VOL. XLIII. No. 12 DECEMBER 1958

MECCANO MAGAZINE

CHRISTMAS IN TRAFALGAR SQUARE

15c

A NEW model of a NEW diesel

HORNBY-DUBLO L30 1,000 b.h.p. Bo-Bo Diesel-Electric Locomotive

Here's the latest Hornby-Dublo Locomotive—a realistic model of the first B.R. standard design diesel-electric for main-line duties—the English Electric Type 1 (Series D8000).

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DUBLO
ELECTRIC TRAINS

MECCANO

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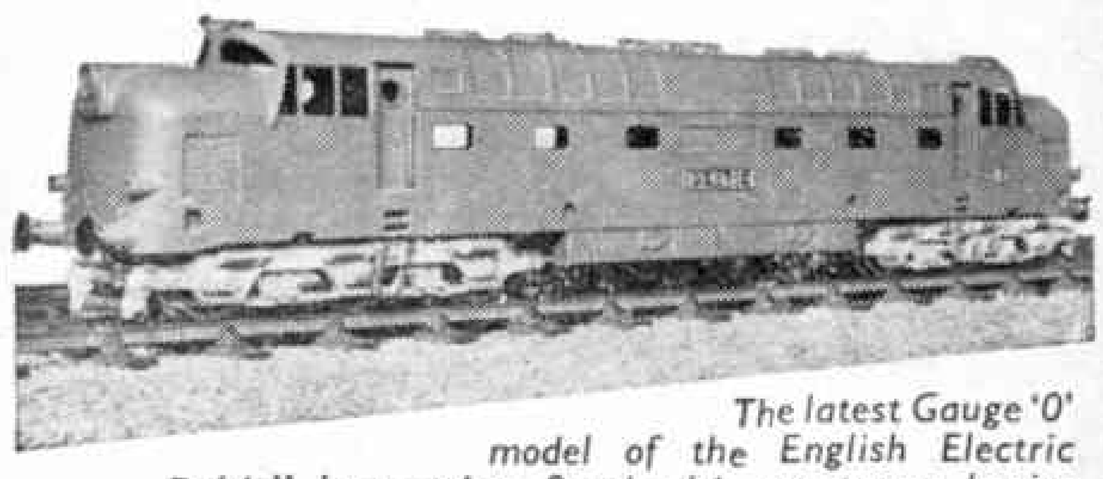
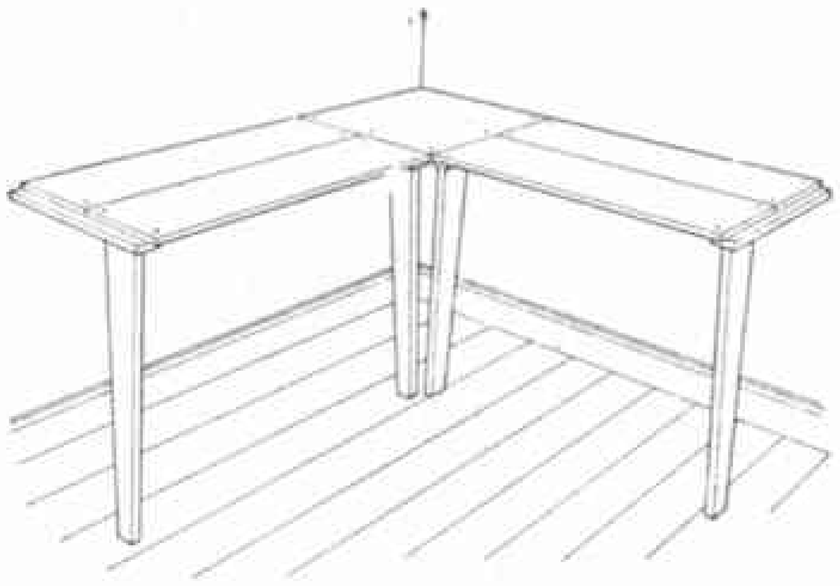


The latest Gauge '0' model of the English Electric Deltic" Locomotive, fitted with two power bogies



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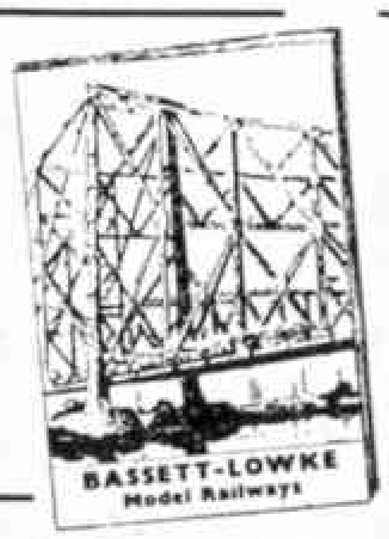

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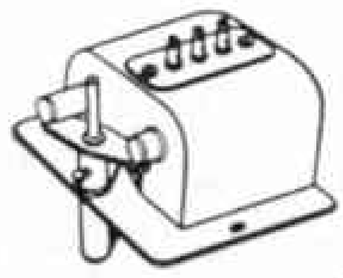

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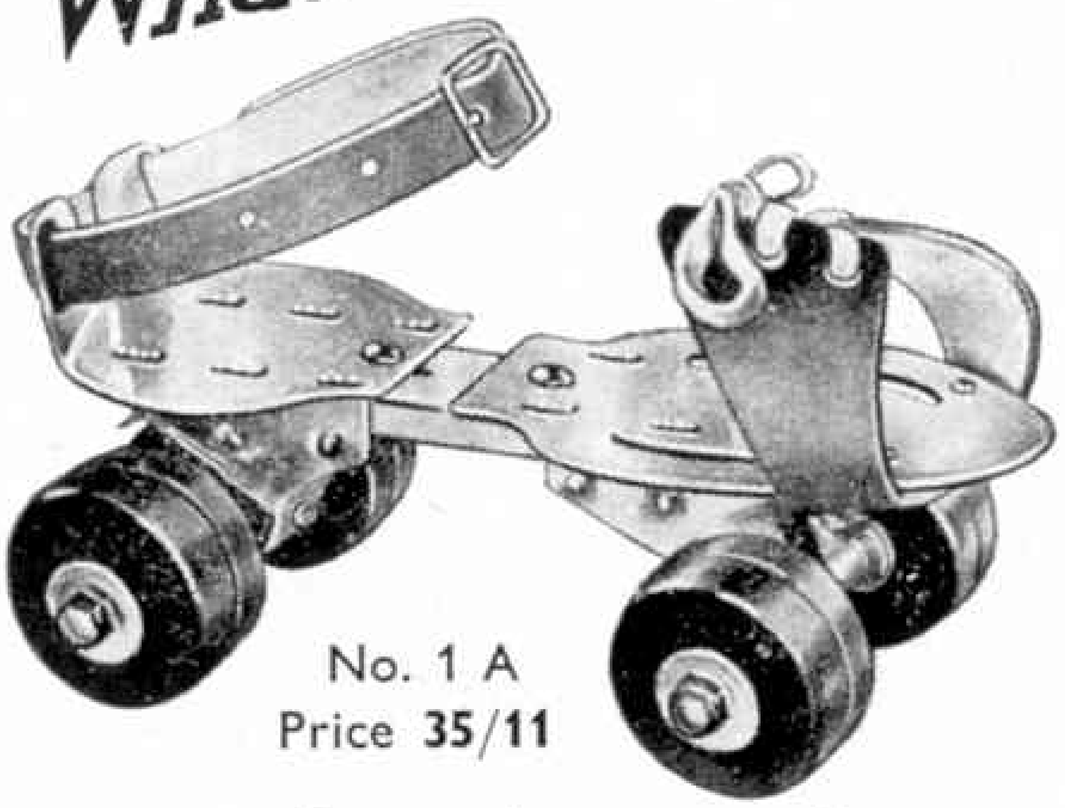

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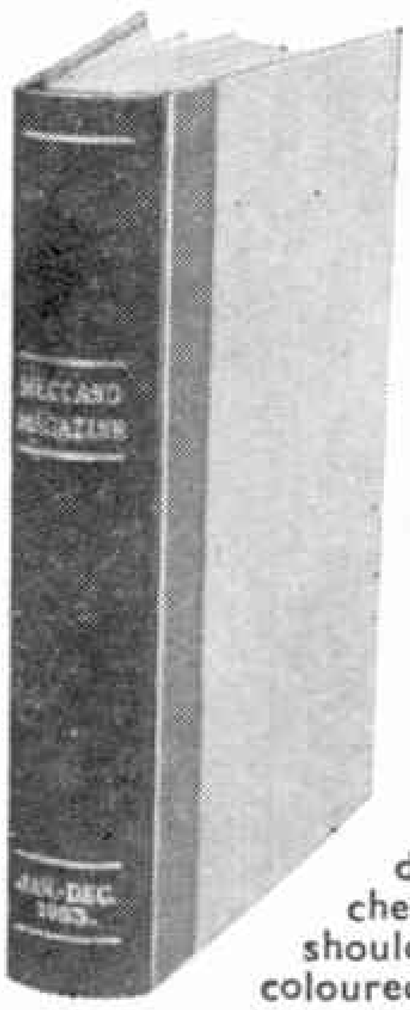

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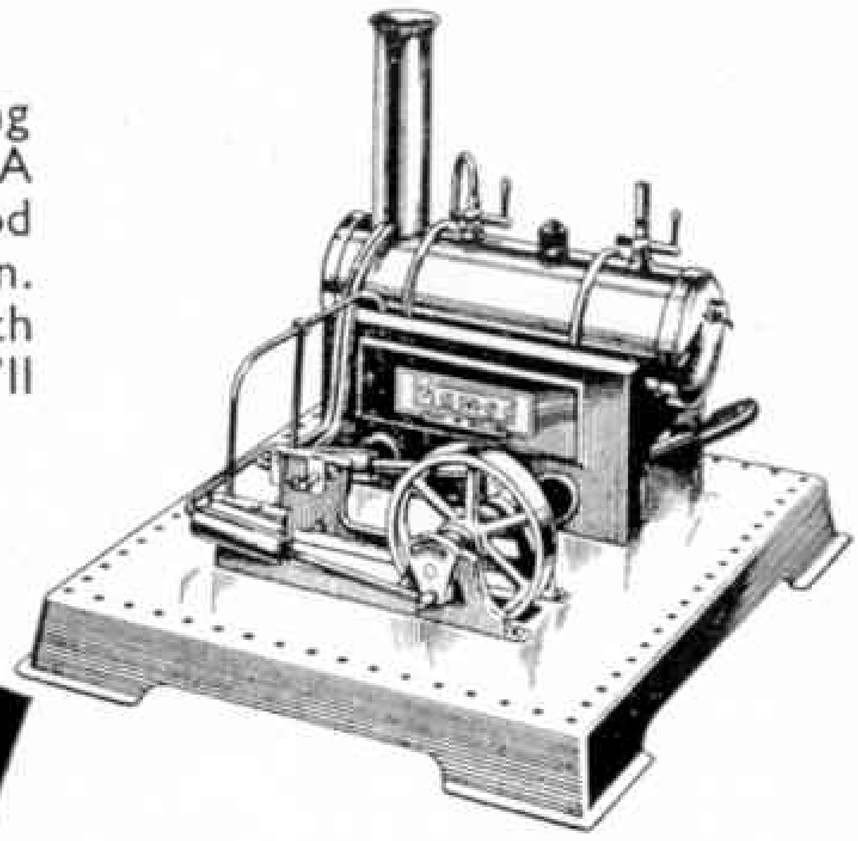

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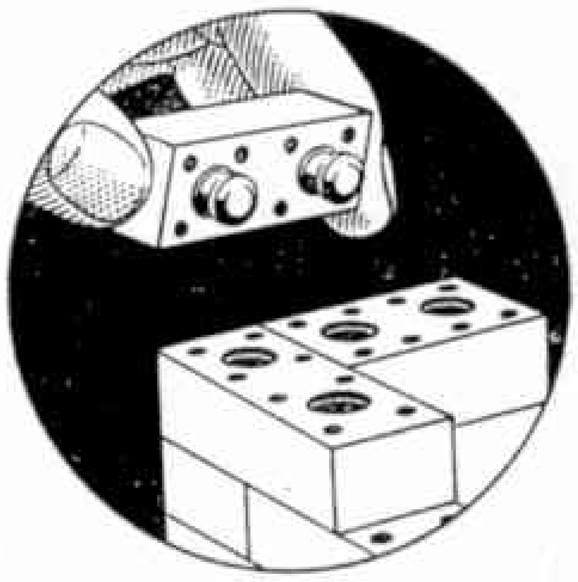

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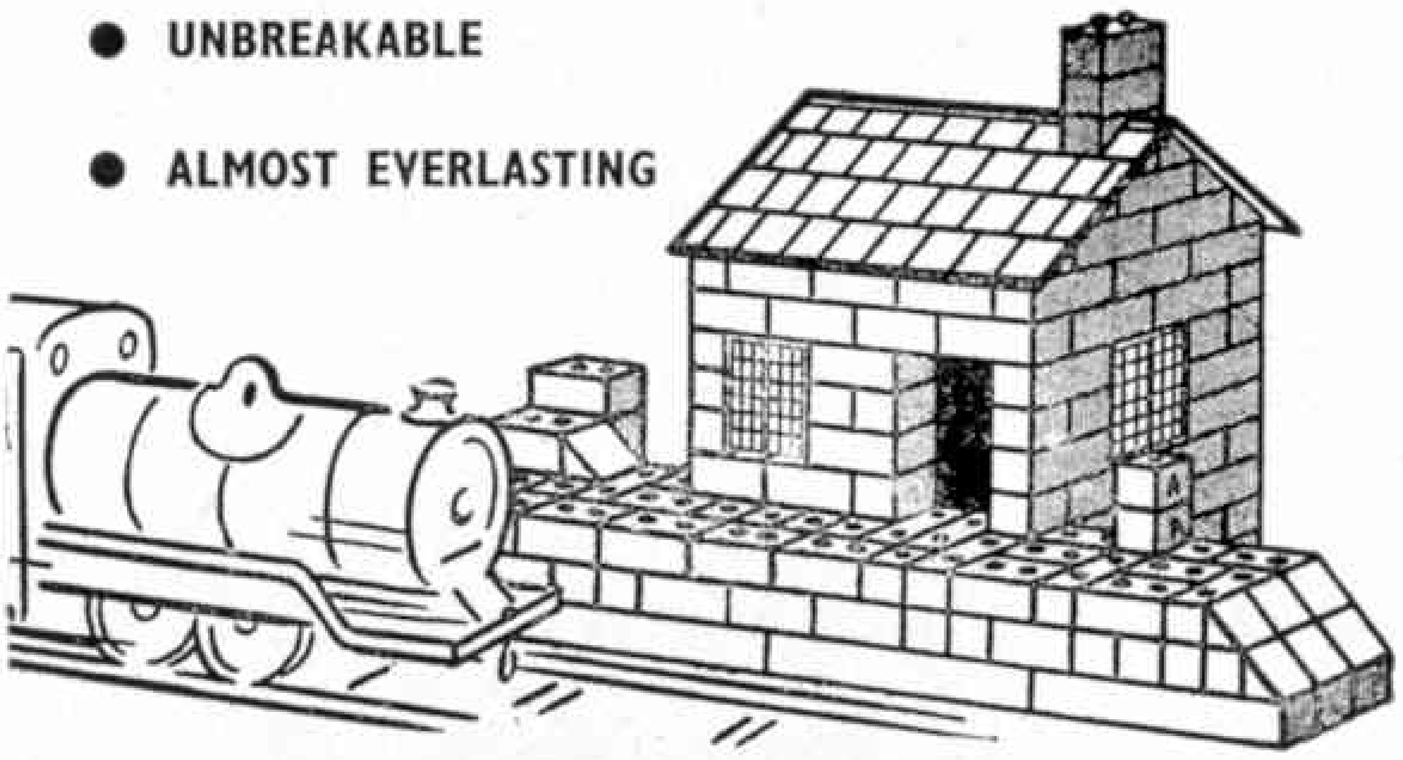

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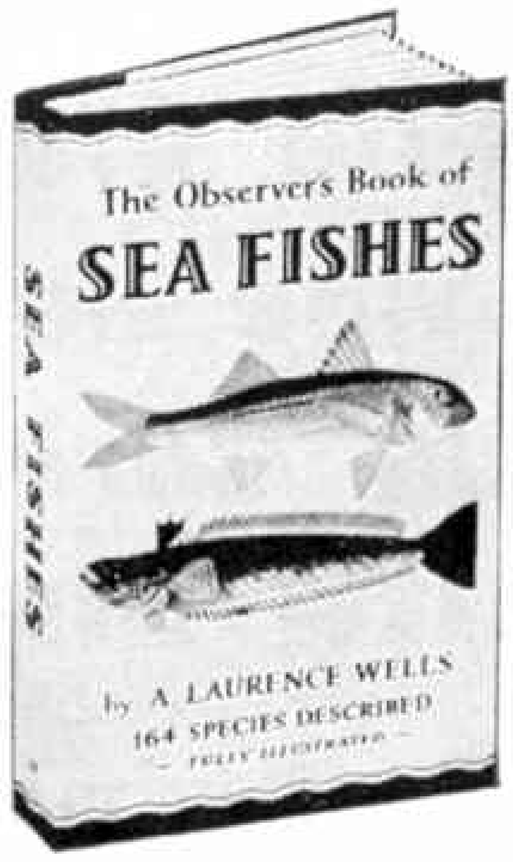

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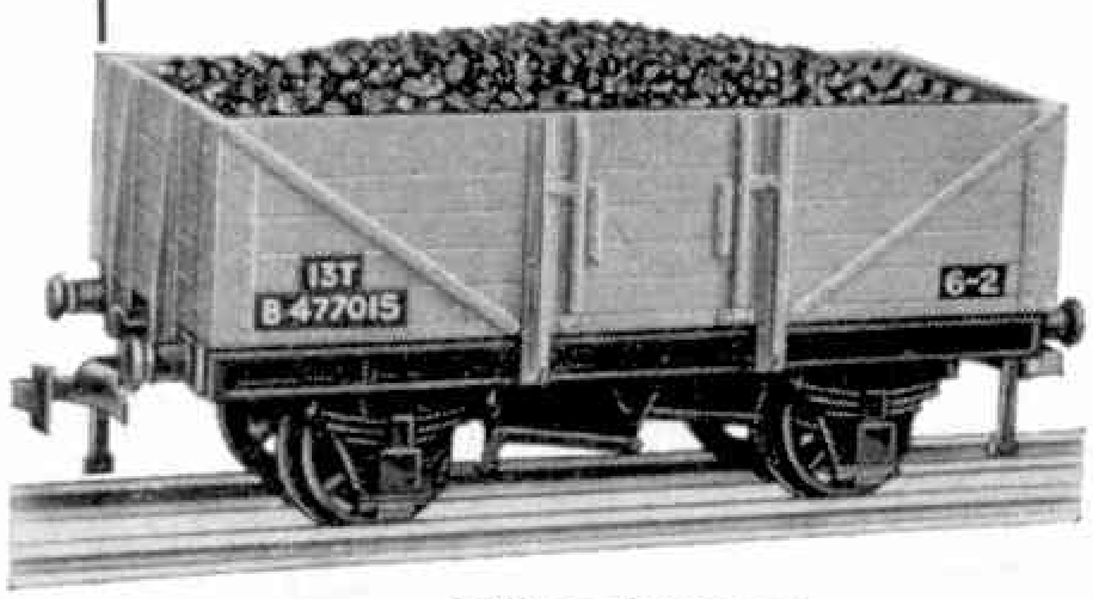

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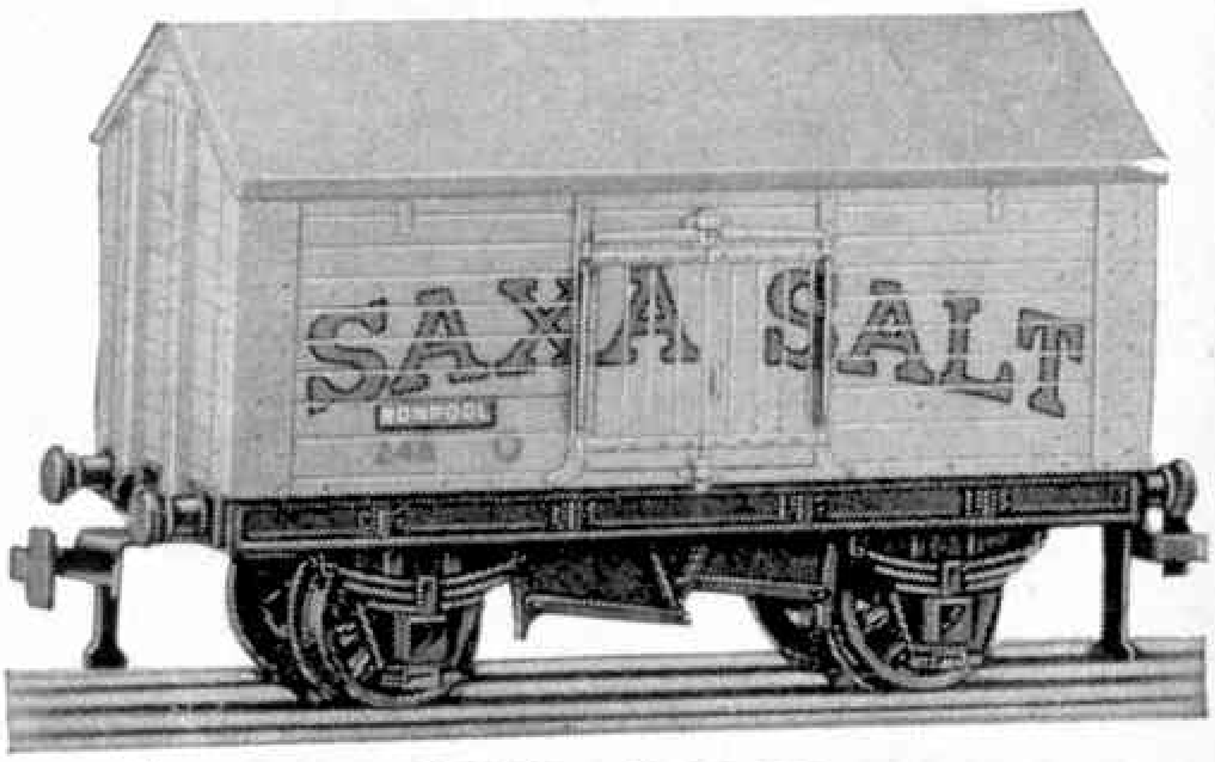

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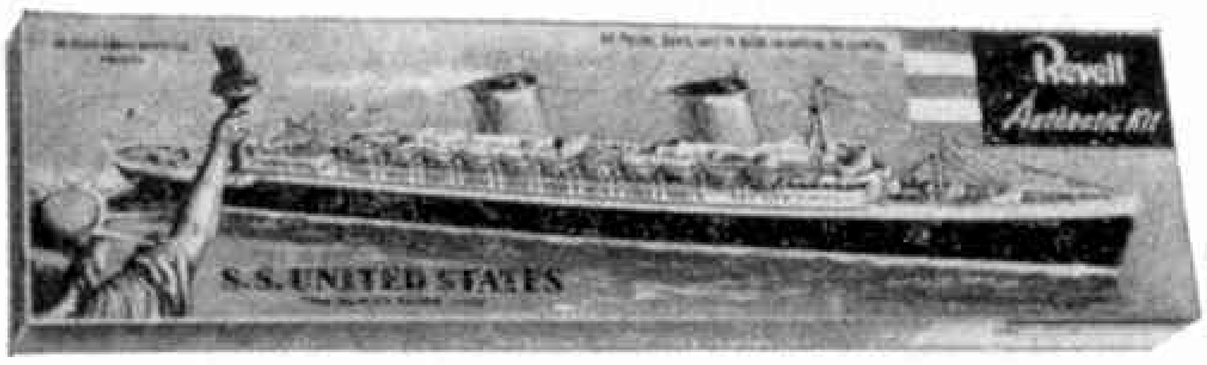

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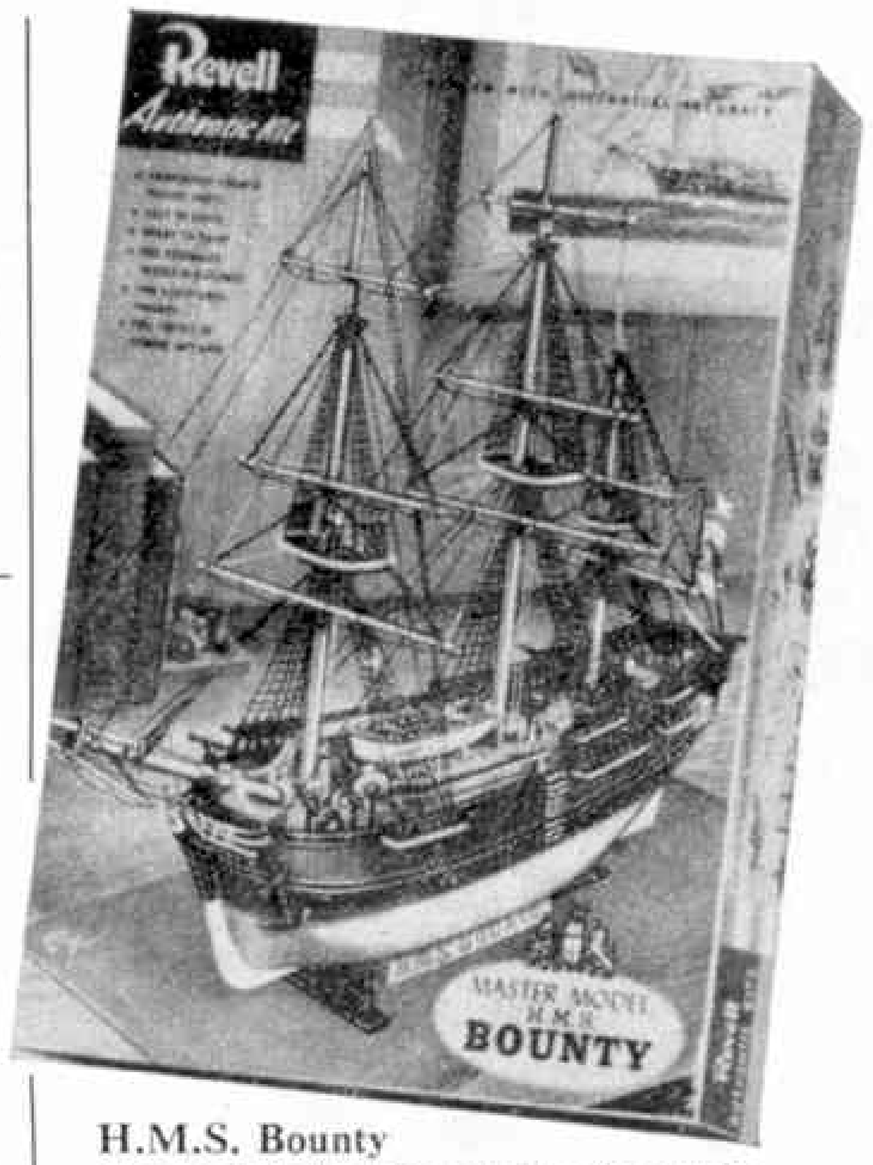

