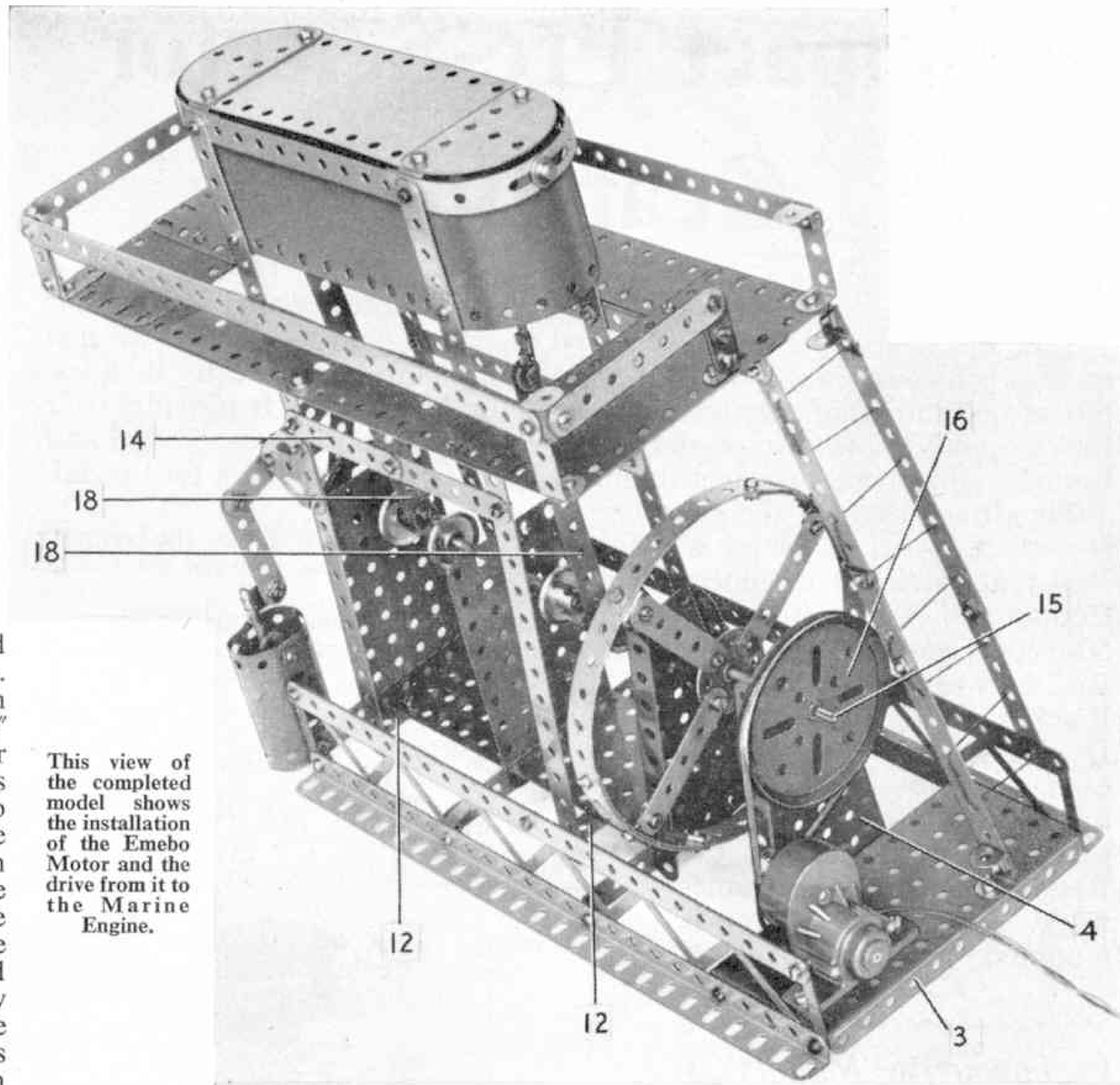
Pulley 17 being one of the Pulleys while the other is fixed to a 3½″ Rod 19. A further similar crank assembly is fitted, one of the Pulleys being on the other end of Rod 19 and the other Pulley on Rod 20, which also carries a 2″ Pulley 21. The cranks should be positioned so that when one of them is at its highest point the other is at rather more than 90° to it. A Pivot Bolt carrying a 2½″ Strip 24 is fixed to the Pulley 21, which operates a water pump. The Strip 24 is lock-nutted to a 3½″ Strip, which in turn is lock-nutted to a 1″×½″ Double Bracket bolted to a Flat Trunnion 22 fixed as shown. A further 2½″ Strip 23 is lock-nutted to the other end of the 3½″ Strip and to the lower end of this is pivoted a Right-Angle Rod and Strip Connector that carries a 2″ Rod. This Rod slides in two ½″ Reversed Angle Brackets bolted inside the pump cylinder, which is built from a 2½″×2½″ Red Plastic Plate and a 2½″×2½″ Curved Plate.

Two 12½″ Angle Girders are bolted in the eighth hole from the top of the 12½″ Strips forming the supporting columns for the cylinder block. On both long sides two 5½″×1½″ Flexible Plates are bolted to the Angle Girders, with 12½″ Strips on the outside edges. The short sides are filled in with a 5½″×2½″ and a compound Flexible Plate consisting of two 2½″×2½″ and one 2½″×1½″ Flexible Plate. 1½″×½″ Double Angle Strips are bolted at two corners and two 1″×1″ Angle Brackets extended by 1½″ Strips at the other two corners. These are connected together by two 12½″ Strips and a 5½″ Strip to form handrails. An entrance to the platform is made by bolting a 3½″ Strip to two Fishplates and an Angle Bracket. Two 5½″ Strips, overlapped four holes, and a 5½″ Strip and a 3½″ Strip overlapped two holes are bolted to the model as shown to form the sides of the ladder. The rungs are made with Cord.

A 5½″×2½″ Flexible Plate 26 with a 4½″×2½″ Flexible Plate 27 at each end is bolted to the 12½″ Strips by the bolts 28. These bolts also hold a 2½″×½″ Double Angle Strip that joins both sides of the cylinder block together, and a ½″×½″ Reversed Angle Bracket is bolted in the second hole of these Double Angle Strips.

Each piston rod is a 2″ Rod fixed in a Rod and Strip Connector that is lock-nutted to each of the 5½″ Strips 18 and this slides up and down in the Double Angle Strip and the ½″×½″ Reversed Angle Bracket. The upper edges of the Flexible Plates are strengthened by two 5½″ Strips 25 and four Formed Slotted Strips 29. Two Double Angle Strips bolted between the sides support the top of the cylinder, which consists of a 5½″×2½″ Flexible Plate and two Semi-Circular Plates.

Parts required to build the Marine Engine: 12 of No. 1; 14 of No. 2; 4 of No. 3; 1 of No. 4; 6 of No. 5; 2 of No. 6a; 4 of No. 8; 2 of No. 10; 4 of No. 11; 1 of No. 11a; 16 of No. 12; 2 of No. 12c; 1 of No. 15; 2 of No. 16; 2 of No. 17; 1 of No. 18a; 1 of No. 19b; 1 of No. 20a; 4 of No. 22; 1 of No. 24; 139 of No. 37a; 122 of No. 37b; 12 of No. 38; 2 of No. 48; 4 of No. 48a; 2 of No. 48b; 1 of No. 52; 2 of No. 53; 2 of No. 53a; 2 of No. 54; 1 of No. 59; 2 of No. 99; 2 of No. 111a; 6 of No. 111c; 4 of No. 125; 1 of No. 126a; 1 of No. 147b; 1 of No. 188; 4 of No. 189; 2 of No. 190; 2 of No. 191; 4 of No. 192; 1 of No. 194a; 1 of No. 199; 2 of No. 212; 1 of No. 212a; 2 of No. 214; 4 of No. 215. 1 Emebo Motor; 1 Driving Band.



This view of the completed model shows the installation of the Emebo Motor and the drive from it to the Marine Engine.

A Veteran Motor Car in Meccano—

(*Continued from page 413*)

A Threaded Crank with a Threaded Pin is fixed to the Flanged Plate by a Bolt locked by the Grub Screw. Flanged Wheels secured to Angle Brackets represent the head-lamps. A 4½″ Strip 104 is bolted to the 5½″ Curved Strips 5. At the rear the bonnet is fastened to the Angle Girders 1 by Angle Brackets, and at the front by Fishplates 105 attached to the 5½″ Curved Strips with ¾″ Bolts and also the Flanged Plate 98.

Two 3½″×2½″ Flexible Plates are joined together by two 4½″ Narrow Strips with 3½″ Narrow Strips at the centre and bottom of the door. The door is extended by two 3½″×2½″ Transparent Plates, strengthened by a 3½″ Strip inside the door. The doors are attached to the Strip 68 with Hinges.

A 9½″ Flat Girder 106 is attached by Angle Brackets to the 9½″ Flat Girder 79. A 9½″ Strip is attached to the Flat Girder by a 1½″ Strip 107 and a 1½″ Angle Girder 108. Each front mudguard consists of a 5½″×1½″ and a 2½″×1½″ Flexible Plate, strengthened on the outside edge by a 7½″ Strip and secured to the running board by Obtuse Angle Brackets. A 3½″×2½″ Triangular and a 2½″×1½″ Flexible Plate form the front wheel arch and are connected by an Angle Bracket to the mudguard. The rear mudguards are built similarly to the front ones and fastened to the 1½″ Angle Girder 108.

The road wheels are 3″ Tyres fitted to 3″ Spoked Wheels. The ridge inside the 3″ Tyres is removed with a wet pen-knife blade. The tyres will now fit on the 3″ Spoked Wheels. The rear wheels are fastened by their set-screws and the front wheels are loose on the axles but held in place by Collars. If the builder does not wish to use this assembly, the Tyres can be fitted to 3″ Pulleys in the ordinary way.

To make the door lock a Handrail Support with a 1″ Rod is placed in position with a Fishplate locked between two nuts.

The space between the Angle Girders 1 and the bonnet sides are filled in on the near side by a 5½″ Flat Girder and a 4½″ Flat Girder attached by a Fishplate on the "off" side.

A list of the Parts required will be supplied on request.

Compact Pre-Selector Gear-Box

PICK OF THE "POPS"

By "Spanner"

I FEEL sure present day Meccanoites will be interested in a pre-selector gear mechanism that first appeared in one of my *Suggestions Section* articles before the war. It is based on a mechanism devised by B. Rees, of Cardiff, and is suitable for use in a motor car chassis. It provides four forward speeds and reverse and any one of these can be pre-selected and brought into operation when required merely by depressing a foot pedal.

The driven shaft of the gear-box is marked 4 in Fig. 1 and is a $3\frac{1}{2}''$ Rod that carries at its inner end a Coupling 5. A 57-teeth Gear and a 50-teeth Gear are placed on the Rod between a $1'' \times 1''$ Angle Bracket and the $3\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 1 of the casing, and a $\frac{1}{2}''$ Pinion that forms a unit of the reverse gear, also is fastened on the Rod, but outside the framework. A second $\frac{1}{2}''$ Pinion is mounted on a Pivot Bolt passed through the centre hole of the Double Angle Strip 1, and is in constant mesh with the $\frac{1}{2}''$ Pinion on the driven shaft.

Favourite Models From The Meccano Files

The driving shaft carries between the Angle Bracket and the Double Angle Strip, a Collar, a $\frac{3}{4}''$ Pinion and a $\frac{1}{2}'' \times \frac{1}{2}''$ Pinion. Between the two $1'' \times 1''$ Angle Brackets the Rod passes through the elongated hole of the Crank 7, and a built-up dog clutch is fitted to the end of the Rod. The clutch consists of a Collar 6 fixed to the Rod by two Bolts, which also pass through the elongated holes of two Fishplates. A second Collar is spaced from Collar 7 by half a Compression Spring, and the Fishplates are secured to it by two Set Screws. The layshaft is a compound rod formed by joining together a 2″ Rod and a 5″ Rod by a Coupling. The 2″ member of the Rod carries a 50-teeth Gear, and the 5″ member carries a 57-teeth Gear, Crank 7, a Collar, Crank 8, six Washers, a $\frac{1}{2}''$ Pinion 10 and finally a $\frac{3}{4}''$ Pinion. Crank 7 is free on the layshaft, and Crank 8 is held between the Collar and $\frac{1}{2}''$ Pinion.

The gear-changing mechanism is very simple both in construction and operation.

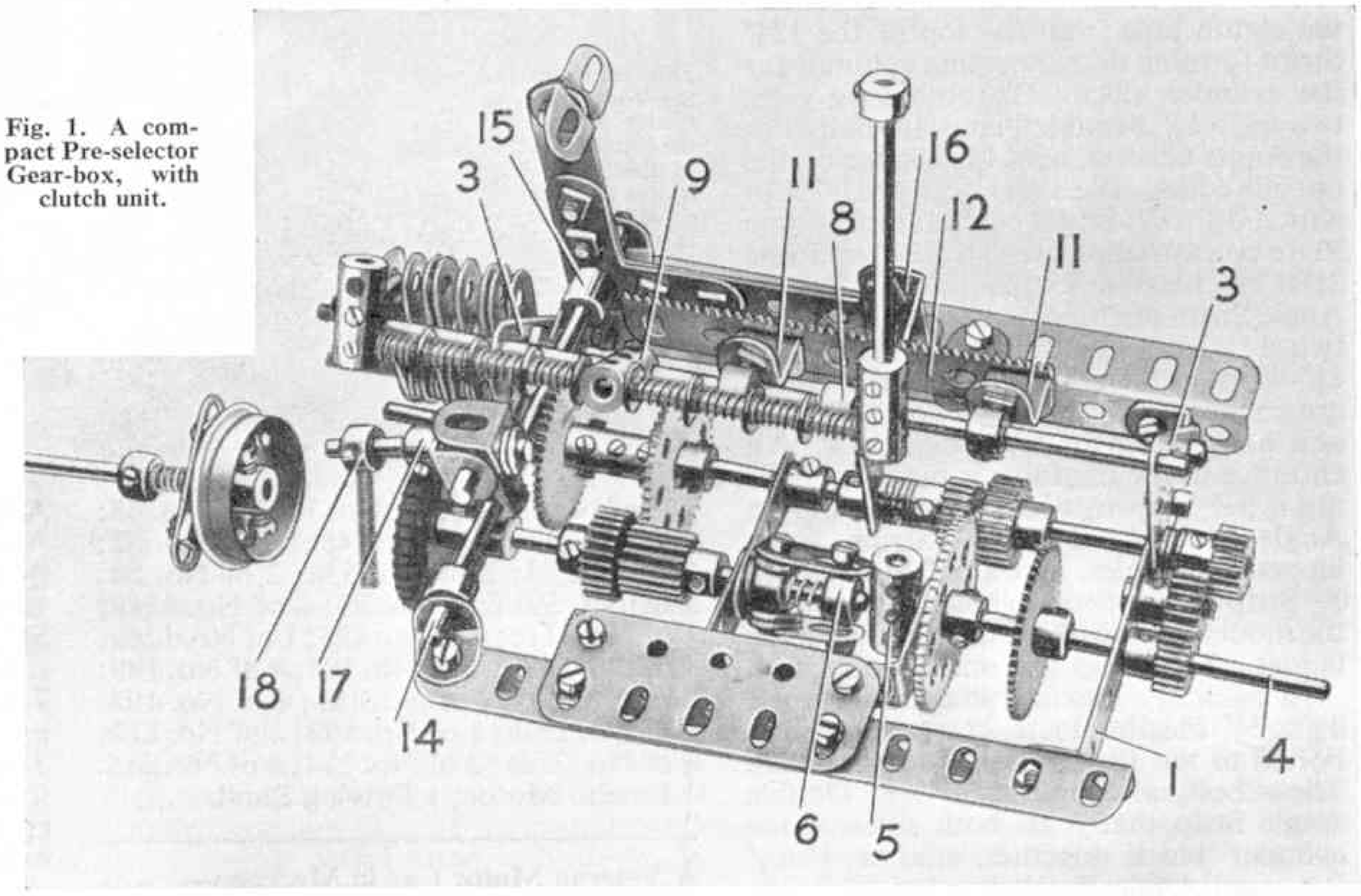


Fig. 1. A compact Pre-selector Gear-box, with clutch unit.

