THE MODEL WORLD AT YOUR FINGERTIPS

MECCANO MAGAZINE

THE MODEL WORLD AT YOUR FINGERTIPS

'SLOT SCENE' FREE INSIDE!

26 PAGE SLOT RACING SUPPLEMENT

H.M.S BOUNTY STORY & PLANS

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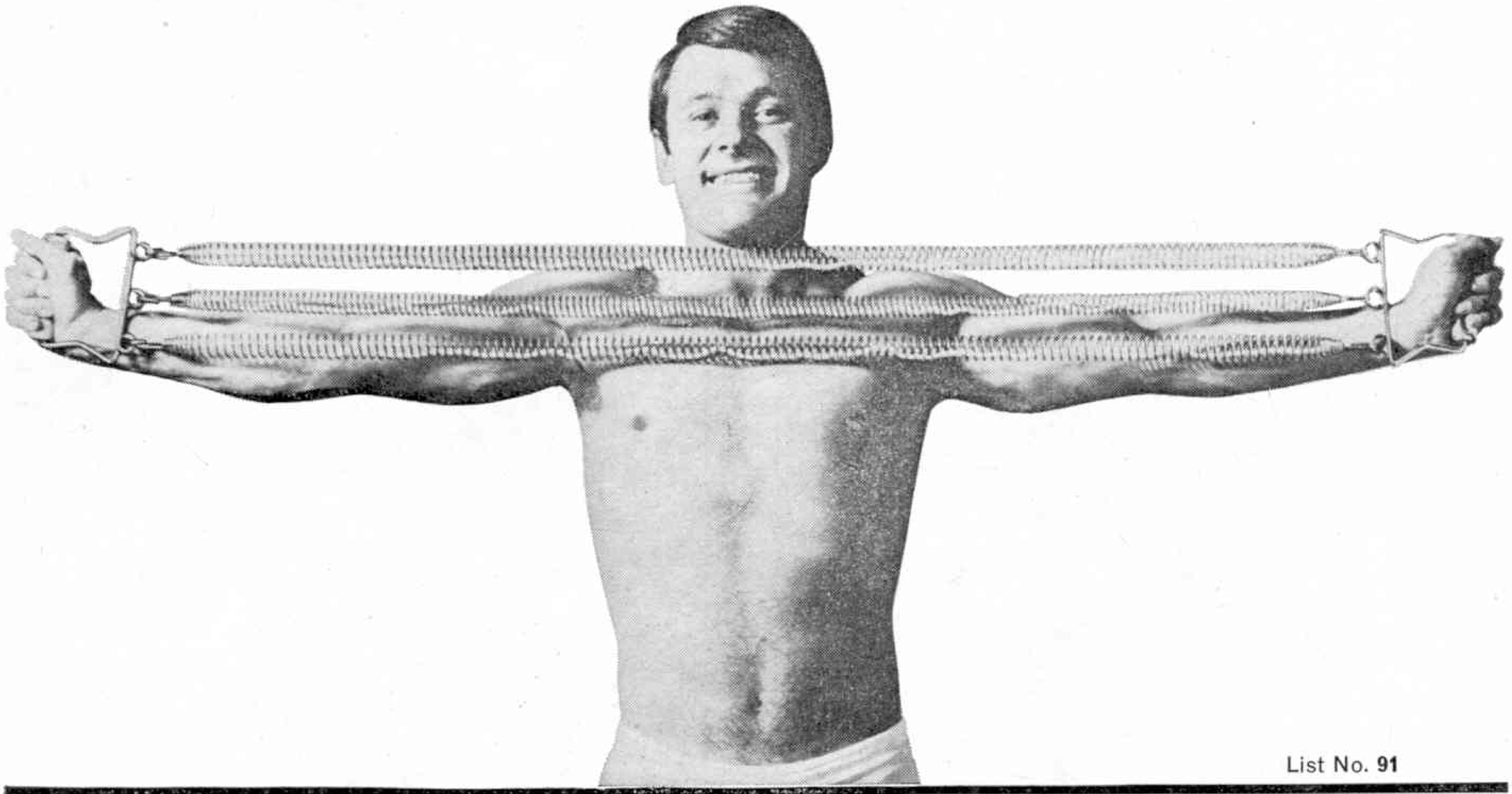

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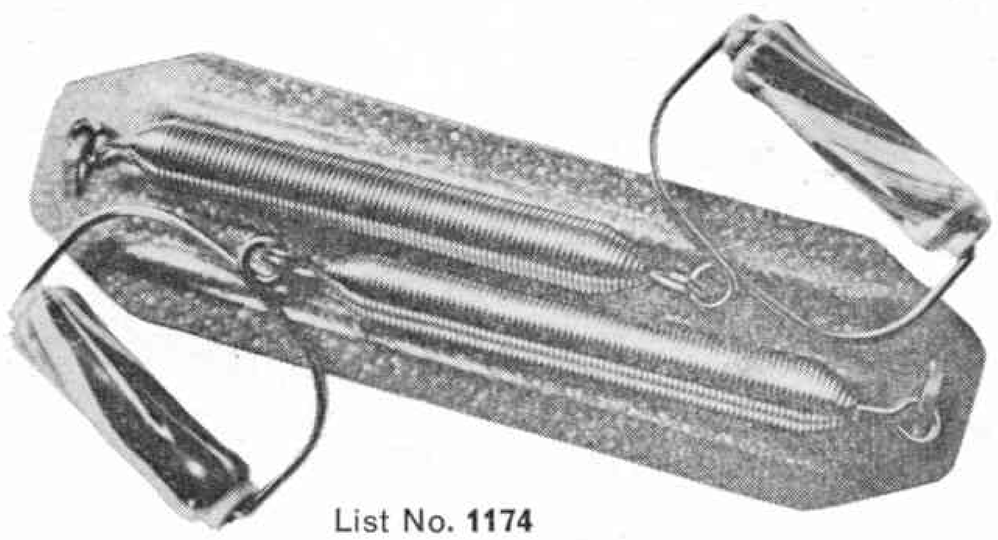

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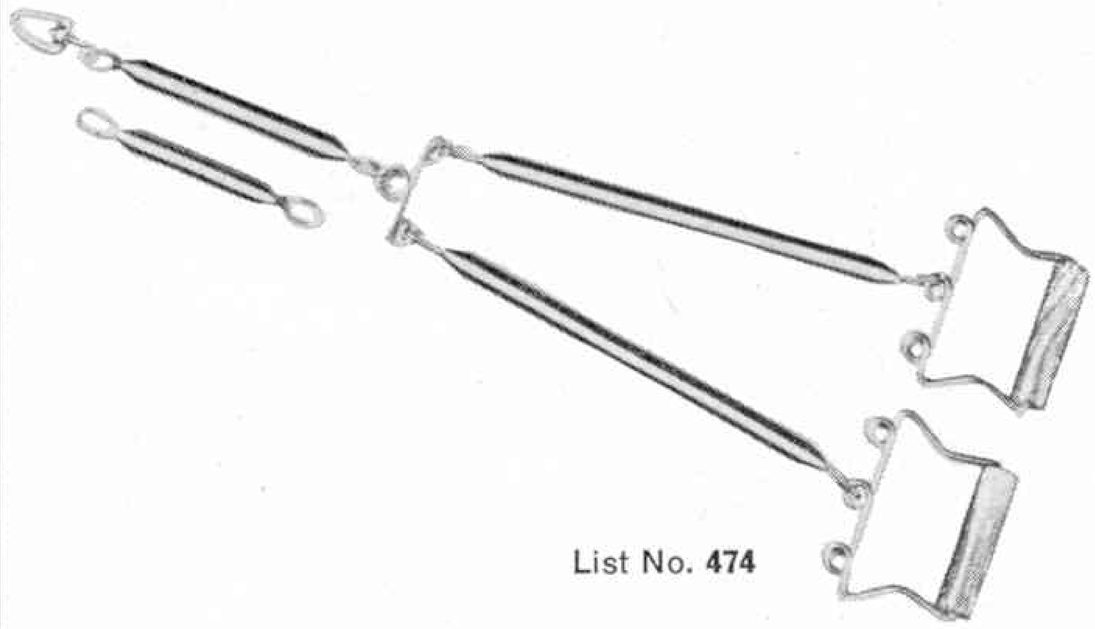

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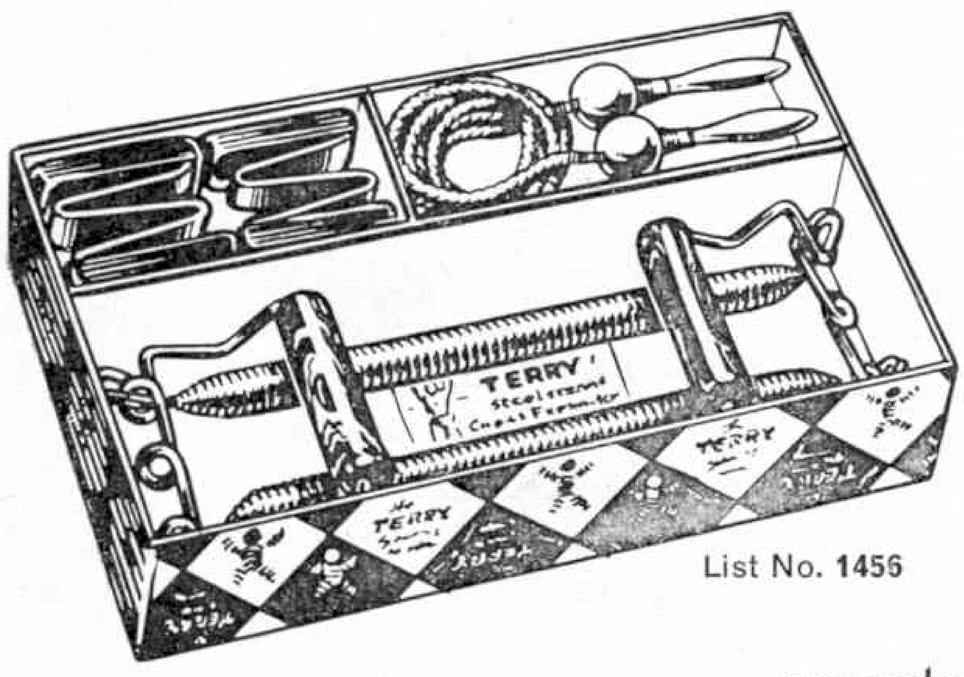

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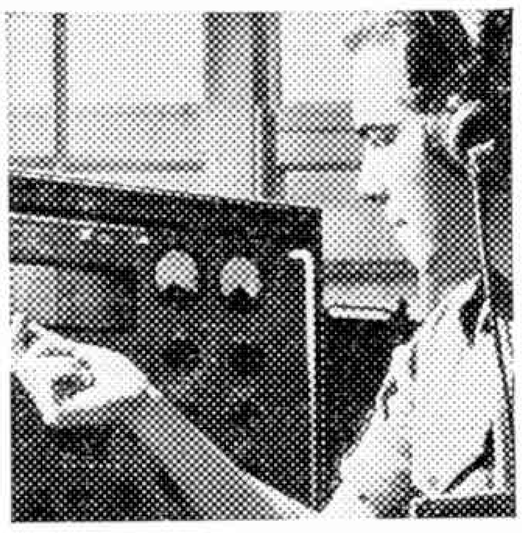

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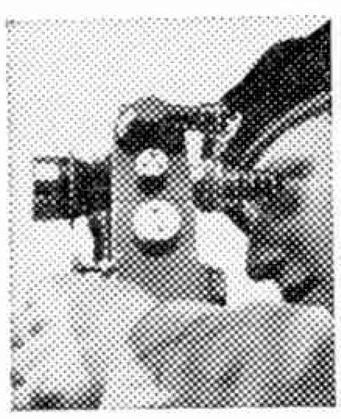

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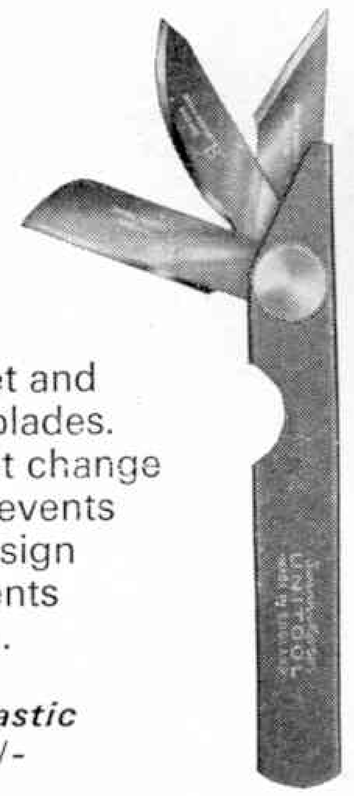

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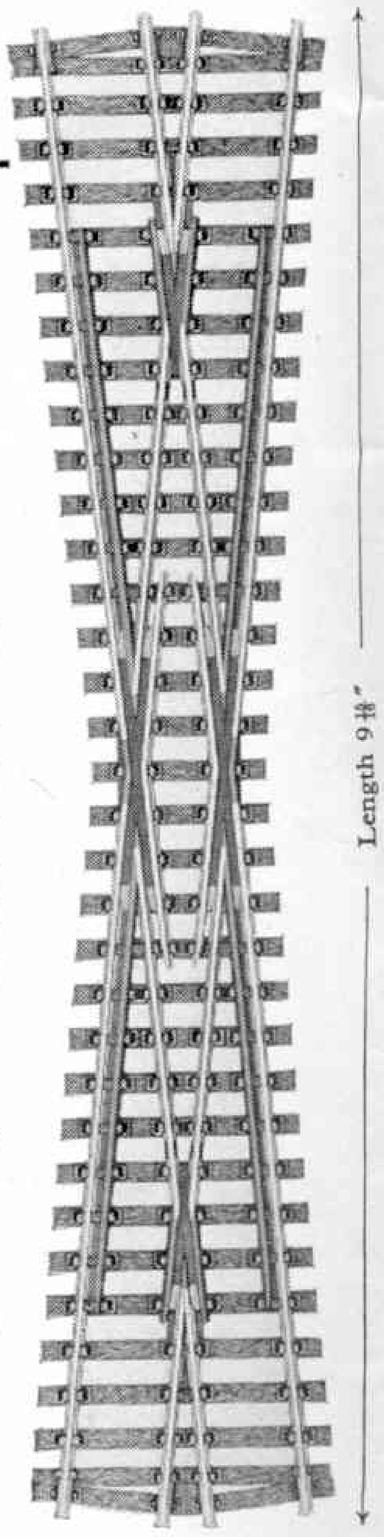

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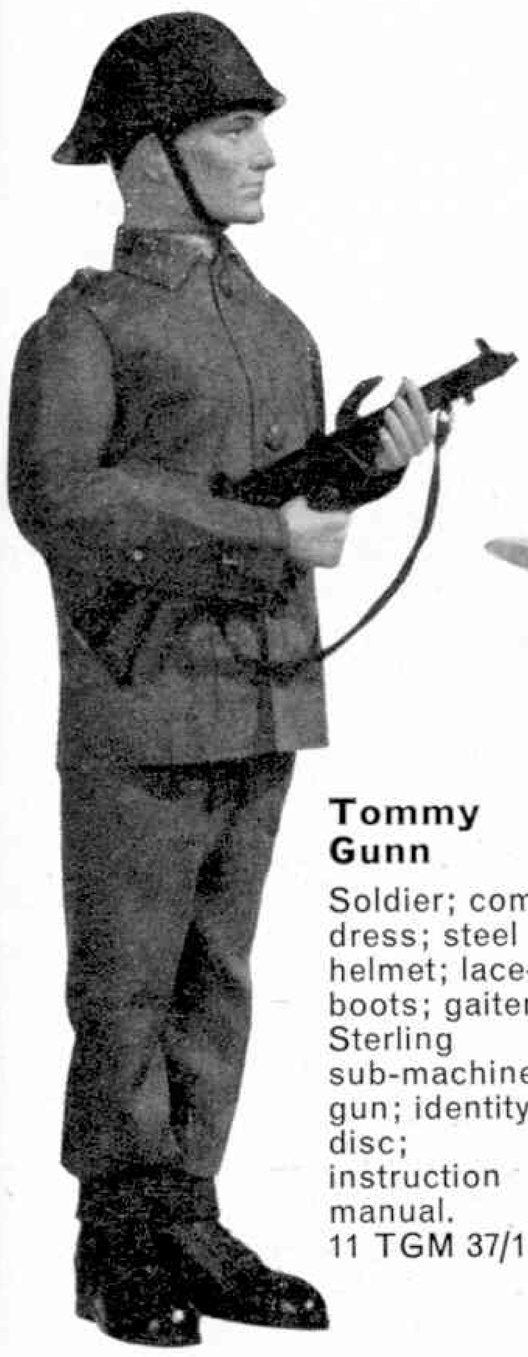

Tommy Gunn

Soldier; combat dress; steel helmet; lace-up boots; gaiters; Sterling sub-machine gun; identity disc; instruction manual.
11 TGM 37/11

Commando Pack

Dinghy and paddle; machine gun; bayonet and scabbard; cap comforter; two grenades; compass.
11 TG 05 20/2

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11 TG 07 37/11

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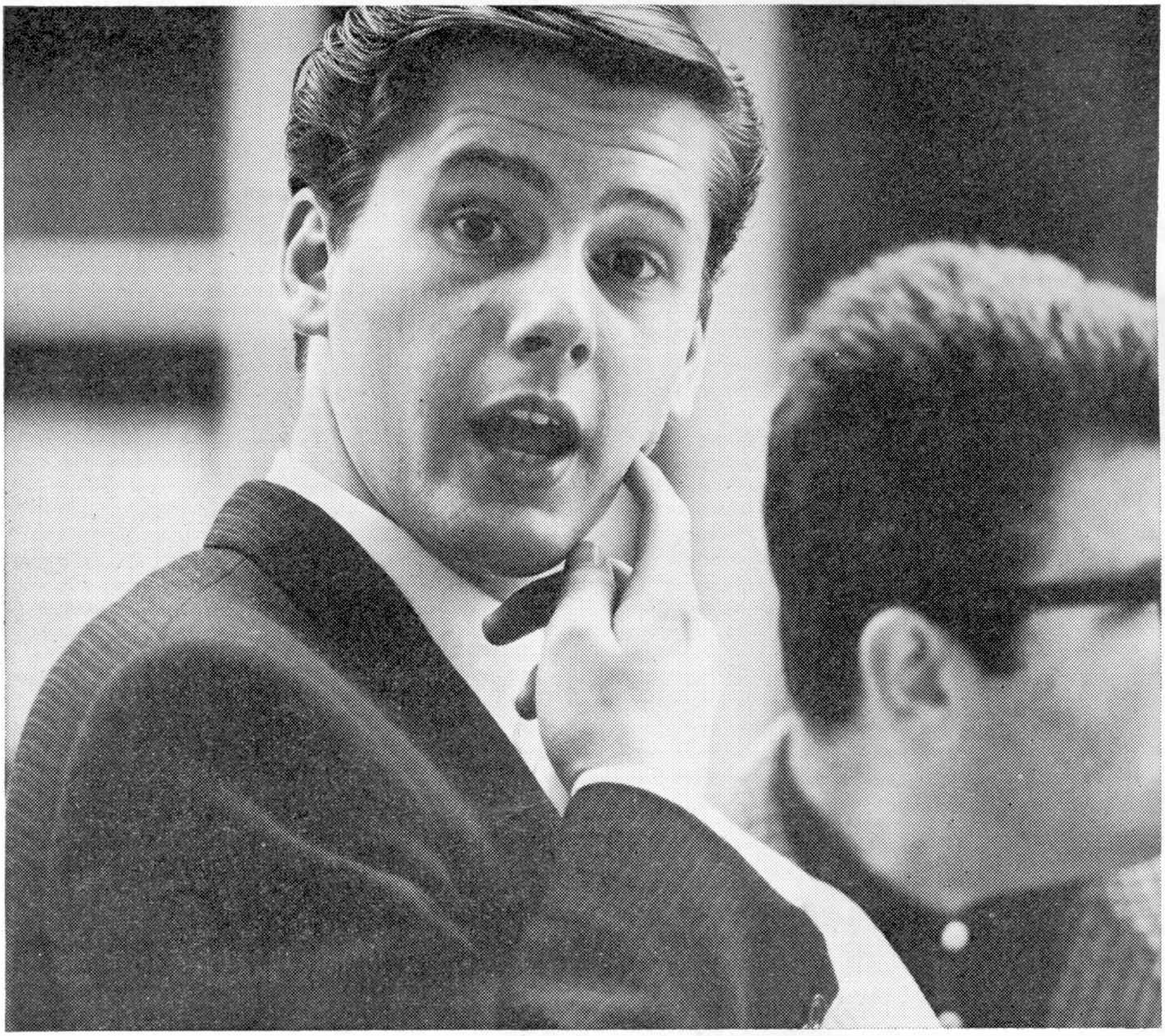

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meccano magazine

the model world at your fingertips

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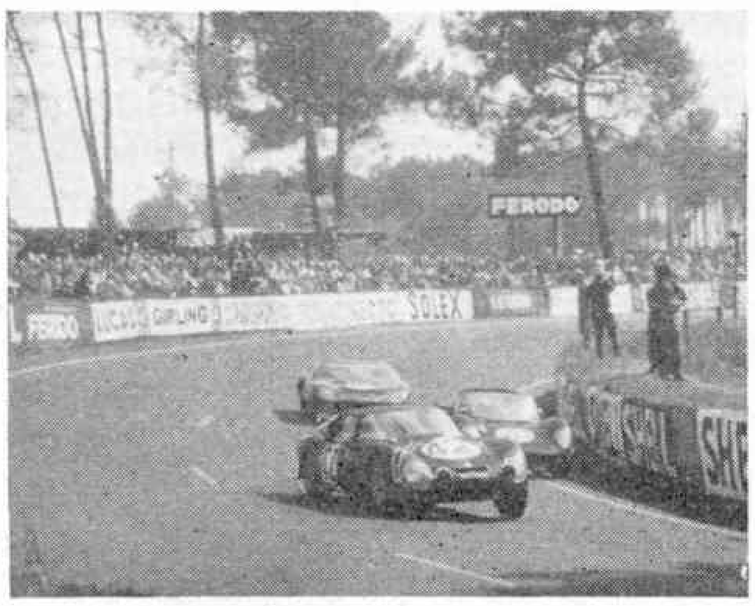


On the cover: This exciting picture captures all the thrills and spectator appeal of motor racing—highly appropriate for this special slot racing issue!
The original colour transparency was kindly supplied by Revell (G.B.) Ltd., whose products you will find described in our slot racing supplement.

Contents

The Best Gun in the West	6
The Voyage of HMS Bounty	8
At the Turn of a Wheel	10
Electronic Organ Part IV	12
Carving Wood Propellers	15
The Boxkite that wasn't	16
Triang-Hornby	18
Dinky Toys	19
The Balsa Story	21
Race-Tuned Scalextric	22
Monogram Porsche	26
'O' Gauge Drop-Side Wagon	27
Have You Seen?	28
Spot on Models	29
The Gloster Whittle Jet	30
Meccano Mechanical Horse	32
With the Model Builders	35
Meccano Braiding Machine	36
Meccano Competition Winners	40

Next month: Another 'conversion' article dealing with the Inpact Bleriot kit and more news about the latest developments in Scalextric Race-Tuned cars.

Just over ten years ago, electric model car racing was unknown to most Meccano Magazine readers, indeed, it was even looked upon by those few hobbyists who *had* heard of it, as perhaps an amusing diversion—another rather clever little toy in which to use an electric motor. No one—even the most pro-biased car fan of 1956—could ever have foreseen the meteoric progress that the hobby would make in the ensuing ten years.

So fast has the car snowball been rolling, that a newcomer to electric model car racing—or slot racing as it has more conveniently become known—must be completely baffled by the welter of cars and equipment from which he has to choose.

Timely therefore, is our big slot racing supplement this month, and a close study of its contents will answer many of the questions that new enthusiasts find so confusing.

When a development has compressed such rapid progress into such a short span of years, it is comparatively easy to find people who have been with it from the start, but not so easy to find someone who has been close enough to the centre of things to be able to present a readable 'potted history'. Walkden Fisher is one who has been right in the hub from the very beginning and I am sure you will enjoy his account of slot racing's First Decade.

Study of such a historical account frequently does more to put you squarely in the present-day picture than hours of studying catalogues and magazines. Reasons for the emergence of particular features, such as current scales, etc., are explained and such 'background knowledge' often inspires new ideas and developments.

'Slot Scene' Part Two, consists of a survey of current racing equipment. It would need much more than the whole magazine to give more than a brief glimpse of all the exciting items that you can buy from your local hobby shop, nevertheless, several entirely new pieces are revealed for the first time in this section. If you feel that you would like more information on any particular line, just fill in the free reader enquiry coupon on supplement page 24

Some slight re-arrangement of the regular magazine contents has been necessary this month, but for those readers who miss their 'Stamps' and 'Fun & Games', they will both be back again next month!

Finally, a personal Thank you to all of you who have written to say how much you like our new M.M. It is always rewarding to receive such letters and some of you have written in such glowing terms that it has been almost embarrassing! Not one single person has expressed disapproval of the changes that we introduced with the May issue—this in itself is quite remarkable.

Is everybody happy? If you are, then why not tell your friends about the new M.M.—your efforts can get you a completely free three-bladed craft knife! Budding salesmen should turn to page 10 of the supplement for further details.

The Editor

THE BEST GUN IN THE WEST

Next time you see a Western on television it's ten dollars to a plugged nickel that both Badman and Hero will be toting Peacemakers, the most famous and popular gun ever to come from Colt's Patent Firearms Manufacturing Company

How it got its name no one is very sure, because it started life under the title Colt's New Army Model 'P'. Probably some guy with a warped sense of humour seeing it in action and thinking of 'Rest in Peace', spread this little joke around! But whatever the reason for its name, its popularity can be proved. Records show that it was in continuous production from 1873 until 1941, during which time getting on for 400,000 guns were made.

The old 'Thumb-buster' had its rivals of course—Jesse James favoured a Smith & Wesson and his brother Frank packed a Remington. But when it came to numbers made, none of the other gunmakers could hold a torch to Colt's.

In the August issue I told you how Sam Colt had to close his first factory through lack of orders, and how luck played its part in getting him going again. Well, Sam lost out a second time. The firm of Smith & Wesson beat him to the draw in bringing out the first successful breech-loading revolver. The idea was protected by a patent which stopped anyone else from copying it. All the same, Smith & Wesson—like Colt with his first gun—were unable to interest the Army sufficiently in their breech-loader to get big orders.

The strange thing is that even when the patent ran out, it was four years before Colt's started making the breech-loading Model 'P', and Sam himself was already dead.

The key which made possible a successful breech-loader, was the invention of the metallic cartridge. Before this, either loose powder or paper cartridges plus ball had to be used, and this made reloading a fairly slow business. But with the metallic cartridge, bullet, powder and percussion cap slipped into the chamber in one piece. A practised gun-slinger could unload five empties and reload five new rounds in as little as ten seconds, and in the West this counted for a lot. What counted for even more was the Peacemaker's reliability and hard-hitting accuracy. As well as this, like its ancestor, the Army Model .44, the Peacemaker was of simple construction. All parts were readily interchangeable and, at a pinch, a good blacksmith could hammer out a part on his anvil and file it to fit. Another but quite different reason for the Peacemaker's wide popularity in the West was a clever bit of thinking by Colt's.

The Winchester lever action repeating rifle was the favourite among frontiersmen, and this was chambered for a .44-40 cartridge. By the simple expedient of boring cylinders to the same calibre, a man could carry only one sort of ammunition and it would fit both rifle and six-gun. This variation was often called the Frontier Colt, but it was exactly the same as the Peacemaker except for the calibre.

Variety was a strong point with the Colt factory. Apart from different calibres, you could have gold, silver and nickel plating, engraved designs on the metal parts, ivory and carved grips, in fact almost anything that you wanted the factory would do.

The Buntline Special is a good example of the sort of thing produced to order. Five of these were ordered by Ned Buntline, the writer, and given by him to such men as Wyatt Earp and Bat Masterson. They were just like the ordinary gun except that they had sixteen inch barrels! It is said that Masterson cut the barrel on his to a respectable length, but another yarn says that Earp liked his and always carried it.

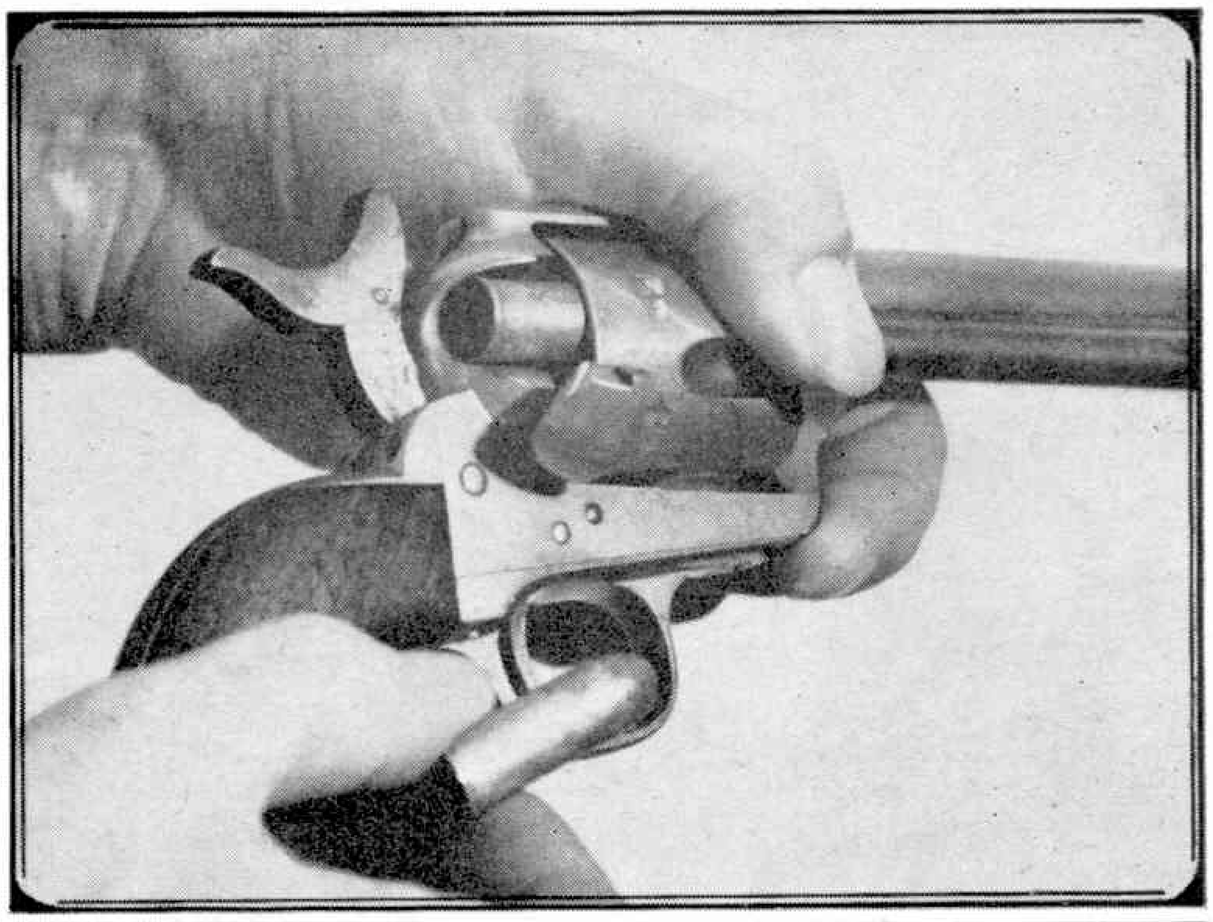
The ordinary production model of the Peacemaker catered for three different barrel lengths—$4\frac{3}{4}$ in., $5\frac{1}{2}$ in. and $7\frac{1}{2}$ in. A quick-draw gunfighter would favour the short barrel, purely because the muzzle would clear the holster quicker, but without doubt the style which suited the majority of Westerners was the $7\frac{1}{2}$ in. barrel of blued steel, and a butt with walnut grips. The gun fitted just as snugly into the hand as the fancier models, it hit just as hard and the barrel was long enough to give accuracy at a distance.

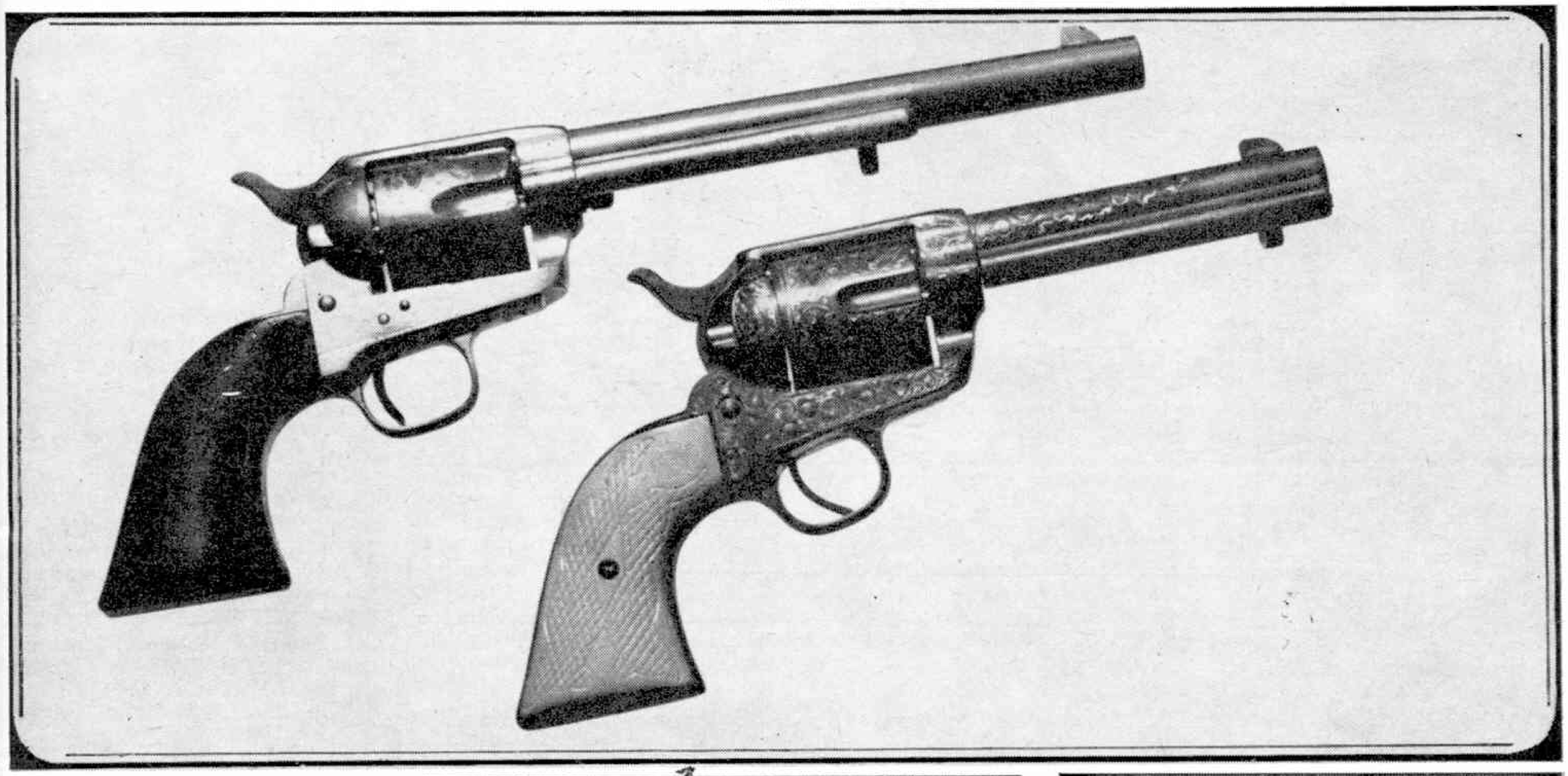
Ammunition was sometimes hard to get in the West, especially for a cowpoke on a remote ranch, and this is why most of them had a reloading outfit. In this way, a spent brass cartridge case could be fitted with a new percussion cap in the base, refilled with powder and a new bullet pressed into the top, and then fired again. And again. In fact, they were used over and over without trouble.

Although the Peacemaker cost $17 in the 1870s, to buy one today would cost a great deal more than that. But the one I have hanging on my wall only cost 16s. 6d. It's a plastic replica imported from the States by A. A. Hales Ltd. . . . . and it took little more than an hour to complete. As you can see from the picture, it's a full-sized copy with engraving work on the metal parts, and even at quite close range I reckon it would fool a lot of folk.–**Doug Mitchell**

Right: this gives you some idea of the size of a ·45 metallic cartridges. Loading is simplicity itself. The hammer is set at half-cock so that the cylinder can be rotated with the fingers. The 'gate' at the side is hinged down and a shell slid into the chamber.

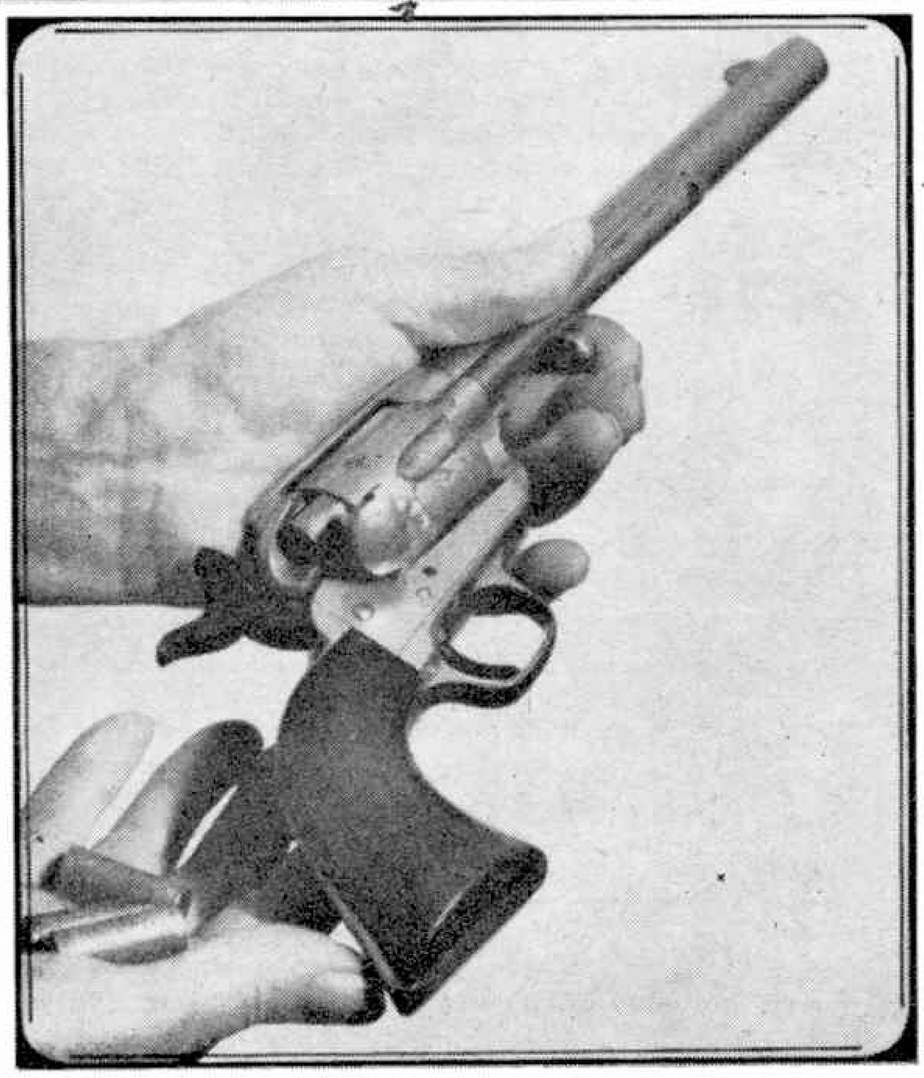
Below: the Peacemaker, probably the finest single-action revolver ever made. Here you see the plain, 7½ in. barrel model with walnut butt grips. And below it is the engraved, gold inlaid, 5½ in. barrel gun with ivory grips. The calibre of both guns is ·45 in.



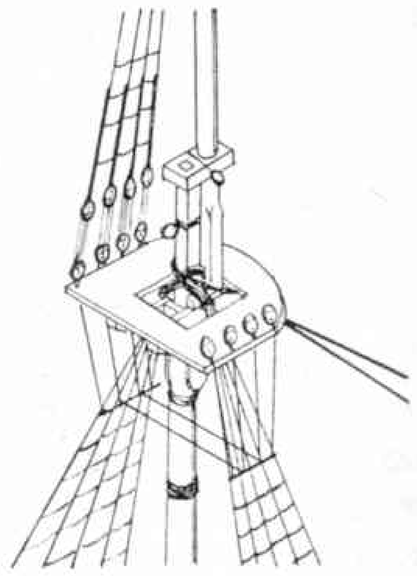


Right: unloading is also done at half-cock with the gate open. It is then merely a matter of sliding back the ejector rod—which is spring loaded—to push the fired round from the chamber. You don't throw those brass cases away, they can be recharged and used again.

Far right: some people bought rods and brushes with which to clean their gun after firing. For the cowboy, a leather thong—probably taken from his holster—and a piece of flannel soaked in oil was all that he needed.



NOTE.
Rigging simplified for small scale model.



SKETCH OF MAIN AND FORE TOP

Figurehead. woman in riding habit.

Deck at side, level with underside of rail from this point aft.

A B C D E.

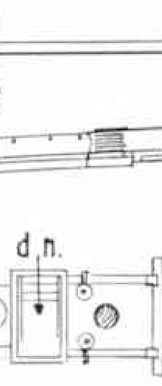
Posts for swivels

d n.

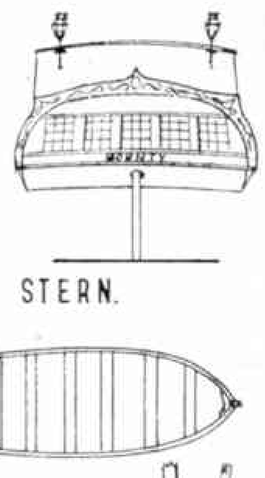
DECK PLAN.

SIDE VIEW OF DECK FITTINGS.
Bulwalks omitted

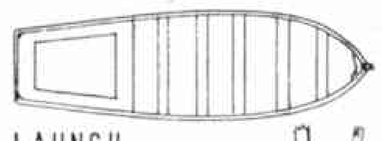
HULL SECTIONS.



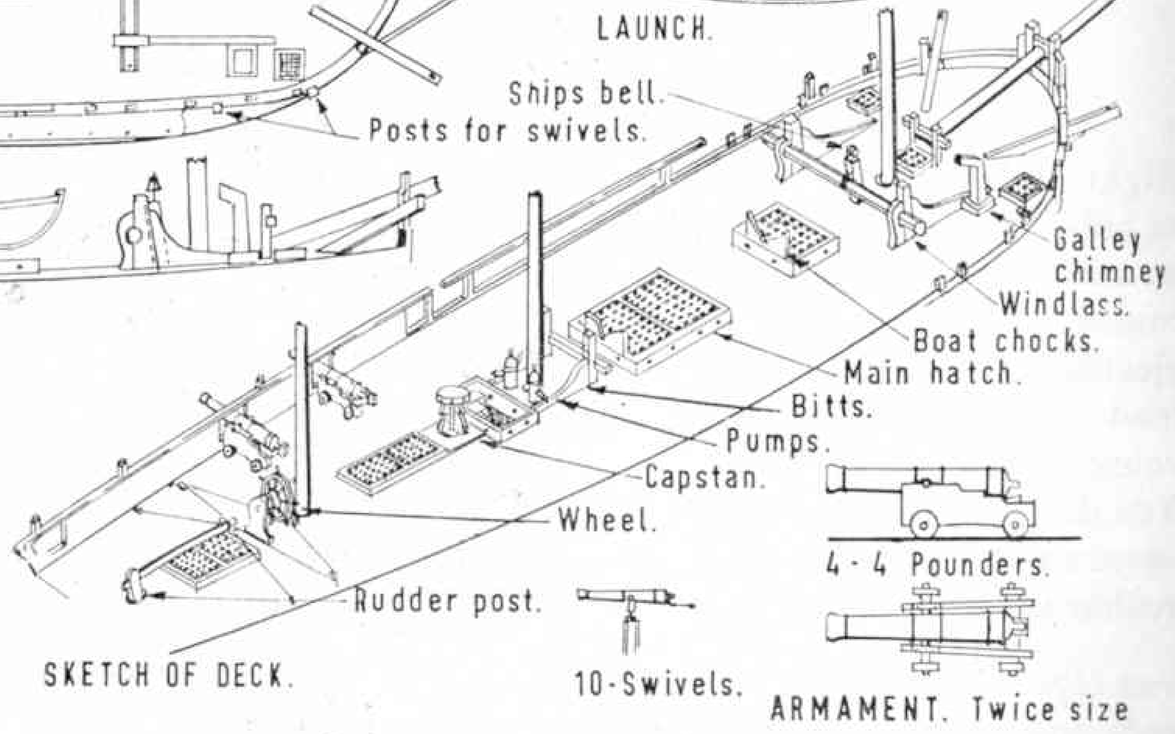
ANCHOR



STERN.



LAUNCH.



SKETCH OF DECK.

4 - 4 Pounders.

10-Swivels.

ARMAMENT. Twice size

H. M. ARMED TRANSPORT BOUNTY. As fitted out for the carriage of bread-fruit, Deptford, 1787.

DRAWN BY IAN R. STAIR.

SCALE. Feet. 0 10 20 30

Colours of the 'Bounty'

Hull below water line—copper. Hull above water line—yellowish-brown with black wales and rails. Figure head—natural colours. Stern carving—yellow on black ground. Deck fittings—natural timber, or if of metal, black, Inside bulwarks—buff. Masts and spars—natural timber. Standing rigging—black. Running rigging—tan.

the voyage of HMS Bounty

by Ian R. Stair

Slightly 'imaginative' contemporary art which, nevertheless, is full of true atmosphere. (Mansell Collection)

THE exploration of the South Seas makes most exciting reading and the ship model maker who is inspired by these stories can be thankful that contemporary draughts of many of the ships have been preserved and it is possible to model them with a fair degree of accuracy.

The 'Endeavour', Capt. Cook's first ship, is perhaps the best known. It is available as a plastic kit and the late Harold Underhill prepared a set of drawings which will satisfy the most exacting model builder.

Equally famous is the 'Bounty', the subject of this month's drawing. Unfortunately, it is famous for the mutiny rather than the equally interesting voyage it undertook.

Towards the end of the 18th century the number of slaves in the West Indies had greatly increased and it was thought that the breadfruit would provide an easily grown source of food for them. The 'Bethia', a merchant ship, was bought by the Navy and was converted to take the breadfruit plants from the South Seas to the West Indies. Armed with four carriage guns and ten swivels she was renamed the 'Bounty'. The great cabin was fitted out to carry young plants and the original drawings (draughts) give details of the racks which held the 629 pots.

Capt. William Bligh, then a lieutenant, was chosen to command the 'Bounty'. He had been with Capt. Cook on his last voyage and therefore had experience of the Pacific, in addition to being a first class sailor and navigator.

The 'Bounty' sailed from Spithead on December 23, 1787, and was beset by fierce gales as far as Teneriffe, reached on January 6. During this rough weather the beer was lost and much food damaged, this later caused some discontent among the ship's company.

After five days the damage to the ship had been repaired and she sailed in fine weather. Staten Island off Tierra del Fuego was sighted on March 23, and again they were faced with severe storms. On April 22, Bligh abandoned the attempt to round the Horn and turned to cross the South Atlantic. By this time a quarter of the crew were on the sick list.

Even in this situation Bligh's interest in navigation was enough to make him spend a few days looking for the island of Tristan da Cunha, the exact position of which had not been fixed at this date.

Unable to find it, he carried on and sighted Table Mountain, Cape Town, on May 22. As this last part of the voyage had been in good weather the crew were now pretty fit again. After leaving Cape Town the 'Bounty' did not anchor again until she arrived at Adventure Bay, Tasmania, the uneventful trip across the Indian Ocean taking just over seven weeks. Sailing on September 4 and passing south of New Zealand, they sighted Tahiti on October 25. The first part of the expedition had been completed successfully, but for 'Bounty', it was almost the end of her time at sea.

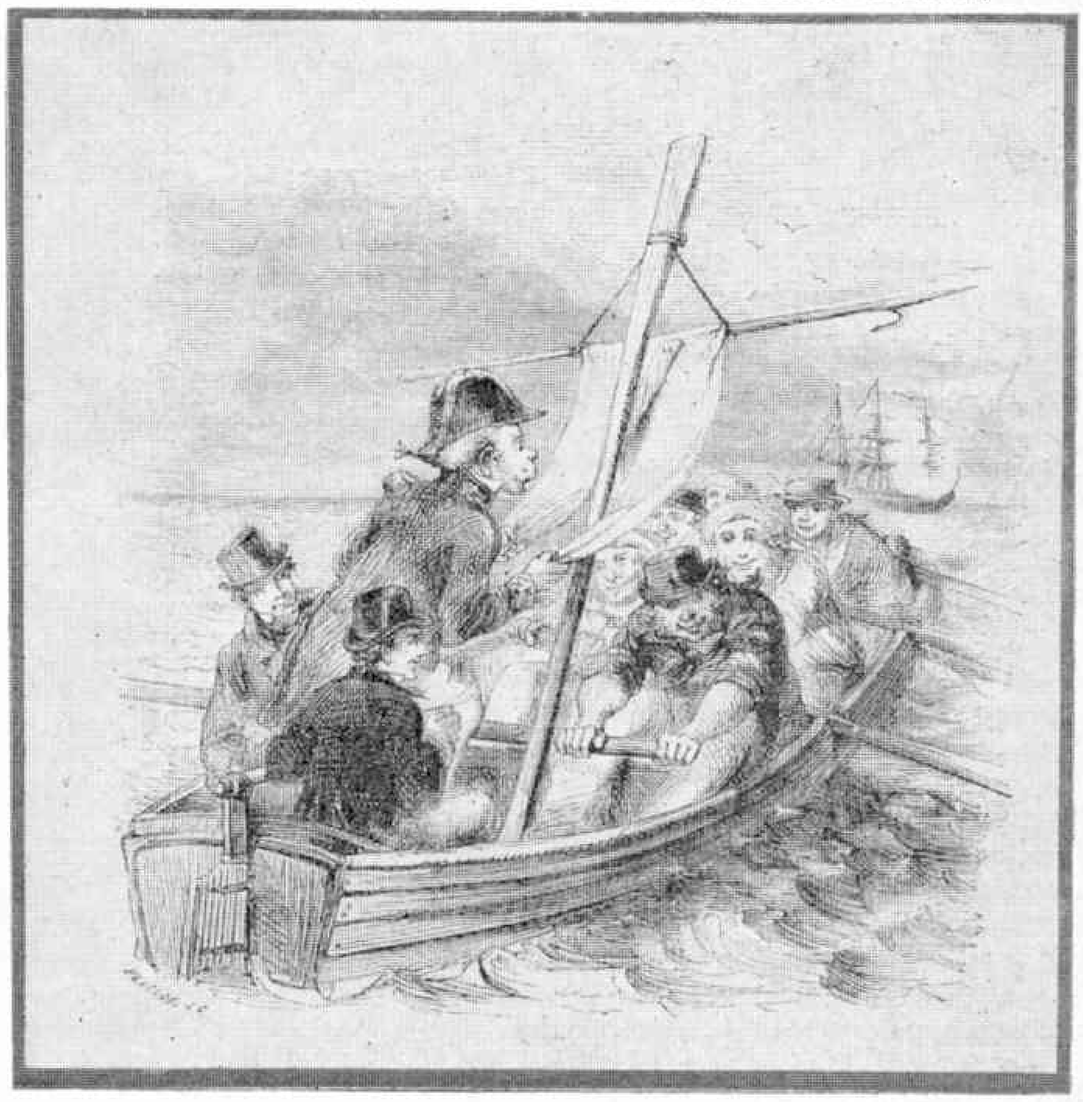
Capt. William Bligh has often been portrayed as a hard tyrant; he was a strict disciplinarian certainly, but judged by the standards of the day, he was unusually fair and just in his dealings with his subordinates. He was most proficient in all branches of seamanship, and did not spare himself to ensure the safety of the ship, and the well-being of the crew. However, it does appear that there was something in his character which aroused opposition in many people he came in contact with. This is, perhaps, not surprising, as efficient people are often irritating and demanding.

Unfortunately, when the 'Bounty' arrived at Tahiti, it was the wrong time of the year to lift the breadfruit plants and the ship remained there for six months until the plants were ready for potting. By this time, many of the men had settled down with native women in a tropical paradise with an almost perfect climate. It is not to be wondered that they did not look with enthusiasm upon the idea of leaving the island to face a hard and dangerous voyage round the dreaded Cape Horn.

On the morning of April 28, 1789, the famous mutiny took place and Bligh, together with eighteen men who remained loyal, were forced into an open boat. The voyage of this boat, of no less than 3,618 miles to Timor, through largely uncharted waters, is one of the sagas of the sea, but it does not really belong to our 'Bounty'.

Fletcher Christian, with a number of mutineers and native men and women, later sailed to the uninhabited island of Pitcairn, where they set fire to the 'Bounty' to prevent it being seen by passing ships. Thus ended the career of one of the Navy's smallest, but best known and most colourful ships.

Not, we should have thought, a humorous situation! (Mansell Collection)



PARIS POTPOURRI

ALL right, on to unit three and this the merry month of October, sees us suitably brainwashed (I hope) and gazing below at some not-so-old Meccano Dinky Toys produced in their factory at Bobigny (Seine) France !

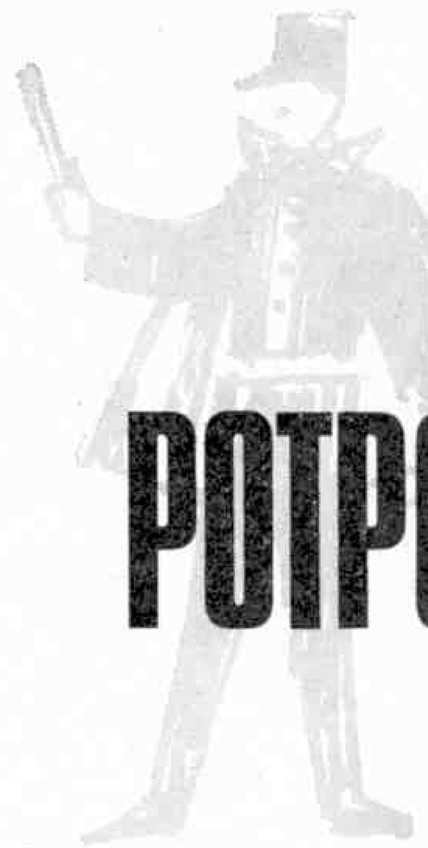
Before I start to waffle on about the cars, I'm going to stick my neck out and disagree (probably) with many and at the same time pay a compliment to everyone from designers to packers at the French factory. It's my considered and humble opinion that Meccano France produce the finest die-cast toys on the market (I don't own shares in the company!) I have in my collection some seventy different manufacturers' models including the Rio and Solido—which I love—and have seen most of the others, but Dinky France get my vote.

Obviously there's good and bad and I've not picked out the best for this issue, just grabbed a few off a shelf, but for all-round consistency they get the 50 dollar prize. One reason for this, is I think that before the war, Frank Hornby and all who worked with and for him, took a real pride in everything they produced. For example—take a pre-war R.A.C. man not an inch high. No flash, every detail nicely painted, face, eyes, hands, cap detail, etc., now, after the war due largely to rising costs we find station staff, etc. —to the same scale as the R.A.C. man—with one colour paint overall plus a too liberal dab of pink for face and hands. At the French factory, I believe they've retained the old 'Hornby attitude' and thanks to this, we have a fine range of models, with generally, a fine finish. Let's hear your views on this, both for and against. Phew, now I've got that off my chest, we'll take a closer look at these Frenchies!

First of the line and numbered 532 is the Lincoln Premiere. This is finished in either pale blue with a silver top or two tone metallic green. I have both but it's the latter which is shown here (though the photograph doesn't do it justice). A very good casting, with no gimmicks such as steering etc., just the usual glazed windows, one-piece body, axles through the tin base-plate and note, rather nice polished metal wheels. Exactly the same type to look at, as fitted to English Dinkys of the period earlier (see model in last months issue of Meccano Magazine), but minus paint. This idea has been used on the French models for many years.

Number 543 Renault Floride is again without springing etc. (though later issues are fitted with 'suspension'). Finished in metallic green, it's a very good model of the real thing. Almost obsolete, it's worthy of a place in your collection, being a better reproduction than the Floride produced by Corgi — so start searching!

Very obsolete and in photo No. 3 is another Yankee model—the Buick Roadmaster. This is one of the worst French Dinkys and, I feel, not fully authentic, having gone wrong



No. 508 Renault 4L

No. 100 Dinky Junior Renault 4L

No. 24V Buick Roadmaster

No. 554 Opel Record

No. 543 Renault Floride

No. 24K Simca Vedette

No. 24A Chrysler New Yorker

No. 532 Lincoln Premiere

somewhere, Catalogued No. 24v and later 538, mine is painted yellow and green—ugh—but was also issued in a more pleasing colour scheme of blue and white I think—anyone got a spare?

At the top of the centre column are two Renault 4L's, both have the same cast body, but differ as follows:— The red model has no windows or other refinements, just a plain body shell with base-plate, axles and wheels, this was shown in the 1963 catalogue as No. 100 Dinky Junior 4L Renault'. The other Renault is exactly the same casting but, fitted with interior detail—seats, steering wheel, windows, suspension and steering (for better or worse, depending on which you view as a collector!) This second Renault was issued twelve months before the first and numbered 518.

I've shown the two Renaults to prove that Meccano France get up to the same tricks of re-issuing models with variations, as do their British counterparts and so if you're set on collecting the full Dinky range, you'll need both types. This happens all the time, I myself have three different DS 19 Citroens which perhaps I'll describe along with others at a later date if you are interested.

One of the current French models, which you should find easy to purchase or swop for, is the Opel Record No. 554. Most of you probably have this car already, so I won't remain here, except to say its another excellent model well cast with the now standard fittings of seats, steering, etc.

It seems we're spending a lot of time with American cars this month, but it's quite by accident for, as I said earlier, the models were picked at random from the collection—so herewith a Chrysler New Yorker No. 24a and later No. 520, very hard to find now, its a beauty with all interior detail cast in one piece. In appearance, it looks far superior to the plastic seats now in all models.

Bodywork is enamelled Cherry red with chrome parts, including the strip down the sides of the car, picked out in silver. Wheels are polished, unpainted metal and the base-plate bears the legend 'Dinky Toys 24a Chrysler New Yorker 1955 —Meccano Made in France'. A very delightful model.

The last model for this month is No. 24k/528 Simca Vedette 'Chambord' once more I cannot find any fault with it. Very well detailed, my model is painted suitably in light and dark green, possibly this was the only colour issued, for all the catalogues show it as such, but I stand to be corrected on this. Being an early model (first issue was the beginning of 1959) it sports windows and nothing else and still has the early type wheels.

Well I hope you've enjoyed taking a peek at these foreigners, perhaps you'll write and tell me so. Next month I'd like to talk about an excellent range of American cars produced by Meccano at Liverpool before the war, plus a few ideas of my own for your interest.