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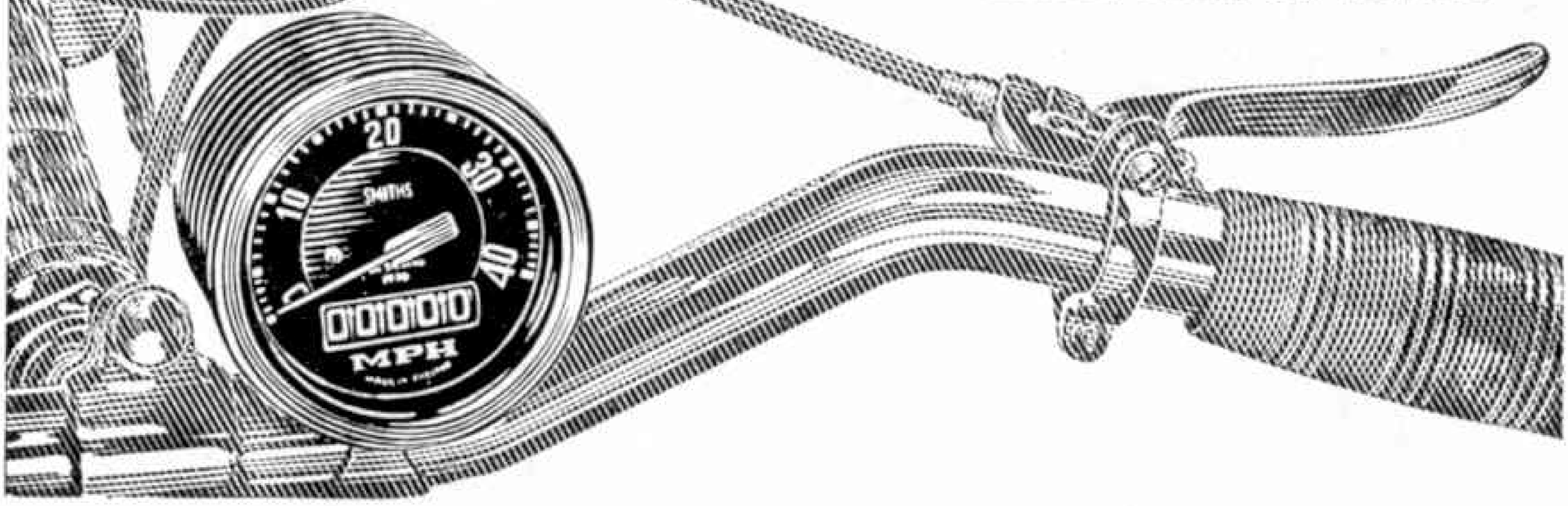

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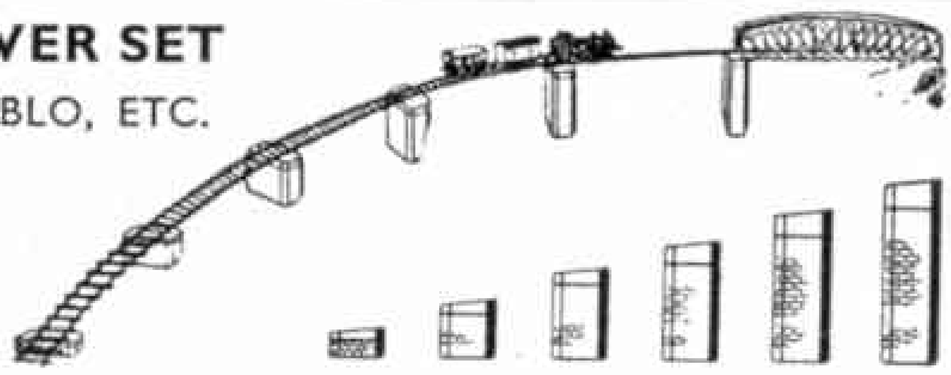

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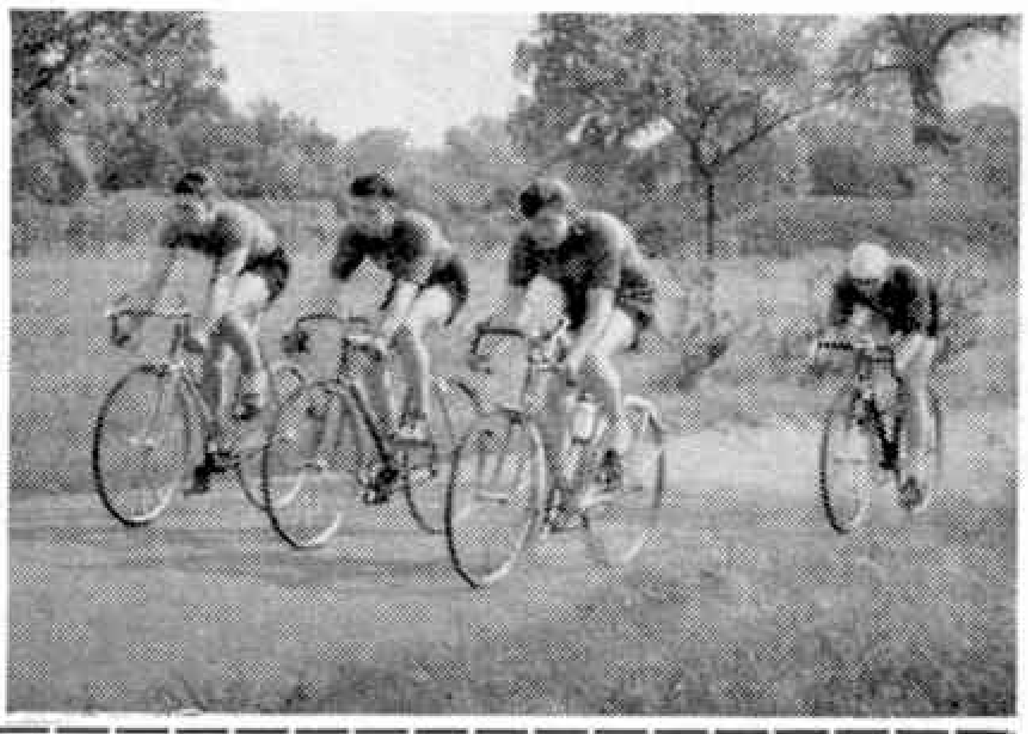

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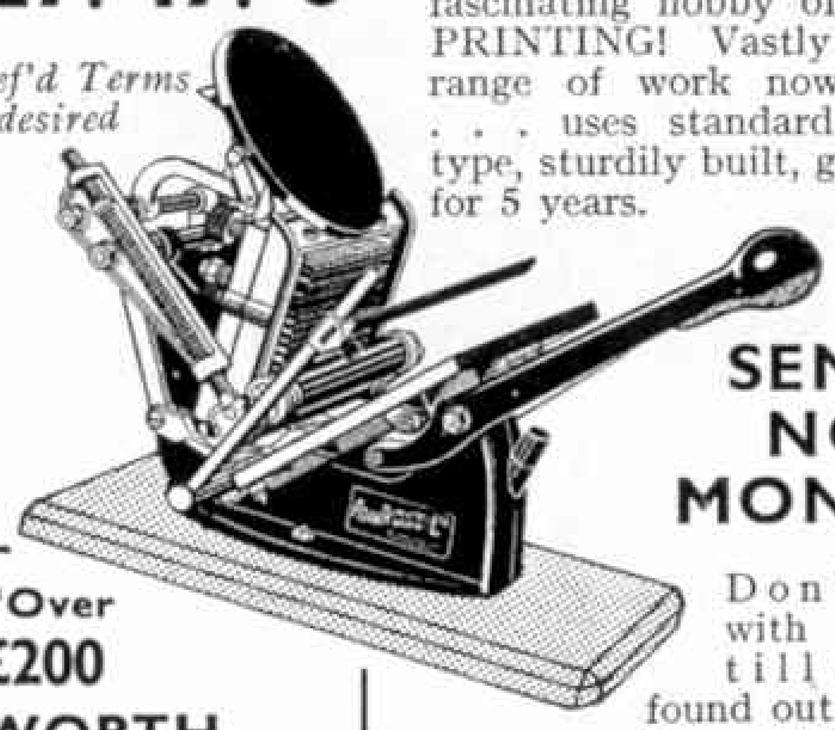

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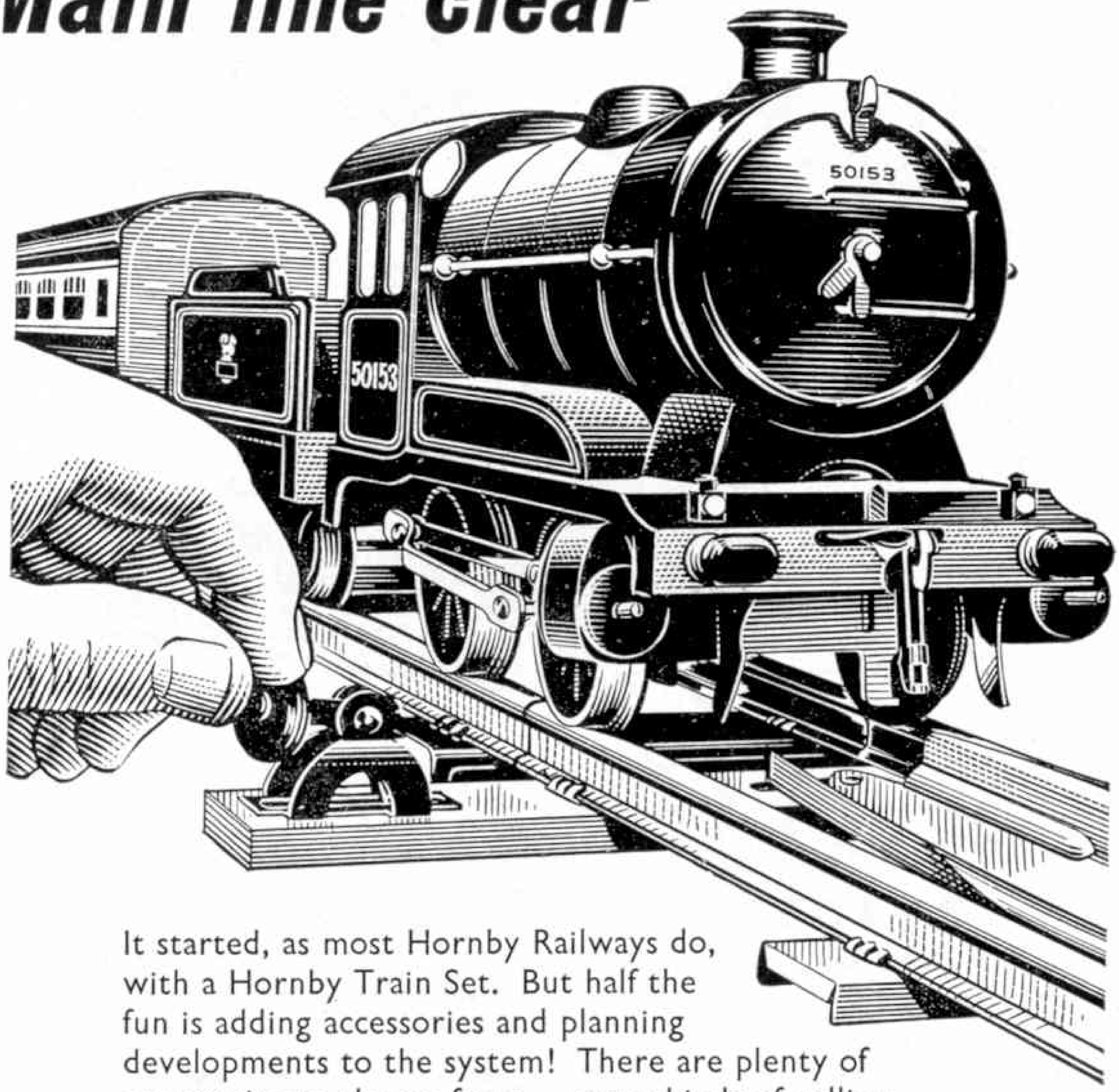

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Editorial Office:
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EDITOR : FRANK RILEY, B.Sc.

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The Christmas Scene

ONCE more we come to Christmas, the season of holly and mistletoe, Christmas trees and crackers, bright lights, turkeys and plum puddings, sweets and nuts and good things in abundance. It is the time for Christmas carols as well as parties and, although rarely, for the snow and the sparkle of frost that in pictures on Christmas cards and elsewhere have become traditional.

All this is very good, and I hope that everyone of you will enjoy all the traditional pleasures of the Christmas season to the full. But there is more in Christmas than enjoyment of bright lights and good fare. For one thing there is the giving of presents, and the spirit of goodwill is in evidence in both giving and getting at Christmas time. For another, there is the inner meaning of Christmas itself.

Here is a picture of a scene that many readers of the Magazine saw at Christmas last year, and which will be familiar to others through similar scenes that they too have witnessed. The pleasant custom of decorating railway stations and public places in our cities, towns and villages with lighted Christmas trees gives us exciting reminders of the happy season, and these are most deeply imbued with the true spirit of Christmas when they include a Nativity scene such as that in my picture. This many of you will recognise as in the circulating area—the Lawn, as it has always been called, although there has been no grass there for ages—at Paddington Station, in London. There are sure to be equally impressive displays there and at other centres this year, and I hope that you will make a special point of visiting any of these within reach.

Christmas decorations, with a beautiful Nativity scene as the centrepiece, at Paddington Station, London, a year ago. Photograph by J. A. Fleming.

The Editor

Christmas Nuts from English Orchards

By Geraldine Mellor

MOST of us like eating nuts, especially at Christmas, when we enjoy them after dinner on Christmas Day, or while sitting round the fire yarning and telling ghost stories. They have featured on the menu at this festive time for many centuries, their flavour, improved by a little salt, being especially agreeable and satisfying after a good meal.

More nuts are sold at the Yuletide season in this country than at any other time, and a proportion of these come from our own English orchards and woodlands. They are among the most valuable of all the fruits we eat, for their contents are of great value in the formation of a well-balanced diet, while in addition they yield a rich and beneficial oil.

A dish of salted almonds adds to the deliciousness of a Christmas meal. B.B.C. Picture Post Library.

Nut is the name applied to that class of fruit of a tree or shrub which consists usually of a single kernel enclosed in a woody, bony or leathery shell, which does not split open when it is ripe. There are certain nuts such as the chestnut, walnut and almond, however, which strictly speaking are at a stage between a stone fruit like the peach and a nut that has an exposed shell like the hazel, for they possess a thick outer envelope that has to be taken off before the nutshell is seen.

The bushy hazel is the most prolific of our nut-bearing trees and shrubs, and hazel nuts incidentally are a genuinely British fruit, for this plant has been flourishing in these islands since the Ice Age. The name is derived from the word *haesl* or *hasel*, which is Anglo-Saxon for a stick, or wand, to control live-stock.

The long yellow lambs-tails of catkins appear in the first dreary months of the year, before the leaves. To begin with these are purple, changing in the summer to green, and becoming a glorious yellow and rich brown in autumn. The fruit is ripe in October, and when cultivated is known as a cob nut or filbert according to variety, and also a Barcelona nut. Moses Cook, a celebrated old-time forester, when speaking about the ripening of these nuts declared: "When they be ripe I need not tell you, for every boy can."

In Kent there are hazel orchards where named sorts are grown. The bushes, which are carefully cultivated, are propagated by layering, that is by bending down a stem to ground level, and pegging it there until it takes root. The nut can also serve as a substitute for the almond or as a source of oil, while the branches of the tree are so supple that they are made into hoops for crates and barrels, and into hurdles and walking sticks.

The sweet chestnut tree ranks second as a producer of edible nuts that ripen regularly in southern England. It originated in Asia Minor and Greece, and was introduced into Italy at a very early age. The Romans probably brought it to Britain for the sake of its nuts, which they frequently ground into a coarse flour called *pollenta*. Nowadays the bulk of our sweet chestnut crop comes from timber trees, or sometimes from coppice, although named varieties, propagated by grafting, are occasionally grown here. English sweet chestnuts are not as large as those imported from Mediterranean lands, where chestnuts are still a staple item of food among the

peasants. But they are well worth favouring for they are particularly tasty to the palate.

The tree is very tall and stately, and grows in extensive woodlands in Kent, Surrey and Sussex. It is not related in any way to the horse chestnut, and its flowers and leaves are quite different. The timber resembles oak, but is not quite so heavy, and much of the famous so-called oak timbers of historic buildings are really a mixture of oak and chestnut.

Our name for this tree has been borrowed from the Latin *castanea*, and this has given rise to the Kentish place names of Chestnut Hill and Chestney. Early summer is the time when the yellow hanging catkins appear, and they are succeeded by the thick prickly coat enclosing two or more of the brown nuts. The kernels are nicest when roasted by the fire, and they can also be boiled to make a delightful stuffing; and I can guarantee that they are very pleasant fried.

Eleven named varieties of the walnut are grown in England, and raising walnuts is a lengthy business, for the nuts have to be stratified in sand for half a year before they will sprout, and then require something like fifteen years to come into bearing. Of course, grafted stock may fruit sooner, but grafting, which is performed on young seedlings, generally needs greenhouse conditions to be really successful.

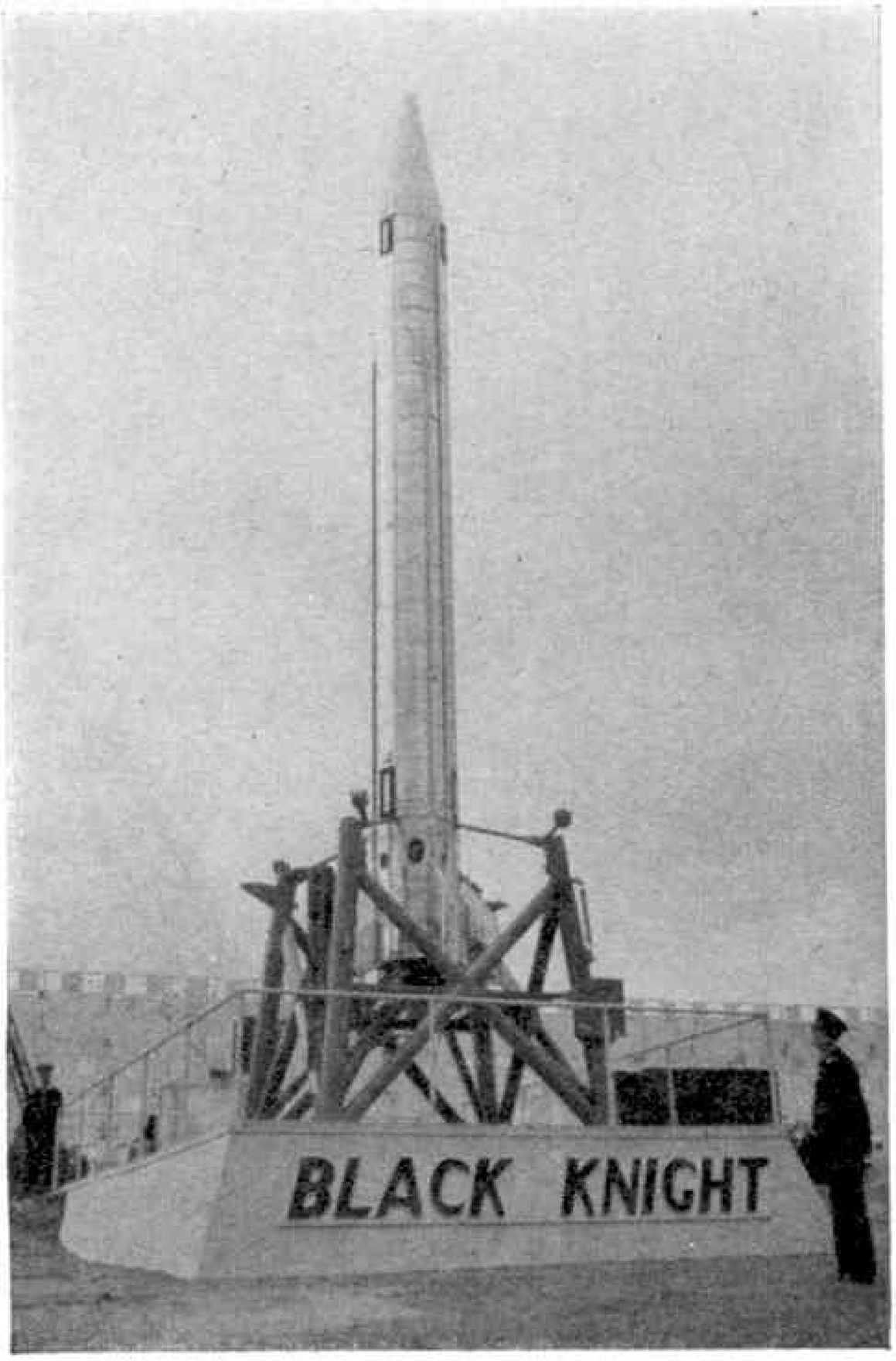
There is no more cheerful prophet of coming summer than an almond tree in spring.

The hazel's long yellow lambs-tails of catkins make the dismal, dark days of January brighter and a little easier to bear. The catkins come before the leaves. B.B.C. Picture Post Library.

This handsome tree which grows freely in our land is a native of the Himalayas, Asia Minor and Greece, and was probably introduced into Britain in the middle of the fifteenth century. Its name is Anglo-Saxon for "foreign nut", and it attains a height of from forty to sixty feet, with a bole twenty feet in circumference. Its leaves are large and fragrant, and in October, when the plum-like fruit is ripe, the green outside husk turns brown and splits open, revealing the "stone" or walnut, and we enjoy the crinkled kernel inside this.

The young fruits are used for pickling, while the ripe walnuts are very popular as dessert. They are rich in a very thin oil, too, which is also eminently suitable for artists to mix with their paint. The outer husks and shells, together with the leaves and roots, contain a strong brown dye. This makes an excellent floor stain, and a first-class dye for dark people going grey. Gypsies often used it to secure an intriguing sun tan. The light but tough wood of the tree is used widely by cabinet makers for the manufacture of fine furniture, and it is much prized for gunstocks because it retains its shape, bears shock and does not warp.

Probably the strangest of our edible nuts is the almond, which is closely related to the nectarine, peach and apricot, for instead of its outside covering becoming juicy like the other fruits, it (Cont. on page 602)



The Black Knight research rocket on a display stand.

Testing Black Knight

By

John W. R. Taylor

THE mere mention of building a rocket testing site on such a beautiful piece of land as High Down on the Isle of Wight, overlooking the Needles, normally provokes an outcry from nature lovers louder than the roar of any rocket-motor. So it came as a surprise to learn that Saunders-Roe have lost none of their friends on the island since they started running the engines of their Black Knight research rockets at High Down in April 1957.

One reason is that this Company is the second largest employer on the island, so that the more work it does locally the better it is for the prosperity of everyone there.

Another reason is that the public are now allowed on part of the cliff at High Down for the first time in a hundred years. Previously they were banned, because it was the property of the War Office, which built a small fort above the Needles about 1860. This was followed in 1895 by a larger fort on a higher level, which was manned right up to the end of World War II.

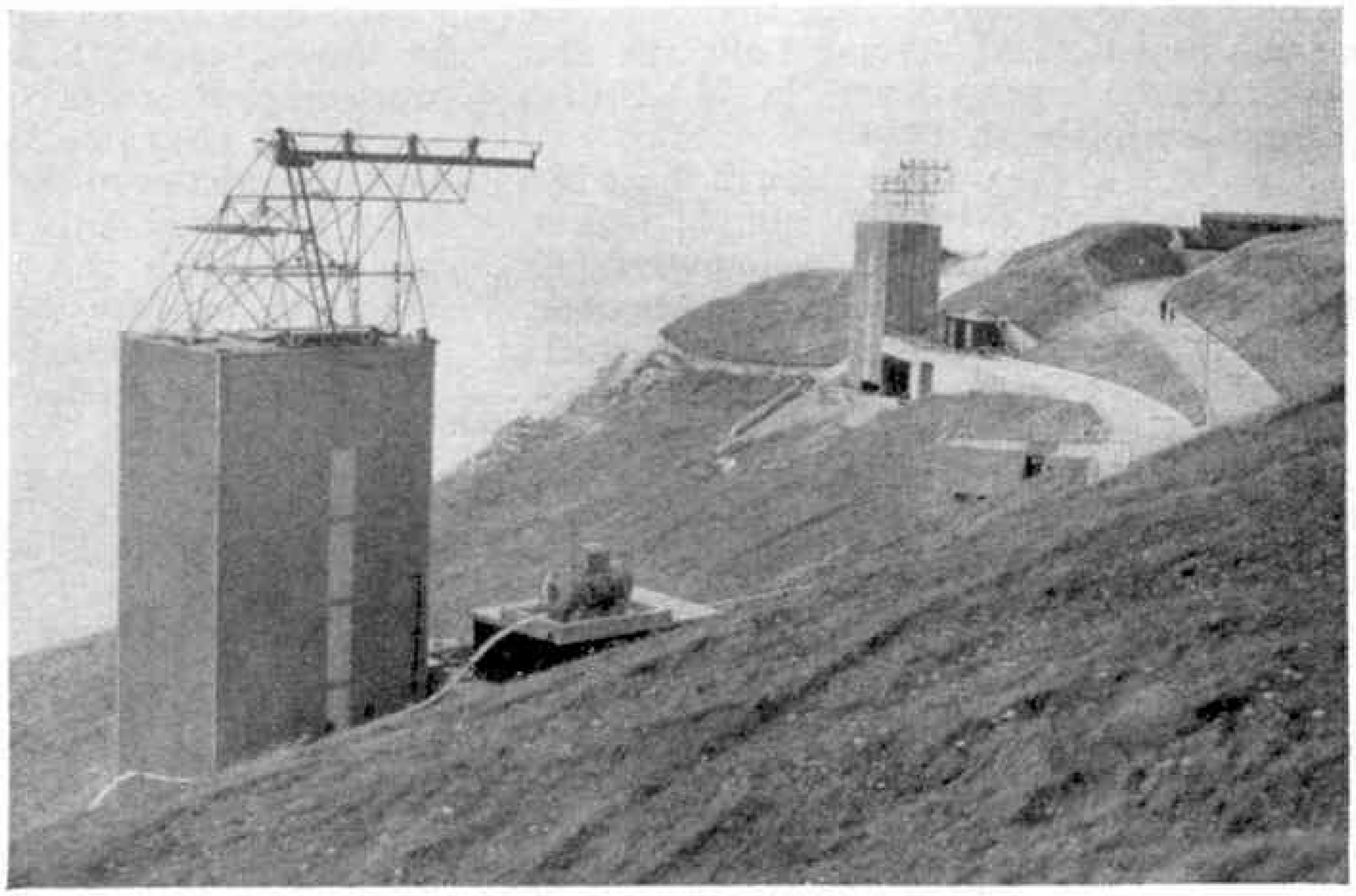
Now, thanks to Saunders-Roe, visitors can get a splendid birds-eye view of the Needles far below. Nor are the few people who live locally disturbed overmuch by noise, because careful design of the test gantries ensures that most of the sound is directed out to sea during the brief periods when it is necessary to fire the rocket-motors.

In any case, most local inhabitants feel a sense of pride that a rocket built on the island has travelled higher and faster than any other single-stage rocket outside Russia. The fact that—unlike so many other rockets—it did so on its very first launching is due largely to work done earlier at High Down.

Design of the Black Knight began in 1956, when Britain decided to build its own long-range military rocket, rather than rely for too long on weapons like the American Thor, which has a range of only 1,500 miles. De Havilland were given responsibility for producing the new missile, under the code-name of Blue Streak; but many other companies were called in to help. For example, Rolls-Royce were asked to build its mighty rocket-motor, the Sperry Gyroscope Company to work on its guidance system—and Saunders-Roe to design and build a research rocket to test some of Blue Streak's most important components.

This research rocket, code-named Black Knight, is what is known as a re-entry test vehicle. Its main job is to prove that the nose-cone that will be fitted one day to Blue Streak is so designed that it will bring the missile's H-bomb warhead back through the atmosphere over the target without burning up through friction with the air in the same way as a shooting star or the Russian Sputniks.