A $6\frac{1}{2}''$ Rod is journalled in the upper holes of the $1\frac{1}{2}''$ Corner Brackets 3, and it carries Coupling 9, a Collar, Crank 8 and a second Collar. A $3\frac{1}{2}''$ Rack Strip 12 has two Reversed Angle Brackets 11 bolted to it, and these are secured in the threaded holes of the Collars by bolts, the securing nuts being tightened up against the Brackets to hold them in place. A Fishplate 13 acts as a support for the Rack Strip.

Reference to Fig. 1 will make clear the construction of the selector. A $4\frac{1}{2}''$ Rod 14 carries a Bell Crank 15, which forms the operating pedal. A 3″ Strip is fastened to the horizontal arm of the Crank 15, and at its free end it carries $1'' \times \frac{1}{2}''$ Angle Bracket 21 (Fig. 2) arranged so that the shorter arm of the Bracket acts as a stop by making contact with the side member of the gear-box. A $\frac{1}{2}'' \times \frac{1}{2}''$ Angle Bracket 16 is bolted to the $1'' \times \frac{1}{2}''$ Angle Bracket 21.

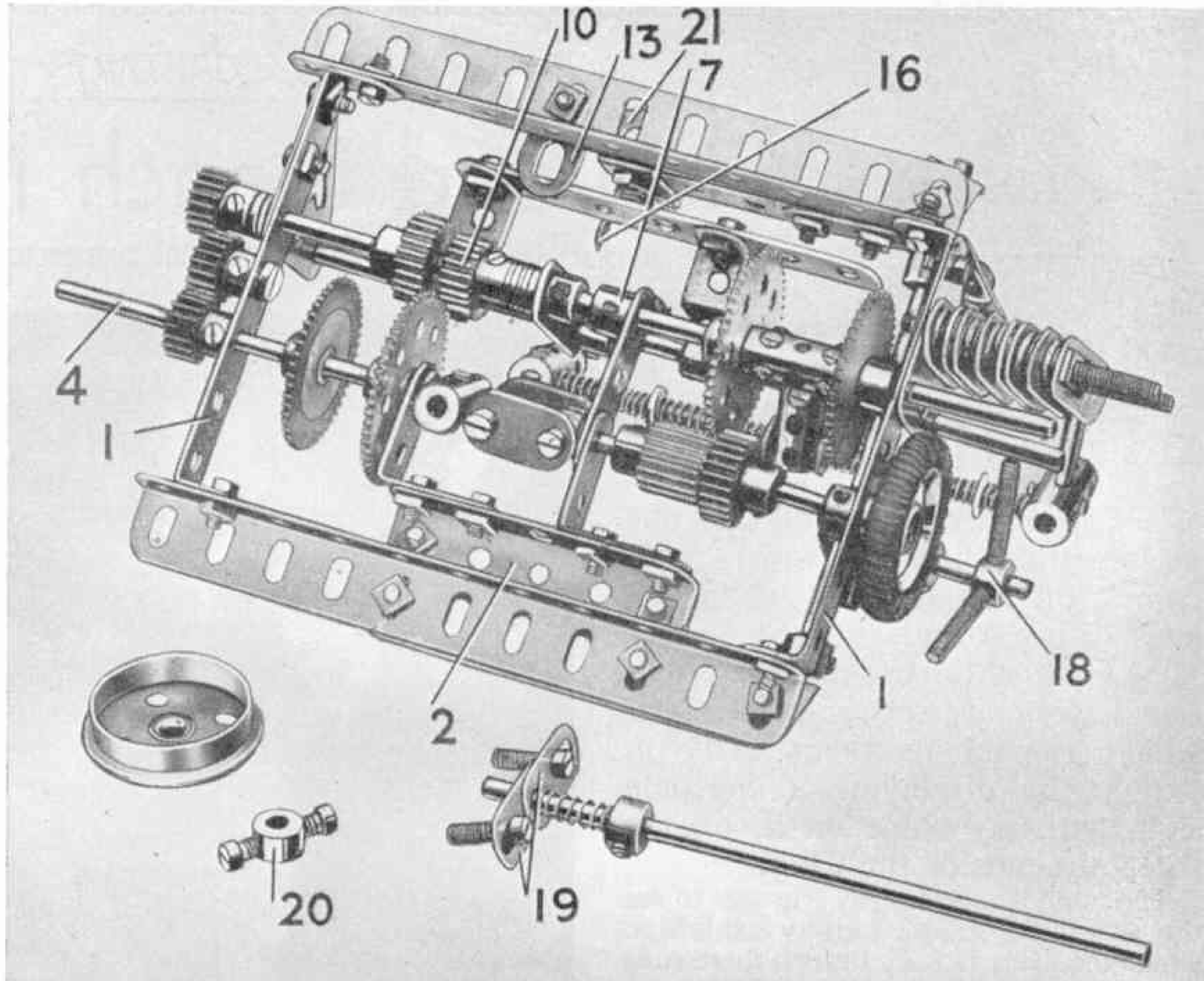
The gate is built up on two 2″ Screwed Rods fastened one above the other to the left-hand Corner Bracket 3, and $1\frac{1}{2}''$ Strips are placed on the Rods and spaced by Washers so that their positions coincide with those of the gears. A large Fork Piece 17 is pivoted on a 1″ Rod held in the top hole of a Coupling fixed on Rod 14. An Angle Bracket is fixed to the Coupling by a Bolt and Washers so that it prevents excessive upward movement of the large Fork Piece.

The complete clutch is shown in Fig. 1, and the construction of its components can be seen in Fig. 2.

The operation of the gear-box is as follows. The desired gear is selected by moving the gear lever, when the Compression Springs on one side of the Coupling 9 are compressed. In order to change gear, the foot pedal is depressed so that the Flanged Wheel is withdrawn by the fork 18, thus bringing the $\frac{1}{2}''$ Bolts 19 out of engagement with the Bolts on Collar 20. At the same time the Angle Bracket 16 is raised out of engagement with Rack Strip 12, which together with the layshaft slides under the action of the Compression Springs.

Reverse gear is taken through the $\frac{1}{2}'' \times \frac{1}{2}''$ Pinion and 57-teeth Gear and the three $\frac{1}{2}''$ Pinions outside the frame of the

Fig. 2. The Pre-selector Gear-box seen from the underside, with the clutch unit dis-assembled.



gear-box. Bottom gear is provided by the $\frac{1}{2}'' \times \frac{1}{2}''$ Pinion, 57-teeth Gear, $\frac{1}{2}''$ Pinion 10 and the other 57-teeth gear on Rod 4. Second gear is obtained by meshing the $\frac{1}{2}'' \times \frac{1}{2}''$ Pinion with the 57-teeth Gear on the layshaft, and the $\frac{3}{4}''$ Pinion on the layshaft with the 50-teeth Gear on Rod 4. The two sets of $\frac{3}{4}''$ Pinions and 50-teeth Gears are brought into operation for third gear, and top gear is a direct drive through the dog clutch unit.

The dog clutch unit is brought into operation by Crank 7, which is moved by the 57-teeth Gear fixed on the same shaft when the layshaft is placed in top gear position. When the other gears are in operation the Crank does not come into contact with the 57-teeth Gear.

In order to ensure efficient operation of the gear-box, all moving shafts should be well oiled so that they revolve and slide freely in their bearings. If the layshaft is properly lubricated no trouble will be experienced in operating the various gears, but if the Crank 7 binds on the layshaft the following simple device may be incorporated to overcome the difficulty. An Angle Bracket is fastened to the upper side-member of the gear-box in the fifth hole from the right (Fig. 380a). A 2″ Strip is pivoted to the Angle Bracket by means of a lock-nutted Bolt in its second hole. The longer arm of this Strip is also attached by a Set Screw to the boss of Crank 7, and a nut is screwed up against the boss so that the Set Screw is prevented from locking the Crank to the layshaft. An elastic band is attached to the shorter arm of the Strip and to the bolt holding Fishplate 13.

The Swindon "Kings"—

(*Continued from page 387*)

Regional locomotive exchange trials of 1948, but only to a limited extent, as loading gauge restrictions precluded its running over L.M.R. and S.R. main lines.

In the meantime, in view of the changed operating conditions as compared with those of the 'thirties, experiments in the form of a departure from the traditionally moderate degree of superheat applied to Swindon designs had been made. In the modified Hall class 4–6–0s of 1944, and in the new Castles of 1946, a greater superheating surface was incorporated and this was followed by an extension of the experiments to include an engine of the King class. A four-row superheater was applied to No. 6022 *King Edward III* and trials against a standard engine of the class were carried out. On the last down journey a train of 14 coaches, or over 500 tons, was taken through to Exeter.

At Swindon, home of these magnificent "Kings", there had for many years, prior to the opening in 1948 of the B.R. establishment at Rugby, been a locomotive-testing plant. Such plants as these provide a ready means for investigation into many points of locomotive design and performance in ideal "laboratory" conditions, and the Swindon plant—still in existence, by the way—has in its time certainly been used to fullest advantage in regard to G.W.R. locomotive design.

This testing equipment had been modernised by the time of the superheater experiments referred to previously. The Swindon authorities felt that stationary plant results should be confirmed by trials on the line, with its varying gradients and weather conditions, and so over the years they developed and perfected the principle and practice of controlled road testing, involving the maintenance of a constant rate of evaporation of water in the boiler of the locomotive. On the Swindon testing plant, boiler and cylinder performance could be established and in road tests these could be associated with running. Data thus obtained formed a sound basis for the preparation of running times.

800-ton test train

After experiments with smoke-box layouts, No. 6017 *King Edward IV* was fitted with modified draughting arrangements in 1952. Previous standard practice at Swindon had incorporated what was known as a jumper ring at the top of the blast pipe. This ring lifted at a pre-determined exhaust pressure and so avoided excessive draught and coal consumption, at the same time placing a limit on the maximum steaming capacity. This was quite in order in the days when first-class coal was readily available, but in view of the indifferent coal liable to be encountered in post-war conditions a plain blast pipe was applied, the idea being to increase maximum steaming capacity.

This series of experiments culminated in the haulage in controlled road test conditions between Reading and Stoke Gifford of a 25-coach train of nearly 800 tons by No. 6001 *King Edward VII* incorporating the modified draughting arrangements. This locomotive appears in our picture on page 387. Boilers incorporating the additional superheating surface and improved draughting became standard for the Kings and, by degrees, double chimneys were added between 1955 and the end of 1958. It is in this form that the Kings illustrated are shown. The double chimney of their later days does not impair their appearance too much, being finished with the traditional copper cap and maintaining a pleasing outline in keeping with the rest of the engine.

The end of an era

In spite of the King's well-proved capacity, the advent of main line diesels was bound to affect a steam class numerically small by Swindon standards, and one of restricted route availability. So, as I conclude, I have to record that by mid-1962 some of the Kings had been condemned. Although these monarchs of the rail are now disappearing from active service, we can be cheered by the fact that the pioneer of the class, a distinguished engine individually, will remain in being as a fitting example of the final expression of Great Western four-cylinder 4–6–0 design.

Club and Branch News

"WELCOME" ON THE FORECOURT

THERE is an old saying that one sometimes finds the word "Welcome" on the doormat when one goes to see friends. At St. Annes Y.M.C.A., in Lancashire, they went one better on the occasion of a visit which I paid to them early in August by displaying a welcome sign, with my name on it, on the forecourt outside the Club.

The main reason for my trip was to see the wonderful model railway exhibition which the lively H.R.C. Branch there runs through the summer months. There was no charge for admission but a collection box was fixed unostentatiously on the wall, and it was well filled time and time again by visitors who were delighted with what they saw.

Both during the exhibition itself and on Club nights the Hornby-Dublo equipment in use at St. Annes Y.M.C.A. has certainly been put through the mill, and it has responded magnificently. As I have mentioned previously in these notes the Club's layout is in a room measuring 20 ft. by 16 ft., and runs round all four sides. The original lift-up section by the doorway has now been replaced by a firmly-constructed wooden bridge which gives access from the main hall of the Y.M.C.A. to the model railway room.

My visit was at the invitation of the Secretary of the Y.M.C.A. itself, Mr. Harry Richards, and I found a first-class display of which any club would have the right to be proud, constructed over many months by an enthusiastic band of young workers under the guidance of the Club's officials.

Mr. Richards told me that many members of the public who had been through the hall had expressed great appreciation of what they had seen, and I feel I cannot praise the members' work too highly.

I offer to all concerned my congratulations on the effective scenic work achieved and the wide variety of track movements that are possible. The principal interest of the layout lies in the fact that it allows for four or five complete trains, varying from fast passenger traffic to slow-moving freight trains, to be operated simultaneously, and there are some skilfully-devised tunnelling sections which are engineering achievements in their own right.

A group of interested members at the opening night, in March last, of the Bury (Lancashire) Y.M.C.A. Meccano Club admiring the picture on the lid of a Meccano Outfit. On the back row are: Immediate left, Mr. S. A. Taylor, representing Sam Taylor Ltd., donors of the "Sam Taylor Trophy" for Meccano model-building; second from left, Mr. David Whatmough (Assistant Secretary, Bury Y.M.C.A.); fourth from left, Mr. R. Morris (Secretary, Bury Y.M.C.A.).

I took the opportunity of joining in the operation of the layout and talking to the boys concerned and, at a later stage in the evening, was able to meet the members of the Meccano Club which is also linked with the St. Annes Y.M.C.A.

Here again, I found a high level of interest running through all the Club's procedure. Boys from the age of nine are working industriously, either in groups or singly, to capture all the delight which Meccano-building can offer. The Club has a wide range of Meccano Parts in use, dating from the old nickel-plated products, through the "Blue and Gold" era to the red and green Outfits of the present day. It was interesting to see that while some of the boys were building from recent Manuals, others were intrigued by a gift from a well-wisher of Books of Instructions from pre-war days. The two combined have given the youngsters an enormously wide range of models from which to choose. Very shortly, the members hope to start building from the purely pictorial illustrations which are the outstanding feature of our latest Books of Models.