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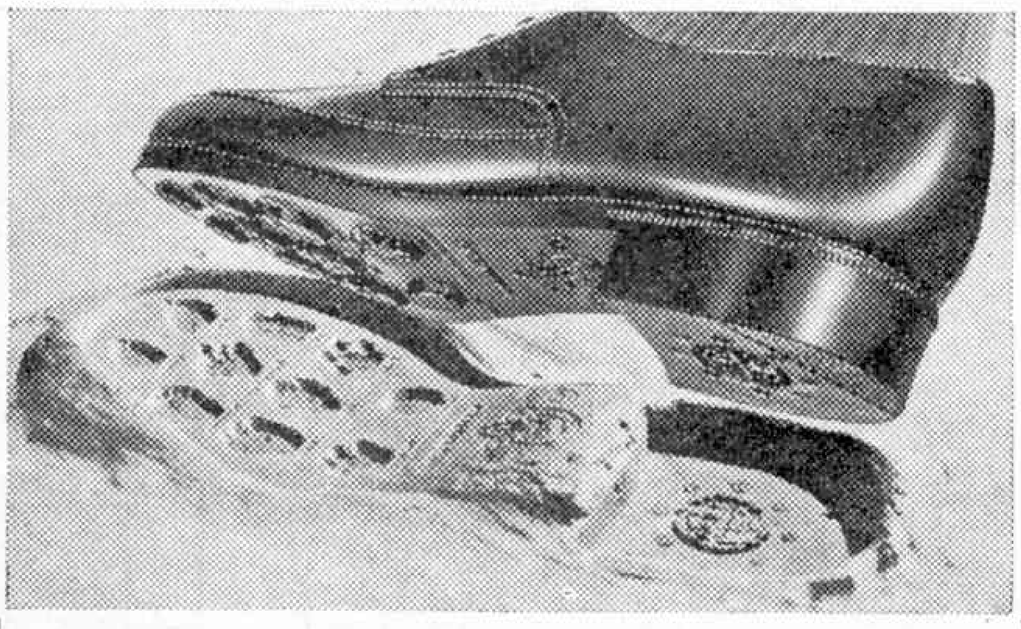

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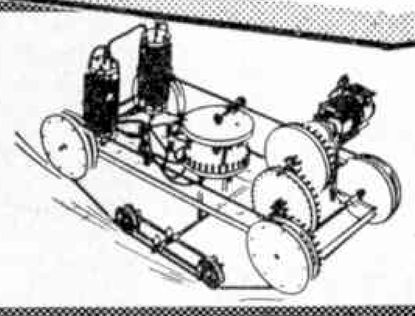

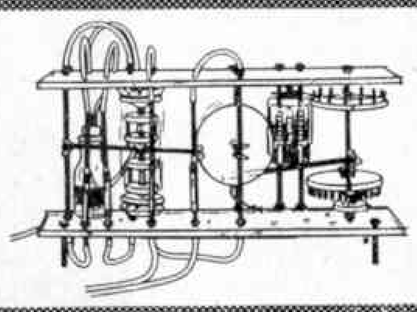

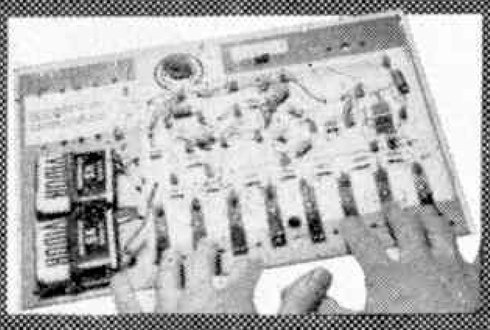

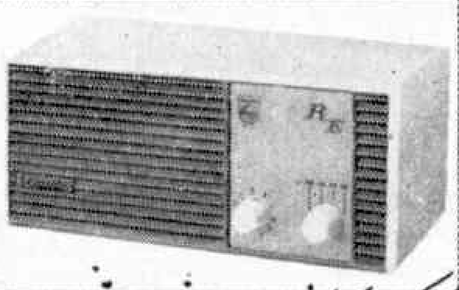

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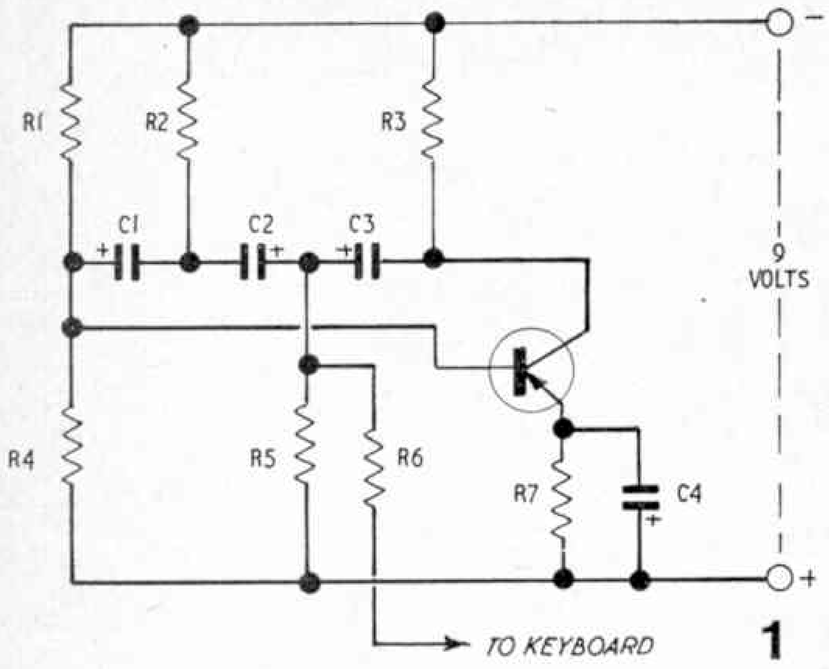

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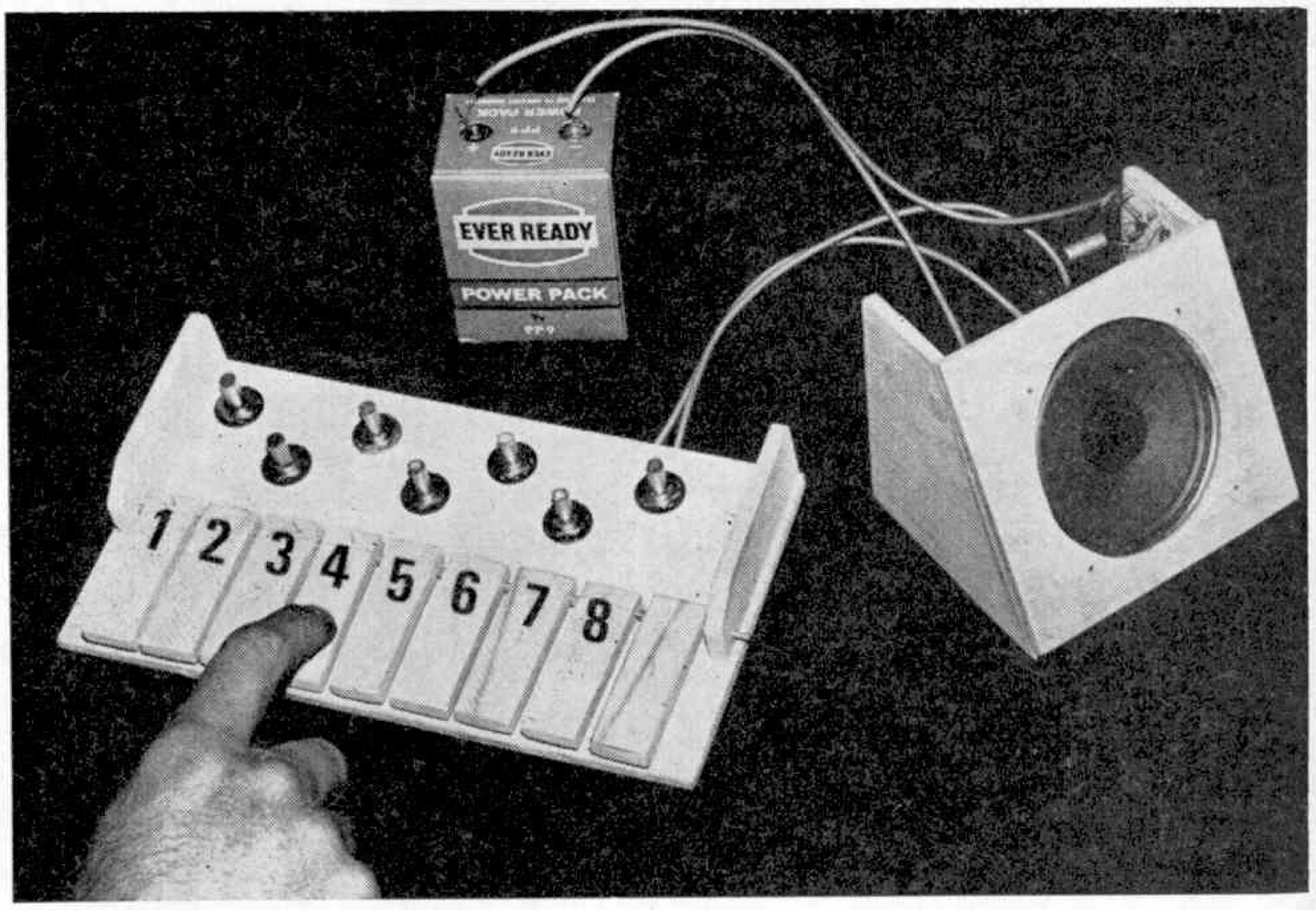

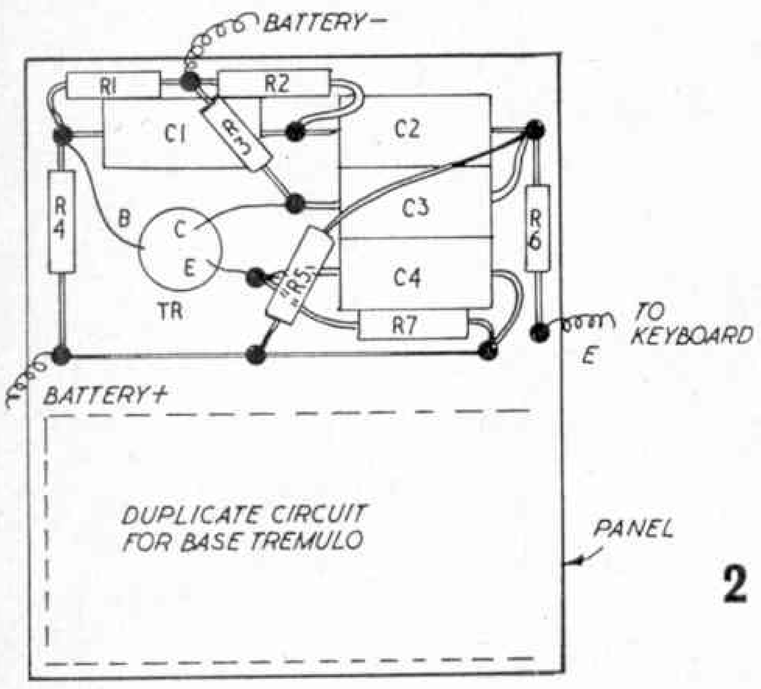

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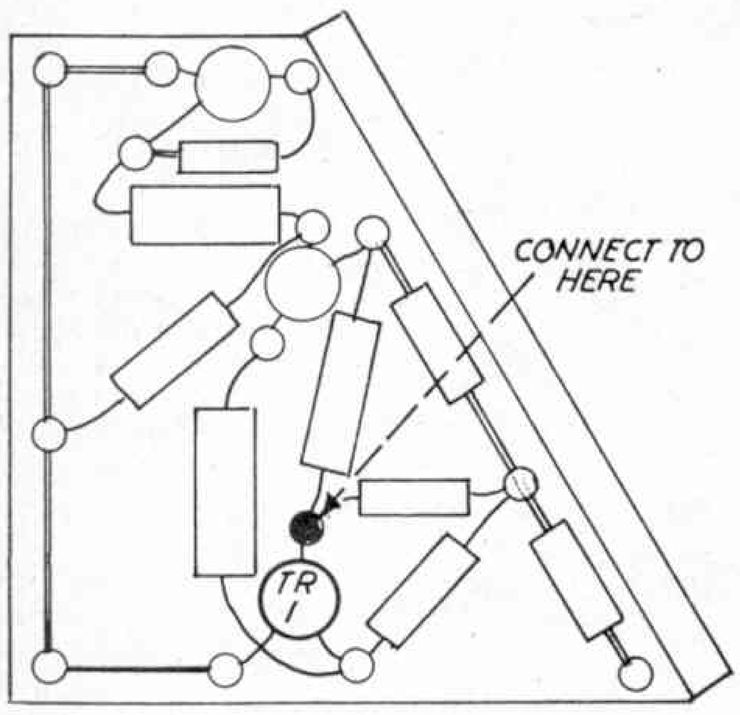

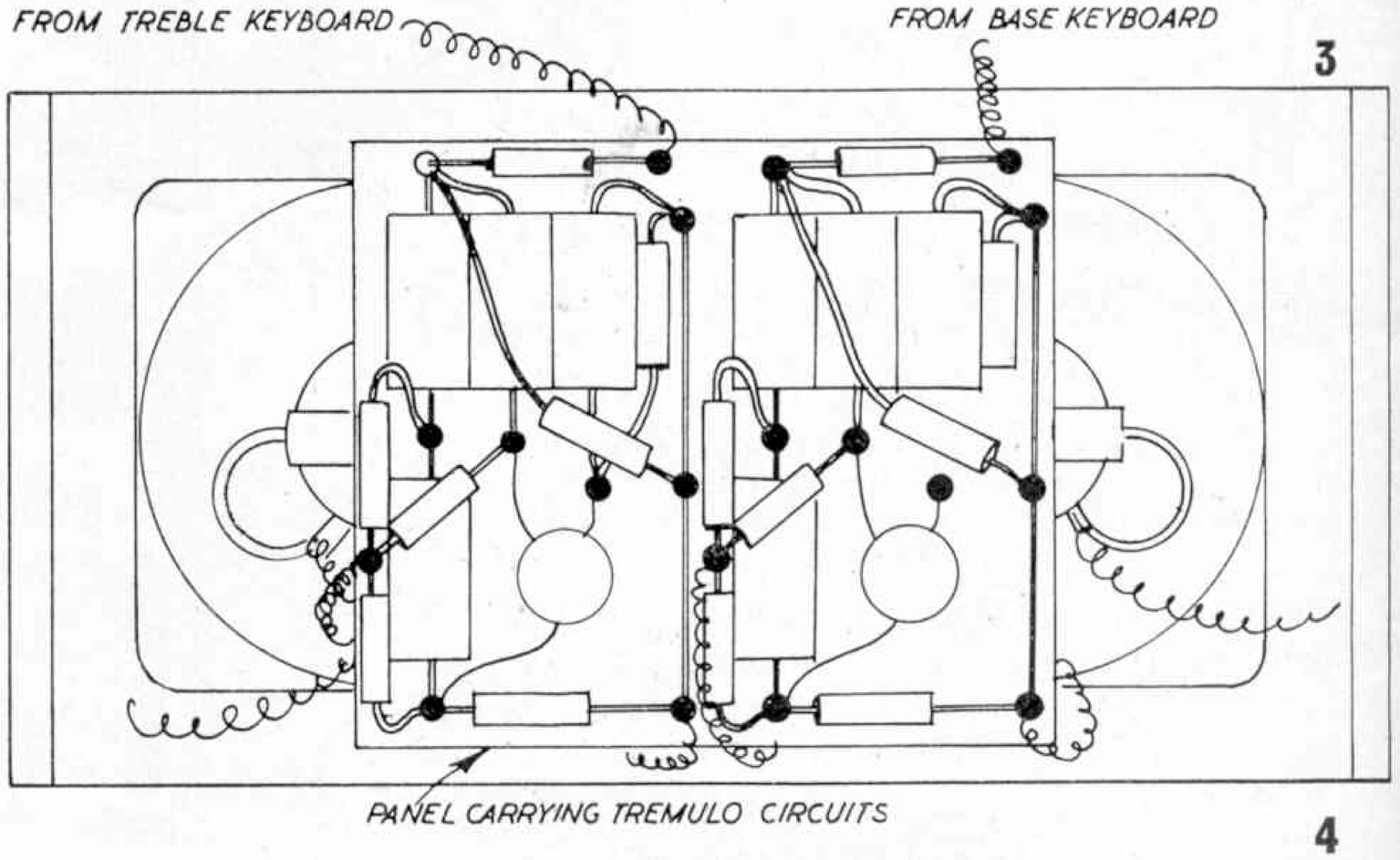

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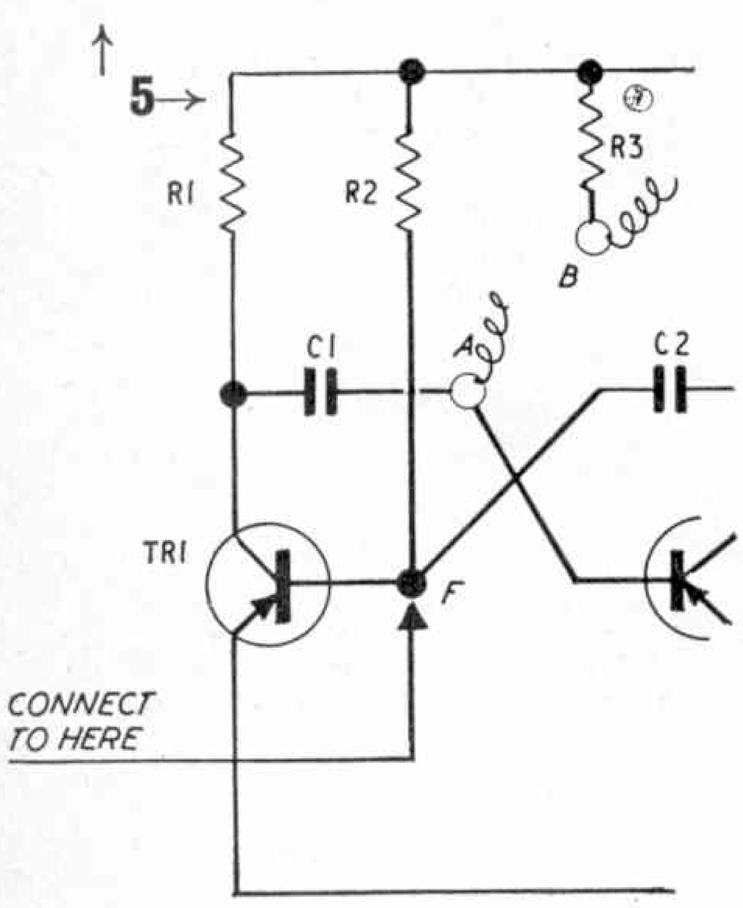

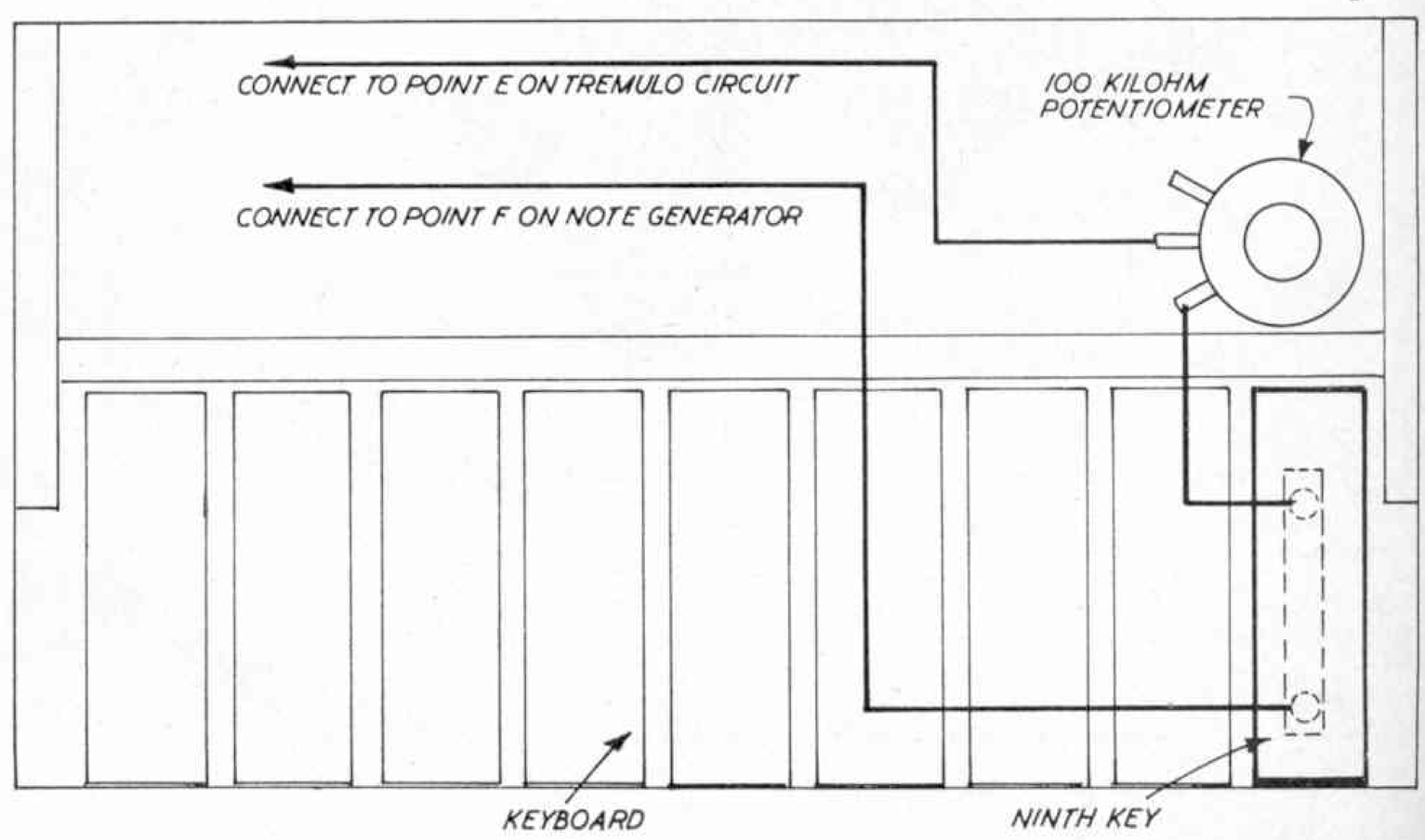

Electronic organ—part 4

THE tone of the organ can be greatly enriched by incorporating what is called a 'tremulo' which can be superimposed on any note played. Technically, the tremulo circuit required is called a phase shift oscillator, but in practice this involves only a simple circuit based around a Mullard OC75 transistor (or equivalent). This can be constructed as a quite separate circuit on its own panel, then connected into the main circuit. Its effect is then superimposed on any individual note played by closing an appropriate switch, which is why the ninth key on the keyboard was left spare. This is depressed and held down whenever it is desired to richen the note played by any of the other individual keys.

One tremulo circuit is required for each keyboard; or, alternatively, you can use one tremulo circuit only connected *either* to treble or base keyboard. Being mounted on a separate panel it can fit behind the loudspeakers for convenience of wiring to the battery supply and appropriate note generator/amplifier circuits.

The tremulo circuit diagram is shown in Fig. 1, whilst this is rendered as a suggested physical layout for the components involved in Fig. 2. It is impossible to give an exact layout since the size of certain components of the same value may vary from different sources. It is suggested, therefore, that the components available be laid out on a piece of $\frac{1}{8}$ in. ply roughly in the positions shown in Fig. 2 when the required connecting points can be marked on the panel. Copper or brass nails are then driven into the panel at these points and the circuit completed by soldering the component leads to their respective connecting points (nails). Be particularly careful to connect the electrolytic capacitors the right way round. Fuse wire should be soldered between the bottom three nails to complete the circuit.

Two identical circuits are assembled on the same panel. The complete panel then fits behind the loudspeakers as shown in Fig. 3, with separate wiring connections to the appropriate keyboards and the battery supply. The battery connections are obvious: battery + to the positive terminal of the battery and battery − to the negative terminal of the battery in each case. The battery is the same as that used for the note generator/amplifier circuits (i.e. only a single battery is required for all the circuits). These connections are made with insulated wire.

Connection to the appropriate *keyboard* involves only one wire connected to the tremulo circuit (point E on Fig. 2). At the keyboard end, however, two wires are involved—the one which connects to point E on the tremulo circuit and another wire connecting to point F on the main (note generator) circuit. In other words a twin flex is led from the keyboard back to the 'electronic' unit, connected to the ninth key position at the keyboard end.

Fig. 4 shows what connections are involved at the keyboard end. The ninth key is nothing more than a switch and so the two wires are simply connected to each end of the switch. If a 100 kilohm potentiometer is inserted in one lead, as shown, this will provide a method of adjusting the tremulo frequency, if desired. It is not *necessary* to include this potentiometer. Thus the wire connecting to point E can go directly to the inner end of the brass contact strip. This is all that is really required for the treble keyboard tremulo anyway. The inclusion of a potentiometer will give better 'tone control' in the case of the base keyboard tremulo and is worth adding in this case. Room has been allowed for it in the original keyboard design.

Tracing the two leads back from the keyboard key, one connects to point E on the appropriate tremulo circuit, as already described. Point F has to be identified on the appropriate note generator circuit and here Fig. 5 will help. This shows the connecting point both with reference to the original circuit diagram and the physical layout of the components (treble note generator). As a further check, remember that point F is the *base* connection of transistor TR 1.

That is all there is to it. With the tremulo circuit connected up properly, depressing the tremulo key at the same time as any other note is being played on the same keyboard will produce a true 'vibrato' effect by varying the pitch of the note as well as its amplitude. This will add considerable 'life' to the note being played—and the 100 kilohm potentiometer (if fitted) at the keyboard end enables you to adjust the depth of vibrato.

There are few further improvements you can attempt unless, perhaps, the volume of your organ is not loud enough. It can be boosted, but to do this you will require a different amplifier. Thus the note generator circuit is detached from the simple amplifier circuit described in part 2 (i.e. the amplifier components enclosed within the dashed outline removed) and the output connected to a more powerful amplifier. You can buy such amplifiers ready made or build them from kits—and if you use a powerful enough amplifier your miniature electronic organ is quite capable of filling a large hall with sound! However, for most purposes the original amplifier should provide quite adequate volume. It also has the advantage of being cheap and simple to incorporate in the circuit and the complete organ—two keyboards and their tremulo circuits—requires only a single 9 volt battery to work. Current drain will only be of the order of 30 milliamps, so battery life should be quite long.

Following is a list of components required for building the tremulo circuit. This refers to one tremulo circuit only. For two circuits (treble and base tremulo) you need two of each item.

Resistors: all miniature type $\frac{1}{4}$ watt

R1	82	kilohms
R2	4·7	kilohms
R3	4·7	kilohms
R4	10	kilohms
R5	4·7	kilohms
R6	100	kilohms
R7	1	kilohm

Capacitors: all electrolytic, 12 volt working

C1	2	mF
C2	2	mF
C3	2	mF
C4	200	mF

Transistor: Mullard OC75 or equivalent. (Note: an OC71 transistor with high gain characteristics will also do.)

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Standard block sizes are available in different densities, usually ranging from about 6 lb/cu. ft. (very light or "soft") to 14 lb/cu. ft. ("heavy" grade). For carving propellers it is usually best to select a fairly heavy grade as the wood is stronger.

You do not have to worry about grain or knots—especially if you choose SOLARBO balsa—as the basic lumber is carefully graded and selected to give fault-free blocks when cut to final size.

Standard block length is 36 in. but shorter lengths may be available at your model shop. Larger cross sections can be cut to special order but it is usually more economical to use standard sizes, glued together if necessary.

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x 1½"	3·0	4·0	5·0	7·0	2/6
x 2"	4·0	5·3	6·7	9·3	3/-
x 2½"	5·0	6·7	8·3	11·7	3/8
x 3"	6·0	8·0	10·0	14·0	4/6
1½" x 1½"	4·5	6·0	7·5	10·5	3/2
x 2"	6·0	8·0	10·0	14·0	3/8
x 2½"	7·5	10·6	12·5	17·5	4/6
x 3"	9·0	12·0	15·0	21·0	5/8
2" x 2"	8·0	10·7	13·3	18·7	4/10
x 2½"	10·0	13·3	16·7	23·3	5/10
x 3"	12·0	16·0	20·0	28·0	7/2
2½" x 2½"	12·5	16·7	20·8	29·2	6/8
3" x 3"	18·0	24·0	30·0	42·0	11/-
x 4"	24·0	32·0	40·0	56·0	14/4

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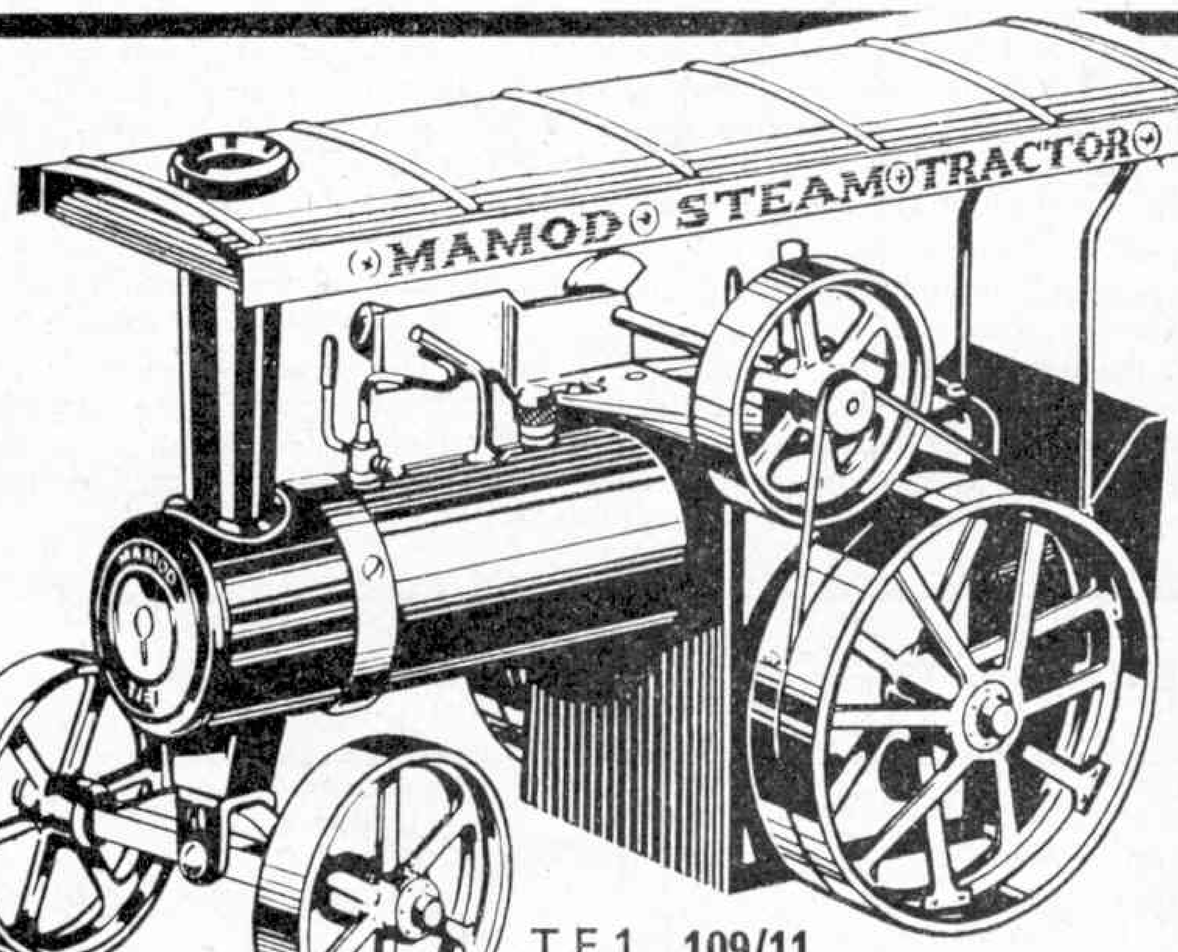

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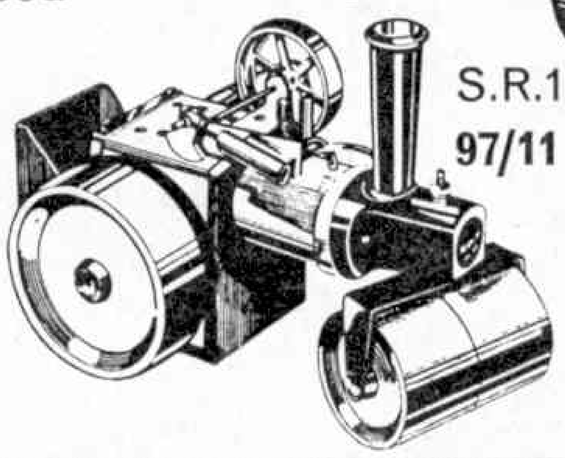

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HOW TO CARVE WOOD PROPELLERS

Propeller carving is something of a lost art in these days of plastic mouldings —but for the best performance from a rubber-powered model there's nothing to compare with a carved prop. These step-by-step instructions show the basic technique for conventional carving of a two-bladed prop. You can use it for single- or two-blade folding props. as well, in any size.

For freewheeling props, choose a medium hard to hard grade of balsa so that you can carve the blades quite thin and still retain adequate strength. For folding props, use a lighter grade of balsa, leave the hub 'square' and fit the hinge before cutting the blades free of the hub at the hinge line.

Exactly the same technique can be used for carving props in other woods, but choose a wood which is reasonably light, easy to carve and has a good straight grain. For flying models, always carve propellers from balsa as hardwood props are too heavy.

1 For any given diameter, block *width* should be about $\frac{1}{8}$th of the *diameter*. Mark off in quarters, as shown, with pencil or ball point pen

2 Complete marking out as shown in this diagram. As an additional guide for accurate cutting it is recommended that all four faces of the block be marked out

3 Use a stiffback saw to cut the ends of the block to taper, as shown. These cuts must be made accurately and a fret-saw is likely to 'wobble'

4 Now make vertical saw cuts down to the hub position and then chisel out the three parts shown, using a very sharp knife or rigid carving blade

5 Turn the block on edge and make vertical sawcuts down to the plan width of the hub. Chisel out the three portions marked on each side very carefully

6 This completes the *propeller blank* ready for carving. The accuracy of your final propeller depends on how accurately and squarely you have made the cuts to this stage

7 Start by carving the *back* face of one blade, aiming for a slightly undercambered (concave) surface from hub to tip. Note which *way* to carve for a conventional (tractor) propeller

8 Turn the blank round and carve the back face of the other blade. Check that the amount of undercamber on each blade is the same by using a straightedge laid from LE to TE

9 Now turn the blank over and carve the front face of one blade, aiming to end up with a good aerofoil section. Blade thickness should taper from a maximum at the hub to quite thin at the tip

10 Turn the blank round and carve the front face of the second blade. At this stage you can rough sand down with fairly coarse sandpaper, middle 2 grade.

11 Trim the outline of the blades to a suitable shape, making sure to get each blade the same. Work all over the propeller with sandpaper to finish the blade and form the hub

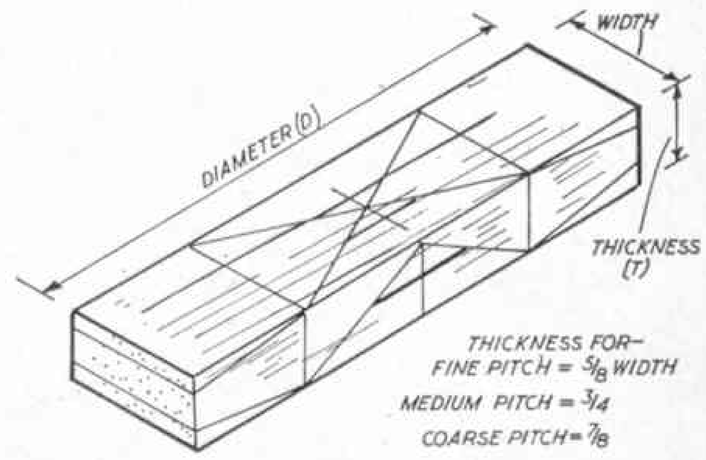
12 Fix a bush in the hub, then balance the prop on a piece of wire. Sand down the heaviest blade until the prop balances horizontally. Finish by clear doping (4 coats)

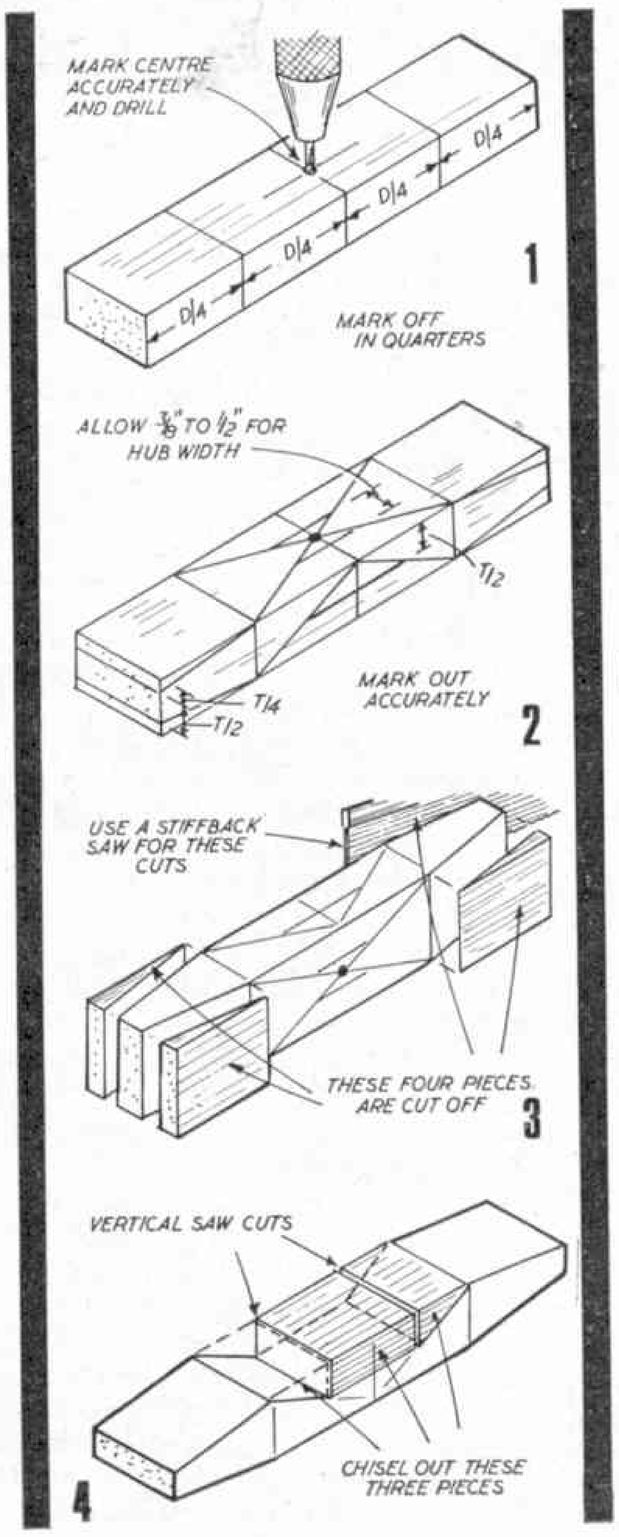
The actual width of a propeller blank is not critical, but the ratio of the thickness to the width governs the propeller pitch. As an approximate guide, width should be about equal to diameter/8, but it is usually more convenient to work to standard balsa block widths to save unnecessary cutting. Suitable widths are:

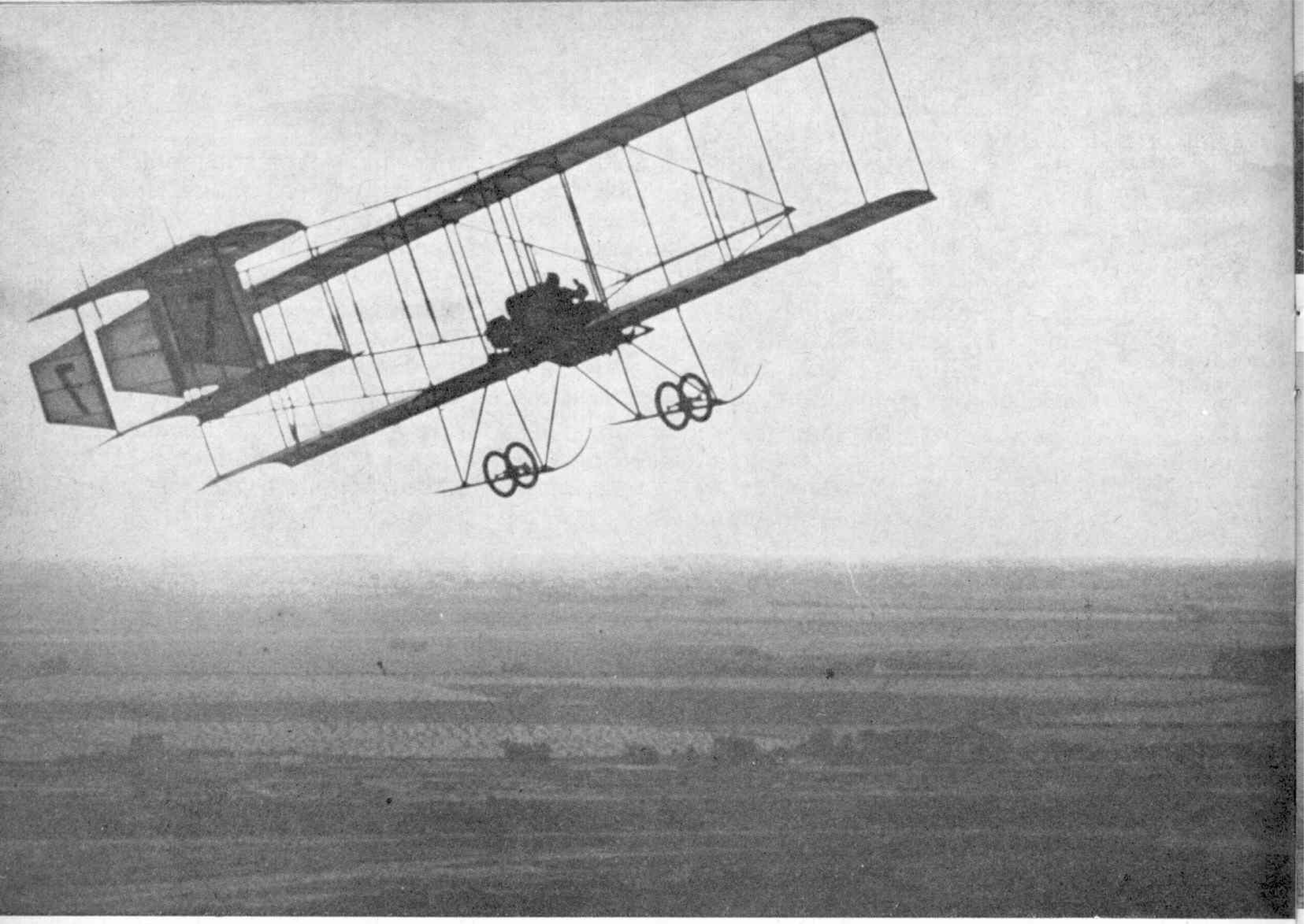
10 in.—width $1\frac{1}{2}$ in.
12 in.—width $1\frac{1}{4}$ in.
14 in.—width $1\frac{3}{4}$ in.
16 in.—width 2 in.
18 in.—width 2 in.
propeller diameter:
6 in—8in.—width $1\frac{1}{4}$ in.

If you want to calculate the pitch of your propeller instead to using approximate guide above, then

$$\text{pitch} = \frac{1{\cdot}57 \times \text{diameter} \times \text{thickness}}{\text{width}}$$







Dubbed 'The Phoenix Flyer', this Boxkite replica appeared in the film 'Those Magnificent Men in their Flying Machines'

THE BOXKITE THAT WASN'T

Back in 1912, nobody flew through clouds. Balloonists had returned to earth with frightening stories of raging gales, hail, thunder and lightning encountered when they strayed accidentally into storm clouds. Clearly, the stick-and-string aeroplanes of more than half a century ago would not have lasted long in such conditions. Furthermore, they carried no instruments. Once out of sight of the ground, the pilot would have been on his own, with nothing but instinct and a sense of balance to tell him whether or not he was flying straight and level.

It created quite a stir, therefore, when young Warren Merriam, an instructor at the Bristol flying school at Brooklands, said one day that he was tired of sitting on the ground under a lot of low clouds and intended to find out what it was like above them. A few of the braver characters asked if they could accompany him, but he was alone when his 50 h.p. Boxkite biplane trundled into the air at about 25 m.p.h. and began to climb.

Almost immediately, Merriam became completely enveloped in cold clammy mist. A leather jacket protected the top half of his body, but the 'cockpit' of a Boxkite consisted simply of a seat mounted on the leading-edge of the bottom wing and within seconds his trousers were saturated. The ground faded from view and even the sun could not penetrate the murk that surrounded him. Never had he felt more lonely.

Before his confidence had time to wane, he noticed that the cloud above him seemed to be getting lighter. Suddenly, he broke free of the last curling wisps of vapour and found himself in wonderland. Above, the sun shone warmly from the bluest of blue skies. Beneath his wheels a soft, dazzling white carpet spread out as far as the eye could see—a familiar sight to those who fly in this jet age, but at that time a scene of unimagined grandeur and beauty.

Merriam became known eventually as the 'Boxkite King'. From a draughty perch on the lower wing of his biplane he taught dozens of pupils to fly, including men like the late Air Chief Marshal Sir Philip Joubert, who became leaders of the Royal Flying Corps and Royal Air Force in two World Wars.

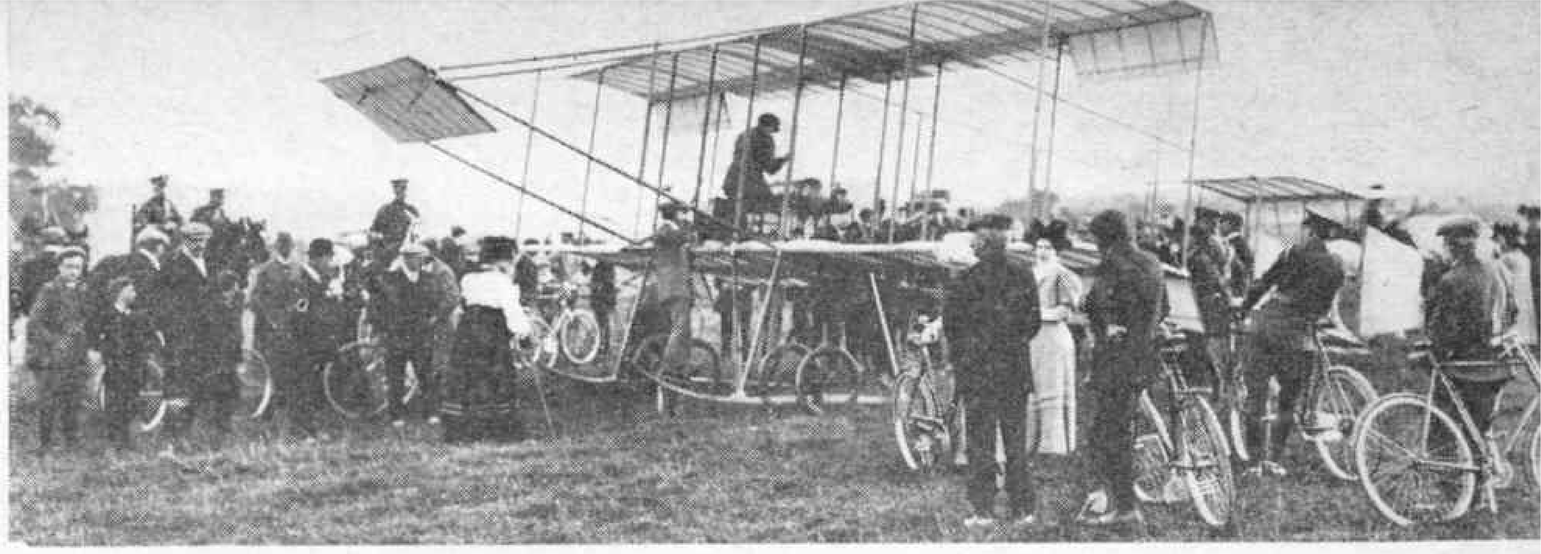
His success stemmed in part from a new technique that he used. Previously, pupils had had to sit behind the instructor and watch what he did, by leaning over his shoulder while hanging on tightly to the nearest wing struts, as there were no such things as safety belts. If the weather was calm and the instructor sufficiently trusting, the pupil might be allowed to reach forward and rest his hand on the joystick. This, and a little taxying practice with the instructor in the back seat, was all the 'dual' he could expect before being turned loose for his first solo.

Merriam changed all this. He let his pupils sit in the front seat, in complete control of the rudder bar but with only partial control of the joystick until he felt they had mastered it. He worked out a system of signals which involved, for example, squeezing the pupil's left shoulder when he wanted the rudder bar moved with the left foot, and pushing forward on both shoulders when the joystick had to be moved forward. Commenting on this later, he said: 'This was horse sense. In fact, it often seemed to me that the use of bits and reins would have been quite a sound idea. My pupils were so keen that they would probably have accepted even such an arrangement had I suggested it.'

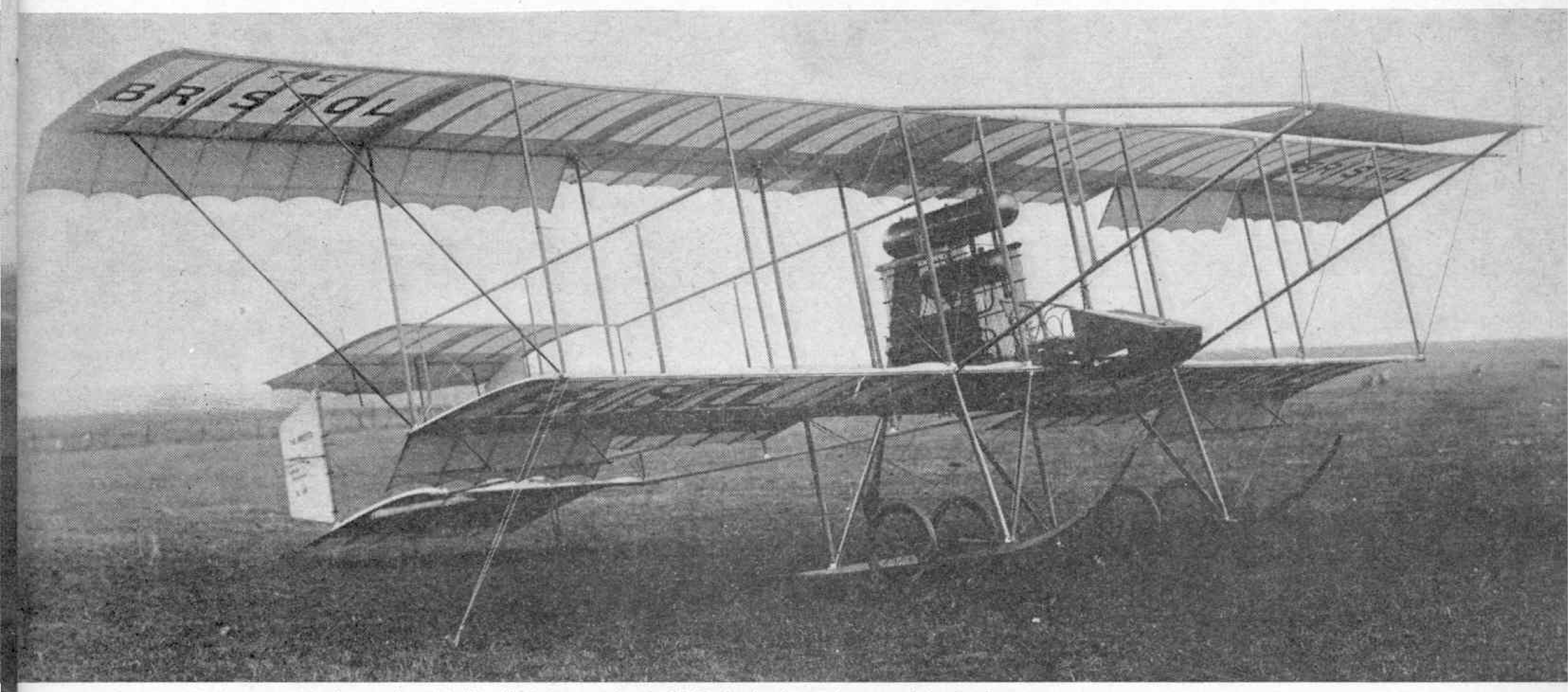
Thanks to the makers of the film, *Those Magnificent Men in their Flying Machines* we can now see a Bristol Boxkite in the air once more—something that I for one never expected to see. That the replicas built for the film fly so beautifully is a tremendous tribute to the men who produced the original design back in 1910, as no major detail was changed, apart from fitting a modern 90 h.p. Rolls-Royce/Continental engine and an additional fin between the two standard tail-fins. It was discovered, in fact, that the original structure compared well with the present British civil airworthiness requirements for the latest designs.

Who did design the Boxkite is a little vague. When the British and Colonial Aeroplane Company (known from the start as 'Bristol') set up shop in 1910, its directors intended to build under licence the French Zodiac biplane, designed by Gabriel Voisin and fitted with boxkite wings. Unfortunately, the Zodiac was overweight and underpowered; so, after completing one, Bristol switched to a somewhat blatant copy of the same machine as

In November 1910, M. Tetarel flew over the Avon Gorge in his Boxkite, quite an adventure half a century ago



First reconnaissance plane was the Military 'Boxkite', seen here on Salisbury Plain during the 1910 British Army manoeuvres



With wickerwork pilot's seat and in-line engine, this 'Boxkite' picture taken in 1910 clearly shows the extended wingtips

improved by Henri Farman. As this dispensed with the vertical canvas 'side-curtains' which extended between the wingtips of the Zodiac, it was not really a boxkite, but was never called anything else.

First Bristol Boxkites to fly were No. 7, with a 50 h.p. Grégoire engine, and No. 8 with a 50 h.p. ENV. No. 8 had double-surface wings, with top and bottom 'skins' like a modern aeroplane. No. 7 had only a single fabric top skin with the ribs enclosed in pockets underneath, and all subsequent Boxkites had this type of construction which was less efficient aerodynamically but saved a lot of weight.

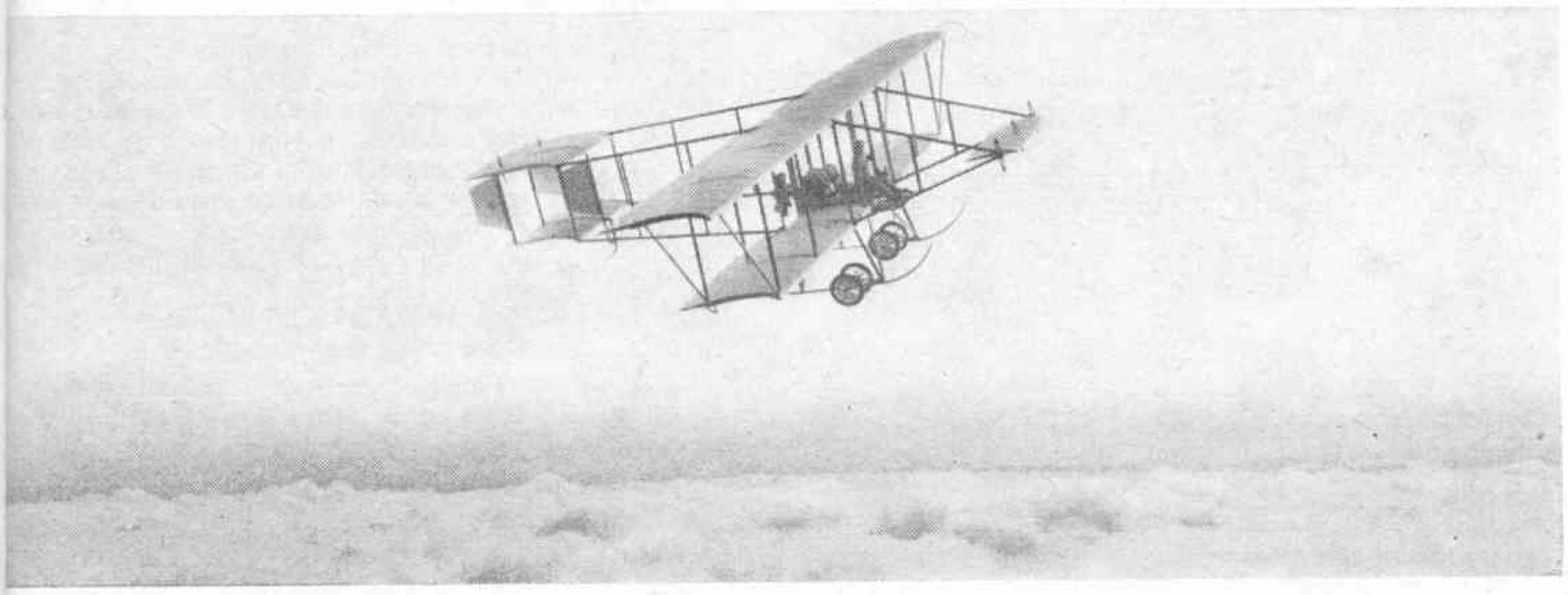
This was important, as engines were so low powered and unreliable in those days that every ounce mattered. Far from flying above the clouds, the aeroplanes of 1910 usually had such a struggle to get airborne that people lay flat on the ground when prototypes made their first attempts to fly, watching excitedly for the first glimmer of daylight between the wheels and the grass. They did so when Boxkite No. 7 was ready for test after being re-engined with a 50 h.p. Gnome rotary; but it astonished everyone by climbing to a height of 150 ft. without difficulty. Such was the impact on aviation progress made by this remarkable aero-engine.

Structurally, the Boxkite was simple. The biplane wings were built first, each made up of wooden ribs, with fabric covering. With the interplane struts in place and braced with piano wire, they formed a surprisingly rigid structure. To them were attached the forward elevator assembly, biplane tail assembly and undercarriage, consisting of two skids, each carrying a pair of wheels. In the film of *Those Magnificent Men* a landing is made with one pair of wheels missing. This was no faking. In fact it was done more than 20 times.

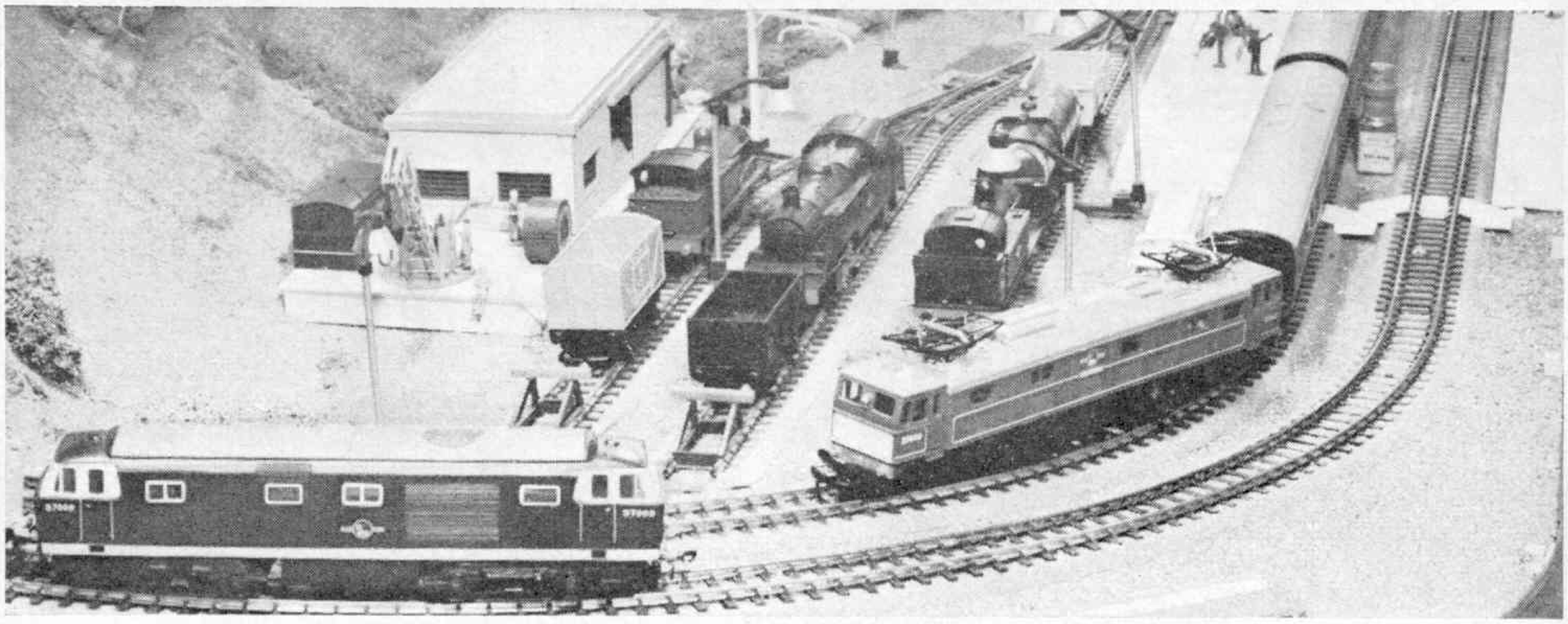
Back in the days before World War I, Bristol built a total of 76 standard Boxkites, and it is interesting to note that the first military order, for eight, came from Russia. Others were exported to Australia, Bulgaria, Germany, India, Rumania, South Africa, Spain and Sweden. To the total must now be added the replicas built for *Those Magnificent Men.*

For a last word on the Boxkite, we can do no better than quote Warren Merriam. In his book, *First Through the Clouds* (Batsford), he asks: 'Will there ever be anything quite as exhilarating as those open machines, with the wind whistling round and playing weird music on the struts and wires and the shouted conversations? Quaint, "stick and string", they might have been, but I cannot help feeling that much of the joy of flying is lost to the modern pilot shut up in the cabin of his aeroplane." **J. W. R. Taylor**

Data: Span, 34 ft. 6 in; length, 38 ft. 6 in.; height, 11 ft. 10 in.; wing area, 457 sq. ft.; weight empty 800 lb., loaded 1,050 lb.; max. speed, 40 m.p.h.



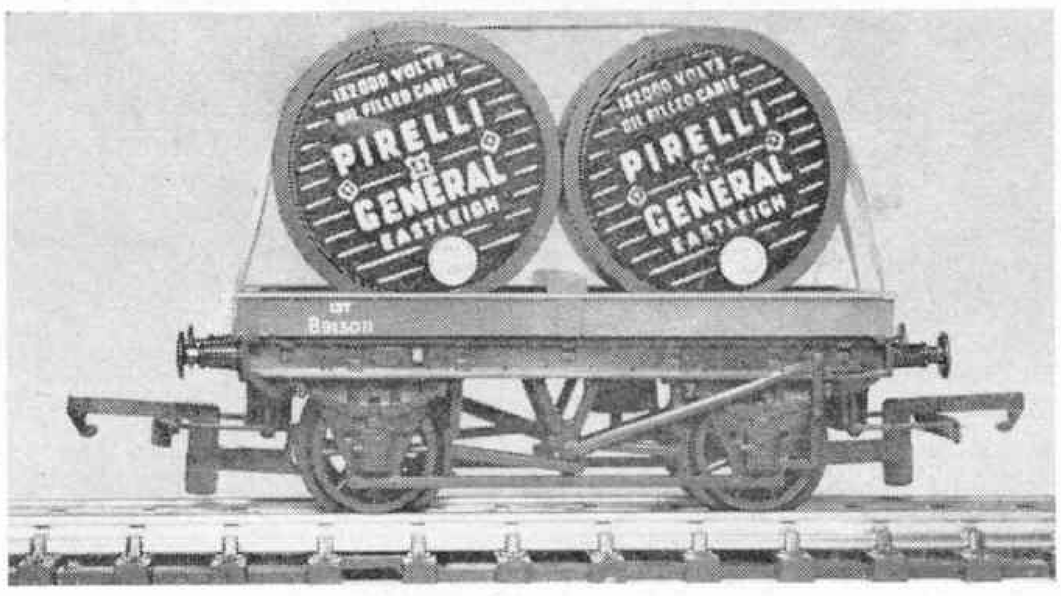
'Boxkite King' Warren Merriam was the first man ever to fly an aeroplane above the clouds. It must have looked something like this picture. By the way, did you guess that this photograph is actually of a MODEL? It's built from one of the new Inpact 1/48th scale plastic kits—very realistic and only 5s 6d. But it does demand careful and patient workmanship



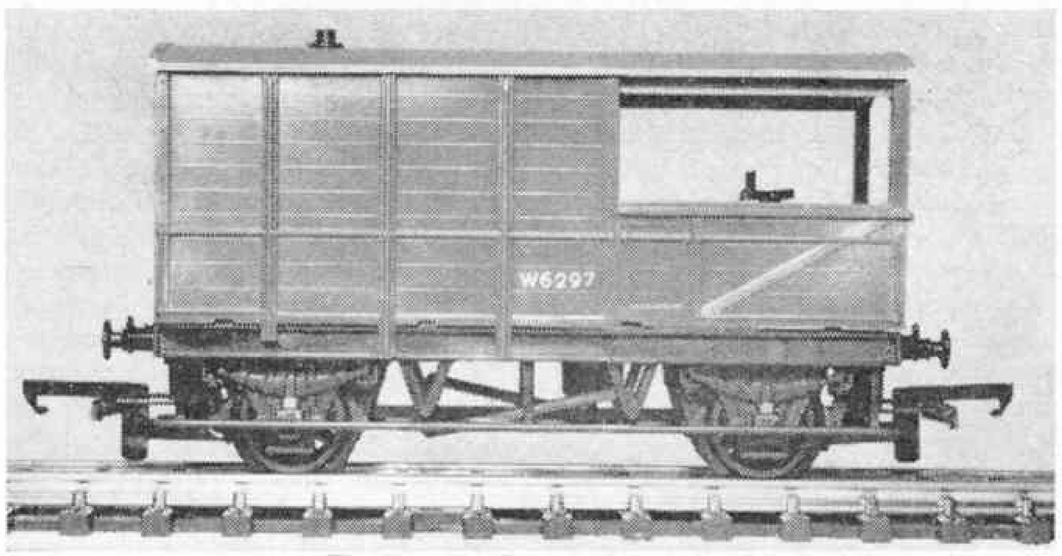
GOODS TRAIN TOPICS

MODEL Railway enthusiasts, irrespective of the size of their layouts, are nearly always more interested in goods trains than in passenger, probably because of the shunting that can be done. Shunting is a subject that fascinates nearly everyone and, unlike some operations on a model railway, it can be carried out in a comparatively limited space; in fact, many small yards require greater skill than their larger equivalents. Shunting does, of course, become necessary when individual wagons in a train have to be distributed to the various sidings in a goods yard, or alternatively when they have to be sorted into a predetermined order to form a train. Although most enthusiasts never bother to sort wagons into any specific order, this is done in real life, and it can make both operating and shunting much more interesting.

Naturally, large numbers of different types of wagons are desirable to make extensive shunting worth while. Take the Tri-ang Hornby range of rolling stock for example. A very wide selection is available, from ordinary goods wagons to really unusual types. These in particular can make shunting quite fascinating, because they would probably have to be set down in a special siding. Other wagons would, on B.R., be isolated in a goods train for safety reasons and yet others would be grouped together for convenience. The Shell Lubricating Oil Tank Wagon (R.211) and the Shell B.P. Petrol Tank Wagon (R.12) for instance, would never be run next to any wagon containing combustible material; indeed, wagons containing oil or petrol are very often run in trains of their own. Have you, incidentally, tried running trains consisting of one particular type of wagon on your layout? You will find that it can add a great deal of interest to train operation, especially if certain wagons in the train have to be shunted into different stations. If, however, your interest lies in mixed goods trains, remember to shunt tank wagons towards the end of the train, well away from the engine, with open wagons of the (R.112) and (R.113) types between them and the engine. A typical mixed goods train would probably consist of a brake van and then, either the Goods Wagon with Dropped Doors (R.112), Goods Wagons with Dropped Sides (R.113) or Open Wagon (R.10), followed perhaps by tank wagons, unless special wagons such as the Cable Drum Wagon (R.18), or the Three Container Wagon (R.340) for instance, are used, in which case these should be shunted next to the engine. The closed van (R.11) or Fish Van (R.14) which is now, incidentally, finished in the new B.R. livery of ice-blue, should be situated between the goods wagons and special wagons. The two bogie tank wagons in the Tri-ang Hornby range (R.349 Bogie Chlorine Tank Wagon and the R.247 Caustic Tank Wagon) would be positioned with the other four-wheel tank wagons.

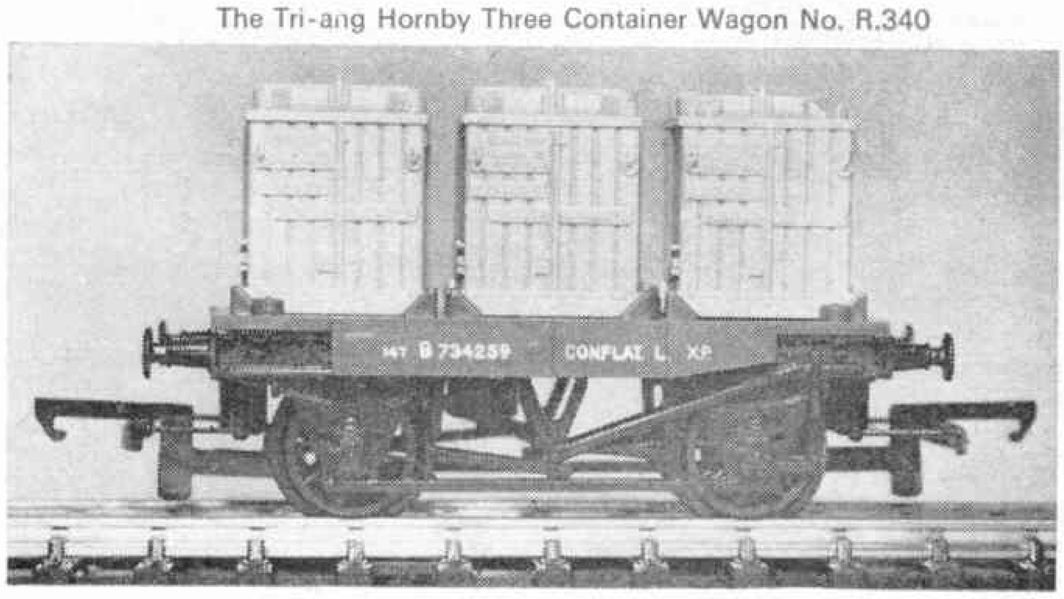


The Cable Drum Wagon No. R.18



The Western Region Brake Van R.124

The Tri-ang Hornby Three Container Wagon No. R.340



If the thought of special trains interests you, why not try a train of six Cement Wagons (R.564) or Bulk Grain Wagons (R.215). Complete trains of these two most unusual vehicles are most distinctive.

The only additional wagon you would require is a brake van at the end and in this field, the Tri-ang Hornby range gives you a choice of two. One is the more commonly seen Eastern Region brake van, used in almost every other region, and the other, the Western Region van, is normally used only on that region. Their equivalents in Tri-ang Hornby are the E.R. Brake Van (R.16) and W.R. Brake Van (R.124).