Although this sounds simple, it is one of the greatest problems facing rocket engineers, because there is little point in firing H-bombs—or men—hundreds of



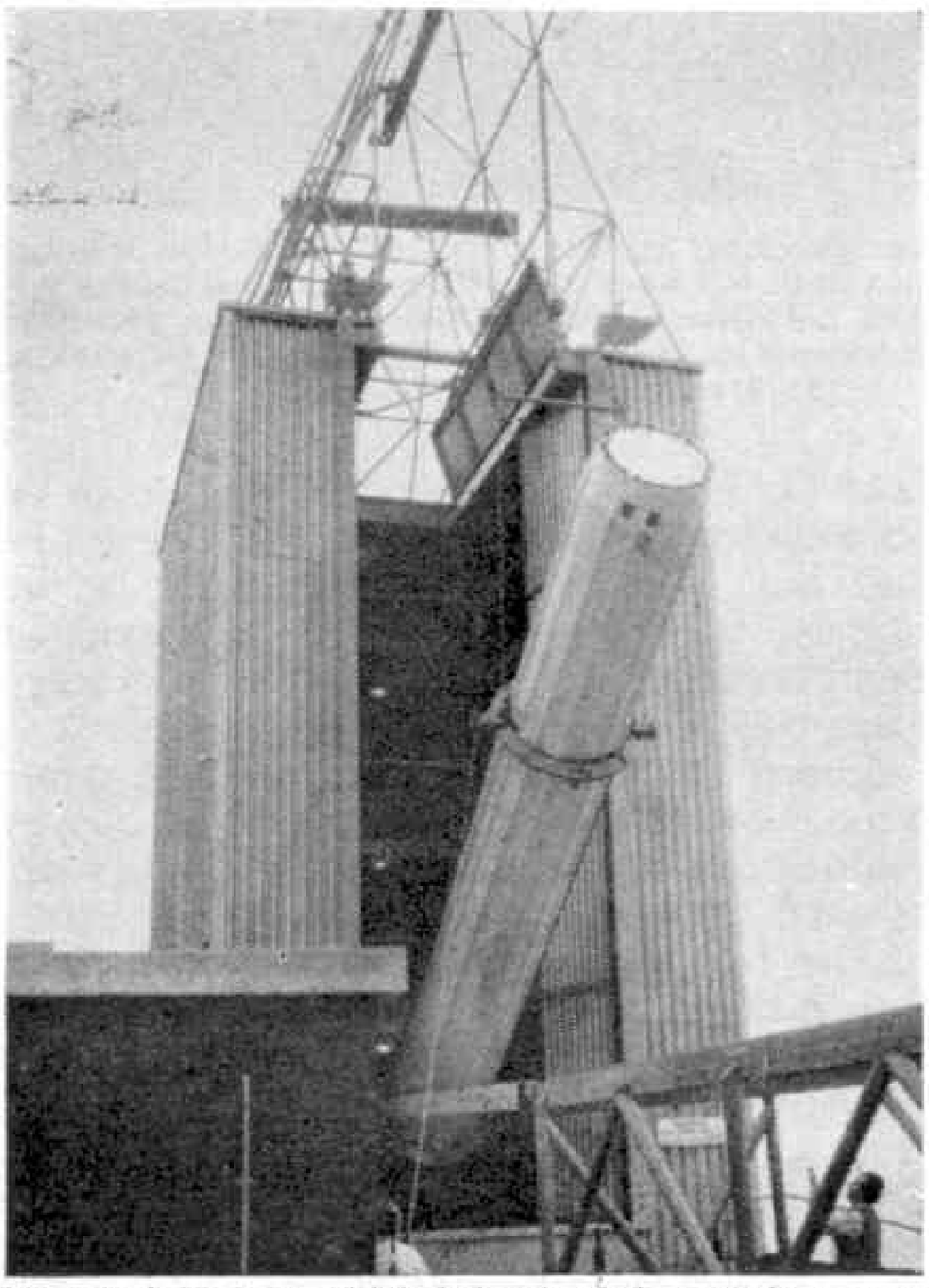
General view of the High Down Rocket Test Site, on the Isle of Wight.

miles into space if they are burned to a cinder on the return journey.

In general terms a rocket that leaves the atmosphere will coast on until its energy is spent and then begin to fall back towards the Earth, faster and faster, until it reaches the fringe of the atmosphere at much the same speed that it left it. The further a rocket is designed to travel, the higher it must be fired and the faster it must be driven.

Even the wartime German V-2 was heated to over 600°C. on re-entry, although its range was only 150 miles and its speed 3,300 m.p.h. When designers began to plan for ranges up to 2,500 miles in Blue Streak and 6,000 miles in the case of American intercontinental missiles like the Convair Atlas, they had to overcome tremendous difficulties in protecting the warhead. The rest of the rocket does not matter, because the warhead is separated from it before re-entry, leaving the empty shell to burn itself up.

From laboratory tests, U.S. technicians discovered that a very smooth blunt nose-cone appeared to reflect almost nine-tenths of the heat back into the surrounding air; and they started to experiment with special heat-resistant materials. But the only way to prove that the new shapes and materials would do their job was to fire them into space and see what happened when they fell back.



The Black Knight vehicle being loaded on to the gantry.

Unfortunately, Atlas missiles cost over a million pounds each and could hardly be used by the dozen as test rockets; so Lockheed were asked to produce a relatively-cheap re-entry test vehicle on which to mount and test the experimental nose-cones. The result was the X-17, a 40-ft. three-stage rocket, so designed that it turns over when the first two stages have burned out. The third stage then accelerates the nose-cone down into the atmosphere at very high speeds.

Black Knight is Britain's counterpart to the X-17 and the fact that it does the same job, although only single-stage, shows again that this country does not lag behind America and Russia in rocket 'know-how'.

Choice of Saunders-Roe to design and build it was no accident, because this Company gained valuable experience with liquid-propellent rocket-engines in the S.R. 53 mixed-power fighter and as blade-tip propulsion units in one version of the Skeeter helicopter. The makers of Black

Knight's engine, Armstrong Siddeley, are no less experienced, having built the first rocket-motor ever flown in a British piloted aeroplane in 1950.

The result of the co-operation of these two companies is an extremely simple rocket, some 40 ft. long and 3 ft. in diameter. At the top is the all-important nose-cone, probably of stainless steel with an outer covering of a heat-resisting plastic material.

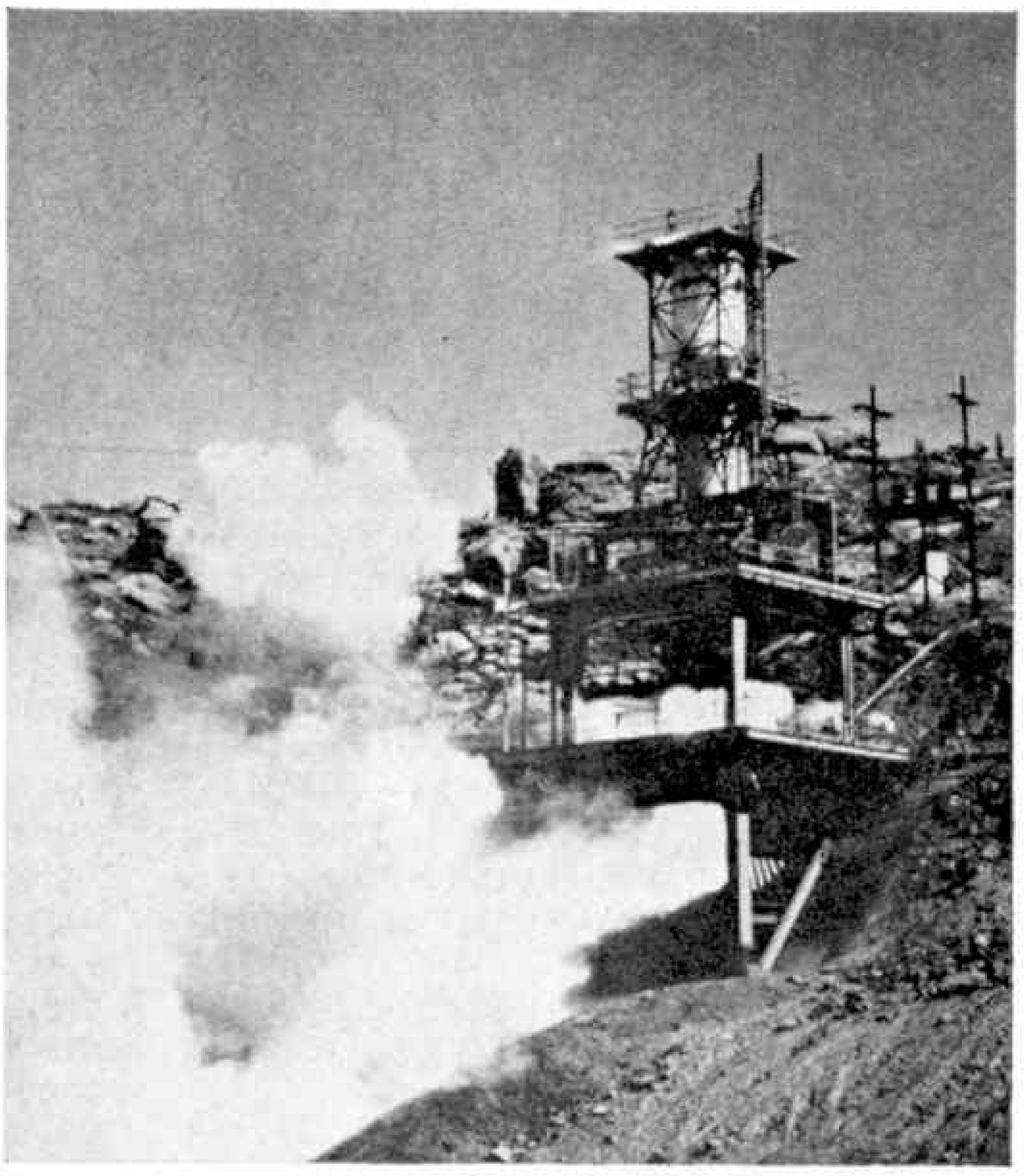
Immediately under the nose-cone is a small electronics bay. Being only a test vehicle, Black Knight needs no complicated guidance system and is fitted with a simple radar tracking unit which enables small adjustments to be made to its flight path after launching. Other equipment radios back to the ground predictions of where the nose-cone will re-enter the atmosphere, to assist in its recovery.

Most of the remainder of the rocket consists of huge tanks for its kerosene and H.T.P. (high-strength hydrogen peroxide) propellents. Pipe-lines run externally from these tanks, inside slim fairings, to the motor in the tail. The motor has four gimbal-mounted exhaust nozzles, which can be tilted individually or together to control the rocket's direction of flight. And that is about all, except for two conical-nose canisters, containing test instruments, on the tips of two of the tail-fins.

Despite its simplicity, even Black Knight costs a lot of money, and that is why Saunders-Roe asked permission to build a test site at High Down, where each rocket could be taken to make sure it worked properly before being sent to Australia. Their plan was approved on 16th April, 1956, and so little time was wasted that the first engine run was made there exactly one year later, to the day.

Money, as well as time, was saved by building instrument rooms, laboratories and workshops inside parts of the old upper fort, the thick walls of which help to keep out noise and vibration. They are linked by a short roadway with the two rectangular steel test gantries, which are almost identical with that used at Woomera for the actual launchings. The main difference is that the Woomera gantry is on wheels, so that it can be moved out of the way for firing.

When it arrives from the assembly line at Cowes, each Black Knight goes into a workshop, where its controls and equipment are tested electronically. It is then placed vertically in one of the gantries for the main tests. Although only a few of these have to be made with the motor running, they reproduce exactly the conditions of a real flight and enable the Company's technicians to predict precisely how the rocket will behave. During the tests it is held down by claws holding a steel ball, little bigger than a golf ball, but with their supports set in massive concrete foundations, the exhaust being taken away through a water-cooled duct which deflects the noise out to sea.



Rocket power developed by this guided missile engine is being measured on a static test stand at the Propulsion Field Laboratory of Rocketdyne, a division of North American Aviation, Inc. The isolated laboratory is located high in the Santa Susana Mountains, 35 miles north-west of Los Angeles.

There is little risk of anything going wrong, but all live tests are carried out by remote control from an underground room in what was originally one of the magazines of the fort. Up to 200 separate items of information are recorded automatically during a firing, which is also observed visually from a blockhouse with 2 ft. thick walls, mid-way between the two gantries. Some idea of the awesome sight gained from this blockhouse is given by the picture on this page of a North American (Cont. on page 602)

Places in Pantomimes

By Arthur Gaunt

THAT popular type of Christmas entertainment, the pantomime, has had a long history, and discovering the origins of the well-known stories and characters is by no means easy. Nevertheless, most of the pantomime figures you know represent people who really lived and many of the stories refer to actual events of long ago.

Old Mother Hubbard, Humpty Dumpty, Mother Goose, Little Red Riding Hood, Little Jack Horner, and the rest—they are mostly far from being entirely imaginary. They represent people of the past, and their performances follow in a veiled way something that actually happened.

In bygone times, when criticising or lampooning persons of high rank openly was a dangerous pastime, it could be done in pantomine with less risk. Famous folk were represented under fictitious names, and actual events were given fairy tale form —the pantomime. Though audiences usually saw through the disguise, proving the real identity of the characters was more difficult.

Take as an example the Big Bad Wolf in Little Red Riding Hood. This well-known animal is believed originally to have symbolised Henry VIII, who swallowed up the monasteries—represented by the unfortunate grandmother. Little Red Riding Hood herself personifies the Church of Rome.

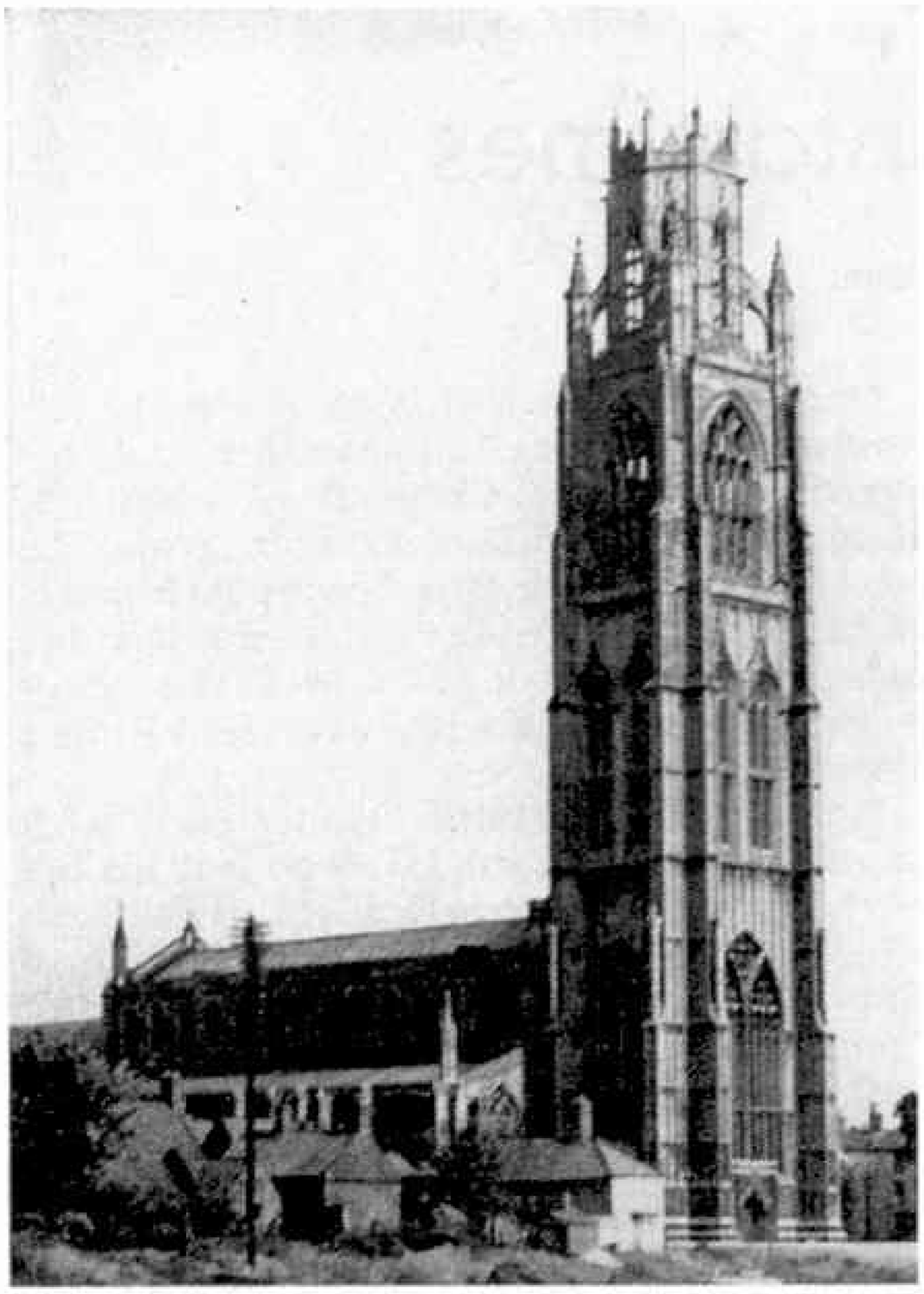
Hampton Court Palace, London, which was taken from Cardinal Wolsey by Henry VIII, who figures as the Big Bad Wolf in Little Red Riding Hood.

James I is often considered to be the Old Woman Who Lived in a Shoe, for in many ways this strange monarch was what is usually described as "old womanish". The many children are the members of his Parliament, and they are said to have confused him so much that he certainly "didn't know what to do".

One place connected with Henry VIII's confiscation of the monasteries and his overthrowing of Cardinal Wolsey is Hampton Court Palace, London, which he took from the Cardinal and occupied himself. In fact, the many abbeys standing in ruins today, as a result of the Dissolution, may be regarded as a link with Little Red Riding Hood.

Another monarch connected with pantomime is Richard III, who lost his life in the battle of Bosworth Field. His death meant the end of the Plantagenet line of English kings, for his followers couldn't "put him together again" and were left without a leader. Yes, Humpty Dumpty in pantomime is the ill-starred Richard!

Mother Hubbard, on the other hand, was no national figure but an ordinary housekeeper. She was employed by a Devonshire Member of Parliament at Kitley, near Yealmpton, and was the central character in a story entitled "The Comic Adventures of Old Mother Hubbard and Her Dog". This was written by Sarah Martin, the member's sister-in-law, for private circulation. In fact, Miss Martin had only one copy printed but later the



St. Botolph's Church, Boston, more familiarly known as Boston Stump. The original Mother Goose came from the town.

printer was allowed to issue more copies. They found a ready sale and popularised Mother Hubbard to such an extent that she was soon introduced into pantomimes.

All this happened early last century, but the original book survives. It is treasured by the family concerned.

There was a real-life Mother Goose, too. Her home was at Boston, Lincs., and she had twenty children to look after. She took them to London when Mr. Goose died, and she wrote nursery rhymes to amuse them. Some of these rhymes gave us other pantomime characters, as well as introducing Mother Goose herself into such stage shows.

The tragic story of the Babes in the Wood is based on truth. A marble sculpture in Norwich Castle Museum represents two little children beneath a tree, clasped in each other's arms, and is a reminder that Wayland Wood not far away was the scene of events just as cruel as those in the pantomime.

Nearby stands Griston Old Hall, where lived a wicked uncle who coveted the fortunes of his little nephew and niece. When their father died, the children became wards of their uncle, but he determined that they should never inherit the money left to them.

He hired two ruffians to kill them, and events turned out just like the pantomime story, the children escaping and becoming lost in Wayland Wood when the assassins quarrelled. The youngsters finally collapsed from exhaustion and died under a tree, which was long pointed out to tourists.

It is said that the wicked uncle failed to enjoy his ill-gotten gains, one misfortune after another falling upon him.

Another loathsome pantomime figure, Bluebeard, is said to have been modelled after a 15th-century Marquis de Laval, who was reputed to kill children for sorcery uses. He was eventually burned at the stake for his gruesome practices.

There have been several real-life Tom Thumbs, one of the most famous being Jeffery Hudson, who was born at Oakham, Rutland, in 1619. He was so tiny that he was once placed in a pie, and delighted Charles Stuart by hopping out on to the dinner table.

An inscription on a tombstone outside Christ Church, Skipton, Yorkshire, refers to another midget. Despite his lack of inches he was perfectly proportioned, and was a respected local character. But neither of these dwarfs was the original Tom Thumb, for that honour is commonly given to the midget who accompanied King Arthur and who was originally known as Tom of Wales.

Whitby Abbey, Yorkshire, desecrated by command of Henry VIII. He is the Big Bad Wolf of Little Red Riding Hood.

Frome, Somerset, is regarded as the place most closely connected with Little Jack Horner, a further personality of pantomime. Members of a Horner family still live in the district, and they claim that Little Jack was an ancestor of theirs who lived in the reign of Henry VIII.

The boy was entrusted with the title deeds of Glastonbury Abbey properties at the time of the Dissolution, being given a pie containing them. He was instructed to take this to a place where the deeds would be out of King Henry's reach, but on the way Jackie extracted one of the documents and later claimed possession of the manor concerned. It was certainly a precious "plum" to take from a pie.

Cinderella is one of the oldest of pantomimes, for the tale of the kitchen-maid who married a prince is part of the folklore of many countries. The most curious feature is that the incident of the glass slipper arose from a mistake in translating the French version into English. The translators confused *vair*, a fur trimming, with *verre*, glass, and Cinderella has since always worn a glass slipper instead of a fur-trimmed one when appearing on the pantomime stage in Britain.

The pantomime figure taken most directly from everyday life is Dick Whittington. His story has been handed down 500 years, though some of the details have been slightly distorted. He was never *Lord* Mayor of London, for that office did not exist in his day, and he was Mayor four times not three.

Nor is it certain that he was impelled to return to the city by hearing Bow Bells telling him to do so, for he seems to have been not a poor lad, but the son of a knight. Nevertheless an inscribed stone in Highgate Hill is pointed out as marking the spot on which he sat when the bells seemed to say *Turn again, Whittington.*

Dick Whittington sits listening to Bow Bells outside almshouses named after him near Camden Town, London.

A statue of him in listening attitude is also to be seen outside some almshouses associated with him, and the church where he was buried stands just off Cannon Street, London.

Whether he had a favourite cat is uncertain, too, some authorities pointing out that he owned a fleet of coastal cargo ships known as "cats". This fact may have given rise to the legend that he was always accompanied by his famous partner.

A good deal of evidence connected with Dick's life-story was destroyed by fire a long time ago. Until the Great Fire of London obliterated the inscription on his tombstone, the memorial bore a verse including the lines:

He rose from indigence to wealth
By industry and that.
For lo! He scorned to gain by stealth
What he got by a cat.

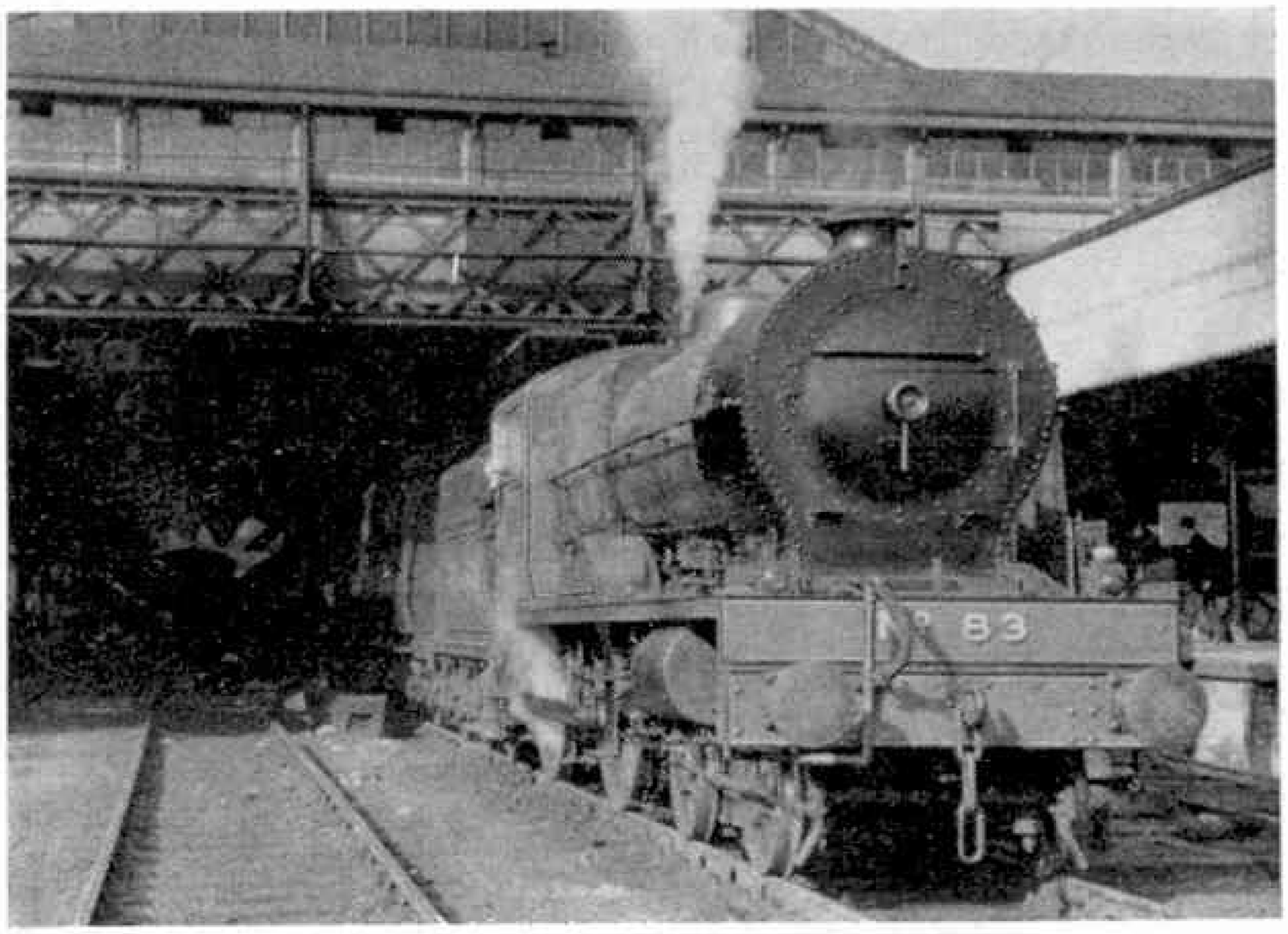
Space Notes—(*Continued from page 567*)

not been possible to produce free fall for more than a few seconds. By bringing an aircraft down in a parabolic powered dive, free fall can now be obtained for up to about a minute. A large number of people have been tested in this manner and, almost without exception, they have pronounced the experience to be very comfortable.

Of course, over a period of weeks or months some unpleasant effects may become apparent. Many other problems—the effect of cosmic rays, the provision of a breathable atmosphere, food supplies and the return through the Earth's atmosphere—exist, and it is hoped to discuss these in a future *Space Notes* article. Those hoping to be amongst the first space travellers might be interested in a recently published space diet described as "enriched sugar water thickened with shredded paper towel!"

Space Ship Design Contract

General Dynamics Corporation have been given a one-million dollar contract to determine the feasibility of a space ship propelled by "nuclear explosions", with a promise of further money if preliminary work looked promising. No other details were given except that the system was unlike any other nuclear propulsion system yet proposed—which sounds exciting.



No. 83 "Eagle" a 4-4-0 compound of the former G.N.R. (I) ready to leave Amiens Street with the 9 a.m. from Dublin to Belfast. Photograph by Dr. E. M. Patterson.

Railway Notes

By R. A. H. Weight

Locomotive and Diesel News

Another new standard steam 2–10–0 of the only design still under construction is No. 92197, allocated to 36A, Doncaster depot. Nos 92235-6 are stationed at 86G, Pontypool Road, W.R., with others to follow.

Diesel-electric locomotives added to stock include the following: A1A–A1A, 1,250 h.p. main line mixed traffic, Nos D5516–7, 30A, Stratford. Duties performed by this class include Liverpool Street–King's Lynn passenger train working.

Bo–Bo, 1,160 h.p. No. D5000, 5B, Crewe South (and on loan to Derby); Nos. D5300–1, the first for passenger or mixed traffic duty in the King's Cross suburban area, E.R., based at 34B, Hornsey.

Co–Bo, 1,200 h.p. No. D5701, 17A, Derby, and Bo–Bo, 800 h.p. freight, Nos. D8405–9, 30A, Stratford.

Shunting types, round about 350 h.p.: Nos. D3575, 18A, Toton; D3576–7, 6C, Birkenhead; Nos. D3538–40, 63B, Stirling; D3541–5, 63A, Perth (South); Nos. D3593–4, 83E, St. Blazey, Cornwall; Nos. D3619–23, 36E, Retford; D3624, 40E, Colwick, Nottingham; Nos. D3683–4, 30A, Stratford; D3685–6, 41A, Sheffield, Darnall.

Diesel-mechanical shunting engine numbered D2411 was allocated to 60A, Inverness; Nos. D2025–7, to 40A, Lincoln. With diesel-hydraulic transmission, Nos. D2907–8 went to 1D, Devons Road, and 2A, Rugby, respectively; No. D2728 to 64A, St. Margaret's, Edinburgh.

Some more single-unit diesel parcel vans have been ordered, and there are several in service. Yard shunting locomotives of light type for the railway engineers' or similar depots will also be of diesel design to a greater extent. Considerable additions have been made to the stocks of multiple-unit diesel passenger sets, appearing on more and more lines, usually with considerable success. Further construction will continue.