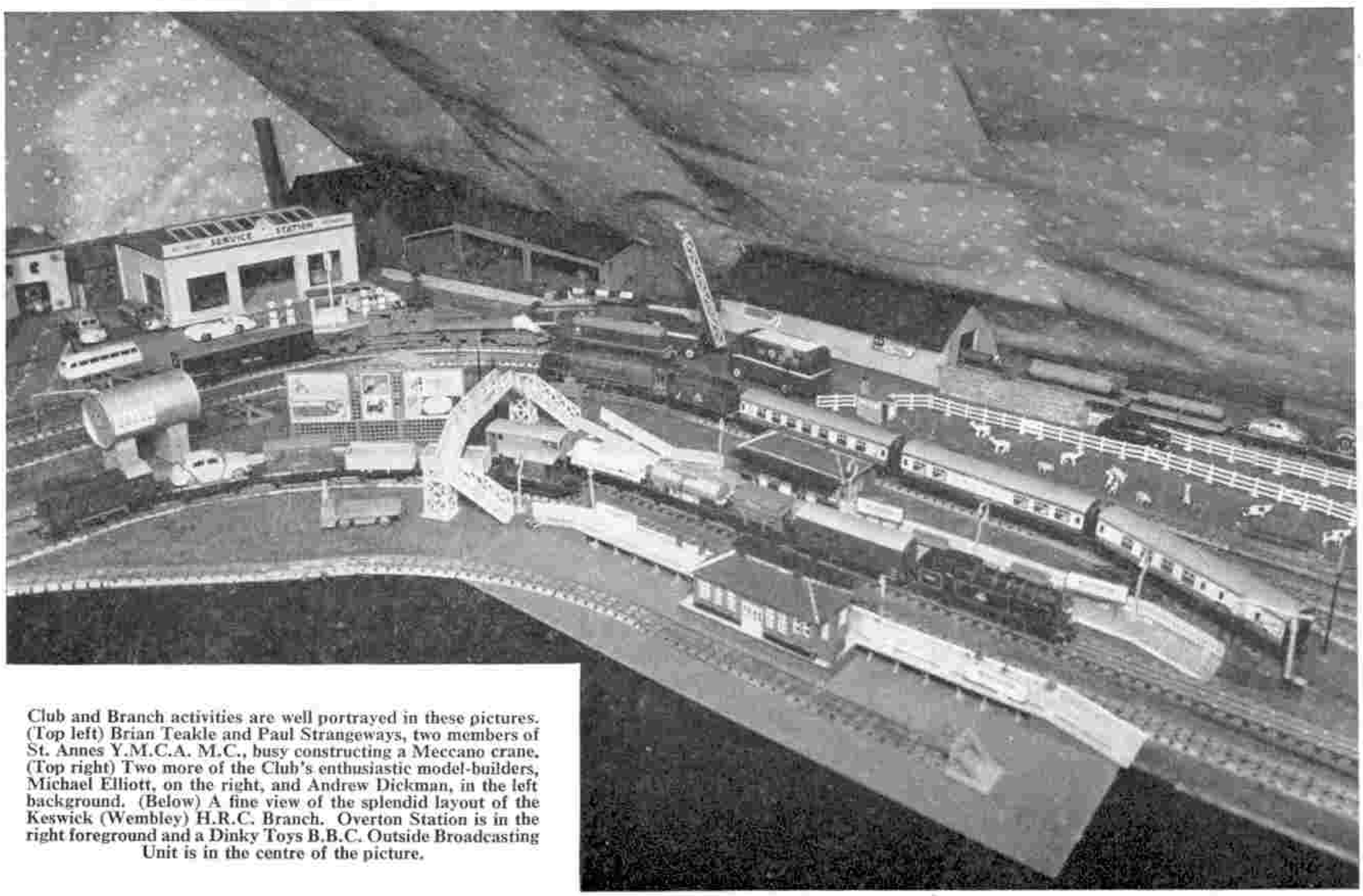
One last word—there was a television set in operation in the model-building room. What a tribute to Meccano that the boys' interest was concentrated on the work on the benches. It struck me as a singular example of how Meccano, when the builders' interest is fully occupied, does not fear competition from any quarter.

CLUB NOTES

AUSTRALIA

MAYLANDS M.C.—The members, again grouped into named "Factions", have been busy on models for the first exhibition of the Club year. *Green and Gold* are building an airport, *Black and Gold* are constructing a wharf, *Blue and Gold* a nuclear power station, and a new group led by Warren Bransby is building a racing car track. The Leader has resumed the "Model of the Month" awards, and the first winners since moving into the new Clubroom were Reg England for his fine model of the No. 10 Outfit 4–4–0 Locomotive and Tender, and Ian Anderson for his "Idea for a retractable undercarriage". *Secretary:* Trevor Criddle, 17 Kenilworth Street, Maylands, Western Australia.

CLUB AND BRANCH PICTURE PAGE



Club and Branch activities are well portrayed in these pictures. (Top left) Brian Teakle and Paul Strangeways, two members of St. Annes Y.M.C.A. M.C., busy constructing a Meccano crane. (Top right) Two more of the Club's enthusiastic model-builders, Michael Elliott, on the right, and Andrew Dickman, in the left background. (Below) A fine view of the splendid layout of the Keswick (Wembley) H.R.C. Branch. Overton Station is in the right foreground and a Dinky Toys B.B.C. Outside Broadcasting Unit is in the centre of the picture.

BARGAIN DISCOUNT APPROVALS

These are the QUALITY Approvals which offer you the stamps you've been looking for. They give a wide selection of modern and new issues (inc. Q.E.) in mint and used singles and sets. (No all-used available.) Commonwealth or Whole World selections. We allow a generous discount, pay outward postage and NEVER send again unless you ask. "Wants" lists welcomed and there is no obligation to buy. Send today for a really worth-while trial selection! Prompt attention to all orders. (No stamps sent abroad.)

THE BIRKDALE STAMP COMPANY, 104 Liverpool Road, Southport, Lancs.

Postal Business Only **No Callers**

2,500 QUALITY STAMPS

AT 1d. EACH!

Simply keep the stamps of your choice from our approval box and post the remainder. Fantastic Value! Many high denomination specimens, mint and used, to give you a wonderful opportunity to build up your collection. Our World Wide Selections contain many British Colonial and Special Issues commemorating International Events. (Write to Dept. Y3.)

500 REALLY TOP GRADE MINT & USED STAMPS

This SPECIAL SELECTION containing a predominance of very fine Mint and Used British Colonials, is sent in a box on approval, the stamps of your choice costing only 3d. EACH. (Write to Dept. C3.)

Both boxes contain only best quality stamps. You may browse through either, filling the spaces in your album and finding new series to improve your collection. Parents' approval is essential if you are under sixteen. 2½d. stamp appreciated.

The Connoisseur Stamp Service

10 PARK LANE, FAREHAM, HAMPSHIRE

We shall send you—quite FREE OF CHARGE **TWO VALUABLE VICTORY SETS** *COMPLETE*—if you request our superb selection of 1,000 TOP GRADE STAMPS, sent on approval in a box at only **2d. each!!** BRITISH COLONIALS, FOREIGN, NEW ISSUES. Write NOW. Enclose 3d. stamped envelope please to:

REMBRANDT PHILATELICS
(Dept T.4), 2 Newtown Road, Woolston
Southampton, Hants.

(Parent's approval essential if under sixteen)

FREE! POSTAL CENTENARY STAMPS

ANTIGUA—JAMAICA—AUSTRALIA

These countries recently issued special stamps to commemorate 100 years of postage stamps. Our **FREE** packet this month contains three of these stamps and many other interesting Queen Elizabeth Issues. Just ask to see our **"Tip-Top" Colonial Discount Approvals** and you will receive the **Centenary Packet** absolutely FREE OF CHARGE. Please enclose 3d. stamp for postage.

M. Theobald (100)
4 Sipson Road, West Drayton, Middlesex.

FREE MATCHBOX LABEL

This scarce MALTESE label sent FREE to all those sending 3d. for our famous MATCHBOX LABEL APPROVALS

MATCHBOX LABEL ALBUM
to hold up to 1,200 labels 6/- post free

WE OFFER MATCHBOX LABELS FOR SALE

SPECIAL OFFER—OCTOBER ONLY

50 diff. Belgium and 50 diff. India ..	2/6
100 diff. Japan and 100 diff. Sweden ..	7/6
50 diff. Czecho. and 50 diff. Holland ..	4/-
50 diff. Austria and 50 diff. Italy	5/-
100 diff. Germany and 100 diff. Macau ..	6/-
700 different as offered above	22/6

8-page list of offers 6d.

PICTURE CARDS

We offer complete sets in clean condition

50 Planes	2/9	50 Cricket	2/9
50 Ships	2/9	50 Space	2/9
50 Coins	2/9	50 Fishes	2/9
50 Birds	2/9	50 Trains	2/9
50 Motor Cars ..	2/9	50 Butterflies ..	2/9
50 Animals ..	2/9	50 Footballers ..	2/9

SPECIAL OFFER—3 sets for 6/6

Album to hold 200 cards 2/9 post free. **Send 1/3 for 48-page CATLALOGUE with over 350 illustrations.**

E. H. W. Ltd. (Dept. M)
12 SICILIAN AVENUE, LONDON W.C.1

COMMOMWEALTH QUEEN ELIZABETH CATALOGUE

Price 8/6 (postage 9d.)

The 1963 edition has just appeared, and as it is the only catalogue devoted exclusively to Commonwealth stamps of the present reign, coupled with the fact that for the price of a mere paperback, you get a beautifully bound and illustrated volume (makes a fine birthday or Christmas gift) it is only natural that sales look like putting up a record.

The important thing about the catalogue is that although its lists contain everything which the most advanced philatelist will need, such are their clarity, that even a beginner has no difficulty in finding his (or her) way about, which is one of the reasons why Commonwealth Catalogues have had such great success.

So do order at once, and by adding 5/- (10/- special air mail edition) you can book a year's sub to the Commonwealth Courier, which will be your guide and friend for a full year, by keeping you and the catalogue bang up to date.

Commonwealth Stamp Coy.
Leather Lane, Liverpool 2.

100 Different Stamps Free

Plus free membership Post Globe Trotter Club value 10/-. A good selection of new and old issues sent on 14 days' approval. Good discount. Also good bank lots, unsorted, 10/6 ½lb. Sample bag 5/6d.

Dept. (M), **D. H. ELLIOTT** (Postal only 6d.)
636a Bristol Rd., Northfield, Birmingham 31

32 PAGE ILLUSTRATED "STAMP FINDER" BOOKLET

absolutely FREE to all requesting our PRIORY APPROVALS. World-wide, Commonwealth, or Nature. FREE GIFTS—BEST DISCOUNTS—QUALITY STAMPS. Please send 6d. postage.

THE PRIORY STAMP COMPANY
(Dept. O), 86 Pauntley Road, Mudeford, Christchurch, Hants.

50 PICTORIAL STAMPS FREE

This packet of stamps is given absolutely **FREE** to all genuine applicants for my superior used British Colonial Approvals enclosing 4½d. in stamps for postage. Overseas Applications Invited.

D. L. ARCHER (M),
2 LITCHFIELD WAY, BROXBOURNE, HERTS.

110 DIFFERENT STAMPS FREE!

Foreign and Colonial including Pictorials, absolutely **free** to applicants requesting my famous discount approvals, enclosing 3d. for postage.

H. BANKS, 62 Avonlea Road, Sale, Cheshire

FOR OTHER STAMP ADVERTISEMENTS SEE ALSO PAGE 422

For Stamp Enthusiasts

Antigua

By F. E. Metcalfe

IF I was asked which will prove to be, in the long run, the most popular stamps among special issues, I think I would plump for those issued to commemorate the centenary of a country's postage stamps. As anybody who knows anything at all about postage stamps is fully aware, thematic collecting is all the fashion. There was a time when most collectors took every stamp which came their way—general collecting it was called. That was, of course, before the floodgates opened and stamps simply poured off the presses, making it necessary for collectors who wanted to get anywhere with their hobby to limit their field; hence collecting by theme, or subject.

At the present moment flowers, birds and fishes are about the most favoured subjects, but it looks as though the "miller will be drowned" here are well before very long, such is the current output of stamps designed to catch collectors' eyes. So new subjects for thematic collecting will have to be considered, and "Postal Centenary" issues being of such a character that even the most prolific post office can only bring out one set, strike me as being highly suitable for collecting, in these days of philatelic avalanches.

Already several countries have issued nice "Postal Centenary" sets, and one of the latest to join the proud company of those who have issued stamps for a hundred years and thus become entitled to release a centenary issue to mark the great event, is that tight little West Indian colony, Antigua. In view of its general popularity with collectors, especially in the United States, as well as in the British Commonwealth itself, this seems to be an opportune moment to take a look at what Antigua has been doing philatelically during the last century.

First a few words about the island itself. Antigua lies to the south-east of St. Kitts in the Leeward Islands. Actually the colony consists of Antigua, a mere 108 square miles in extent,

the smaller island of Barbuda 25 miles farther north, which has an area of 62 square miles, and a rocky islet which only covers half a mile. Trinidad once overprinted some of its own stamps for use on Barbuda island, but they are now obsolete and quite scarce, although not rarities.

Antigua has a much indented coast line, resulting in quite a number of natural harbours, and no doubt these were used much more in those not very far-off days when pirates haunted the region than they are today. The island also boasts of a mountain of volcanic origin—at least, I suppose you would call it a mountain, for Boggy Peak, as it is named, is 1,330 feet high. Barbuda, on the other hand, is flat, with a large lagoon, on the west side, which is separated from the sea by a sandbank. Alas, there are no rivers and few springs, so I suppose fresh water will be a bit of a problem at times. I know at first-hand how precious fresh water can be, having once lived in a place where it only rained when it felt like it, and it was not often in that mood! When it did rain it did a thorough job, and rain water pouring from the roof had to be carefully stored—every drop of it. No doubt Antigua follows suit.

Incidentally, our old friend Colon is given credit for finding Antigua during his second voyage in 1493. Thirty years later the Spaniards attempted a settlement, but found the island too dry. A century after that the French had a shot at settling down there, but they soon cleared off to St. Kitts. Finally, in 1632, Sir Thomas Warner, along with his son, successfully colonised it, but in the early years the Caribs, with their raids, made the lives of the settlers anything but pleasant. In 1666 the French again invaded the colony, but Britain never relaxed her grip and in 1667 Antigua was, by the Treaty of Breda, acknowledged to be a British possession.

The principal products of the colony are sugar, cotton and molasses, and no doubt rum will not be unknown. But it is about time I got down to the stamps, for after all these also are a quite profitable export.

Antigua's first stamps were those of Great Britain, issued between 1856 and 1858 (they were not as fussy about dates in those days), and the postal cancellations A02 and A18 are their distinguishing marks. Then, in August 1962, Antigua issued its own stamps—a 6d., a facsimile of which is to be found on the stamps of the "Postal Centenary" issue to which I have already referred. The next year a 1d. stamp appeared and between 1864 and 1867 there were several printings of these modest values.

These stamps were printed by the long-defunct firm of Perkins, Bacon and Co., but in 1871 the company was requested to turn in the plates, and the firm of De La Rue (still going strong as stamp printers, etc.) got the job of printing more 1d. and 6d. stamps for Antigua, which they did in 1872, with further printings four years later.

Other values, with the Queen's portrait, appeared as time went on, but the big change came in 1903 when a new set from ½d. to 5/– was issued. (Incidentally, as well as its own stamps Antigua used stamps common to the Leeward Islands from 1890 to 1903.) All values in the new set except the top depicted the badge of the colony, and the highest, 5/–, bore the head of King Edward VII.

From then on the pattern was very similar to that followed by most of the West Indian colonies, but there is one set which stands out because of its scarcity. In 1932 an issue of ten stamps to 5/– was released to mark the tercentenary of the colony. Probably it was felt (for these were the days of the big slump) that the profit to be obtained from this issue would come in very useful. No doubt it would have done had there been any profit, but few people had ten shillings to spend on a set of stamps so sales were very small. We do not know the numbers, as I had not got to work in those days to get the Crown Agents to give sales figures, which they do now, but the fact that the 5/– value alone is catalogued at £9 today proves how few sets were sold.

As I have said, apart from this issue things have gone normally, but if anyone wants to collect Antigua they could not do better (unless they have a lot of money to spend) than start with the "KGVI" stamps issued in 1938 and follow on to the latest "Postal Centenary" issue. There are quite a few nice inexpensive stamps to go at, full details of which will be found in the Commonwealth Catalogue. In the "KGVI" issues there are one or two nice shade varieties, and copies can be picked up. One, the 1½d. lake-brown, is quite scarce, yet I found one only the other day, marked at 6d. Be sure, however, that you

(*Continued on page 424*)

SPECIAL 1963 OFFER—COMPLETE

STAMP COLLECTOR'S OUTFIT FREE!

Here's your chance to get a Beginner's Stamp Collector's Outfit absolutely FREE. This outfit, worth at least 5/–, contains everything to start you off on the World's Finest Hobby!

This is what it includes:

1. World Stamp Album with 120 illustrations to hold 1,550 stamps.
2. Magnifier to check stamps for flaws, etc.
3. Stamp Wallet for "swaps" etc.
4. Perforation Gauge to measure perforations.
5. Black metal Watermark Detector Tray—and a leaflet explaining how to use items 4 and 5.
6. Metal Tweezers for handling stamps properly.
7. 16-page XLCR Stamp Finder Book, to enable you to identify stamps easily.
8. Land Finder World Map.
9. Packet of Stamp Hinges.
10. Exact full colour facsimile of World's Rarest Stamp. (Original worth over £35,000!)
11. "How to organise a Stamp Club" Leaflet.
12. Super Stamp Club Badge, in red, white and blue to wear on your lapel.
13. Price List of Albums, Packets of Stamps, Accessories, etc.
14. Three Special "Prize Stamps" valued at 2/6d. in 1962 Catalogue.
15. Special Collection of 52 ALL DIFFERENT STAMPS to start you off on this grand hobby.