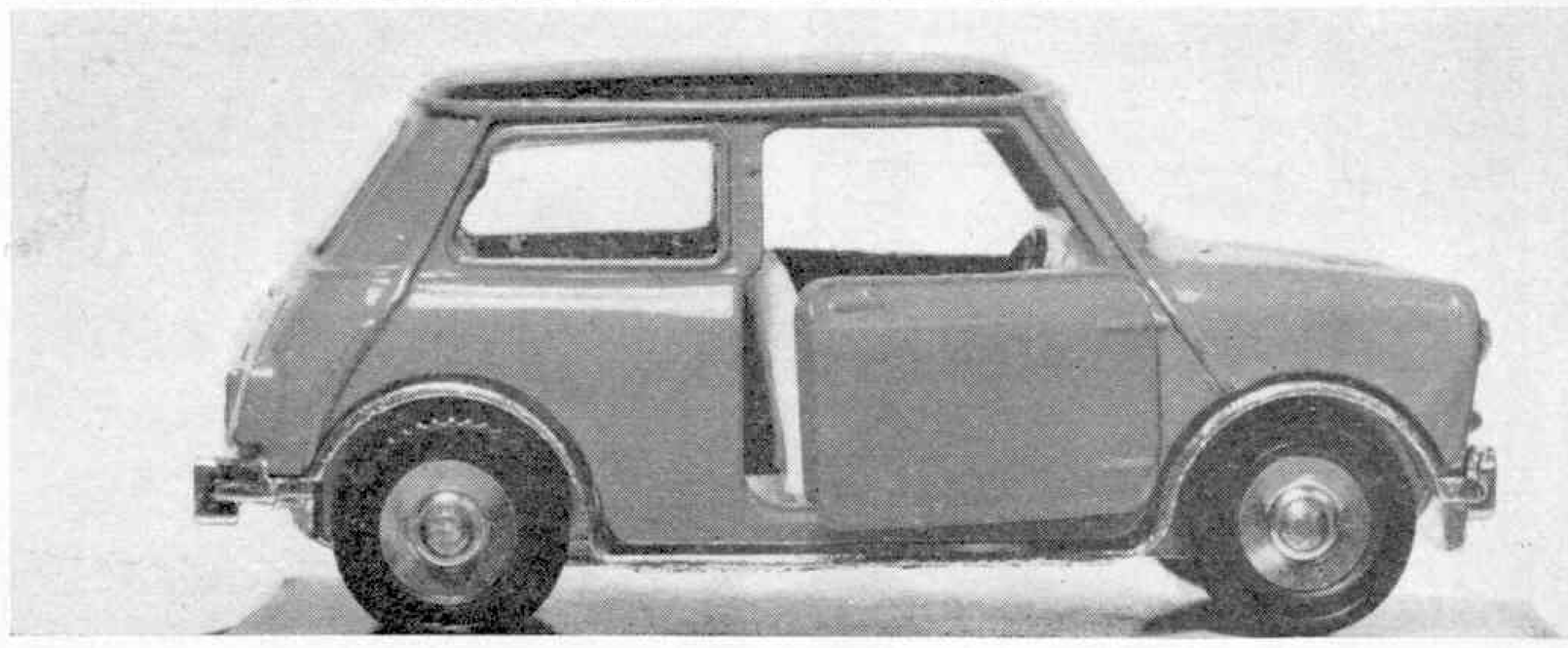
For those of you who like to see wagons carrying loads of one sort or another, the double deck Car Transporter (R.342) will be of interest. This is supplied complete with six Minix cars, four on the top deck and two on the bottom. A train of these is guaranteed to keep any shunter happy, especially if one or two other wagons are mixed in! A special car train could consist of three or four car transporters with one or more Flat Wagons with car load (R.17C) and, of course, the usual brake van at the end.

Finally, why not form a breakdown train from Tri-ang Hornby Goods rolling stock, using the operating crane wagon (R.127), the Engineering Department Coach (R.620), and one or two additional wagons of the (R.113) type?

You Can Bank On It

by Chris Jelley

Above: the prototype of the latest Dinky Toy in a chilly winter setting
Below: much larger than life, the automatic Mini—an automatic choice



AT least, you can bank IN it, if you live in any one of 18 villages dotted throughout the countryside around Whitby. In case you find this a bit puzzling, I should explain that I'm talking about a luxurious, self-contained Mobile Bank operated by the Midland Bank Limited, one of Britain's leading banking organisations. But if you haven't a banking account, and you don't live anywhere near Whitby, then you can substitute by owning new Dinky Toy No. 280 Mobile Midland Bank, just released when this article was written.

On average, Meccano Limited manufacture something like two new Dinkys every month. Most of these I like, although, of course, I prefer some more than others, but I can say in all honesty that I think the Mobile Bank is among the very best, if not *the* best, ever produced. I have no doubt that fair-minded collectors will agree with me. Before describing it, however, I should like to say something about the real-life vehicle and the reason for its existence.

It's generally recognised that keeping large sums of money at home is dangerous, therefore banking facilities must be provided. In sparsely-populated country areas this is usually done by having a system of small banks in outlying villages that are only open for a limited period in any week. Referred to as 'sub-branches' of main banks, these 'part-time' banks are often staffed by only a cashier and a guard, supplied by the main branch. This, of course, requires a lot of staff, although the same people will handle more than one sub-branch, and loses a good deal of time through travelling. The Midland Bank, therefore, decided that, instead of sending staff to numerous sub-branches in the Whitby area, they would take the bank to the customers and they accordingly had the prototype of our new Dinky Toy specially designed and built for them. Technically speaking, this is really a sub-branch of the Midland's main Whitby branch, therefore it comes under the jurisdiction of the Whitby manager. It was the first and, I believe, is the only self-powered vehicle of its kind in existence in England and Wales.

The immense advantages of such a vehicle are obvious. It immediately does away with the need for a chain of costly sub-branches, made even more costly because they stand idle for a good proportion of the working week. It requires only one 'crew' and, perhaps most important to the customer, it brings banking facilities to a much wider area than would otherwise be possible. Naturally, before the advent of the Mobile Bank, a fixed sub-branch could not be provided in every little village in the district, but the Mobile Bank can, if need be, visit all these villages.

At present, the bank has a fixed weekly route covering, as I have said, 18 villages around Whitby, ranging from Easington in the North to Flyingthorpe in the South, and as far West as Glaisdale and Goathland. Striking in appearance, the vehicle consists of a strong van body, externally panelled in aluminium, built onto a Ford Thames P.S.V. chassis of the type normally used for passenger-carrying coaches, and measures 26 ft. long by 7 ft. 6 in. wide by 10 ft. 9 in. high. Irrespective of size, however, its smart colour-finish is sufficient to attract attention like a magnet attracts iron—deep blue waistband, separating a cream upper section from a silver-grey, horizontally-ribbed lower section, with the Midland Bank's insignia of a Griffin within a circle of guinea pieces in the cream section at each side. Illuminated 'Midland Bank' signs are carried at front and rear, while a flashing light is on the roof.

A door in the nearside of the body gives access to the spacious interior, which has been designed to tie-in as closely as possible with an up-to-date bank interior. It provides, as the Midland Bank puts it, 'the best customer accommodation, with full counter and other accommodations'. It certainly is luxurious, being finished internally with polished wood panelling, Florentine metalwork, French-grey floor with delf-blue border and black coving. Heating and fluorescent lighting is included, plus adequate ventilation from two electric intake/extract units in the roof—a bank to compare with the best of 'em!

A model to surpass the best of 'em is the Dinky Toys' version of the Mobile Midland Bank. Externally, it is an almost exact reproduction of the real-life vehicle and the casting detail is amazing, even down to the bumpers, the ribbed bodywork and the opening access door. I use the word 'almost' here because the model is not quite identical in that it has been given a transparent roof. Why?—to

show off the inside. This is not simply a case of a casting slapped onto a baseplate. It has a fully-detailed, moulded interior including counter, desks, table, seats, windows and even curtains, all under the care of a smartly-dressed cashier! And that's just the bank section. The completely enclosed driver's compartment also has windows and seats, in addition to a steering wheel. Windscreen wiper representations appear on the windscreen moulding, while the bars covering the side windows of the actual vehicle are reproduced in the corresponding windows in the cab of the model.

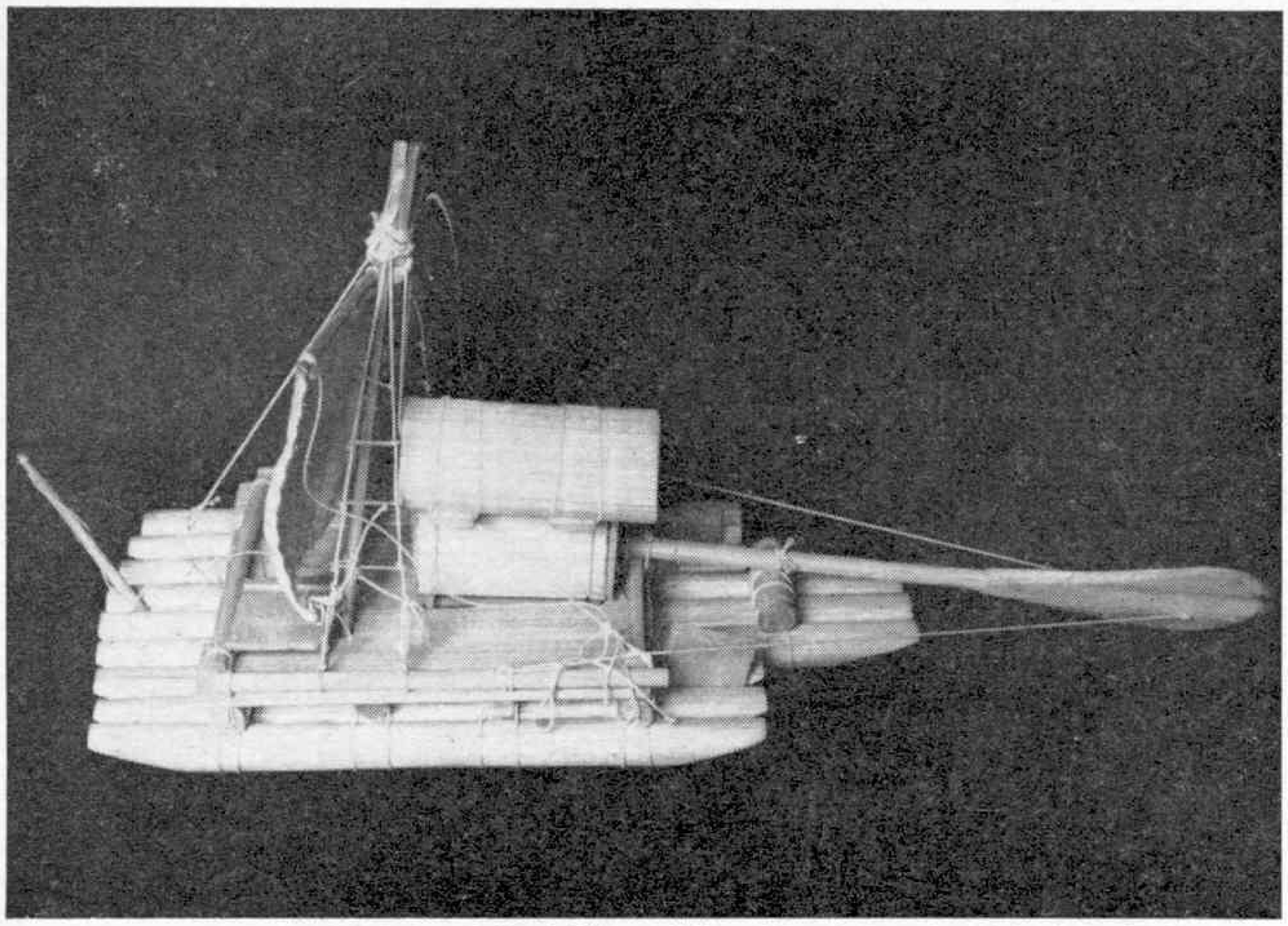
As is only to be expected, the new Dinky is finished in the correct external colour-scheme, and also carries the correct insignia and identification signs. A simulated flashing light is mounted on the roof and the chassis is equipped with four-wheel suspension. Inside, the seats and curtains are blue with the desks and counter brown, as also are the walls and floor. The floor itself is roughened to give a very realistic carpeted effect. Overall, the model is $4\frac{7}{8}$ in. long by $1\frac{3}{8}$ in. wide by $1\frac{1}{16}$ in. high to the top of the roof-light, and it's a 'must' for every collector.

Released with the Mobile Midland Bank was Dinky Toy No. 183, Morris Mini Minor (Automatic). This really is a delightful little miniature, and it is 'little', measuring only $2\frac{15}{16}$ in. $1\frac{5}{16}$ in. by $1\frac{1}{4}$ in., length, width and height respectively. Small, yes, but so is the real-life vehicle, and the model captures all the charm of its prototype. Body detail, again, is superb, with particular reference to the guttering, window-surrounds and boot lid. The boot doesn't open, but clearly represented on the lid are a handle, a number plate light and the words 'Automatic Mini Minor'. The bonnet, on the other hand, does open to reveal a very good reproduction of the real car's transversely-mounted engine.

The opening bonnet, however, is only one of the action features fitted to this model. Also opening, wide, are the well-detailed doors, allowing access to the seats inside. As in real life, the front seats tip forward and it is interesting to note that the complete seat tips, not just the back of the seat. Other internal features present are windows and a steering wheel, whereas additional outside features are jewelled headlamps and number plates. Finish is in a high-gloss red colour with black roof and silver base.

As you may know, the actual Mini Minor Automatic is unique in that it is the first small car having a specially-developed, fully-automatic transmission system that fits compactly into the engine sump. What you may not know is that the Meccano miniature engineering system played an important part in the invention of the automatic transmission unit fitted to the full size Mini.

In 1947, a Belfast inventor began working on an automatic transmission system in his garage, using £100 worth of Meccano as the major part of his equipment. Originally, he started off for, as he put it, 'a bit of fun', but the 'fun' soon changed to serious intent, so much so, in fact, that he spent 18 years perfecting his ideas. Then design and engineering experts of the British Motor Corporation, including Mr. Alec Issigonis, became involved with the Meccano model and have developed it over the years into the now famous fully-automatic system that gives this version of the Mini two-pedal operation. It is only fitting, therefore, that a Dinky Toy Mini Car should be based on the Mini Minor Automatic. It's only a pity that Dinky Toys don't have a model working engine so that they can be fitted with a miniature working automatic transmission system!



On April 28th, 1947, the 40 foot Balsa raft 'Kon Tiki' set sail from Calloa in Peru, bound for the Pacific Islands. The 'Kon Tiki' Expedition made history, and this model, like its famous full-size counterpart, is built of Balsawood

The Balsa Story

The Balsa tree, with its huge, shiny, dark green leaves and tall, straight trunk, grows at an enormous rate, and when only six to ten years old, can be anything up to 90 feet tall!

THE little country of Ecuador, lying between Columbia and Peru on the West coast of the South American continent is not often in the news, but every modeller should have heard of it, as it is from here that all the Balsawood used by model-makers originates.

Balsa is not a manufactured or synthetic material, but a genuine, healthy wood, obtained from very large and impressive trees. Another surprising fact is that Balsa, botanically speaking, is a hardwood, as it sheds its huge shiny leaves in winter. Balsa is not, in fact, the lightest wood in the world, as many people believe. It is actually about the fourth or fifth lightest, but, unlike the others, it combines *strength* with low weight.

Although our 'modelling Balsa' is so much lighter than most other woods, Balsa as a timber does vary considerably in weight—the lightest has a density of only 4-6 lb. per cubic foot and it can go to as high as 20 lb., but most commercial Balsa lies in the density range 7-12 lb. per cubic foot. Even this is still very light compared with Obeche, with an average density of 25 lb. and Oak 50 lb. Pound for pound, Balsa is much stronger than most other varieties of wood, and this is its most important characteristic as far as aeromodellers are concerned. It is strongest when under direct compression along the grain, and when used to build a model aircraft fuselage, quite thin strips will take the strain of a fully wound rubber motor. Generally speaking the strength properties of Balsa vary directly with its density—the heavier the wood the stronger it is. Experienced aeromodellers often spend hours choosing wood of the right density, 'cut' and texture for a particular job. The lighter grades are often used for the lightly stressed parts of a model, like solid wing tips, and the heavier wood for spars and longerons. The stiffness or flexibility of the wood across the grain is largely dependent upon the angle at which the wood is cut from the tree. Some 'cuts' are far more brittle than others.

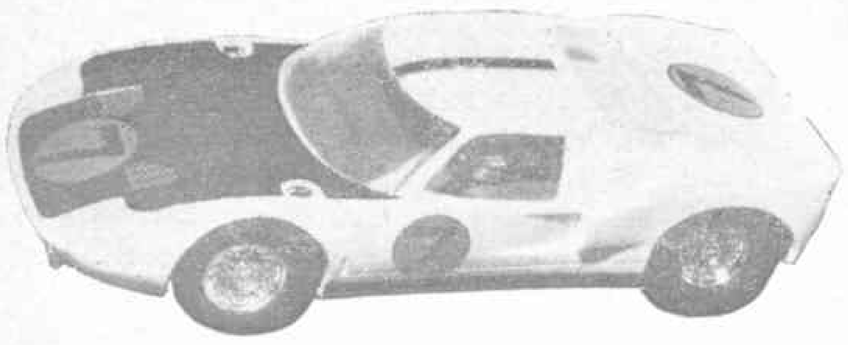
The Balsa trees grow very rapidly indeed, and when they are six to 10 years old, they can be anything from 60 to 90 feet tall and one to three feet in diameter! The density of Balsa is determined by its rate of growth. Trees in favourable positions will grow faster and produce lighter wood than those in poorer positions. Because the trees grow in extremely dense jungle, felling them and transporting them to the coast for shipment is an adventurous business. Good trees are often spotted from light aircraft, their positions plotted, and a felling team sent into the forest to cut them down. After felling, the logs are dragged laboriously through the dense undergrowth to the nearest stream, which may only be a rivulet, and floated down to the main river. Here, the logs are lashed together to form huge rafts, and the journey to the sea begins. During the first part of the voyage downstream, the Balsa rafts are propelled by paddling, the crews living, cooking and eating 'on board'. Further down the river, the convoy is met by launches, and towed the remainder of the way to the sea. The two main ports of Ecuador from which the Balsa is shipped are Esmeraldas in the north, and Guayaquil to the south. At these places are situated the sawmills where the logs are cut into convenient lengths for shipment.

Balsawood can carry three times its own weight in water, so the 'raw' logs are put into kilns to dry. This process takes several weeks! After kilning, the wood is bundled and swung aboard the waiting vessel which will bring it to England. When the bundles of rough-cut Balsa arrive (usually in the Port of London) it is still difficult to believe that they will soon form the material so familiar to modellers. Most of the Balsa that arrives in this country goes to the Lancing factory of Plantation Wood Ltd., home of 'Solarbo' Balsawood, a familiar name to modellers. After unloading, the wood is kilned once again, until the moisture content is reduced to 6-12 per cent. Each piece is then inspected and graded by weight; 'soft to medium' pieces have their ends painted green, 'medium to hard' are red.

The pieces are now trimmed on a circular saw until all edges are parallel and the ends at right angles. This is only the first of many sawing operations which produce strip, sheet, dowel and blocks in all the many sizes, thicknesses, diameters and grades required by discerning modellers. As aeromodellers demand only the highest quality Balsa, which is strong but light, only a small proportion of the total import is suitable for their requirements, and the lower quality bulk of the shipment must be used for other purposes if it is not to be wasted Every bit is used—somewhere—and here lies the secret of keeping the price of high quality Balsa down to a reasonable level. Since, for some obscure reason, modellers prefer to buy wood in three foot lengths and seem to be reluctant to purchase shorter lengths, there are many 'left-over' pieces of equally high quality which go to make up the various Solarbo 'Balsa Paks', many of which are supplied to schools. Logs rarely come in exact multiples of three feet!

All cutting operations at the factory are performed on circular saws, which run at high speed, and have the teeth specially 'set' for Balsa cutting. This is most important in order to achieve a silky-smooth surface.

When flying a model aeroplane on a sunny day in England, it seems a far cry indeed from the steamy forests of Ecuador and the convoys of Balsa logs making their way slowly down river to Esmeraldas or Guayaquil, but on reflection, what a chore aeromodelling would be if those tall Balsa trees were left in their natural home!



Race Tuned

An independent report on the new Scalextric race tuned cars by our slot race expert Godfrey Arnold

I SHOULD imagine that, in this country, more people have been introduced to slot racing by Scalextric than all the other manufacturers put together, to a lot of people the name being synonymous with model car racing. Through the years, from the very first 'Tinplate' models, there has been a steady improvement in the products and the introduction of the new Race Tuned cars represents yet another major step forward.

It may seem odd, when reviewing a new range of cars, to start at the wheels but, oddly enough, this has always been one of the main features that endeared Scalextric cars to me and I suppose that this is partly because so many manufacturers seem to run out of attention to detail by the time they get to what is, after all, the most important part of the car, so that one gets the impression that Scalextric care about every detail. Suffice it to say, therefore, that the wheels are up to the standard that we have come to expect.

The contrate gear is similar to the one used on all the cars powered by the Mk. IV Triang motor, but here the similarity ends, for an ingenious gearbox cum rear subframe is screwed on to the Mabuchi motor, this improving performance no end, making the cars very fast down the straights and being of proven reliability. This gearbox is, incidentally, the neatest method of mounting a Mabuchi that I have yet seen.

The slot guide, which is fitted to a pillar mounted under the bonnet, is of the flag type and is pivoted forward of the front axle so that road-holding is much enhanced to match the increased power. I particularly like the clever solder tag type connector plugs which facilitate easy changes of polarity and, as usual, a suppressor capacitor is fitted. (Actually, on the cars that I tried the slot guide depth was about a sixteenth of an inch too shallow and while this would be of little consequence to those racing on home circuits, anyone racing on a club circuit may like to deepen it by means of a longer self tapping screw, a piece of brass tubing and another washer, as in the diagram.)

The body is up to the usual standards in toughness and detail and, the decals and numbers being self adhesive plastic, I would suggest spraying on a coat of clear varnish if one wants to retain the finish, this of course being true of any model that has to withstand the rigours of slot racing. As with any mass produced body a little attention to details with a paintbrush will enable the full potential appearance to be realised.

The front axle runs in plastic bearings which allow just enough vertical movement to keep the wheels on the ground all the time and it would pay to ensure that the bearings are kept oiled enough to prevent them from wearing excessively.

Whilst all the improvements incorporated in these new cars are easily seen on examining them, it is the actual performance that counts and from the first stab on the controller it is obvious that the new design is justified. The cars fairly rocket down the straights and the road holding is good, the tail hanging out predictably and controllably and the slot guide staying where it is meant to. What is even more important, to me at any rate, is that they are fun to drive.

New tyres nearly always have moulding flash on them and if the rear ones are rubbed down smooth by running the car and *lightly* holding it down on some coarse emery cloth one does not have to wait for them to wear to this state before getting ultimate road holding. If you do this, however, only run the car for short bursts as prolonged running under such a heavy load would burn out even the most expensive motors in the world!

As with all slot cars ballast is a help in setting up the car to suit one's own driving, in much the same way as the driver of a full size racing car will set up the suspension to suit his own style.

One unusual thing that I did encounter while track testing was that after I had set a car up with weight, so raising the cornering speeds considerably, if I overdid it on a corner and really hung the tail out without leaving the slot, the tyres would come off the wheels. This is never likely to happen on Plexytrack but it may on the very rough type of club track so it would be as well to stick the tyres to the rims with an impact adhesive such as Evostick if this is where your racing is done.

THE CARS I TRIED
Ford GT

I expect that the Ford GT has had more slot racing reproductions of it put on the market than any other car, but this newcomer from Scalextric stands comparison with the best. The bonnet is given a matt blue appearance by one large self adhesive decal so it would save a lot of anguish later if the car were given a coat of clear varnish before it is used on the track. I did not do this and mine is now rather scratched about, but I see little point in a tester proudly proclaiming that he took the photographs after the test and the model had no scratches, for, although this would be an excellent recommendation for a model aircraft, it implies that a car has not been driven hard enough on test even to leave the track. The result of the severe testing on this car is that it will have to be repainted, which means losing all the decals and this is a pity.

The track on this car is a quarter of an inch narrower than it could be, but this can easily be put right by substituting longer $\frac{3}{32}$ in.

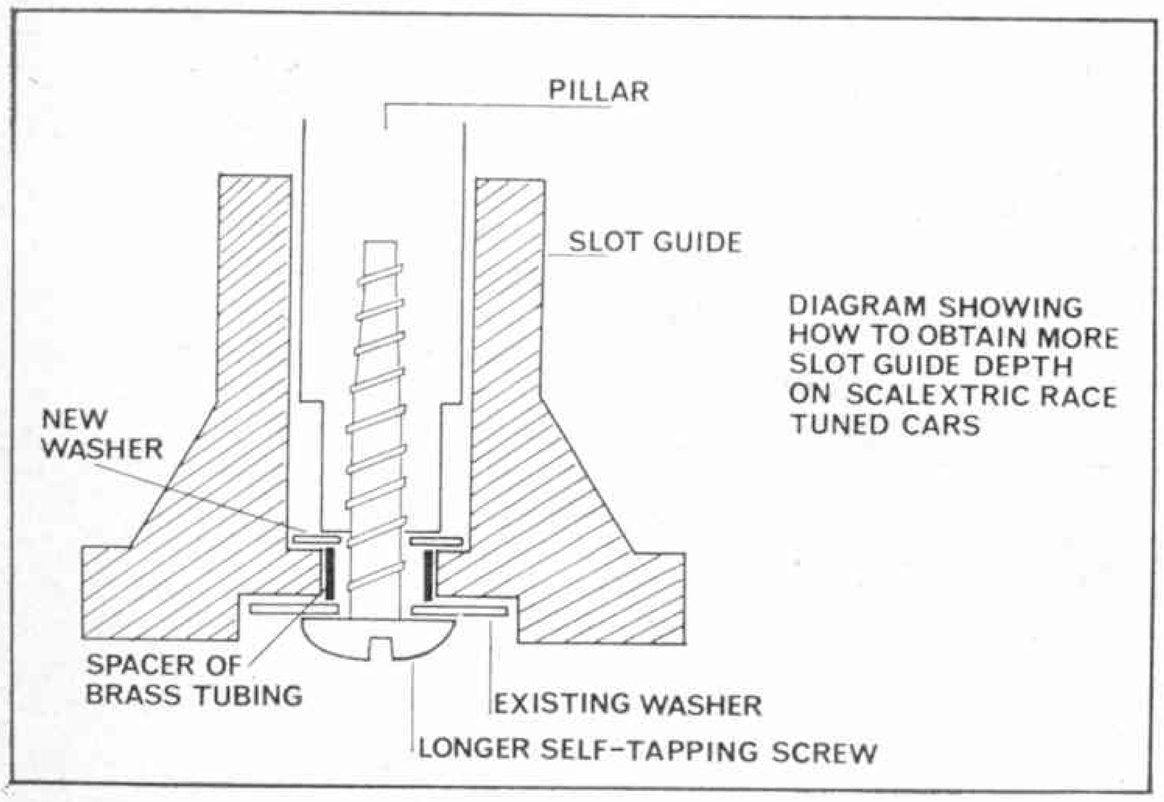
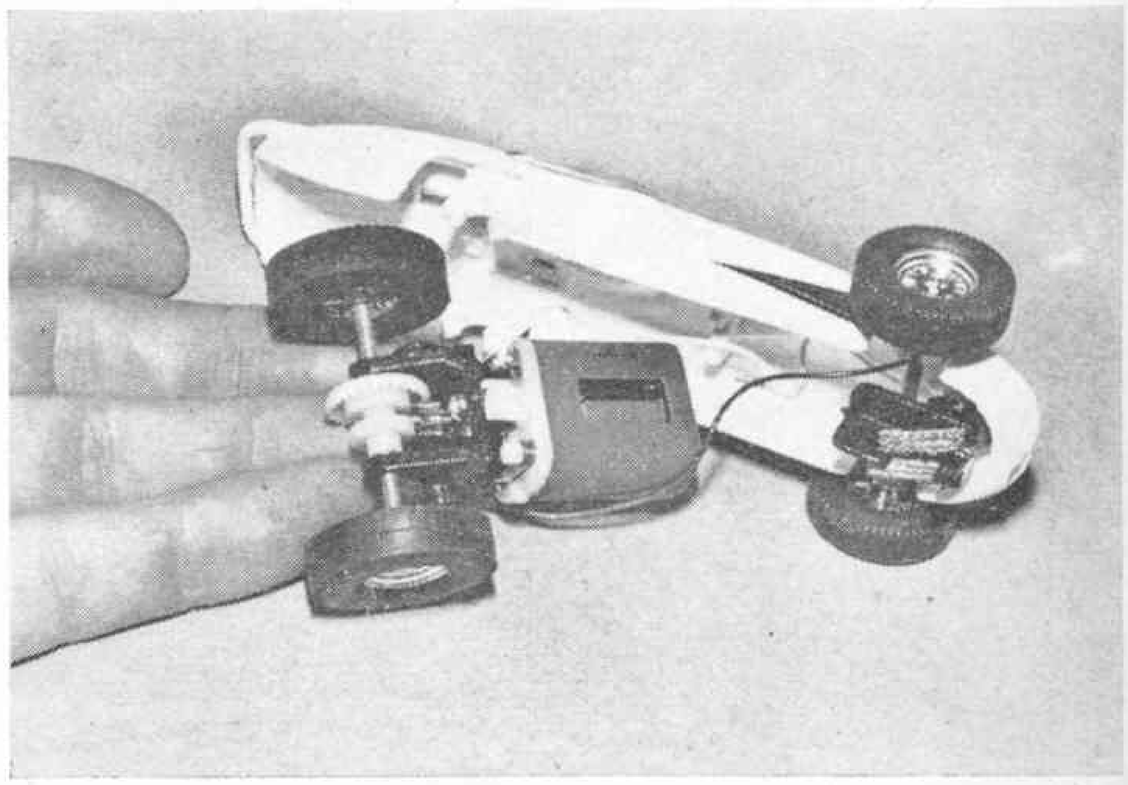


DIAGRAM SHOWING HOW TO OBTAIN MORE SLOT GUIDE DEPTH ON SCALEXTRIC RACE TUNED CARS



diameter silver steel axles, retaining the wheels with an epoxy resin adhesive and locating the front axle with packing washers.

A.C. Cobra

The track on this car is three-eighths of an inch too narrow and the already good road-holding can be made even better by widening this. Again, a few dabs of paint, such as silver on the radiator grille, finishes the appearance, and I particularly like the realistic tonneau cover on this model.

This was the car that I subjected to my toughness test, which involves driving it flat out down the main straight of our club track, over the end and into the wall. I did this four times and the windscreen did not even come loose·!

Front engined Offenhauser

This, the Sheraton Thompson Special, is definitely my favourite and comes at a very opportune time when the front engined American track car has almost been forced into extinction by the British and British inspired designs. From its front air scoop (so useful for putting lane stickers in), through its long chrome exhaust pipe, to the 'nerfing bar' on the back, this is a gem of a model. Being quite large it has lots of room for ballast but handles most respectably without it. I entered this car in a race at our club when it was virtually brand new against a lot of well developed specialist Grand Prix cars and went immediately into the lead. This I held for several laps but was overhauled by, and could not quite keep up with, what is probably the fastest car in its class here. Altogether an impressive performance and one that staggered many of our club members. This, of course, proves that with a little personal attention these new Scalextric Race Tuned cars will be regular winners.

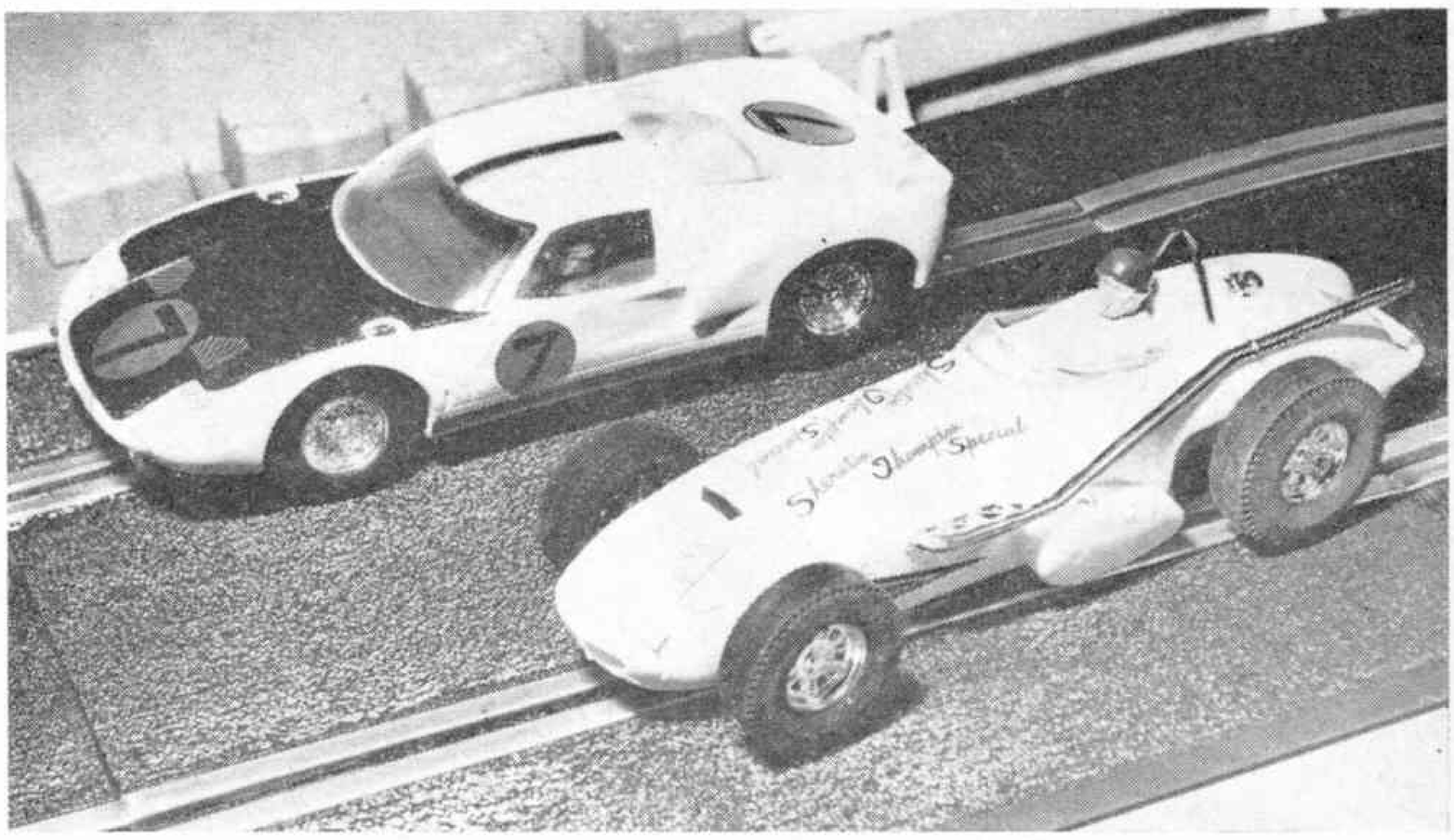
Rear engined Offenhauser

This car is, I believe, the Cooper based Bryant Heating and Cooling special that was one of the early British type of cars laughed at by the Indianapolis sceptics. It should become a firm favourite with its bulbous body with lots of room for experimenting with ballast, which could improve the already good roadholding afforded by the wide track. This car has a roll-over bar of metal, as have the others when one is fitted, which is far more sensible than the plastic ones encountered only too often.

If you really want to see how fast these cars go, why not try a drag race for a change? The Scalextric drag turns make this easy if you have two of these and sufficient straights. If you are short of space (a drag strip should be 15 straights or more long), you can always use the garden path on a nice day and lay out two strips side by side with a turn at the end of each. A stop-watch makes timing easier. One further idea using these turns is a rally special stage which can be put all around the garden or living room, thus giving twice the length of track that you actually have·! If you lay out one stage, time all the competitors over it (no practice allowed), then take it up and lay down another, note the times and carry on like this for several stages you will be able to assess the winner as the one who has the lowest total time.

The criticisms in this feature are currently being looked into by the Scalextric design and development department—Ed.

This attractive box will soon become a familiar sight on dealers' shelves



Above: Ford GT and Sheraton Thompson Special. Below: A.C. Cobra and rear engined Offenhauser

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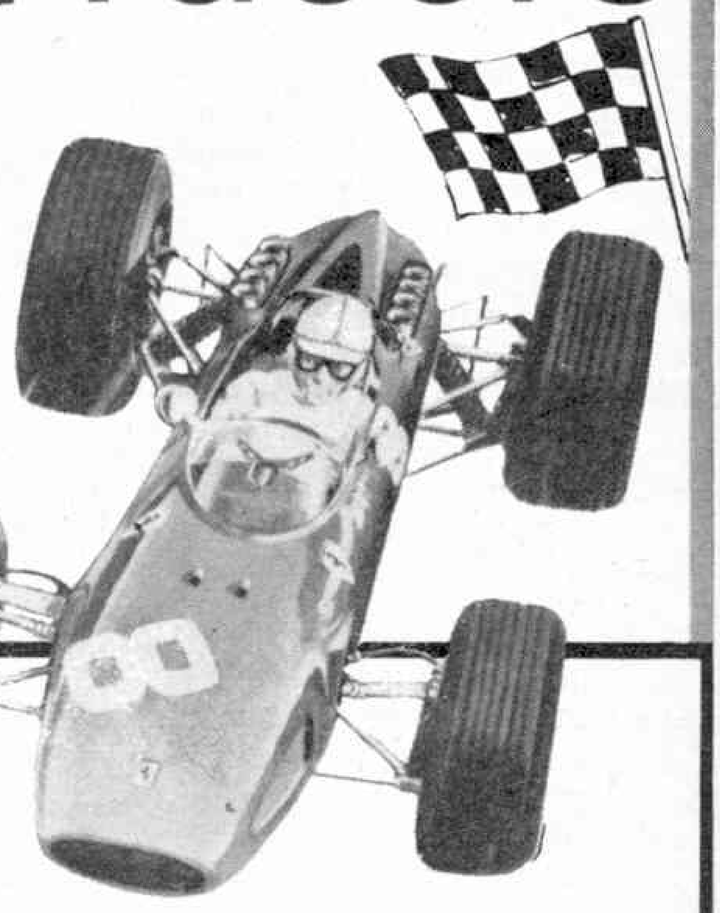
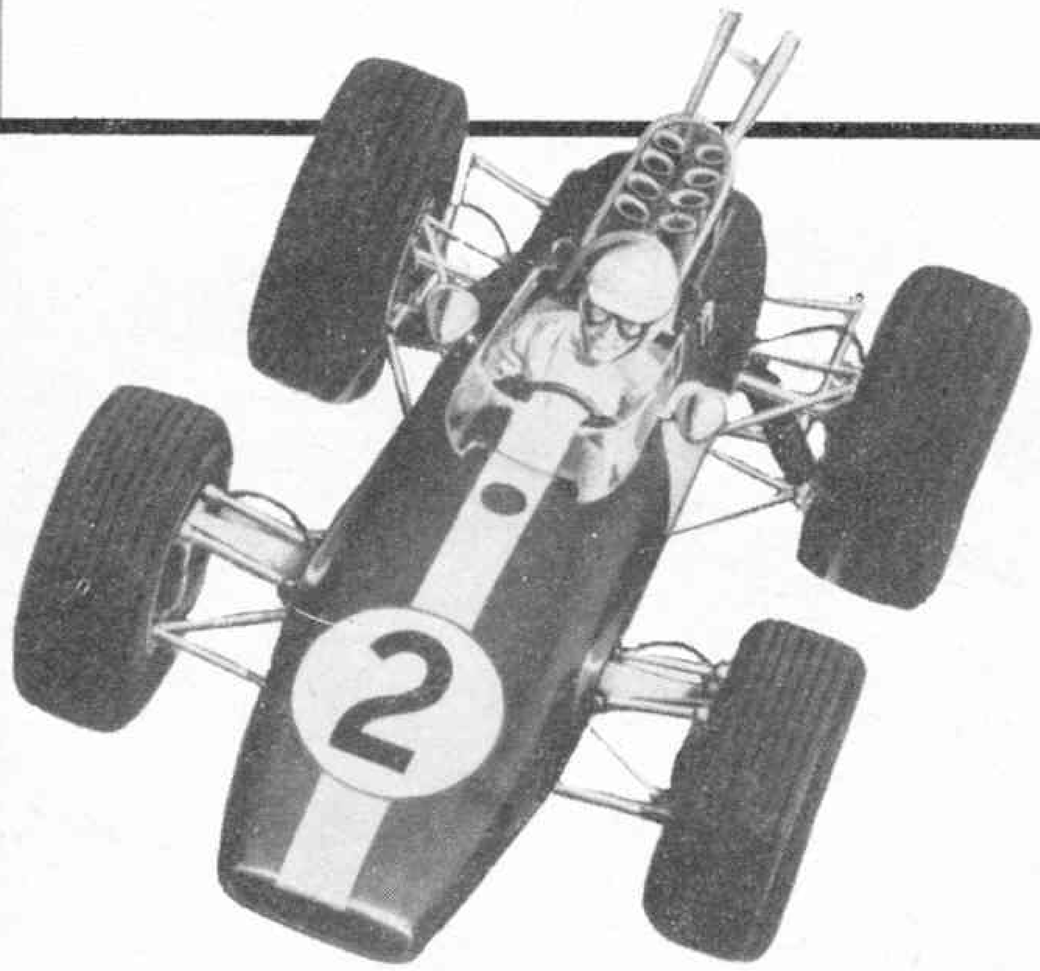


(ABOVE) **FORMULA 1 FERRARI GP**—KIT SR3209 1/32 SCALE
Grand Prix Model Racer—new design, new equipment. The fastest Formula 1 produced in kit form. This is a model of the F1 Ferrari, one of the outstanding cars in Grand Prix racing. **Price 90/10**



(LEFT) **LOTUS 33 GP**—KIT SR3208 1/32 SCALE
This model was scaled from the actual car with the co-operation of the Watkins Glen Grand Prix Association and Colin Chapman, Lotus designer and team Manager. Entirely new in design, equipment, power, performance and handling. One piece high-impact detailed body, nylon crash-proof plated parts. Slim, powerful, low profile motor, adjustable wheelbase etc. **Price 90/10**

(BELOW) **PORSCHE 904 CARRERA GTS**—KIT SR 3203 1/32 SCALE
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(ABOVE) **FERRARI 250 GTO/LM**—KIT SR3205 1/32 SCALE
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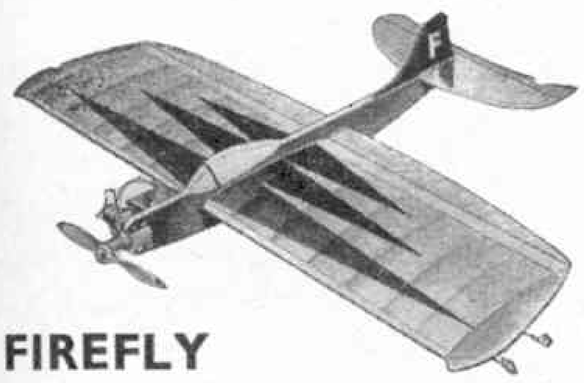
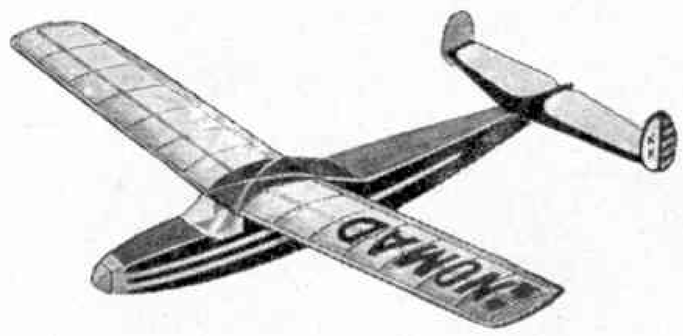


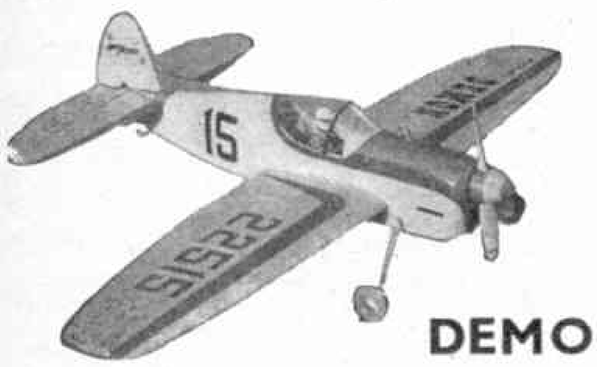
FIREFLY

Stunt model with "profile" type fuselage, specially designed for engines under 1 c.c. Kit contains die-cut parts. Wingspan 20 in. **19/9**



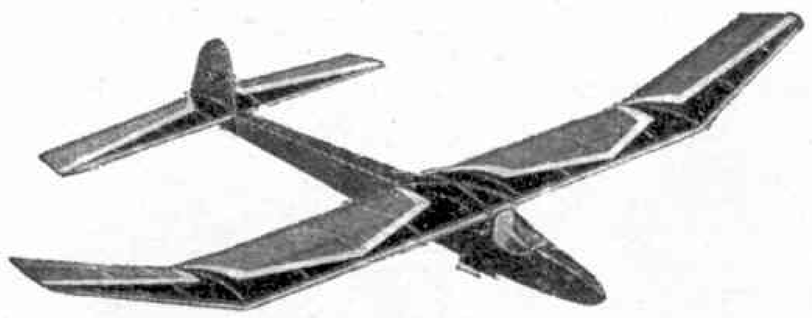
NOMAD

Beginner's model with fuselage parts, tailplane and fins in pre-cut, decorated sheet balsa. 20 in. span. **5/11**



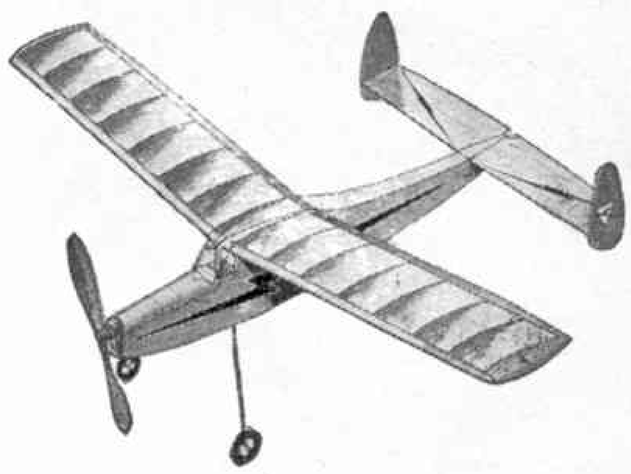
DEMON

Class A team racer to the new S.M.A.E. specification. Kit contains die-cut parts. For engines up to 2·5 c.c. Wingspan 30 in **36/3**



CONQUEST

Towline glider for beginners, with a very good performance. Kit contains die-cut parts. Wingspan 30 in. **9/4**



GEMINI

Duration model with all fuselage parts, tailplane, and fins in pre-cut, pre-decorated sheet balsa. Wingspan 22 in. **10/-**

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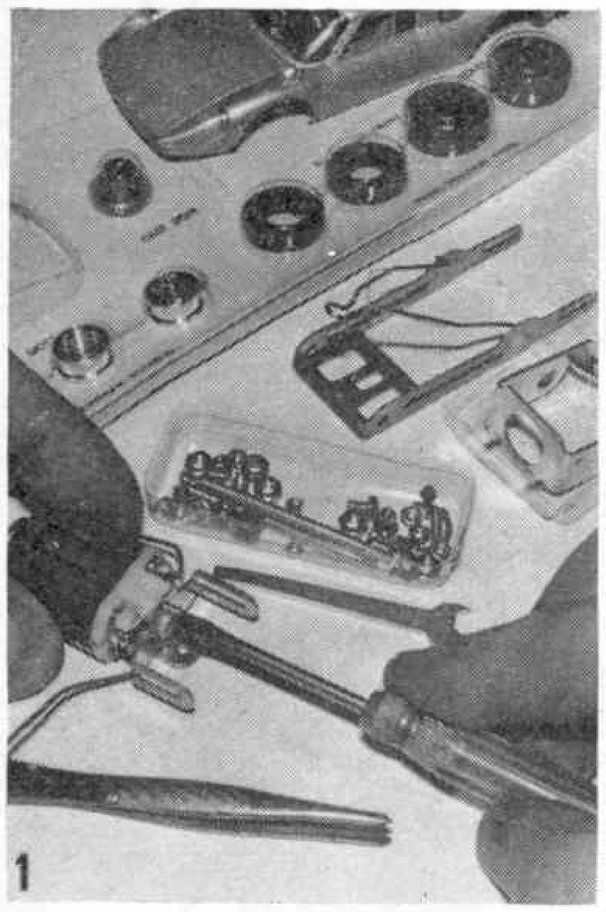

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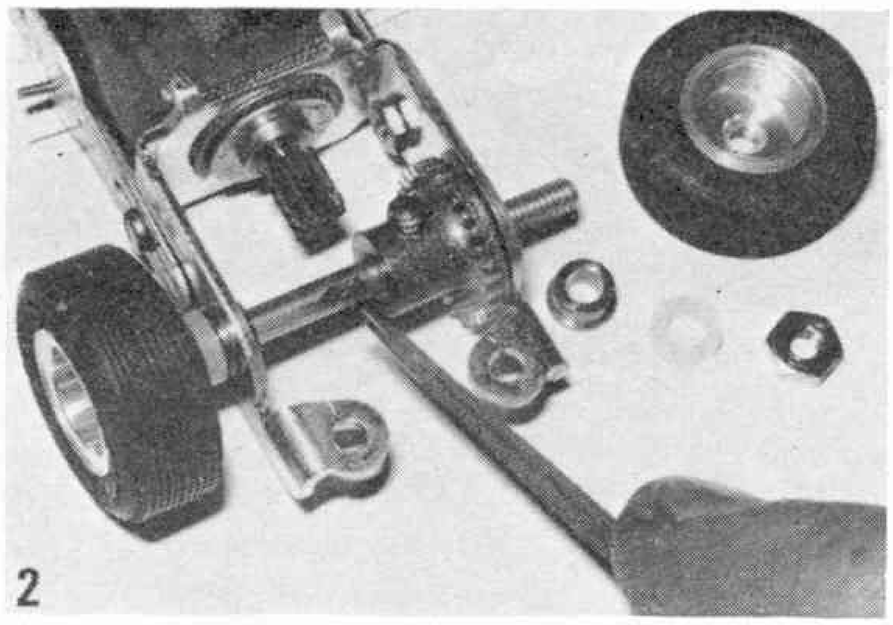

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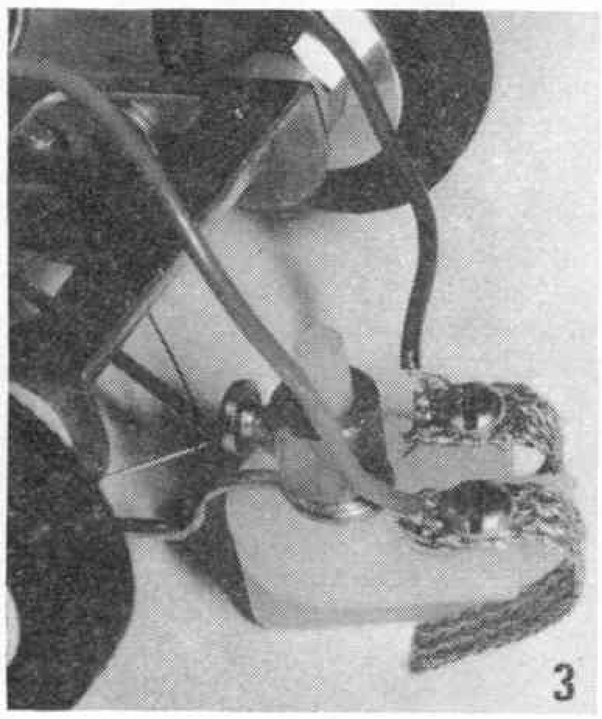

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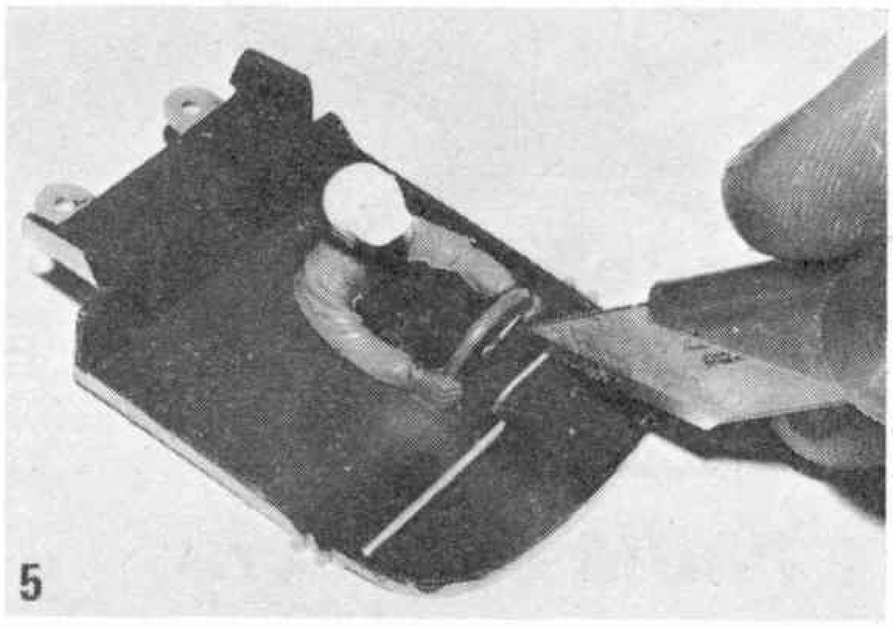

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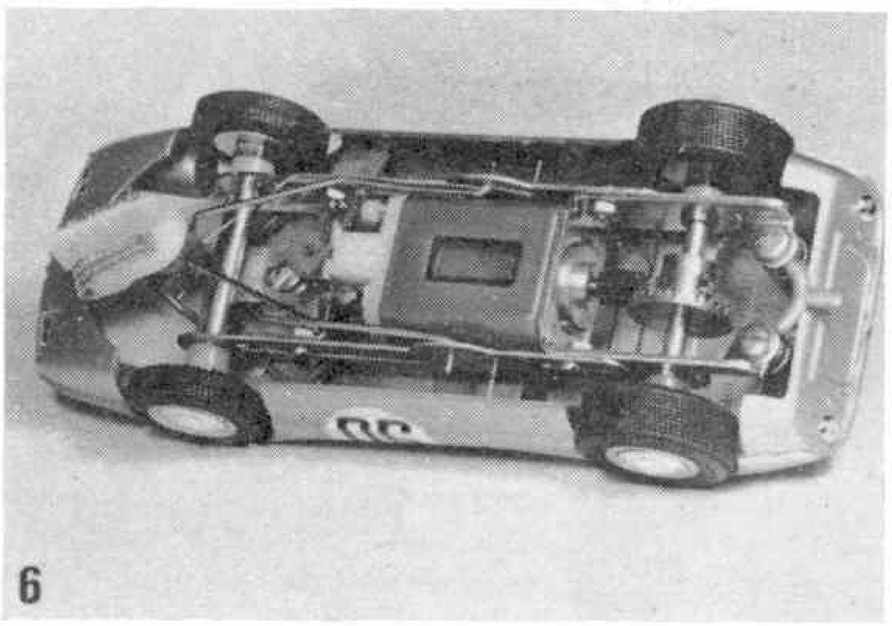

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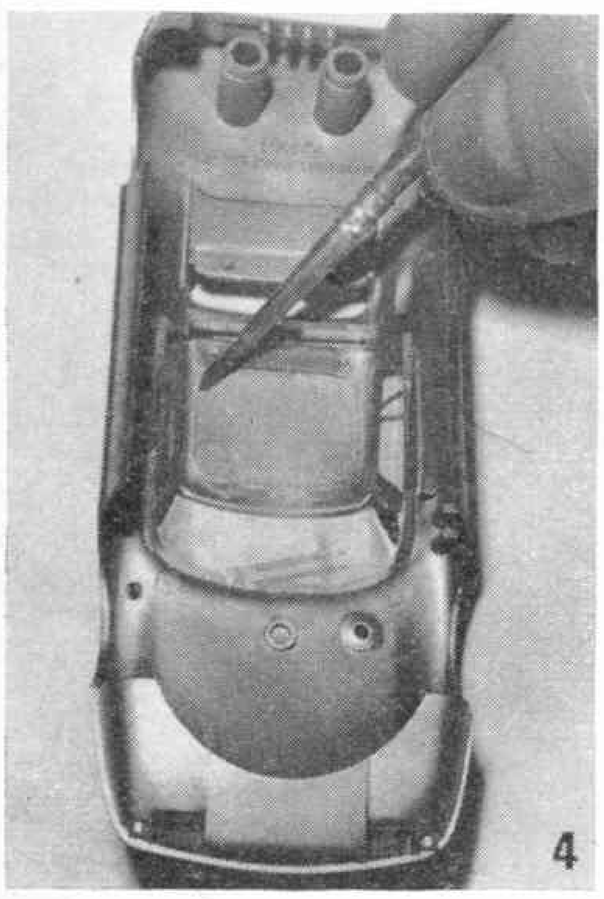


4

7

Any craftsman worth his salt will tell you that there is greatly increased satisfaction to be had from working with really high quality materials and we have very rarely come across better-engineered kits than these Monogram slot racers. The beautiful lines of the Porsche 904 persuaded us to choose it for this picture page, but we could equally well have chosen one of the many other cars in this range of $\frac{1}{32}$ and $\frac{1}{24}$ scale motorised or static models. This includes the Ferrari LM, Ford GT, rear engined Scarab, Lotus 33GP, Lola GT and many more. They are all described in the 1966 Monogram catalogue which you can get from your dealer for 1s. or 1s. 6d. direct from A. A. Hales Ltd., 26, Station Close, Potters Bar, Herts.

1. The kit components are all sealed in clear plastic bubbles, and if these are carefully cut from the supporting card, they can be used as trays for easily-lost small components during assembly. The top end of the spanner supplied with the kit is shaped in the form of a screwdriver, but you will find a slightly larger one easier to use when inserting the small self-tapping screws shown here. A pair of tweezers will also be useful for positioning the tiny bolts.

2. File a "flat" on the rear axle to take the steel gear set screw. Notice the precision bronze axle bearings, the low-friction nylon axle spacers, and the chrome plated nuts. The treaded tyres are 'branded' too!

3. The sprung wire pick-up is of substantial proportions. Notice that the leads to the motor are best placed *under* the pick-up braids before securing them with the self-tapping screws.

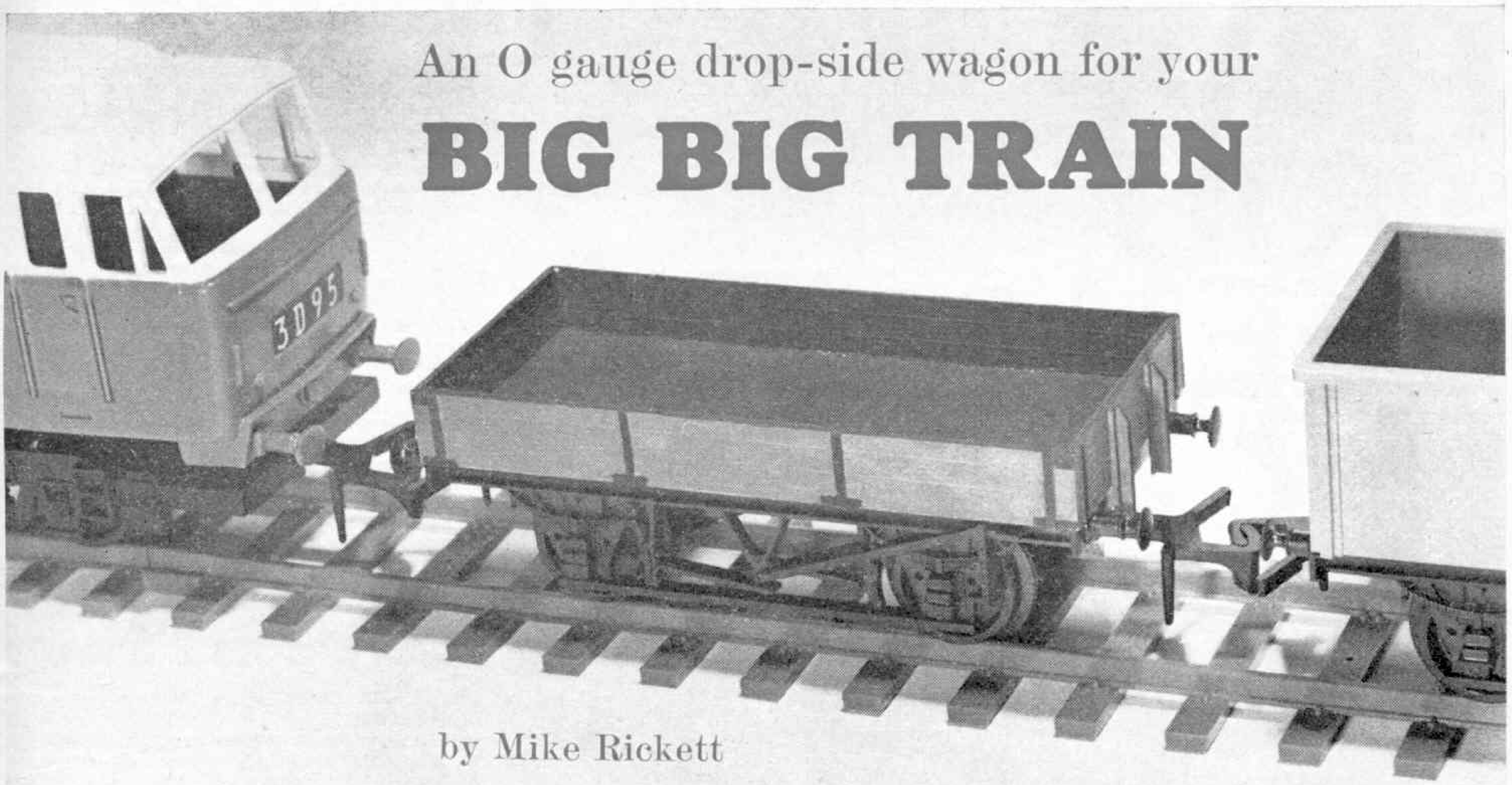
4. Having assembled *and* painted the body shell and black window surrounds, the transparent windows can be fitted. Fix the clear window moulding from *inside* by running a couple of drops of liquid polystyrene cement round the roof cut-out.

5. Paint the driver's base moulding matt black and then, when dry, scrape away the paint from the raised ridges to reveal the silver plastic beneath, thus simulating chrome trim strips. Remember always to remove paint from areas to be cemented.

6 & 7. Finished chassis mounted within the shapely body presents a picture of power and precision—ready to race; ready to WIN!

An O gauge drop-side wagon for your

BIG BIG TRAIN



by Mike Rickett

The completed wagon mounted on the Tri-ang chassis

O GAUGE, without a doubt, is a very convenient modelling scale. It is small enough to fit in most houses and large enough to allow the finest of detail to be shown. Yes, O Gauge has a lot to recommend it, especially since the introduction of the new Tri-ang O Gauge sets. These are ideal for the beginner and also extremely useful for the more advanced modeller because the various items of rolling stock in the set need but little work before they are virtually scale models.

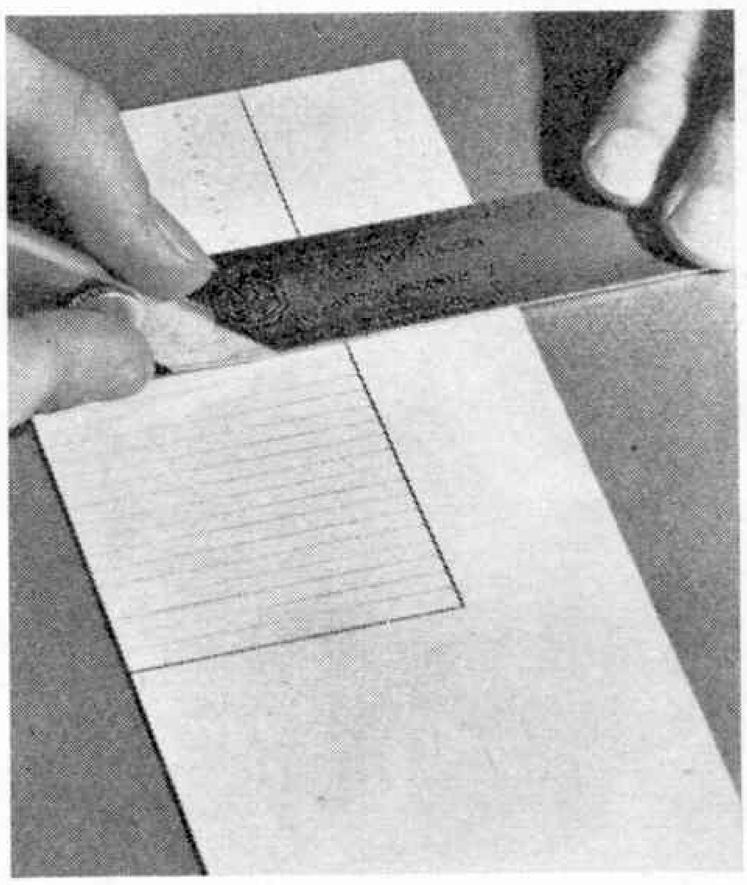
The Mineral Wagon in particular is very suitable for adaptation and we have used its excellent chassis to make a completely different type of wagon—an interesting way of adding variety to your rolling stock if you are the owner of a set. We chose to make an L.M.S. 12-ton drop-side wagon, which is exactly the right size for the mineral wagon chassis, and which is also so simple in design that it takes only an hour or two to build.