An entirely revised quicker local or semi-fast service with diesel units is planned for next year along the St. Pancras–Bedford main line. Light diesel rail buses mounted on four wheels and seating 56 passengers have entered branch line service between Bedford and Northampton, also between Bedford and Hitchin. Their use will be extended experimentally on various lightly-loaded routes.

The 2–4–2T withdrawn as L.M.R. No. 50621 and scheduled for preservation as an example of a long-lived, powerful though small passenger tank design, has received its original Lancashire and Yorkshire Railway number, 1008, and has been painted in that former company's style of black with white and red linings and coat of arms. It was the first locomotive built at Horwich Works, Lancs., in 1889. There were ultimately 270 in the class, and some were still at work quite recently.

Among the withdrawn steam locomotives, many having rendered long service, are more of the ex-L.N.E.R. Shire or Hunt 4–4–0s; Sandringham 4–6–0s; former Great Eastern B12 4–6–0 and D16 4–4–0 rebuilt express engines; the last ex-L.M.S. Compound 4–4–0 in Scotland, No. 40920, No. 6100, the first of the largest W.R. 2–6–2 passenger tanks, and a number of smaller ones having the same wheel arrangement.

Farewell to the G.N.R. (I)

For 82 years there has been a Great Northern Railway in Ireland, operating the main route from Belfast to Dublin as well as services to Londonderry, Bundoran and other parts. It was a private commercial undertaking until 1953, when management was assumed by a Board representing the Governments of Northern Ireland and Eire, the new joint owners. It was recently announced, however, that the long-popular "Great Northern" was about to disappear as such, since its assets, rolling stock, road services and property have been divided between Coras Iompair Eireann (Dublin) and the Ulster Transport Authority (Belfast), with a somewhat drastic closure of a number of lines and stations.

Built to the Irish standard rail gauge of 5 ft. 3 in., the G.N.R. named 4–4–0 express steam locomotives have been notably successful. They include the large V class compound and VS simple types, both with three cylinders and blue livery. As reported not long ago in these notes, diesel operation is now much to the fore with formations of trains varied according to requirements, on the *Enterprise* Belfast–Dublin expresses for instance.

Aboard "The Man of Kent"

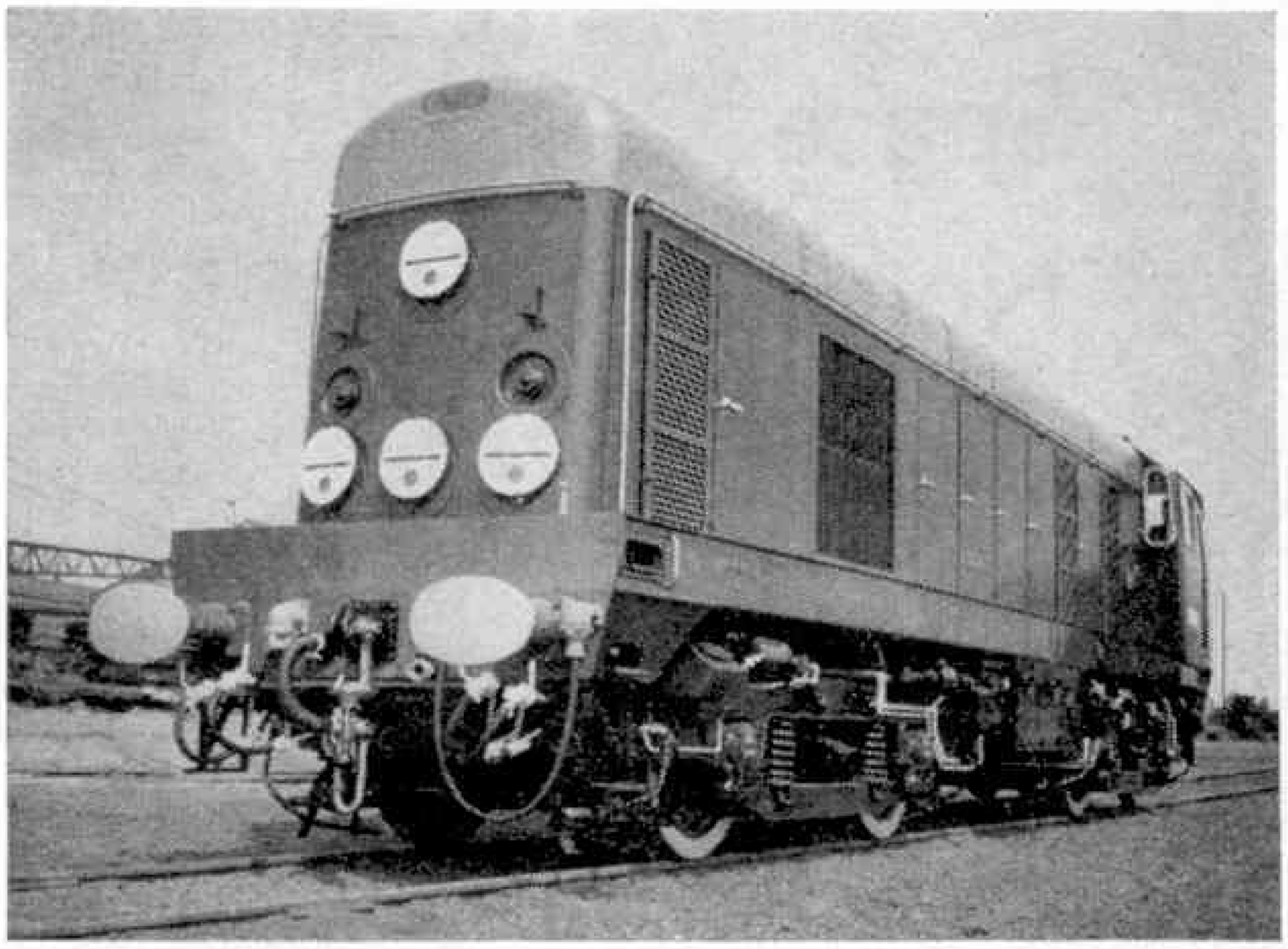
There are two weekday fast trains titled *The Man of Kent* each way between the Kent Coast and London, Charing Cross, by way of Ramsgate, Deal, Dover and Folkestone. Tradition has it that those born on the eastern or coastal side of the River Medway are "Men of Kent"; people hailing from the western or London side of that river are "Kentish Men". The Medway flows through Chatham, Maidstone, Tonbridge, etc., bisecting the large county. The original up morning, and down early evening, expresses are the fastest, with non-stop runs over the 69 miles between Folkestone (Central) and Waterloo (Eastern), the useful London interchange station nearly a mile outside Charing Cross.

I logged a fine run on the up train from Folkestone last summer behind rebuilt West Country 4–6–2 No. 34016, *Bodmin*, stationed and ably manned at Ramsgate.

It was a full train of modern green coaches, "11 on", 371 tons tare or about 400 gross. The start from Folkestone, where a portion was attached, was 3 min. late; attaining 53 m.p.h., on the initial rise to Westenhanger, we were soon making the most of the fast stretch across the Weald past Ashford, at 75 m.p.h., then up to 84, 83½, 80 and so on, passing Tonbridge, with brakes on slightly for the curve, 40½ miles, in 38 min. from Folkestone.

The climb to Sevenoaks Tunnel and station, with a minimum of 44 m.p.h., was followed by our topping the last summit, near Knockholt in the North Downs, at 51, with an intermediate maximum of 61 m.p.h. Through Orpington, 56 miles, in 56¼ min. at 62½, the express was now punctual, but the normally fast descent through outer suburbs is impossible owing to a severe slowing at present where bridge reconstruction and new track works are in hand in connection with the coming electrification of the Chatham main line passing beneath.

Although running was again brisk when there was a chance, signal checks before London Bridge in the busiest area did not permit a punctual arrival, though we pulled up in Waterloo within a few seconds of our scheduled allowance of 78 min. from Folkestone.



B.R. Standard type I Bo-Bo diesel-electric Locomotive No. D8000, built by the English Electric Company Limited. This is the prototype of the fine new Hornby-Dublo Locomotive that makes its appearance this month. B.R. Official photograph.

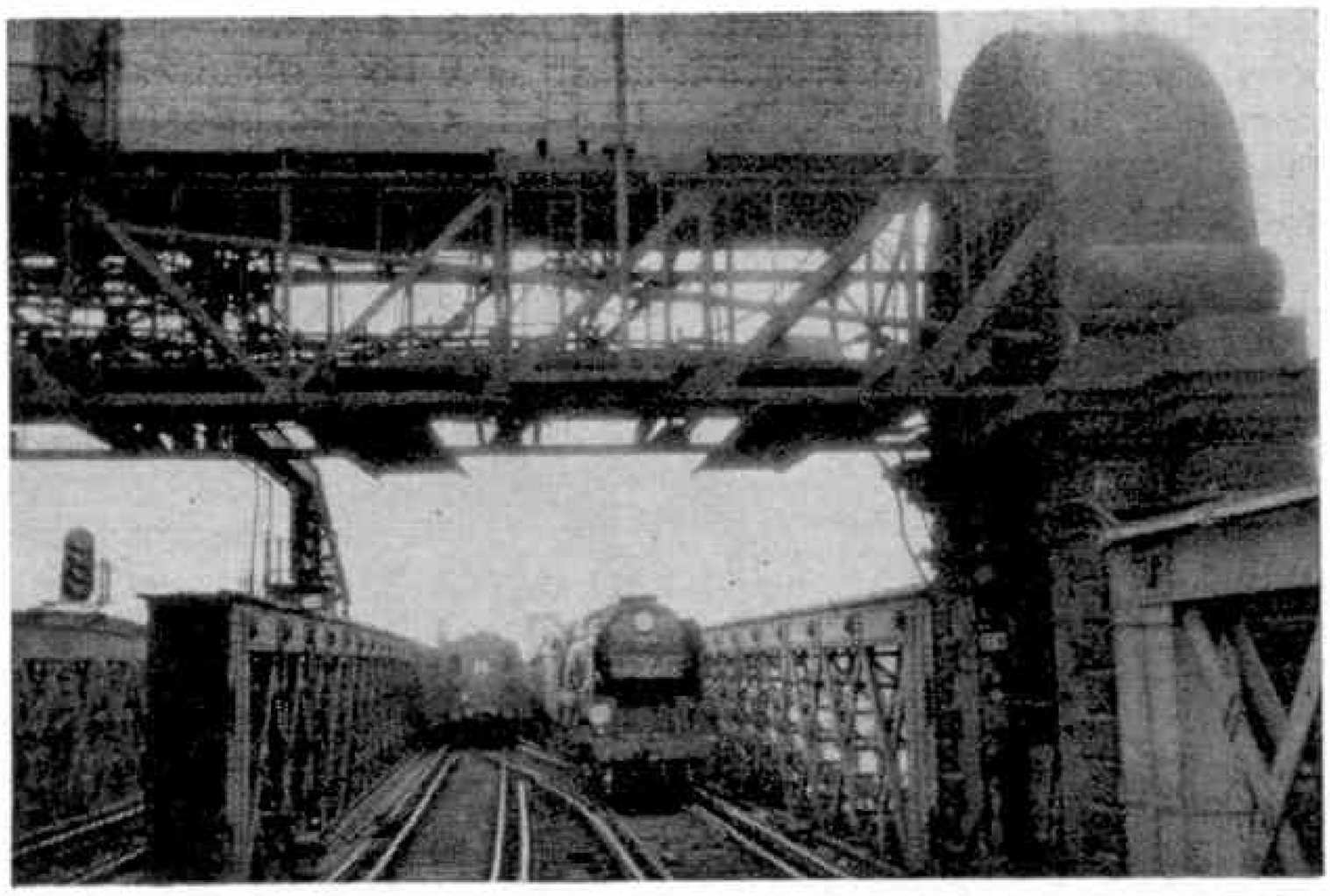
S.R. Summer Saturdays and Special Occasions

During the peak of the holiday season there was much interesting locomotive and multiple-unit traffic operation on the main lines to and from the Kent and Sussex coasts. As part of the considerable cross-country through train movement mentioned last month between resorts in those areas and the Midlands and North, return visitors' trains running up the Brighton main line, amid frequent fast or slow electrics, were hauled by West Countries, Schools, a King Arthur, L 4–4–0, K, N, U and U1 Moguls, also a 2–6–4T of L.M. design. Some were bound for the Birmingham district, Sheffield, Manchester, Leicester and elsewhere, going over the West London connecting link via Clapham Junction to Kensington (Olympia) or Willesden Junction, L.M.R., for handing over to other Regions. Others were routed via Redhill and Reading and so on to the W.R. with W.R. 2–6–0 haulage in some cases between Redhill and Reading, S.R.

A Longsight L.M.R. class 5 4–6–0 had a regular Saturday working from Manchester to Brighton and back; engines of this type paid a number of visits with excursions to various S.R. destinations; a Q1 0–6–0 took a southbound through express from Kensington to Brighton; S.R. Co–Co electric locomotives shared some Midlands train working along the Sussex coast, as well as customary London–Newhaven boat and freight train running.

Over the steeply graded, busy, London–Margate–Ramsgate route via Chatham — all steam east of Gillingham probably for the last time in summer— Saturdays last season again saw considerable use of ex-S.E. & C.R. or L1 4–4–0s as well as 2–6–0s on fast coast trains, sharing with Pacifics, King Arthurs and Schools. The 10-car *Kentish Belle* Pullman was taken down one Saturday afternoon by 1914-built L 4–4–0 No. 31766; on a Sunday the fast 11.0 a.m. Victoria–Dover Continental express, rostered for a Pacific, with maximum 10-corridor, 2 Pullman and 2 van load, was tackled boldly by Schools No. 30909, *St. Pauls*. Many improvised services and routes through Kent, Hastings and into Surrey, applied in emergency during the first week-end in September after heavy flooding and storm devastation.

In October two diminutive, ancient "Terrier" 0–6–0Ts, one the yellow painted Brighton Works shunter No. DS 377, the other lined black No. 32678 headed an enthusiasts' corridor train special from Crowhurst to Hastings and ran from Robertsbridge to Tenterden and back.



The up "Man of Kent" running over Charing Cross bridge about to pass under the overhead signal box. The engine is rebuilt 4-6-2 No. 34016 "Bodmin". Photographed on the occasion of the run described on page 565, by C. A. Gostling.

Space Notes

By
J. Humphries, B.Sc.(Eng.),
A.M.I.Mech.E., A.F.R.Ae.S.

Explorer satellite (upper section) and last stage rocket (lower section). Official U.S. Army photograph.

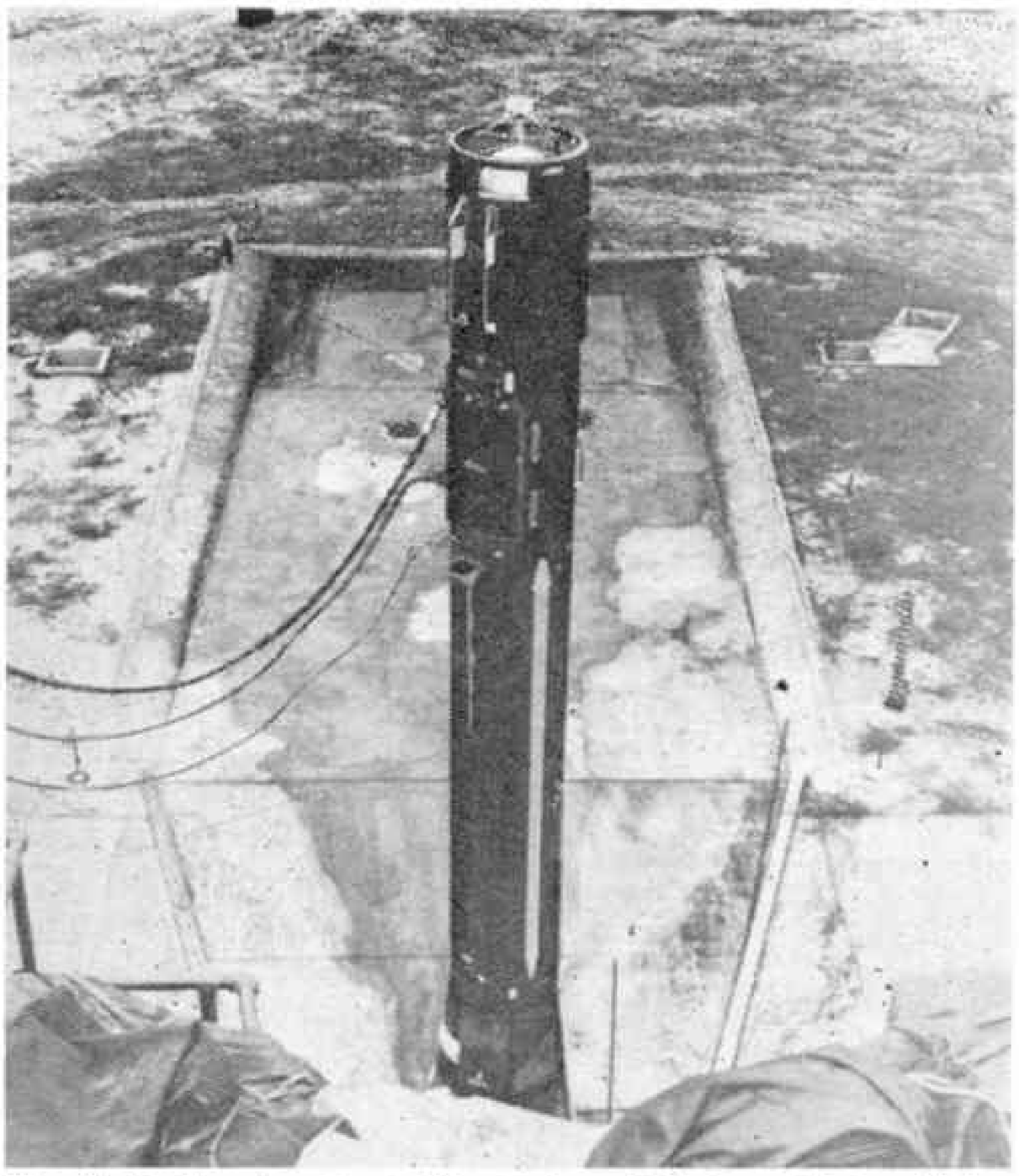
Artificial Satellites

Just over a year ago the world was surprised by the launching of Sputnik I, now known to astronomers as 1957 alpha. For the previous two years there had been a continual build-up of information on the American Vanguard with only a few vague references by the Russians to their own programme. The success of the Russian programme coupled with the setbacks of the Vanguard convinced the Americans of the necessity for a backing-up programme. Sanction was therefore given to the Army project Explorer, which was a fairly simple satellite proposed at an earlier date by von Braun, using existing tried and proved rockets for the launching vehicle. Within months the vehicle was developed and Explorer I, the first U.S. satellite, was launched on 31st January, 1958.

At the time of writing a total of five Explorer launchings have been made, of which three have been successful. The Vanguard programme has not been so lucky, only one having gone into orbit. But if one counts time in orbit as the chief mark of success then Vanguard I has beaten all others by a very handsome margin. It is estimated that it will not return to Earth for 200 years, and as its radio is powered by the Sun it may still be sending out signals as it spirals in during its last few hours of life. It should be noted that only successful launchings of Vanguards are given numbers whereas all Explorer attempts are numbered.

A total of seven satellites, weighing from 3½ to 2,806 lb., has been launched during the past year, and a great deal of information must have been obtained from them. But, like all scientific information, it must be analysed and chewed over, and theories proposed and knocked down, perhaps several times over, before any final reports on the findings can be made. It is not surprising therefore that so far little has been published and the impact of the satellites on the scientific world has been slight. The table on the left gives a list of the main characteristics of the

Satellite	*Date launched*	*Date down*	*Weight*	*Initial orbit*	
				Time	*Min. and Max. heights*
Sputnik I	Oct. 4/57	Jan. 4/58	184 lb.	96.2 min.	127-577 miles
Sputnik II	Nov. 3/57	April 14/58	1,120 lb.	103.3 min.	133-974 miles
Sputnik III	May 15/58	Late 1959	2,806 lb.	106 min.	140-1,160 miles
Explorer I	Jan. 31/58	1959	31 lb.	114 min.	219-1,587 miles
Explorer III	Mar. 26/58	June 27/58	31 lb.	115.9 min.	112-1,672 miles
Explorer IV	July 26/58	1959	38 lb.	110 min.	163-1,365 miles
Vanguard I	Mar. 17/58	Approx. 2158 A.D.	3½ lb.	134 min.	404-2,466 miles



The 3½ lb. Vanguard satellite on top of its launching vehicle. Official U.S. Navy photograph.

successful satellites and an indication of the more important measurements they have been making.

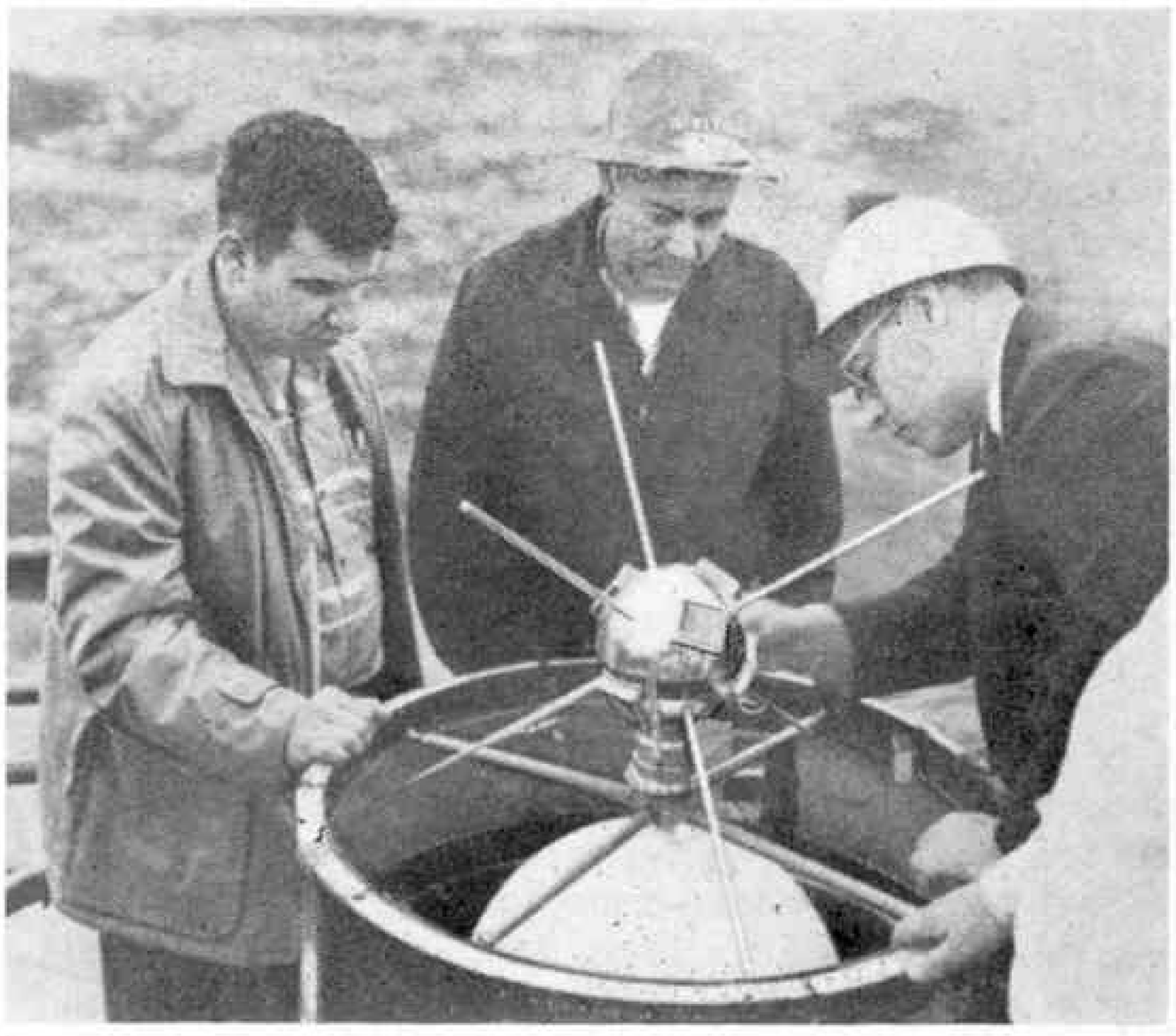
One of the first pieces of information to be obtained was on the density of the atmosphere in the orbital region. This was determined by measuring the orbit of the satellite and finding how it varied from elliptical to near circular with time. The density so obtained has been found to be from five to ten times as great as was expected. Explorer I was responsible for finding out that the radiation at heights over 600 miles is at least 1,000 times greater than expected, and this has given rise to great alarm and despondency in space-flight circles. If this high level persists far out into space it will mean that man-carrying space vehicles will need shielding as the level is far higher than can be tolerated for long periods. Explorer IV is finding out just what this radiation is and how it is caused, and further satellites will also follow up this line of investigation.

Man in Space

It is certainly very exciting to be able to place instruments in space and receive all kinds of scientific information back from them. But even the most hard-headed scientist must be looking forward to the day when a man is in orbit or on his way to the Moon. It is clear from the number of failures to date that the vehicles are not yet safe enough—although Sputnik III is large enough. Reliability is certain to improve rapidly and it may not be too long before the rocket engineers have the first space-ship waiting for a man.

In the meantime the medical profession is investigating the human problems involved. The first, in order of encounter as the space-ship takes off, is that of high acceleration. In many films this has been overdone. In practice the space-ship itself must be so lightly built that its ultimate strength will be less than that of the crew. Of course the crew will have to withstand a period of acceleration (say 4 minutes at 5 g) but it is quite a straightforward matter to test them fully in a large centrifuge beforehand.

After escape velocity has been reached and the rocket motors have been turned off comes the period of "free fall", which continues until the motors are turned on again or until the ship is spun about an axis to produce an "artificial" gravity. Under free fall a person has no weight; a number of unpleasant occurrences due to this condition have been postulated, but until recently it has (Cont. on page 563)



Test sphere placed on top of the third stage rocket for a ride into space. Official U.S. Navy photograph.

"Catch-Me-Who-Can"

The Story of a Great Inventor

By M. Schofield

"*THIS surprising Engine will commence to exhibit her power of speed to the Public, This Day at 11 o'clock, and will continue her experiments only a few days. Tickets of admission: 5 shillings each, may be had of all London Coffee-houses.*"

Such was the announcement that appeared in London newspapers just 150 years ago. It was a signal that Richard Trevithick's engine—the first in the world to draw passengers—was ready to run around a circular track near Euston that he had laid down.

The story of George Stephenson, who has been called "the father of railways", has often been told. What the Cornish giant Trevithick did at Bridgnorth Foundry in Shropshire is not nearly so familiar, although experts and historians are now agreed that he was the first to design and build a steam locomotive to run on rails. The "surprising Engine" of the announcement at the beginning of this article was built by him and was nicknamed *Catch-Me-Who-Can*. It created a sensation, drawing immense crowds ready to ride behind it at 12 m.p.h. at a shilling a time, until a mishap caused it to fly off the track, after which the enterprise came to a disastrous end.

Richard Trevithick. Crown Copyright, Science Museum, London.