To: **PHILATELIC SERVICES (Dept. MMI), Eastrington, Goole, Yorks.**

Please send me the Free Stamp Collector's Outfit described above and your Special Approvals for inspection. I enclose 9d. in stamps for postage and packing.

NAME .....

ADDRESS .....

..... (MMI)

These items will be sent to you absolutely FREE if you fill in the coupon on left and post it to us, enclosing only 9d. in stamps for our postage. We will also send you a selection of our famous Special Approvals—priced stamps which you can buy if you wish, or return if you don't wish to buy them. (No need to buy anything!) Please tell your parents you are sending for this FREE Outfit and Approvals.

How about your friends? Owing to the value of this Offer, it is limited to one Outfit per applicant. But many of your friends will want to send for this offer so write their names and addresses on a piece of paper, enclose 9d. for each, and we will gladly send the Outfit and Approvals to them. No need for them to use the Coupon.

FREE SPECIAL OFFER

1953 NIGERIA Q.E. ½d.—2/6

9 VALUES. FINE USED. CAT. 5/-

THE ABOVE SET ABSOLUTELY FREE TO ALL APPLICANTS FOR OUR BRITISH COLONIAL APPROVALS ENCLOSING 3d. STAMP

BARGAIN OFFER

BARBADOS Q.E.	48c.	1/9
	$1.20c.	4/–
	$2.40c.	8/–
ADEN Q.E.	10/–	5/–
S. AFRICA Q.E.	10/–	3/–

R. J. SMITH & SON
81 Redbreast Road, Bournemouth

---

3 TRIANGULARS FREE to everyone ordering one of these PACKETS

25 diff.		50 diff.		100 diff.	
Ceylon	1/9	Bulgaria	1/6	Canada	6/–
Cyprus	4/6	Chile	2/3	China	1/6
Ecuador	2/3	Egypt	2/6	India	3/–
Hong Kong	3/9	French Col.	1/9	Malaya	8/–
Iceland	3/9	Greece	2/–	Russia	6/6
Jamaica	2/9	Luxemburg	3/6	Sweden	2/9

Please tell your parents.

POSTAGE 3d. EXTRA. C.W.O. LIST FREE

Battstamps (T) 16 Kidderminster Rd., Croydon, Surrey.

FREE—6 DIFF. GHANA PICTORIALS

All large-size stamps depicting **President Nkrumah, Bishop Bird, Spider Lily, Volta River,** etc., to GENUINE applicants for my famous Booklets of Used Colonials at chiefly 1d. per stamp. Wonderful Bargains. *(Enclose 3d. stamp for postage.)*

S. FENLEY, 16 Rosebud Avenue, Bournemouth

INTERESTING OFFERS:—

GREAT BRITAIN 1841 2d. Blue used 4/6
1924 Empire Exhibition set of 2 used .. 3/6
1929 Postal Union set of 4 used 1/9
1939 K.G.VI 2/6 Brown .. used **2/6**: mint **9/–**
1939 K.G.VI 5/– Red.. .. used **1/3**: mint **7/–**

New List of G.B. stamps now available.

No Free Stamps but satisfaction at the lowest possible prices. Overseas orders welcome. Lists Free. Postage 4d. **H. V. JOHNSON & CO.** P.T.S.
78 Dale Road, Wickersley, ROTHERHAM

VERY SPECIAL RUSSIAN PACKET

consisting of 25 different worth-while stamps. Sent **FREE** to approval applicants if postage is enclosed.

YULWONTMOR STAMPS (Dept M), 54 Compton Avenue, Leagrave, Luton, Beds.

FREE Five 1962 Jamaica Independence FREE
This set of latest issue (August 1962) **ABSOLUTELY FREE** to applicants for my popular "Marvel" Appvls. enclosing 6d. towards cost of postage, etc. Tell your parents.
W. GRANVILLE LUCAS, (J.1), Hinckley, Leics.

BRITISH Colonial, Foreign, Spacefillers, 15 a 1d. Pictorials, Commemoratives, Colonials, Foreign ¼d., ½d., 1d. Postcard secures hundreds approvals.
PILGRIM
Priory View Road, Moordown, Bournemouth

20/- FREE GIFT 20/-

To all requesting to inspect a selection of our stamps on approval we will send **FREE** 20/– **Face** value British Commonwealth stamps, including 5/–, 2/6, 1/6 and 1/– values. Please state whether Colonials, Foreign or Mixed approvals are required and enclose 6d. in stamps to cover cost of postage to you.
Lindsey Stamps (M), 19 Chantry Lane, Grimsby, Lincs.

SERIOUS COLLECTORS SHOULD SEND FOR SELECTION OF FIRST-CLASS APPROVALS STATING CHIEF INTERESTS.
H. B. LANG, 3 Brooklyn Avenue South Norwood, London S.E.25

DIAMOND TRIANGLE PKT. 30 FREE!

MONGOLIA WORLD FOOTBALL CUP 1962 Diamond, CONGO **MAILPLANE** Triangle, 30 stamps free! Send 3d. post, and request appvls. **ROSEBERY STAMP SERVICE (Dept. S), 37 Rosebery Rd., Epsom, Surrey**

FREE, Malta, New Issues commem. Gt. Seige to genuine applicants for KGVI/QE appvls. enclosing 3d.
TWO REIGNS STAMPS, 53 Windsor St., Burbage, Leics.

No Gifts, No Gimmicks—Just worthwhile approvals—used at ⅓rd cat. or mint at face. 10% discount.
K. HOYE, 6 Merriden Road, Macclesfield, Cheshire

2,500 STAMPS FREE ! ! Send 3d. stamp for full details of Big Bonus Offer and Bargain Approvals.
P. YEOMAN, 18 Brainton Avenue, Feltham, Middx.

FREE! STAMPS CATALOGUED OVER 15/–
To all approval applicants. 3d. postage.
G. I. Pattle, 57 Union Street, Stowmarket, Suffolk

Genuine Approval Applicants ask to see my good value Stamp Selections on approval. Postage appreciated.
Nicholson, 41 Collins Road, Wednesbury, Staffs

FREE—STAMPS CATALOGUED 5/–
to applicants for ½d. approvals. *(Letters only)*
COX, 15 OLIVER ROAD, SUTTON, SURREY

FOR OTHER STAMP ADVERTISEMENTS SEE ALSO PAGE 420

Stamp Gossip

The Source Of The Nile

IN spite of what is often said to the contrary, collecting stamps, especially modern issues, does widen one's knowledge of what is going on in the world, as well as of what has gone before. An example of what I mean is to be found in the set of four special stamps issued, on July 28 last, by Uganda to mark the centenary of the discovery of the source of the Nile by John Hanning Speke, at Jinja, on July 28, 1862. This important discovery solved a mystery which had worried some people even as far back as the pre-Christian era. The Nile is the only outlet for the waters of that great "inland sea" Lake Victoria, with its incredible coverage of 26,828 square miles. The actual source of the Nile is where the lake waters fall over a drop of 15 feet to form the river, which eventually ends its journey at the Mediterranean.

Uganda, the country which has issued the stamps, lies astride the equator, in the heart of East Africa, and hitherto has been joined up with Kenya and Tanganyika. Only half of Lake Victoria is actually in the new country, but the White Nile has its source there, so Uganda is the right country to commemorate the mighty Nile. There are four values in the set, all of the same design, and the few shillings which a set will cost will be well spent. I think there is a great future for these stamps.

BAHASA JIWA BANGSA

That, I believe, in Malayan, stands for *Language is the life of the Nation*, and as can be seen from the illustration here it is the caption on the three triangular stamps issued on July 21 by the Malayan Federation to help publicise the National Language Month. Needless to say, the format of the stamps themselves was enough to make them popular, for although dealers do not like stamps of this shape very much—they are awfully difficult to separate without damaging the perforation — collectors simply lap them up. As for the design of the stamps, which was the same for all values, there is more to it than might be thought at a casual glance. It shows a Palmyra leaf, and the official explanation of this choice is that these palm leaves played a big part in the development of language and literature during the early centuries, before the advent of paper. The federation is anxious for all Malayans to have a common language, and from 1967 it is intended to have this tongue as the only one used officially throughout Malaya.

"THE CHAPMAN"

It is not often that South Africa issues any special stamps, which makes them all the more welcome when any are released by that country. The two stamps, 2½c. and

12½c., issued on September 1, are no exception. Indeed, they are of particular interest to British collectors (very many of whom collect South Africa) as they were released to mark an event closely connected with people of our own flesh and blood. The ship depicted on the stamps is the one which, on April 10, 1820, arrived at Algoa Bay with the first large group of British settlers. The stamps were issued to mark this event, and it is interesting to note the emblems at the four corners of each stamp.

ONCE AGAIN

Nowadays philatelists do not suspend their stamp collecting in summer as used to be the case, but even so the advent of the new season's catalogues does seem to bring new life to the hobby. The first one to appear is Gibbons, Part 2, which deals only with the stamps of Europe (less Great Britain) and its vanishing colonies. Unfortunately, with printing costs going up all the time and more stamps to list, the price has had to go up, too, from 30/- to 37/6—a hefty rise, but a very fine catalogue. Then there is the Gibbons, Part 1, which deals exclusively with British Commonwealth stamps, and which has only gone up by 1/6 to 24/-. But collectors of QEII stamps are better off still, as the Commonwealth Catalogue —the only one published which deals exclusively with stamps of the present reign—remains at 8/6. So everybody is catered for, and now is the time to take up the reins again, if you have let them go during the summer. Not that you are likely to have done so, if you are keen collector.

(*Cont. on page 424*)

By E. W. Argyle

Locomotives On Stamps

NO. 1020, a heavy, main-line passenger train locomotive, shown on the 30c. stamp above, was the last steam locomotive to be built for the Finnish State Railways. After its completion in 1957 only diesel locomotives were built. No. 1020 has the name "Ukko-Pekka", after the nickname of the Finnish President at the time when this type of engine was constructed, P. E. Svinhufud, who was also called "Ukko-Pekka", or in translation, "Old-Man Peter".

The top speed of the engine is 110 km. per hour, and it weighs 93 tons in working condition. There are 22 locomotives of this type still in use in Finland.

A typical German-built Pacific type engine, such as hauled the major passenger trains in Jugoslavia in pre-war days, is depicted on this 3 din. stamp. It is one of 40 similar locomotives built by the Berlin Maschinenbau, successors to Schwarzkopf, in 1931, with the conventional large sheet exhaust deflectors common all over Europe.

100 Different Stamps FREE!

Plus Super Perforation Gauge to all applicants asking to see my famous ¼d. upwards Approvals. British Colonial or Foreign. Don't delay, write today enclosing 4½d. in stamps for postage.

C. T. BUSH (MM10)
53 Newlyn Way, Parkstone, Poole, DORSET

For Stamp Enthusiasts—

(*Continued from page 421*)

get the right one. The last printing of this value is rather like the scarce lake-brown, and often, I am afraid, sold as the scarce shade.

So to sum up, Antigua is a nice little country to collect. It has a number of rare stamps, but quite a presentable collection —not a big one, of course—can be gathered for a relatively small sum. As it never looks like being a country which will go haywire (as some do) its stamps are likely to continue being popular.

Stamp Gossip—(*Continued from page 423*)

THE TIP OF THE MONTH

It will have to be short and sweet this time, for I have little space left. I am very fond of Norfolk Island stamps, and many others seem to share my taste. No wonder, for the beautiful flower stamps of 1960–1 are enough to entice anyone. But the stamp which I feel is going to be worth securing at its present price is the "Local Government" commemorative stamp, face value 2/8, issued late in 1960. My advice is, make sure of your copy, if you collect this country.

Road and Track—*Continued from page 389*

One of the most fascinating cars I have driven during the past few weeks is the ordinary DB4 Aston Martin. I say ordinary because this car was not fitted with the special, more powerful Vantage engine, but its handling was fabulous and acceleration breath-taking. The wonderfully smooth, silent 3·7 litre twin overhead camshaft engine would whisk the DB4 to a steady 120 m.p.h. in little more than half a minute, while 100 m.p.h. came up often and in well under half a mile.

I think this must be one of the fastest luxury four-seaters in the world—its maximum speed is 142 m.p.h. The large servo-assisted Dunlop disc brakes are the smoothest and most powerful I have ever used, taming its enormous speed quickly and safely. At all speeds the ride is superbly comfortable. If I had £4,000 to spare this is one car I would like to own.

Changes have been made to the Ford Classic saloon and handsome Capri coupé. Both are fitted with a new 1½ litre five bearing crankshaft engine and a new gear-box with extremely good synchromesh on all four gears. Steering and suspension require no maintenance; greased for life joints are fitted and the old 1,340 cc. engine has been discontinued.

I had an opportunity of driving the new Classic and found the improvements have completely transformed the car. Maximum speed of 83 m.p.h. is little higher than before, but acceleration is two seconds quicker to 50 m.p.h., while the extra smooth power makes handling so much easier. Under fast driving, fuel consumption is 26 m.p.g., improving to around 30 m.p.g. at touring speeds. The prices are unchanged, but Fords have now made a good car even better.

Racing Personalities—

(*Continued from page 389*)

His wonderful collection of clocks, dating back many years, gives him a great deal of pleasure, but I think he is even more fond of repairing an old clock in his home workshop, for he is still at heart a very skilled and practical mechanic.

Although Lord Nuffield has made a great deal of money, he has given most of it away. His tastes are simple. Until recently his personal car was a Wolseley Eight made in 1939, but a few months ago he acquired one of the 6/90 Wolseleys, painted black like his other car.

All his life W. R. M. has had the ability to gather around him a great team. Only recently, as the firm he founded celebrated its Golden Jubilee, did we see its newest and most exciting design, the astounding little Morris 1100.

Britain's Last Airship—

(*Continued from page 397*)

including Lord Thompson, the secretary of State for Air, and Sir Sefton Brancker, who was Director of Civil Aviation.

At 2 o'clock on the morning of October 5, R 101 crashed on a hillside near Beauvais, in France, and was completely burned out. Only eight people survived the crash, and two of these lived only a few hours. Two of the remaining survivors, who were members of the crew and who were in the after-gondola of the airship, still work at Shortstown.

While R 101 was making her trials the R 100 had journeyed safely to Canada and back, but there was some talk of replacing her engines with diesels, when it was hoped she would be able to carry a load of 26 tons for 2,600 miles at a speed of 75 miles per hour. Nowadays, the U.S.A. Cargomaster can carry 20 tons for 4,000 miles and the Boeing A 707 can transport 100 passengers across the Atlantic during the night.

In spite of the successful trials of R 100 the disaster of her sister ship was responsible for her *coup-de-grace*, and she was dismantled. Thus ended the short but not inglorious reign of Britain's last lighter-than-air craft.

Air News—(*Continued from page 393*)

screen, deflect the evaporated drops away from the glass. To prove that the idea works, it was tried out on a fighter in monsoon rains in the Far East.

MEET THE STEPULATOR

For those who don't know (which included me until recently) a Stepulator is an electric battery-operated stair climber which is particularly useful at airports near skiing resorts during the leg-breaking season.

It looks like a small tank, with two thick rubber tracks and a comfortable seat on top. All the passenger has to do is sit back, prop up his bad leg, if he has one, and let the attendant flip a switch. He then goes up the stairs and into the aircraft with never a bump!

United Air Lines have been testing the Stepulator with a view to helping the estimated 200 passengers who need special help in boarding and leaving their aircraft each day at 117 cities on their 18,000-mile network of routes.

Dinky Toys News—

(*Continued from page 404*)

main housing, plus all the additional parts, such as insulators, etc., in a plastic bag inside the housing the base of which is removable. Instructions are also provided. All the parts have been designed to make cementing unnecessary but a suitable fixative can be used if you do not intend ever to dismantle the transformer, which is built up by positioning all the different parts as shown in the diagram on page 404.

The completed model is 13¼ inches long, is fitted with windows and is finished in a bright, modern colour scheme with the tractor yellow, the trailer light grey and the transformer dark grey. The wheels and loading ramps are red and the tractor radiator is silver.