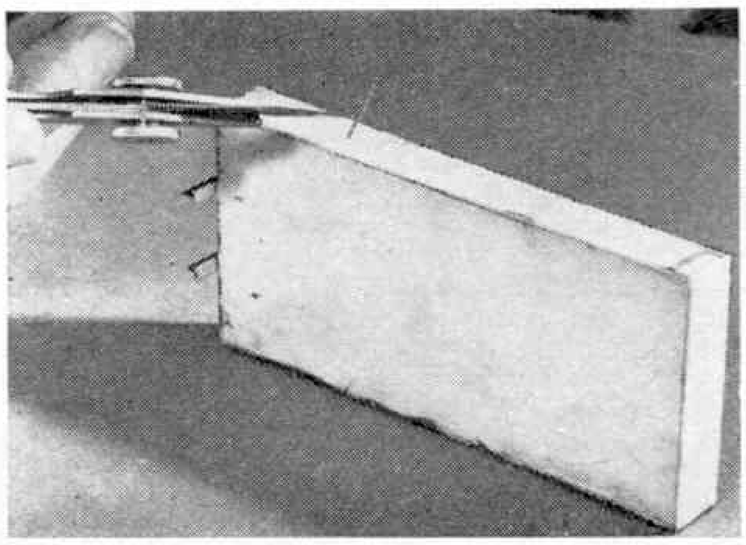
Held to the chassis by two plastic lugs visible from the inside of the wagon, the body is easily removed by easing the lip of the lugs to one side and pulling the wagon body off vertically. A new floor can then be cut from 60 thou. 'Plastikard' 122 mm. long by 54 mm. wide. Lay this on a flat surface and mark off along it at 4 mm. intervals, afterwards scribing lines to coincide with these marks to represent planking. If the new body is to be permanently attached to the chassis the spigot situated in each corner should be cut off with a modelling knife. If, however, you want to swap bodies periodically, drill four holes in the new wagon floor to coincide with the positions of these spigots.

For the next step, mark out two pieces of 30 thou. card 14 mm. wide by 124 mm. long and mark across at 3 mm. intervals, to leave a line approximately 2 mm. from one edge. Take your modelling knife once again and scribe along the card to represent planking. Repeat this for the other side and cut out a further two pieces of 30 thou. card 14 mm. wide by 55 mm. long for the ends of the wagon. Scribe along as before to represent planking and lay the floor of the wagon on a flat surface. Hold the two sides to the edges of the floor and run a little solvent along the joint. Wait for about a minute for the joint to dry and repeat with the two ends, making sure that they fit between the sides and not over them. When the four joints have hardened, cut two more pieces of 30 thou. card for the sides, this time 2 mm. shorter and about 2 mm. less in width. Scribe on planking once again and spread solvent over the reverse side. They can then be stuck to the inside of the wagon and the process should be repeated for the two ends.

For detail such as strapping, you will need stiff paper of the sort used for envelopes. Scribe two parallel lines 14 mm. apart and mark off along these at 2 mm. intervals 12 times. Using the point of a compass, make five indentations along each of the strapping pieces to represent rivet heads. Cut the pieces out and glue two to each side of the wagon. The strapping in the middle of each wagon side should be positioned 42 mm. from the end of each side and about 4 mm. along from each end. Cut four strapping pieces in half to give eight 7 mm. long by 2 mm. wide pieces. Insert these under the bottom ends of the strapping already glued on by lifting the ends with the modelling knife and glueing into position with solvent. Cut four additional pieces out from the stiff paper, each an inverted 'L' shape, 7 mm. long and 1 mm. wide along the long leg of the 'L' and 6 mm. long and 3 mm. wide along the short leg. Glue these pieces into position at each corner of the wagon and, when dry, glue a hinge piece under the bottom of the long leg as described above.

The supports at each end of the wagon are made from two pieces of 30 thou. card, one 4 mm. wide by 20 mm. long and the other 2 mm. wide by 20 mm. long. The first is glued to the wagon end 20 mm. from each side and the second, which is cut diagonally 4 mm.

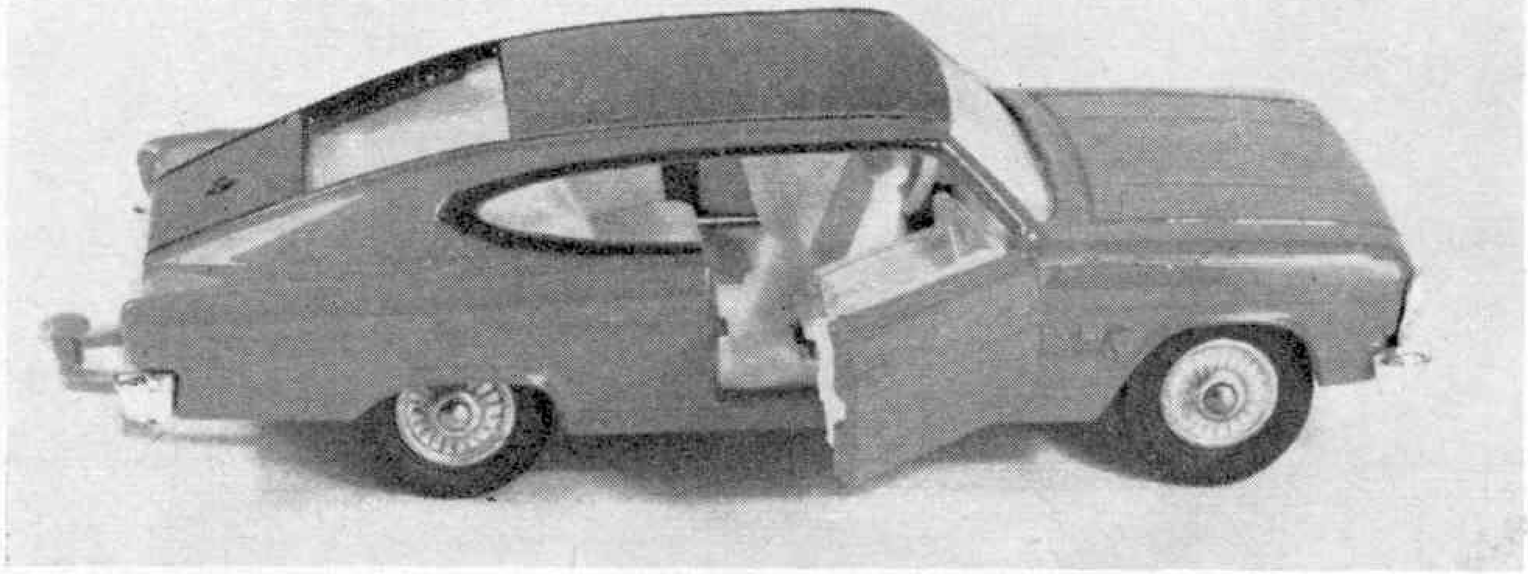


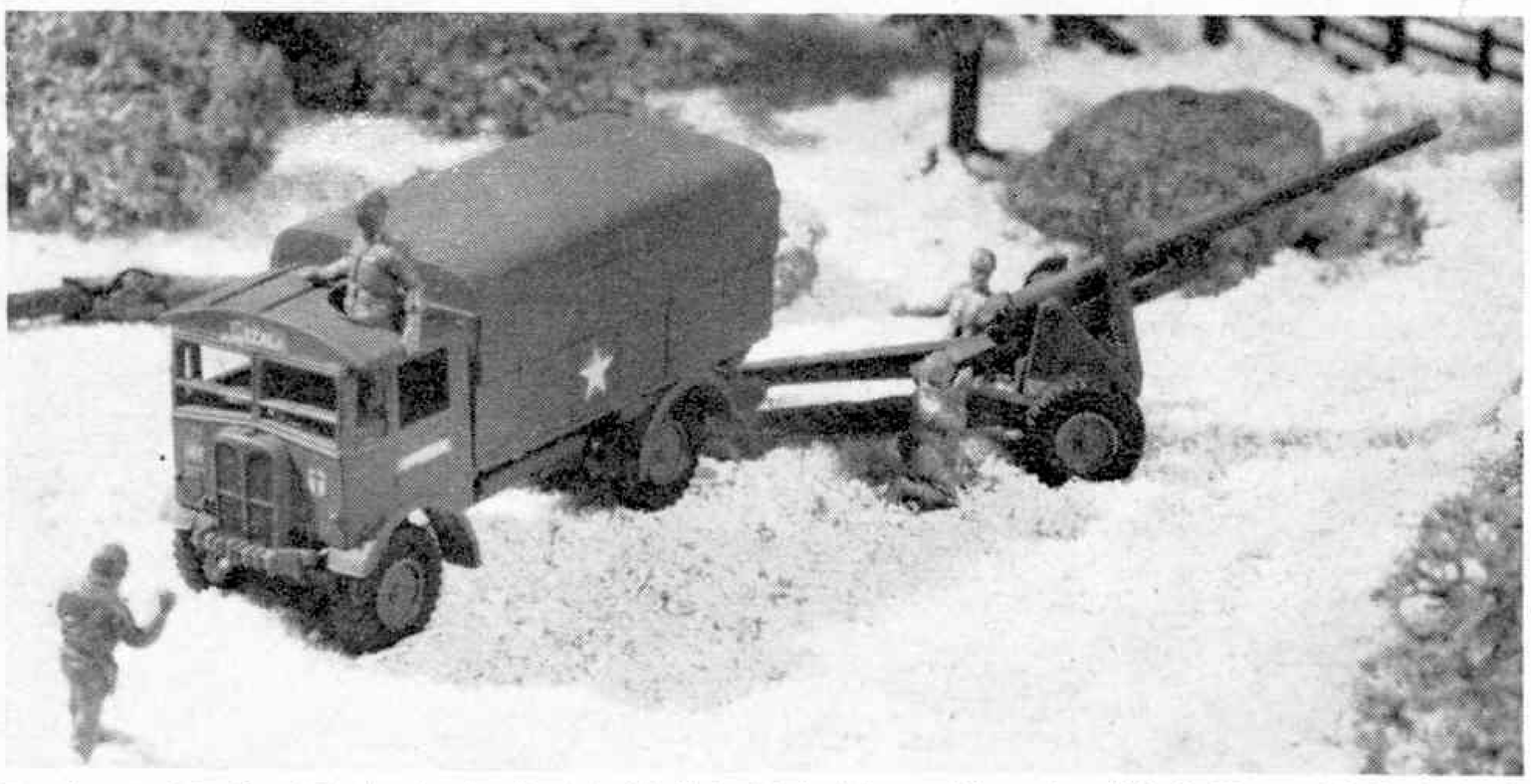


Above: The scribing of the planking for the floor of the wagon. Below: Adding strapping made from stiff paper on to the side of the wagon

down from one edge to the top corner of the other edge, is glued edge-on to form a 'T' section. All that now remains is to paint the wagon body a brownish-orange, the strapping black, with letters 'L.M.S.' painted or transferred on in white, and you have a brand new wagon to run with your existing rolling stock.

HAVE YOU SEEN ?





Top: latest of the Corgi Fastbacks, the Rambler Marlin is finished in a striking red and black. Above: this finely detailed Matador and 5·5 in. gun is the latest addition to the Airfix range of OO scale fighting vehicles. The 67 part kit costs 2s. 3d.

CORGI RAMBLER MARLIN

Fastbacks are the latest fashion in America. Two of the most outstanding examples—the Ford Mustang and Chevrolet Stingray—are already recorded in the Corgi range and now the latest development of the style, the Rambler Marlin fastback family car, joins the range.

Rambler cars, made by American Motors, started the 'compact' revolution and the Marlin is the latest in the tradition—that is a medium-sized car with room for five and loads of luggage, which is economical and has good performance.

The Corgi model of the Marlin faithfully records many of the features of the full-sized car. Two large doors open to reveal full details of the modern interior—bucket-type front seats with fold-forward backs, a central console and individual rear seats. Bumpers and grille are plated and the red and black finish is the precise colour combination chosen by the manufacturer for the first Marlin made. Other outstanding details are a built-in towing hook, 'day-glow' tail lights and beautifully modelled wheels and tyres with solid spoked hubs and broad section tyres with a most realistic sidewall pattern—just like the real thing! **Price 6s. 9d.**

MANCHESTER TRANSPORT HISTORICAL COLLECTION

A non-profit making organisation, the above society intends forming a section devoted to Public Transport in the proposed Northern Museum of Science which, it is hoped, will soon be established in Manchester. They also publish a fascinating range of booklets dealing exclusively with trams.

One of the booklets 'By Tram to the Tower' is, to the best of our knowledge, the only booklet dealing with the Blackpool system, Britain's last remaining tramway. This however, is not its only claim to fame, for Blackpool was responsible for much of the pioneering work on the electric tram in 1885. Although not a detailed account, an accurate outline of the history and formation of the Blackpool system is given and the 68 pages are crammed with interesting information. Among the subjects mentioned are Preserved Tramcars, Depots, Cars in current operation, scrapping dates, and it also includes a diagram of Rigby Road Depot and a route map of the Blackpool system. A useful, indeed the *only*, compendium of information available on this world famous tramway system.

The three other booklets include one entitled 'The Steam Tram Era' prepared by W. G. S. Hyde, price 4s. 0d. which is an illustrated account of the development, operation and eventual replacement of the Steam Tram.

The Manchester Tramway System has always had a considerable attraction for many enthusiasts and the two following books, 'Manchester's Little Tram' price 5s. 6d. and 'Manchester's Transport' Part One, price 7s. 6d. dwell in some detail on two different aspects of Manchester's system. The former is a history of the No. 53 route from Brooks's Bar to Cheetham Hill, often known as 'The Circular' and the other is a revised and enlarged edition of the Manchester Tramway Fleet list first published in 1957. It also incorporates additional information and includes the Horse Trams of the Manchester Carriage and Tramways Co. Ltd. All four books are available from Mr. C. Taylor, of 1020 Manchester Road, Castleton, Lancs., on receipt of remittance and 6d. per booklet to cover cost of return postage.

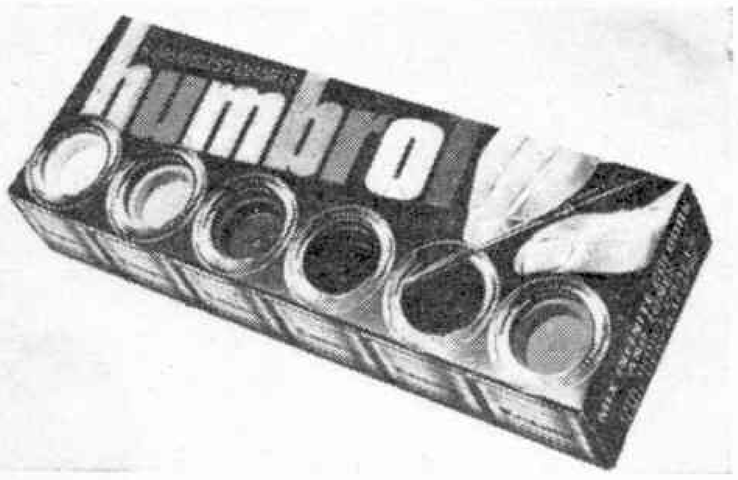
BRITISH BUS FLEETS
No. 22 Scottish Bus Group
Published by: Ian Allan Limited, Terminal House, Shepperton, Middlesex. **Price 7s. 6d.**
104 p.p. plus 16 p.p. half-tone illustrations, 7¼ in. by 4¾ in.

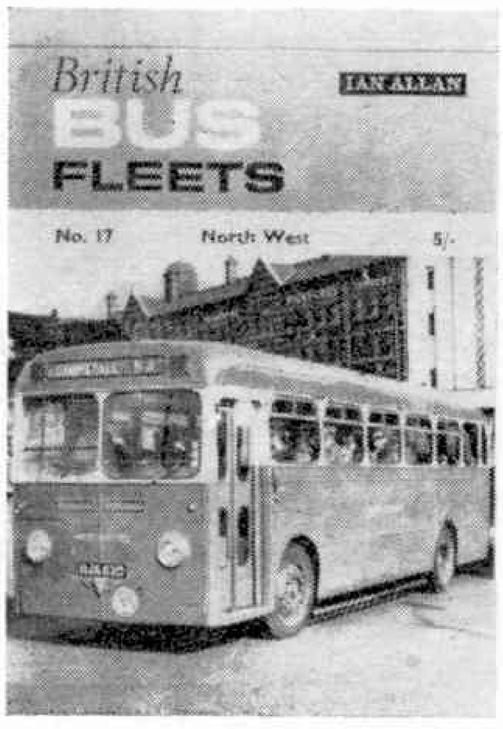
Covering the Scottish Bus Group, this booklet completes the survey of major bus fleets in Great Britain. The information on vehicles owned by the seven operators in the Scottish Bus Group and of David MacBrayne, is presented in the usual form and as with the other books in the series, a short general history is given for each operator, followed by information neatly set out in tables for easy reference. Illustrations in the booklet cover a wide range of different bus types, both single and double decker, rear and forward engined.

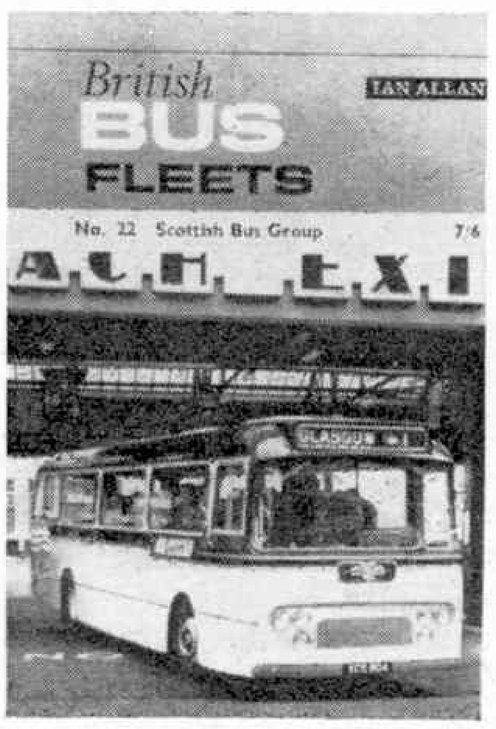
BRITISH BUS FLEETS
Number 17 North West
Published by: Ian Allan Limited, Terminal House, Shepperton, Middlesex. **Price 5s.**
64 p.p. plus 16 p.p. half-tone illustration, 7¼ in. by 4¾ in.

Seventeenth in the series on British Bus Fleets, this booklet covers the buses owned by seven Municipal Authorities and four other private operators. Among the former is included Birkenhead Corporation, which has a special significance because of its association with the birth of Street Tramways in Great Britain. As with other booklets in the series, this includes details of liveries, ticket systems, depots and a short description and history of each operator.

Right: the covers of three of the books reviewed on this page present an interesting contrast in transport old and new. Below: the Humbrol Presentation Painting Kit contains six basic gloss enamels in half-ounce tinlets. A colour chart on the pack gives instructions for mixing 20 different colours. Price 5s.







money minors and rowing boats

IF a survey of diecast model cars had been made only a short while ago, one rather strange omission would have been noticeable. This is a car that has been in almost continuous production for 40 years in various forms and which has never, to the best of our knowledge, been produced in model form—until recently. Which car am I talking about? If you haven't already guessed, it is, of course, the Morris Minor 1000, which was recently introduced into the Spot-on range of model cars.

The difficulty in producing a model of the Morris Minor which has plagued manufacturers in the past is that, when scaled down, it never 'looks' quite right. No. 289, the Spot-on model, however, really has captured the appearance and atmosphere of the Minor with that most distinctive roof, boot and bonnet. Finished in a light-blue with chromed front and rear bumpers, radiator surround and head lights with red tail lights, the model looks very attractive and has glazed windows with the quarter lights represented on the glazing. The model has full interior fittings in the way of red seats and dashboard, which has a steering wheel fitted. The car also includes independent suspension on all four wheels as well as steering, and we suspect that this is one model that will find its way into most model car collections.

Another Spot-on model that we thought would be of interest to collectors is a rather unusual model of an Austin 1800—the most recent addition to the range. There is, of course, nothing unusual about the Austin 1800 except that in this case, it comes complete with rowing boat. Like the Minor 1000 model, the Austin 1800 has full interior fittings, including steering wheel but, unlike the Morris, it has a bonnet opening to expose a finely detailed engine. It also has a chrome radiator, head lights and front and rear bumpers with springing on all four wheels. Finished in fawn, the model is supplied in a set with both the rowing boat and an upright figure, dressed in a yellow cardigan, and navy blue trousers. No accounting for taste! A special fitting is fixed to the roof of the car, on which the rowing boat can be mounted. The boat is moulded in plastic and has full interior detailing. Altogether, a very unusual combination of boat and car, making an excellent collector's piece. No. 410 in the Spot-on range, the set, like others in the range, comes complete in its own display box.

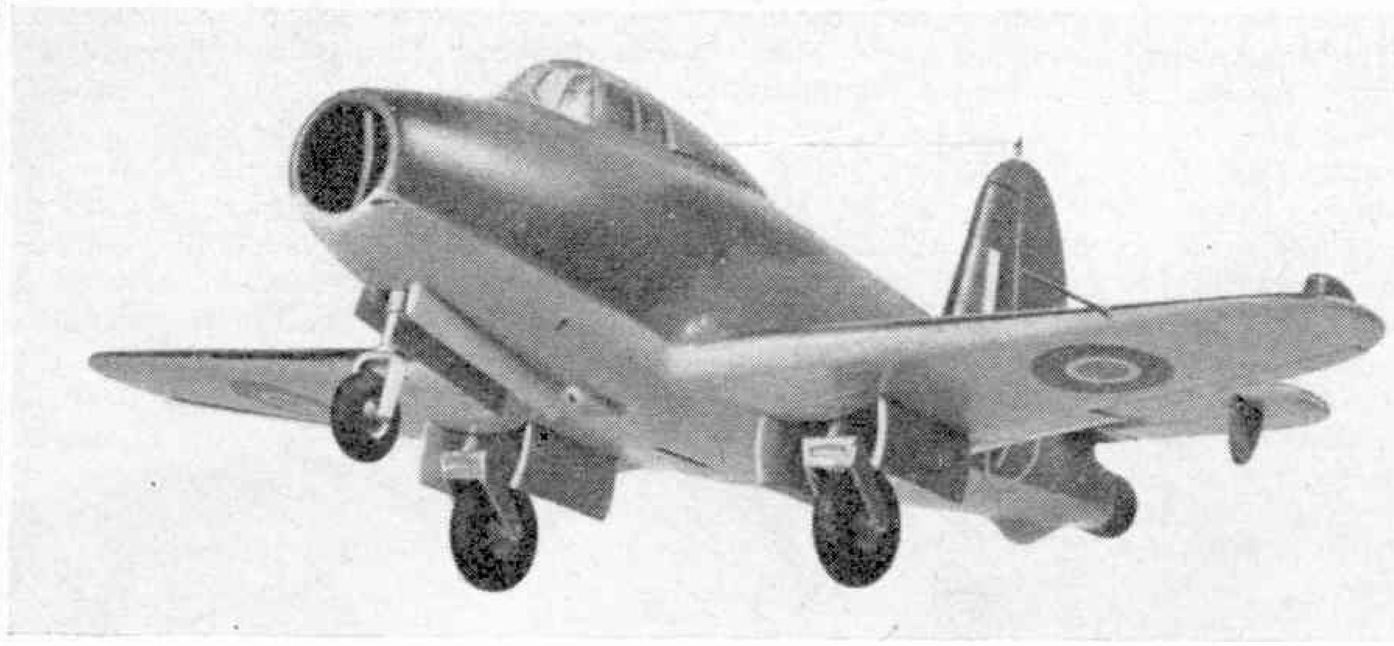
The third model we wish to talk about this month is of special interest because it can be used as a money box, although it is itself a very fine model, worthy of even the serious collector's attention. No. 273 in the Spot-on range, it is an accurate and rather pleasing reproduction of one of the 'Security Express' vans. A slot in the roof is provided for coins —6d. or 3d. pieces being ideal—which fall inside the van. That, however, is not all, for as you open the rear doors of the model you see a guard mounted on a seat in front of the strong room which holds the coins. Before the strong room can be pulled out, the guard must be turned to release both him and his seat from the floor so that he may be lifted out together with his seat. The moulded cage forming the strong room can then be pulled out through the rear of the van. Measuring about two inches by one and a quarter by one and three-eighths, the cage has a lid fastened by two hinges to the side. It also has a slot to coincide with that on the roof of the van. The cage, we estimated, would probably hold approximately 60 sixpences, and is a most entertaining way of saving.

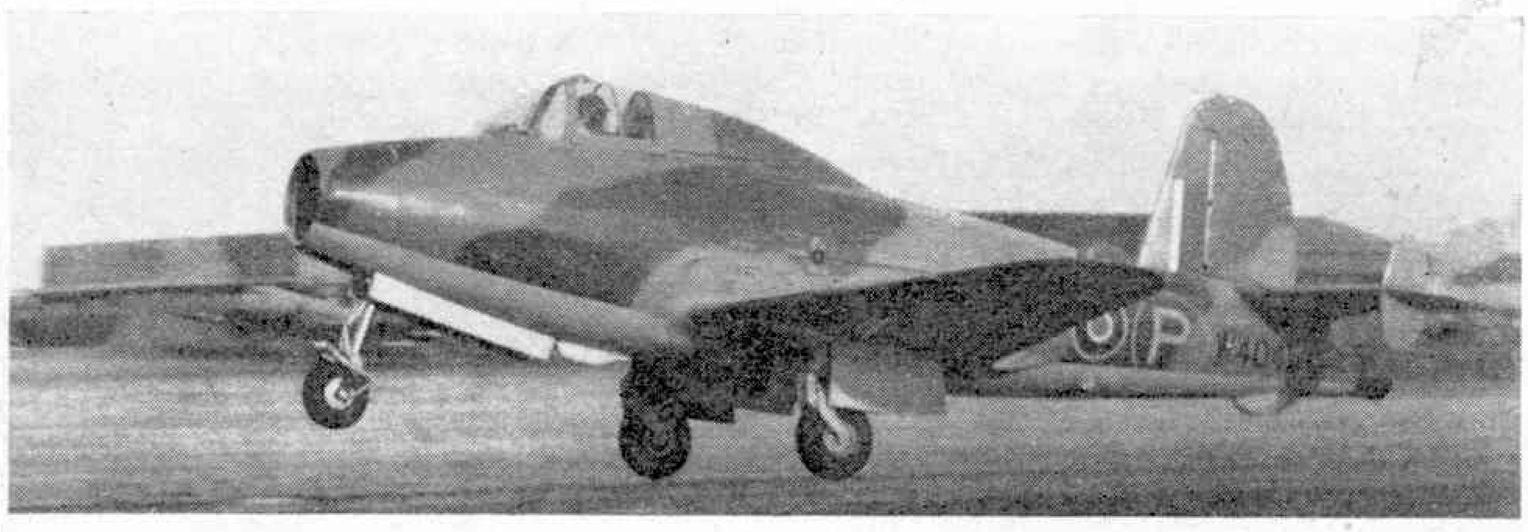
The van is finished in a dark green and is provided with a driver and guard, both in green uniforms, and has side windows at the cab with simulated wire mesh. The radiator, head lights and front and rear crash bar are finished in chrome and the van has the same 'Security Express Limited' with a proper crest on both sides.

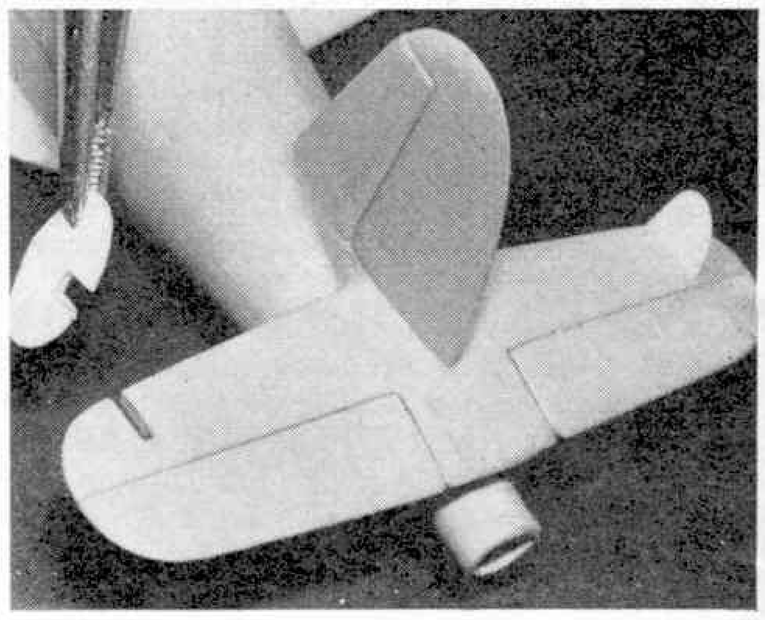
Above: a Spot-on 'Security Express' van, with strong box and seated guard. Below: Spot-on Morris Minor 1000 (No. 289) Austin 1800 with rowing boat (No. 410)

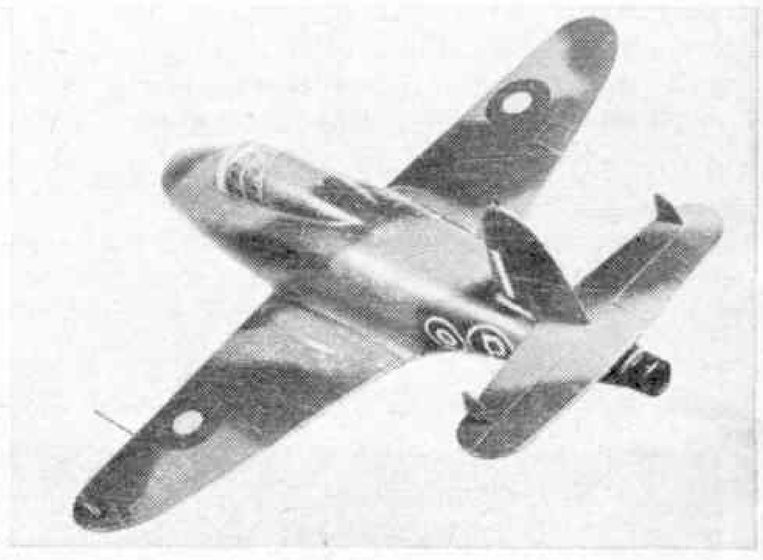
BUILD BRITAIN'S FIRST JET

You can build a model of the historic Gloster Whittle Jet from this Frog plastic kit now in the shops. If you're a conversion addict, the drawing on the facing page will provide you with data to enable you to produce a model of the E28/39 as it was eventually flight-tested at Farnborough. One or two simple 'mods' are shown on this page.









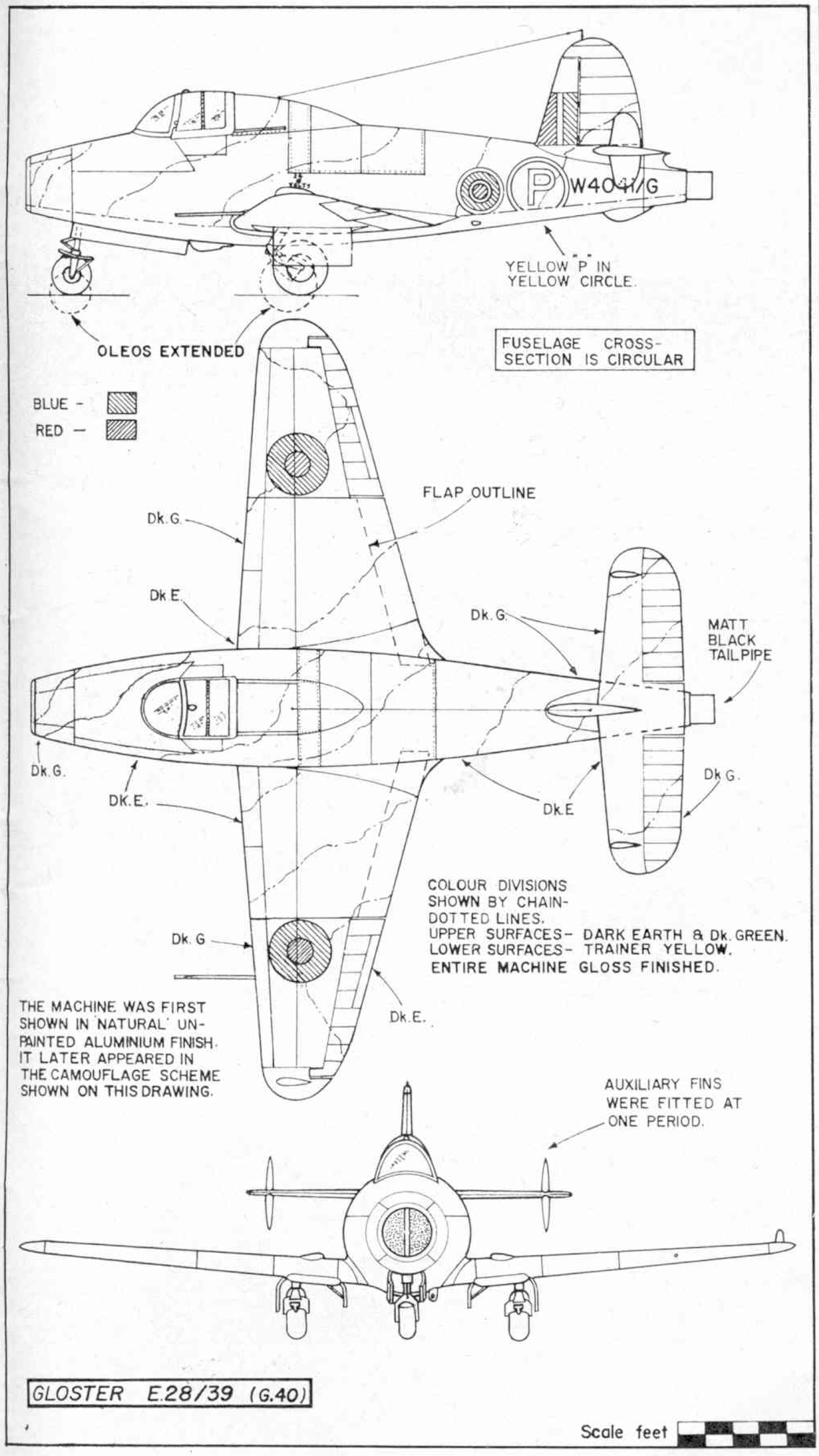
On 15th May, 1941
just 25 years ago, this little aeroplane
opened the door to the future
for with its successful flight,
it proved the jet engine to be a practical power unit.
Twenty five years prior to this momentous flight,
frail wood, wire and fabric machines,
like the Bristol Boxkite, described on page 16 of this issue,
were the wonders of the age—
such is the speed
of aeronautical development.
Who would hazard a guess at the likely shape
of the aeroplane
or its propulsion unit in 1991—
another 25 years on?

Here are some simple modifications that you can carry out.

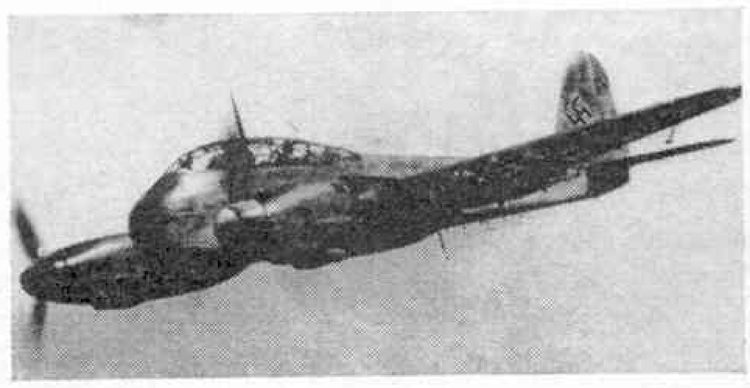
1 Vertical stabilisers on the tail are easily made from 30 thou. styrene sheet, cut as shown, and sanded to a streamline section before cementing in position. Run a $\frac{5}{32}$ in. diameter twist drill up the tail pipe, to enlarge the open area. Fair in the wing root with body putty to hide the wing join and make a realistic fillet (see drawing).

2 The aerial is made from Kleintex Invisible Thread painted black. It is fixed to a small pin which is first heated and then pushed into the top of the rudder. Snip off the head when cool. The pitot head on the port wing is thin wire fixed in the same way. The camouflage pattern is well shown in this view.

3 Notice the small 'bumps' just behind the nosewheel doors and on the port wing tip—These are made of scrap plastic sprues from your kit, sanded to shape. Body putty should be used to extend the main undercarriage fairings forward almost to the wing leading edge.

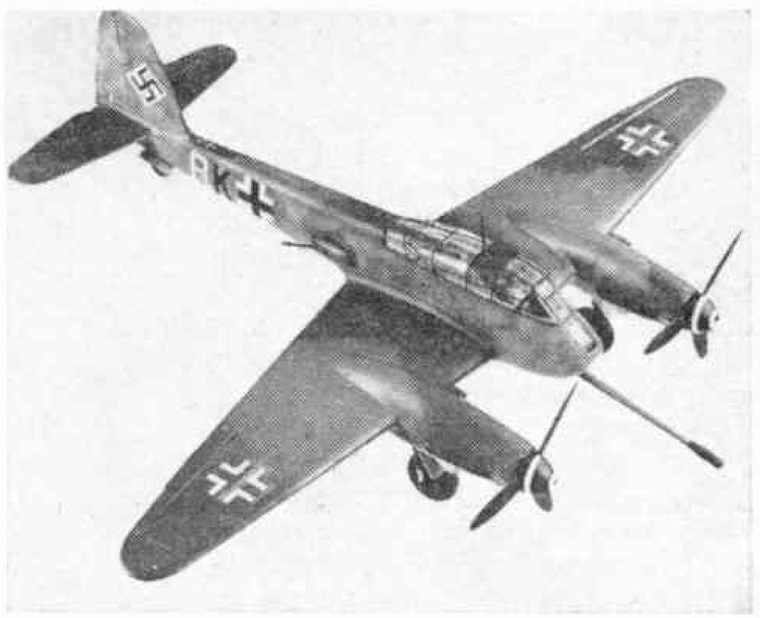


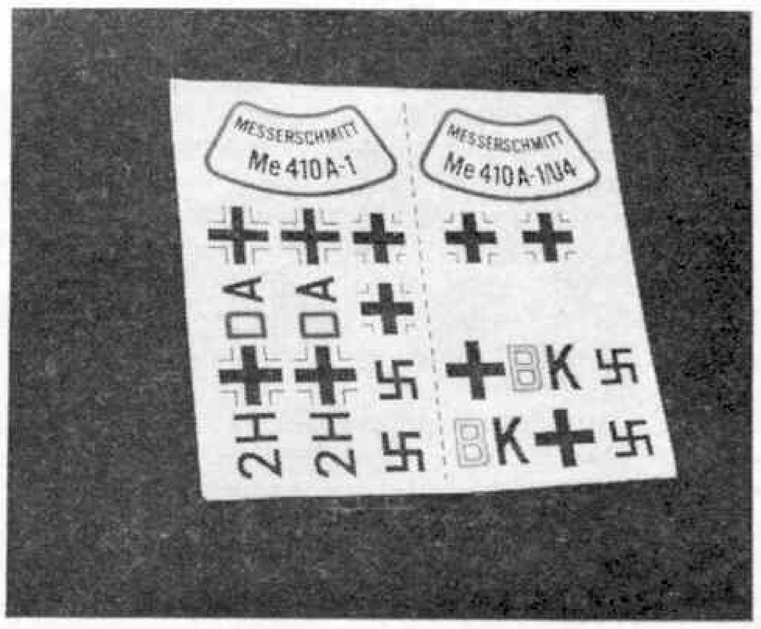
THE LUFTWAFFE'S HORNET



This is the very latest Frog kit (for release in October) and it represents perhaps one of the most aesthetically appealing machines ever produced for the Luftwaffe. Like the Heinkel 219, (described last month), it has a matt transfer sheet with swastikas and two complete sets of markings, one for each version of the Me. 410 that can be built with this kit. You can build the model as a multi-gun fighter like the one in the picture above or as the 45 mm. cannon-equipped plane shown in our model photo. A very comprehensive full colour double 'profile' of these machines is included with every kit, a new and extremely useful innovation. Price will be 3s 7d.

If you like gadgets, you will rave over the movable remote controlled fuselage gun barbettes on the Me. 410. They rotate *and* elevate and as you can see, inclusion of these facilities has not made them bulky or out of scale.





British Rail... on the road

By Spanner

I KNEW them as "Mechanical Horses and Trailers". A Liverpudlian colleague remembers them as **'Lecies'.** Nowadays, I've heard them unromantically described as 'Three-wheel Articulated Lorries', but whatever they were or are called, their correct title has always been 'Scammell Tractor and Trailer'.

In case you're a bit puzzled by this rather mysterious beginning, I should explain that I'm talking about those highly distinctive British Rail articulated delivery wagons, seen on most roads in Britain at one time or another, the towing unit for which is provided by a 3-wheel Scammell Tractor. Fast trains may be able to carry goods quickly from one depot to another, but it still needs a road-vehicle to deliver them right to your door!

British Railways have been using these Scammell vehicles for certainly as long as I can remember, and for a very good reason —they meet all their requirements. To begin with, they have only one steerable wheel which makes them considerably less complicated than a 4-wheel unit and thus cheaper to produce. This single wheel also makes them tremendously manoeuvrable. They can be coupled to any suitable trailer, be it open flat-bed or enclosed box van, and they are extremely economical in operation.

The manufacturers, Scammell Lorries Limited, are not of course owned by British Rail. They are an entirely separate concern producing all sorts of equipment, and the 'mechanical horse' is just one of their many products. Over the years several different versions of this particular vehicle have been produced, the most widely-known being the Scammell Scarab which the railways have been using for a very long time. The Scarab, however, is now being superseded by the new Scammell Townsman, roughly similar in design to the Scarab, but generally more modern-looking and advanced. The Townsman makes an excellent subject for the Meccano model-builder to work on and, because of this, we have chosen it as a prototype for the new Meccano Model described below.

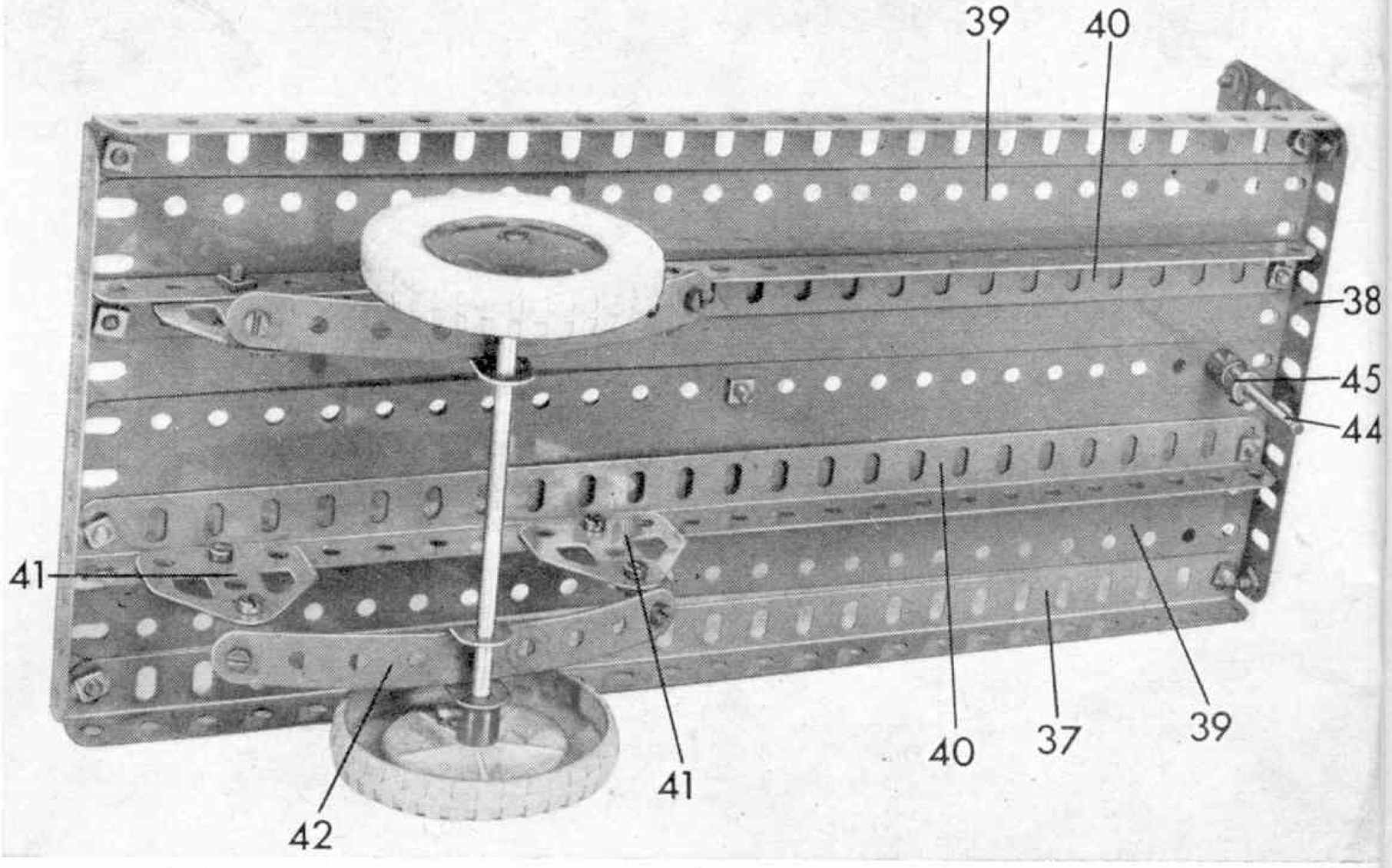
The Tractor

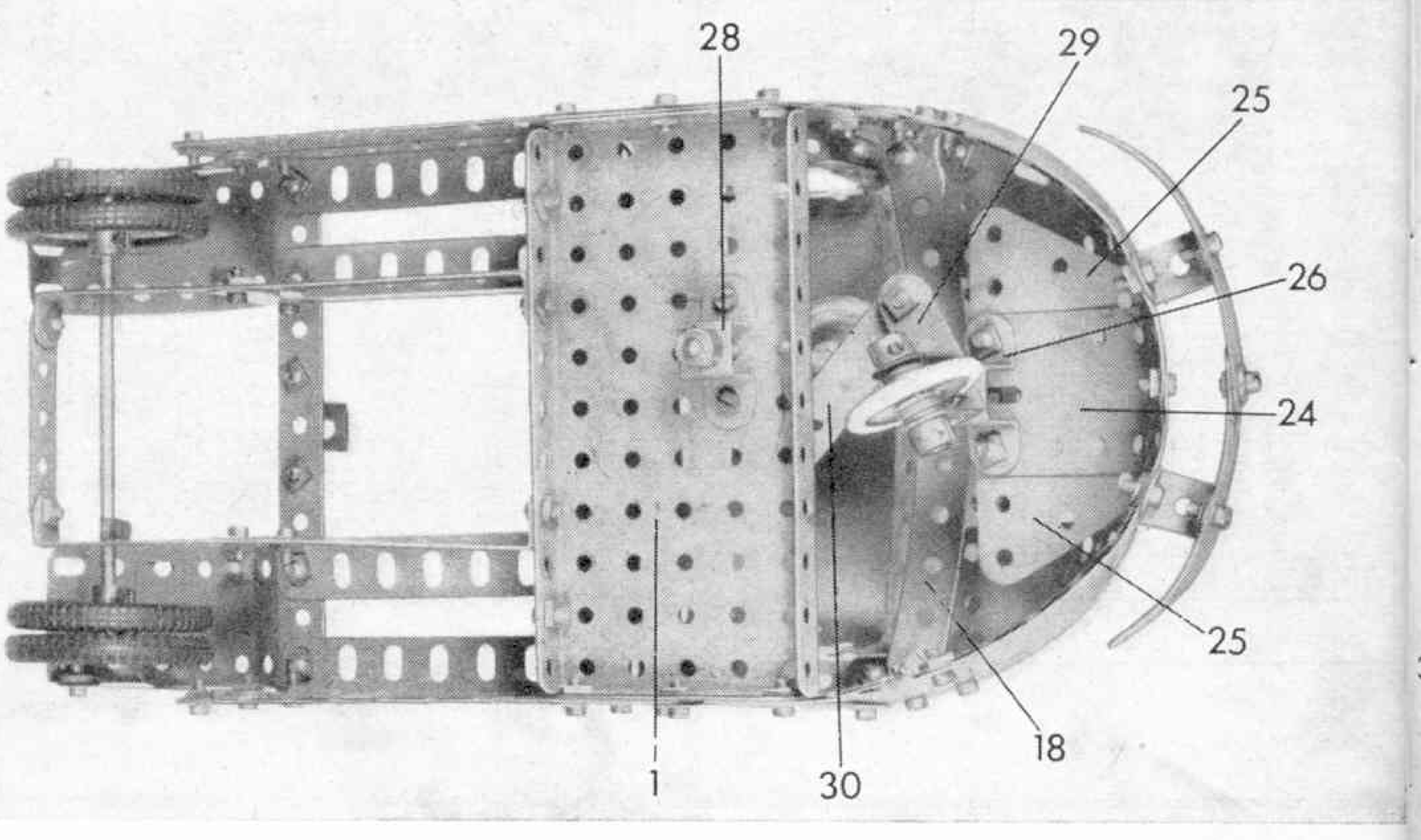
Dealing first with the tractor, a chassis is built up from a 5½ in. by 2½ in. Flanged Plate 1, to one side flange of which a 5½ in. by 2½ in. Flexible Plate and two 5½ in. by ½ in. Double Angle Strips 2 are bolted. The free lugs of these Double Angle Strips are connected by a 2½ in. Strip. Fixed to each end flange of Plate 1 are a 5½ in. by 1½ in. Flexible Plate 3 and a 3½ in. by 2½ in. Flexible Plate 4, overlapped three holes and edged along the bottom by a compound 8 in. strip. This strip is obtained from a 5½ in. Strip 5 and a 3 in. Strip 6.

A 3½ in. Angle Girder 7 is now bolted to the upper edge of Plate 3, at the same time fixing a 4½ in. Strip 8 in position. Strip 8 is connected to Strip 5 by a 2½ in. Strip 9 and a 1½ in. Strip 10, the upper Bolt securing Strip 10 also holding a 2½ in. Stepped Curved Strip 11. The rearmost ends of Girders 7 at each side are joined by a 5½ in. Strip 12, to which a further two 3½ in. Angle Girders 13 are bolted. At its forward end, each Girder 13 is connected to corresponding Girder 7 by a 1½ in. Strip, while, at its rearmost end, its vertical flange is connected to corresponding Double Angle Strip 2, also by a 1½ in. Strip. The rear mudguards are represented by a compound 3½ in. by 1½ in. flexible plate, obtained from two 2½ in. by 1½ in. Flexible Plates, bent to shape and attached to Curved Strip 11 by an Angle Bracket.

Another two 2½ in. Strips 14 are bolted to Flexible Plate 4, to represent a side panel, at the same time securing two Obtuse Angle Brackets in place. A further two Obtuse Angle Brackets 15 are added, as also is a 2½ in. Strip 16, then a 3 in. Narrow Strip 17 is bolted through its third hole to each Bracket 15. Fixed between Plates 4 at each side is a 5½ in. Curved Strip 18, attached to the Plates by Angle Brackets.

Each plate 4 is, itself, extended forward by a 3½ in. by 2½ in. Triangular Flexible Plate 19, at the same time fixing an Angle Bracket in place at the top. Bolted to this Angle Bracket is a 3½ in. by 1½ in. Triangular Flexible Plate 20, overlayed by a 2½ in. Curved Strip 21, then Curved Strips 21 at each side are connected by a 1½ in. Angle Girder 22. Attached to the vertical flange of this Angle Girder is a





2½ in. Flat Girder 23, to the lower edge of which two Angle Brackets are bolted. A 2½ in. by 1½ in. Flexible Plate 24 and two 2½ in. by 1½ in. Triangular Flexible Plates 25 are secured to these Angle Brackets, as shown, at the same time fixing a Double Bent Strip 26 in position beneath the Brackets. All the Plates at the front are bent to shape and bolted to two 4 in. Stepped Curved Strips 27, attached to Strips 6. Two large and two small Washers are fixed to Flat Girder 23 to represent headlamps and sidelamps, while a bumper is provided by two Formed Slotted Strips, bolted together and attached to Curved Strips 27 by Double Brackets.

Steering

Before completing the cab, it is best to fit the steering gear. A Double Bent Strip 28 is bolted to the underside of Flanged Plate 1 to provide a bearing for the steering column, which is a 3½ in. Rod carrying a 1 in. fixed Pulley with Rubber Ring at its upper end, a Crank immediately above the Flanged Plate, and a Collar beneath Double Bent Strip 28. Lock-nutted to Double Bent Strip 26 by a ⅜ in. Bolt is a 1 in. by ½ in. Double Bracket, to the top of which a 1½ in. Strip 29 is fixed. The other end of this Strip is lock-nutted to a 2½ in. Strip 30 which is, in turn, lock-nutted to the Crank fixed on the steering column. Journalled in the end holes of the Double Bracket is a 1 in. Rod carrying a 1 in. loose Pulley with Rubber Ring between Washers, and held in place by two Collars.

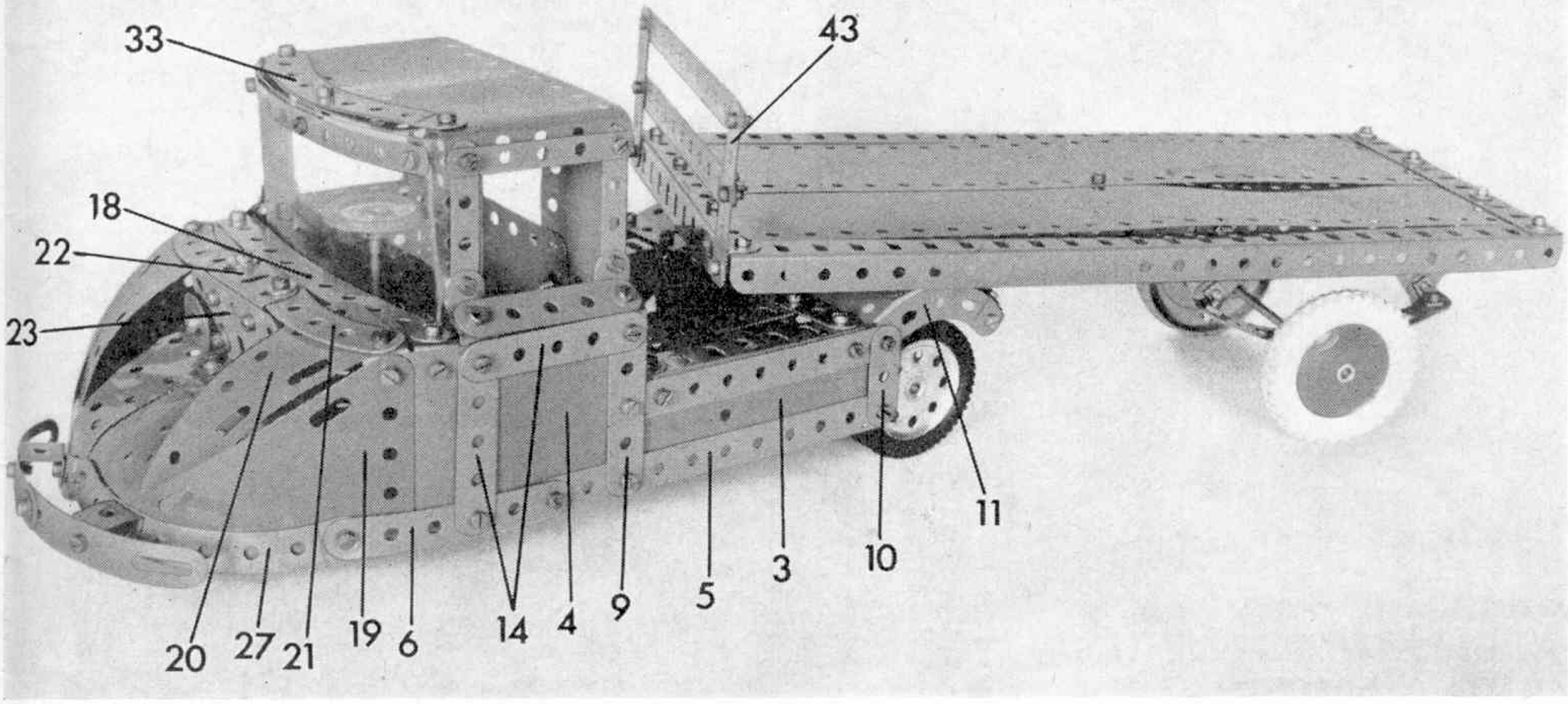
The cab can now be completed by bolting a shaped 5½ in. by 2½ in. Flexible Plate 31 between Narrow Strips 17 at each side, at the same time adding a 2½ in. Narrow Strip 32. Two 4 in. Stepped Curved Strips 33, overlapped seven holes, are attached to the front edge of Plate 31, then the windscreen is provided by a 5½ in. by 2½ in. Transparent Plastic Plate, edged along the top by a 4½ in. Narrow Strip and connected to Curved Strips 33 by an Angle Bracket. At the back, the sides of the cab are joined by a 4½ in. Strip 34, attached by Angle Brackets, and the remaining space is enclosed by three 2½ in. by 1½ in. Flexible Plates, remembering to leave a small space to represent the rear window.

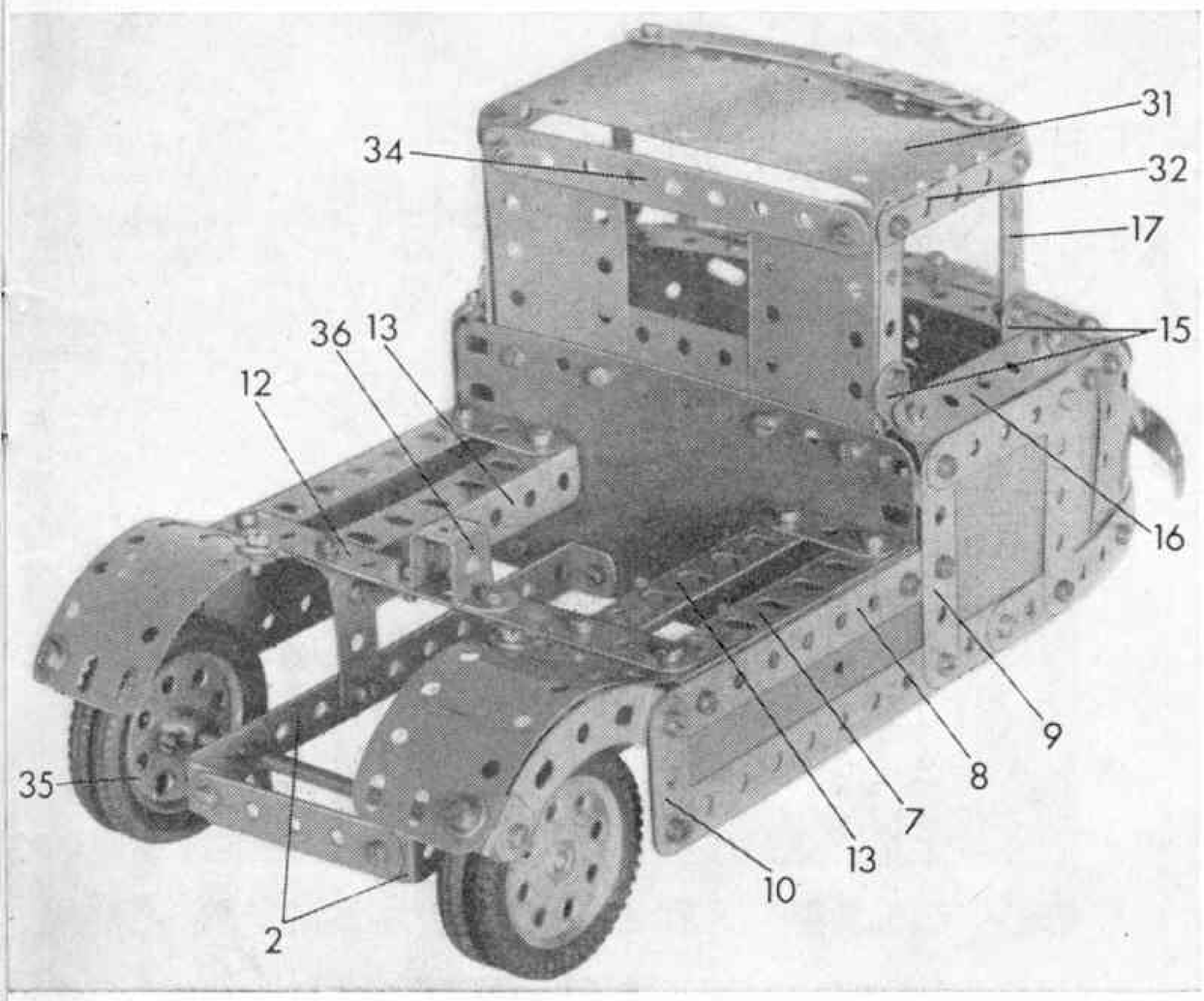
Twin rear wheels, arranged in two sets of two, are fitted to the model, each wheel consisting of a 1½ in. Pulley with Motor Tyre 35. The wheels are mounted on a 5 in. Rod, journalled in Double Angle Strips 2 and held in place by Spring Clips. A third Double Bent Strip 36, bolted to the centre of 5½ in. Strip 12, serves as the coupling point for the trailer.

The Trailer

If you are acquainted with the full-size vehicle, you will know that the tractor is sometimes used to tow an open flat truck and, at other times, can be seen towing a completely enclosed box-van trailer. We have decided to feature the former type here, but you may like to design and build your own, different version. To build our trailer, however, a rectangle is obtained from two 12½ in. Angle Girders 37, joined at each end by a 5½ in. Angle Girder 38. Two 12½ in. by 2½ in. Strip Plates 39 are then bolted between Girders 38, at the same time fixing another two 12½ in. Angle Girders 40 in position. Attached to each of these Girders 40 are two Flat Trunions 41, through the apex holes of which Angle Brackets are fixed. A 4½ in. Strip 42 is curved and bolted to the free lugs of these Angle Brackets to act as a spring, then a Double Bracket is secured to its centre. The holes in the lugs of the Double Bracket provide the bearings for a 5 in. Rod on which two 2½ in. Road Wheels are mounted. Great care must be taken to see that the holes in the Double Bracket lugs are exactly in line, otherwise the Rod will not turn.

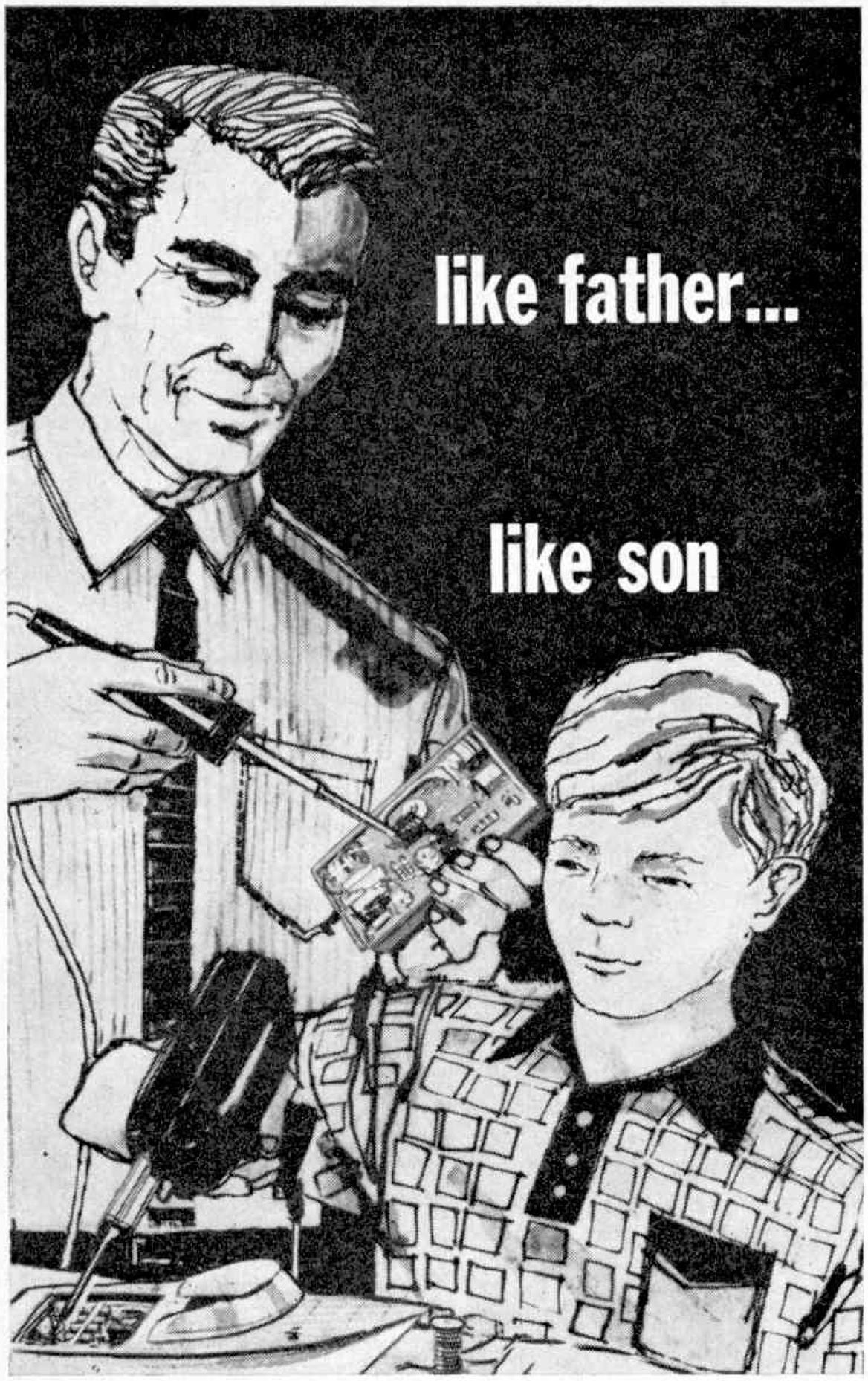
A 2½ in. Strip 43 is bolted through each end hole of the front Girder 38, then Strips 43 are connected, as shown, by two 5½ in. Strips. Finally, a coupling pin is provided by a 1½ in. Rod 44, mounted in a Rod Socket and carrying a Collar 45 to act as a spacer when the trailer is coupled to the tractor.