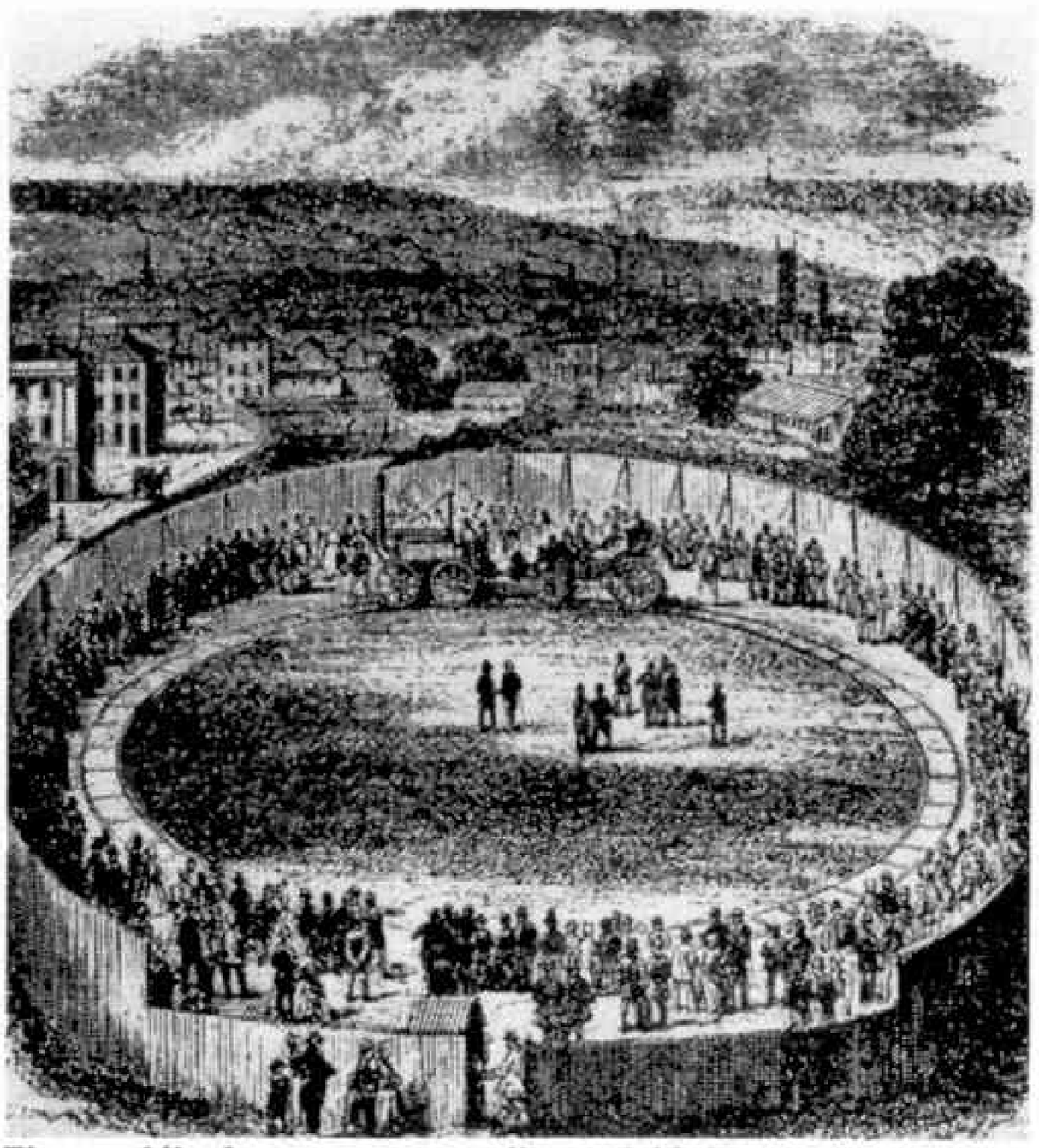
Catch-Me-Who-Can was not Trevithick's first steam locomotive. An earlier one he had built had been in use for some time hauling coal at Pen-y-Darran, in South Wales, and had been successful enough to establish Trevithick's fame as the pioneer of the steam locomotive.

Now *Catch-Me-Who-Can* was built at Bridgnorth of "best Shropshire Iron", as were other famous engines using steam at the high pressures introduced by Trevithick. In the Science Museum at South Kensington there is another of the high pressure engines built at Bridgnorth. Until Trevithick's time steam had only been used at the low pressure favoured by James Watt, the great inventor.

One point to be stressed from the start is that Trevithick was lucky in having a first-rate practical engineer at Bridgnorth to put his ideas into practice. This man, without whom Trevithick would never have built his *Catch-Me-Who-Can*, nor later engines, was John Urpeth Rastrick, the engineer who built the Stourbridge Lion engines that were the first locomotives to run in the Western Hemispheres.

It was the combination of Trevithick and Rastrick that built *Catch-Me-Who-Can*, and it was the publicity that this and his other pioneer efforts gave him that led to his receiving orders for Peruvian pumping engines. The silver mines in which they were installed were 13,000 ft. up in the Andes. Trevithick himself went out with them, and remained in South America for many years, enduring many hardships in the adventurous life he led there.

Trevithick was a man of giant stature and famed for wrestling while in Cornwall. He came to Bridgnorth on the Severn to have engines built when other foundries had failed him. He was ever bullying and then pleading with the owners and workmen of the Foundry when he feared lest his engines would not be ready in the time



The world's first passenger railway, laid down in 1808 near Euston by Trevithick. The locomotive, "Catch-Me-Who-Can", hauled a carriage round the track at a speed of 12 m.p.h.

stipulated. Ready they always were, provided Rastrick as the brains behind the business was not called away too often, to build Chepstow's iron bridge, for example, or on some other job.

Where Trevithick scored over James Watt was in harnessing high steam pressures. His first product was a steam-carriage he called his "Travelling Engine" that he built while still in Cornwall. This first passenger-carrying carriage ran on the road, not on rails, and it was burned out one day when the water boiled away and the boiler became red-hot, all because "the party in charge forgot to extinguish the boiler fire while comforting their Hearts with a Roast Goose and proper drinks". Later he built another that created a sensation when he ran it on the streets of London.

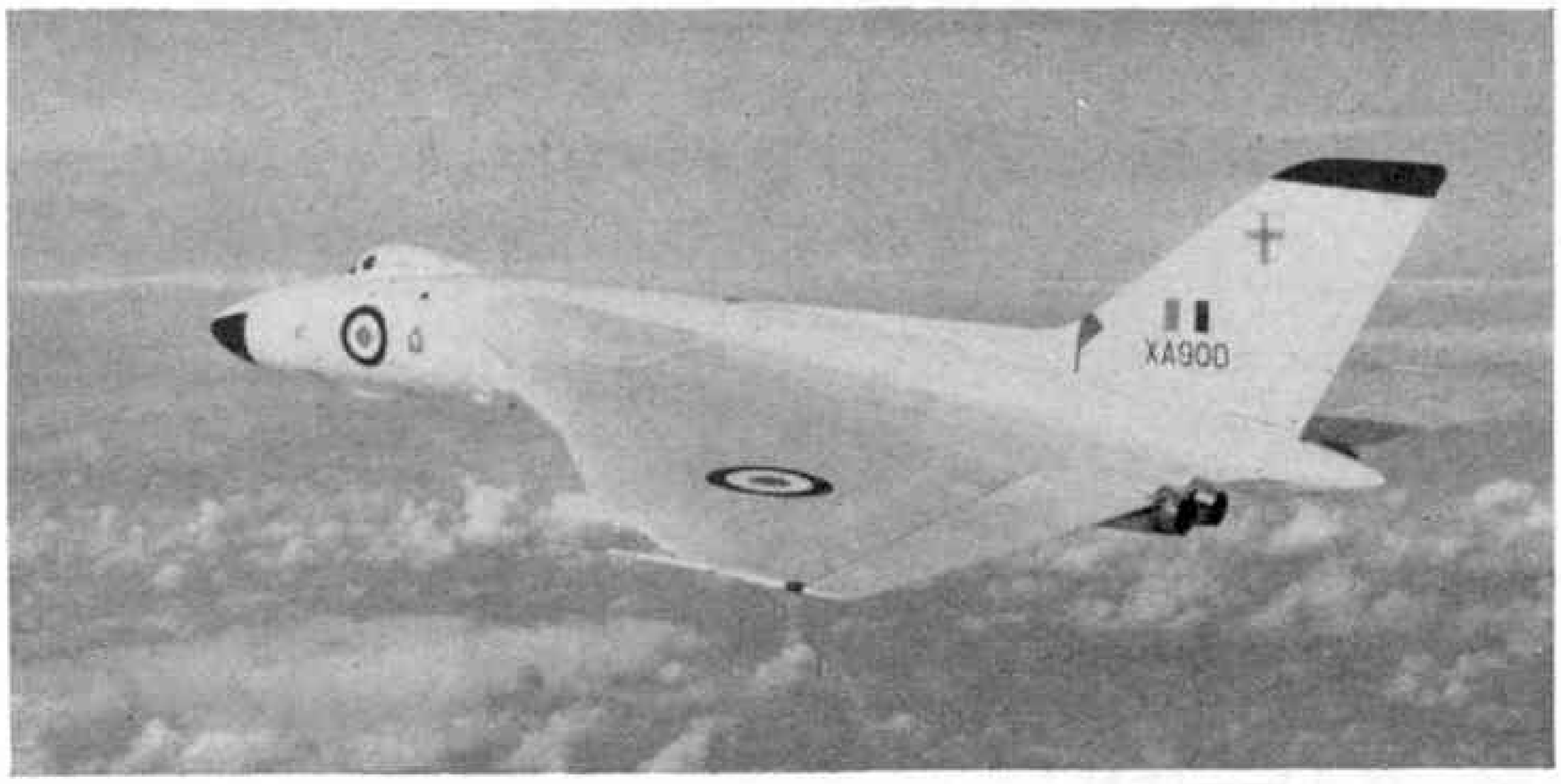
Catch-Me-Who-Can, which Trevithick called his *Racing Engine*, weighed eight tons and was able to "gallop from fifteen to twenty miles an hour". The name "Racing" came from the idea of racing it against three shifts of horses at Newmarket at the next race meeting, an idea which came to nought because of the failure of the Euston enterprise. Trevithick's engine satisfied all expectations, reaching the speed stipulated and proving a trial or pilot-engine for his engines to come. What failed was the circular track, for the ground or waste patch on which he built it was very soft and spongy, and required extra timber supports on one or two days on which the show was held. For a brief spell the novelty drew the crowds: then once again the track sank on one side and caused the engine to topple over. "Mr. Trevithick, having expended all his means and the shillings not having come in fast enough, the engine was not set on rails again," ran the final report.

And yet the engine *Catch-Me-Who-Can* provided the practical experience for greater triumphs to come. The story of how it and Trevithick's other engines led him to Peru is an interesting one. From the dizzy heights of Cerro de Pasco silver mines, high up in the Andes, an engineer named Uville was sent to Britain to try and obtain some pumping-engines without which the silver mines would have to be abandoned. Uville came by sea all the way round Cape Horn. He went first to Birmingham to see James Watt and his partner Matthew Boulton at the Soho Foundry. But he was bitterly disappointed, for Watt's condensing-engines would be useless when working at the low atmospheric pressure at Cerro de Pasco. In any case, argued Watt, who (*Continued on page 602*)

The view from "Foundry Yard", today. Telford's Doric Tower in Hightown overlooks the Severn and the Bridge.

Air News

By John W. R. Taylor



Avro Vulcan B.Mk.1 of Bomber Command, R.A.F.

Record Flights

Seldom have there been so many remarkable flights as in the past few months; yet we have become so accustomed to achievements in the air that only the Comet's superb record time of 6 hr. 12 min. when it opened the world's first transatlantic jet-liner service on 4th October made newspaper headlines.

Records have a special significance when they are set up in this way, by standard production aircraft doing their everyday job. That is why it is worth noting that the R.A.F.'s Vulcan bomber has also been getting a move on lately. One flew 3,345 miles from Ottawa to London in 5 hr. 20 min., at an average of 627 m.p.h. Another travelled 2,530 miles from El Adem to Embakasi in under 4 hrs., at 637 m.p.h. This is equivalent to more than 96 per cent. of the speed of sound at height and emphasises that our V-bombers fly so fast and so high that they would have a better chance of getting through to their target than any other bombers in the world.

Finally, there have been some more splendid flights by Max Conrad, the American ferry pilot who has flown the Atlantic 42 times, mostly in Piper lightplanes. In June he flew a 250 h.p. single-engined Piper Comanche non-stop from New York to Palermo, Sicily, a distance of 4,440 miles. Three months later, he flew another one 3,750 miles non-stop from Boston, Massachusetts, to Madrid. There could be few better examples of fine flying or confidence in an aeroplane, because the Comanches were perfectly standard except for the installation of extra fuel tanks.

Art Treasures go via North Pole

The first art collection ever to fly over the North Pole left Amsterdam on board an SAS air liner on 28th September last, en route for the National Museum of Art in Japan. It consisted of 60 paintings and 70 drawings by Van Gogh, valued at and insured for over a million pounds and including many of his best-known works.

The Polar Route was chosen for this flight because of the even-ness of its temperature, more favourable weather conditions, absence of turbulence and dry, dust-free air.

Lockheed JetStar transport, with two 300 gall. external fuel tanks fitted to the wing, increasing its range from 1,730 to 2,280 miles.

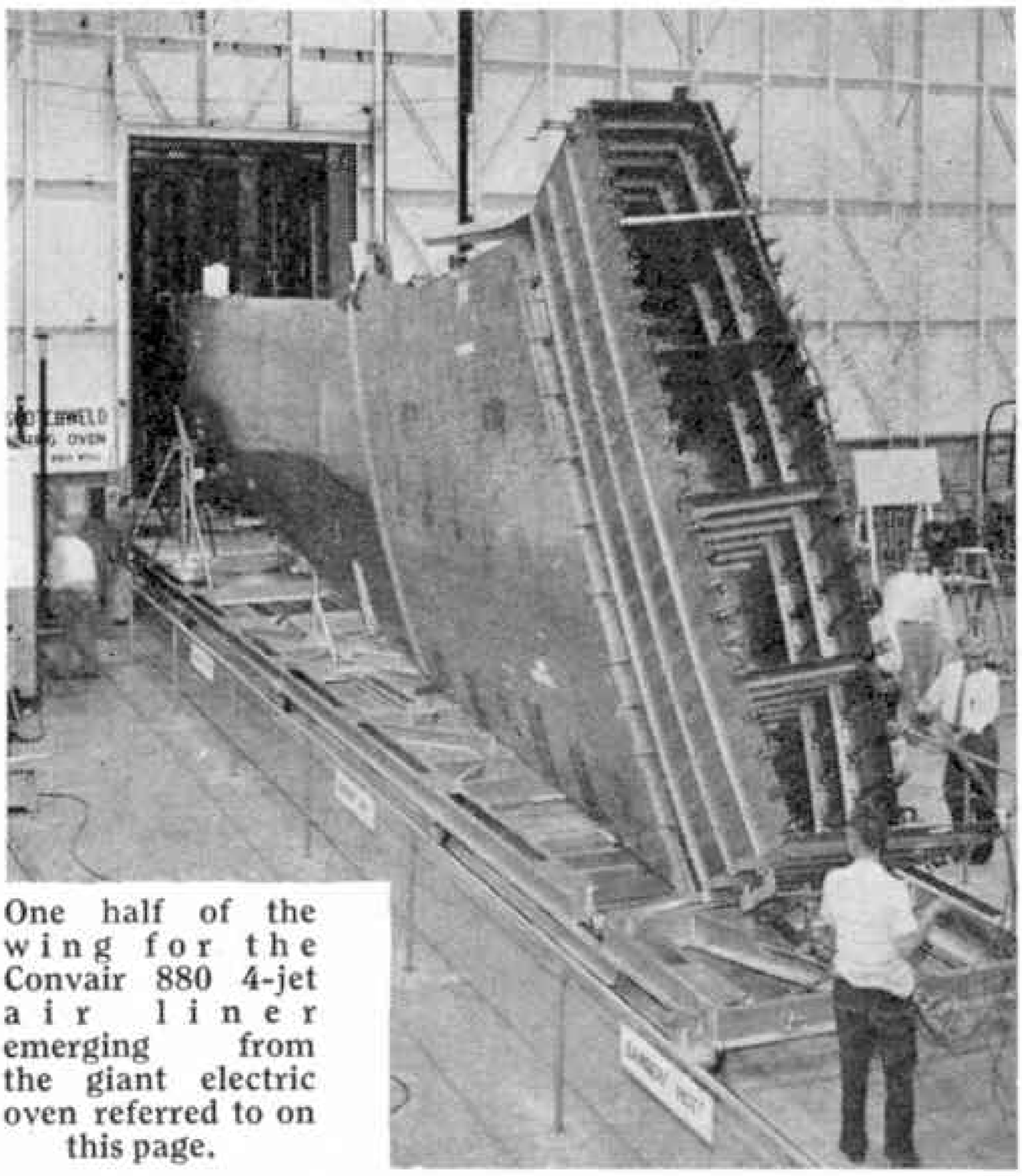
Another fast-mover is Lockheed's little JetStar transport, which is powered by two Bristol Orpheus turbojets, mounted on the sides of its rear fuselage. Taking off from Edwards Air Force Base in California, it flew north over the western states of America to make its first stop in the state of Washington. From there it headed east to make a second stop in Massachusetts, and then flew south over the eastern seaboard to Florida. Eighteen hours after take-off, the JetStar returned to Edwards, having made a complete circuit of the United States in 15 hrs.' flying time, at an average speed of 440 m.p.h.

British Airlift for French Cars

So great is the demand in Britain for the Renault Dauphine family car that the Company's factory at Acton has had to concentrate exclusively on the assembly of this model. As a result, the Renault 750's and Fregates sold in this country are now being brought over direct from France on board Bristol Freighters of Silver City Airways.

The cars are transported from Paris to Etaples by diesel train, driven two miles to Le Touquet Airport, and then flown to Ferryfield to connect with a mammoth car transporter bound for Acton.

In the year ended 30th September last, Silver City carried over the Channel 49,991 cars, 4,826 motor-cycles, 1,200 bicycles, 153,760 passengers—and one submarine!



One half of the wing for the Convair 880 4-jet air liner emerging from the giant electric oven referred to on this page.

Big Oven for a Big Joint!

Like most modern air liners, the 600 m.p.h. four-jet Convair 880 will carry its fuel inside the wing in integral tanks. This means that the skin and internal structure of the wing itself form the walls of the tank, which saves a great deal of weight and makes full use of every inch of space; but care has to be taken to avoid leakage, and Convair have developed a special Scotchweld sealing technique to ensure that the 880's wing is completely leak-proof.

During assembly of the wing components, a film adhesive is inserted at every joint. Then each half-wing is placed in the huge 80 ft. long, 20 ft. high electric oven shown in the upper illustration on this page, and baked for an hour at 320 deg. Fah. This causes the adhesive to form a maintenance-free leak-proof bond at all joints, after which the two half-wings are joined together on the final assembly line.

Automatic Flight System for Lightplanes

An automatic flight system which weighs only 4½ lb., but relieves the pilot of almost all handling of the controls except for take-off and landing, is now offered as standard equipment on Piper Apache, Comanche and Tri-Pacer light aircraft. Known as the Piper AutoControl, it operates electrically, deriving flight information from both the directional gyro and the artificial horizon.

Operation of the system is controlled by a single knob which turns the AutoControl on and engages it. Turns are made by means of a small knob next to the directional gyro. To hold any desired course, such as flying cross-country, the directional gyro is set at zero and the turn knob pulled out. This holds the aeroplane level on an exact course, within a few degrees, and provides a much straighter flight path than normal, so ensuring shorter flight times and lower fuel consumption.

As well as reducing fatigue for the pilot, the AutoControl makes it much less likely that he will run into trouble in bad weather. When it is engaged, the aircraft is incapable of entering a spiral dive, which often occurs if an inexperienced pilot flies accidentally into thick cloud and has no experience of flying 'on instruments'. Instead, the pilot can use the AutoControl to make a 180 deg. turn and fly out of the engulfing weather under complete control.

1,300 m.p.h. Naval Bomber

North American's new A3J-1 Vigilante carrier-based attack bomber made its first flight on 31st August last. Unlike the Royal Navy's Blackburn N.A.39, which delivers its atomic weapons at around the speed of sound at sea level, the Vigilante is designed to attack from high altitudes at more than twice the speed of sound. As a result, it is a massive aircraft, with a span of about 50 ft. and length of 70 ft., weighing some 22 tons and powered by two General Electric J79 turbojets, each giving 15,000 lb. of thrust with afterburning.

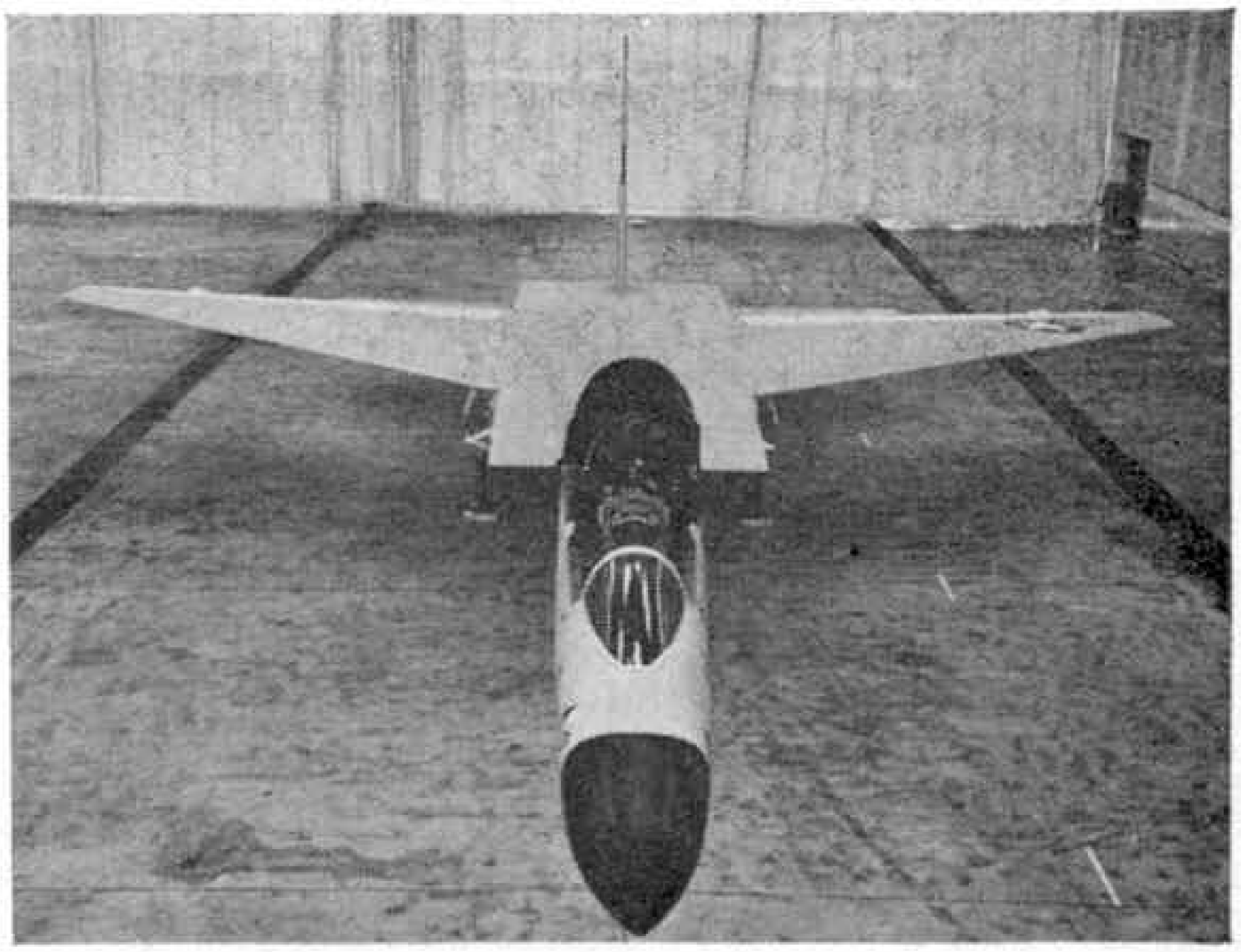
No aircraft of this size has been built previously for operation at sea, and this would not have been possible but for the availability of the U.S. Navy's great *Forrestal*-class super-carriers, fitted with the British-developed angled deck, steam catapult and other aids. It carries a crew of two in tandem, and drops its weapons at supersonic speed by ejecting them from its tail through a tunnel which runs along the inside of the rear fuselage.

Across the Atlantic for 4d. a Mile

Many passengers will fly the Atlantic this winter at a fare of 4d. a mile, which is lower than the cost of some forms of surface travel in Britain. Under T.W.A.'s Family Fare Plan, a man who flies from London to New York for the full economy fare of £90 one way, can take his wife along for only £54, which is the lowest fare in the history of transatlantic flight. Saving on a return ticket is £54, and there are comparable reductions in the fares of children travelling with their father.

* * * *

When the American Cessna company introduced their new Model 150 two-seat lightplane recently, they received 600 orders for it in a single day from distributors in the U.S.A. Another 115 were allocated for export.



North American Aviation's new A3J-1 twin-jet Vigilante, a carrier-based attack bomber.

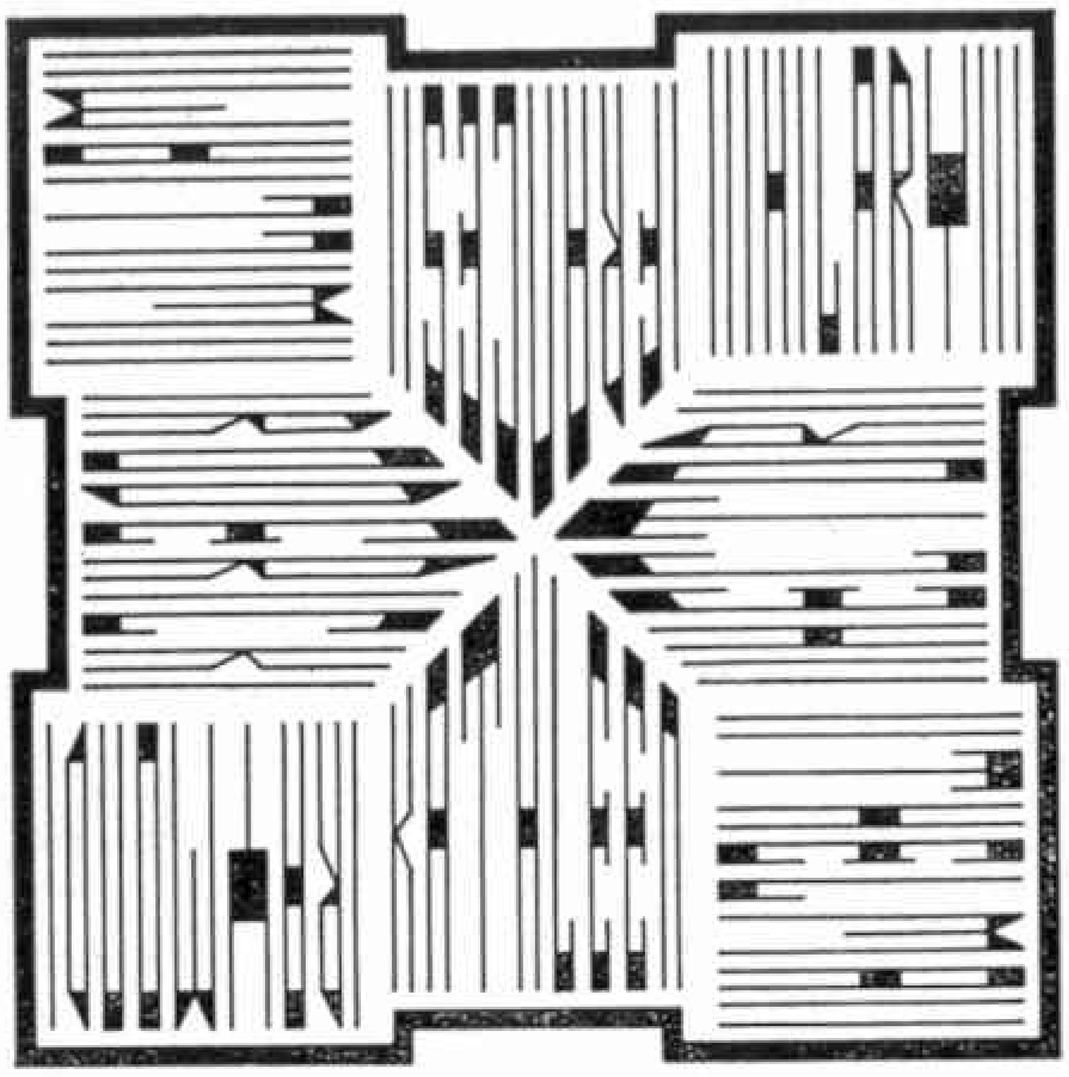


Fig. 1.