Railway Statistics—

(*Continued from page 405*)

of cargo were handled by the Irish and Continental cross-channel shipping services operated by British Railways in the twelve months under review.

And in spite of all the loads carried, Britain's railways are still the finest in the world—and the safest, too.

Calling All Bus Spotters—

(*Continued from page 425*)

As if this competition were not fierce enough, some of the registered camp site owners are now buying their own minis. For instance, E. A. F. Davison of Garrison Farm, Hugh Town, has recently purchased a Bedford "Workobus" (634 HRL) to convey his campers to and from the Quay and Airport, and hopes soon to take them on trips round the island to see the sights and reach Pelistry Bay and other beaches.

Calling All Bus Spotters—

(*Continued from page 405*)

giving the island a public transport monopoly. By now, the fleet of five vehicles was deployed in three distinct duties—the Airport Service, the circular stage carriage route round the island (Hugh Town–Telegraph Hill–Holy Vale–Maypole–Old Town–Hugh Town) and the famous Vic's Tours. These last-named tours are run direct from the quay, in the afternoon, for passengers who come from Penzance aboard the *Scillonian* on day excursion tickets, and from the Park in the evenings, for local residents and visitors. They are described on the posters as "Local History, Poetry and sometimes a Song". If you are fortunate enough to have Vic himself at the wheel, you certainly get all three, plus his fabulous list of the inhabitants of Tresco, St. Agnes and St. Martins, and further, an imitation of a sea-sick *Scillonian* passenger singing a ballad.

Round Maypole the road is so narrow that the coach can barely squeeze through. At Old Town, a spring storm, accompanied by waves which swept over the 50 ft. high Pulpit Rock, wrecked the coastal road, and during August it was still difficult to negotiate. However, these hazards are everyday business for Vic and his merry band.

At present, the Blue and Cream fleet consists of the following vehicles: BDL 92 Bedford WTB Duple C25F; EFJ 92 Bedford WTB Heaver C25F; DBU 78 Bedford OB Plaxton C25F; JCV 663 Austin CVB Rowe C21F; GDL 25 Austin Whitson C29F; 833 HCV Commer DP12C.

Although the Airport Service and the Tours are still well patronised, the circular stage carriage route has suffered from severe competition from private motorists during the past two summer seasons—the £7 fee does not deter many visitors from bringing over their vehicles in the four-car hold of the *Scillonian*—and from the new taxi-buses. Mr. Townsend has re-entered the p.s.v. field with a Thames 15 cwt. with a Ford 12-seater body, and since then three other local residents have joined in the business.

Since no road fund licences are needed on St. Mary's, registration plates are not carried by new vehicles. Indeed, I saw one young motor-cyclist who had a skull and crossbones on his rear plate. However, vehicles run on the mainland often retain their plates, although I noticed that both BDL 92 and DBU 78 had lost their front ones. The mini-buses haul a one-wheel trailer for passengers' luggage when meeting the *Scillonian*, and it is an interesting study to compare the performances and appearances of these miniature p.s.v.'s, which are listed below:

Rear Registration Plate	*Make of Chassis*	*Livery*	*Owner*
5217 LJ	Morris	Light Blue	Cannon
TAXI PHONE 11	Thames 15	Dark Blue	Treneary
MINI-BUS	Thames 15	Cream	Townsend
TAXI—TEL. 236	Bedford	Light Blue	O'Grady

(*Continued on page 424*)

Fireside Fun

"Are there any improvements in this town since I was here last?"

"I really couldn't say. I've been living out of it for six months now."

"Any other improvements?"

"Yes, it looks contemporary—well, temporary anyway."

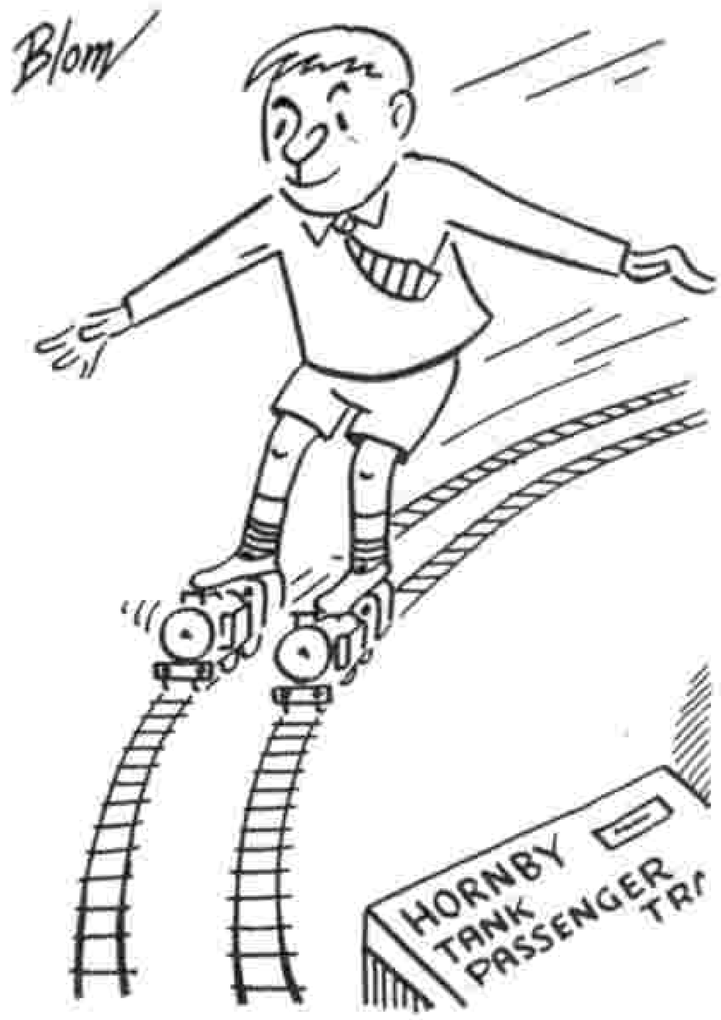
Clerk: What's the matter, Sonny?

Little Boy: Please, Sir, have you seen a lady without a little boy who looks like me?

* * * *

"You've put your gloves on the wrong hands again, Peter."

"But I haven't any others to put them on, Dad."



A Hollywood producer called a writer into his office to discuss the man's latest script. "It's not bad," the producer admitted, "but I want you to rewrite it and put in more conflict."

"Conflict?" asked the surprised writer.

"Yes," was the answer, "and I want you to be sure that you know the meaning of conflict. Listen, this is what I call conflict: One guy wants to be a jet pilot and the other guy wants to be a concert pianist, and they're Siamese twins. That's conflict!"

* * * *

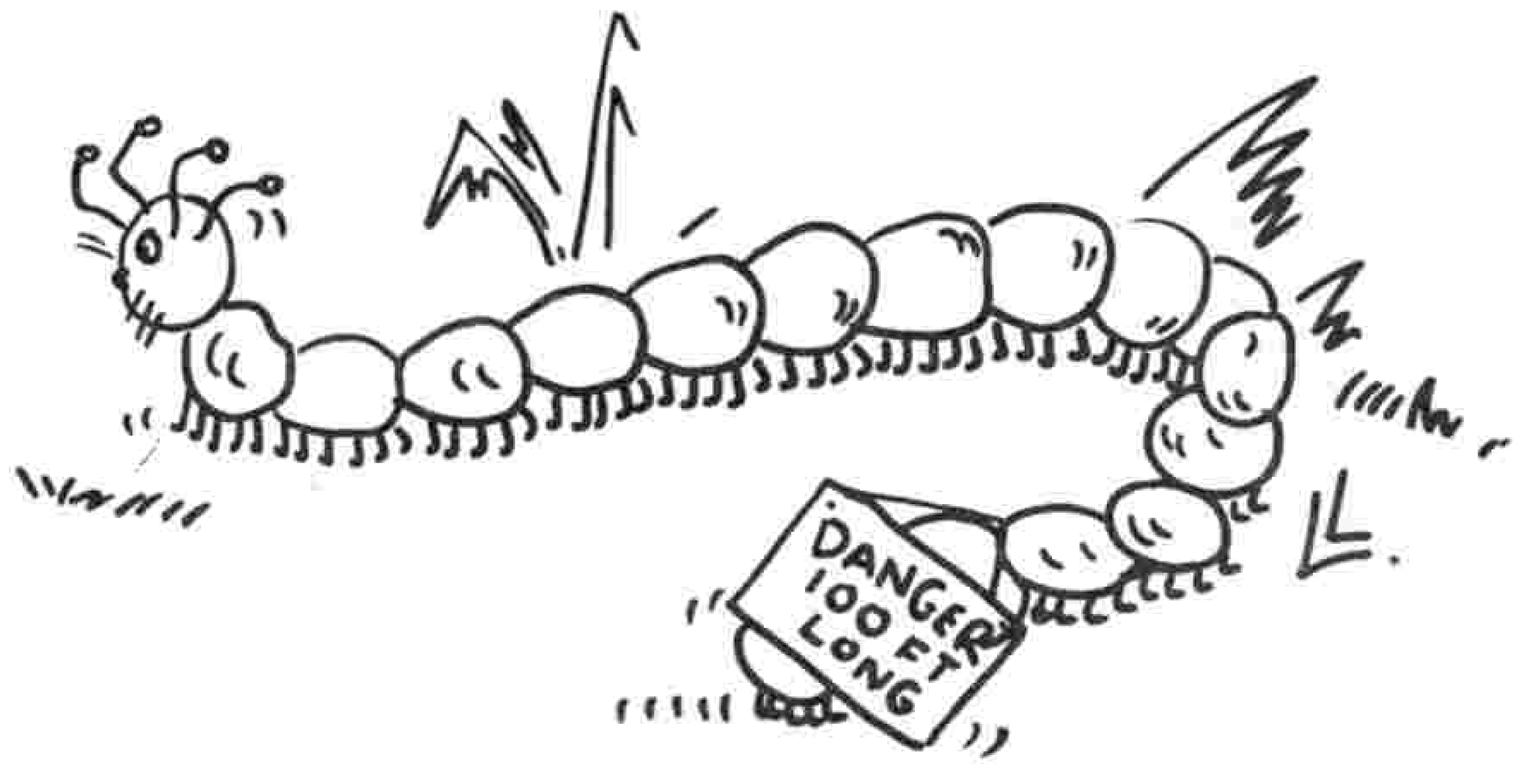
"I want some consecrated lye," said the customer to the chemist.

"You mean concentrated lye."

"It does nutmeg a difference," the man retorted. "That's what I camphor. How much does it sulphur?"

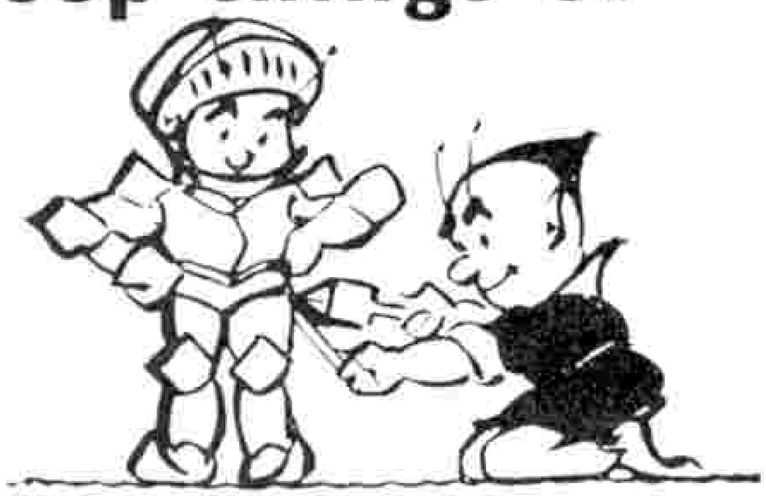
"Sixpence. Bright fellow, aren't you? I never cinnamon with so much wit."

"Oh, I don't know. As yet ammonia beginner at it."



WHETHER YOU SOLDER to-

(a) **keep things UP**



(b) **keep things DOWN**

(c) **keep things RUNNING**

success is certain with

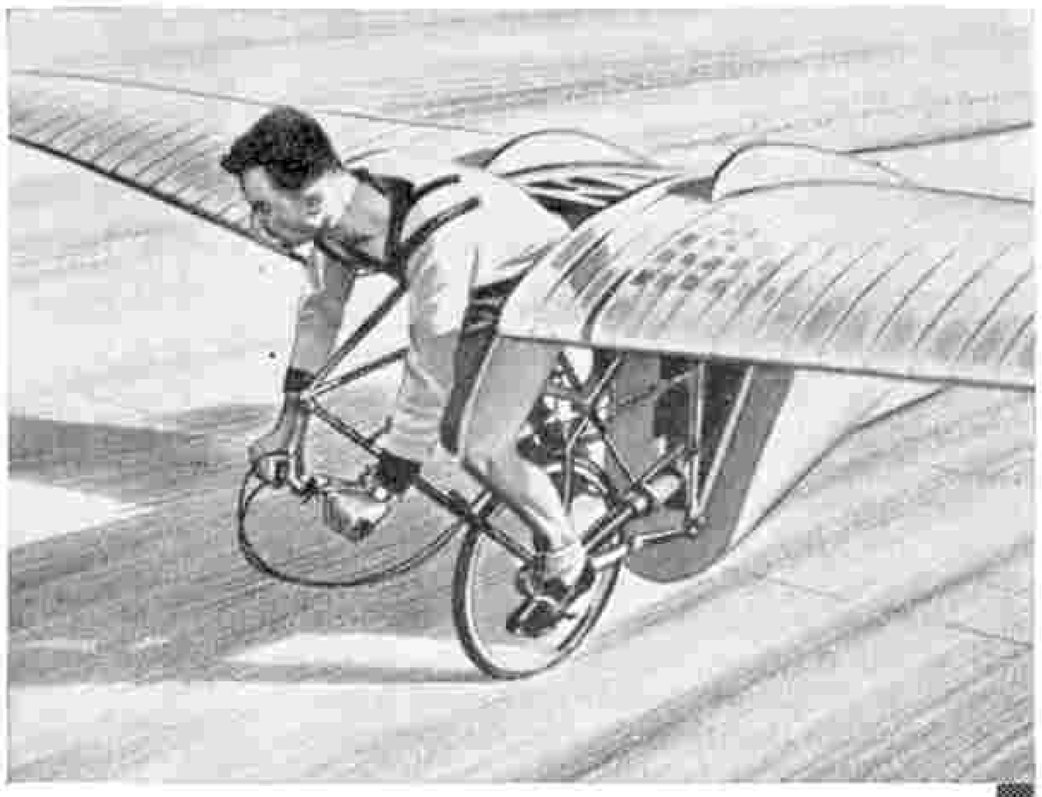
FLUXITE

A touch of FLUXITE sets the seal on every soldering job—it's the sound simple way to success. FLUXITE, famous for fifty years, is as popular today as the best deserves to be—it's the automatic choice of engineers and mechanics the world over!

M.P.98

Obtainable from all good-class Ironmongers & Hardware Stores

FICTION TO FACT



Flying man! The Greeks symbolized man's desire to fly by creating the myth of Icarus, who used feather and wax wings to escape from prison on the island of Crete. The dream of every age, man-powered flight became fact last May, when Mr. Wimpenny flew the Hatfield Man-powered Aircraft Club's "Puffin" for over half a mile. He used a bicycle pedal action to drive the propeller, and stayed airborne for just over two minutes.

DUNLOP SYMBOL OF PROGRESS

This enterprise in man-powered flight is paralleled in Britain's powered aviation industry by the De Havilland "Trident", for which Dunlop supplies tyres, brakes, anti-skid units and thrust reversal control units.

CFH/PR2/26

Join the CHILDREN'S BOOK CLUB and receive

WONDERFUL BOOKS FOR ONLY 4/- EACH!