Parts Required

5 of No. 2	1 of No. 52
5 of No. 2a	4 of No. 59
2 of No. 4	1 of No. 62
12 of No. 5	1 of No. 89
5 of No. 6a	2 of No. 89b
4 of No. 8	2 of No. 90
2 of No. 9	2 of No. 90a
4 of No. 9b	1 of No. 103f
1 of No. 9f	3 of No. 111c
4 of No. 11	4 of No. 126a
1 of No. 11a	4 of No. 142d
14 of No. 12	2 of No. 155
8 of No. 12c	1 of No. 179
2 of No. 15	2 of No. 187
1 of No. 16	8 of No. 188
1 of No. 18a	2 of No. 189
1 of No. 18b	2 of No. 190a
4 of No. 21	2 of No. 192
1 of No. 22	1 of No. 193e
1 of No. 22a	2 of No. 197
2 of No. 35	2 of No. 215
126 of No. 37a	2 of No. 221
120 of No. 37b	2 of No. 224
22 of No. 38	2 of No. 226
2 of No. 38d	2 of No. 235
3 of No. 45	4 of No. 235a
2 of No. 48d	1 of No. 235d



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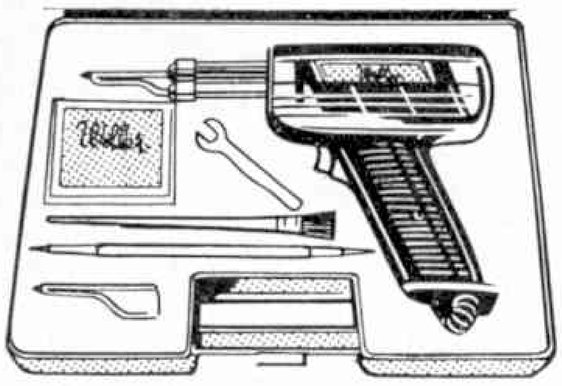

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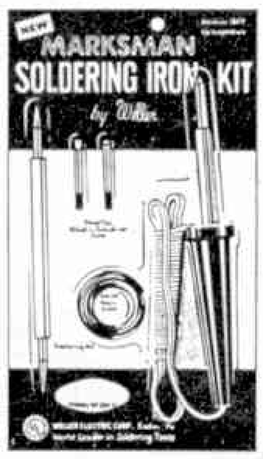

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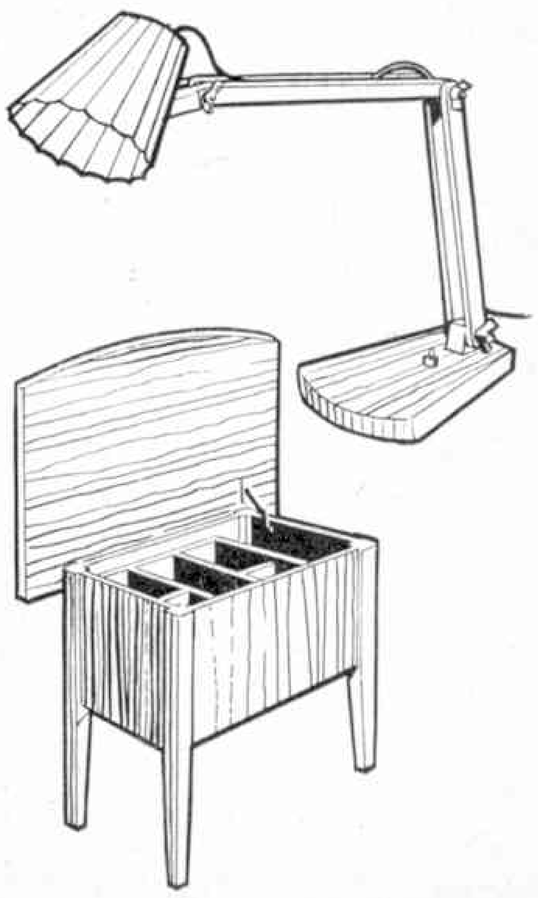

The October PRACTICAL WOODWORKING includes full how-to-make details for a variety of useful things you'll enjoy constructing . . . an adjustable reading lamp . . . a lady's work table . . . a handy stool . . . and plenty more. It's a big double issue, with a FREE 32-Page Book, "Kitchen Furniture and Fitments" that will interest Dad as well. Don't miss it!

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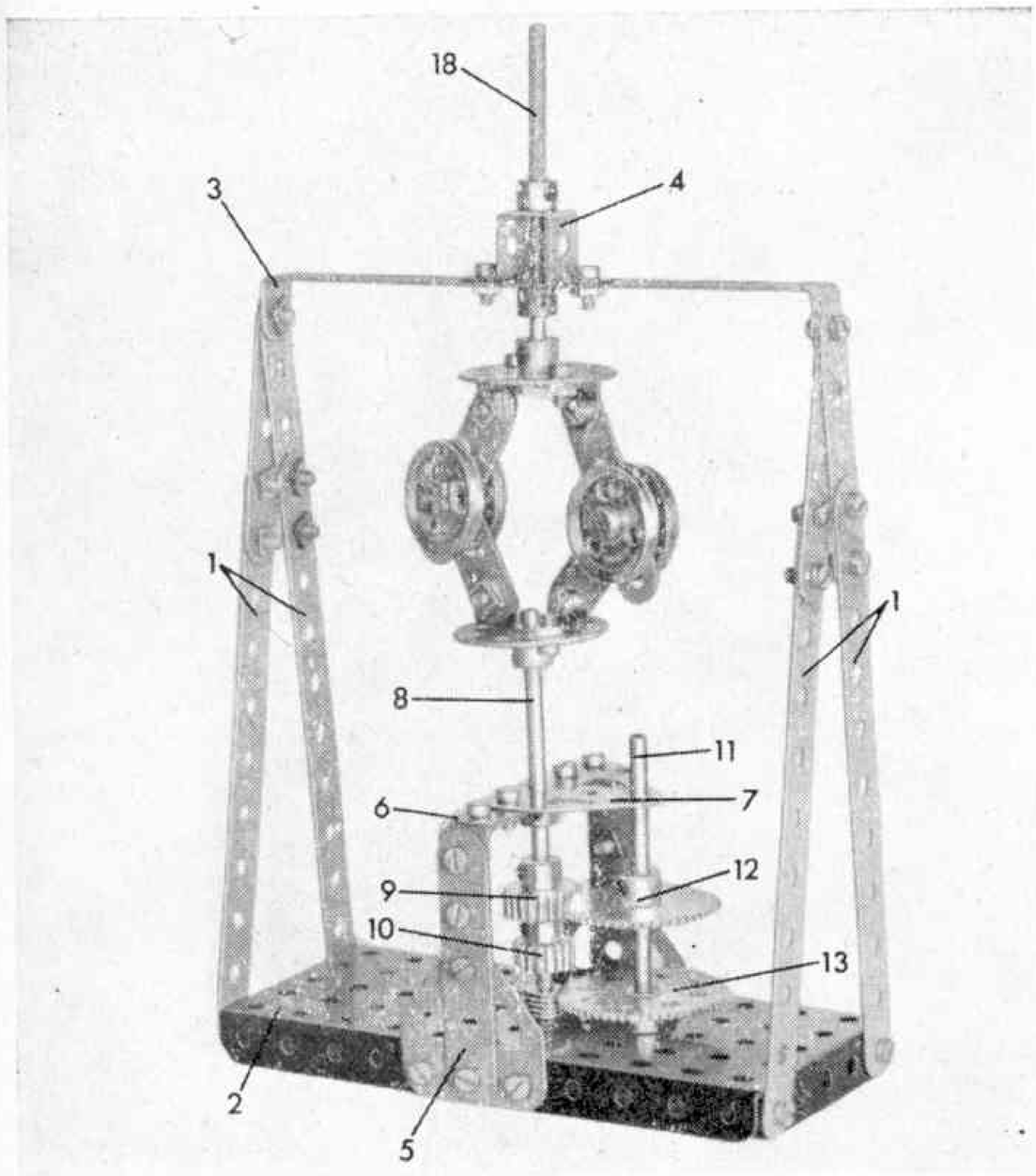
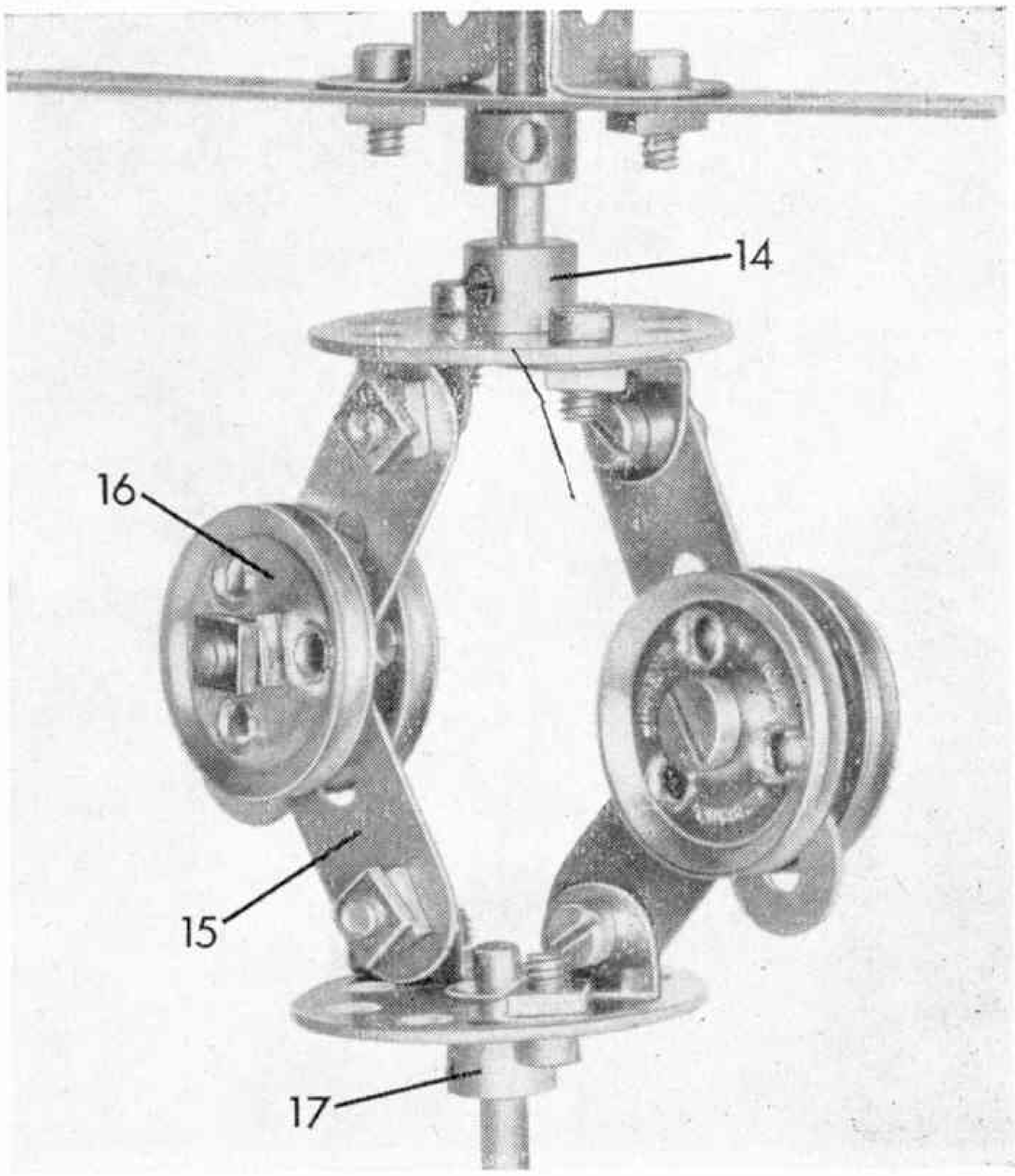




AMONG THE MODEL BUILDERS

AUTOMATIC gear boxes as fitted to motor cars are highly complex pieces of apparatus, but the basic principles of automatic gear-changing are not particularly complicated. With Meccano, it is quite easy to build a simple automatic gearbox and, in fact, the subject that I am covering this month is such a mechanism which has been designed and built by Messrs. C. and P. L. Woods, of Oadby, Leicestershire. The actual unit illustrated is one which I have built up from details kindly supplied by the designers, slightly modified, and I am pleased to say that they have come up with a very well-produced unit. Controlled by a simple governor, it is not only easy to build, but it is also extremely positive in operation.

A framework is built up from four 7 in. compound strips 1, obtained from 5½ in. Strips extended by 2½ in. Strips, bolted two to each end flange of a 5½ in. by 2½ in. Flanged Plate 2. The two strips at each end are brought together at the top, then the two pairs of strips are connected by a 5½ in. by ½ in. Double Angle Strip 3. A Double Bent Strip 4 is fixed to the centre of this Double Angle Strip, while a Flat Trunnion is bolted to the centre of each side flange of Plate 2. These serve as a firm base for 2½ in. Strips 5, to the top of which 1 in. by 1 in. Angle Brackets are attached. These Angle Brackets are joined by another 2½ in. Strip 6, in the centre of which a third Flat Trunnion 7 is bolted.

Once the framework has been finished, the gearing can be added. A 4 in. Rod 8, carrying a Collar, a ¾ in. Pinion 9, a ½ in. Pinion 10 and several Washers, is journalled in Flanged Plate 2 and Strip 3. The number of Washers determines the proportionate length of time the gearbox remains in first gear. The designers used five, but if a smaller number is used, first gear will remain engaged longer. The actual method of finding the position of the Pinions and Collar is as follows:

Place the framework on a flat surface and arrange the Rod so that its end does not quite touch the surface. Holding the Rod in this position, move Pinion 10 against the Washers with its boss uppermost and fix in place. Pinion 9, also with its boss uppermost, is fixed against Pinion 10. Now raise the Rod as far as possible without its lower end leaving the hole in the Flanged Plate, and tighten the Collar against the underside of 2½ in. Strip 6. This should give the Rod maximum movement without allowing it to leave its bearings.

Journalled in the apex hole of Flat Trunnion 7 and Flanged Plate 2 is a 3 in. Rod 11, carrying a 50-teeth Gear 12, a 57-teeth Gear 13 and a Collar, the latter beneath the Plate. Gear 13 is in contact with the Plate, while Gear 12 should be positioned so that it meshes with Pinion 9 a fraction after Pinion 10 disengages with Gear 13 when Rod 8 is raised.

All that now remains to be built is the governor. Two Angle Brackets are bolted through diametrically opposite holes of an eight-hole Bush Wheel 14, then a 2 in. Strip is lock-nutted to the free lug of each of these Angle Brackets. A Pivot Bolt, carrying a 1 in. Pulley without boss, is now passed through the third hole in each of these Strips. A 1½ in. Strip 15 is added, followed by a second 1 in. Pulley without boss 16, after which the lock-nuts are fixed in place. The 1½ in. Strips 15 are lock-nutted to further Angle Brackets bolted through diametrically opposite holes of a second eight-hole Bush Wheel 17. This Bush Wheel is mounted on the upper end of Rod 8, while Bush Wheel 14 is mounted on the lower end of a 3 in. Rod 18, journalled in Double Angle Strip 3 and Double Bent Strip 4, and held in position by Collars. Rod 18 serves as the input shaft, with Rod 11 acting as the output shaft. Suitable Pulleys or Pinions must, of course, be mounted on these Rods to take the drives.

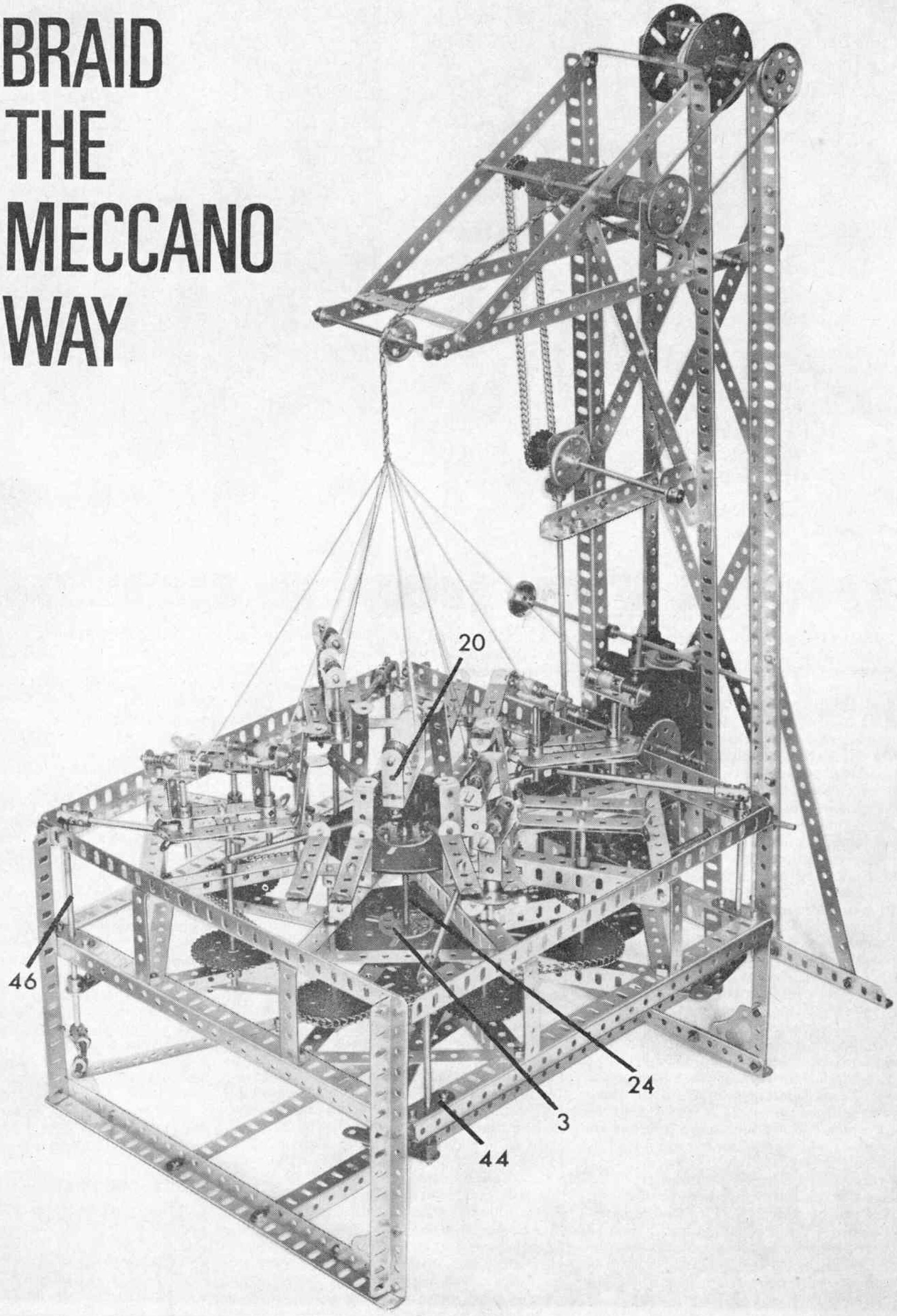
I should mention that the designers of the gearbox fitted a tensioning spring between the two 2 in. Strips in the governor. This is not essential, but is certainly advisable as it increases the speed (r.p.m.) required to raise Rod 8, thus ensuring that first gear remains in operation for a reasonable length of time. The tensioning spring was provided by a Meccano Tension Spring with 12 of the coils removed, but an elastic band should do just as well. The speed necessary to raise Rod 8 can be varied by altering the tensioning spring.

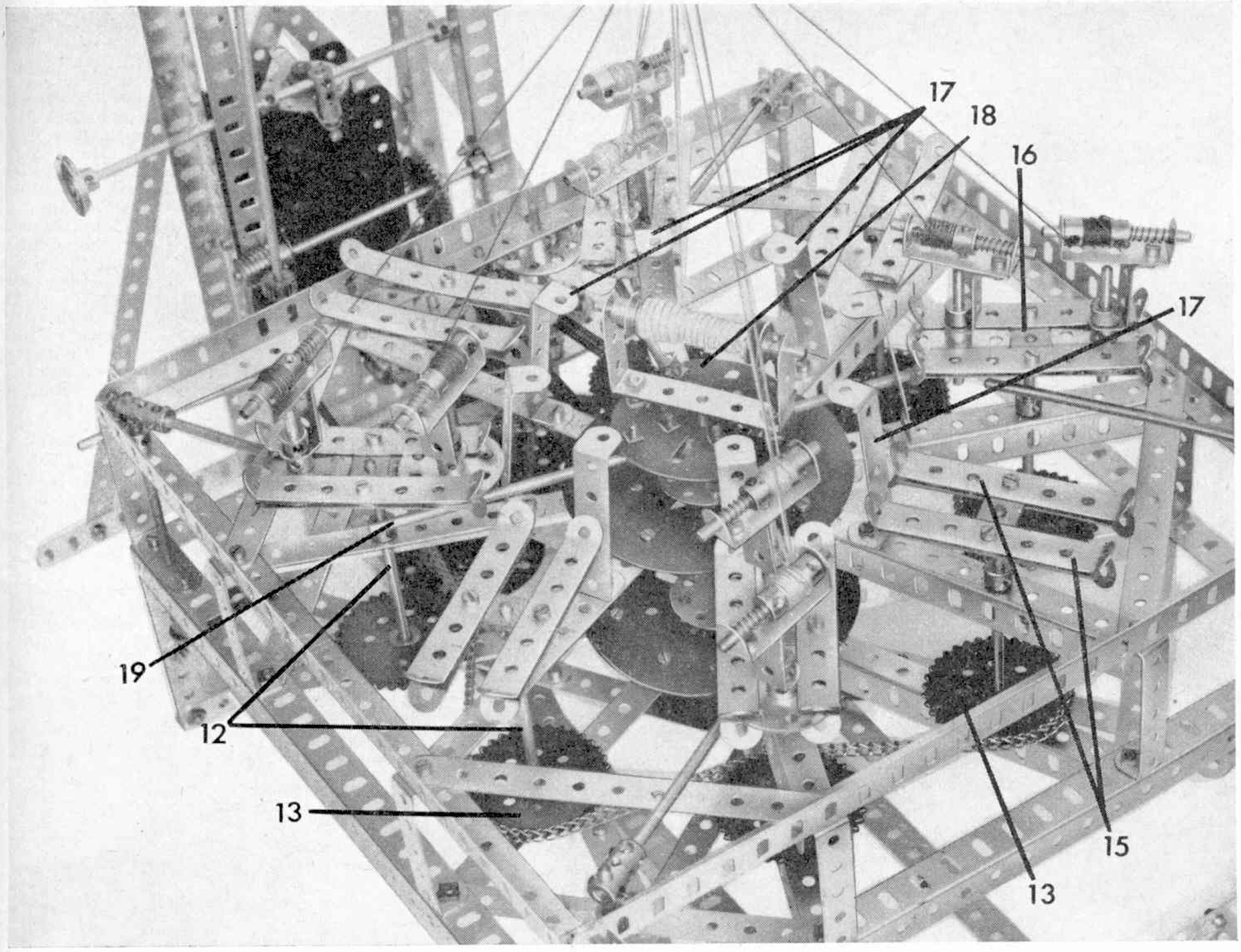
Messrs. Woods stress that an electric motor with variable speed should always be used to drive the gearbox. They used a Meccano Power Drive Unit operated from a model railway mains controller, with the Power Drive Unit in the 16 : 1 ratio. In this way, they were able to boost the power just as first gear was about to disengage, thereby causing the gearbox to change into second gear with a positive action. Incidentally, the box can be fitted with a third gear by mounting two 1 in. Gears, one above Pinion 9 and the other above Gear Wheel 12 on the respective Rods. The following parts list, however, applies only to the unit as it appears here.

Parts required

4 of No. 2	4 of No. 22a	5 of No. 38
7 of No. 5	2 of No. 24	1 of No. 45
2 of No. 6	1 of No. 25	1 of No. 48d
2 of No. 6a	1 of No. 26	1 of No. 52
4 of No. 12	1 of No. 27	3 of No. 59
2 of No. 12a	1 of No. 27a	3 of No. 126a
1 of No. 15b	40 of No. 37a	2 of No. 147b
2 of No. 16b	36 of No. 37b	

BRAID THE MECCANO WAY





ONE of the most popular large models we have featured in the M.M. recently proved to be the Loom that appeared in the July issue. I believe that this was because it actually wove material and, therefore, I am expanding the theme this month with a working Braiding Machine. The model in question, however, is rather complicated, both in design and operation, and so it is necessary for me to go into great detail. Unfortunately, I don't have enough space in this issue to give all the building instructions required to complete the fine details, and so we will cover as much as possible here, finishing the machine next month.

As you probably know, braiding machines are used for weaving a covering on such things as shoe-laces, some kinds of electric flex, elastic, etc. They are fascinating things to watch in operation, performing all sorts of complex movements. The model described below reproduces all these movements, but I must stress that, because of the complexity of these movements, enormous care must be taken with their setting, and the construction of the moving parts involved. To help follow the instructions, I have split the model into easily-identified sections, as follows:

Main framework

Two identical units are each obtained by bolting eight $5\frac{1}{2}$ in. Angle Girders 1 to a 4 in. Circular Plate 2, to the centre of which a Wheel Disc 3 is fixed. Great care must be taken to see that the corresponding Angle Girders in the two units lie exactly one above the other. Rods will later be journalled in these Girders, and it is essential that the Rods will be perfectly vertical.

Using $12\frac{1}{2}$ in. Angle Girders, two 'squares' 4 and 5 are built up and are connected together at the corners by four $7\frac{1}{2}$ in. Angle Girders 6, with their elongated-holed flanges pointing outward. The upper square is secured through the top hole of Girders 6, while the lower square is fixed through the seventh hole of the Girders. At two sides, the lower ends of Girders 6 are joined by $12\frac{1}{2}$ in. Angle Girders 7 and 8, Corner Gussets 9 being included to increase rigidity. It is essential that the completed structure is rigid and exactly level.

A $5\frac{1}{2}$ in. Strip 10 is now bolted across each corner of both squares at the same time securing six $2\frac{1}{2}$ in. by $\frac{1}{2}$ in. Double Angle Strips 11 between the two squares, two Double Angle Strips along each of three sides. The securing Bolts also fix Girders 1 to the squares.

Seven $4\frac{1}{2}$ in. Rods 12, each carrying a 2 in. Sprocket Wheel 13 are journalled in seven sets of Angle Girders 1, being held in place by Collars. A $6\frac{1}{2}$ in. Rod 14 also carrying a 2 in. Sprocket Wheel, is journalled in the eighth set of Girders. Note that Rods 12 must protrude upwards as far as possible, with Rod 14 protruding a similar distance. A length of new Sprocket Chain is now passed alternately around the outside of one Sprocket Wheel and around the inside of the next, and so on until all eight Wheels have been dealt with, when the ends of the Chain are joined to form an endless belt which should be fairly taut but free-running.

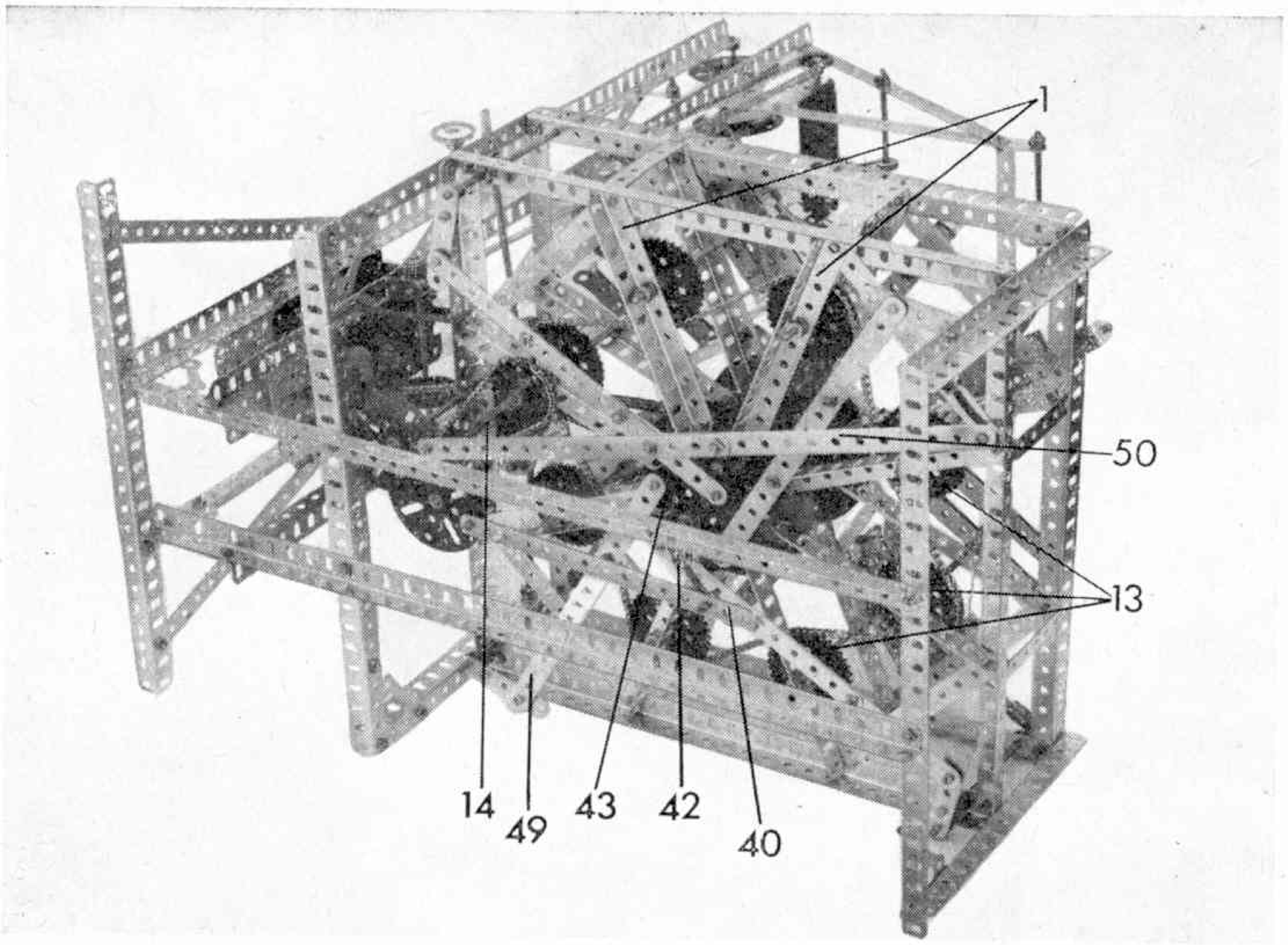
Carrier slides

Eight identical carrier slides are each built up by bolting four $3\frac{1}{2}$ in. Strips 15 to the arms of a Double Arm Crank 16, overlaid by a $1\frac{1}{2}$ in. Strip 16, two to the upper sides and two to the lower sides of the arms. The ends of Strips 15 are bent to form a sharp 'V' that acts as the 'lead in' for the thread carriers. The completed slides are mounted on Rods 12 and 14, but their position on the Rods is highly critical, therefore great care must be exercised. Each Strip 15 must run exactly parallel to the $5\frac{1}{2}$ in. Angle Girder 1 above which it is mounted, and each end of each slide must be at exactly the same height as the corresponding ends of the adjacent slides at each side. When Rod 11 is turned the ends of adjacent slides must meet exactly without quite touching each other. If they do touch, this means that the ends of Strips 15 have not been sufficiently bent.

Bolted to each upper Angle Girder 1 is a $2\frac{1}{2}$ in. by $\frac{1}{2}$ in. Double Angle Strip 17, its lugs pointing outwards, which is bent inward slightly. This will help to hold the thread carriers in the slides when the model is in motion.

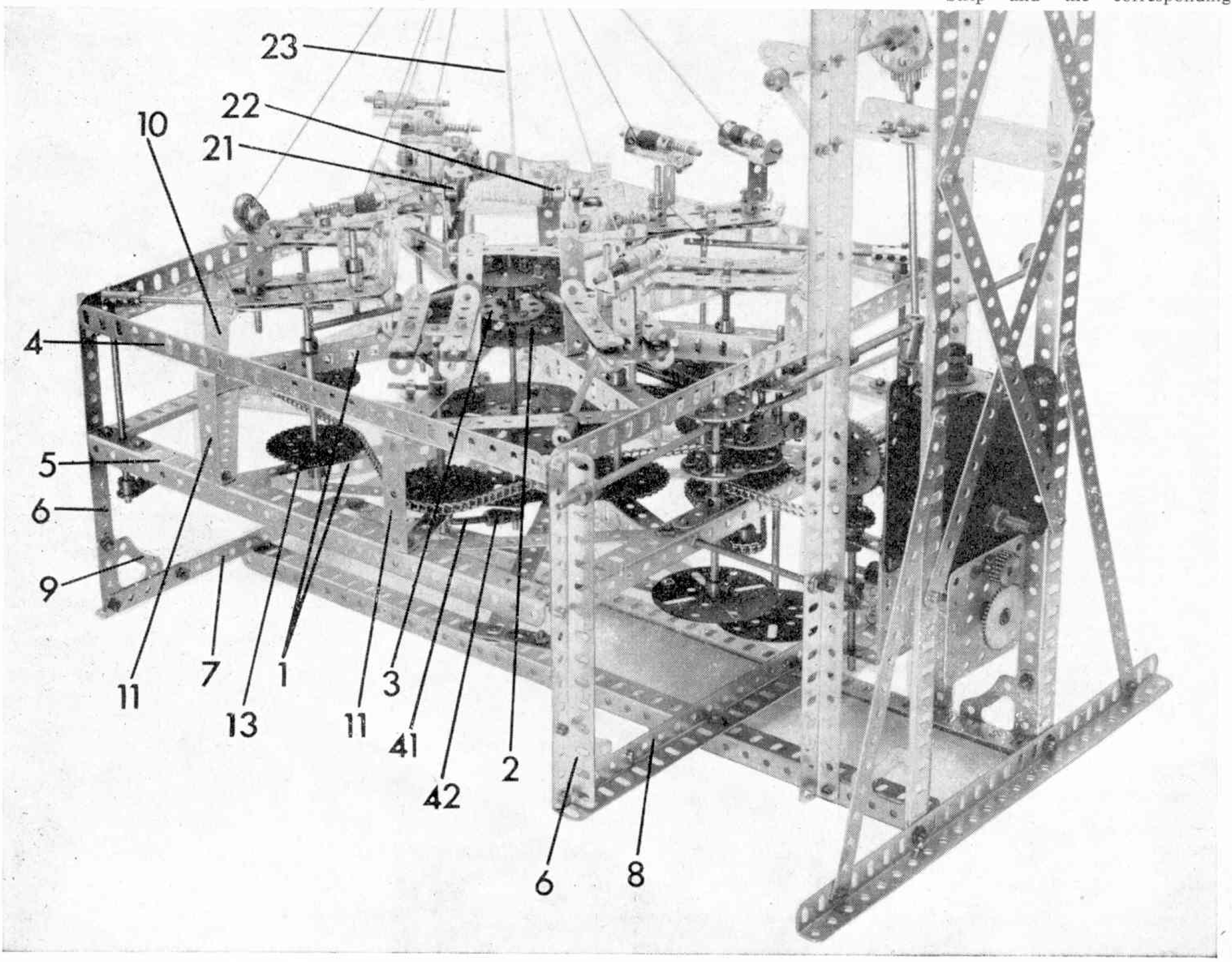
Inside transferring levers

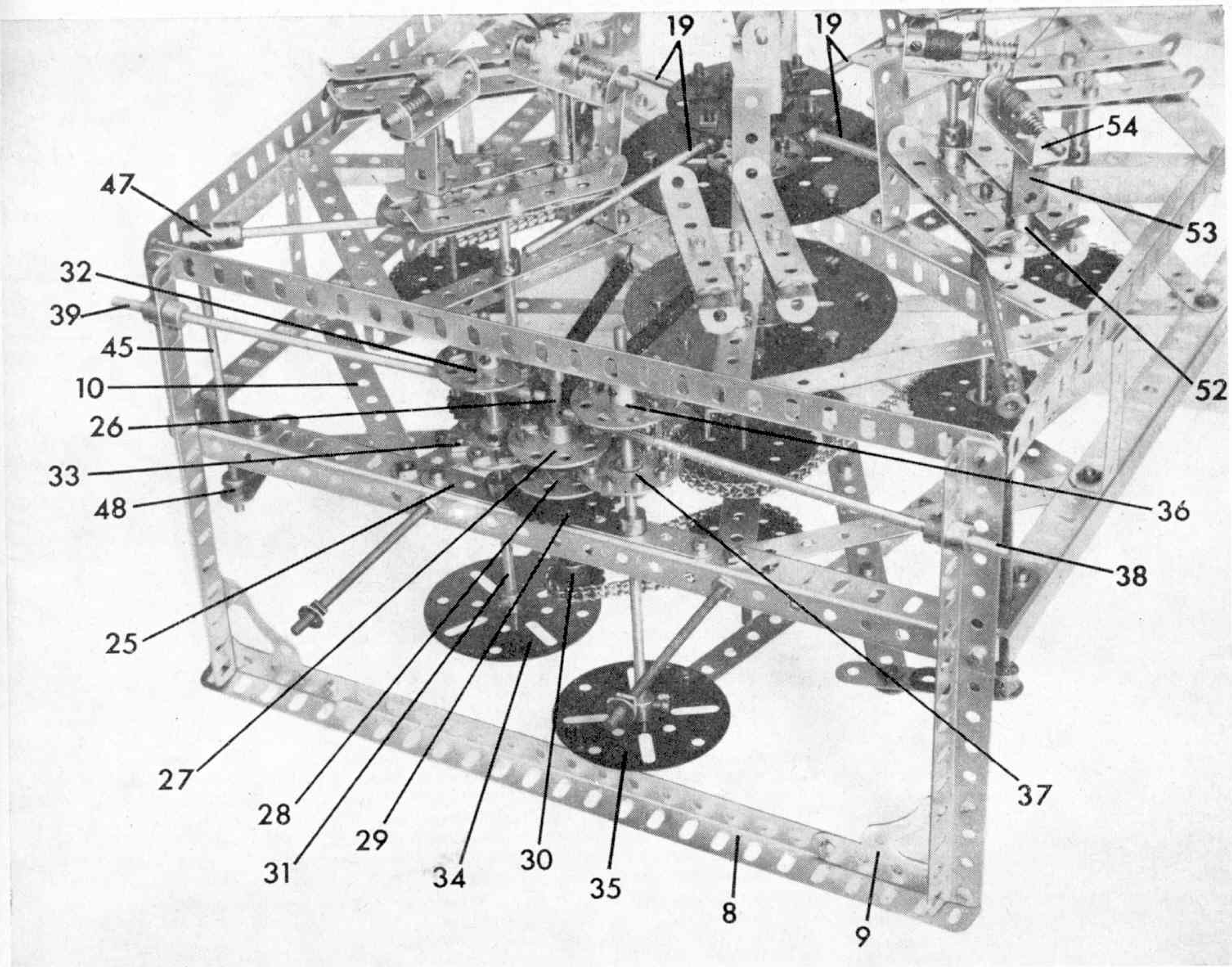
Tightly fixed to the underside of a Face Plate 18 are eight Handrail Supports 20, arranged



in four pairs with the shanks of the Supports passing through the circular holes in the Face Plate. Four $4\frac{1}{2}$ in. Rods 20 are mounted one in each pair of Handrail Supports, being positioned exactly at right angles, both to each other and to the edge of the Face Plate. A $2\frac{1}{2}$ in. by $1\frac{1}{2}$ in. Double Angle Strip 20 is now fixed to the top of the Face Plate by $\frac{1}{2}$ in. Bolts, with three Nuts positioning it so that it lies just above the boss of the Face Plate. Journalled in the lugs of the Double Angle Strip is a 3 in. Rod held in place by two $\frac{1}{2}$ in. Pulleys 21 and 22. This Rod forms the drum carrying the central or 'insertion' cord 23 around which the braiding will be performed. It is braked by a $2\frac{1}{2}$ in. Driving Band wrapped around one of the Pulleys and fastened to one lug of the Double Angle Strip. A $6\frac{1}{2}$ in. Rod 24 is journalled in Wheel Discs 3 bolted to Circular Plates 2, being held in place by Collars. Faceplate 18 is fixed on the top of the Rod and should lie a distance of one inch above the upper Circular Plate.

A $4\frac{1}{2}$ in. Strip 25 is bolted to the centre of one of the $12\frac{1}{2}$ in. Angle Girders used in square 5 to form a strong bearing for a 4 in. Rod 26 journalled in this Strip and the corresponding





12½ in. Angle Girders. This Rod carries, between the Angle Girders, a Collar, two eight-hole Bush Wheels 27 and 28 and a 1½ in. Sprocket Wheel 29, this Sprocket Wheel and the Collar holding the Rod in place. Bush Wheels 27 and 28 each carry four Bolts, in adjacent holes, held in place by Nuts. It is advisable, incidentally, to secure the Bush Wheels on the Rod with two Grub Screws in each boss. A ¾ in. Sprocket Wheel 30 is added to the lower end of the Rod.

Also journalled in Strip 25 and the corresponding Angle Girders is a 5 in. Rod 31 held in place by Collars. Mounted on this Rod, between the Girders, are two eight-hole Bush Wheels 32 and 33, while a Face Plate 34 is fixed on the lower end of the Rod. Fixed in diametrically opposite holes of Bush Wheel 32 are two Threaded Pins, pointing downwards, whereas eight Bolts are fixed by Nuts in the eight holes in the face of Bush Wheel 33. A 6½ in. Rod, also carrying a Face Plate 35 and two Bush Wheels 36 and 37 with Threaded Pins and Bolts, is itself journalled in Strip 25 and the corresponding Angle Girders. As shown, Bush Wheels 33 and 37 are arranged so that they lie between Bush Wheels 27 and 28 on Rod 26. When this Rod is revolved the heads of the Bolts fixed in Bush Wheel 27 engage with the heads of the Bolts in Bush Wheel 37, while the Bolts in Bush Wheels 28 and 33 also engage with each other. Two 6½ in. Rods 38 and 39 are loosely held in elongated holes of nearby Angle Girders 6 by Collars, and are held tight against the Threaded Pins in Bush Wheels 32 and 36 by Tension Springs anchored to two Angle Girders 1 by Hooks.

Lock-nutted to Face Plate 34 is a 7½ in. Strip 40 through the third hole from the opposite end of which a Collar is fixed by a Bolt passed into one transverse tapped bore. A Flexible Coupling Unit 41 is held in this Collar and its other end secured in a Coupling 42 mounted on the lower end of Rod 24. Before this Coupling is added, however, a Face Plate 43 is loosely mounted on the Rod. The whole arrangement must be so adjusted that the Flexible Coupling Unit is bent an equal distance in either direction as the revolving action of Face Plate 34 moves Strip 40 to and fro. Note that Rod 38 should rest on both Threaded Pins in Bush Wheel 32 when Strip 40 is at the maximum limit of its throw in either direction. This will keep the transfer levers in contact with 2½ in. by ½ in. Double Angle Strips 17.

Outside transferring levers

At each corner of the lower square a 1½ in. Strip 44 is bolted. These provide extended bearings for three 5 in. Rods 45 and a 6 in. Rod 46, journalled in the Strips and the corresponding Angle Girders, and held in place by Collars. A Coupling 47, carrying a 4½ in. Rod in its longitudinal bore is mounted on the top of each of these Rods, while a Crank 48 extended by a 2½ in. Strip, is secured on the lower end. Lock-nutted to the 2½ in. Strip is an 8 in. compound strip 49, obtained from two 5½ in. Strips, the other end of which is lock-nutted to Face Plate 43. Note that the strips 49 are lock-nutted through the second holes in the 2½ in. Strips. A 13 in. compound strip 50, obtained from two 7½ in. Strips, is now lock-nutted to Face Plate 35, and is fixed to Rod 46 in the same way as Strip 40 is fixed to Rod 24, i.e. by a Collar, Flexible Coupling Unit and Coupling. Sprocket Wheel 30 is connected by Chain to a 1½ in. Sprocket Wheel 51 secured on Rod 14.

Carrier heads

Eight units, known as 'Carrier Heads', which carry the actual braiding thread, are required, and each is identical in construction. A Bush Wheel 52 is mounted about a half-inch from the end of a 2 in. Rod. A 1 in. by ½ in. Reversed Angle Bracket 53 is then added and is held loosely against the boss of the Bush Wheel by a Collar. Bolted to the upper lug of the Reversed Angle Bracket is a 1½ in. by ½ in. Double Angle Strip 54, in the lugs of which a 2 in. Rod is journalled. Two Collars and a Compression Spring are mounted on this Rod as shown to form a drum.

The carrier heads complete the most difficult sections of the model and, I'm afraid, are the last parts that we have room for this month. Next month I will describe construction of the take-up framework, the method of drive and how to prepare the model for braiding. **—Spanner.**

CONTEST COMMENTS....

"IT'S getting harder to decide every year", said one of the judges when the mammoth task of selecting the winners of Meccano Model-Building Contest '66 had been successfully completed. "The standard of building, as a whole, is certainly improving tremendously. In every past competition we have received a fairly large number of entries that obviously fall below prize-winning standard, making our job that much easier, but this time there were hardly any obvious rejects. They were nearly all well-built, carefully thought-out models, many of which showed definite originality, and I only wish we could have given them all a prize."

Having seen every single entry in the competition, I can endorse the judge's words. By far the majority of entries were well up to scratch and the job of deciding the overall winners is one which I would not have chosen for myself. I must say, however, that I fully agree with the judges' final choices.

For my own part, I was greatly surprised by the quantity of overseas entries—far more than in the last few competitions. The quality of overseas models, too, was excellent, as is witnessed by the number of prize-winners from abroad. India made a particularly fine showing, which might be thought unusual, owing to the fact that Meccano is almost impossible to obtain over there. If you remember, however, we stressed before the contest that small, well-built models stood just as much chance of success as large constructions, and the India-based competitors took this to heart. Kenneth White, in school at Panchgani, Maharashtra State, for example, gained Second Prize in Section A with a tiny model of a Lambretta Scooter that was only seven inches long and which used very few parts. In spite of this it looked just like the original. (More details in a future issue—Ed.)

In the same way Dipak Shah of Calcutta netted a 10s. 6d. prize with a working Box-Filling Machine. Admittedly, this was larger than the Scooter, but no parts were wasted in it. Here, of course, lies the secret. The less complicated a Meccano model can be made without distorting or detracting from its features, the better. Despite this, it's surprising how many people build a perfectly good model that does all it was designed to do, but who find that they have a good many parts left over when it is finished. Consequently, instead of congratulating themselves, they set to work to use up as many parts as possible by embellishing the model with all sorts of unnecessary bits and pieces.

A perfect example of a delightful scale model that uses few, if any, unnecessary parts is the 1914 Dennis Fire Engine which gained First Prize in Section A for J. C. Boothman, of Datchet, Bucks. If you are familiar with the real-life vehicle, you will know from the photograph on this page that Master Boothman's model is a very good representation, although in no way flamboyant. It was the builder's obvious intention here to produce a neat, but uncomplicated scale model of his chosen subject, rather than a highly-complex, mechanism-packed construction only vaguely reminiscent of the subject. In a model of this sort, of course, some additional features are an advantage, a fact not forgotten by Master Boothman. His Fire Engine is fitted with steering, working electric lights and removable fire escape which is, itself, fully extendable.

I do not mean to suggest by all this that it is good policy never to go into minute detail. On the contrary, it can often be advantageous and even necessary to reproduce small detail, but only if you have the parts and skill at your disposal. Assume, for example, that you are building a large model of a pretty complex piece of apparatus. If you don't go into detail, the resulting construction will almost certainly look unrealistic, amateurish and unfinished. If, therefore, you haven't got the parts and skill to finish a complicated model successfully, don't even start to build it.

Mr. R. H. Groen, of Amsterdam, Holland, is a man not only with an abundant supply of parts, but also with more than enough skill to use them. He won First Prize in Section B with a scale model of an American Shay Narrow-gauge Locomotive that is as close to perfect as it's possible to get with Meccano. To be quite honest, when I first glanced at the photographs Mr. Groen sent with his entry, I thought I was looking at a real locomotive!

This is a case of detail at its best. Besides the basic lines being captured exactly, just about everything carried by the real locomotive is reproduced on the model—Stephenson valve gear, crankshaft, cylinders, steam reversing gear under the cab, drive shafts, ashpan, sandboxes, headlamp, bell, dynamo, Westinghouse Duplex air-pump, various steam and water pipes, etc., etc. Even inside-cab detail is featured, such as the hand-brake handle, water gauge, regulator handle, reversing handle, etc. Nor is the locomotive a static display model. It's powered by two electric motors, bolted together and mounted inside the firebox, which drive the crankshaft via intermediate shafts and gearing. From here, all the appropriate bogie axles are driven. Overall, the locomotive with tender is 3 ft. 9 in. long, 9 in. wide and just over 1 ft. high. It weighs 31 lb. and has a tractive force of 7 lb.

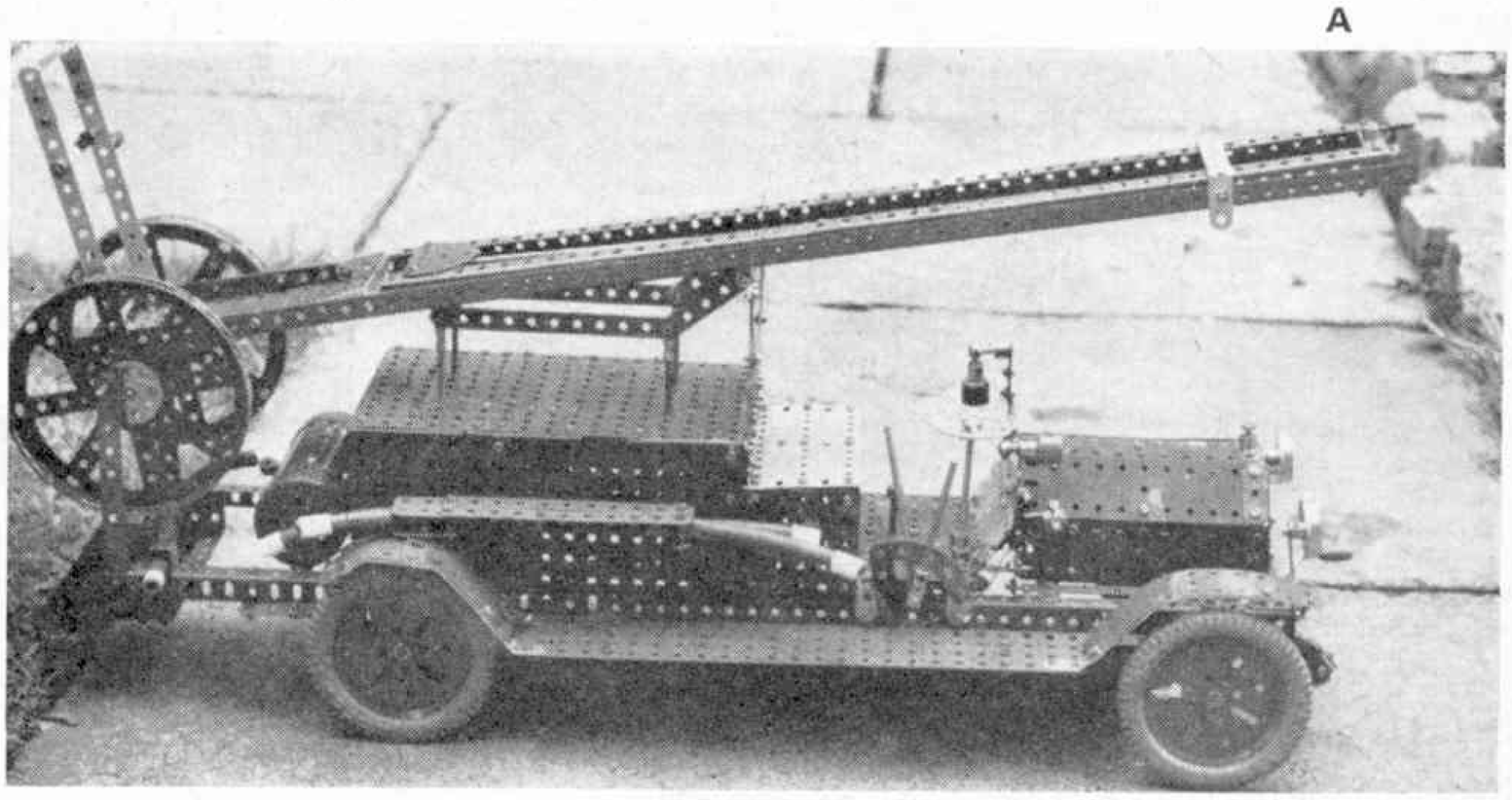
Mr. Groen's model was well worthy of First Prize, but Mr. Groen was by no means the only entrant in either Section of the competition who went in for fine detail. Ten year old Dixon Upcott, of South Harrow, Middlesex, gained third place in Section A with a very well-detailed but neat model of a Mobile Crane, an illustration of which was published in these pages last month. While the general outside appearance of this model was appealing, it was the excellent chassis and mechanical features that most impressed the judges. Some of these features can be seen in the accompanying picture, and include single-plate clutch, three-speed and reverse gearbox, differential and correct Ackermann steering. Power for the chassis is provided by an electric motor, housed under the hinged bonnet, while a separate motor is built into the crane body to drive the three movements of the crane—slewing, hoisting and vertical jib motion — all controlled by individual levers. A single lever mounted on the steering column determines which motor is to receive current, obtained from an external source. Considering that Dixon is only 10 years old, his model is really amazing.

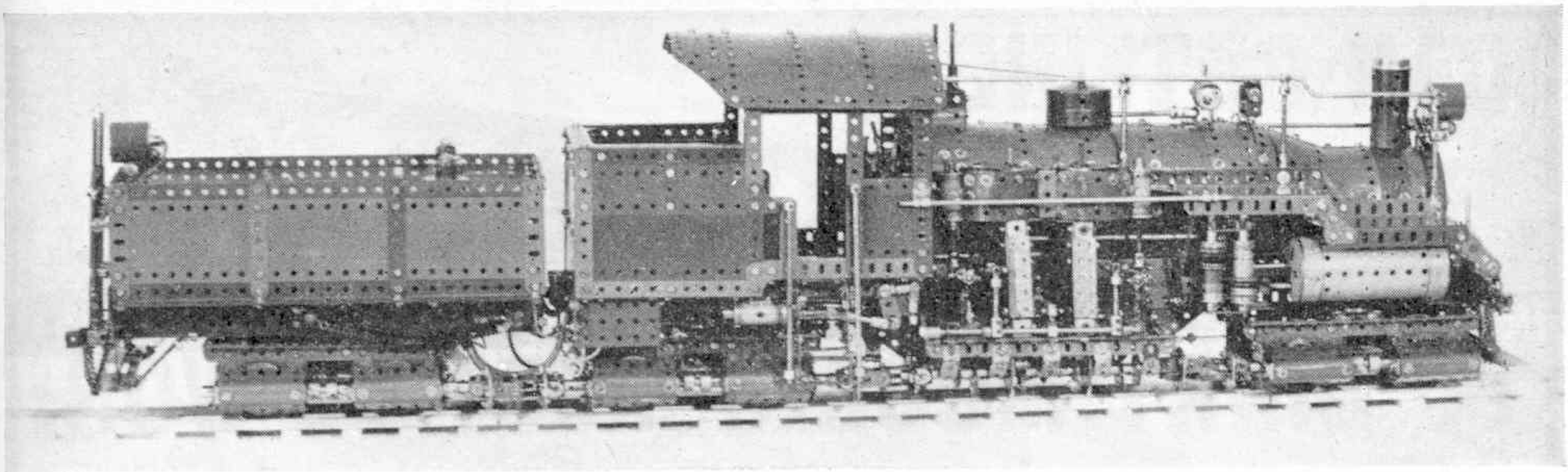
Also illustrated last month was an enormous Big Wheel that netted Second Prize in Section B for Mr. H. J. Halliday, of London, S.E.15. This was, in effect, two wheels in one, consisting of a 2 ft. 4 in. long revolving beam, at each end of which an eight-chair passenger-carrying wheel was mounted. The framework carrying the main beam was, itself, mounted on a revolving plate so that, when the model was in operation, the whole unit turned in the horizontal plane. At the same time a Pinion-operated Sprocket-and-Chain arrangement caused the main beam to revolve in a vertical plane, while another Sprocket-and-Chain arrangement working through a light friction drive caused the passenger-carrying wheels also to revolve, but in the opposite direction to the beam. All three movements combined to make a very impressive display.

A fascinating and popular subject for Meccano builders is the Traction Engine. Third place in Section B was won by Mr. J. F. Hulse, of Shrewsbury, Shropshire. Mr. Hulse's model carries working representations of all the main features of the prototype.

Unfortunately, lack of space prevents me from covering any more models, but before finishing I should again like to stress that by far the majority of entries in Model-Building Contest '66 were well up to prize-winning standard. Regrettably, however, we could only award a limited number of prizes; therefore, if you were not among the successful entrants, it was probably because the judges had to be far more critical than in past contests. Better luck next time!

A





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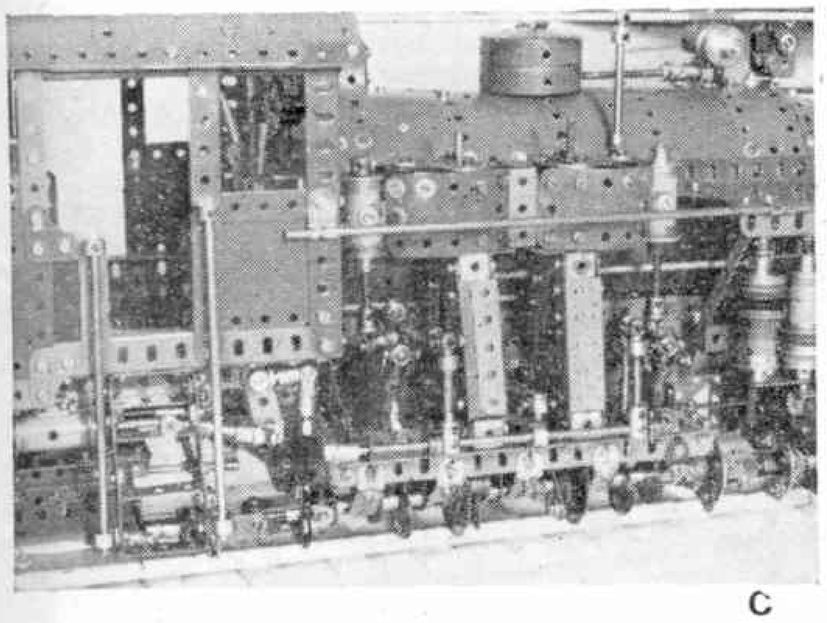

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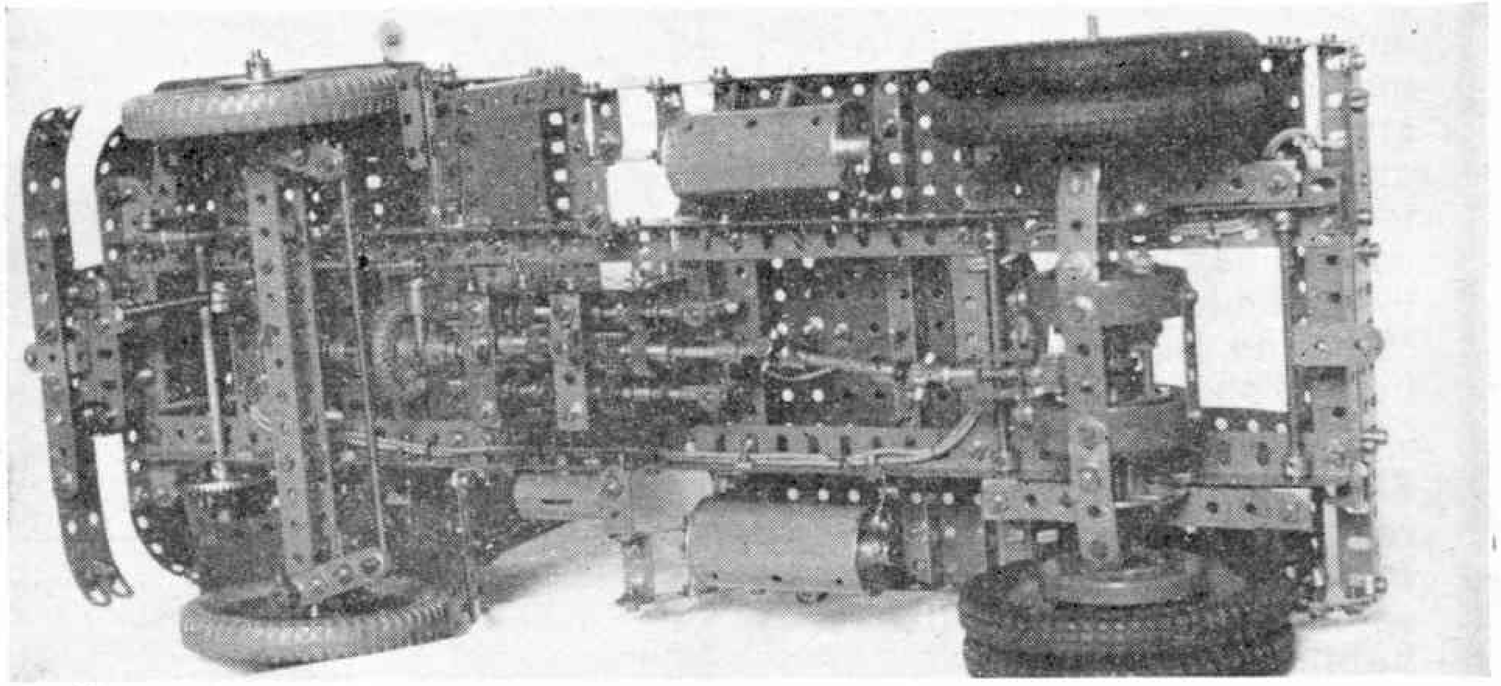


D

E

A. The 1914 Dennis Fire Engine which won First Prize in Section A for J. C. Boothman, Datchet, Bucks.

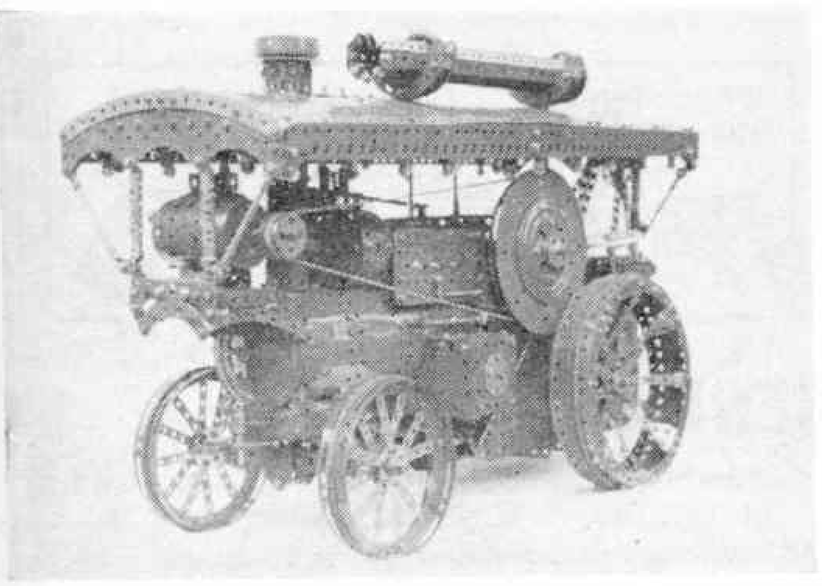
B. Overseas reader Mr. R. H. Groen of Amsterdam, Holland gained first place in Section B with this minutely-detailed model of an American Shay Narrow-gauge Locomotive

C. 'A case of detail at its best.' A close-up view of Mr. Groen's Locomotive showing, among other things, the vertical cylinders, driving onto the longitudinal shaft, unique to the Shay-type Locomotive

D. An underside view of the Mobile Crane which netted Third Prize in Section A for Dixon Upcott of South Harrow, Middx. The clutch, three-speed and reverse gearbox, and differential can be clearly seen

E. Also illustrated last month was this enormous Big Wheel, designed and built by Mr. H. J. Halliday, London, S.E.15. It won him Second Prize in Section B

F. A splendidly-proportioned and very well-detailed model of a Showman's Traction Engine which gained third place in Section B for Mr. J. F. Hulse of Shrewsbury, Shropshire



F

CAR OUTLINE COMPETITION

50 DINKY MODELS MUST BE WON!

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

Five Models will be reserved for Overseas Readers. These will be selected one month after publication date

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

The vehicle illustrated is

.....