Easy Puzzles for the Christmas Party

By H. Hutchinson

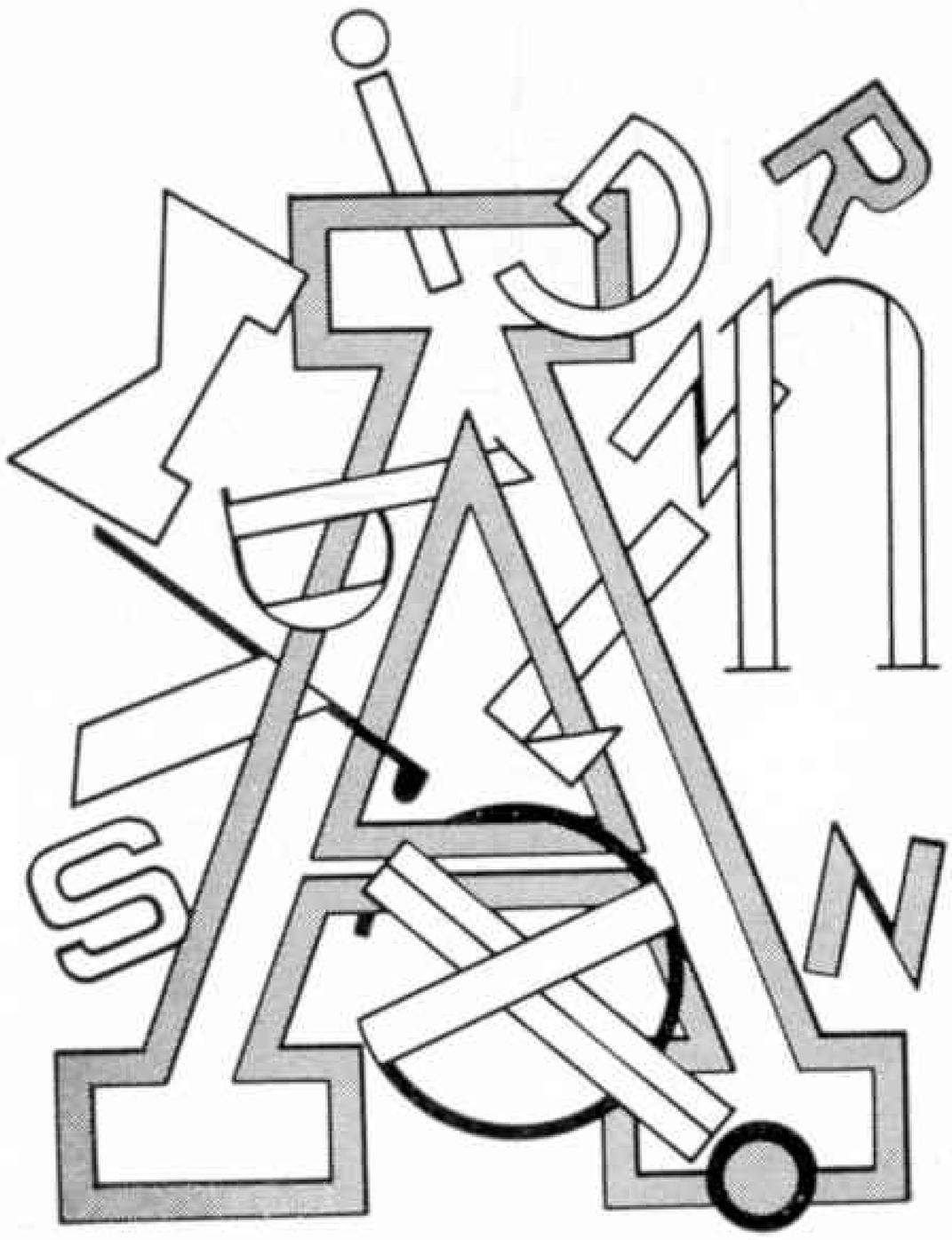


Fig. 3.

Sam's Vanished Guests

The Christmas Party of our friend Sam Salty was in full swing, and the guests were enjoying themselves immensely. Suddenly Sam realised that eight of them had disappeared, and they could not be found. See if you can find the names of the missing guests in Fig. 1.

A Small Word Square

Have you ever tried the art of "Word Square" making? It's fun, and Sam is a dab hand at it. Just for a lark, he completed one, then rubbed out all but five of the letters, leaving the Word Square as you see it in Fig. 2. Can you re-form his square for him?

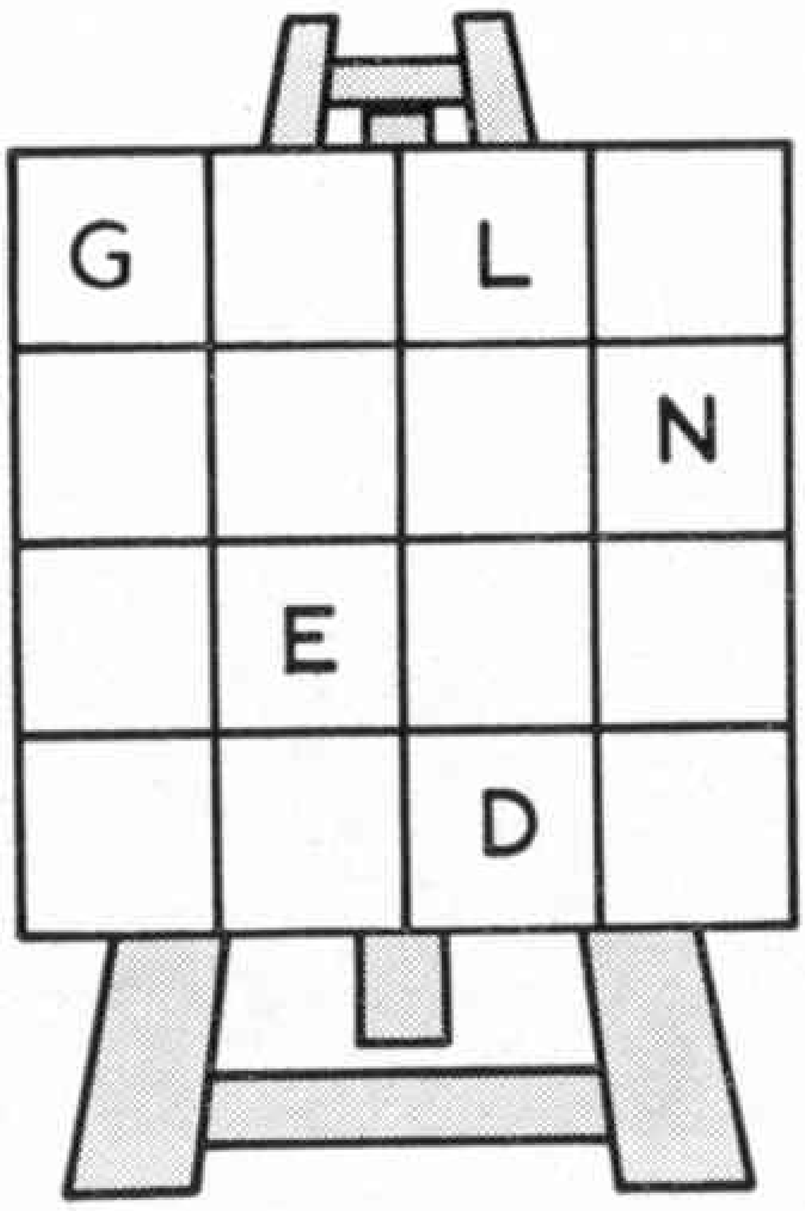


Fig. 2.

Word-Building Puzzle

Another good word puzzle is called "Town and Industry", and this is how Sam does it. He writes down the name of a town and of its chief industry, each letter separately. Then he cuts out the letters and jumbles them up, much as you see them in Fig. 3. Now see if you can re-arrange the letters so as to form the names of the town and a local industry.

An Exciting Race Track

Goodwood or Silverstone, it doesn't matter where the motor race is to be held, Sam will be around to watch it. The last motor race that Sam attended was the most exciting that he had ever seen. The roads were interwoven —some went under and others went over—and a number of separate tracks were to be found. You will see what they looked like from Fig. 4. Take a good

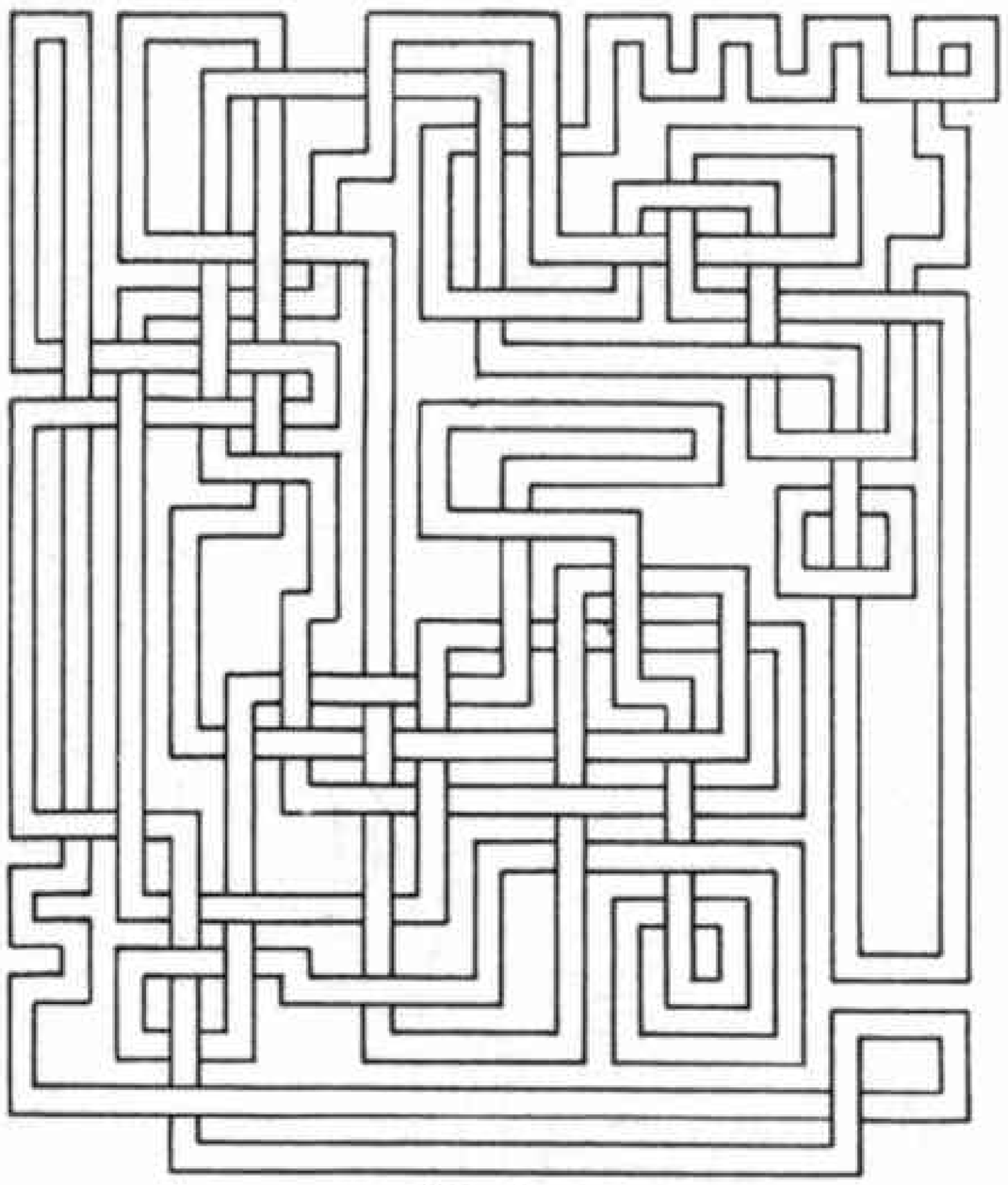


Fig. 4

look at this course, and see if you can tell how many separate tracks there are.

Famous Indeed!

"Oh yes, very famous," said Sam as he gazed up at the statue. "Very famous indeed. He certainly looks down from his pedestal." Whom did the statue portray? The secret is hidden in Fig. 5.

An Easy Crossword

Fig. 6 shows an easy crossword for the young ones. The clues are:

CLUES ACROSS

1. Not happy
4. Flies don't like this
7. Time for rejoicing
10. Small globules of lead
11. Middle of shutters
13. Part of the body
14. Past tense of the substantive verb
16. Not daughter
17. Young child (abbrev.)
18. Associated with 7 across
20. Civil Defence
21. Wearing Apparel (beheaded)

Fig. 5.

CLUES ACROSS (*continued*)

22. A feathered friend
23. Half of slay
24. Calls for a celebration (reversed)
26. That thing
28. Seen in a boat
30. Eaten (reversed)
31. Single
32. A colour denotes this
34. A plant
35. Large animals
38. And so on
39. Signal of distress

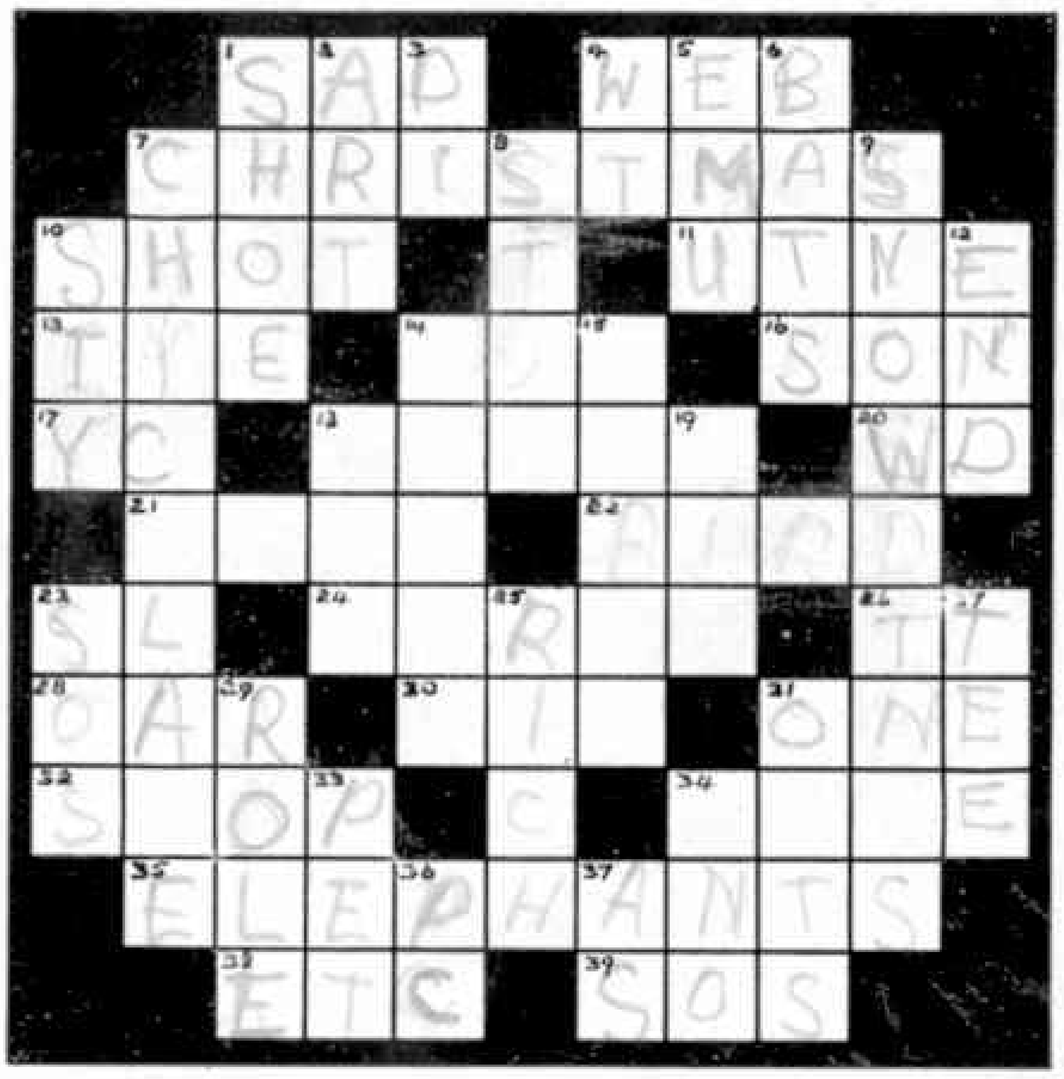


Fig. 6.

CLUES DOWN

1. Covering of the foot
2. A work of . . .
3. To reach into (curtailed)
4. Work time (abbrev.)
5. An Australian bird
6. They fly by night
7. Very delicious
8. To examine closely
9. Seen at 7 across
10. Homes of pigs
12. Opposite to begin
14. . . . . not, want not
15. A long narrow piece
18. Part of South
19. Ancient Order of Buffaloes
23. Same as 39 across
25. Not poor
27. Associated with golf
29. Part of a play
31. Seen on the river (beheaded)
33. To fondle
34. Very cold (curtailed)
36. Helps to keep law and order
37. In like manner

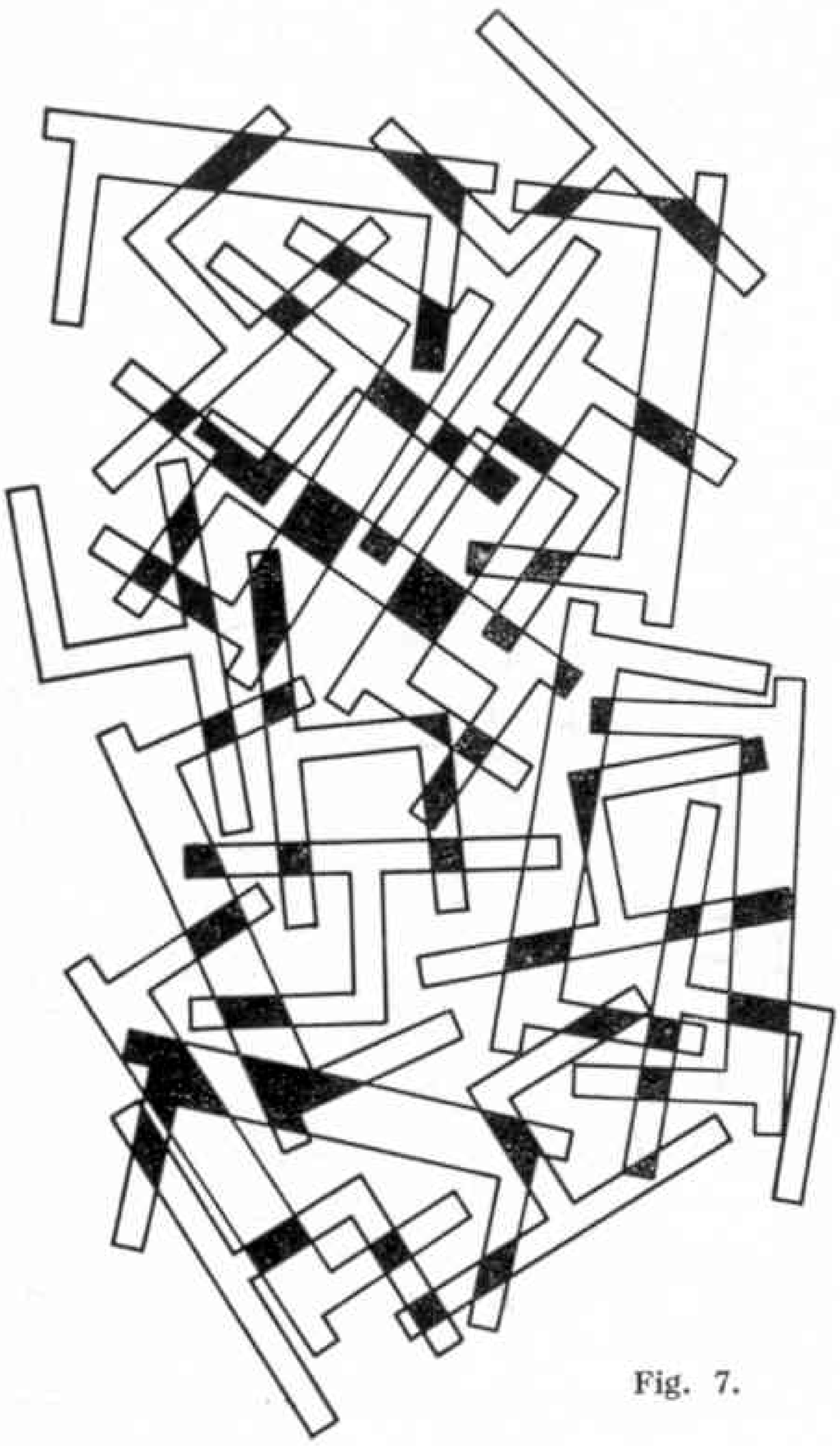


Fig. 7.

Moving Camp

"On the move again," says Private Tom Bennett, of Nether Ballot armed forces. All furniture has to be moved out of the barracks. The chairs and tables are piled up ready for transport—see Fig. 7. Along comes an efficient C.O. and begins to count the various items, but gets really stuck when he comes to the tables and chairs. See how you fare counting this lot—I warn you that it isn't easy!

Santa Claus' Worst Chimney

They do say, and I don't doubt a single word of it, that Santa Claus still climbs down chimneys to deliver the goods. Santa must have found the one shown in Fig. 8 very tricky, as it had so many turnings. Just pretend that you have some toys to put into the stocking, and see if you are able to find the correct way down the first time.

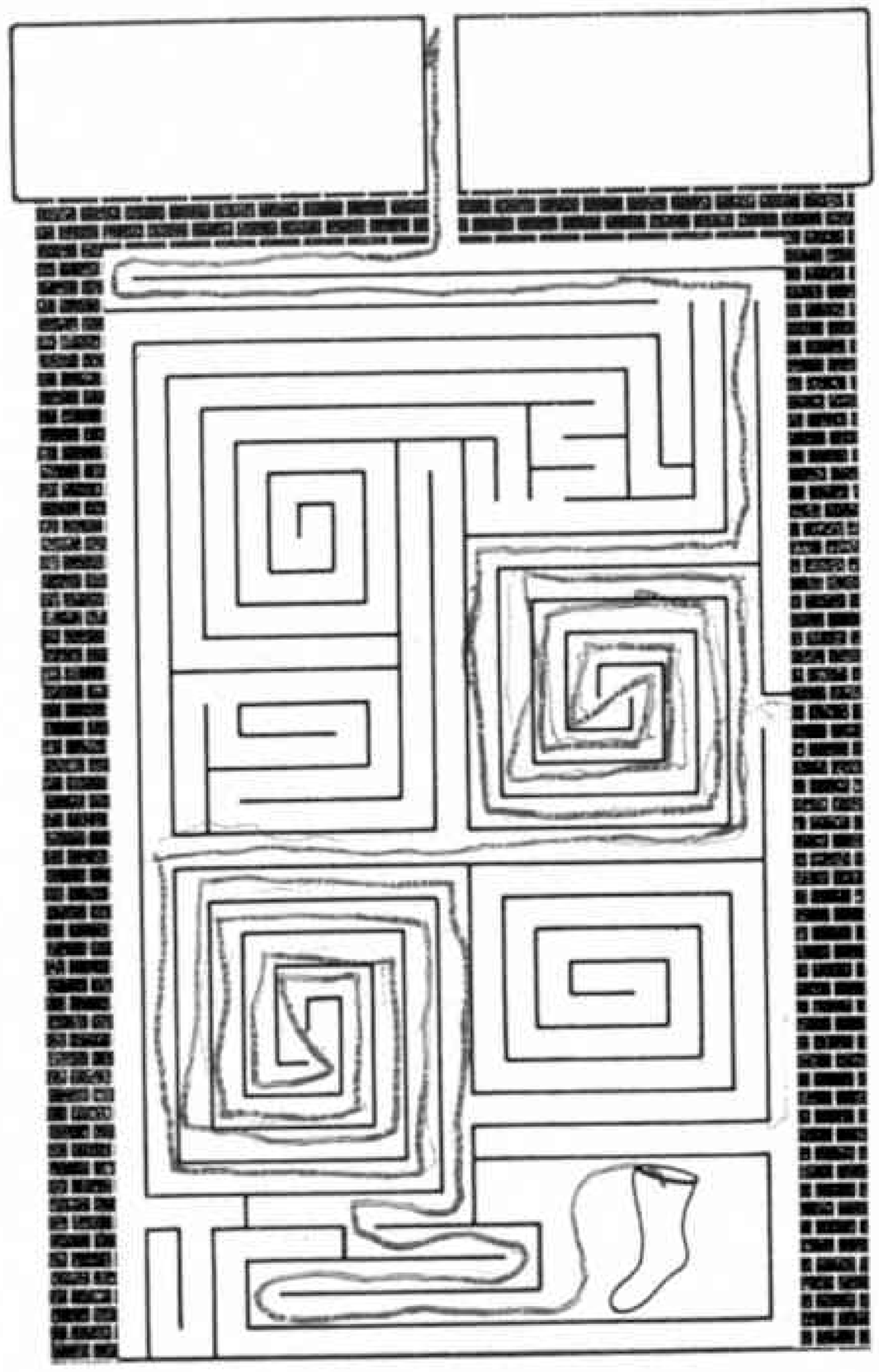


Fig. 8.

Food for Bunty

Bunty is pondering over the idea whether to go round to the local restaurant for dinner or jump into his box and hope for the best! By re-arranging the letters in each line of Fig. 9, see if you can discover the names of the six vegetables Bunty will find if he hops into the box.