Each month you will be sent by post a recent best-selling book by one of your favourite authors —chosen especially for your enjoyment and interest by the Children's Book Club. These splendid editions, by authors such as Malcolm Saville, Monica Edwards, Capt. W. E. Johns, Noel Streatfeild, etc., are excellently bound and printed in clear modern type, with many illustrations. You will be proud to own a library of these valuable books. We are fortunate that the huge membership allows us to offer these books to you, as a member only, for ONLY 4/-, when they would normally cost you three times as much. In addition to these books, you also receive a *FREE* monthly magazine, containing news of forthcoming books, a FREE Pen Pal Club, and many easy-to-enter competitions—the WIN A PONY COMPETITION will be held in a month or so. Also you are sent a FREE Club badge and you receive wonderful FREE gifts when you enrol your friends in the Club.

JOIN THE CHILDREN'S BOOK CLUB TODAY and you will own your first valuable book in two or three days! Fill in the coupon down below and post it without delay.

THESE GREAT TITLES

Forthcoming books include:

THE LOST POTHOLE
by Showell Styles.
Published at 12/6.

SPRING ADVENTURE
by John Pudney.
Published at 10/6.

THE BORROWERS ALOFT
by Mary Norton.
Published at 12/6.

THE QUEST FOR THE PERFECT PLANET
by Capt. W. E. Johns.
Published at 8/6.

THE OUTSIDER
by Monica Edwards.
Published at 12/6.

THE CAVE ON THE CLIFF
by Kathleen Mackenzie.
Published at 12/6.

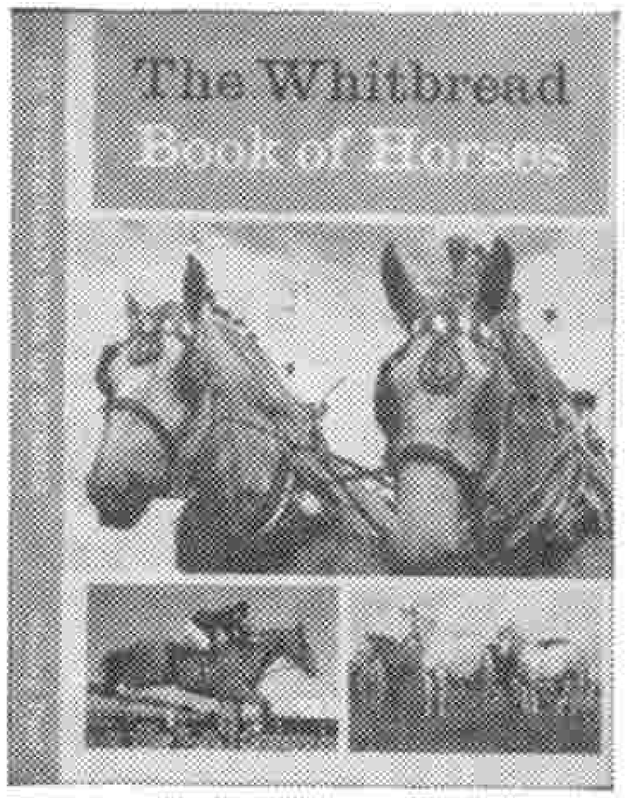
EACH ONLY 4/- TO MEMBERS!

WIN A PONY!

The Children's Book Club is holding a competition in conjunction with WHITBREAD'S in which the first prize will be a PONY! A lovely pony will be given by WHITBREAD'S to members of the Children's Book Club and this can be your very own by entering an easy competition to be held in a few weeks' time.

All you do is enrol a friend in the Club and you will be sent a FREE copy of the magnificent WHITBREAD BOOK OF HORSES, which, since it came out, has proved to be a tremendous best-seller. With this book you will receive an entry form for the competition which you can enter free.

THE WHITBREAD BOOK OF HORSES is a splendid volume packed with dozens of exciting photographs. There are chapters on Ponies, Pony Clubs, Point-to-Points, Show Jumping, Flat Racing, Fox Hunting and several others. If you would like this book anyway, you can buy it from Foyles, 121-125 Charing Cross Road, London, W.C.2, either by calling in or by writing, and also at your local bookseller.



FILL IN THIS ENROLMENT FORM TODAY

To The Children's Book Club, 121 Charing Cross Rd., London W.C.2

I wish to join the Children's Book Club, and agree to purchase the book issued each month to members at a cost of 4s. (postage 1s.). I agree to continue my membership for a minimum of six books and thereafter until I cancel. **Meccano/Oct. 62**

☐ ***I will pay for my selections on receipt.**

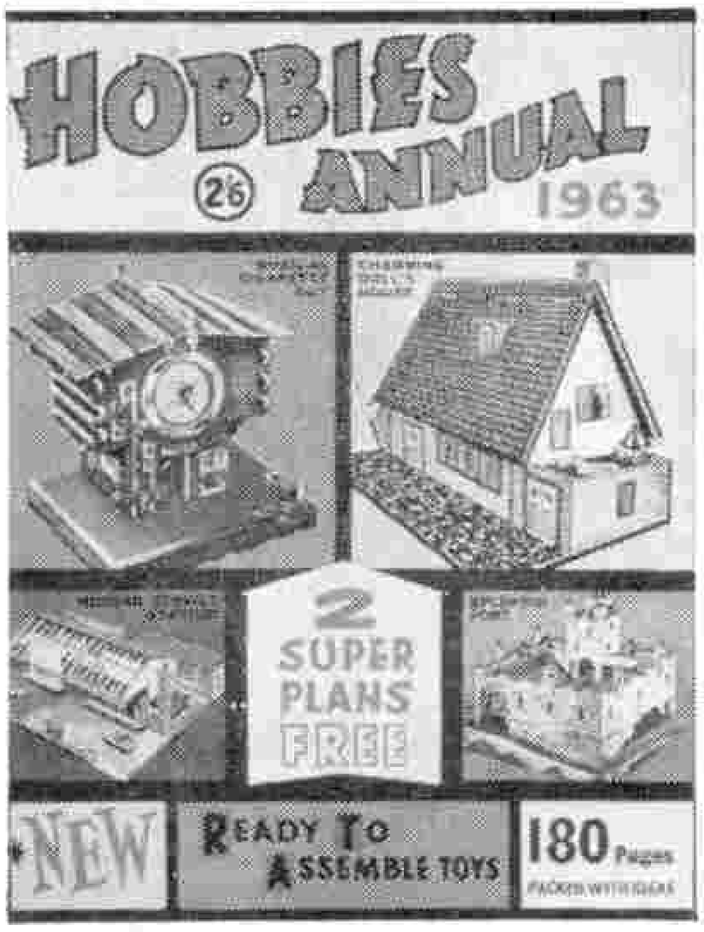
☐ ***I enclose 30s. for six months' subscription.**

*Place √ in the space above, as required.

NAME .....
(*Block letters, please*)

ADDRESS .....

Overseas members should pay by advance subscription. Prices as for inland (except S. Africa, Australia, New Zealand and U.S.A.)



HERE IT IS!

The very latest
HOBBIES 1963 ANNUAL

Get your copy now of this completely revised publication consisting of 180 pages crammed with interest for the modeller, woodworker and handyman. Details of hundreds of gift, novelty and model projects for all the family.

TWO FREE DESIGNS with each copy, for making a superb Continental Doll's House and a novelty "Swiss Chalet" clock which serves as a cigarette box and includes a musical movement.

OUTSTANDING VALUE FOR 2/6

From all newsagents, bookstalls, model and handicraft shops, Hobbies branches and stockists, etc., price 2/6 (by post 6d. extra).

Send in the coupon NOW

To Hobbies Ltd., Dept. 961, Dereham, Norfolk.

Please send copy of Hobbies 1963 Annual containing 2 FREE Designs. I enclose 3/– (including postage).

Name .....

Address .....

.....

.....

E.A.M.E.S.

The Railway Specialists.

NEW

Wills' Loco Body kit of the Stanier LMS 2–6–4 Tank, Class 4, to fit on Hornby-Dublo standard 2–6–4T chassis. **65/–**

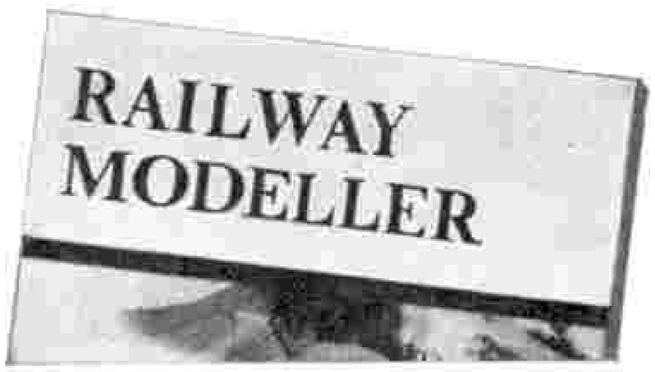
Hornby 'Deltic' bodies, St. Paddy, or Crepello, to fit on standard Co–Co chassis. **17/–**

Please allow extra for postage on orders less than £5 value.

Try our service, over the counter, by post, or by 'phone.

EAMES (Dept. HD), 24 Tudor Rd., Station Hill, Reading.

Tel. 50868



the start of the season...

The enlarged October 'Railway Modeller' with free pull-out booklet 'Painting the Background' heralds the start of the modelling season. Lavishly illustrated articles 'Show you How' to get the most from your hobby. **2/– monthly.**

PECO PUBLICATIONS
SEATON . DEVON

GRAPHITE GREASE

This Grease has a thousand and one uses and retains its properties better than oil. Absolutely ideal for use with Meccano Models, Hornby-Dublo, Hornby '0' Gauge equipment, Dinky Toys and Hornby Speedboats.

No. 60125 Graphite Grease
U.K. Price **1/6** (tube)

MECCANO
BINNS ROAD · LIVERPOOL 13

CHEMISTRY APPARATUS

Send 5d. in stamps for LATEST
PRICE LIST

Booklets:
'EXPERIMENTS' 1/3
'FORMULÆ' 1/3
'EASY HOME CHEMISTRY' new edition 3/–
(*Post Free*)

BECK (SCIENTIFIC DEPT. G), 60 High St., STOKE NEWINGTON, LONDON N.16

11+ EXAMINATION

WRITE NOW for **FREE** 24-page **GUIDE**, and Test, stating age of child, to the Registrar **MERCER'S CORRESPONDENCE COLLEGE** (Dept. M1), **37/39 Oxford St., London W.1.** *Tel.:* REG 1329. *Callers welcome—Mondays to Fridays, 10 a.m. to 4 p.m.*

MODEL RAILWAYS

Track parts and all equipment. New revised catalogue. Price **2/–**.

BOND'S O' EUSTON ROAD LTD.
357 EUSTON ROAD, LONDON N.W.1
Est. 1887 *Phone:* EUSton **5441-2**

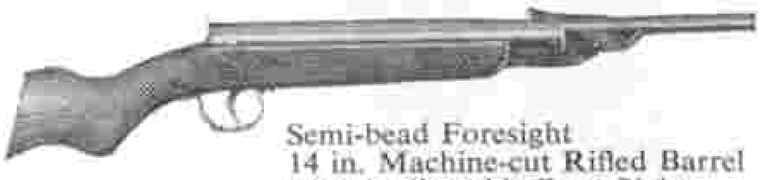
TOY CAR FLEET OWNERS!

Run a Service Station for your toy cars with the help of our realistic Job Sheets, specially printed for you—fill one in for each car to be "serviced". 3/6 for 10, *post free.* **BURDEKIN**
Box R, 6 Station Road, Parkstone, Poole, Dorset

Webley

'JUNIOR' AIR RIFLE

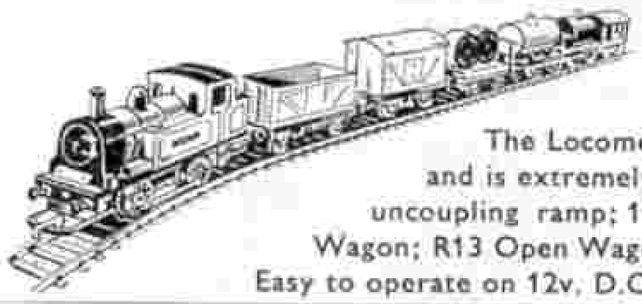
THE IDEAL TARGET RIFLE FOR THE YOUNG SHOT



Semi-bead Foresight
14 in. Machine-cut Rifled Barrel
Wheel adjustable Rear Sight.

WEBLEY & SCOTT LTD. *Est. 1790*
24 PARK LANE, HANDSWORTH, BIRMINGHAM 21

GAMAGES



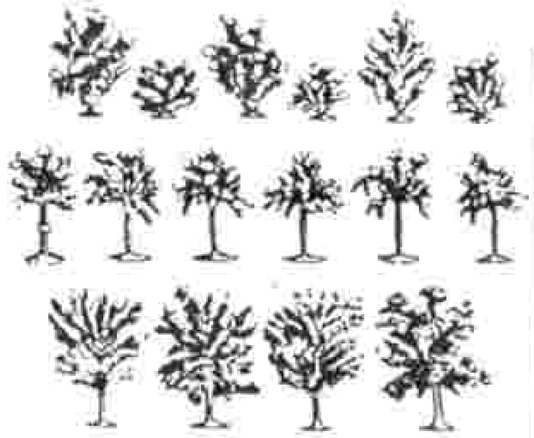
GAMAGES SPECIAL 00 GAUGE ELECTRIC TRAIN SET

The Locomotive is the well-known R355 0-4-0 Tank *Connie*. This engine is 4⅜ in. long, has automatic couplings, blue livery and is extremely powerful. The set includes: 8 No. R483 double-length curved tracks; 6 No. R481 straight tracks; 1 No. R488 uncoupling ramp; 1 No. R487 power clip; sufficient track for layout, approx. 50 × 31 in. Rolling stock consists of R18 Cable Drum Wagon; R13 Open Wagon; R14 Fish Van; R211 Shell Tank Wagon; R210 Shell B.P. Tank Wagon; R16 Brake Van. Easy to operate on 12v. D.C. via an A.C. Mains Transformer or Batteries.

75/6 *Post & Pkg. 3/-*

TREES and BUSHES

A series of three sets of decorated Trees and Bushes—really Super!



No. 641 Six assorted Bushes, some decorated with Yellow or Pink Blossoms. Vary from 1½ to 2 in. **6/11 SET**

No. 643 Six assorted small Trees, some decorated with coloured blossom. Height 2 in. **6/11 SET**

No. 642 Four assorted large Trees, two of which are bearing apples. Height 3 in. **8/9 SET**

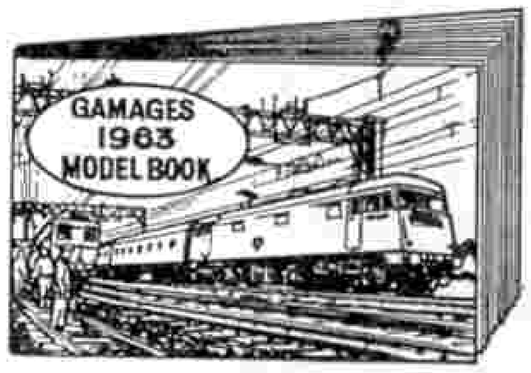
Post & Package 1/-

NEW MAMMOTH MODEL RAILWAY

The Largest of its KIND

OPENS 19th OCTOBER, 1962

Entirely new layout. Now entirely in 00/H0 and TT gauge. The biggest and best of its type in any store in the world. Area approx. 1,000 sq. ft.



GAMAGES 1963 MODEL and TRAIN BOOK

132 Pages Fully Illustrated with covers in Full Colour

Hundreds of interesting facts and figures and articles about British Railways, B.O.A.C., Racing Cars, etc. And simply packed with details and information about Aircraft, Trains, Boats, Cars, Steam Engines, plus prices and all the latest Plastic Kits available in Gamages famous Model Department.

STILL ONLY **1/-** *Post 6d.*

GAMAGES, HOLBORN, LONDON E.C.1 — Open Thursdays 7 p.m. — HOLborn 8484

FOR HORNBY-DUBLO USERS

Our range of BILTEEZI construction sheets provide a variety of lineside and railway buildings, easy to assemble and very realistic. 35 sheets are available some of which we list as under: See last month's advert.