.....

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NAME .....

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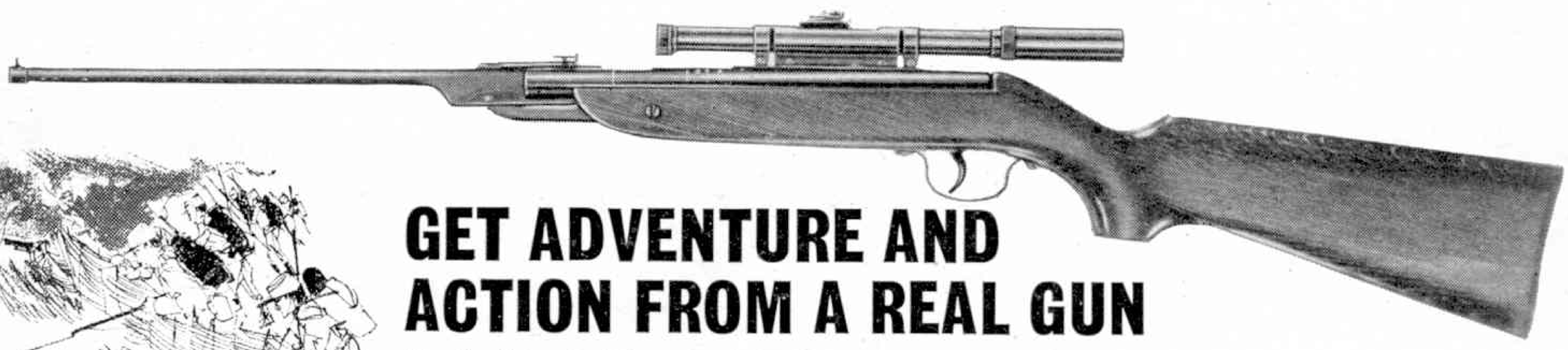

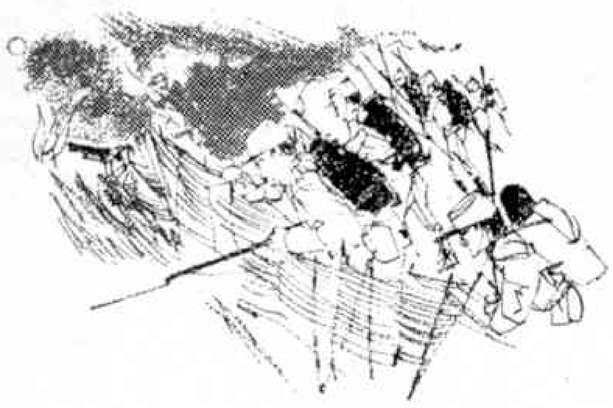

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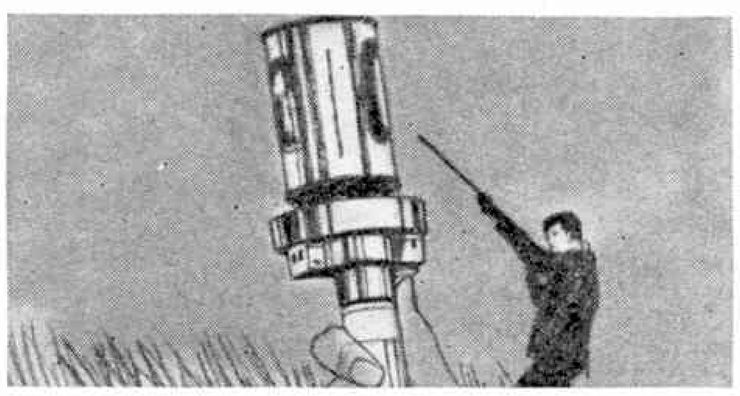
The Confederates' Army in the U.S. Civil War were equipped with Webley revolvers. Expert shots today have the same feeling . . . a proud name, for fine guns (and they often pay £230-plus for their Webleys!)

The most accurate air-weapon you can buy anywhere is Britain's Webley. The one at the top of this page is the **Jaguar** air-rifle—light, strong—£6.19.6. FREE, with it—a full shooting kit; target-holder, target cards, pellets, darts, and Webley oil.

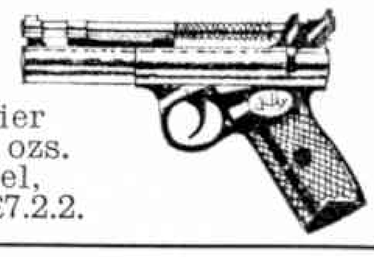
You should always use Webley special pellets (3/9 for 500) and darts (2/3 for 12). Collect the coupons from four tins of Webley special pellets and send 3/- P.O. for a Webley Marksman's Badge. The Webley long-range telescopic sight on the Jaguar you can buy separately (£3)–an expert's sight, with 4 x magnification. Other Webley rifles are: Ranger .177, £7.19.11, Falcon .177 or .22, £11.18.7. Mk III £21.6.5.



Action out-of-doors; Webley target-launcher (4gns.) simple, safe. Uses .22 blank cartridges. Sends old mineral and juice cans over 60ft. into the air. Try your skill at moving targets this way.

Shoot with safety. Never point a gun, unloaded or not, at anyone. Never handle a gun before checking that it's unloaded. Always carry it so that the muzzle is fully under your control. Never leave your gun where people younger or less responsible than you can meddle with it. Never leave a loaded gun unattended. Always make certain no-one is behind your target before opening fire.

If you prefer an air-pistol, the Webleys are fast and accurate. Premier .177 or .22, weighs 37 ozs. £10.13.3. Junior model, .177 weighs 24 ozs., £7.2.2.



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- ☐ I-Cor
- ☐ Ian Allan
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use meccano magazine

Classified Columns for your Sales/Wants/Swops

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

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

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

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

1	2	3
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10	11	12
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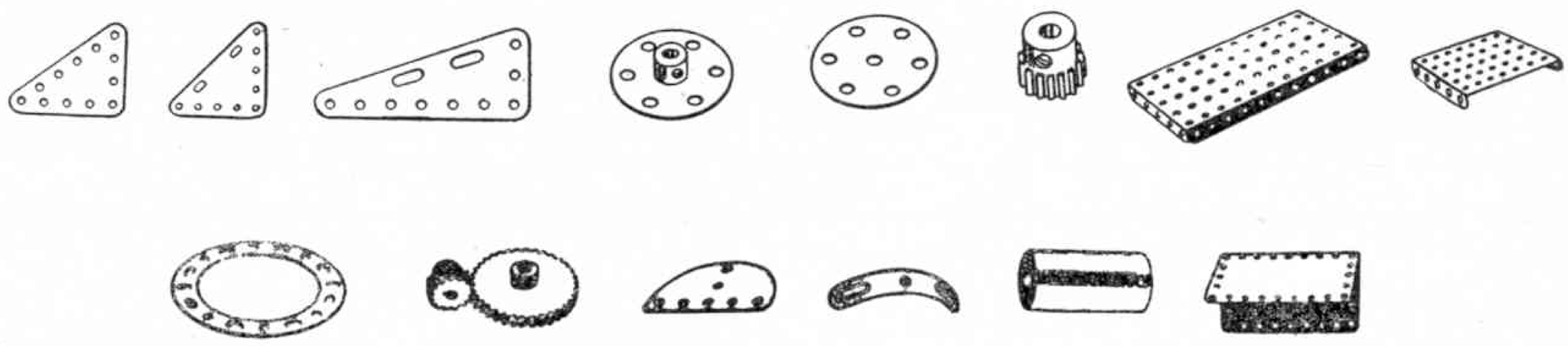
If you require further words please continue on another sheet of paper



Dealers who specialise in Meccano spare parts

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

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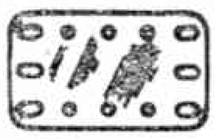

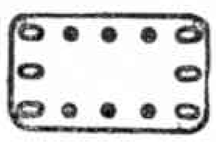

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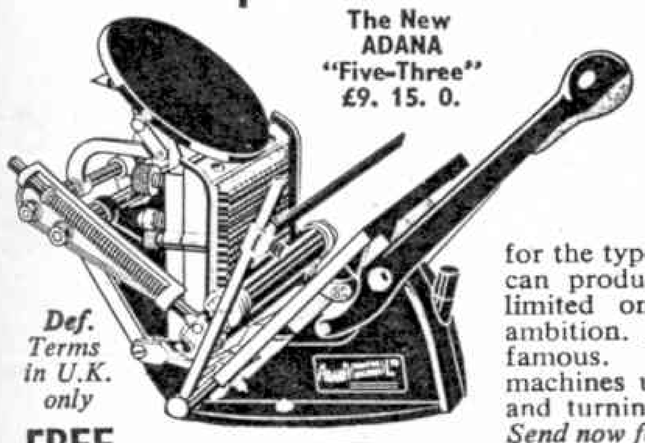

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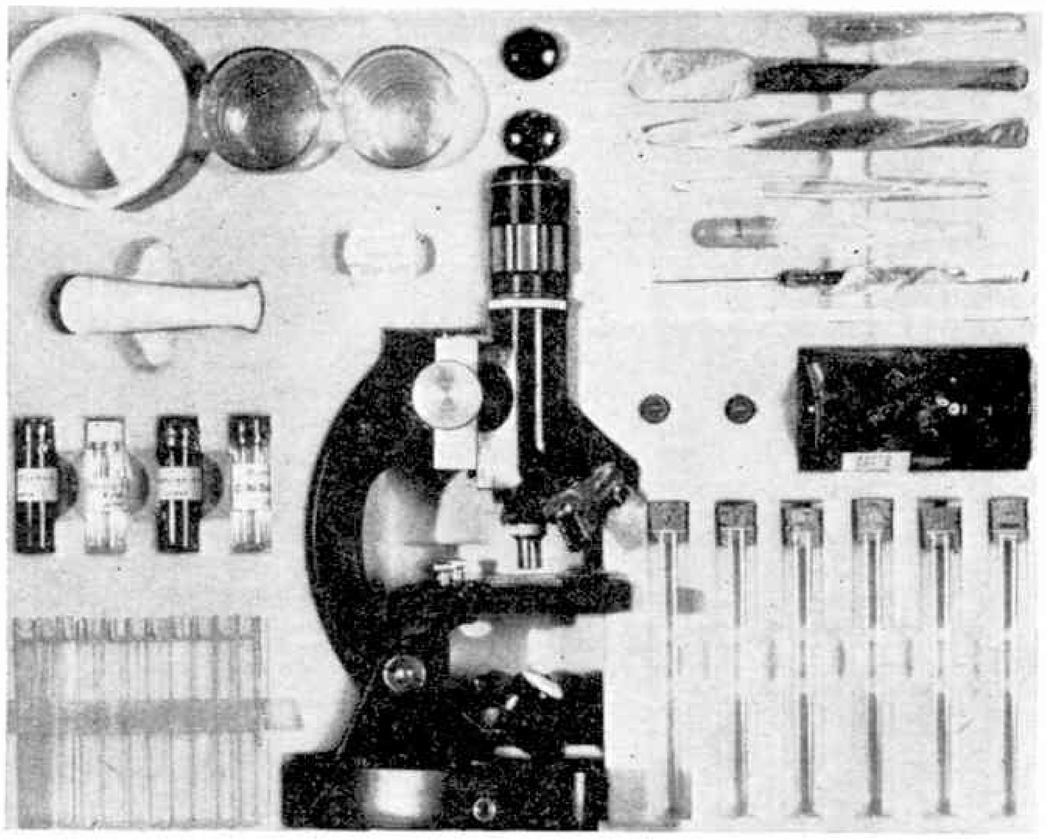

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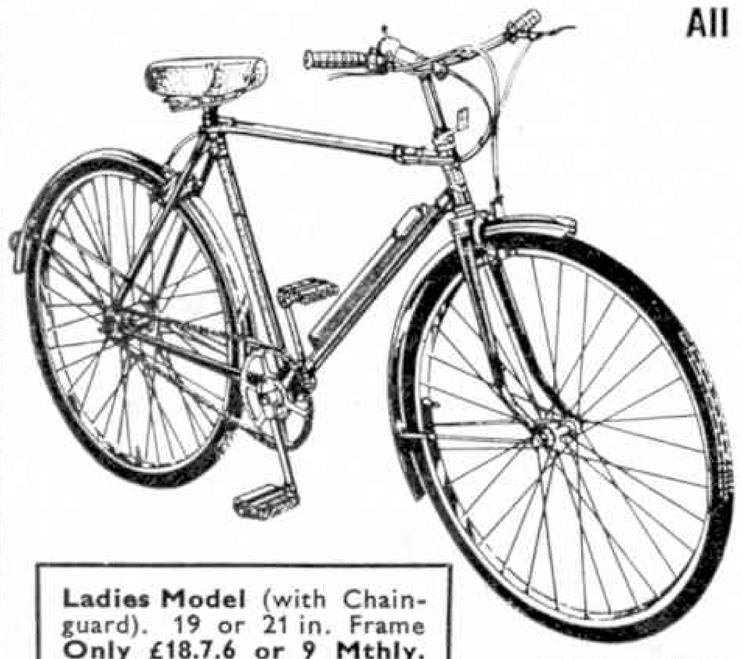

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• Meccano Magazine, June 1940 to December 1945, three missing, offers; also Model Engineers, May 1953 to June 1955, two missing. Jones, 8 Grosvenor Road, Solihull, Warwickshire.
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• "Flight" aviation magazine, June 1960—today. "M.M.'s" January 1960—August 1964. Assorted Hornby 00 3-rail stock and accessories including two controllers, 3-rail Wren track, Dinky toys, "Air Pictorials", "Autocars". S.a.e. to A. H. Evans, Crumwel, Church Road, Freshwater, Isle of Wight.
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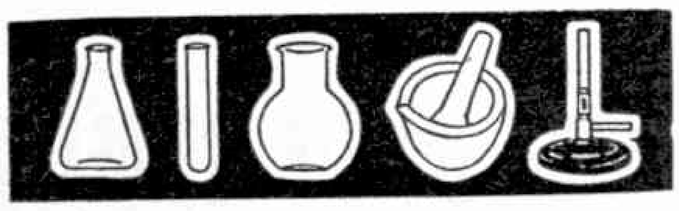

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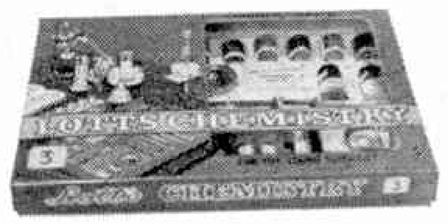

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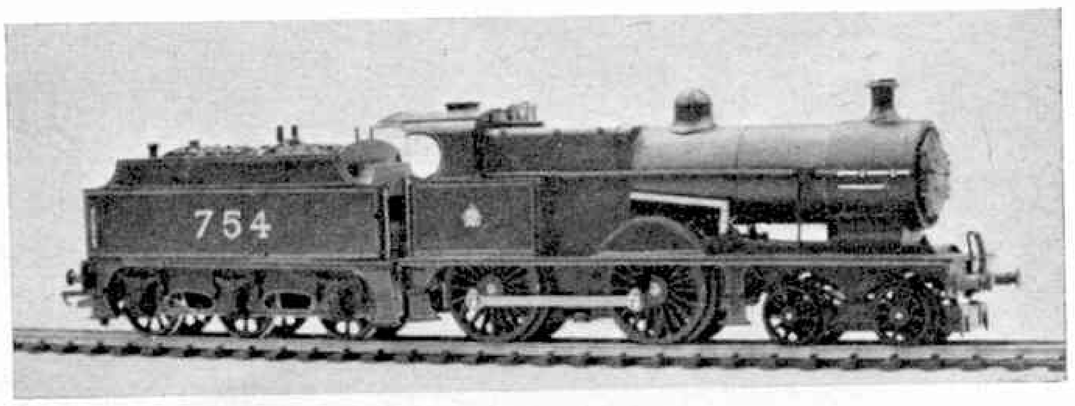

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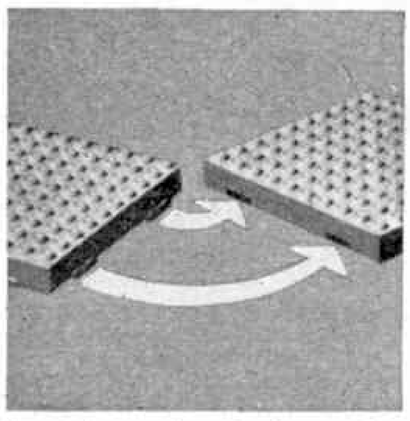

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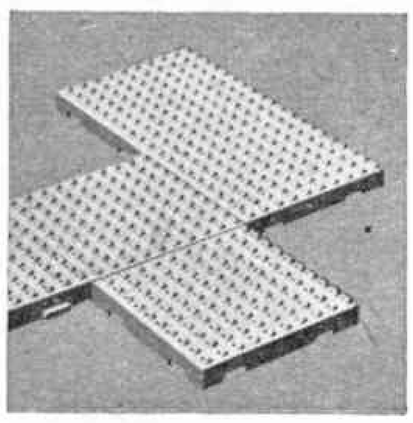
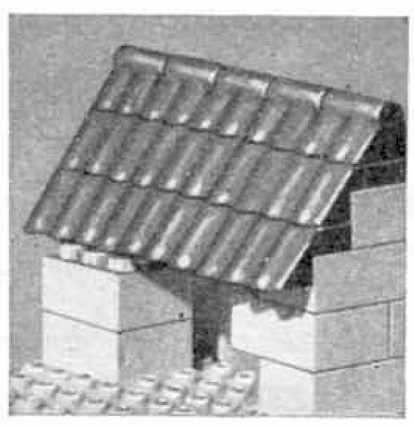
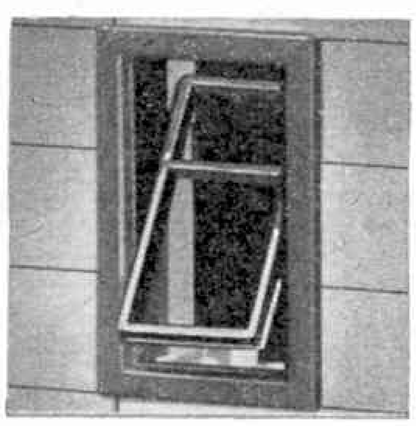
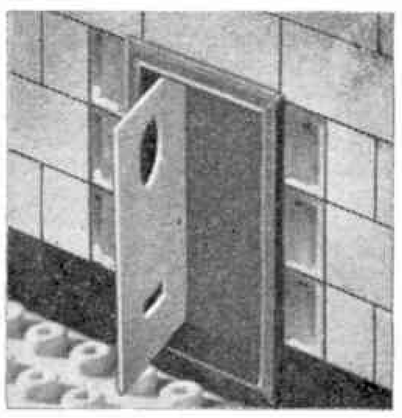




roofs that have tiles and look just like real roofs

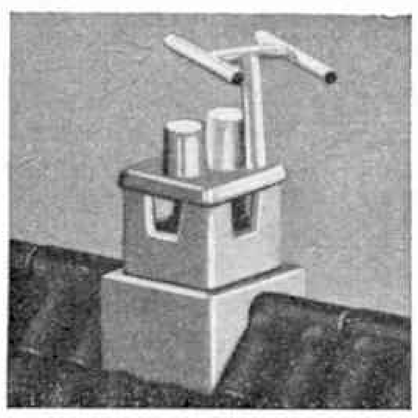


windows that open and shut



doors that are hinged to open and close

neat little bay windows with flowers in a bowl



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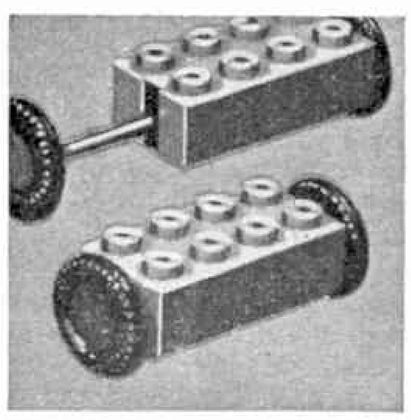

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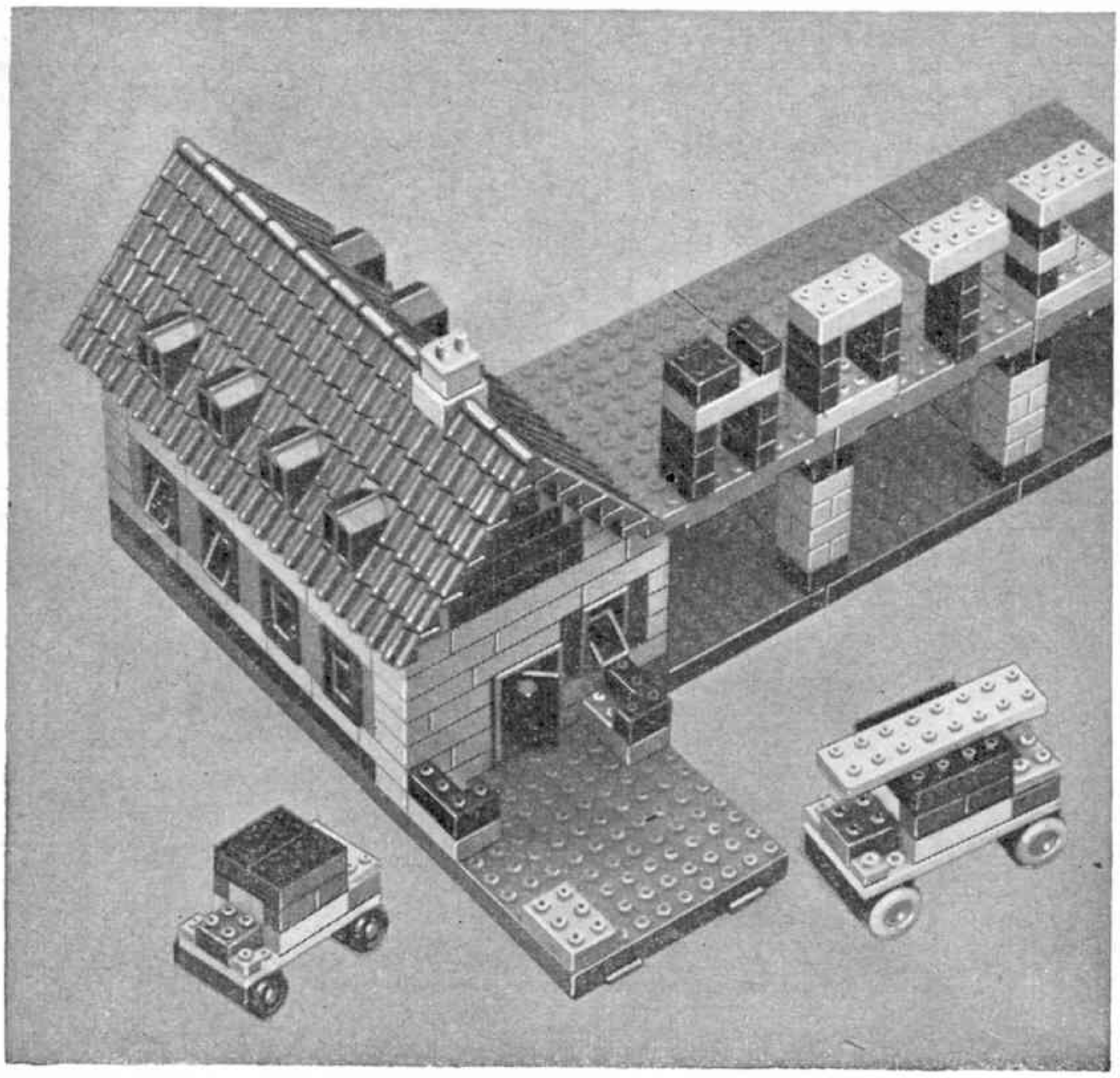

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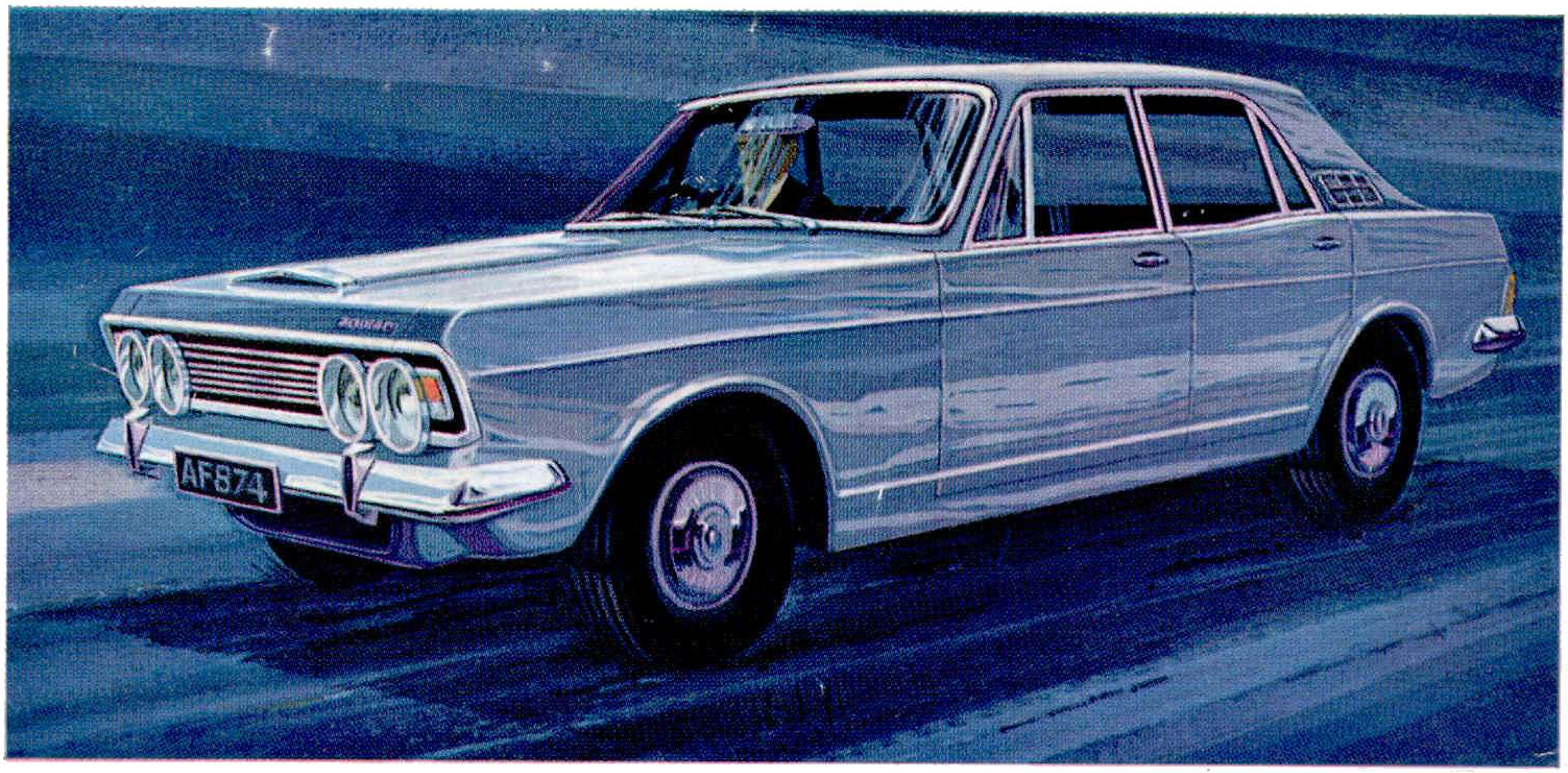

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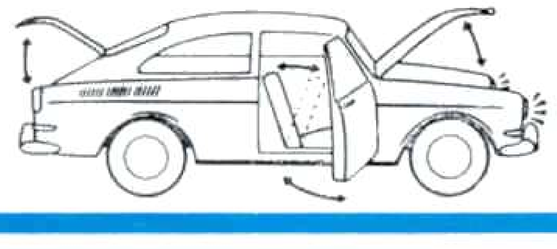

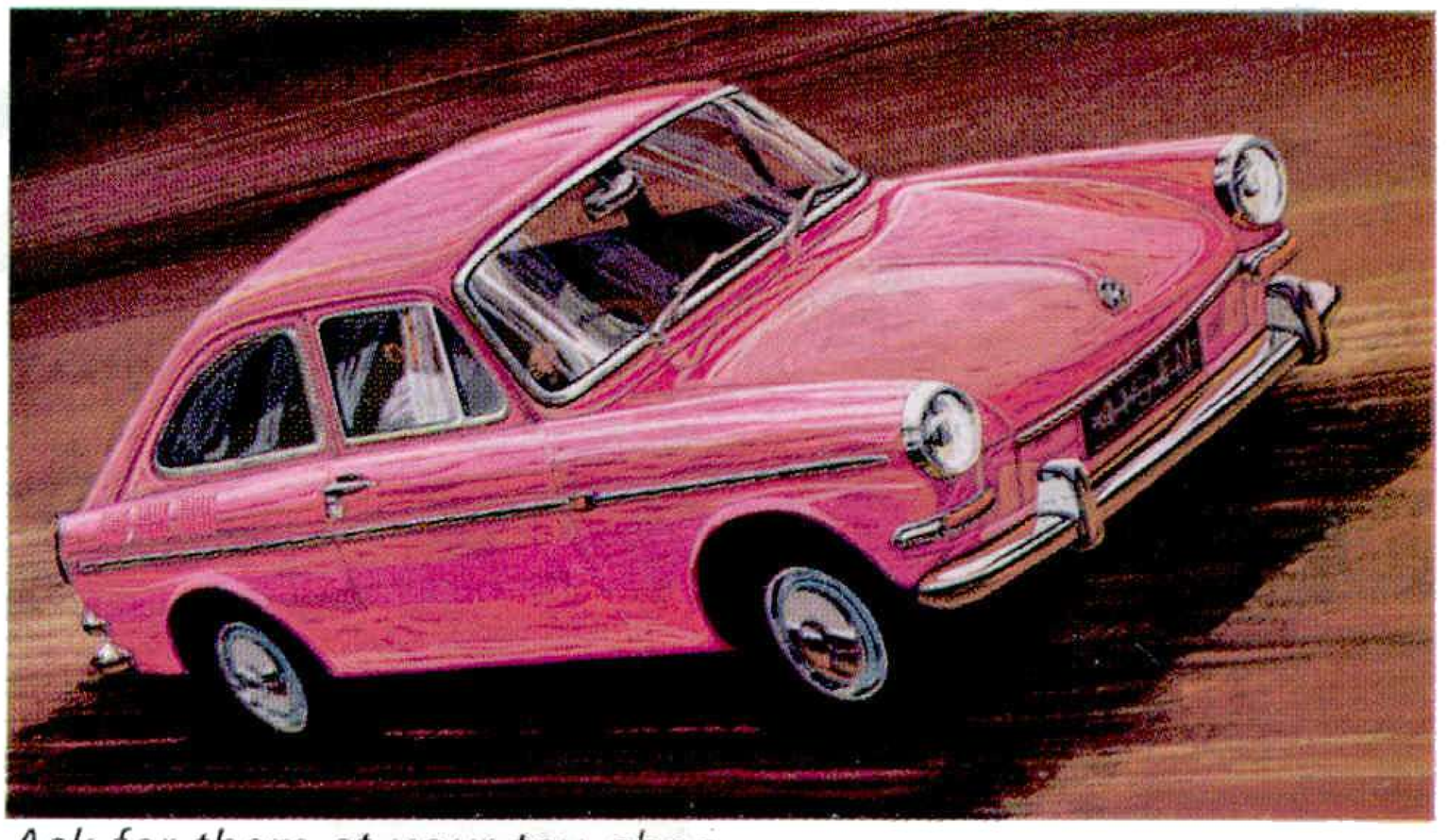

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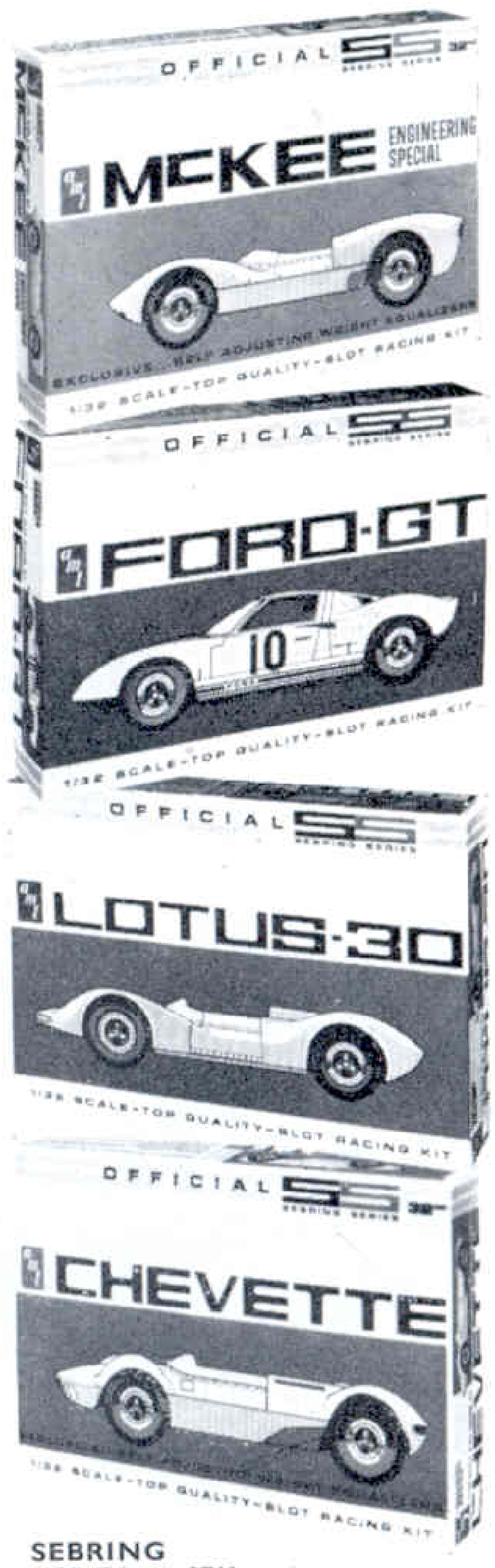

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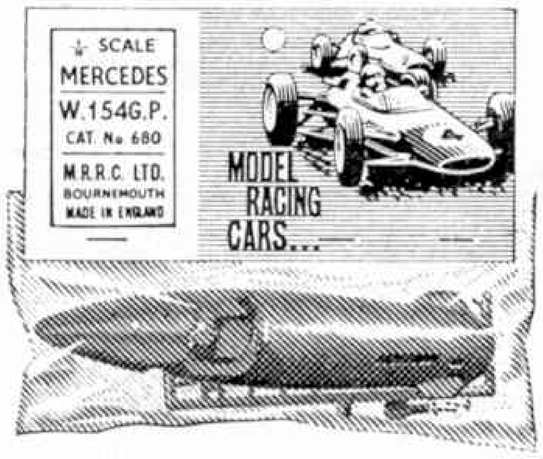

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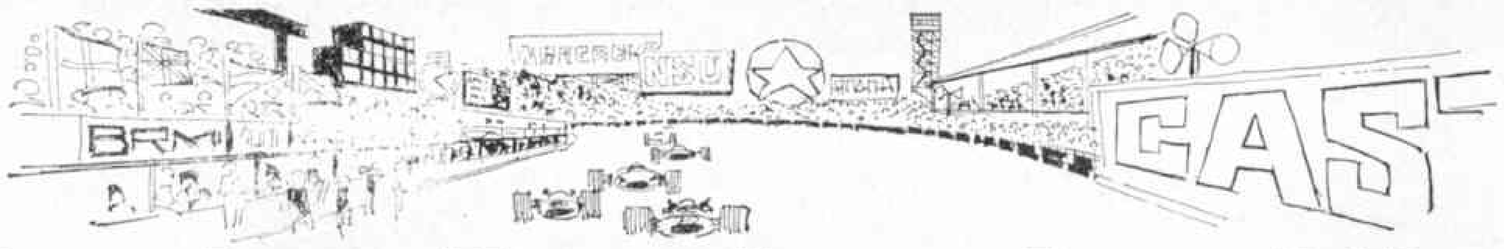

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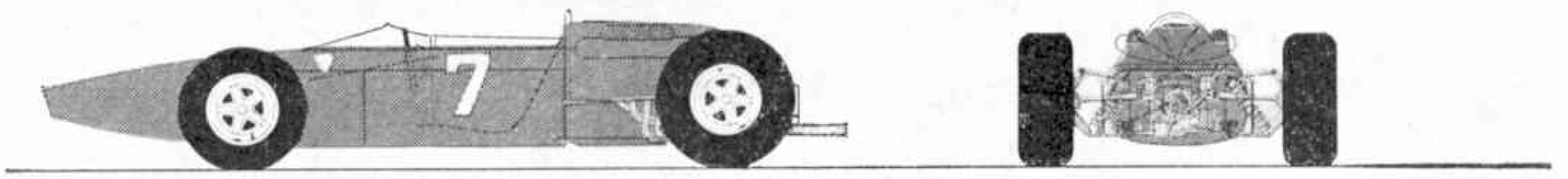

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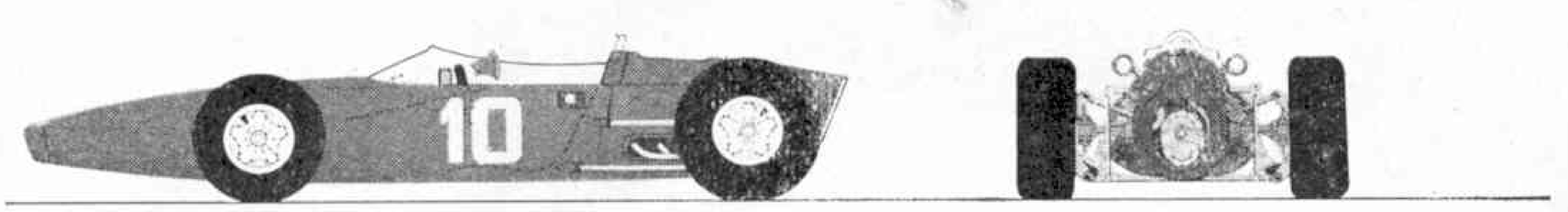

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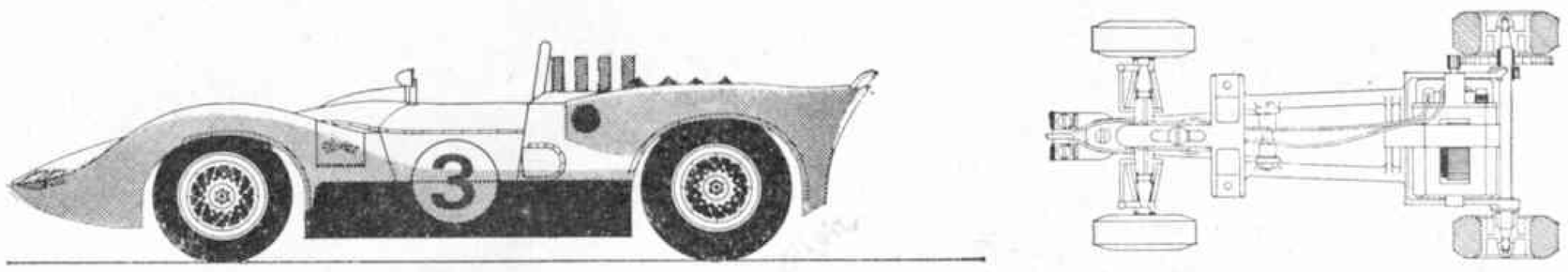

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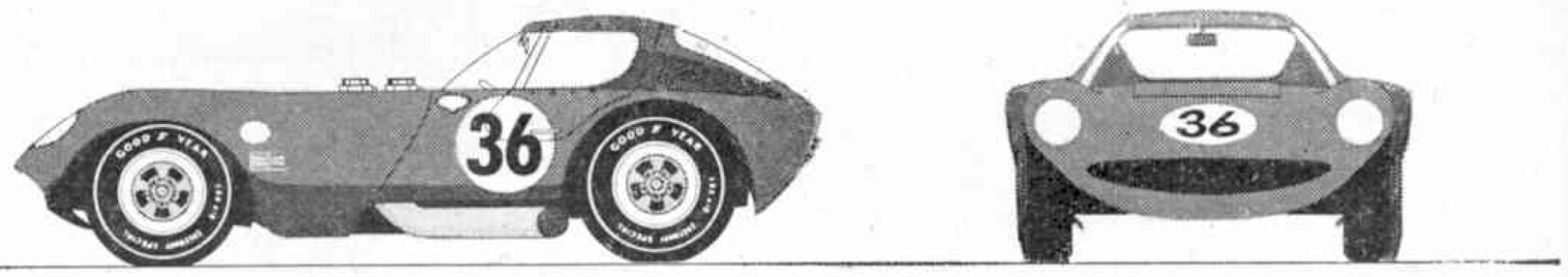

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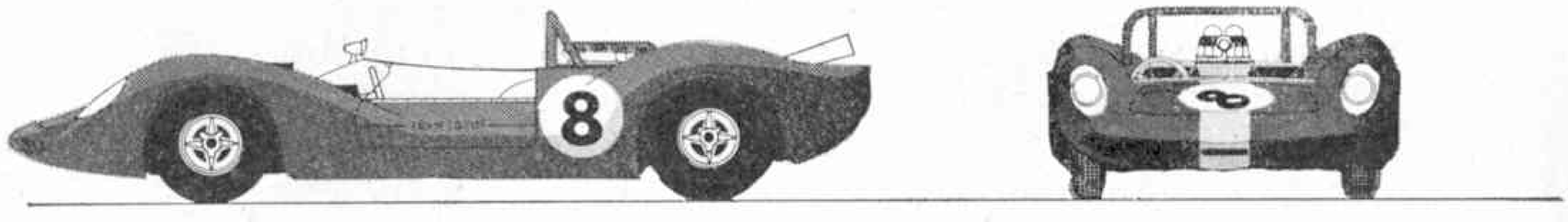

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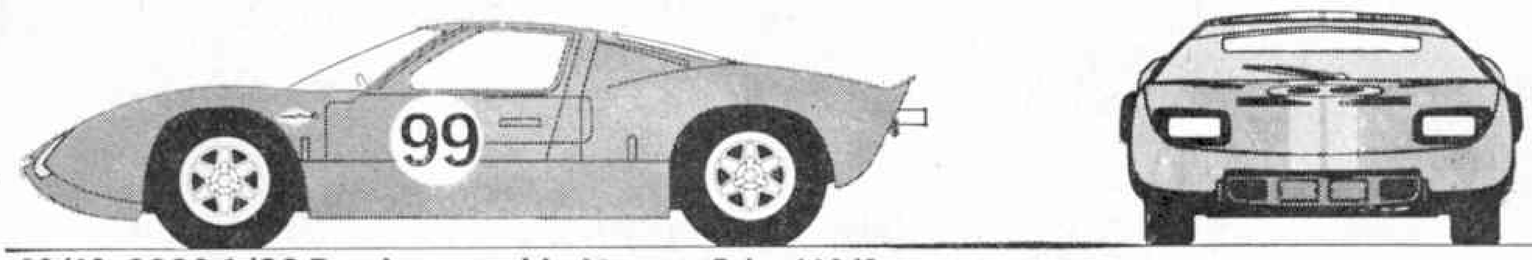

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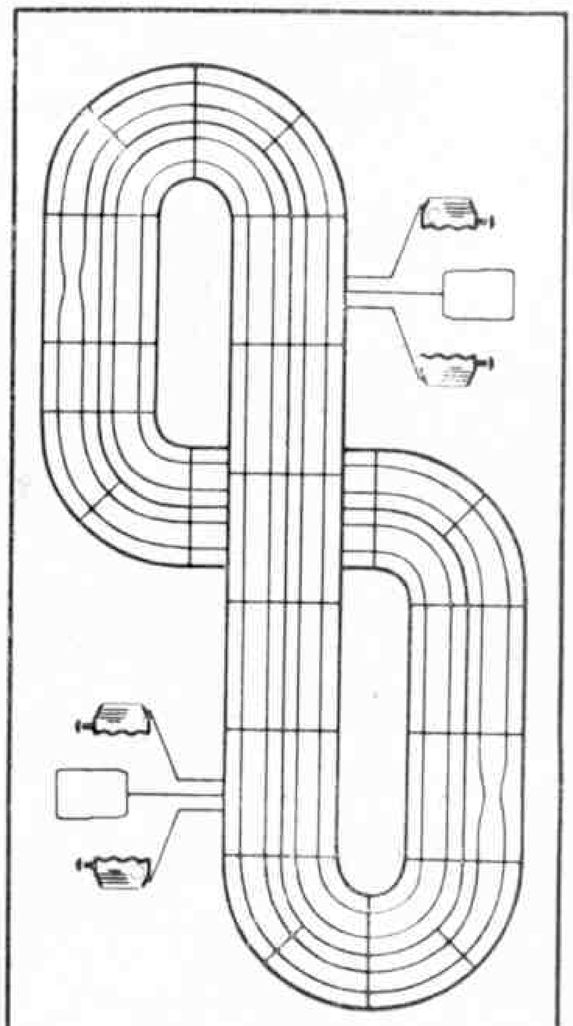
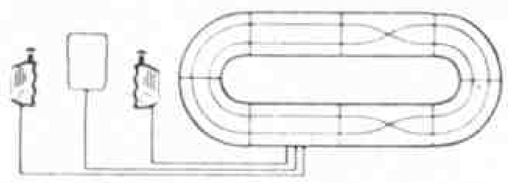
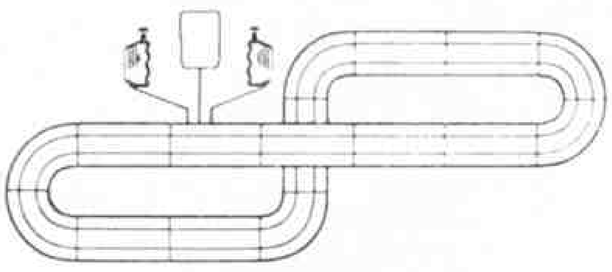


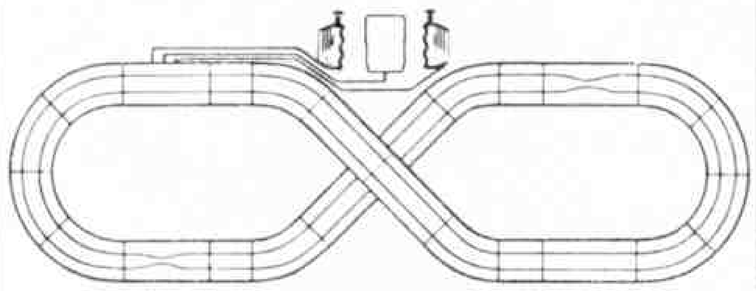
Sets B and C combine to form this 4 lane layout. 28½ ft. of figure-8 track. Area of layout 76″×40″.



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



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



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

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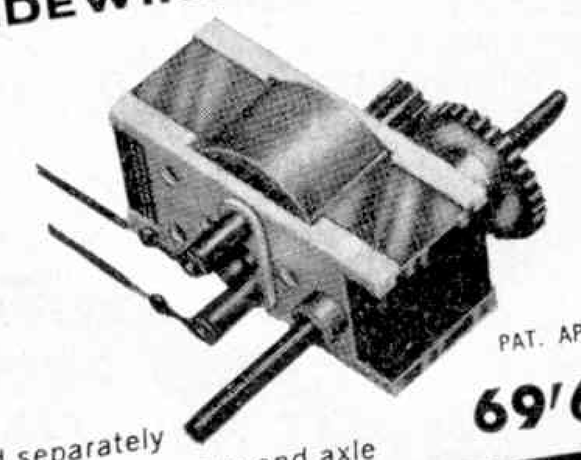

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SLOT SCENE / THE FIRST DECADE

Electric model car racing is new, but already it has a history complete with dates and names that in years to come will be increasingly regarded as significant milestones. Walkden Fisher has been with the hobby from the very outset and here, for the first time, he tells the full story.

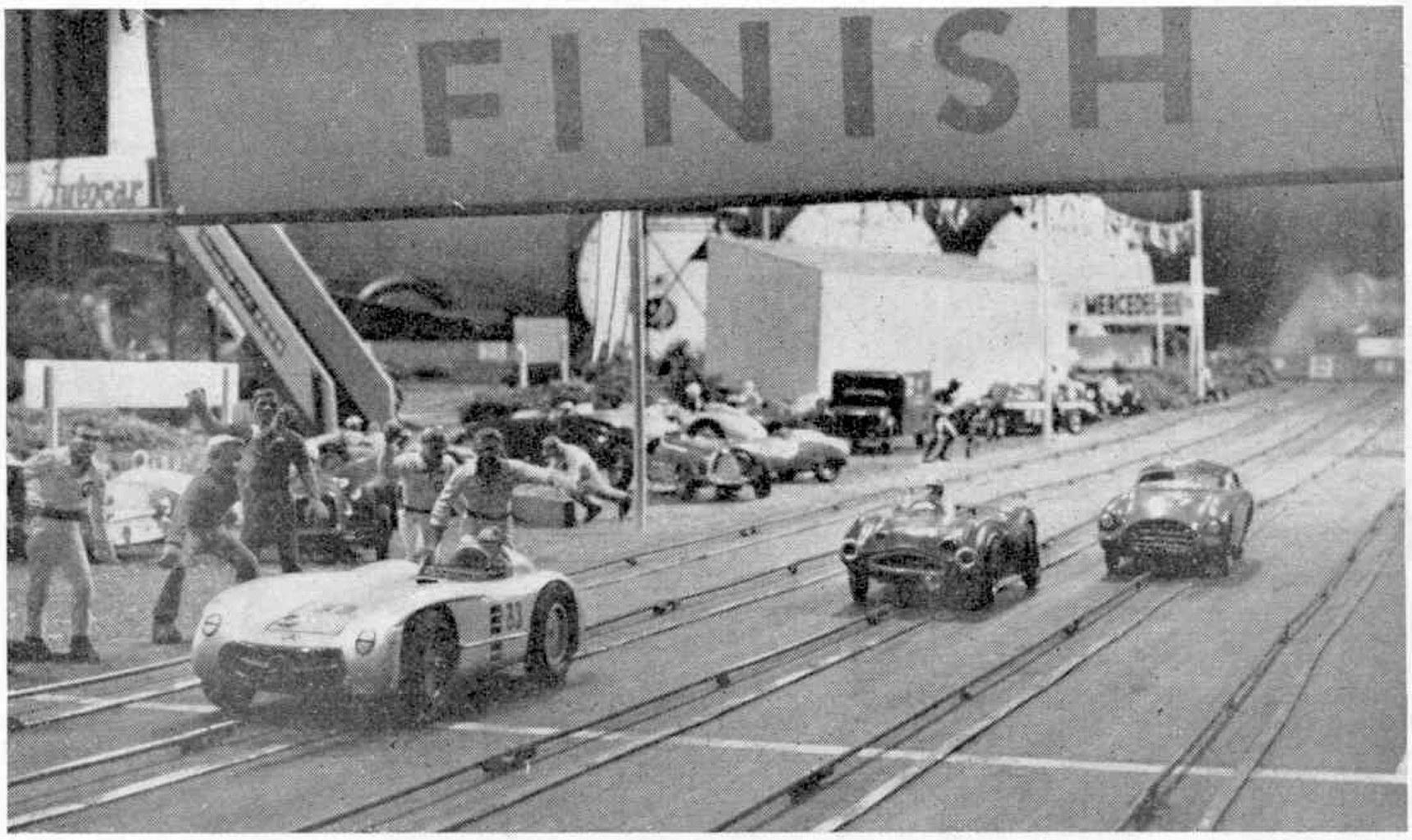
How it all began

In just over 10 years the hobby of electric model car racing has developed into a world-wide sporting pastime, and its growth from simple experiments, first by individuals and later by small groups has been phenomenal.

The tremendous increase in the popularity of motor racing since World War II is probably one of the influencing factors, plus the advent of television and the opportunity it has provided for many to witness motor sporting events in their own homes.

During the early fifties, the British magazine, Model Maker, publicised the various experiments then being carried out by a few individuals up and down the country, and it was undoubtedly the interest and publicity given to their endeavours by this publication that started the ball rolling. Following a particular article that was featured in the 1954 Christmas issue of the magazine, far-reaching developments began to take shape. This article dealt with a scheme which involved the use of a Mighty Midget electric motor fitted into the chassis of a former Scalex clockwork Ferrari. A small oval circuit was constructed and a system devised which proved highly successful. Basically it was extremely simple, and similar in principle to that used in operating model railways. L-shaped pins were driven into the track and to these a 'guide rail' made of piano wire was soldered, positioned $\frac{3}{16}$ in. above the track surface. A second wire on the surface itself was pinned alongside and the model car was designed to pick up its current from the guide rail through a shim brass brush contacting the latter, and return it via another similar brush contacting the 'earth return wire'—an arrangement that provided an efficient current feed. A U-shaped shoe fitting over the raised rail guided the model and the incorporation of a variable resistance controller in the system provided a means of regulating its speed.

This scheme started several people thinking. Another enthusiast proceeded a step further and introduced a 00 gauge model railway motor which, together with ex-Government surplus rheostats for speed control, proved that the system was definitely workable, and that with this type of



Finish of the 1956 Southport International Sports Car event. The construction of the rail guides is clearly shown (Model Cars photo)

Below: landscaped setting of a club home-built slot circuit

motor, miniature cars could withstand overloads to which, under racing conditions, they were likely to be subjected.

Standardisation and the introduction of 1/32nd scale

Further considerable impetus was given to the new sport during 1955/56, and its popularity was increased tremendously, due to the pioneering work carried out at this period by the Southport Model Engineering Club in Lancashire. Members of this club, after prolonged experiment, not only constructed a six lane rail circuit with a lap distance of 58 feet, plus lap recorders, but most important, they evolved a set of efficient workable standards and were responsible for the introduction of 1/32nd scale to electric model car racing. Also, a slight modification was eventually made by this group to the original current feed arrangement, because it was proved better to allow the raised guide rail to act as the negative and the lower wire to carry the positive —a change that reduced the number of shorts which often formerly resulted when a car derailed or twisted askew.

The Scale Model Equipment Company of Steyning, Sussex, in those days produced an excellent series of kits intended for building 1/32nd scale solid models of a variety of famous racing cars. Plated brass wheels with ingenious spoked inserts, together with sets of realistic hard rubber tyres were included, and it was the availability of these kits, and the useful items contained therein that influenced the Southport club in its choice of scale.

It must be borne in mind that, at this stage in the hobby's development, apart from the SMEC products, there were no other manufacturers producing items, and consequently everything had to be done the hard way. Clockwork and push-and-go toys were cannibalised and their gears utilised to a great extent in the construction of the miniature cars. Wheels and tyres from some of these toys provided useful alternatives to the SMEC type, and often other toy bits and pieces were incorporated in the models.

The 'Southport Standards', as they became known, set out the height and dimensions of the guide rail; distance of the latter from the positive rail; the side the positive rail was to be placed, and the distance between the centres of separate rails. In addition the Standards stipulated, among other things, that only replicas of full-sized prototypes would be accepted for competition events. This was a wise rule, the enforcement of which prevented any possibility of 'animated lumps of balsa' and other horrors being raced. It acted as a safeguard which was to prove very successful in maintaining authentic miniature realism in the sport. The Standards also encouraged many individuals and groups to build cars and tracks to 1/32nd scale, secure in the knowledge that in following them, their models would operate successfully on other circuits.

The first 'International' electric model car race meeting

An 'open' meeting — the first Southport Grand Prix, held during the club's annual exhibition in 1955 attracted considerable attention and numerous entrants from various parts of the country. Trials were necessary to decide the finalists in the GP and Sports Car classes and the meeting was an outstanding success. News of the hobby was spreading rapidly. Interest arose in the United States and consequently, in 1956, the Southport club was able to announce the first electric car racing 'International'. Modellers in the States sent over a team of cars by post and these were proxy driven by members of the organising club. Two of the American models qualified for the 200-lap Grand Prix final and took second and fourth places in this memorable event which was watched by a large crowd of enthralled spectators, including the present Editor of MECCANO MAGAZINE, who afterwards presented the awards to the finalists.

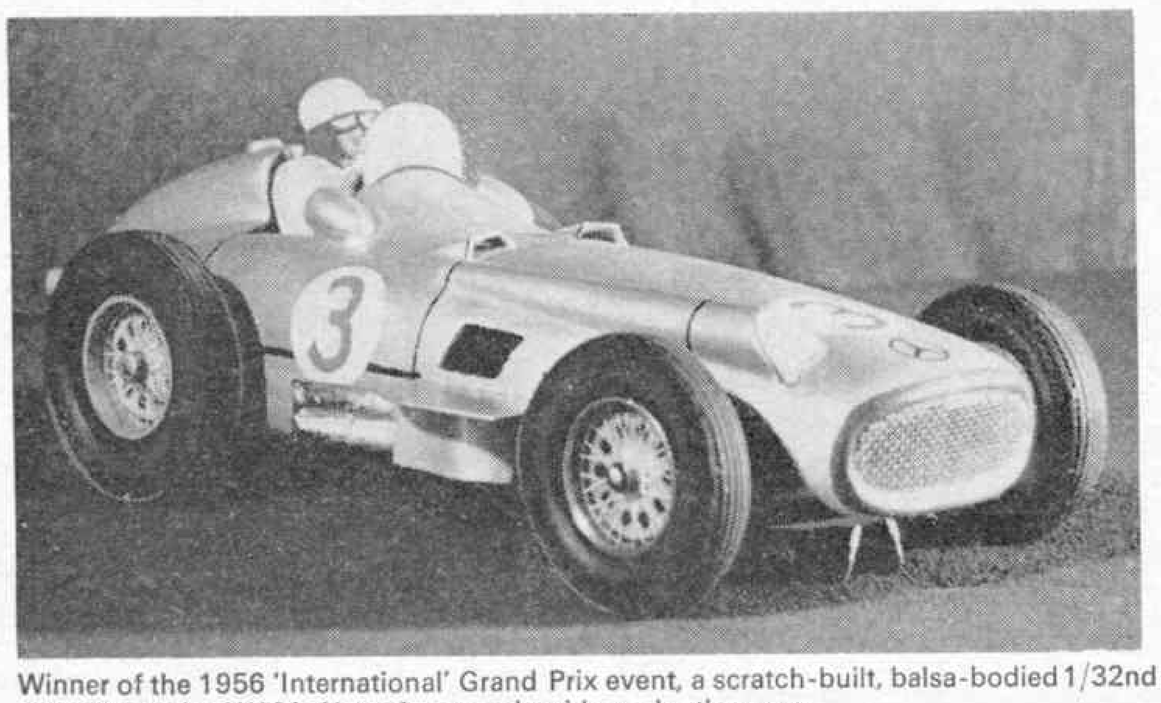
That first International in 1956 was just a beginning, and despite the enthusiastic interest it aroused at the time, few who were present on that historic occasion could have visualised the amazing growth and further successful developments this miniature sporting hobby was to undergo in the years to follow.

Slot racing supersedes the rail system

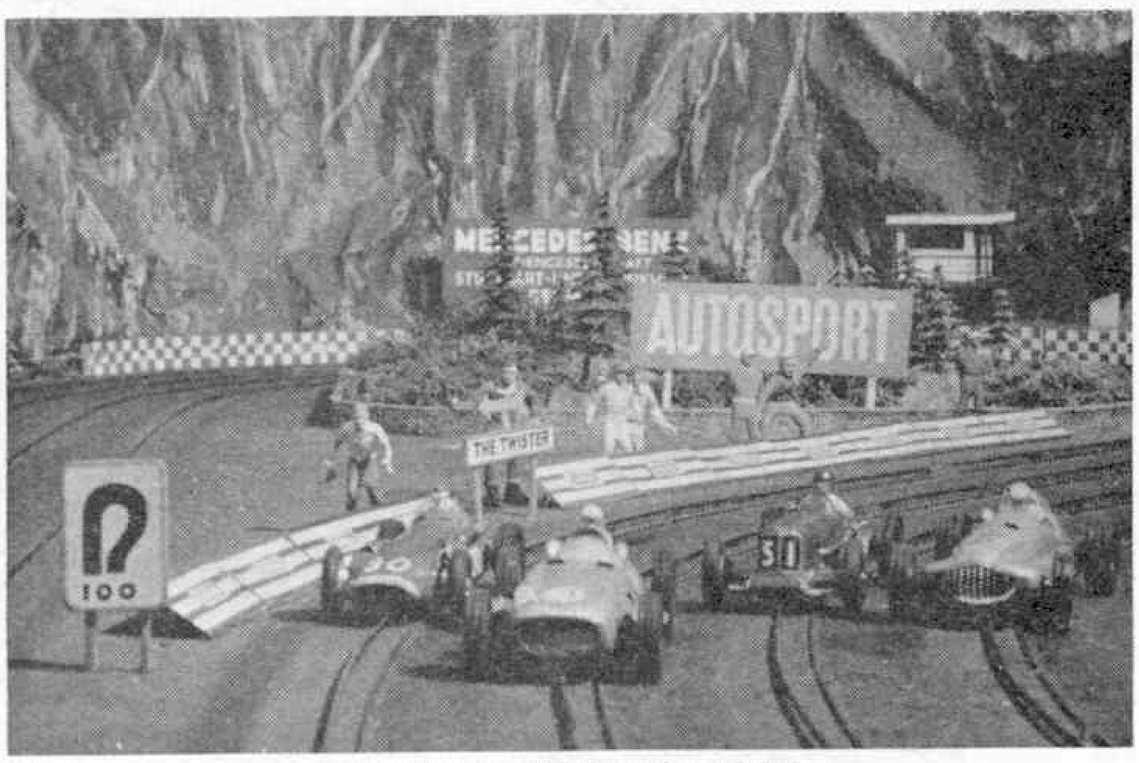
In the meantime, individuals banded themselves into groups and more and more clubs were formed. Inter-club events were staged as well as several 'open' meetings, to which enthusiasts often travelled hundreds of miles to compete. All this activity fostered the growth of model car racing, but no proprietary rail racing sets were then produced, although one or two manufacturers were beginning to take an interest in the hobby. Notable among these was Model Road Racing Cars Ltd., of Bournemouth, who already were well known for their diesel-engined track and round-the-pole tethered racing models. This firm began to produce extruded brass rail and nylon fixing pegs which soon were in great demand by clubs and individuals eager to build circuits. However, many modellers regarded the raised centre rail as being unrealistic, and although a minority of 'die-hards' preferred it, indications suggested that it was only a matter of time before rail racing became obsolete.

The system that eventually superseded rail racing is one which incorporates a slot cut into the track surface. Cars are still fitted with guides, but these now operate in the track slots and not only permit more realistic 'tail-wagging' on corners, but allow for a more authentic appearance in the models themselves, as they can be constructed to accurate ground clearance dimensions. Contact strips on the track surface, close to each edge of the slots, provide the positive and negative current feed.

Slot racing made rapid strides and by 1962 most of the rail racing clubs were beginning to convert to the new system. Very soon it had taken over completely and rail racing was supplanted. The latter, however, had served its very useful purpose, and many of the original Standards which had enabled this type of model car racing to be organised so successfully were retained, and with a few modifications used to further the development of 1/32nd scale slot racing.



Winner of the 1956 'International' Grand Prix event, a scratch-built, balsa-bodied 1/32nd scale Mercedes W196. Note the tunnel guide under the nose



Above: a typical scene on one of the old rail racing circuits
Below: 1956 Grand Prix winners at Southport. (Model Cars photo)

Trade interest

Many more new clubs were formed and, significantly, trade interest in model car racing, during the late fifties and early sixties, had begun to materialise on an ever-increasing scale with the advent of the new system. The very obvious demand for parts, and even complete models and racing circuits could no longer be denied, and gradually manufacturers in Britain and the United States began to give it their attention.

The new slot system certainly widened the scope of model car racing, and following a tremendous upsurge in trade interest, with the flow of commercial items increasing each month, the hobby developed and spread accordingly. First to mass produce a ready-to-operate track, complete with cars, was the British firm of Minimodels, and in the United States it was the large Strombecker Corporation that introduced the sport on a commercial basis to the immense American market. Other firms in both countries also began production, and electric model car racing soon proved to be a strong rival to the long-established model railway hobby. Trade interest has benefited the racing modeller considerably and today, manufacturers provide a vast array of equipment that caters for all tastes.