(*For solutions see page 602*)

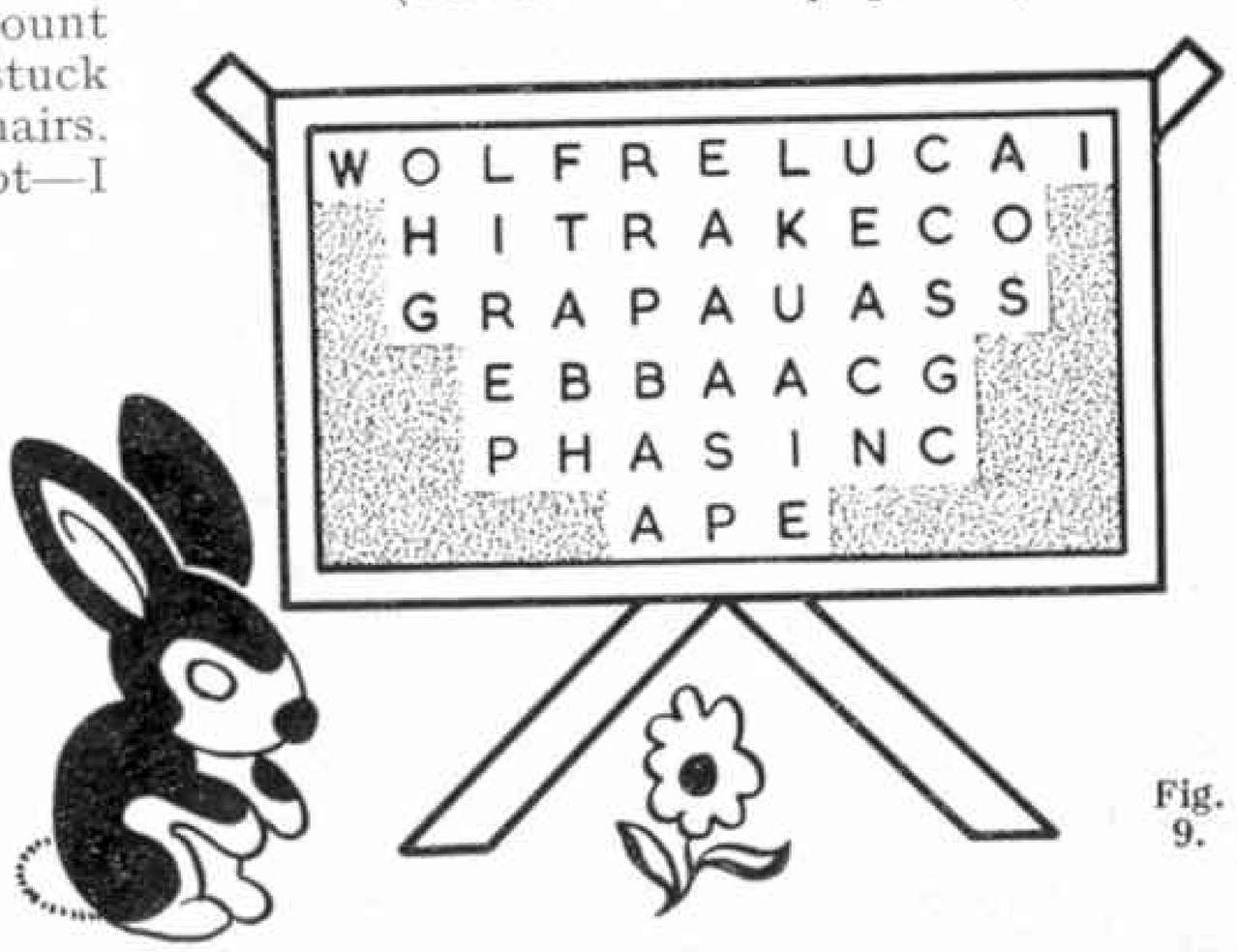
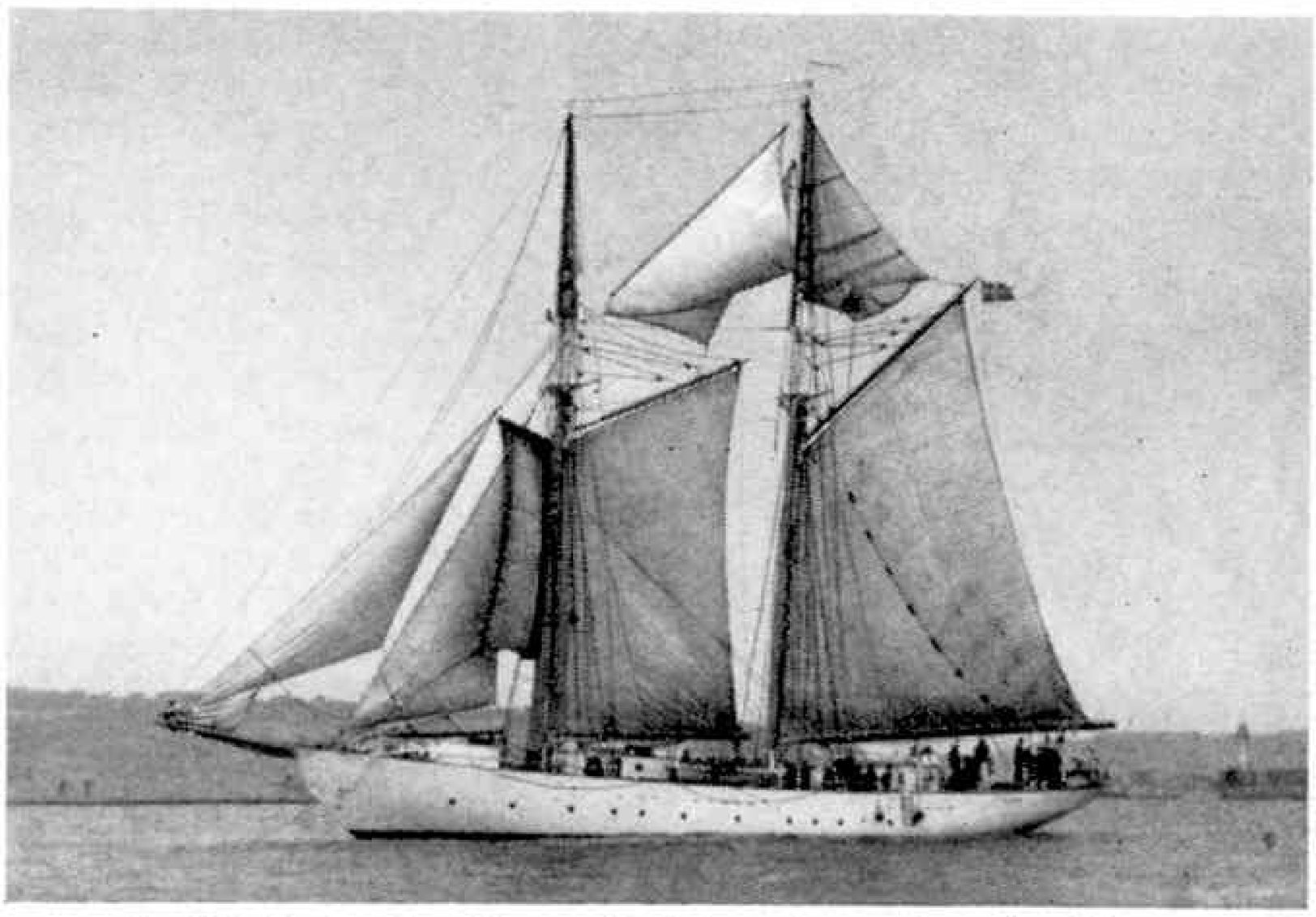


Fig. 9.

MECCANO MAGAZINE

Junior Section

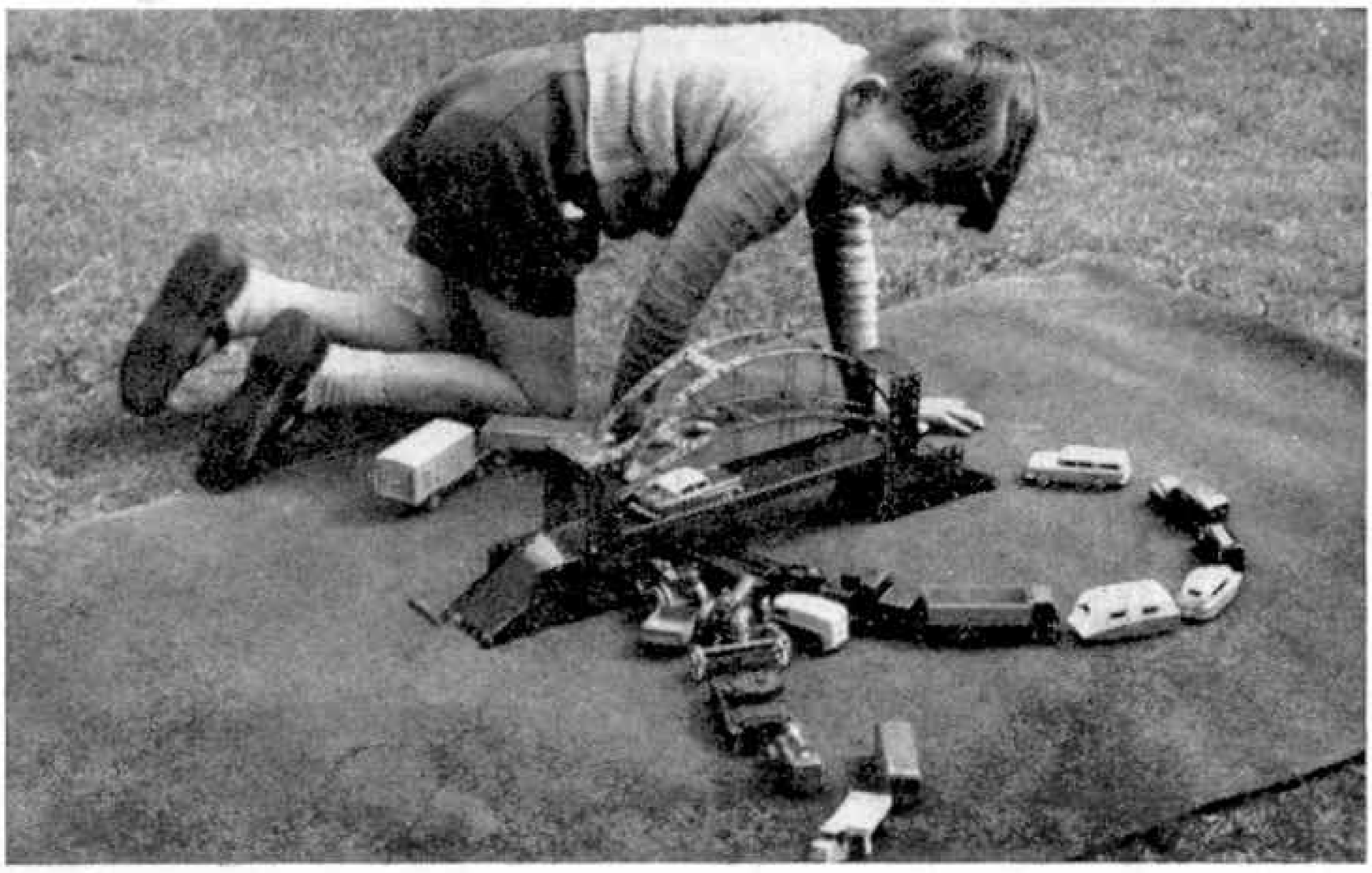
THE beautiful picture at the head of this page, from a photograph by J. Mannering, shows a Swedish naval training schooner that visited Dover last summer. She is the *Gladan*, and she was accompanied by the *Falken*, with which she was carrying out a routine cruise. Each vessel carries about 40 cadets whose ages range from 16 to 20 years, and every young entrant to the Swedish Navy makes at least two cruises in them.



The "Gladan," a Swedish naval training schooner hove to off Dover.

The vessels are fitted with diesel engines, although these are seldom used, as the cadets are expected to be able to handle the vessels, under competent officers, in all conditions of weather.

Here on this page is a picture of Alan Lindley, Pudsey, a devoted *M.M.* reader, although only six years of age, who can scarcely wait for the beginning of every month to get the latest issue of the Magazine! He is particularly interested in Dinky Toys, and makes very good use of his Meccano Outfit in providing "scenery" when he is playing with them.



Alan Lindley, Pudsey, Yorkshire, runs his Dinky Toys vehicles under a Meccano bridge he has built.

Easy Model-Building

"Spanner's" Special Section for Juniors

Trapeze Artist

The very simple model shown in Fig. 1 represents a Trapeze Artist performing on a high wire and it can be built from parts in Outfit No. 00. Its construction will provide fun for young model-builders and it forms an amusing toy to play with when completed.

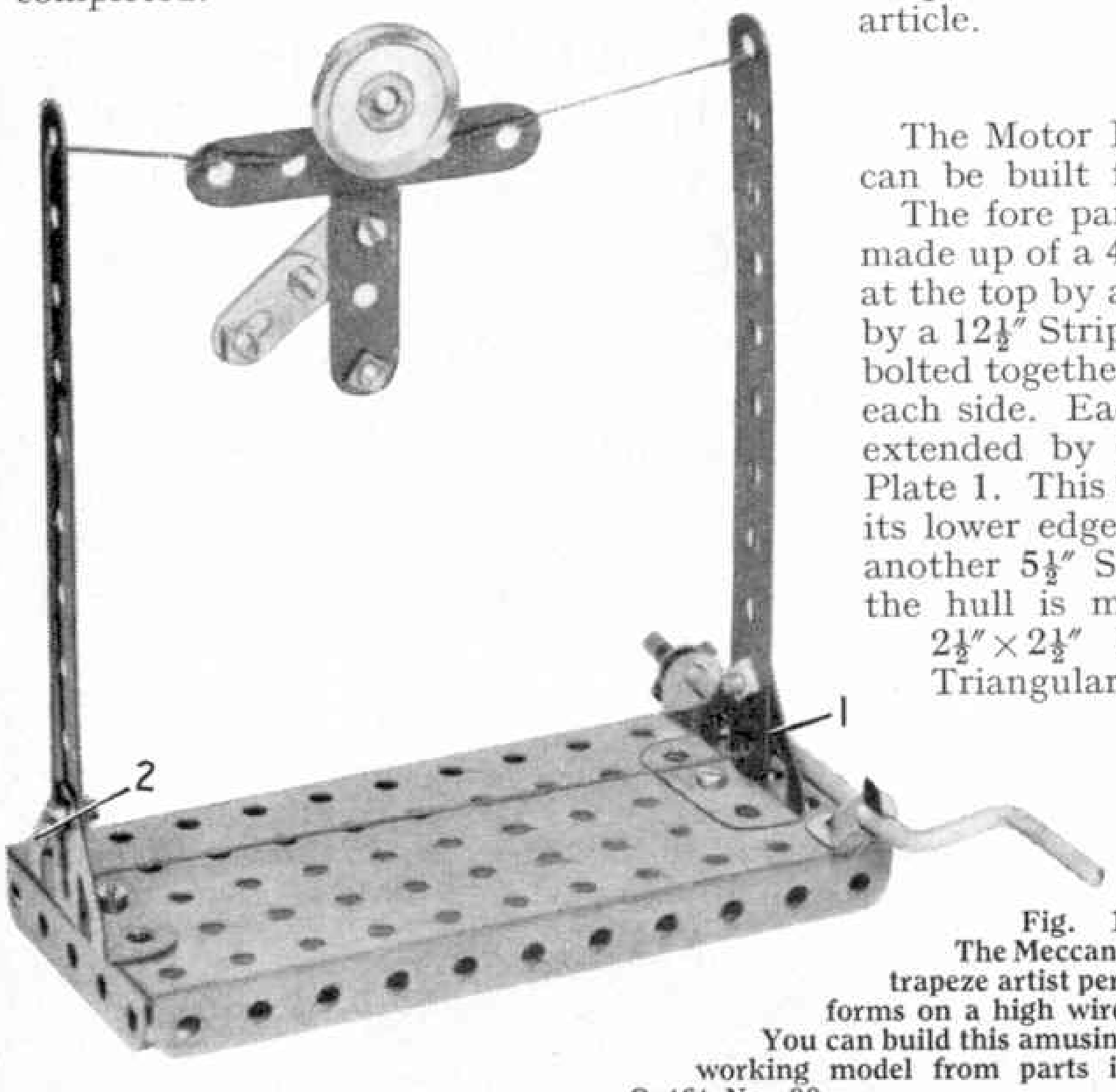


Fig. 1. The Meccano trapeze artist performs on a high wire. You can build this amusing working model from parts in Outfit No. 00.

The base of the model is a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate, to which are bolted two Trunnions 1 and 2. A $5\frac{1}{2}''$ Strip is fixed in the top hole of each Trunnion. Then two Angle Brackets are bolted to the Flanged Plate at one end and a Crank Handle is mounted in them.

The figure of the performer consists of two $2\frac{1}{2}''$ Strips bolted together. A 1" fixed Pulley forms his head and one of his legs is represented by two Fishplates bolted end to end.

A length of cord is wound a few turns around the Crank Handle, pulled tight, and then each end of it is taken through the lower and upper end holes of the two $5\frac{1}{2}''$ Strips. Finally the two ends of the Cord are each tied to an arm of the figure.

By turning the Crank Handle, first in one direction and then in the other, the figure is caused to move from end to end between the two $5\frac{1}{2}''$ Strips.

A list of the parts required to build the Trapeze Artist is given at the end of this article.

Motor Boat

The Motor Boat shown in Figs. 2 and 3 can be built from parts in Outfit No. 4.

The fore part of the hull on each side is made up of a $4\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate edged at the top by a $5\frac{1}{2}''$ Strip and at the bottom by a $12\frac{1}{2}''$ Strip. At the prow the Plates are bolted together and edged by a $2\frac{1}{2}''$ Strip on each side. Each $4\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate is extended by one half of a Hinged Flat Plate 1. This is bolted to the $12\frac{1}{2}''$ Strip at its lower edge and at the top is edged by another $5\frac{1}{2}''$ Strip. The remaining part of the hull is made up on each side by a $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate, a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Triangular Flexible Plate 2 and a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate 3. The stern is completed with a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate, edged with two Formed Slotted Strips. The upper Formed Slotted Strip, together with a $2\frac{1}{2}''$ Strip at the centre of the stern, are bolted to an Angle Bracket 4, to which is also attached a Semi-Circular Plate 5 that forms the stern deck.

A Flanged Sector Plate 6 fills in the fore-deck. The top of the cabin consists of two $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plates and $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Curved Plates. These are edged at each side with a $2\frac{1}{2}''$ and a $3\frac{1}{2}''$ Strip overlapped, and are connected by Angle Brackets held by Bolts 7 and 8 to further Angle Brackets fixed to the sides of the hull by the bolts 9 and 10. The space between the cabin and the hull on each side is filled in with a $5\frac{1}{2}''$ Strip 11. The fore end of the cabin is closed by a Wheel Disc (8 holes) fixed to an Angle Bracket held by bolt 12, and the after end consists of two Flat Trunnions placed

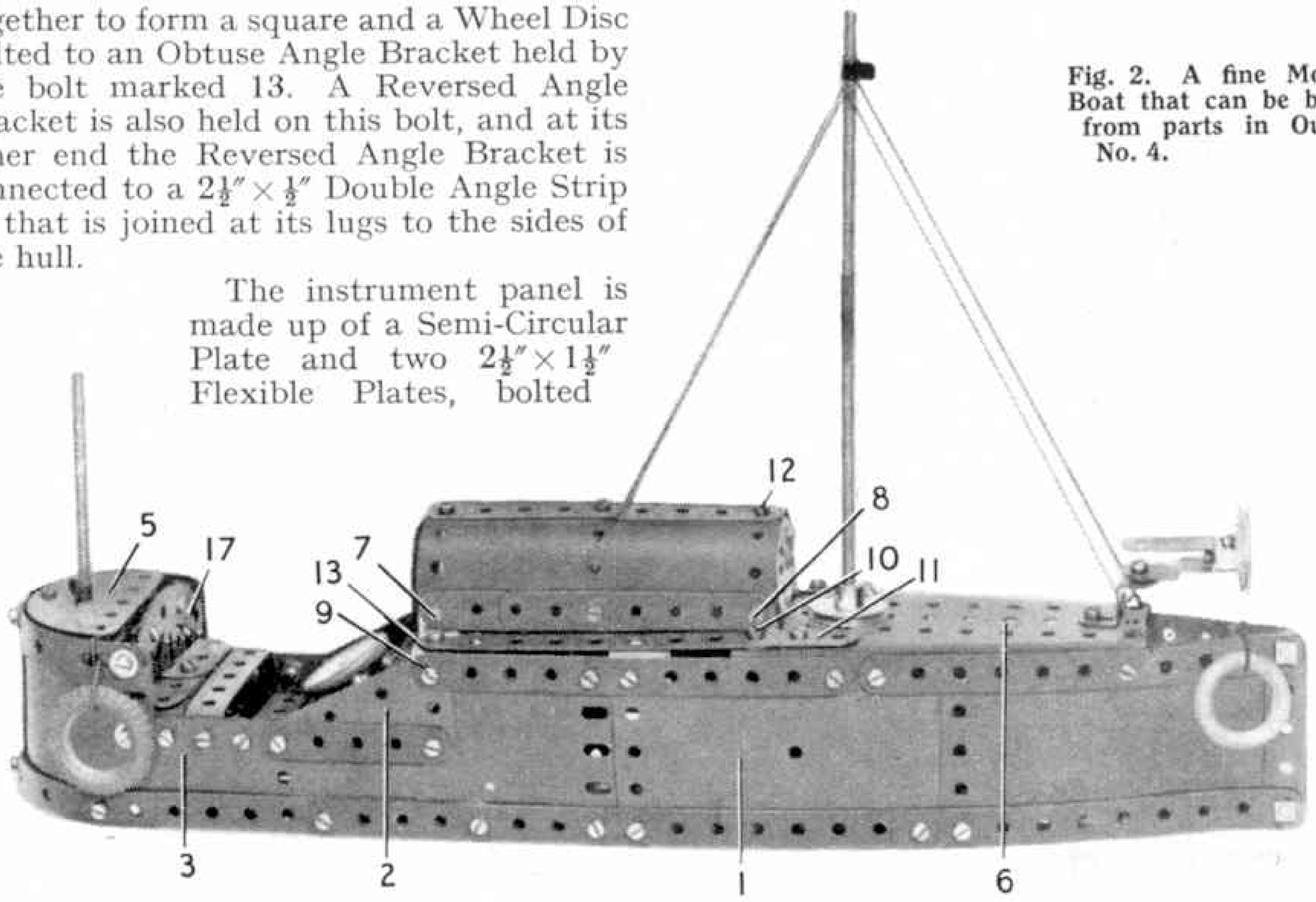


Fig. 2. A fine Motor Boat that can be built from parts in Outfit No. 4.

together to form a square and a Wheel Disc bolted to an Obtuse Angle Bracket held by the bolt marked 13. A Reversed Angle Bracket is also held on this bolt, and at its other end the Reversed Angle Bracket is connected to a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 14 that is joined at its lugs to the sides of the hull.

The instrument panel is made up of a Semi-Circular Plate and two $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates, bolted together and connected to an Obtuse Angle Bracket 15 at the bottom. The Obtuse Angle Bracket is bolted to a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flanged Plate 16, which braces the sides of the vessel. The Steering Wheel is a 1" Pulley fitted with a Rubber Ring, and it is mounted on a $1\frac{1}{2}''$ Rod held underneath the panel by a further 1" Pulley.

The seat consists of two $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips bolted to the sides of the vessel. The back of the seat is made up of two Trunnions with a $2\frac{1}{2}''$ Curved Stepped Strip 17 bolted to them as shown.

A $\frac{1}{2}''$ Reversed Angle Bracket bolted to the fore-deck has a Bent Strip connected to it by lock-nuts, and the searchlight consists of a 1" Pulley.

The mast consists of two 4" Rods joined together by a Rod Connector. It is held in the boss of a 1" Pulley and is supported below the deck by a Bush Wheel 18. The rigging is arranged as shown. The flag pole at the rear is a $3\frac{1}{2}''$ Rod supported underneath the Semi-Circular Plate by a 1" Pulley.

Parts required to build the Trapeze Artist: 2 of No. 2; 2 of No. 5; 2 of No. 10; 2 of No. 12; 1 of No. 19s; 1 of No. 22; 2 of No. 35; 11 of No. 37a; 11 of No. 37b; 1 of No. 38; 1 of No. 52; 1 of No. 111c; 2 of No. 126.

Parts required to build the model Motor Boat: 2 of No. 1; 8 of No. 2; 2 of No. 3; 9 of No. 5; 8 of No. 12; 2 of No. 12c; 2 of No. 15b; 1 of No. 16; 1 of No. 18a; 5 of No. 22; 1 of No. 24; 2 of No. 24a; 3 of No. 35; 75 of No. 37a; 71 of No. 37b; 7 of No. 38; 1 of No. 40; 1 of No. 44; 3 of No. 48a; 1 of No. 51; 1 of No. 54; 1 of No. 90a; 4 of No. 111c; 2 of No. 125; 2 of No. 126; 2 of No. 126a; 2 of No. 142c; 3 of No. 155; 2 of No. 188; 2 of No. 189; 4 of No. 190; 2 of No. 191; 1 of No. 192; 1 of No. 198; 2 of No. 200; 1 of No. 213; 2 of No. 214; 4 of No. 215; 2 of No. 221.

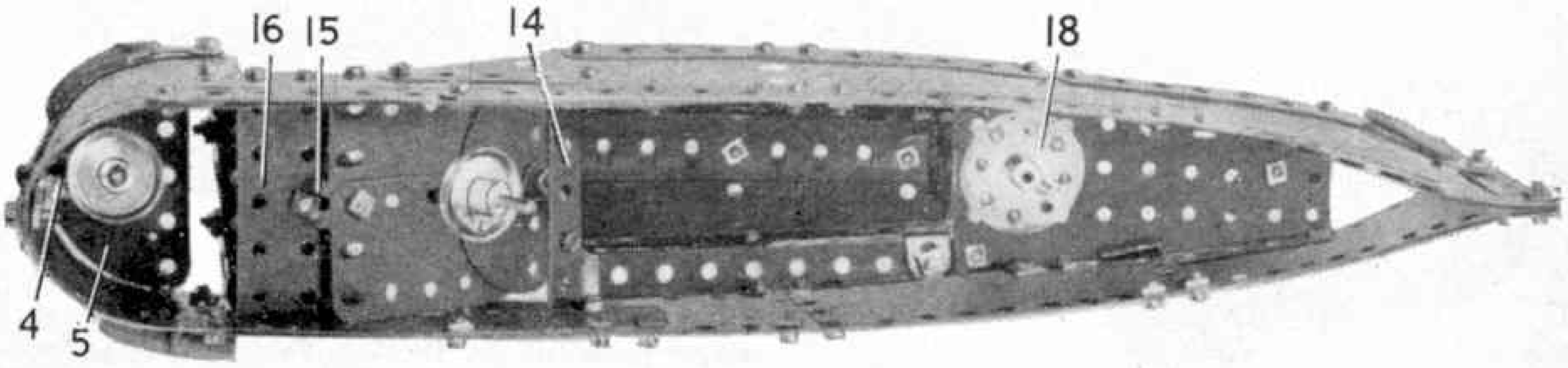


Fig. 3. An underneath view of the Motor Boat.

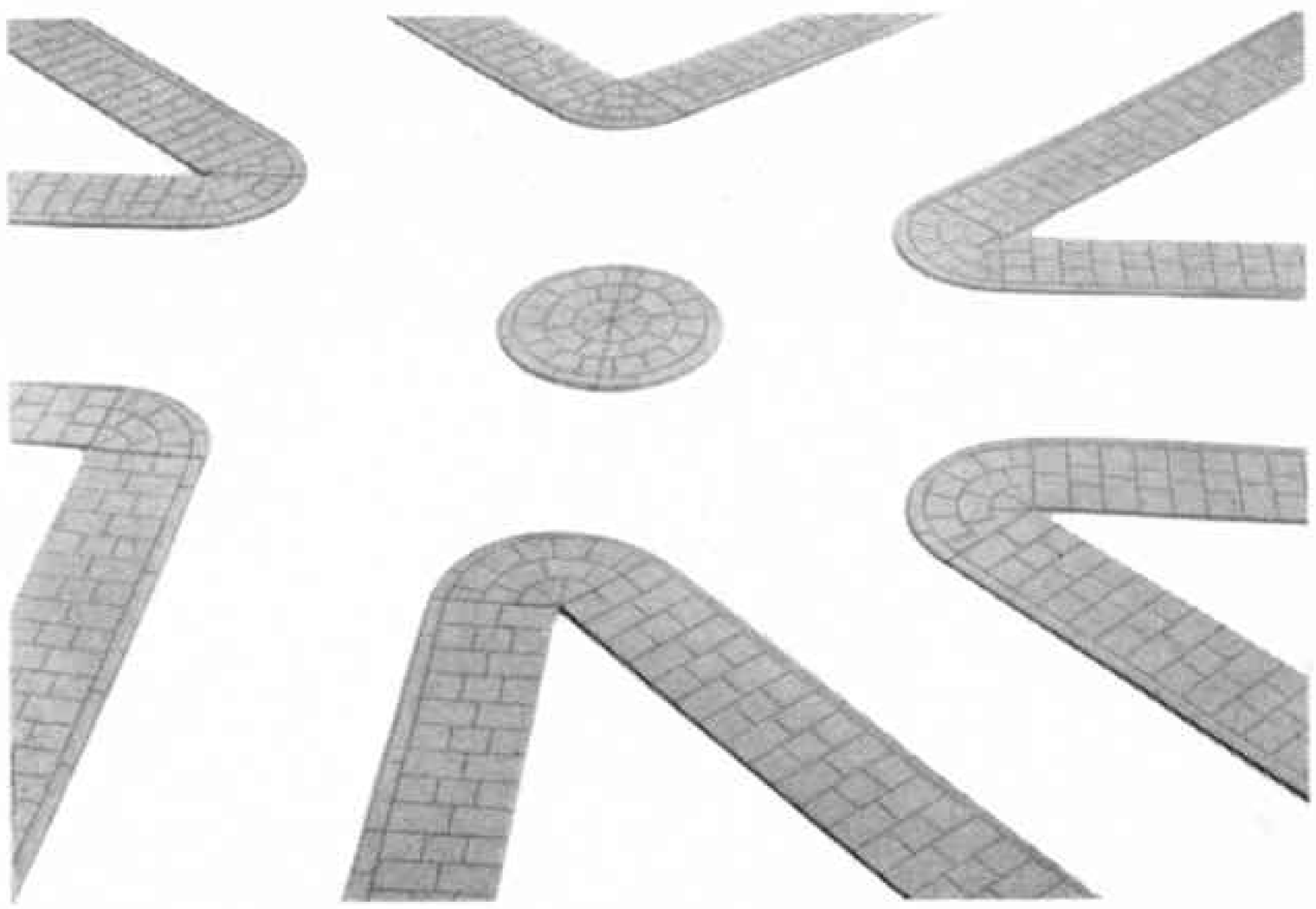
DINKY TOYS

By **THE TOYMAN**

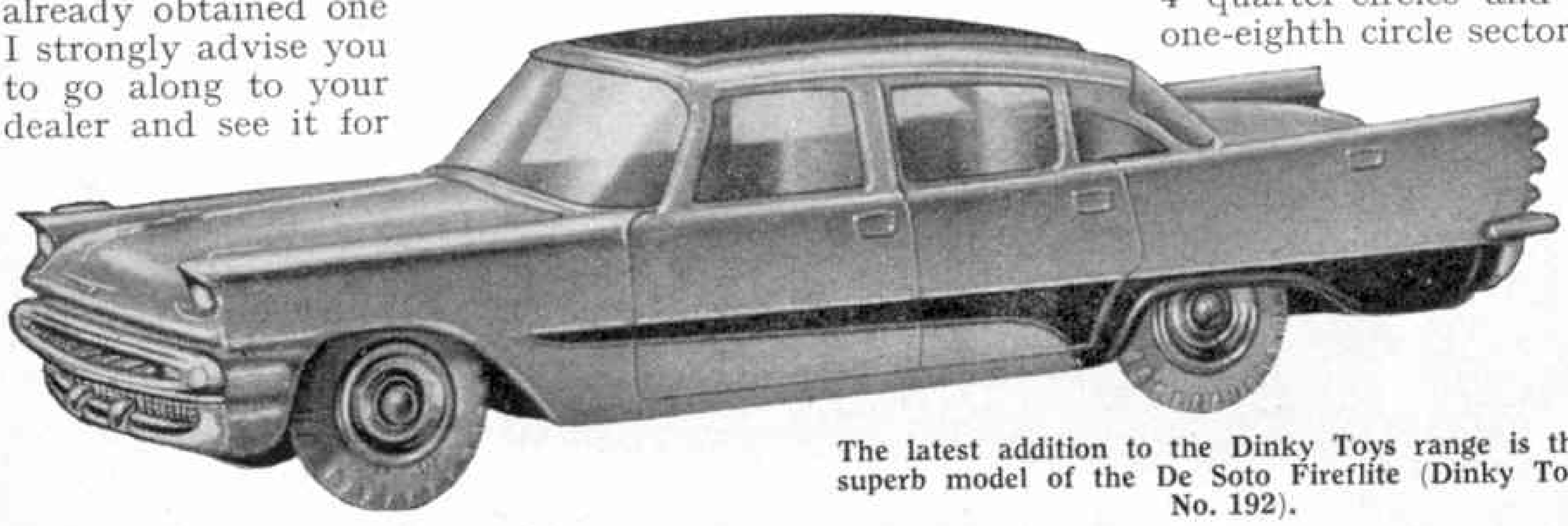
ONE of America's fastest cars, the De Soto Fireflite, has been selected as the subject for a most attractive new Dinky Toy (No. 192) that has appeared in the shops this month. It is an item that is bound to make a big appeal and it forms a very handsome addition to the range of big American vehicles already represented in the Dinky Toys range. The Fireflite is the speediest car made by De Soto, and the Dinky Toys model is based on the 4-door sedan version, there being also a convertible and 2- and 4-door versions.