SERIES "E"
E 1 Suburban House
2 Bungalow
3 Modern Flats
4 Police Station
5 Fire Station
6 Backs of Houses

SERIES "F"
F 1 Stone Cottage
2 Stone Forge
3 Stone Chapel
4 Stone Hotel
5 Stone School
6 Stone Accessory Sheet

SERIES "G"
G 1 Shops in Low Relief
2 Houses in Low Relief

BILTEEZI BACKGROUND SCENERY

12 Scenery sheets available as listed below, price 2/- per sheet. Sheet size 36 inches long, maximum height 8 inches.

AS1 Open Country	AS7 Village Square
AS2 Fields	AS8 Row of Shops
AS3 Woodland	AS9 Salt Works
AS4 Woodland	AS10 Salt Works
AS5 Seascape	AS11 Timber Yard
AS6 Seascape and Promenade	AS12 Gas Works

We are Authorised Hornby-Dublo repair agents and can convert locos, etc. to 2-rail working.

HAMBLINGS (MODELS) LTD.
10 CECIL COURT, CHARING CROSS RD.
LONDON W.C.2 TEM 4704

Training for the Merchant Navy

THE H.M.S. "CONWAY"

(CADETS ON ENTRY ARE ENROLLED CADETS R.N.R.)

Merchant Navy Training School
ON
THE MENAI STRAITS

"Conway" course trains boys between 13¾ and 16½ years for ultimate command in M.N. and R.N. Following the "Conway" motto "Quit ye like Men, be Strong"—Sailing, Rowing, Swimming, Rugby Football are stressed, "Conway" certificate can count as much as 15 months' sea service when taking 2nd Mate's examination. FEES: £309 p.a. (*including a certain amount of uniform*).

ILLUSTRATED PROSPECTUS FROM:—

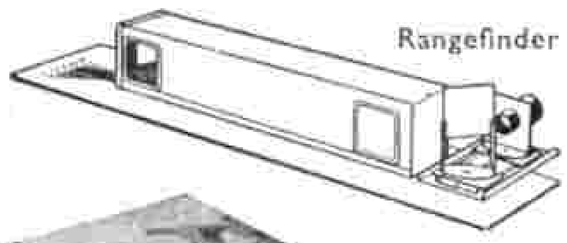
THE H.M.S. "CONWAY", 18 Nautilus House, Rumford Place, Liverpool 3

For Birthday or Christmas

ask for OPTIKIT

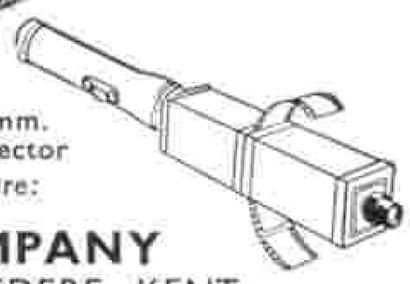
The Young Scientist's Optical Construction Kit

Every Boy and Girl can build real optical instruments with OPTIKIT
Microscopes, Telescopes, Colour Film and Microscope Projector, Sextant, Rangefinder, Kaleidoscope, are but a few of the many instruments you can make with this wonderful new construction kit and you can make them over and over again.


Rangefinder

OPTIKIT No. 0
makes over 20 instruments and experiments
£3.19.0

OPTIKIT No. 1
makes over 40 instruments and experiments
£7.10.0 ▶


35 mm.
Film Strip Projector

Available from leading stores and toy dealers or write for Free Brochure:

HELIO MIRROR COMPANY
CRABTREE MANOR WAY, BELVEDERE, KENT

GRANTA CANOES

BEST - IN PRICE - DESIGN - QUALITY

READY BUILT and BUILD YOURSELF KIT WITH THE NEW PLASTIC PVC/CANVAS

KIWI—11 ft. single—Ready built—**£17**
Build yourself kit—**£13**

KINGFISHER—14 ft. 2 str. Ready built—**£23**
Build yourself kit—**£16**

PLANS only—Full size—**11**/– and **16**/–

All kits are absolutely complete and include everything including paint and varnish. H.P. terms.

Send for illustrated leaflet.

GRANTA CANOES (Dept. K)
COTTENHAM, CAMBRIDGE

Meccano Magazine Binding Cases

The binders are blue in colour with the words "Meccano Magazine" embossed in gold gilt on the spine and front. Metal rods hold the magazines in position and single copies can be inserted as received. Being made of plastic, the binders are washable and there will be little difficulty in keeping the covers clean.

PRICE **8/6** *(Post Free)*

For your binders write to Publishing Department, *Meccano Magazine*, Binns Road, Liverpool 13, enclosing postal order.

The (M.E.T.A.)
RAILWAY SPECIALISTS
FOR ***EVERYTHING*** *IN*
HORNBY

FULL, FAST AND EFFICIENT REPAIR SERVICE

CALEDONIA MODEL CO.
MODEL & PRECISION ENGINEERS
478 ARGYLE STREET
GLASGOW C.2

BOOKS:

60 Plans for Small Layouts		2/6
Starting in Scale 00		2/6
RAILWAY ACCESSORIES:	00	0
G.W.R. L. Q. Junction Signals ..	11/6	—
Bilteezi Goods Shed	2/–	—
T. & H. Screw Couplings, each	2/1	2/1
T. & H. New Coal Depot	6/–	—
ACEM Stone Walls, 6½ in.	1/2	1/2
Sky Paper 36 in. × 22 in.	1/6	1/6
Cork Track Underlay 36 in. × 12 in. ..	1/6	1/6
Leprechaun Green Grass, packet ..	1/–	1/–

"00", "TT" or "0" Railway and Book Lists, each **6d.**
POSTAGE EXTRA

TYLDESLEY & HOLBROOK (M.E.T.A.)
109 DEANSGATE, MANCHESTER 3

P.B.K. CANOES

Plans, Materials and Accessories, etc.

G. G. HINTON (6), Abbey Fleet, Fairford, Glos. S.A.E.

City of Cardiff Education Committee

REARDON SMITH NAUTICAL COLLEGE, FAIRWATER, CARDIFF

Principal:
Capt J. N. Rose, R.D., M.I.N., Master Mariner

PRE-SEA TRAINING

This Residential College provides a one year's course of pre-sea training for young men of 16–18 years who wish to become Merchant Navy Officers. Special attention is given to the Cadets' character training, the development of reliability, resourcefulness, trustworthiness and initiative, to the development of the art of leadership and power of command, and to the fostering of a pride in the Merchant Navy as a whole and to their work and standing in particular.

The College has a 43-ton Auxiliary Sailing Vessel used for practical training at sea in the Bristol Channel. Remission of NINE months' sea service will be allowed to successful cadets. Fees for residence and tuition £170. Local Education Authorities should be consulted regarding financial assistance.

Prospectus and further information may be obtained from the Principal.
Robert E. Presswood,
Director of Education,
City Hall, Cardiff.

BACK ISSUES AVAILABLE!

Meccano Magazines
1942–1955 .. **9d.** each
(Complete years **8/–**)
1956–1961 .. **1/–** ,,
(Complete years **10/–**)

Railway Magazines
1942–1949 .. **2/–** ,,
(Complete years **10/–**)
1950–1961 .. **1/6** ,,
(Complete years **15/–**)

Trains Illustrated
1953–1955 .. **1/6** ,,
1956–1961 .. **2/–** ,,
1962 .. .. **2/6** ,,

Buses Illustrated
1959–1961 .. **2/6** ,,

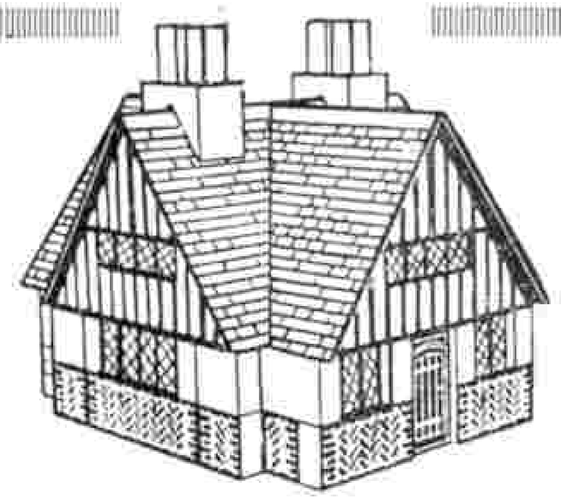
Cigarette Cards
100 Mixed **2/–**

LENS of SUTTON
50 CARSHALTON RD.
SUTTON, SURREY

Lots of lucky BOYS and GIRLS will be getting

LOTT'S BRICKS

Regd. Trade Mark



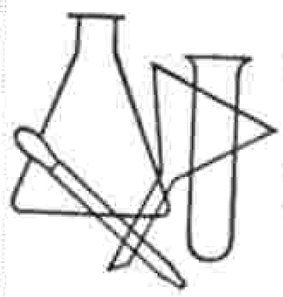
for Christmas

Ask for a set now and make sure you are among them! With these coloured artificial toy stone building bricks you can make realistic model Tudor-style houses (as illustrated), shops, farms and even whole villages.

And if you've a Model Railway, they're ideal for building true-to-scale railway stations, signal boxes and bridges.

Full instructions are contained in every set of LOTT'S BRICKS which also includes roofs, doors, and transparent windows, to make your models really life-like.

Prices from **8/-** to **65/6**



FOR OLDER BOYS
LOTT'S CHEMISTRY SETS

complete with chemicals, apparatus and instructions. Sets at **22/6** *to* **75/–**
SPARES ALWAYS AVAILABLE

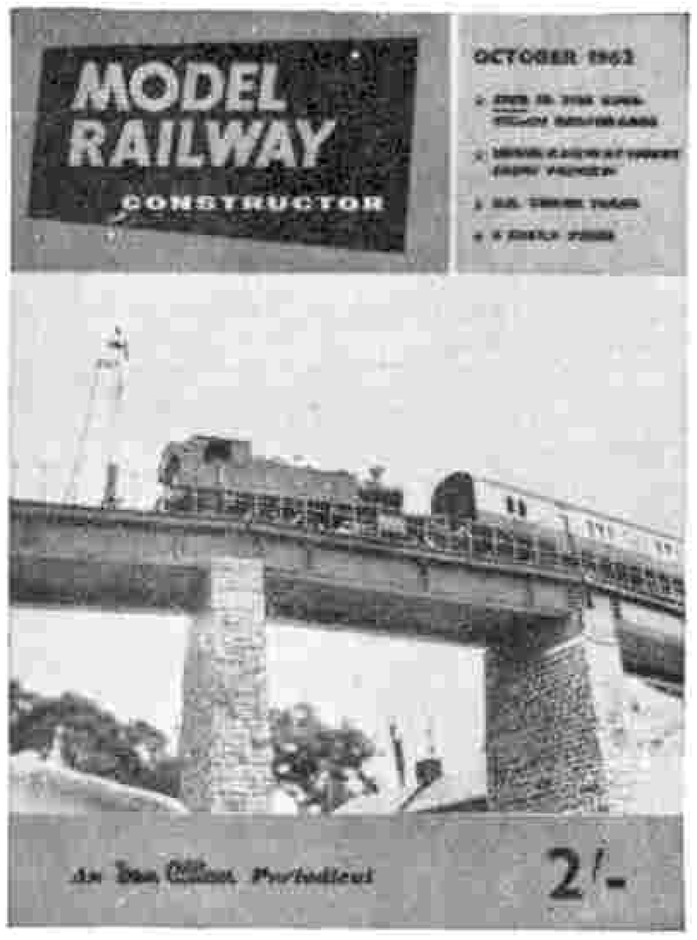
Enquire at your Toy Dealer or write for Price Lists enclosing 2½d. stamped, addressed envelope

LOTT'S BRICKS LTD

DEPT. MB3, WATFORD, HERTS.

model railway enthusiasts . . .

SPECIAL HOBBY SHOW NUMBER



NOW ON SALE

Includes
MODEL RAILWAY HOBBY SHOW — REPORT AND PREVIEW OF TRADE STANDS — SCALE PLANS OF LAYOUTS AT THE EXHIBITION.

TRAMWAY MODELLING

REVIEWS OF NEW PRODUCTS

MODEL RAILWAY CONSTRUCTOR

2/- every month

Ian Allan Ltd
HAMPTON COURT, SURREY

DEALERS WHO SPECIALISE IN MECCANO SPARE PARTS

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

C. G. MARSHALL
Maxwell Road
BEACONSFIELD
Telephone: 1092

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

TETTS THE IRONMONGERS
402 Wimborne Road
Winton, BOURNEMOUTH
Telephone: Winton 309

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

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

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

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

WEST END CYCLE STORES
65 and 71 Crouch Street
COLCHESTER
Telephone: 73759

DOLLS' HOSPITAL (MELLERS)
55 Hallgate
DONCASTER
Telephone: 2831

CRESTA
1 Cinema Parade
EDGWARE, Middlesex
Telephone: 2533

DERRETT (Toys) LTD.
52 High Street
ERITH, Kent
Telephone: 32339

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

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

THE MODEL SHOP
179 Ferensway
HULL
Telephone: 29199

E. F. WILLIAMSON & SON LTD.
11 Belgrave Gate
LEICESTER
Telephone: 58525

H. M. MORRIS & SONS LTD.
10 Market Street
LEIGH, Lancs.
Telephone: 73997

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

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

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

WAIN'S THE TRAIN SHOP
478 Kingsland Road
DALSTON, LONDON E.8
Telephone: Clissold 8186

BOYDELL'S
Percy Street
NEWCASTLE-ON-TYNE 1
Telephone: 24281

ALFREDS & WARNER LTD.
49 Blackett Street
NEWCASTLE-ON-TYNE 1
Telephone: 2-4987

P. HEATHCOTE LTD.
300/302 Radford Road
NOTTINGHAM
Telephone: 75851

F. T. B. LAWSON LTD.
New George Street
City Centre, PLYMOUTH
Telephone: 63573/4

RICHARD MARSDEN & SON LTD.
115 Church Street
PRESTON
Telephone: 3314

THOMAS MEARS LTD.
14 and 15 Fishergate
PRESTON
Telephone: 5219

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

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

OSBORN & CO. (Southampton) LTD.
9 High Street
SOUTHAMPTON
Telephone: 23617

JOHN W. BAGNALL
Model Craftsmen's Supplies
South Walls, STAFFORD
Telephone: 3420

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

CLEMENTS (Watford) LTD.
23-33 The Parade
WATFORD
Telephone: 28211

OVERSEAS DEALERS

AUSTRALIA

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

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

NEW ZEALAND

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

SCIENTIFIC SUPPLIES

We can help you to enjoy your leisure hours. A scientific hobby is absorbingly interesting, and being educational, can help you with your future career. Take your choice:

CHEMISTRY

We supply apparatus and chemicals for the young scientist. Send 4d. in stamps for lists showing sets of parts, etc.

BIOLOGY

We have Students' Microscopes at **£4.16.4** and **£6.19.6** Microscope Slide Kit and Book at **15/6.** Pocket Magnifiers, 2 lenses, **8/6.** Send 4d. stamps for leaflet.

RADIO & ELECTRONICS

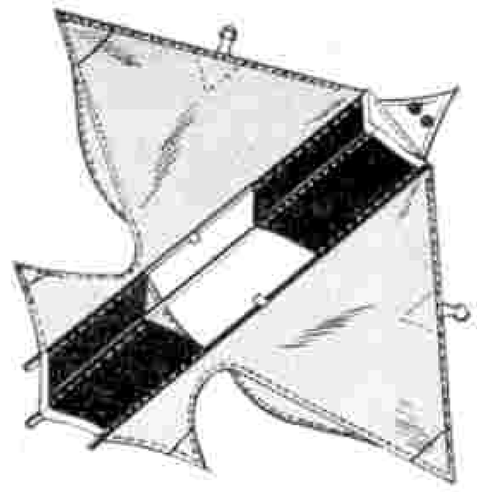
Transistors are fascinating to work with. Loudspeaker radios need small batteries only. Our notes show how such receivers can be made simply and cheaply using transistors. Mains or large batteries are not required, so you can use transistors with absolute safety. A 4½ or 6 volt flashlamp battery is the only power required and this will last many weeks.