Scales

During the rail racing era, 1/32nd scale was the size generally adopted, but with the evolution of slot racing, additional scales were introduced. Some firms now concentrate on producing items in one scale only, whilst others extend their output to include equipment in different scales. Although 1/32nd, and the larger 1/24th and 1/25th scales are proving the most popular, a steady demand has also developed for models and complete circuits in much smaller sizes.

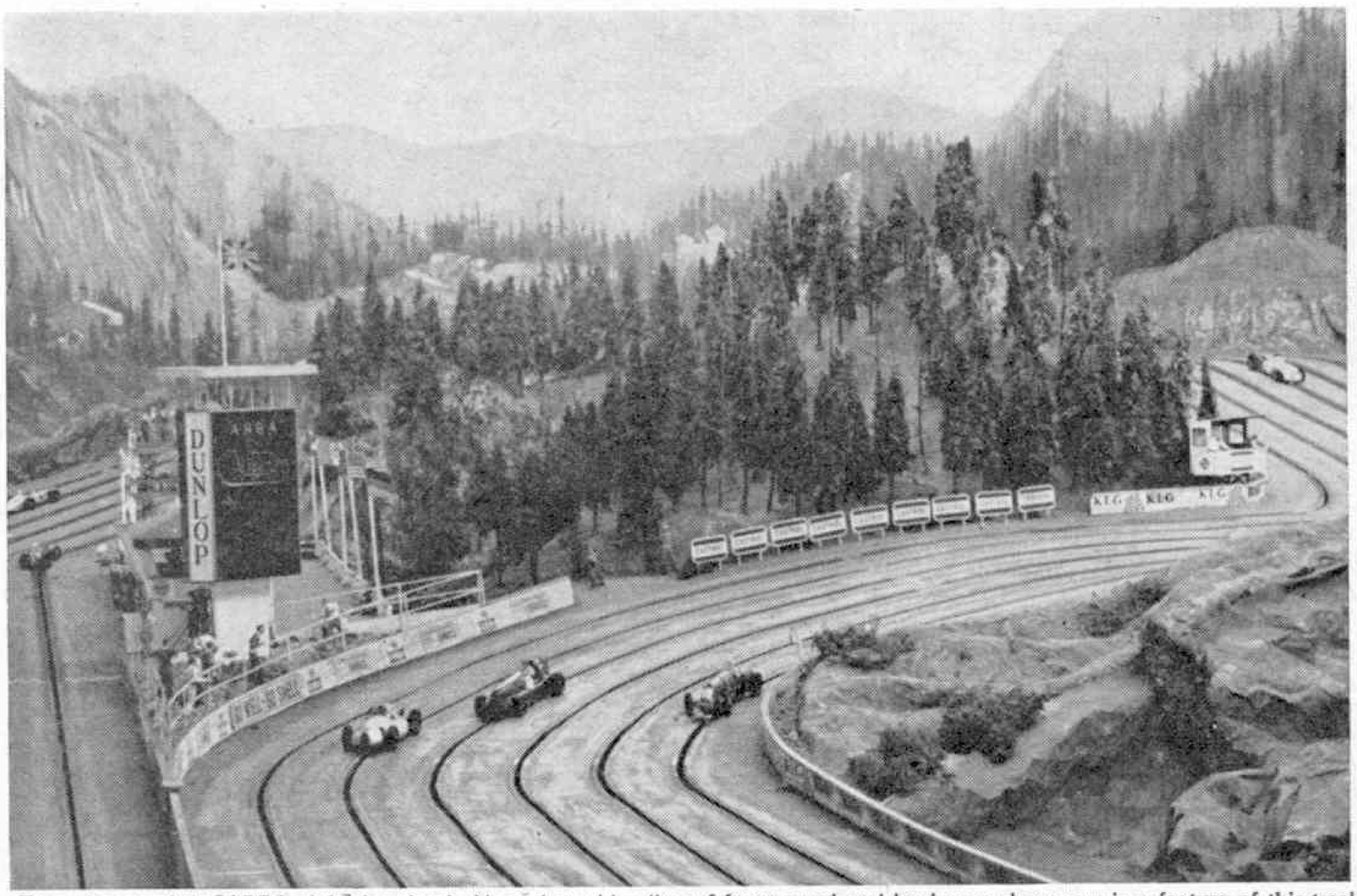
Today, some of the highly-efficient working models that are available are so tiny that only a few years ago it would have seemed impossible to fit a suitable electric motor inside their diminutive body shells—such is progress! Apart from those mentioned, operating model cars are now obtainable in the following scales: 1/30th, 1/36th, 1/40th, 1/43rd, 1/52nd, 1/65th and 3·5 mm. = 1 ft. (HO scale).

Available space is one of the governing factors in the choice of scale and the hobby is nowadays so well supplied with such a variety of proprietary track systems that the enthusiast should find little difficulty in deciding on one that will meet his requirements. Basically, they are produced as 'temporary tracks', for assembly in a normal sized living room, and are designed to be swiftly erected or dismantled for storing away when not required. In some cases it is possible to keep a permanent track assembled in a spare room, but the large and more permanent layouts are those belonging to clubs, and these are usually elaborate home-built circuits.

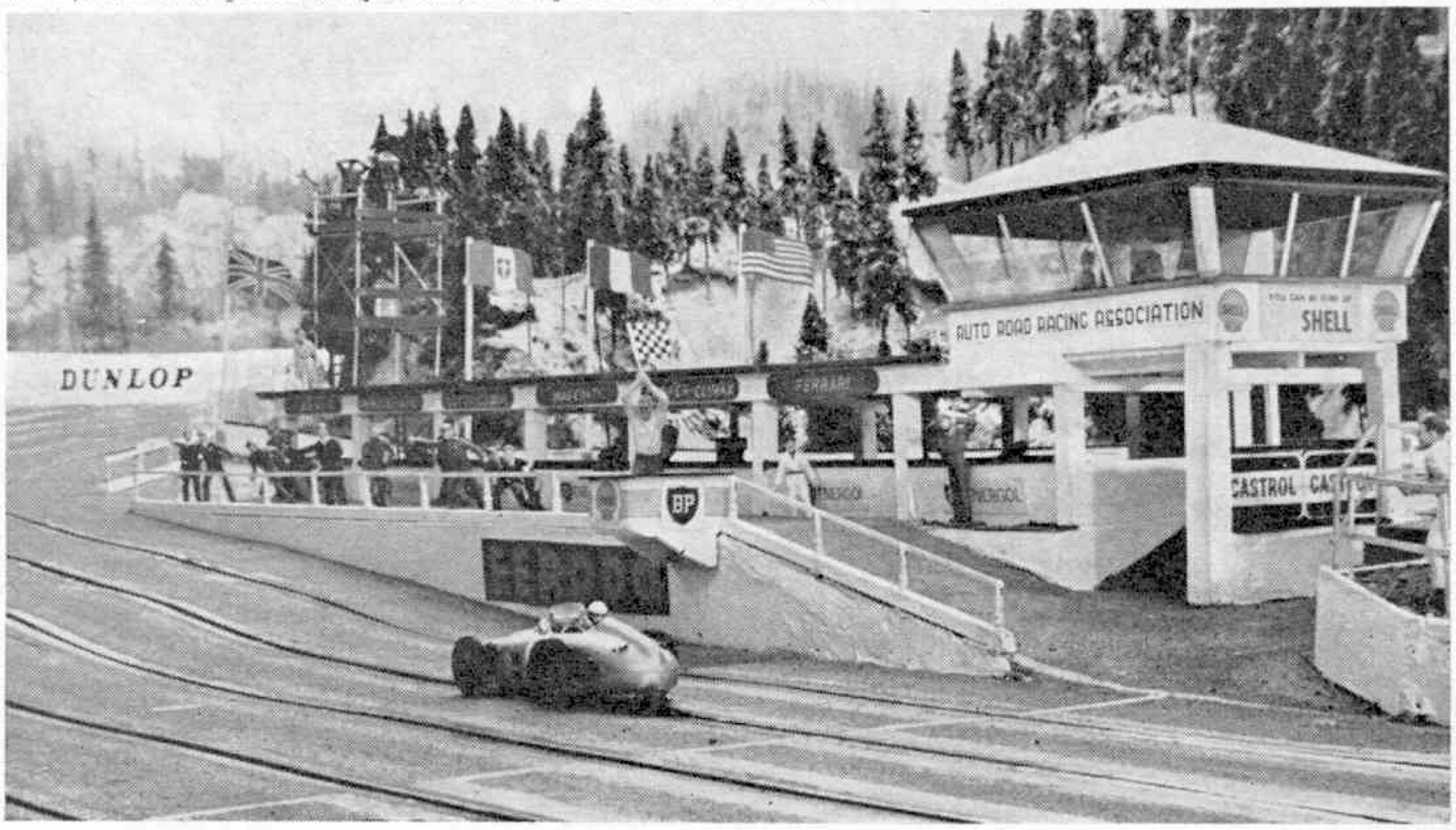
In Britain, for home use, 1/32nd scale and the smaller sizes are the most favoured, with 1/32nd still remaining the popular choice for the majority of clubs. The accommodating size of models built to this scale enables big five and six lane circuits to be constructed within a reasonable area, whereas in the same area the use of 1/24th scale would necessitate reducing the number of lanes and consequently the number of competitors in events. Thus, with space usually being at a premium in premises occupied by most clubs in this country, 1/32nd scale becomes the obvious choice.

Scenic circuits and scratch-build models

Quite apart from the model cars, tracks and necessary associated electrical equipment, the racing modeller



Two photos of the ARRA club slot circuit. Very clever blending of foreground and background scenery is a feature of this track

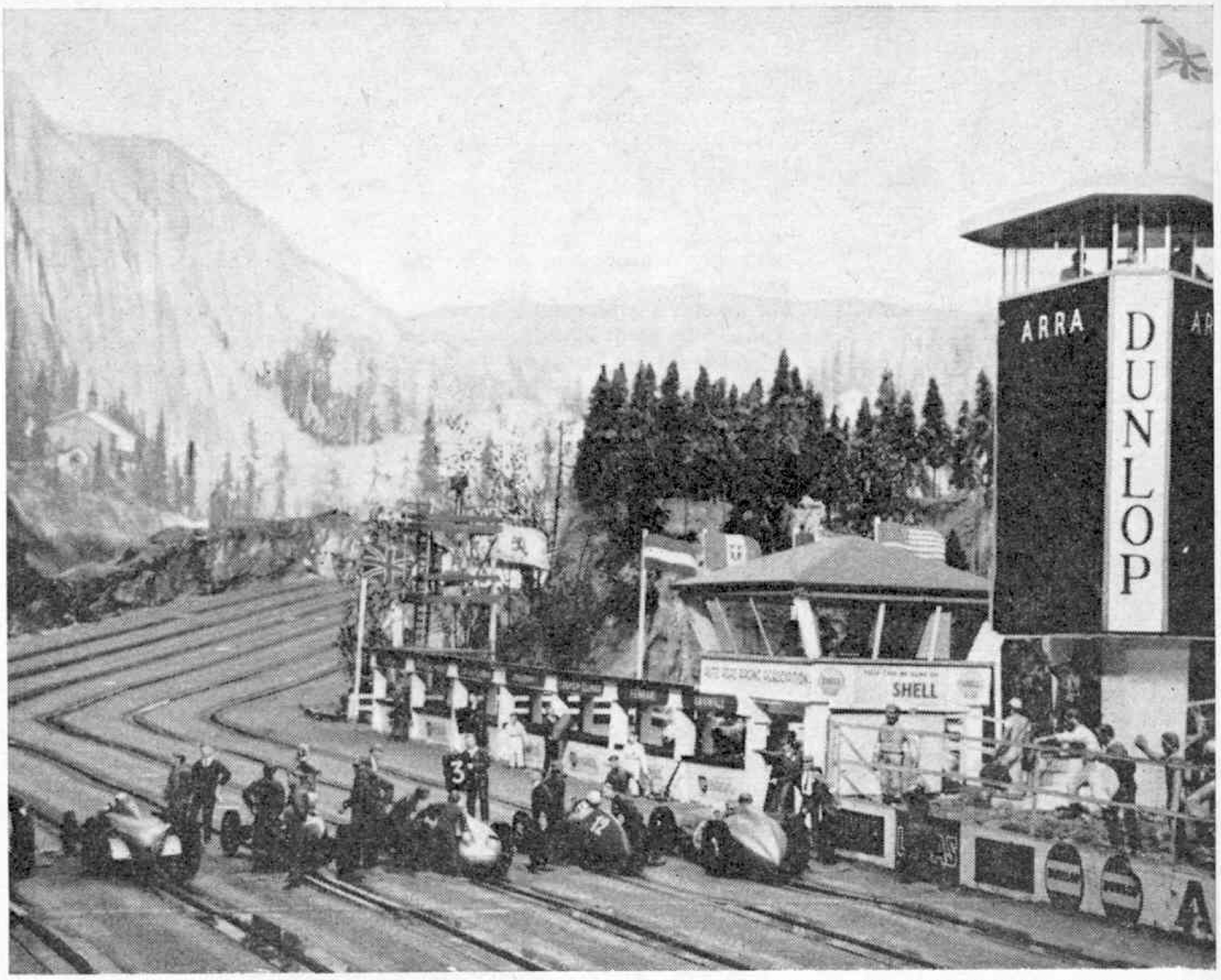


is catered for admirably by manufacturers who now supply every conceivable item likely to be required for landscaping a miniature layout and providing it with an authentic atmosphere. Scale figures, typical trackside structures and many other features are available, and the scenic schemes on some of the larger club circuits have been carried out with such great attention to detail that the overall appearance is one of remarkable realism.

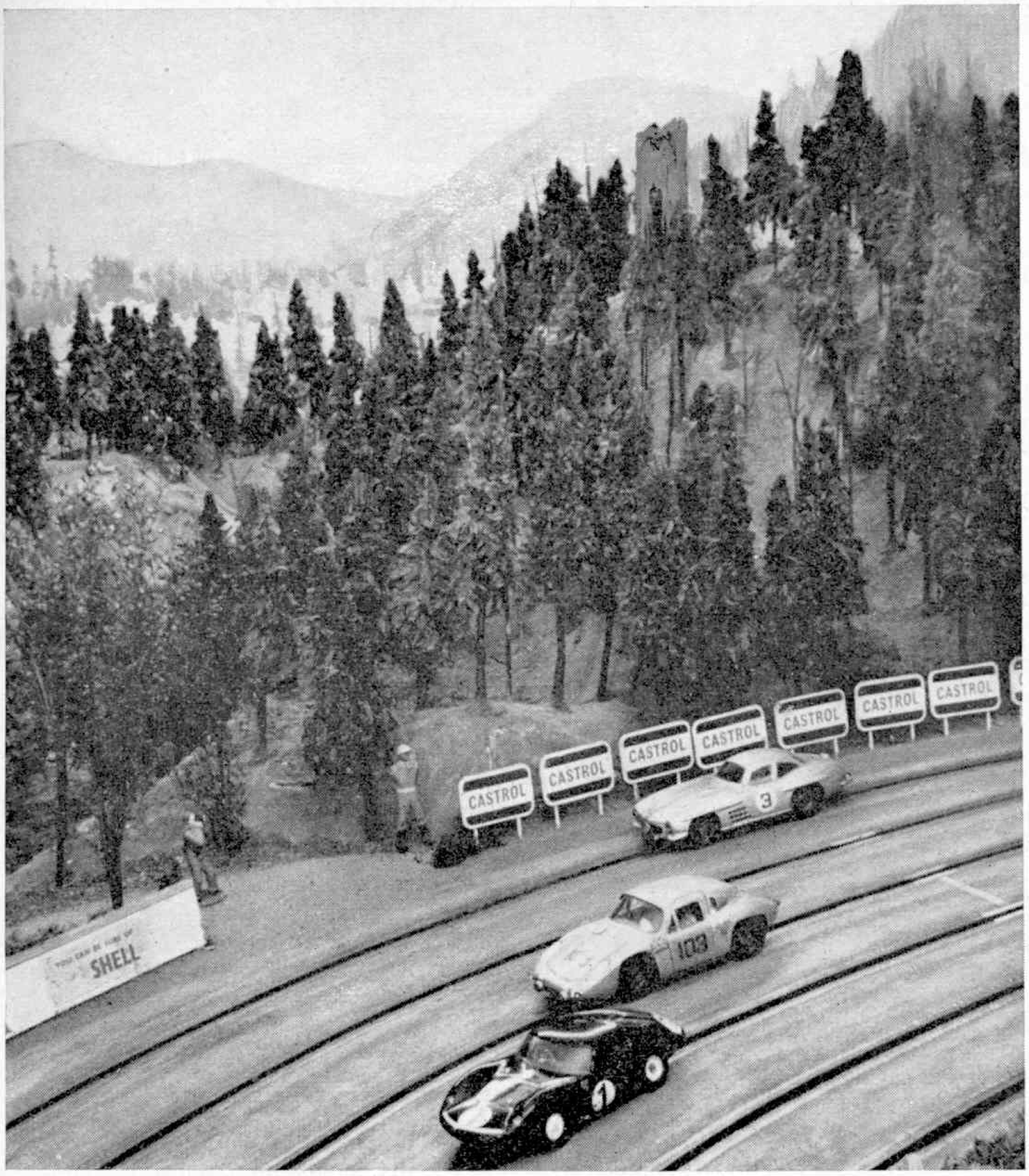
Devising a scenic scheme for a model car circuit is a branch of the hobby that can prove most intriguing, and a track with a scenic setting is undeniably of far greater interest to competitors and spectators alike, than one that remains stark and strictly utilitarian. There is an undoubted fascination in seeing cars speeding round a circuit that is complete with full scenic detail, as anyone who has experienced this will realise.

Miniature car racing is an easy-to-participate-in type of sport that is relaxing, challenging and creative. Many who start off with a car from a home racing set develop an urge to build their own competition car, or modify the proprietary model with competition parts. It is a simple way of testing one's individual creative talents and there are countless racing modellers who find this aspect of the pastime particularly enthralling.

The construction of scratch-built models is simplified considerably today because of the many items available. A variety of motors, wheels, tyres and gears, the latter in a range of useful ratios, give the modeller tremendous scope. There are even kits of parts obtainable which enable the hobbyist to wind armatures and assemble his own motor. Body shells in plastic and glass fibre of GP, Sports Racing, GT and Production Saloons provide further incentive to the scratch builders, many of whom, however, still prefer to form their own shells in hardwood, balsa, or 'Plastikard'. There is a great fascination in building a racing model and afterwards testing and tuning it; experimenting with gear ratios, tyre sizes and weight distribution to ascertain the best combination for speed and road-holding. Last month Godfrey Arnold wrote about basic scratch building in Meccano Magazine and he will continue this theme in next month's issue.



Above and right: two more impressive scenic sets from the ARRA circuit. These photos are worthy of close study by anyone embarking on the construction of such a scenic track—big or small. Below: all commercial products are used in this four-lane Airfix circuit. The cross-overs are particularly interesting



The Electric Car Racing Association

The scope of the hobby now embraces in miniature almost every aspect of full-size practice — road races, Indianapolis-type track racing, rallies, hill climbs (see last month's issue), sprints and drag racing, all with their attendant thrills and attractions, present a wide choice. Consequently, with the widespread increase in competitive events all over Britain, it became obvious that some kind of national association would be useful in bringing together all those interested, and enable the sport to run on an organised basis that would be acceptable to the majority—similar to R.A.C. regulations in the realm of full scale.

Meetings were held to discuss the possibilities, and eventually, the Electric Car Racing Association was formed. This, it must be emphasised, is a non-profit-making body, entirely organised by an enthusiastic band of volunteers in their spare time. It has been in existence for only a few years and has already proved a valuable asset to the sport in general. The country has been divided into ten areas, with clubs in each area voting a delegate to represent them on the National Council. Every member of the Association is thus able to state his own views and proposals; membership is open to individuals as well as clubs. Following organised race meetings in the areas, and inter-area events, the E.C.R.A. holds a British National Championship Meeting each year to decide the National Grand Prix Champion, the National Sports Champion and the National Club Team Champions of Great Britain. E.C.R.A. rules and regulations, which are an extension of the original scheme behind the old 'Southport Standards' of bygone years, ensure that race meetings held under their jurisdiction in any part of the country are organised thoroughly on a national level, much to the sport's overall advantage.

Drag racing

A branch of motor sport that originated in the United States is known as 'Drag Racing'. It converts the English 'Sprint' against the clock into a race between two cars over a straight 440 yard asphalt strip, and top line dragsters are capable of accelerating from rest to 200 m.p.h. in less than 8 seconds within the 440 yard limit. American hobbyists soon introduced this exciting form of sport into electric model car racing, and in Britain also it has gained an enthusiastic following.

The British Hot Rod Association introduced Model Drag Racing in order to popularise the full-scale sport. A model strip and timing gear was constructed to 1/32nd scale and elapsed times on this 41 feet 3 inch strip have been reduced in one season from 5 seconds to 1·5 seconds. Following negotiations between the B.H.R.A. and the E.C.R.A., affiliation resulted, thus making model drag racing with its own particular code of rules available to the circuit racing enthusiasts of the E.C.R.A.

Pay circuits

During recent years electric model car racing has undergone a further significant development which has increased its already wide appeal—the new innovation being the introduction of Racing Centres, or Pay Circuits as they are sometimes called, which in the United States and Japan are operating with considerable success. With model car racing becoming one of the fastest growing forms of indoor recreation, the commercial course was a logical development — particularly in the United States where the current trend towards 'family recreation centres' is nowhere more clearly demonstrated than in this hobby. It is, in fact, a hobby as well as a sport-recreation, and as such, it can involve all members of a family, either as builders or racers.

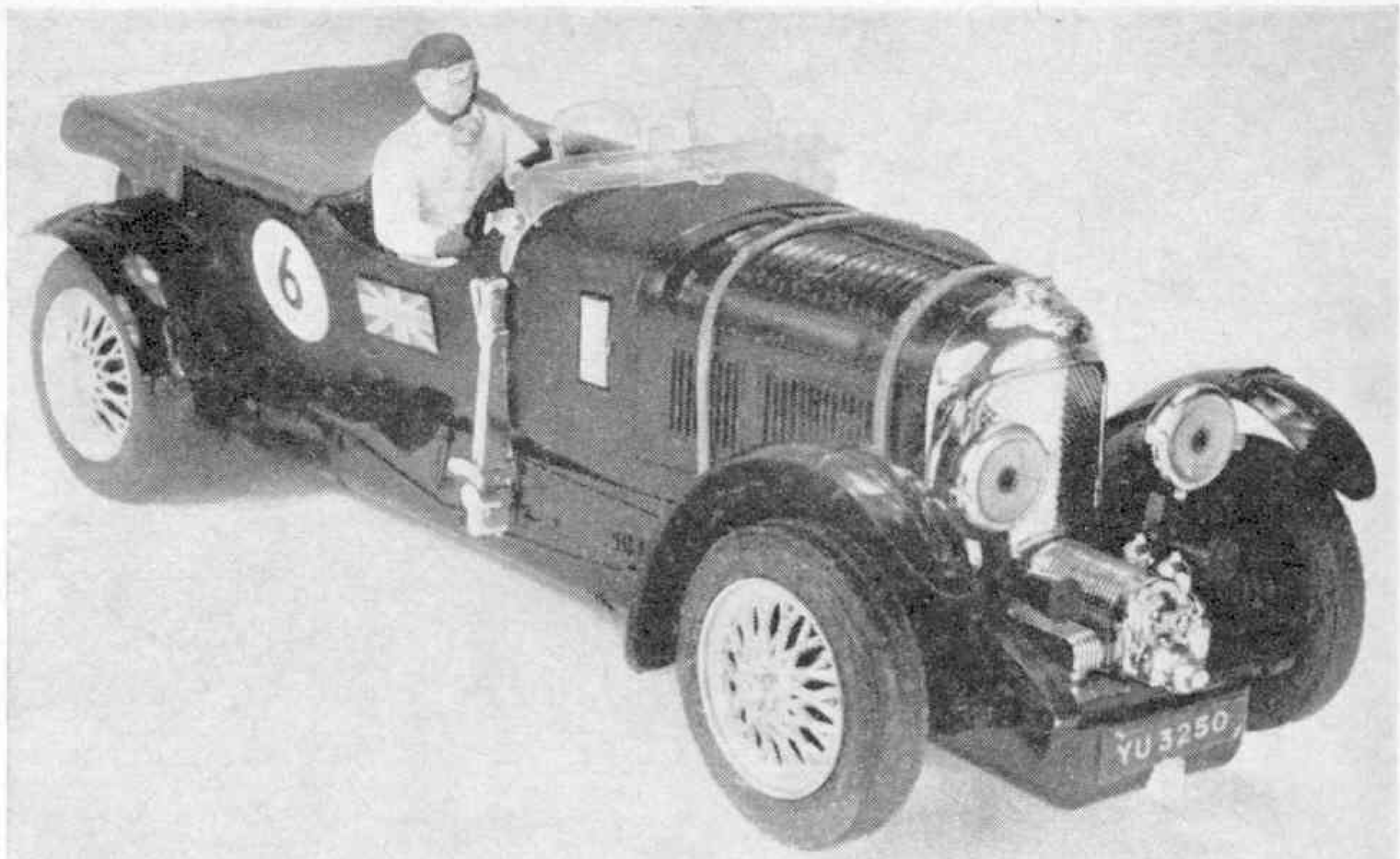
Large premises are taken over to accommodate these pay circuits—premises in which two or three entirely different tracks are sometimes installed. Laps of 200 ft. with 6 to 10 lanes are not unusual and, as can well be imagined, the home set owner certainly has a surprise in store when he races on one of these vast commercial courses. In some Racing Centres slot machines are fitted and lanes can be booked for a set period of time. The centres usually rent models and controllers, but they also cater for the owner-drivers using their own models. Organised race meetings are run weekly and every facility is supplied to enable the modeller to purchase items of equipment or service his own models on the premises. Although 1/32nd scale models are often raced, the size of the layouts favours 1/24th scale, because the cars built to this larger scale are more clearly visible on the far reaches of some of these big tracks.

Many centres sponsor racing clubs which compete with others in localised race programmes. So great is the attraction of these competitions that on race nights the premises are usually crowded with spectators.

In Britain during the past twelve months several rather similar racing centres have been organised. Their popularity will have to be proved and will naturally influence future developments along these lines. However, judging by the enthusiastic reception given to those in the United States and Japan, the future could well offer interesting possibilities.

Electric model car racing is thriving and it shows every indication of continuing to do so. It has certainly

developed into 'Big Business', and in the United States alone it is estimated that over 200 million dollars' worth of slot racing equipment was sold during 1965. Even the most cursory glance at advertisements and catalogues produced by manufacturers in this particular industry confirms how well the hobbyist is catered for today, and new kits, items and ideas are constantly being introduced to add to the thrills and excitement of this absorbing sporting pastime.



Above: vintage enthusiasts are well catered for by Scalextric who produce this magnificent model of a Bentley 3½ litre racer—a classic unsurpassed. Below: the authentic buildings, which add so much realism to this Playcraft circuit, are built from kits in the Corgi 'Silverstone' series, and road vehicles in the background are from the Corgi Toys range.

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SLOT SCENE TODAY

Development of slot car racing has been meteoric and it is difficult for a newcomer to get an overall picture of current developments without wading through a whole pile of literature.
So here, in the next eight pages we present a comprehensive survey of the slot scene in Great Britain today.

Airfix & Model Road Racing Cars Ltd.

Racing sets, cars and accessories produced by AIRFIX are manufactured to the popular 1/32 scale, and one of the main attractions of this firm's range is the excellent variety of reasonably priced static car kits which are comparatively easy to motorize. These are in great demand among members of model car clubs and some highly competitive racing models have been developed in consequence. A feature of the AIRFIX miniatures is the swinging front axle and Ackerman-type steering which can be purchased as a separate unit—a most useful component that is now used extensively by scratch builders.

Among the notable prototypes included in the AIRFIX range are the pre-war C-Type Auto Union and W125 Mercedes-Benz Grand Prix cars. Excellent replicas of the Vanwall and 250F Maserati, as well as several 1½-litre F1 machines, plus an interesting selection of Production Saloon models are also available, thus catering for all tastes.

An exciting introduction this year is the Clubman range of models in kit form. These incorporate a new, powerful 3-pole motor which is particularly fast. All chromium parts in these kits are reproduced in chrome-plated nylon. First in this series is the Formula One BRM, followed by a Ferrari and Aston Martin DB5.

Ideally suited for home use are the complete AIRFIX slot racing sets which can always be extended by fitting extra track sections available separately. Other attractive accessories include Grandstands, Racing Pits, a Timekeeper's Hut and Press Box to add to the realism of a layout. Last, but not least is the set of Spectators and Track Officials which provide a life-like aspect to any circuit.

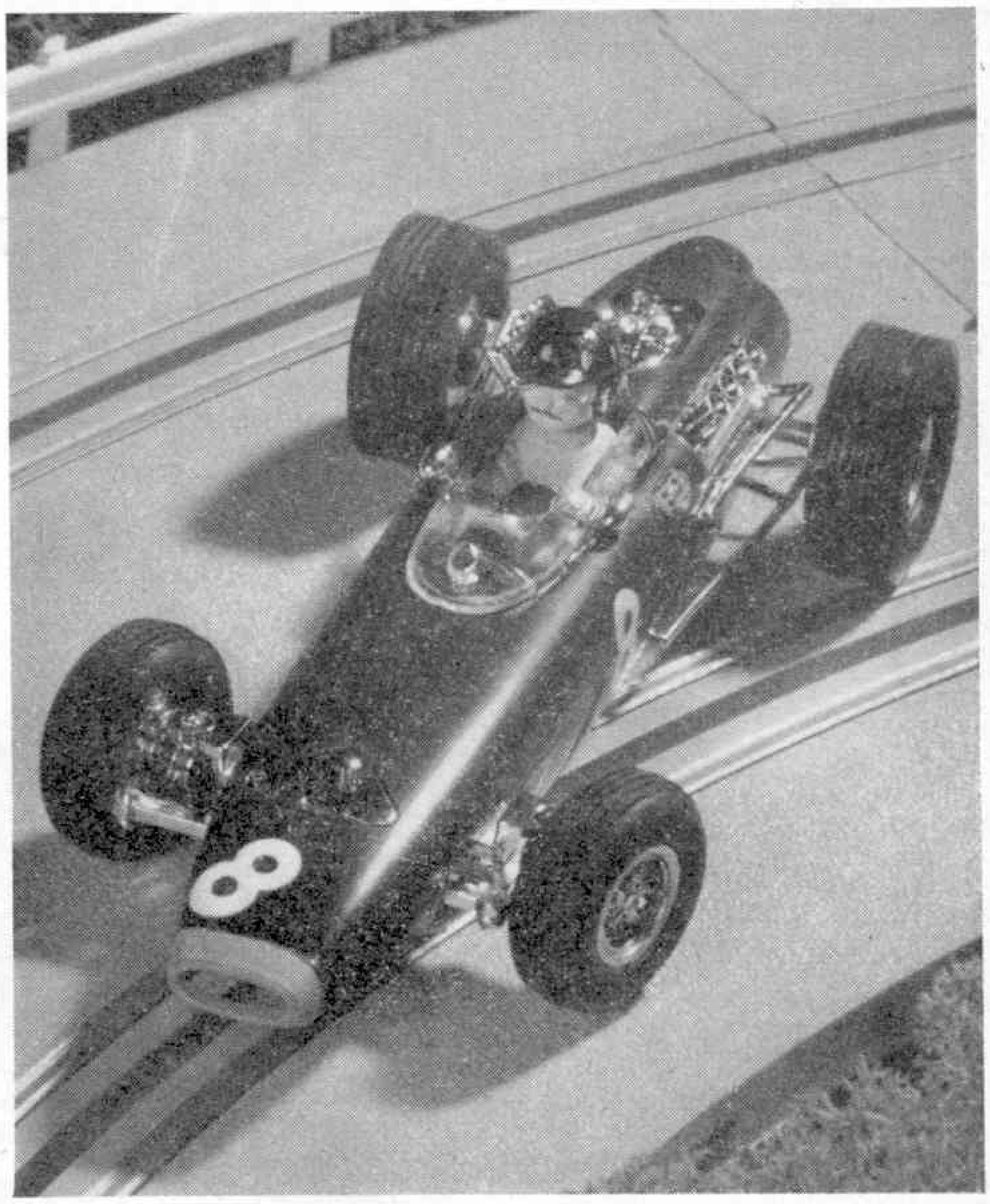
A member of the Airfix Group of Companies is the well-known firm of MODEL ROAD RACING CARS LTD., of Bournemouth. This, the longest established concern in the business, has catered for model car builders for many years and is one of the pioneers of commercial electric model car racing. They produce a wide range of parts for constructing 1/32 scale cars, including two of the most potent motors at present on the market. These are the well-proved MRRC 3-pole and a 6-pole Ball Race Motor. Both are used, together with a 5-pole unit, with great success by scratch builders in many parts of the world.

An excellent range of brass bevel gears, tyres, wheels, robust steering units and other useful components are also produced by this firm.

To MRRC Ltd., goes the credit for introducing the first proprietary four-wheel-drive model; this, their Mercedes-Benz W154, fitted with the 6-pole Ball Race Motor has proved extremely popular. The MRRC Mercedes is also fitted with a 3-pole unit—a version that has developed into a very successful contender in club events all over Britain. Further proof of the potential of the MRRC 3-pole motor is provided by the fact that the British National Championships were won in 1964 and 1965 by cars fitted with this unit.

The year 1966 has also seen the introduction of a MRRC four-wheel-drive Indi-Novi Ferguson, similar in layout to the Mercedes. A 3-pole version of this model has also been produced, and for the first time the firm is branching out into the field of 1/24 scale with a powerful model of the renowned Maserati 250F Grand Prix 2½-litre F1 car.

A new controller produced by MRRC Ltd. is another welcome addition to their range this year. It will take a load of up to 30 amps and is fused and wired for Dynamic Braking. Operated by thumb pressure on a plunger this 'Hi-Speed' controller is already proving its worth under gruelling tests in club events.



First in the new Airfix Clubman range, this Formula One BRM is powered by a new and very potent 3 pole Airfix Slimline motor. Available in kit form only, the BRM combines performance with really super detail—all 'chrome' parts are in plated nylon. Two more cars in the high-performance Clubman range will soon be available: a Le Mans Ferrari and the world beating Aston Martin DB5.

AMT Corporation, Troy, Michigan

The range of AMT model cars covers a variety of types and this firm produces kits scaled to 1/32, 1/25, 1/24 and 1/12, each engineered with the same care and attention to detail as the original car. Every part contained in the kits is accurately scaled down by experts with such attention to detail that the models, on assembly, are outstanding for their miniature realism and authenticity. All the chrome fittings of the full-size prototypes are included and step-by-step, easy-to-follow instruction sheets make con-

Below: completely assembled and ready-to-race, the AMT 1/25 scale Mustang Fastback GT is a picture of potency from bumper to bumper

struction in each case simple and uncomplicated.

The 1/32 models include the Ford GT, Lotus 30, McKee and Chevette. Completely assembled ready-to-go 1/25 scale models of 1966 prototypes are presented in the form of the 1966 Galaxie XL Hardtop, 1966 Chevy Impala SS Hardtop and the 1966 Mustang Fastback GT. Among other beautifully detailed models available in this scale are the Indianapolis Lotus-Ford, Willard Battery Indy-Special and Don Garlits Wynn's Jammer Dragster. Numerous customizing kits in 1/25 scale for those hobbyists whose interest lies in this direction, are produced by AMT and the fractionally larger 1/24 scale is well represented by such notable prototypes as the McLaren Elva, Hussein, Chaparral and Lola-70.

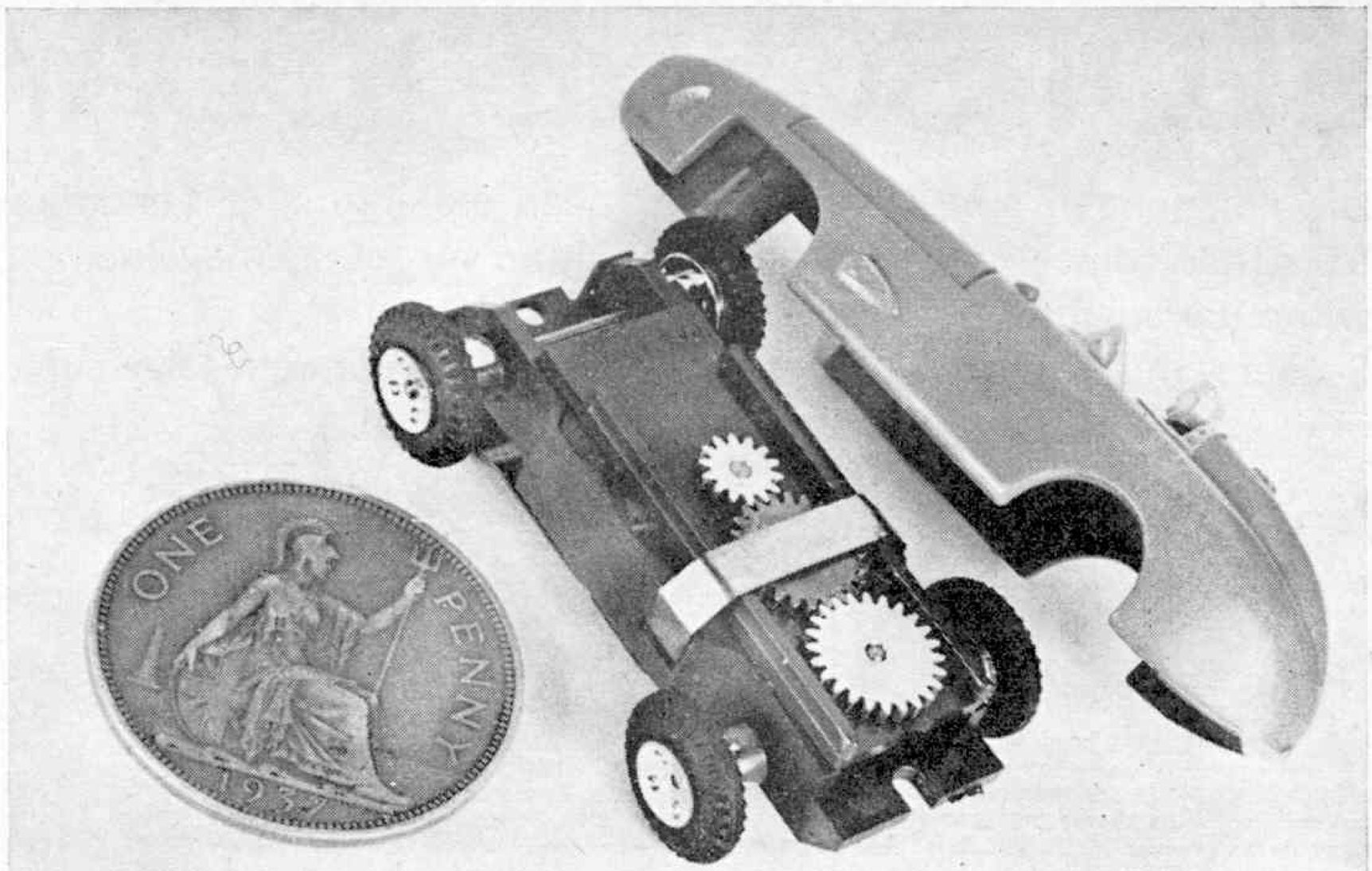
The finish of a model is always extremely important and the AMT Corporation has produced a useful assortment of spray lacquers in 30 different colours that will enable the modeller to obtain an authentic gloss on a miniature replica. These lacquers spray easily and dry quickly and are obtainable in Kandy Kolors, Metal-Flake, Metallic Lustre and Solid Gloss.

AMT are constantly producing new designs, new motors and new cars and their products are of excellent value.

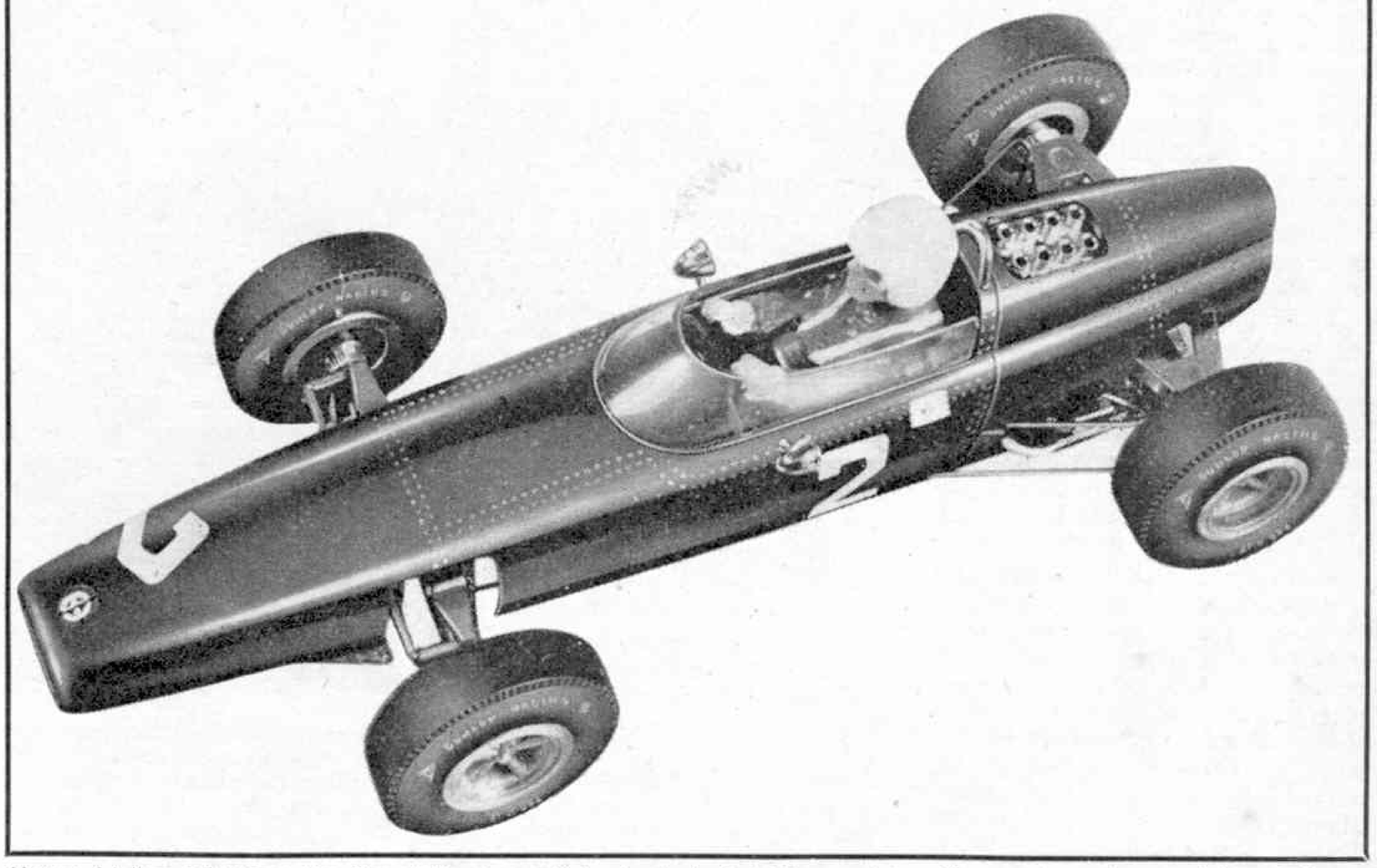
Aurora Plastics of Canada Ltd. Model Motoring

For those enthusiasts in search of a miniature racing system that will fit into a reasonably small space, HO scale could well be the answer. AURORA MODEL MOTORING has produced a roadway system that is notable for its ruggedness and versatility. It has been scaled to HO size so that the hobbyist can use HO accessories to perfection in planning roadway systems. Alternatively, scale replicas of famous race tracks all over the world or exclusive racing circuits with over and under flyover bridges, straightway stretches, banked curves and tunnels, etc., can be reproduced.

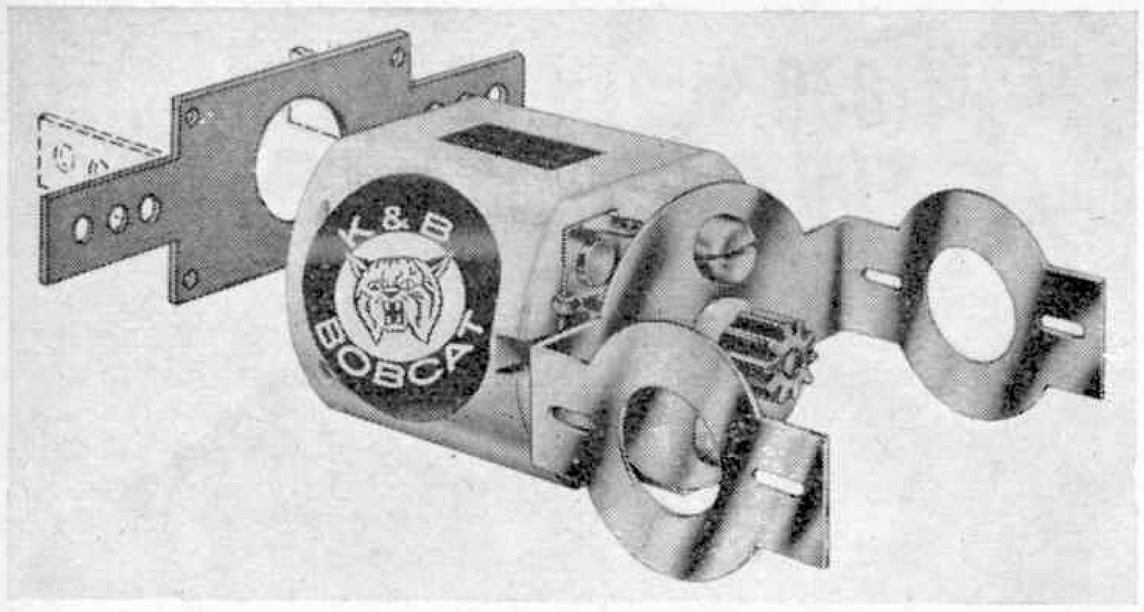
This compact set-up enables lay-outs to be constructed on 4 ft. × 12 ft. and 4 ft. × 8 ft. platforms or even a 4 ft. × 4 ft. table. Aurora



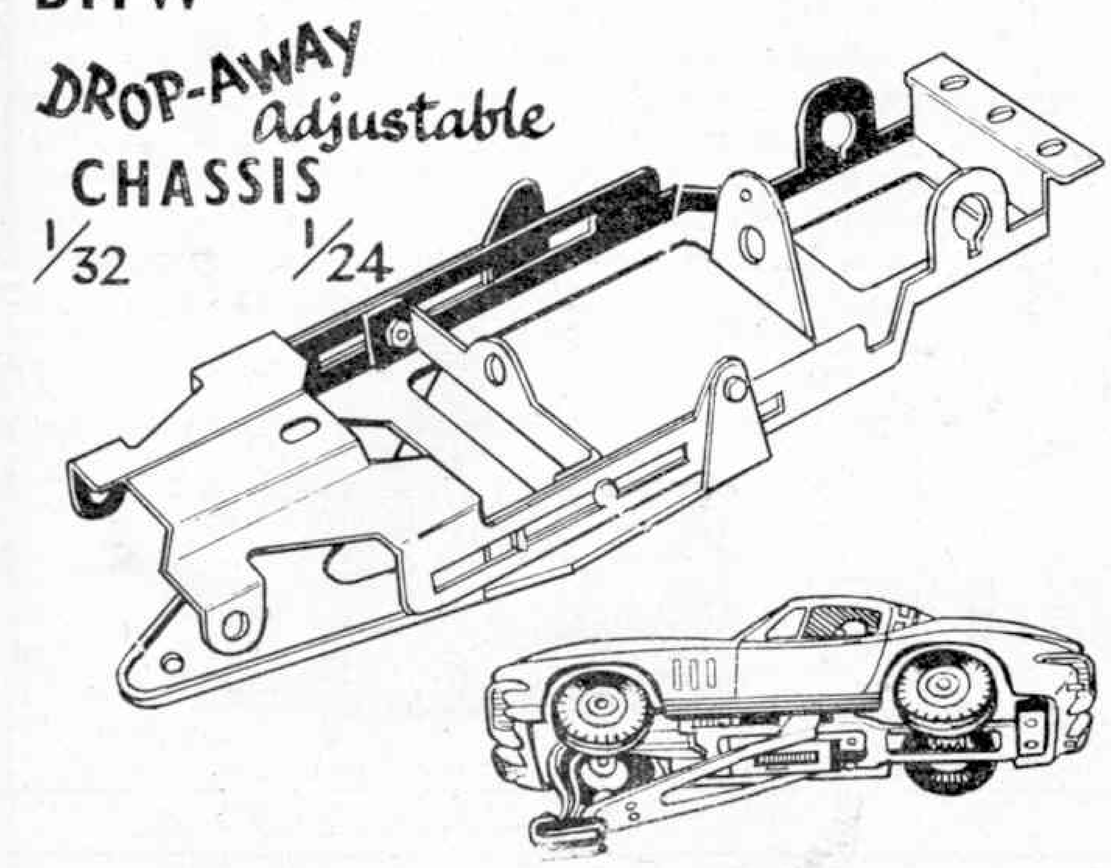
The incredibly compact Aurora Model Motoring Chassis is powered by the unique 'Pancake' motor. Built to 'HO' scale, this system blends well with a model railway



Above: 1½ litre BRM from the Cox stable shows high standard of detail, complete with rear-view mirrors and 'branded' tyres
Below: Batman and Robin would surely approve of the K and B Aurora 'Batmobile'. Six volt Hellcat Sidewinder supplies the 'go', and the model rides upon a special light-weight aluminium chassis



The 12 volt 'Bobcat' is one of the range of six K and B motors which have gained an enviable reputation for dependability and power



Suitable for both 1/32 and 1/24 scale, the BMW 'Drop-Away' all-brass chassis is particularly useful for scratch builders. Kit contains 40 parts, and the completed chassis will take a variety of motors

also produce the only battery operated racing set which uses the same track and cars. You can convert the set to mains operation later. (This will be fully described next month.)

A wide variety of cars and trucks such as the Jaguar XK140, Mercedes-Benz 300SL, Corvette, Thunderbird, convertibles, hard-tops, station wagons, trucks with flat body or stake body, tractor trailers, etc., are available in this system, and the models are powered by AURORA's unique 'Pancake' motor fitted within a sturdy chassis.

B.M.W. (Models) of Wimbledon

The B.M.W. 'Drop-Away' adjustable chassis is particularly useful for the scratch builder. It is suitable for 1/32 scale models or small 1/24 scale cars and can be fitted with Mabuchi, Revell and similar motors. Its all-brass construction makes it extremely robust and in all there are 40 parts to the kit which includes : space collars, bearings, pick-up collars, screws, nuts, washers, snap retainer and weight, plus a spanner for use in assembly.

This firm also imports and supplies a variety of high-quality American and Japanese kits and components.

Champion-Playcraft Toys Ltd.

The 12-volt-D.C. racing system released by Playcraft Toys Ltd., under the title of CHAMPION is designed as a system which can be developed from the basic set to form a fully comprehensive circuit layout at the minimum of expense. This firm also manufactures CORGI Toys, and these, together with CORGI Kits can be incorporated in CHAMPION layouts with excellent effect.

Three track sets are available—Sets A, B and C, each containing all the necessary accessories, plus two model cars, to enable attractive working layouts to be set out.

CHAMPION racing cars are manufactured to 1/36 scale and the sports cars to 1/43; all are fitted with identical motors, plated wire spoked wheels, windscreen, numbers, pick-ups, stub-axle steering and drivers. In each set a CHAMPION Driving Manual is included which gives details concerning all the sets, different types of cars, track units (such as hump bridges and lap recorders), accessories and spare parts, as well as crash barriers, ramp supports, controllers, pick-up shoes and tyres, etc., plus maintenance tips and racing rules.

Classic Shells

Glass fibre body shells produced by CLASSIC are in great demand by discriminating modellers, and their scale accuracy, fine detail and durability have made them popular among scratch builders in various parts of the world. These shells are not mass produced items, each being the individual product of a master craftsman and therefore their numbers are limited.

The CLASSIC range is comprehensive and is continually being extended—3-litre F1 bodies are now being introduced. All shells are to 1/32 scale and are available from several hobby stores up and down the country. Alternatively, they can be obtained direct from the manufacturers : C. D. Fitzpatrick, 61 Larkfield Lane, Southport, Lancashire.

Cox

The tremendous reputation built up over the years by the L. M. Cox Manufacturing Co. Inc., of Santa Ana, California, with their model aircraft products is more than maintained in their miniature car racing kits and accessories which are beautifully engineered and detailed.

Eight racing models are available in the COX range, only two of which at present are in 1/32 scale, the remainder being produced in 1/24. In the latter scale 1½-litre models of the BRM and Ferrari, plus the famous Ford GT, Lotus 40, Chaparral and Cheetah are manufactured—the Ford GT and Cheetah being repeated in the smaller 1/32 scale. The 1/24 scale Ferrari, BRM and Chaparral, together with the 1/32 scale Ford GT, are also available as completely finished ready-to-run models.

Even the most cursory glance at any COX kit or component will immediately provide convincing proof of their extra fine quality. Detail in all the body shells produced by this firm is exceptionally fine, and the models are all fitted with weight-saving, cleanly-formed die-cast magnesium frames. Fine detail also extends to precision-scaled cast magnesium wheels, all of which are machined to close tolerances.

Special formula rubbers have been developed by COX for their tyres—soft rubbers that give maximum traction for rear tyres and hard rubbers for minimum 'scrubbing' on the front tyres. All are instrument-checked at the factory for hardness, roundness, tread and diameter. These tyres are in great demand and used by many of the most successful competitors in club events—a sure indication of their quality. They're 'branded' too—Dunlop, Goodyear—take your pick!

COX motors also are in a class by themselves. Each is tachometer tested before leaving the works to make certain its track performance will meet specifications. The TT X-50 is a small, slim-line unit ideally suited for installation in 1/32 scale F1 models, and the TT X-150, fitted with self-aligning bearings, is another little 'bomb' — slightly

larger than the TT X-50 but suited for 1/32 scale as well as 1/24. For the latter scale COX provide the TT X-250 which develops maximum torque and is suitable for those who demand the ultimate in power.

Two excellent speed controllers are produced by this manufacturer—the Mark 3 and Mark 4. Both are engineered to the highest standards and are super-sensitive and super-tough. The latter is a 15 ohm unit and COX claim it will outwear three ordinary controllers and is the most advanced and responsive type yet developed.

Faller

Four motor sport sets in the HO scale are available in the FALLER AUTO MOTOR SPORT system and these can be extended and elaborated according to personal preference by the purchase of extra track sections and items from the magnificent variety of scenic accessories.

Motor kits are available separately and there is also an excellent range of finely detailed scale model cars to choose from.

Posts, guard rails, traffic signs, embankment parts—in fact, everything connected with roadways and their surroundings is catered for in the FALLER range. The model craftsman, therefore, is provided with tremendous scope and is able to impart remarkable realism into a layout which may, because of space limitations, be restricted to only a small area.

K&B Manufacturing

K. & B. Aurora of Downey, California, offer a wide range of products specifically designed for model car racing, all precision engineered for 1/24, 1/25 and 1/32 scales, and they feature innovations such as one-piece insert moulded car bodies with clear windows and windscreen. Another interesting K. & B. item is their Posi-Lok gear and wheel development in which a tapered collet permits a positive lock around the axle and assists in achieving accurate rolling and concentricity. With these Posi-Lok gears and wheels no thread is required and any type of installation is possible. The ingenious design overcomes the problem of gears and wheels coming loose and installation

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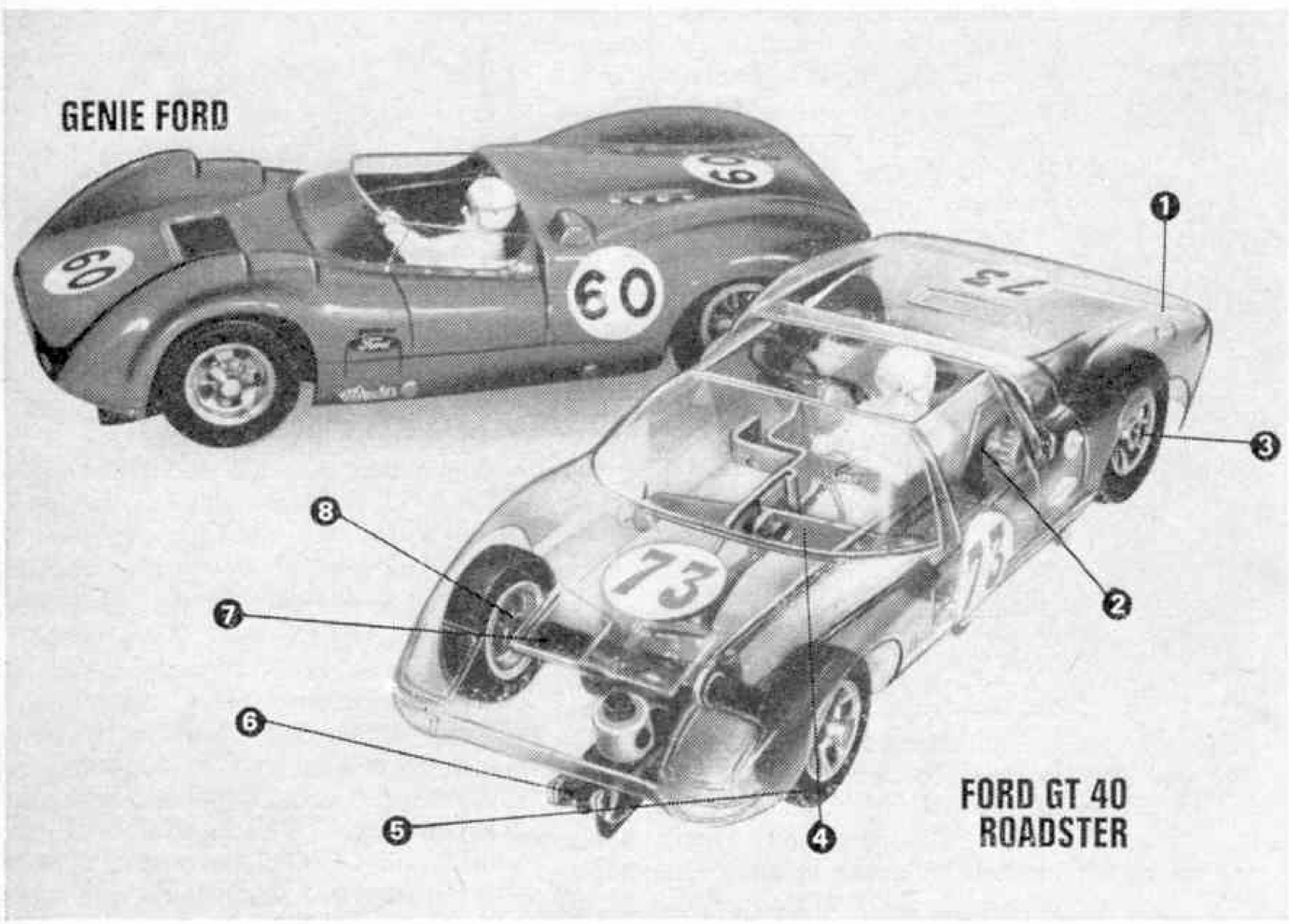

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This exciting new addition to the series is complementary to the above title by L. A. Manwaring. It gives world wide coverage of commercial vehicles. There is information on vehicles from USSR, USA, Japan as well as Europe. Notes on engines, modifications, design, etc. of such vehicles as earth moving vehicles, fire fighting appliances and many more. Fully illustrated throughout. **Published October 24th. 6s net.**

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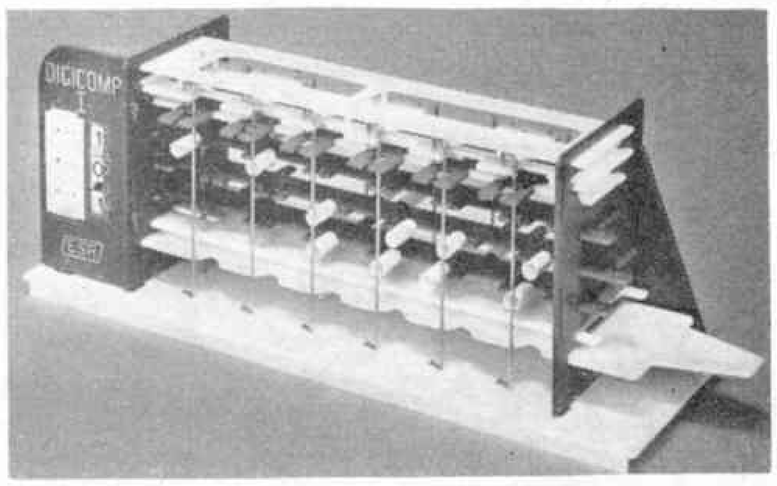

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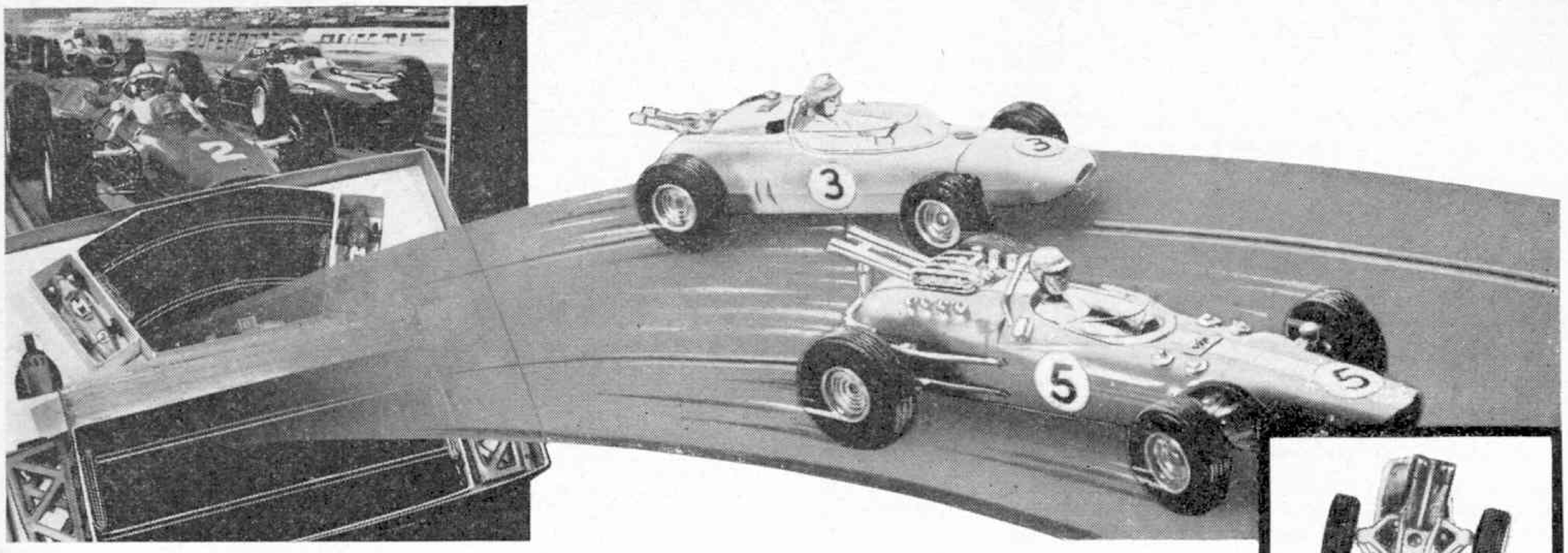

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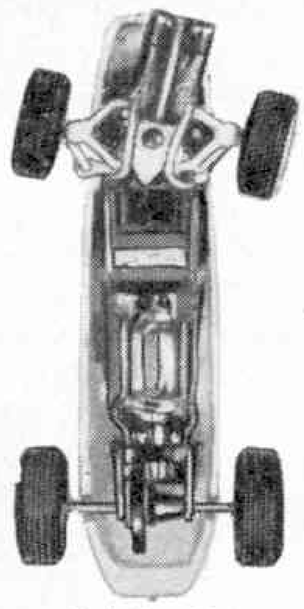

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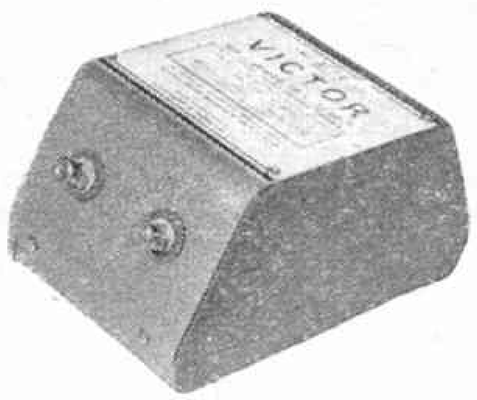

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E Type Jag	35/–
Ferrari 250	35/–
AC Cobra	35/–
Sting Ray	35/–
Mercedes	35/–
Aston Martin	35/–
Cox	
Ford GT	89/6
Cheetah	95/–
K & B	
Barracuda	79/6
Corsa	79/6
Mustang	79/6
Ford GT	79/6
Pontiac	79/6
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Lotus 30	84/11
Porsche R561	79/11
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Berlinetta	79/11
Atlas	
Porsche 904	89/6
Ford GT	89/6
Ferrari 158	89/6
Brabham	89/6
Tokyo Plamo	
Maserati	33/6
Cooper	33/6
Thunderbird	33/6
Lincoln	33/6
Studebaker	33/6
Cooper Ford	33/6

MOTORISED KITS 1/24 SCALE

Revell	
Porsche RS6C	45/–
Ferrari 250	50/–
Sting Ray	50/–
Lotus 23	45/–
Genie Ford	120/–
Ford GT 40	120/–
Cox	
Cheetah	112/6
Chaparral	112/6
Lotus 40	112/6
Ford GT	112/6
BRM F1	99/6
Ferrari F1	99/6
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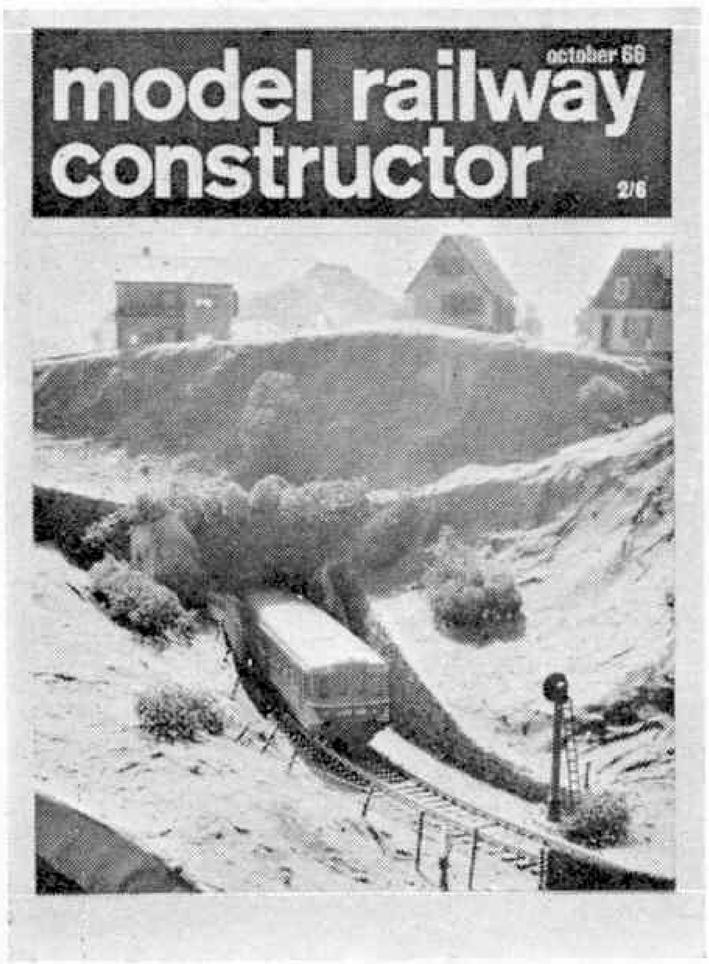

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and removal is simple and fast, being achieved with a twist of a wrench.

A fine selection of brass pinion, spur and crown gears—all with Posi-Lok centres, are also available, plus a useful assortment of wheels and tyres.

All 1/32 scale models in the K. & B. range include: the Cobra GT, Ford GT, Pontiac GTO, Mustang 350 GTO, Corvair Corsa, Plymouth Barracuda, Comet Exterminator, Lola T-70 and Chaparral.

K. & B. slot car racing motors have built up an excellent reputation for dependability and there are six in the range. The 'Challenger' and the 'Super Challenger' are both sidewinders, specified as 12-volt and 6-volt units respectively. Can-type motors are listed as the 'Royal Bobcat' with a 9-volt armature—the 'Bobcat' for 12-volts and a 9-volt 'Wildcat' that turns at 37,000 r.p.m. A new high-speed 9-volt motor specially developed and constructed for 1/32 scale models is known as the 'Cougar'.

Four racing speed controllers are produced by K. & B., all wired for Dynamic Braking, and their sturdy construction and fine design features assure peak performance and instant response. The superior finish and quality of these, and all K. & B. products, places them high on the list in popularity among discriminating racing modellers.

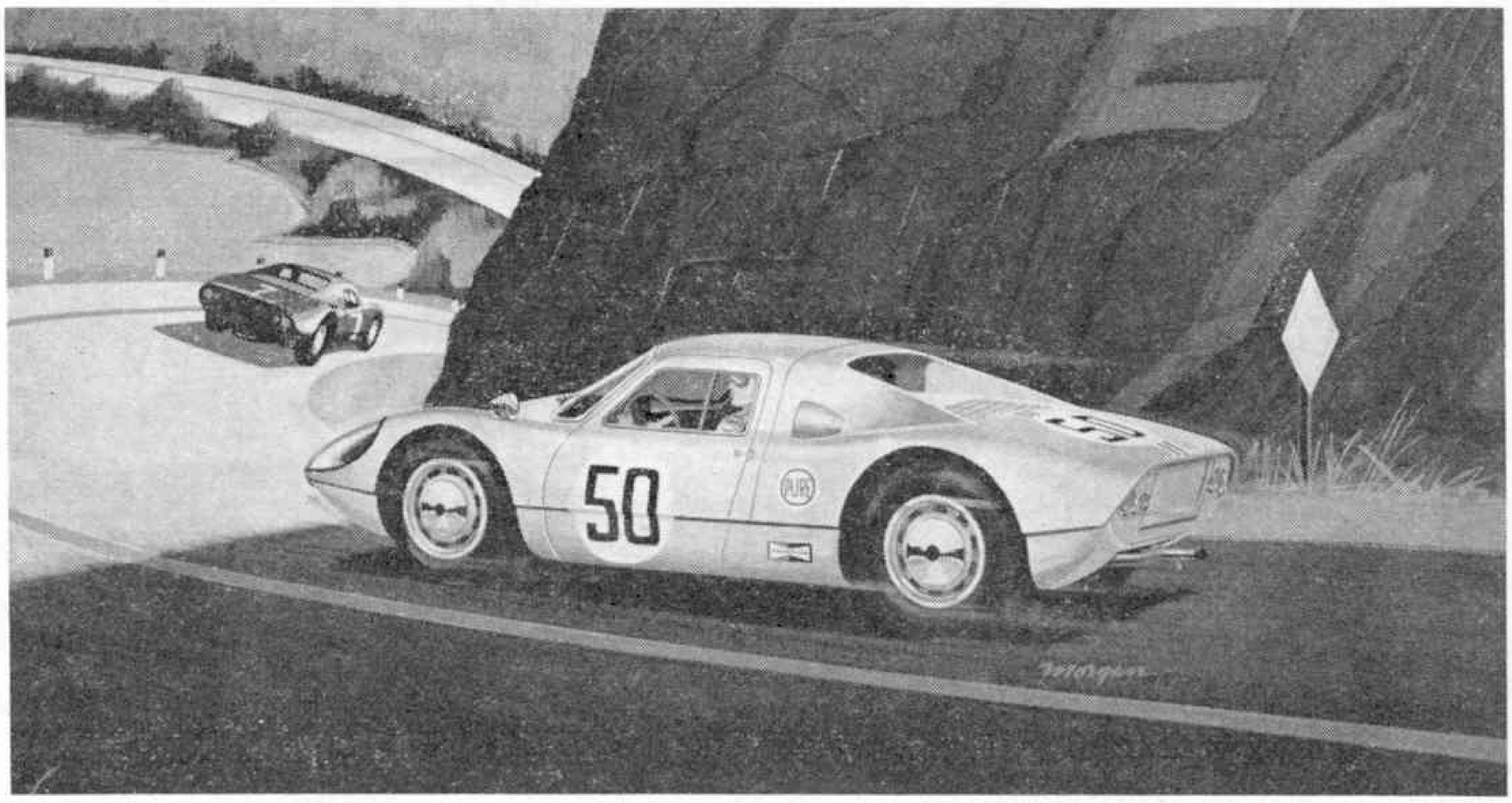
Minic Motorways
Minic Ltd.

Although originally designed as a roadway system MINIC MOTORWAYS have now been developed to include racing and rallying. In size the range fits in perfectly with Tri-ang Hornby Model railways and therefore it provides plenty of scope for the railway modeller as well as the miniature sporting motorist.

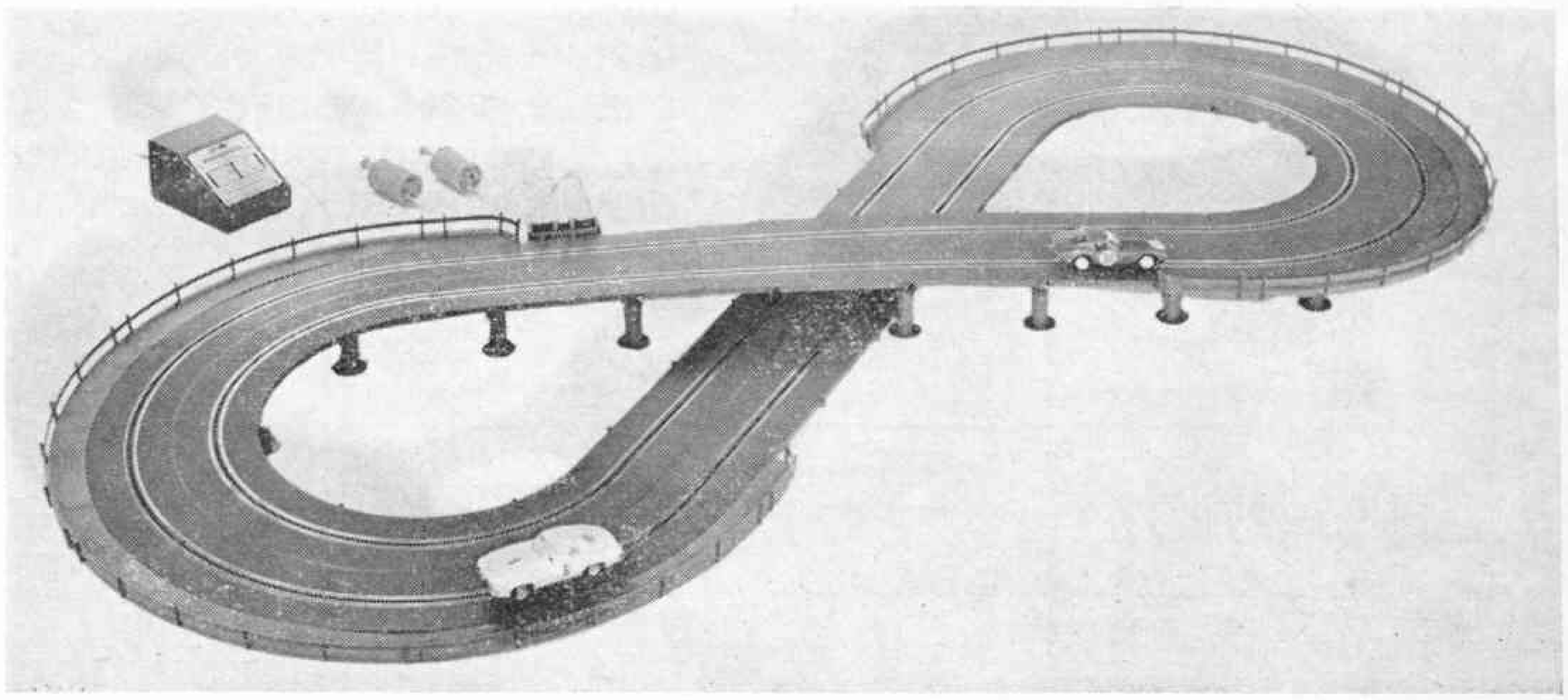
A fascinating variety of layouts are offered and this year two new exciting additions to the range are the Rally-Racing Sets—The Frontier Post Motor Rally set and the Checkpoint Bravo Rally set. Both incorporate an ingenious operating barrier that can be pre-set by means of a clockwork timer to go up and down across the track at varying intervals. These were fully described and illustrated in the May, June and August issues of Meccano Magazine.

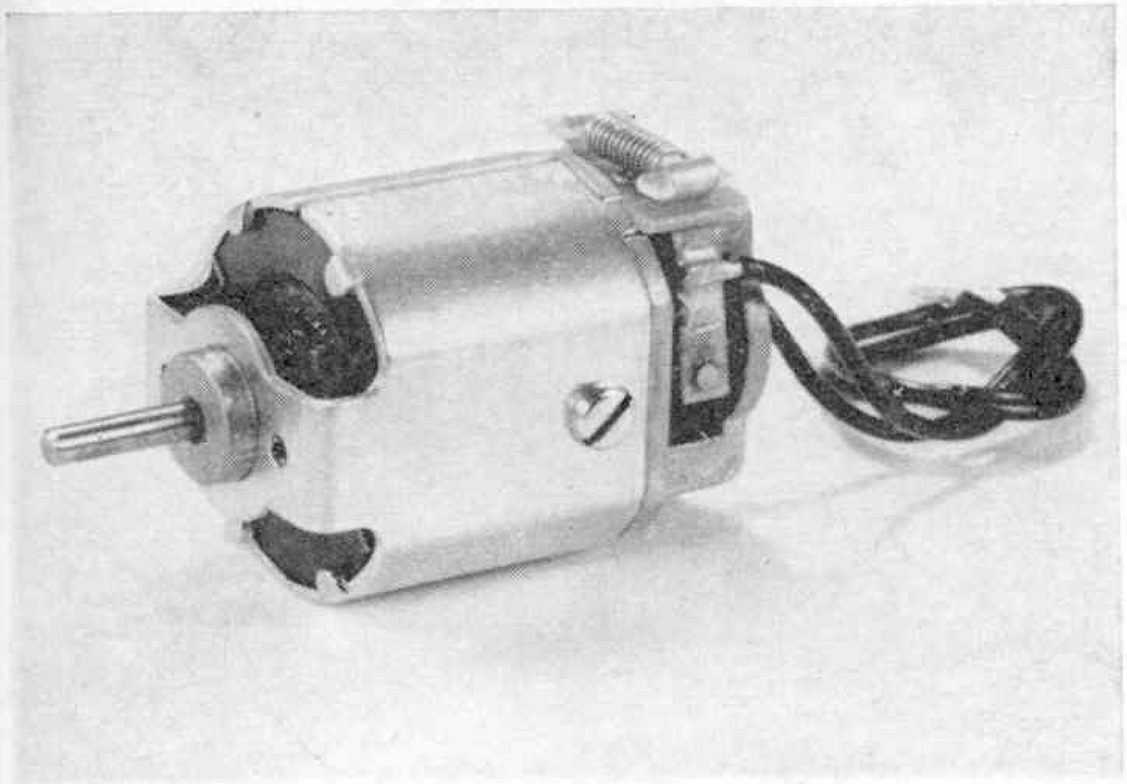
A fine series of GT Racing and Rally cars are featured in the

The terrific realism that can be obtained with the Minic Motorways system is well shown in this very atmospheric photograph. Both commercial vehicles and cars are available, and the system can be used to great effect in conjunction with a model railway. Rally sets are the latest thing, and they introduce real 'purpose' to the slot scene.

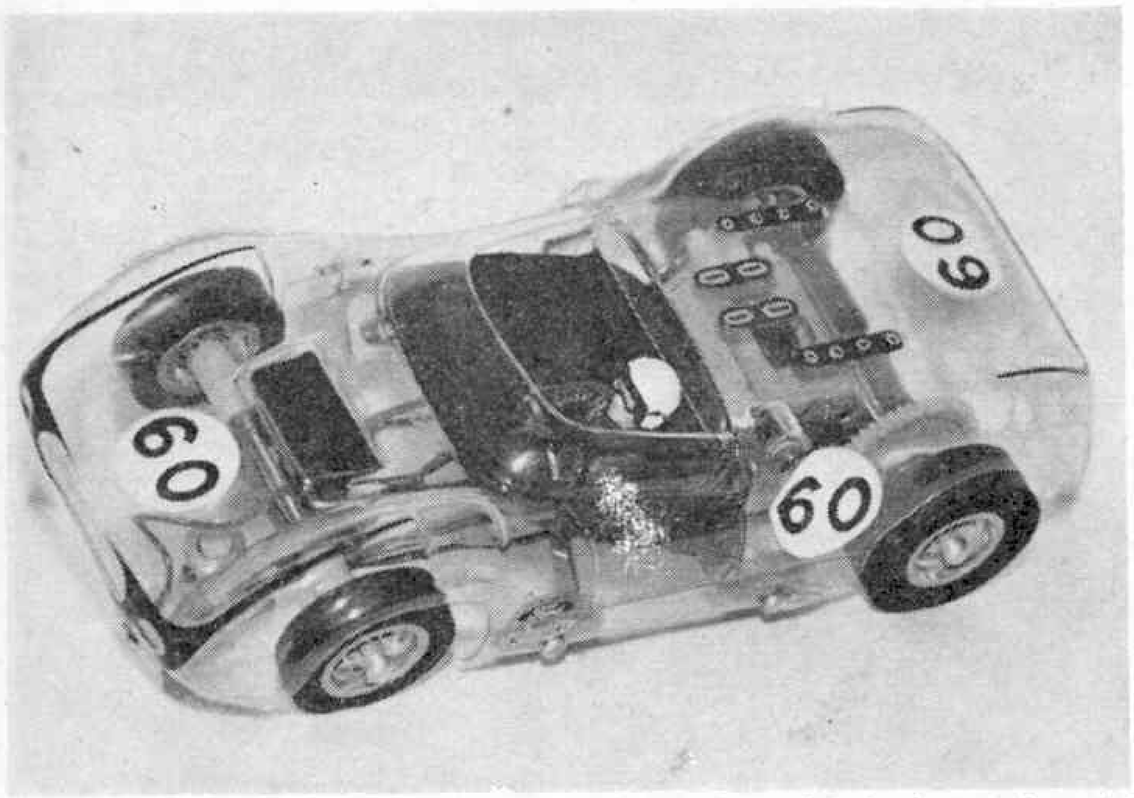


Above: 'Designed for show and engineered to go' say Monogram of their cars, and this could not be more true of the sleek Porsche 904. Read more about this kit on page 26 of this month's issue. Below: attractive 'figure 8' layout with fly-over and two cars is built from the Revell 'Gran Turismo' set.





Not yet available, but eagerly awaited, the new Pittman DC6001 three pole motor promises to be really 'hot'. Operating at 12 volts D.C. it will run at speeds in excess of 35,000 r.p.m., providing tremendous acceleration in lightweight cars. It is claimed to out-accelerate and out-stop all comers!



The sidewinder drive and brass 'space-frame' chassis can be clearly seen through the clear, vacuum moulded body of this Revell 1/24 scale Ford GT roadster.

MINIC model range and these are all fitted with the new and potent 3-pole 'Jet-Speed Six' motor.

MINIC layouts can be extended and enlarged by purchasing extra track sections and it is possible to reproduce many of the famous full-size racing circuits in miniature. In addition, the range includes several attractive easy-to-assemble, clip-together buildings to add to the realism of the track and roadway layouts. The accommodating size of the MINIC products will be of particular attraction to those enthusiasts with limited space. (There's more on Minic in the next M.M.)

Monogram

Available in the popular 1/32 and 1/24 scales, the complete line of MONOGRAM slot racing scale accessories will appeal to the scratch builder, as the useful variety of MONOGRAM 'TIGER' items covers his every requirement and every component is engineered with precision.

All the famous 'TIGER' motors produced by this firm are thoroughly tested before delivery and the hobbyist can therefore rely on their quality.

A variety of kits are supplied by MONOGRAM, authentic down to the finest detail and they include Sports and GT models. In addition, 1½-litre formula one Grand Prix racing models of the Lotus 33 and Ferrari are available in 1/32 scale, complete with exposed suspension detail which is such a characteristic feature of GT cars of recent years. For these, and the current 3-litre F1 machines, a slim chassis and motor are essential in 1/32 scale and MONOGRAM have supplied the requirements in both cases. Firstly, with their rugged slim-line, adjustable brass chassis with swing pick-up, and secondly, with their slim, can-type motor—the 'TIGER' X-88—which supplies all the necessary power. The chassis in kit form is complete with wheels, tyres, axles, guide-shoe and pick-ups, and will doubtless be used, together with the X-88 unit, by numerous scratch builders in the construction of the latest 3-litre prototype in 1/32 scale.

Superb handling characteristics and outstanding straight away speeds are a feature of all the MONOGRAM models which are 'Designed for show and engineered to go', and for those who prefer to construct straight from a kit rather than scratch build a model, the MONOGRAM range could well be the answer.

Pittman

For those in search of exceptional power, speed and reliability a PITTMAN motor is the solution. This American company has a tremendous reputation in the modelling world and they have specialised in the design and manufacture of miniature permanent magnet electric motors for over 25 years.

All the units are equipped with self-lubricating powdered metal bearings giving extremely long life. Graphite copper carbon brushes operate on ground copper commutators and a standard size shaft is made from ground stainless steel stock, while the pole pieces are rust resistant magnetic iron.

Among the in-line motors suitable for 1/32 scale the DC196B is probably the most versatile. This has rear axle bearing arms incorporated and its overall dimensions make it a most useful motor for installation in GP models. Other in-line motors are the DC195A, DC70 and the DC66, which is also available for 6-volts. All these motors, of course, are equally suited for 1/24 scale.

The latest PITTMAN introduction is the DC6001 and this is claimed to out-accelerate, out-wind and out-stop the majority of the really 'hot' re-wound motors. It is a 3-pole unit housed in a nickel-plated shell and fitted with sintered bronze bearings. At present this potent motor is not available in Britain, but with the tremendous reputation of PITTMAN behind it, it will be one that is awaited with considerable interest. British distributors are the Pritchard Patent Product Co. Ltd., of Seaton, Devon.

Revell

The high standard of REVELL products is well-known, and the model car slot racing kits and components introduced by this manufacturer over the years have become notable for their reliability and realism. Their popular range of 1/32 scale car kits now extends to eight and includes the Chaparral and Cooper Cobra, both fitted with the super-fast REVELL SP 80 motor that delivers 37,000 r.p.m. at 12-volts.

A new home racing set has been introduced this year—this, the Nova Set in 1/32 scale can be set up in a space of 2½ ft. × 4½ ft. and provides over 9½ ft. of track with Chicane and Lane-Changer sections. Two completely assembled Ferrari 250 GTO Sports Cars are included, together with Controllers with Built-In Brakes. The Nova Set contains the same high quality components that are to be found in any other REVELL Home Racing Set and, of course, with the excellent range of track sections that are available, the layout can always be extended.

REVELL accessories and components cover every requirement of the model car hobbyist including wheels, tyres, axles and gears. Various body shells are also available separately, but as yet this firm has not produced any GP prototype models.

Two other new introductions this year to the United Kingdom market are the REVELL 1/24 scale Ford Genie and Ford GT Roadsters. Both these brand new cars include sidewinder drive, brass space-frame chassis and clear, vacuum-formed bodies. They are classed as 'Club Champion Specials' with a guarantee of high performance.

Scalextric

Minimodels Limited, with their SCALEXTRIC MODEL MOTOR RACING system can justly claim to have aroused the interest of thousands over the years in the sporting hobby of electric model car racing. This system, which today is still being developed, has become established as the most comprehensive commercial racing system in the world, and can be regarded as being one of the pioneer projects in the formulation of proprietary motor racing sets.

It is a system that enables from two to eight lane circuits to be built and incorporates a variety of novel ideas, such as controlled Pit Stop Sets, Penalty Chicanes, controlled Blow-Out track sections, Fuel Gauges, and even a simple attachment that fits the Hand Controllers which provides true-to-life engine screams, whether the car is stationary or moving.

There is a big range of SCALEXTRIC sets, and circuits can also be built according to personal preference by utilizing the extremely adaptable track sections and accessories available.

SCALEXTRIC models are manufactured in 1/30 and 1/32 scale and 1966 has seen the introduction of a series of 'Race Tuned' supercharged cars which are recommended for the advanced driver. In conjunction with these models a new 'Race Tuned' hand controller has also been produced and can be supplied with either a 25 or 15 ohm resistance. It is specially designed for operating high-powered motors and incorporates a special braking device.

SCALEXTRIC have also produced 'construct-it-yourself' Car Kits which include the 'Race Tuned' motor and step-by-step instructions.

Among other new models recently introduced are two extremely interesting Indianapolis-

type cars—a front-engined Offenhauser 'Roadster', and one of the rear-engined Indi-Offenhausers. Both capture the characteristics of the full-size prototypes admirably and both are included in the new 'Race Tuned' series.

Extension Packs and Track Accessory Packs, Trackside Buildings, Lighting Equipment, life-like scale figures and innumerable other items are available in the vast SCALEXTRIC range which caters for every aspect of electric model car racing.

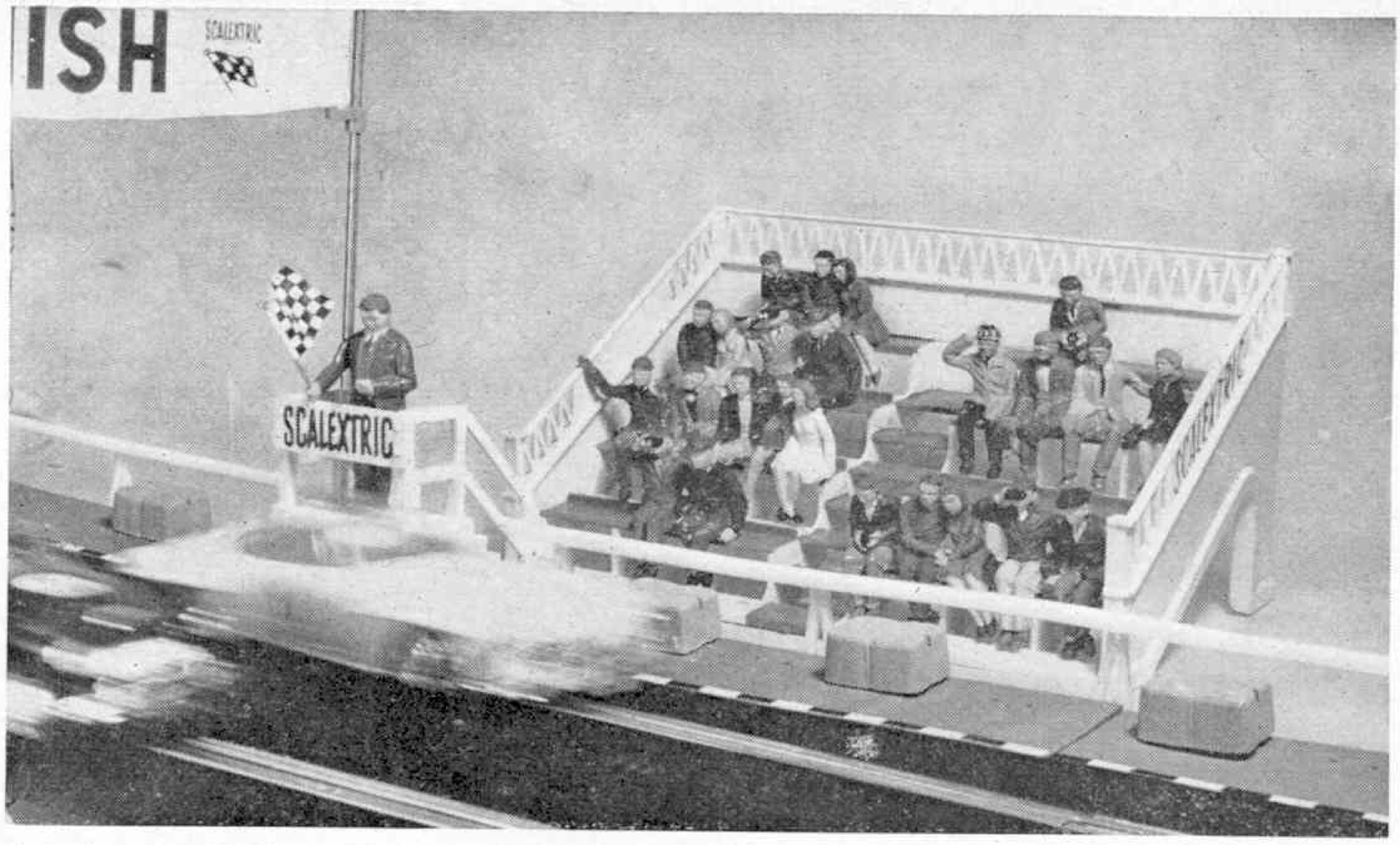
S.R.M. Engineering Ltd.

Scale Raceway Models produced by S.R.M. Engineering Ltd., are scaled at 1/40, and the cars are formula one GP types of BRM, Cooper, Lotus and Ferrari. In addition the popular Mini-Cooper is also available and all are fitted with the robust 12-volt DC S.R.M. motor that provides the models with scale speeds of over 240 m.p.h.

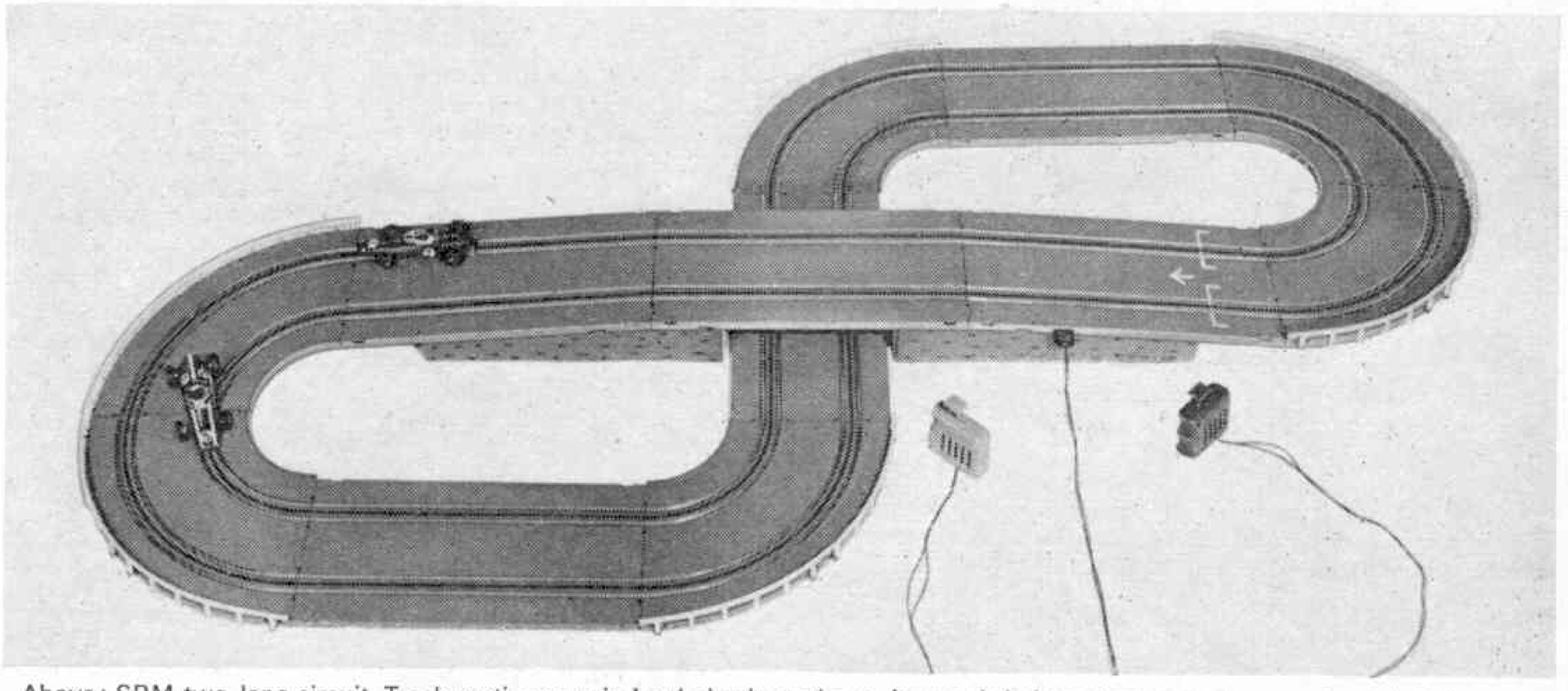
Excellent road-holding is a feature of these little cars, due mainly to the independent all-round suspension that has been ingeniously incorporated in their design, plus front wheel steering. The models are well detailed and all the components used in their construction can be purchased separately.

S.R.M. track sections are formed in hard plastic and two, four or six-lane circuits can be assembled. Complete sets are obtainable and are ideally suited for home use.

Another product supplied by S.R.M. Ltd., is NEW FLEXI-SLOT —a specially designed black plastic extrusion with its own built-in slot which can be purchased in lengths of 25 ft and 50 ft. All slot cars commercially obtainable can run on a New Flexi-slot track and the manufacturer recommends cheap insulation board for the track surface. Preliminary cuts are made with two No. 20 Swann Morton blades bolted to a spacing bar handle and a Stanley router is then used to clear away between the cuts. New Flexi-slot is inserted in the groove, contact braids are stuck down, and a smooth track is the result. All the necessary materials —Flexi-slot, braid, cutting and routing tools, plus an instruction sheet are supplied by S.R.M. Ltd., and for the home builder wishing to design and construct his own exclusive circuit the use of New Flix-slot simplifies the task considerably.



A simple way to add realism to even the simplest layout. The Scalextric Grandstand is supplied in kit form, and the extremely realistic figures only require painting. The starters' flag can also be raised and lowered by remote control!



Above: SRM two-lane circuit. Track sections are in hard plastic, and two, four and six lane circuits can be constructed. Below: two Grand Prix cars 'neck and neck' on an SRM circuit

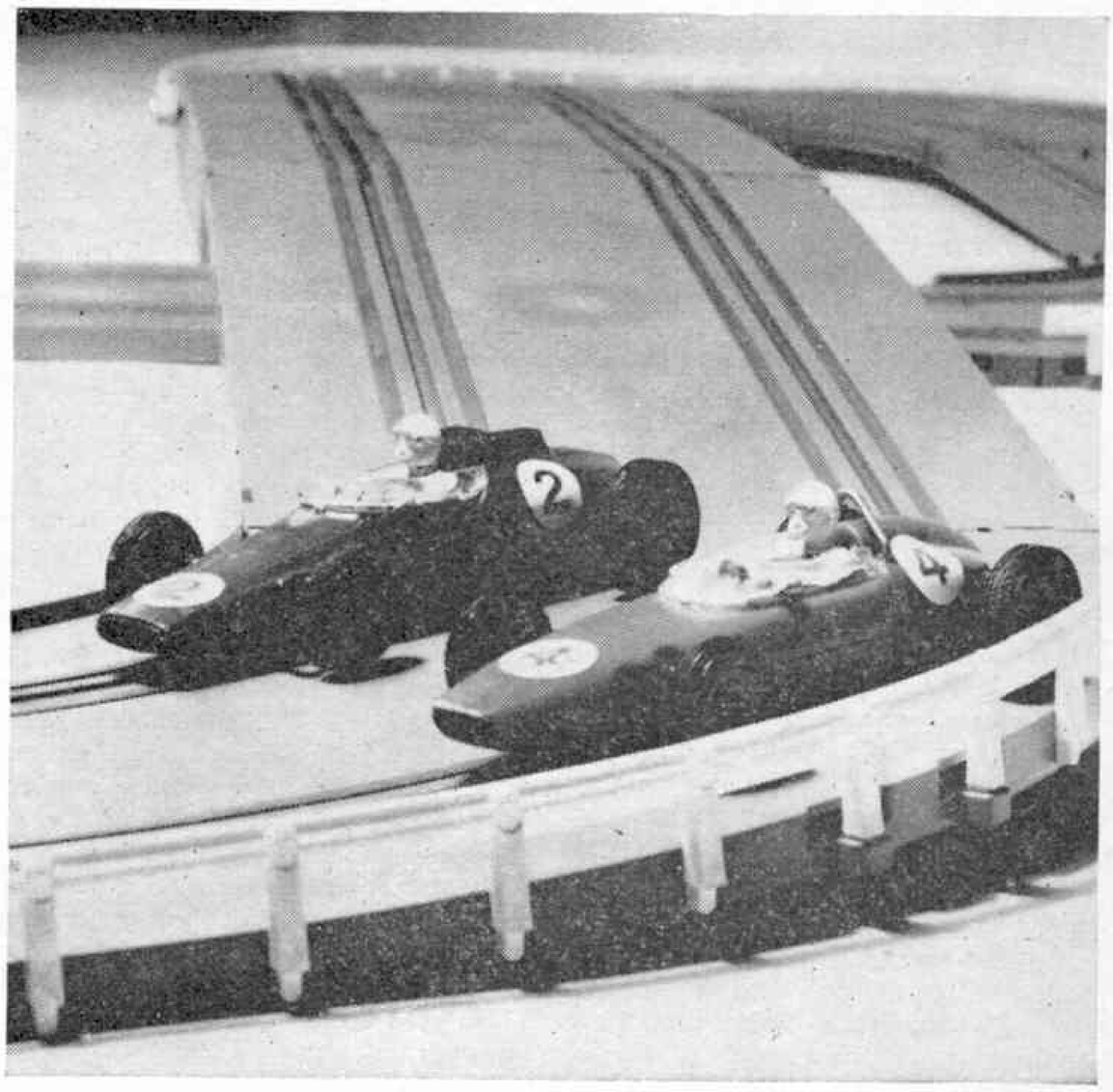
Strombecker

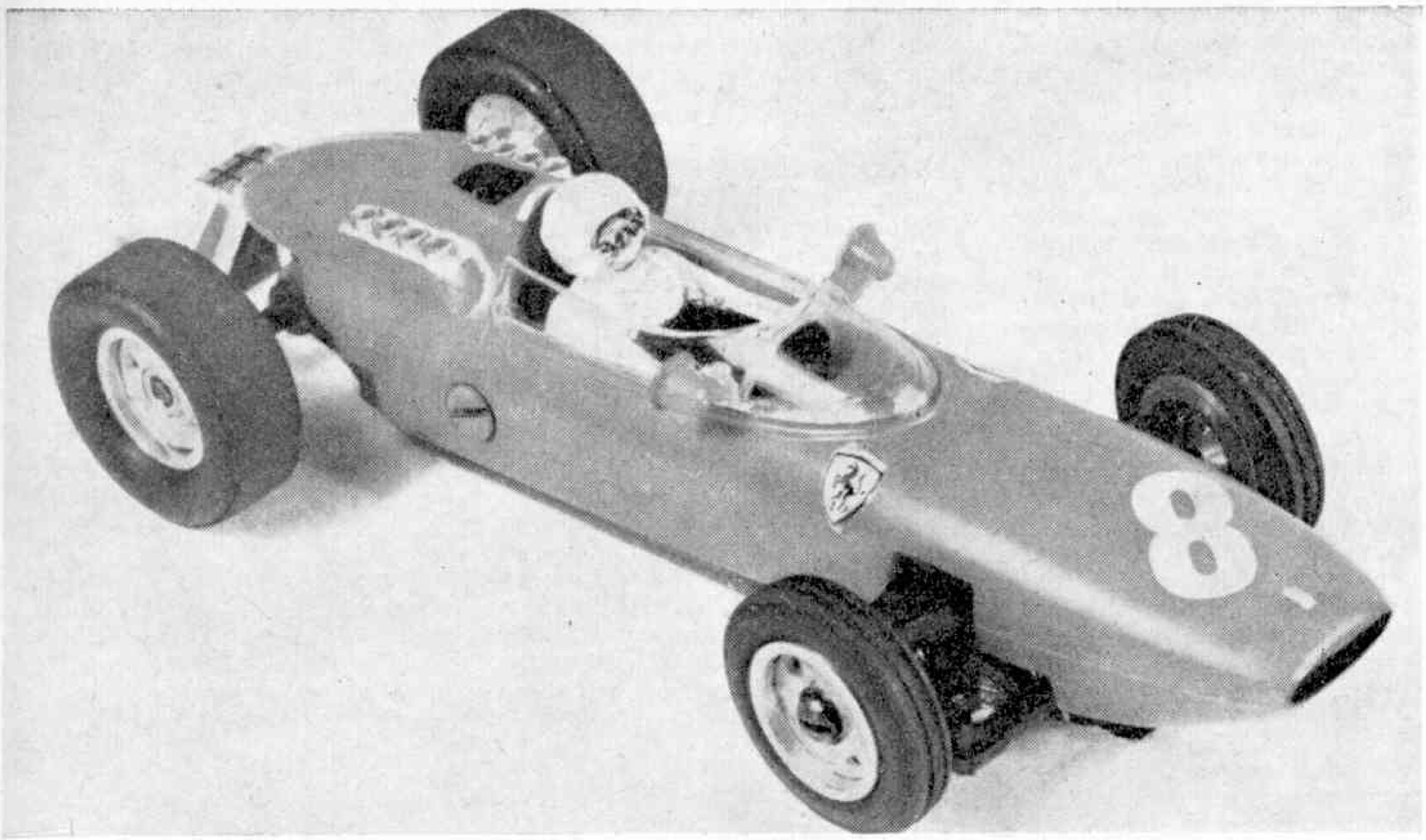
Constant research and development has given STROMBECKER model car racing equipment a tremendous reputation for high quality. This concern introduced slot racing on a commercial basis to the United States and has always been among the leading manufacturers.

Diagrams and assembly instructions accompany each STROMBECKER kit and several models in 1/32 and 1/24 scale are obtainable in Britain.

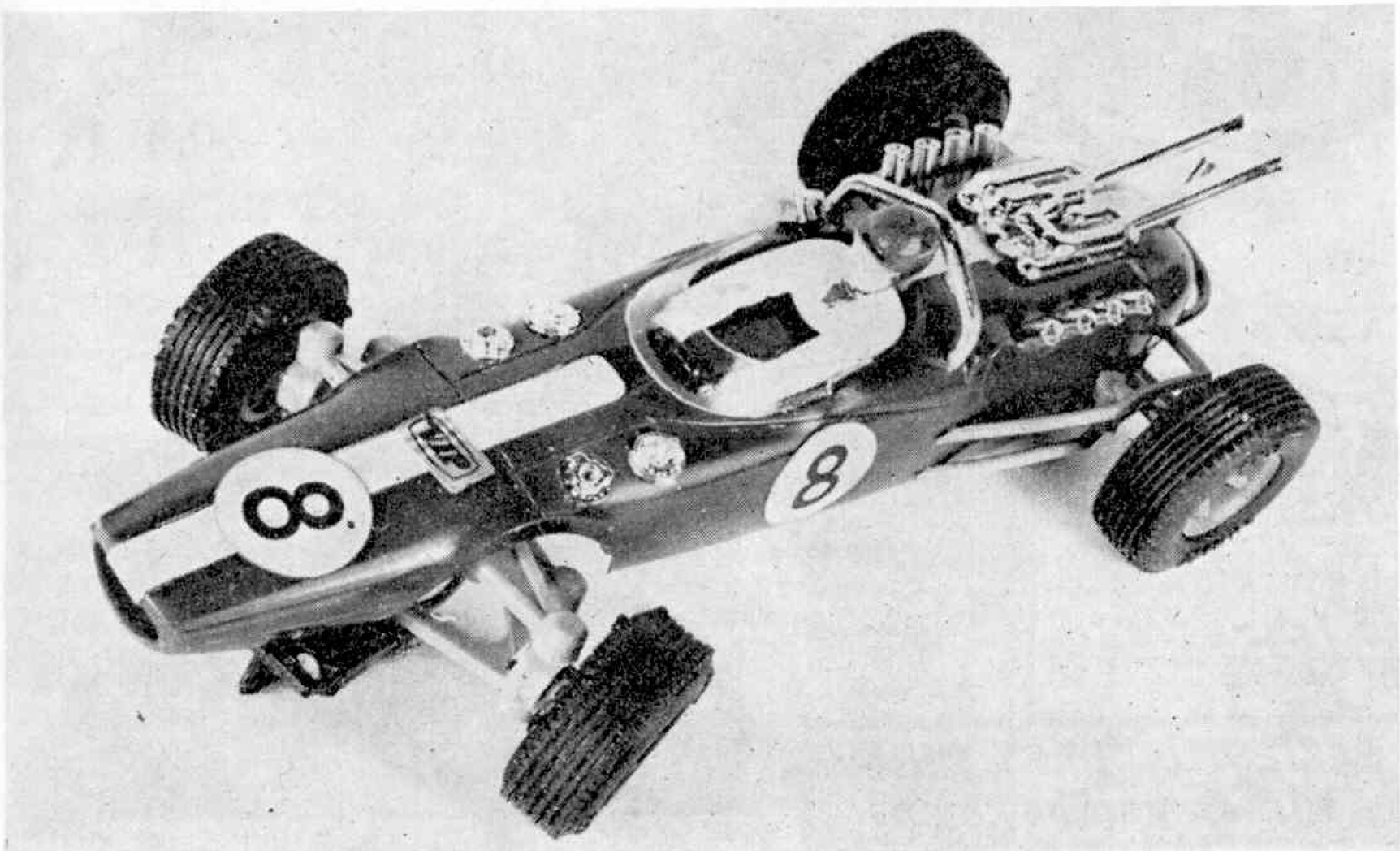
The range of 1/32 kits include the Cheetah GT, Mercedes-Benz W154, Dino Ferrari, Barracuda and the Indianapolis Lotus-Ford; 1/24 scale is represented by the Brabham F1, Ferrari F1, Lancia-Ferrari and Lotus 30.

A very useful series of robust, well designed motors are also produced by the firm, the latest introduction being the 'Hemi 300', a can-type unit with balanced armature, silver brushes, tremendous torque and high r.p.m. This is suitable for installation in 1/32 scale models and for the same scale there is also the

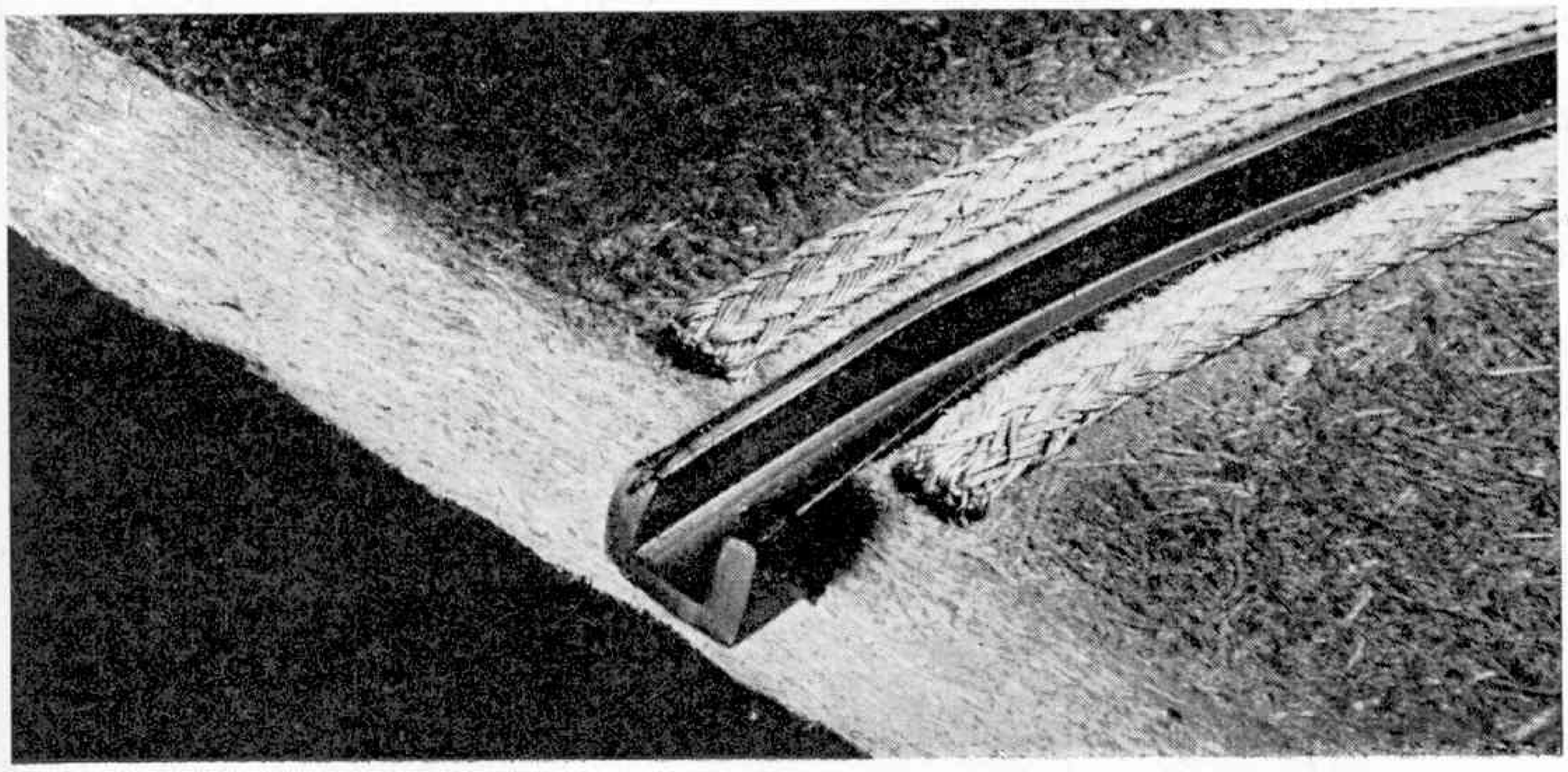




Above: Super Shells 1/32 scale Ferrari V8 really captures the powerful appearance of the prototype. Below: Lotus Indianapolis, one of the latest additions to the VIP range, sports much 'plated' detail. The Viplink independent suspension can be clearly seen



For the enthusiast who wishes to construct his own exclusive slot-track, SRM New Flexi-Slot provides a cheap and simple solution. The black plastic extrusion, available in 25 ft. and 50 ft. lengths is inserted into a slot routed out of the insulation board track base. Contact braids are then stuck to the board on either side of the slot



'Supercharger' with a no load r.p.m. of 36,000, and the TC 32 that turns at 32,000 r.p.m. For 1/24 scale models the 'Hustler' unit is a high-torque motor fitted with twin in-line magnets at each end and a no load r.p.m. of 28,000. Also for 1/24 is the can-type TC 24, a slightly larger version of the TC 32, the former with a no load r.p.m. of 23,000.

This manufacturer also produces Motor Rewind Kits containing all the necessary components to enable the hobbyist to construct his own can-type motor. Rewind kits for 'Hemi 300' and 'Hemi 400' motors are available; the latter being highly suitable for 1/24 scale. By following the instructions contained in these kits it is possible to assemble a motor that will turn at speeds in the region of 40,000 to 50,000 r.p.m. at 12-volts with no load.

Super Shells

This firm caters solely for the popular 1/32 scale and supplies a fine range of kits and parts. Models produced by SUPER SHELLS include the F1 'Nostril Nose' Brabham, 1964 Ferrari V8, 'Stack-Pipe Exhaust' BRM, F1 Lotus 25, Lotus Elite, Lotus 30, Ferrari 250P, and 'E' Type Jaguar.

Two extremely useful items are the 'Popin' Sports/Saloon chassis kit and the 'Slim Jim' Formula One chassis kit—both designed to accommodate the potent Mk 1 and Mk 2 K's motors. The nylon steering unit supplied with each of these kits is also available as a separate component and can be adjusted for a variety of track widths. It includes swing pick-ups, stub axles, slot guide, braid and flexible connection wire and has great possibilities in the hands of the scratch builder.

Tyres formed in high hysteresis, hardwearing rubber, aluminium/magnesium wheels, inserts and Eldi gears are among other products manufactured by SUPER SHELLS, and one of their latest novel introductions is a trailer kit made from high-impact polystyrene to true 1/32 scale. It embodies many attractive and realistic features and is complete with two rubber-tyred wheels —just the thing for adding that extra touch of authenticity to the paddock on a model circuit.

VIP
Victory Industries (Raceways) Ltd.

Today's Victory Industries (Raceways) Ltd., acquired the assets of the former Victory Industries Company who were one of the originators and pioneers of slot car racing back in 1955/56. This company, therefore, has a fine background of experience which is reflected in their excellent products.

VIP specializes in 1/32 scale and offers four complete boxed Raceway Sets which include their new VIPTRACK racing sections incorporating ingenious flexible joints which slide easily into one another locking the track sections positively together. Also notable are the filled tubular VIPTRACK conductor rails which allow forming and careful bending to obtain a smooth approach to a hill.

A range of eight cars, including six racing cars and two sports is at present available, all precision engineered. Two of the latest additions are the Honda and Lotus-Indianapolis cars.

VIP's 'Club Special Cars' are already well-known and have gained a reputation for reliability and high performance. This 'specialist' range has been designed and developed to meet the exacting requirements of enthusiasts for club use, and for the larger home circuits.

All VIP models are now fitted with the VIPLINK independent front suspension which features steering and fully working 'wishbones' as on a full-size racing car.

Springing can be added by attaching a small elastic band to the lugs provided.

A full range of car spares and components is available and all VIP bodies, with the exception of the Lotus are interchangeable. There is also a special platform obtainable which can be mounted inside most other manufacturers' body shells, or scratch built models to enable them to be fitted to the VIP chassis.

The 'Viper Club' is open to every VIP owner. Membership entitles him to wear an attractive enamelled lapel badge and also receive copies of the 'Viper Gazette' which keeps members up-to-date with developments, and according to reports, there are scheduled to be some exciting new ones lined up for introduction in due course.

Wrenn Formula 152

Formula 152 model motor racing produced by G. & R. WRENN LTD., of Basildon, is scaled at 1/52, and the perfectly detailed 3-inch long cars used in this system are capable of scale speeds up to 200 m.p.h.

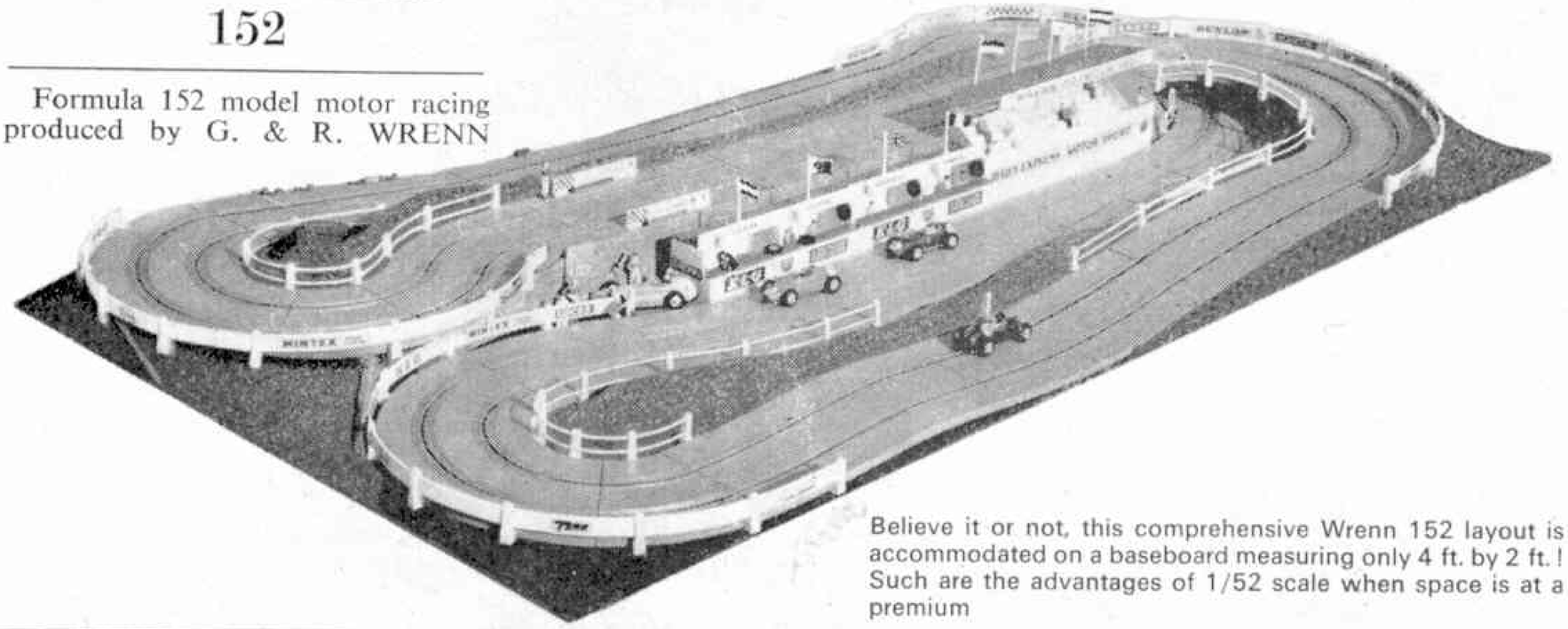
The WRENN system is also known as 'Triple Electric Model Motor Racing' because it is designed to enable three cars to race independently under separate control on each lane and actually overtake the car in front by pulling out and passing as in full-size racing. This is a novel and exciting feature which makes the system one of the most realistic miniature racing types available.

Six boxed sets are obtainable in the WRENN range and circuits with six lanes can be constructed by adding extra track sections available separately. Several attractive scale buildings to provide realism to the miniature circuits are also offered by this firm, together with 1/52 scale figures comprising spectators, mechanics and officials, etc.

The range of cars feature Grand Prix models of Cooper, BRM, Vanwall, Ferrari, Maserati and Porsche, all fitted with the compact and reliable WRENN motor. In addition these well-detailed miniatures have nylon bearings and bodies, metal diecast wheels, exhaust pipes, rubber tyres, clear windscreens and separately moulded drivers.

All WRENN FORMULA 152 products are unconditionally guaranteed against faulty workmanship and a full factory servicing is also available for the cars.

This is another of the sub-miniature systems that is ideally suited to the requirements of those who lack sufficient space for the installation of larger scaled layouts.



Believe it or not, this comprehensive Wrenn 152 layout is accommodated on a baseboard measuring only 4 ft. by 2 ft.! Such are the advantages of 1/52 scale when space is at a premium

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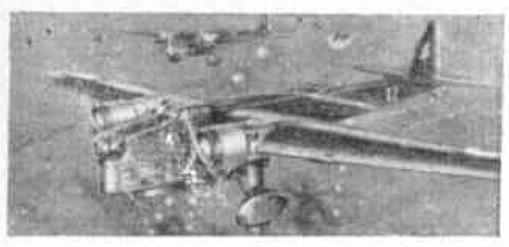
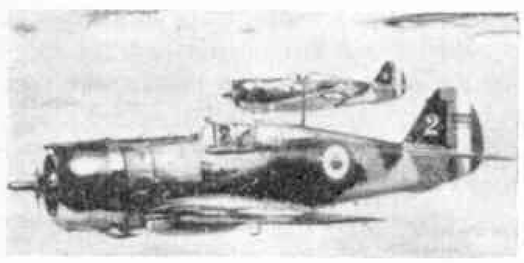


Amiot 143. Evolved from the Amiot 140 which flew in 1931 this bomber was in service in Sept 1939 above. **19/11**

Marcel Bloch 152 **7/11**

Curtiss H 75-A3 (below) **7/11**



1/72nd by Nichimo of Japan. The Japanese Navy Carrier Fighter MK 96 "Claude". This will go very well with your other Japanese models **6/11**

TAMIYA. 1/72nd. Shoki—Raiden **6/11**

L.S. LABORATORIES 1/72nd **6/11**
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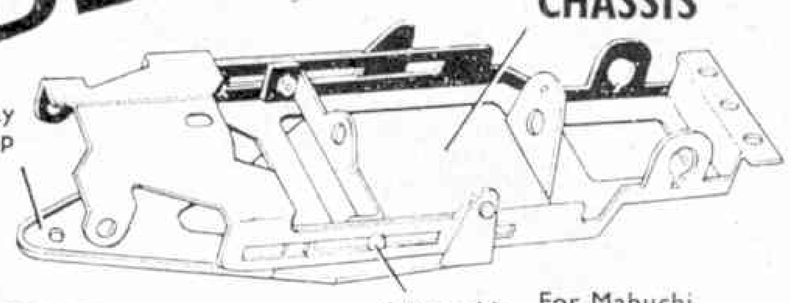

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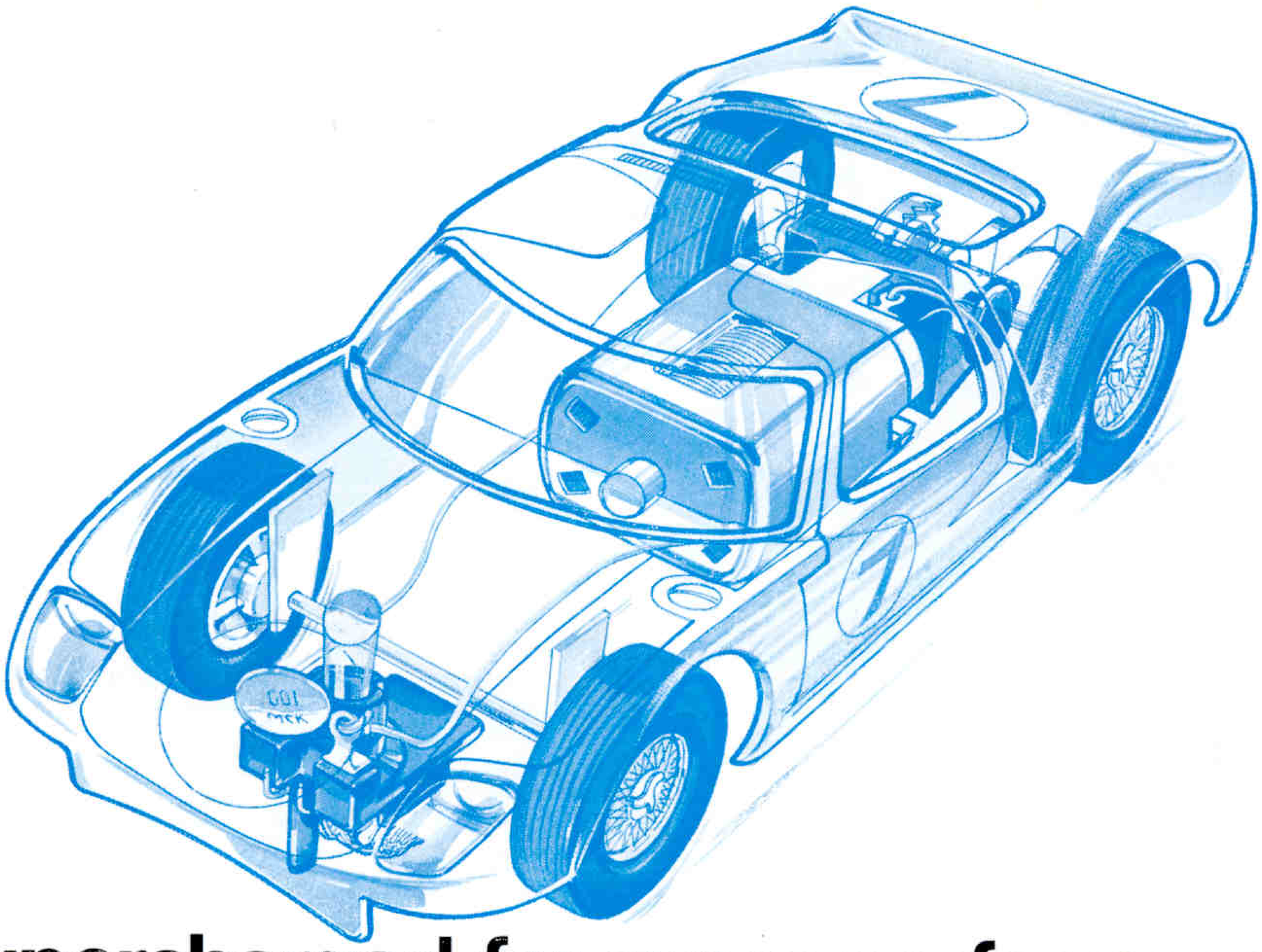

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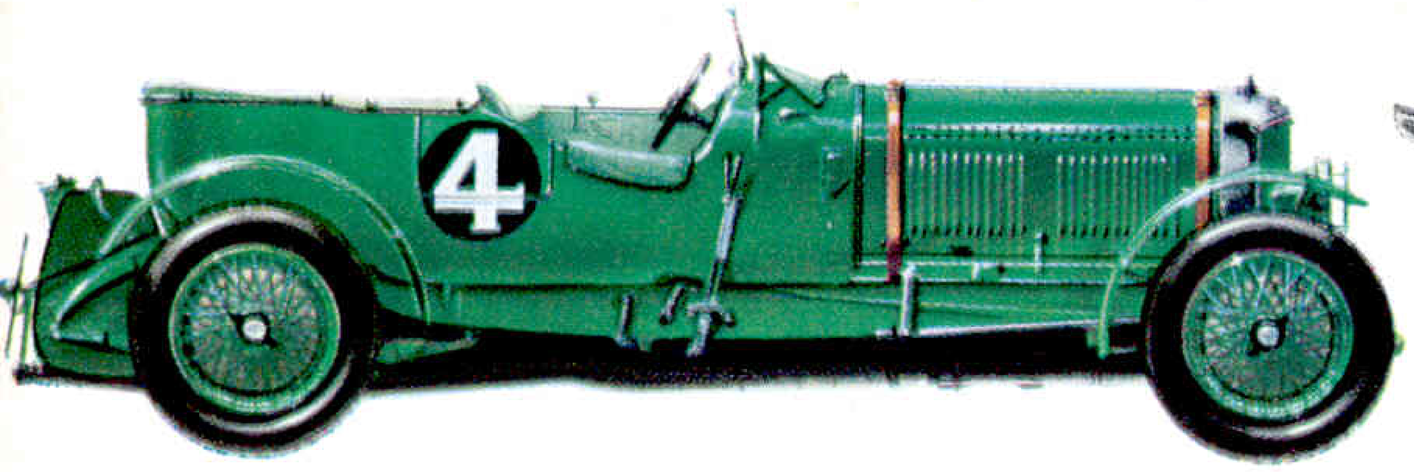

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