Transistor Pocket Radio Kits with personal earphone **65/-** (post 2/-) Transistor Portable Kit (5 in. speaker) **£5.17.6** (post 3/6). Transtronic Kits from **£4.9.6.** Send 10d. in stamps for our notes. Optical Construction Kit **£7.10.0** (post 3/6).

We are always pleased to advise parents considering Birthday or Xmas presents. Please write in good time. It is helpful if an indication of the amount to be spent is given.

MOORE'S EXPERIMENTAL SUPPLIES
(Dept. M).
8 and 10 Granville Street, Sheffield 2
Tel. 27461

LINK BELT (Canadian)
Make up a strong, attractive belt to your own size from real leather links already punched with tongue and buckle keeper. Full instructions.
Price **10/-**
Carr. & Pkg. 1/-



KITE
33 in. span bird kite with string.
Price **16/9.** *Carr. & Pkg. 1/9*

PENGUIN SAILING YACHT
Plastic hollow hull—12 in. long. Good sailer.
Price **12/11.** *Carr. & Pkg. 1/6*

TRI-ANG FAMOUS INVENTOR SERIES

Galileo's telescope—easy to follow instructions show how to assemble an authentic working model—and a superb bust of the inventor is included. Price **36/9.** *Carr & Pkg. 2/9*

Hamleys
Est. 1760
HAMLEY BROTHERS LTD
The Finest Toyshop in the World
200-202 REGENT ST. LONDON W.1
Our Only address

BAZOOKA GUN

14 in. gun. Fires six balls rapid—by pump action. Price **9/11.** *Carr. & Pkg. 1/6*

NEW and EXCITING

Four Wonderful Sets

30/- 50/- 79/6 110/-

You'll enjoy finding out all about Magnetism and Electricity. Lots of apparatus and a wonderful 48-page book with each set, enabling you to do scores of intriguing experiments. A 4½ volt pocket battery will provide all the power you need.

Ask for a Magnet-tricity set if you want a REALLY EXCITING PRESENT

Obtainable from all leading Stores and Retailers
Manufactured by the makers of **KAY CHEMISTRY SETS**
KAY (SPORTS & GAMES) LTD.
CARLISLE ROAD · THE HYDE · LONDON N.W.9

Just the dishes for you!

Johnson's 'Vogue' Triple Purpose Set

You can set about your dark room work in a really professional way with the Johnson "Vogue" dishes. They come in sets of three and are separately coloured: Orange, Grey and White. You can identify them by their colours for each processing job and retain them for specific chemicals. Available in half plate and whole plate sizes. Set of 3 half plate dishes 6s. 9d. Set of 3 whole plate dishes 12s. 9d.

SOLD BY THE LEADING PHOTOGRAPHIC DEALERS

JOHNSONS OF HENDON LTD
FOR CONFIDENCE IN PHOTOGRAPHY

MECCANO EMEBO ELECTRIC MOTOR

This most economical but amazingly powerful motor—housed in a bright red moulded case—is battery operated and has a rating of $4\frac{1}{2}$ to 12 volts D.C. When used with batteries such as Exide H30 (or Ever Ready 126) a suitable Battery Controller will provide speed control both forward and reverse. It may also be run from a 6-volt accumulator.

The EMEBO Motor will operate models of suitable type made from Meccano Outfits up to No. 6. U.K. Price **19/6**

MECCANO

MADE BY MECCANO LTD.

READERS' SALES AND WANTS

If you have anything to sell or wish to buy anything, take advantage of the service offered by a small advertisement in these columns.

The *M.M.* is read by over 100,000 people every month. It circulates in every country where the English language is spoken. If you wish to sell your stamp collection, your rabbits, or your tools, or to purchase a steam engine, a model yacht, or a hundred-and-one other things, you will be able to do so through the columns of the *M.M.*

The rates are 2d. per word, with a minimum of 2/- (cash with order). Readers' advertisements are published as soon as possible, inclusion in the first issue after receiving them, however, cannot be guaranteed.

Advertisements of goods recently and currently manufactured by Meccano Ltd. are not accepted.

SALES

Empire Stamp Collection in springback loose leaf Album (cat. £8) 35/-. German Sheet (cat. £30) £4. South Australia S.G.1 (cat. £30) £2 10s.—Thomas, Rathpeacon, Newtownpark Avenue, Blackrock, Co. Dublin, Eire.

"M.M.s" 1944–62, few missing. Very cheap, from 1d. each. Must be cleared. Most in good condition. Aerokits "Sea Commander" Model Launch, half complete. Offers? S.A.E. Details.—Craigwell, Barnet Wood Road, Bromley, Kent.

Large Stamp Collection, mainly Commonwealth, two Stamp Catalogues (1962) and three Stamp Albums. Sell or exchange for Tri-ang or Hornby-Dublo Train Layout. Apply—31 Brunswick Road, Morecambe.

35 mm. action colour slides of most main classes of B.R. Engines (Steam and Diesel). Please send S.A.E. for list to—M. C. Watts, 25 Cleveland Road, Loughborough, Leics.

"M.M.s" October 1945–January 1961, "B.O.P.s" June 1949–May 1960 and "Motor Sport" August 1957–December 1961. Good condition. Offers.—D. J. Smith, 425 London Road, Isleworth, Middlesex.

New Liebig Condenser and Adaptor, 10/-.—J. Gwyther, The Bank House, Winslow, Bletchley, Buks.

"M.M.s" 1956–1960, complete except April 1956. Any offers.—A. Lowe, 8 Hillview Road, Oxford.

"M.M.s" 1946 January, July, December. 1947 January–April, June–October. 1948 January, February, May, July, August, November. 1949 January, March, June, October. 1950 July, September, November. 1951 February, May, August, September 1952 March. 1953 March–October, December. All 1954/5/6. 1957 complete except August. 1958 January–November. 1959 February–July. "B.O.P.s", 1950 October, December. 1951 March, June, July, September, December. 1952 March, April. 1953 March. Offers.—K. W. Ward, 21 Woodfield Drive, East Barnet, Herts.

WANTS

Any number of 9.5 mm. Films. Send details and state price to—P. Rochelle, Bryn Bychan, Oakwood Park, Conway.

Dinky Side Cab Single Deck Bus, AEC Type Double Decker and Commer Coach. Write stating price, condition.—A. B. Phillips, 544 Rochester Way, Eltham, S.E.9.

Dinky Toys, Pre- and early Post-War types up to about 1950. Price, condition and details to—Box M.M. 25.

English or French Super Model Leaflets 1–36. Books of New Models, Books of Prize Models, Pre-War Instruction Manuals, in good condition. Also construction details for January 1958 Model of the month, Automatic Box Filling Machine. State price and details.—Alberto Fernandez, Luis M. Campos, No. 1562–7° 23, Buenos Aires, Argentina.

Stuart-Turner, "Sandhurst" Petrol Engine.—Dr. Kowal, 2743 West 55 Street, Chicago 32, Illinois, U.S.A.

Hornby-Dublo 20-ton Tube Wagon. State condition, price.—Middleditch, 58 Schaw Avenue, Drongan, Ayrshire.

Roller Skates, good condition, state price—Douglas Fowlie, 24 Church Street, Turriff, Aberdeenshire.

Urgently required Meccano Part 167, complete pre-war Geared Roller Bearing, also any pre-war Parts and Super Model Leaflets. Best price paid for Parts in good condition.—Shelly, 3 Romney Road, Bournemouth, Hants.

Good prices paid for pre-war Dinky Buses, Trams, and all 00/H0 Continental Buses, Coaches, any condition.—Taylor, 2 Bay House, Pelham Road, Seaford, Sussex.

Ordering the "M.M." Overseas

Readers Overseas can order the *Meccano Magazine* from Meccano dealers or direct from this office. The price per copy and subscription rates are as follows:

		for 12 months
Australia (A£)	1/6	21/6
Belgium	Fr. 7.50	Fr. 95.00
Canada	15 c.	$1.80
Denmark	Kr. 0.95	Kr. 13.00
France	—	NF 11
Netherlands	Fl. 0.65	Fl. 8.50
South Africa	10 cents	R 1.50
Sweden	Kr. 0.75	Kr. 10.00
Switzerland	Fr. 0.65	Fr. 8.50
U.S.A.	18 c.	$2.20

The rate in other countries not listed here is normally the equivalent of 15/- sterling for 12 months.

BACK NUMBER "M.M.s"

To clear small stocks still in hand of all issues March 1961 to September 1962 the price per copy has been reduced to 1/-, including postage, etc.

Write to the Publishing Department, *Meccano Magazine*, Binns Road, Liverpool 13, enclosing a postal order for the appropriate amount.

HEAR ALL CONTINENTS

With H.A.C. SHORT-WAVE RECEIVERS

Noted for over 18 years for . . .
S.W. Receivers and Kits of Quality

Improved design with Denco coils:

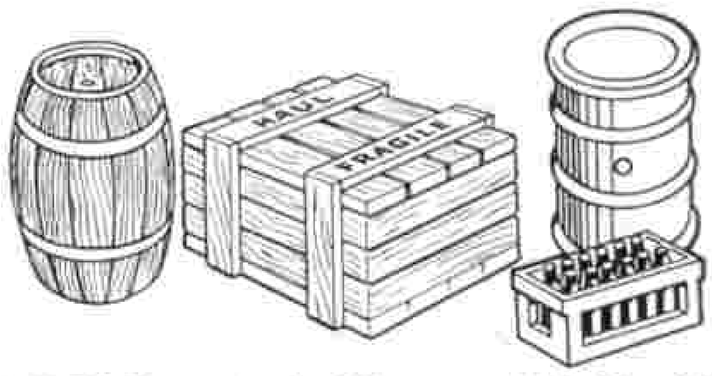
One-Valve Kit, Model "C".....**Price 25/-**

Two-Valve Kit, Model "E".....**Price 50/-**

All Kits complete with all main components and full instructions. (Valves extra if required, 8/- each). Before ordering call and inspect a demonstration receiver, or send stamped addressed envelope for descriptive catalogue.

"H.A.C." SHORT-WAVE PRODUCTS
(Dept. M.M.), 44 Old Bond Street, London W.1

CARGOES FOR DINKY TOYS



846 Oil Drums (pack of 6). U.K. Price **1/4**
847 Barrels (pack of 6). U.K. Price **1/4**
849 Packing Cases (packs of 6). U.K. Price **1/4**
850 Crates of Bottles (pack of 6). U.K. Price **1/4**
851 Set of 2 each of Nos. 846, 847, 849 and 850 (pack of 8). U.K. Price **1/9**

Suitable also for use with Hornby-Dublo Railways

THE FASTEST AND MOST EXCITING RACING CAR GAME OF THEM ALL

Skills and thrills of a racing driver

Circuit 24 is the fabulous race-track game which is sweeping Britain.

Circuit 24 comes *complete with power unit*, so you can start racing from the word "Go!"

All the thrill and exhaust-roar of a real race-track, and the skill too, in your own home.

Acceleration is terrific, and the cars zip up to 200 m.p.h. scale speed.

The miniature Panhard racing cars are as tough as the track, and there's hardly anything to go wrong or wear out.

Circuit 24 is available in three sets, Set R at **£9.7.6**; Set S, **£11.7.6**; and De Luxe Set T, **£12.17.6.** All are complete with power unit, and the bigger sets have more track, more hazards, more excitement. Get to know about Circuit 24 now from your Meccano dealer.

EXCLUSIVE FEATURES:

- Tough unbreakable cars and track.
- Extremely robust motor.
- No brush replacements.
- High grade long life "pick-ups".
- Exclusive supercharge boost.
- High speed (200 m.p.h. scale speed).
- Exciting and realistic exhaust roar.
- Skids, fish-tailing and spin-outs realistically reproduced.
- Races can be run clockwise or anticlockwise.

REMEMBER Circuit 24 is guaranteed by Meccano Ltd.

FIRST AGAIN! . . . OPENING SIDE DOORS

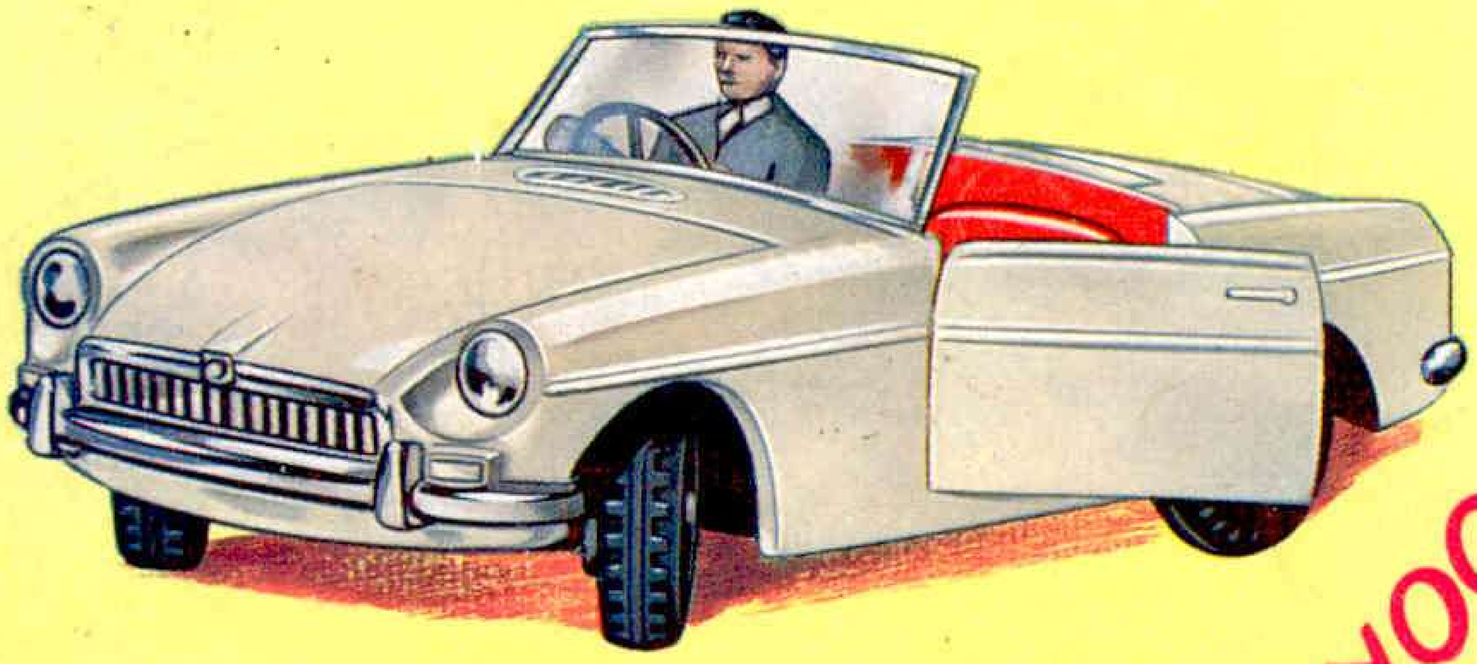
DINKY TOYS

Doors that open both sides, and close with a bang . . .

. . . in addition to driver, steering wheel, gear lever and red upholstered seats; and, of course, Prestomatic steering and 4-wheel suspension. The new Dinky Toys M.G. two-seater sports car has all these features. It's right up-to-date too! As you know, the real one is only just on the roads.

DINKY TOYS No. 113 M.G. B SPORTS CAR

Length $3\frac{3}{8}$ in. U.K. Price **5/9**



NEW

NEW

NEW

MADE IN ENGLAND
BY MECCANO LTD.

A high-bred American style-setter

DINKY TOYS No. 147 CADILLAC 62

From bumper to tail lights the magnificent styling of this luxurious American car is reproduced in perfect detail in this new model. The Cadillac 62 is fitted with Prestomatic steering, windows, seats, steering wheel and 4-wheel suspension. It is enamelled in attractive polychromatic kingfisher blue.

Length $4\frac{7}{16}$ in. U.K. Price **4/11**

AVAILABLE LATER OVERSEAS

Published by MECCANO LTD., Binns Road, Liverpool 13, England

Printed by John Waddington Ltd., Leeds & London