This new Dinky Toy is available in two dual-tone colour schemes. One of these comprises a grey body with maroon red roof and side panels, and aluminium finish to grille, bumpers, headlamps and rear number plate. The wheels are fitted with the popular white tyres. In the second colour scheme a pleasing shade of light blue is used for the body, and the roof and side panels are in stone colour. The other details are as in the first scheme.

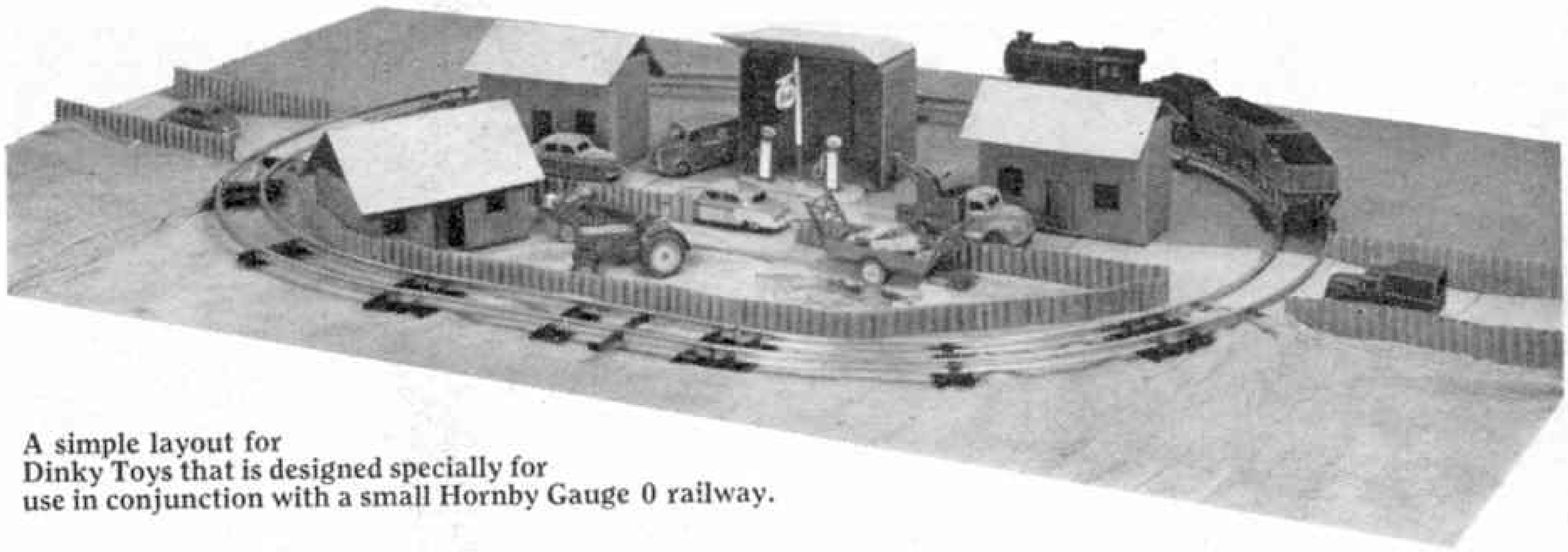
Last month I mentioned the new Dinky Toys Pavement Set, and if you have not already obtained one I strongly advise you to go along to your dealer and see it for yourself. These Sets are just the thing for making up attractive road layouts that I know many collectors have been waiting for, and they will add considerably to the fun and pleasure obtained from playing with Dinky Toys. The various pieces are made from stout chipboard painted in dark grey on a lighter grey background. The Set includes 4 straight sections 15 in. long, 6 straight sections 7½ in. long, and 4 straight sections 3¾ in. long. In addition there are 2 half-circles, 2 three-eighth circle sectors, 4 quarter-circles and 2 one-eighth circle sectors.



This is a view of one of the many interesting road junction arrangements that can be assembled with the pieces in the new Dinky Toys Pavement Set. One of these Sets will increase tremendously the fun of playing with Dinky Toys.



The latest addition to the Dinky Toys range is this superb model of the De Soto Fireflite (Dinky Toys No. 192).



A simple layout for Dinky Toys that is designed specially for use in conjunction with a small Hornby Gauge 0 railway.

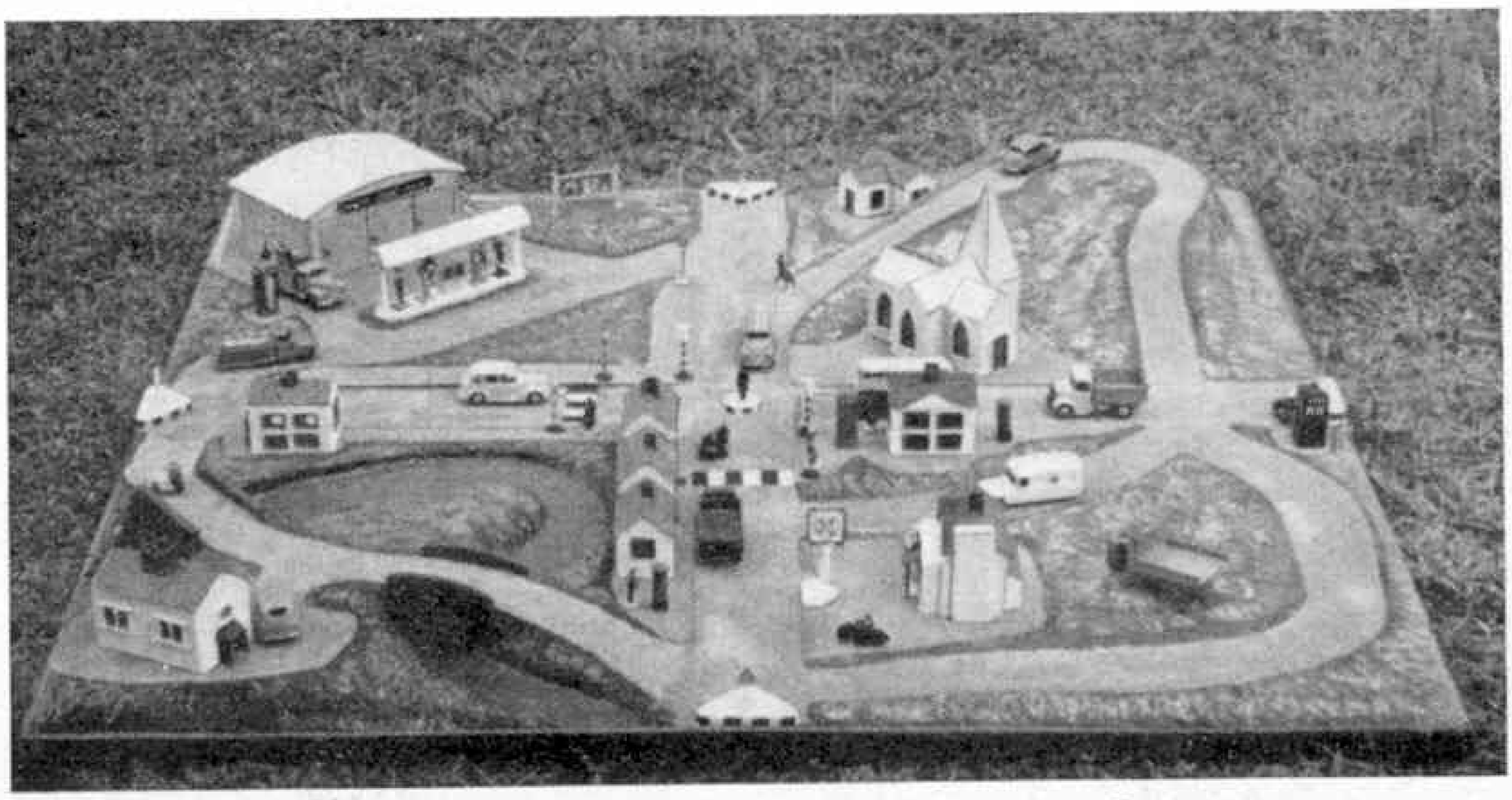
As a result of the careful planning of the shapes and sizes of these various pieces, it is possible to make up a wide variety of fascinating road junctions, with islands and roundabouts, and the upper illustration on the previous page shows one of the many different types it is possible to arrange.

As you may remember, I included in the October issue an illustration of a simple road layout specially designed for use with a small Hornby-Dublo railway. This caused a lot of interest among young collectors who are also railway enthusiasts, and I have been asked by several owners of small Hornby Gauge 0 railways to design something on similar lines for them. The simple layout I have designed for this purpose is shown at the head of this page, and while I do not pretend that this is the best that can be done I think it will prove useful in providing a basic scheme that can be modified as desired.

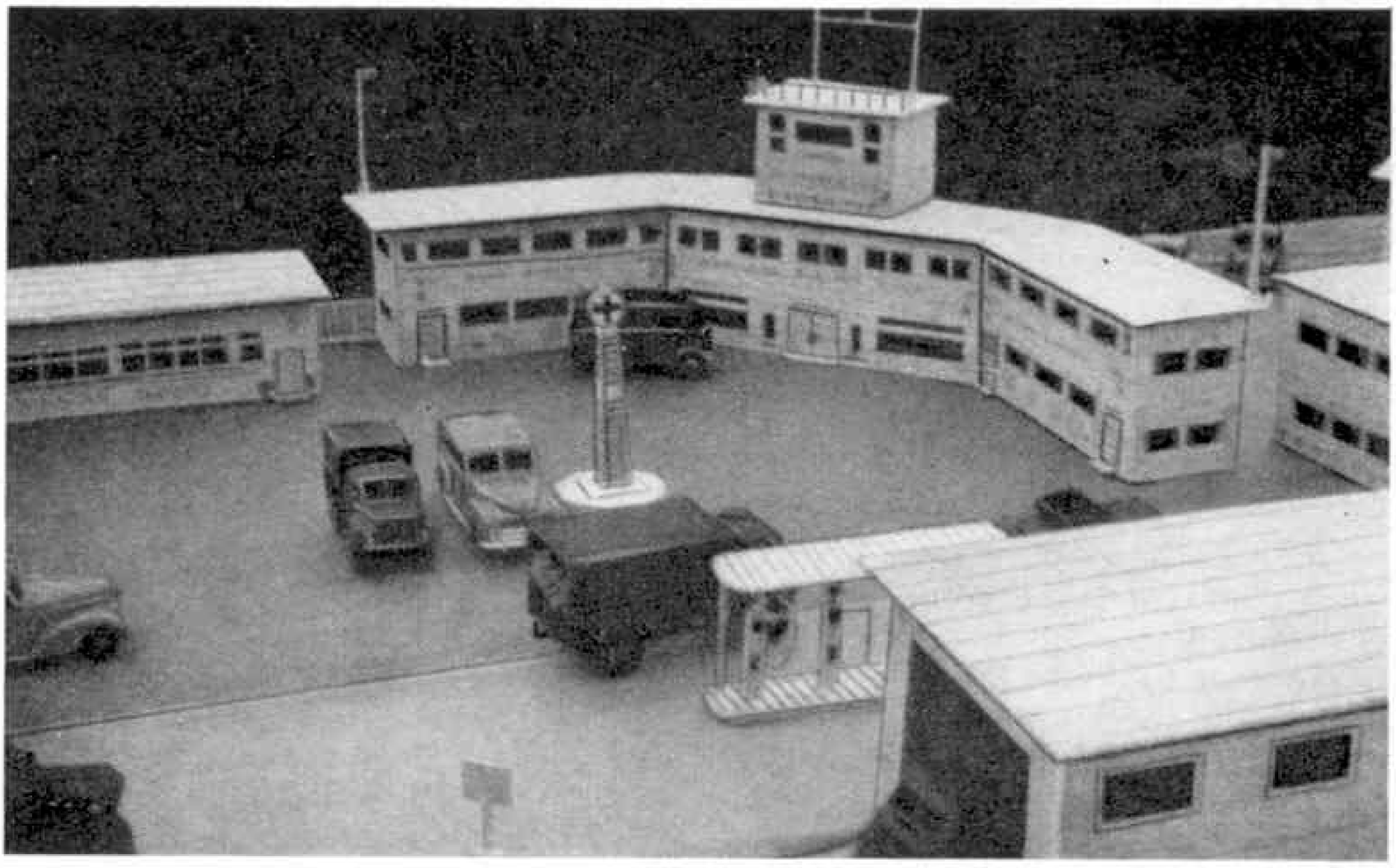
The illustration shows a simple Hornby Gauge 0 oval track consisting of six Curved Rails of 1 ft. radius, and two Straight Rails. One of the Curved Rails is a brake rail, so that the engine can be braked from the track. The scene is quite effective and shows how even the most simple Hornby Railway layout can be made realistic with the aid of Dinky Toys and home constructed buildings.

The layout shown at the foot of this page represents a small village, and was assembled by W.O. II G. Beecham, Singapore, for the benefit of his young son. The roads are complete with traffic lights, pedestrian crossings and beacons, and the various simple buildings are most realistically made and situated. The layout of the roads is planned to provide the fullest scope for playing with Dinky Toys and carrying out realistic traffic movements, and the whole scheme has an air of completeness about it that is often lacking in small layouts.

The ambitious layout seen on the next page was planned and built by Rodney T. La Trobe, Reigate, Surrey. The layout represents an Army Depot and is intended



A layout full of play value designed by W.O. II G. Beecham, Singapore.

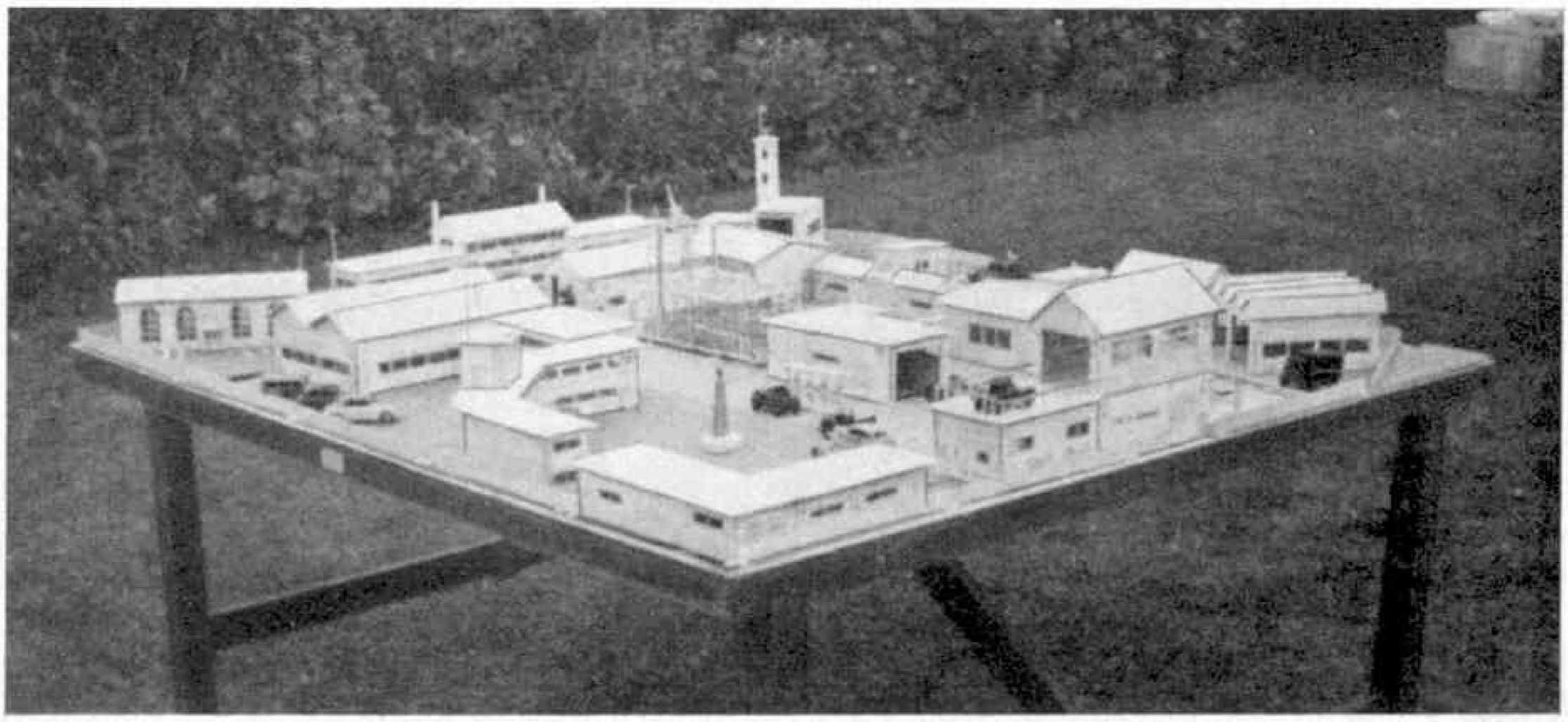


A section showing some of the main buildings of the fine Army depot layout designed by R. La Trobe, which is seen complete at the foot of this page.

specially for use with the Dinky Toys army models. The complete layout occupies half the area of a full size table-tennis table, and altogether there are 18 different buildings ranging from a guardroom to a military hospital. Rodney says he spent the best part of three weeks in building the model and that its total cost was only 50/–. This was expended on Balsa wood, Balsa cement and acetate glazing for the windows of the various buildings. Razor blades, and a few pieces of sand paper, were the only tools used. All the buildings and various small items of the layout equipment are made from Balsa wood, and among the smaller items are a war memorial, sign posts, radar and radio aerials on the tops of certain buildings and even gravestones for the military cemetery!

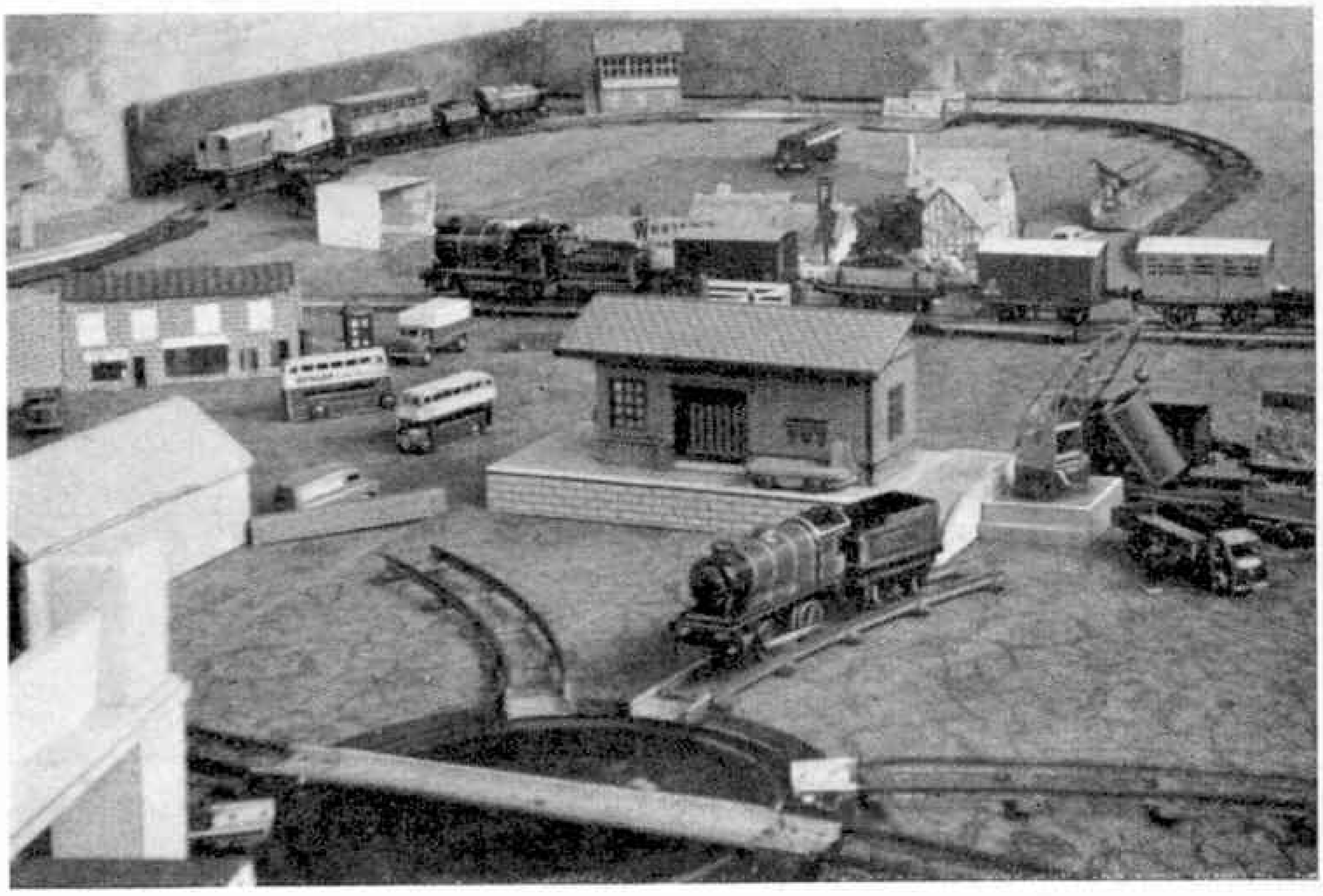
Among the main buildings is a large radar station, which is still in process of construction and can be seen in the centre of the illustration. There is an amazing amount of detail work in it, including scaffolding, roof beams and tiles, and even a hoist crane on the tower!

This is one of the best Dinky Toys layouts that I have seen, and I can fully understand Rodney when he says that he is proud of his work. I heartily agree that it does him great credit and I am very pleased indeed to have had this opportunity of bringing it to the notice of other Dinky Toys enthusiasts.



An Army depot layout built by Rodney La Trobe, Reigate.

"Tommy Dodd" writes about:



A Reader's Railway

I AM glad to be able to show you the Hornby Gauge 0 railway above for several reasons. For one thing, it is quite a busy system and I know that the owner, *M.M.* reader Richard J. Baker, of Malvern, has a lot of fun with it. It is not surprising that he is a Hornby railway enthusiast. In this he is following the example of his father, who began with Hornby Trains in the earliest days of their manufacture. A great deal of the original equipment is still in use, and this says much for the care with which it has been treated.

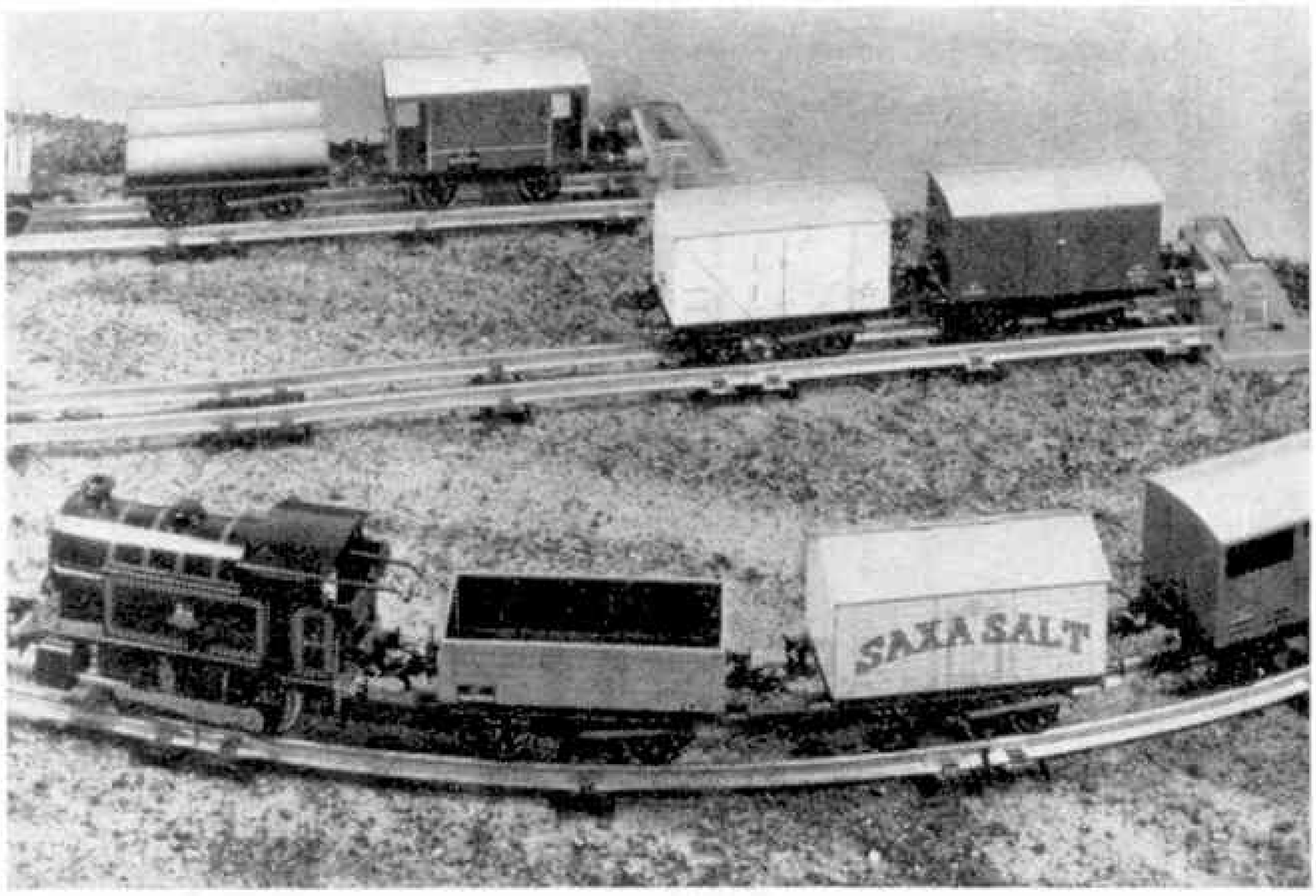
Above is shown part of the Hornby railway of Richard J. Baker, of Malvern. This was begun by his father and some of the original equipment is still in use.

At the same time—and this is another point—it proves the hard wearing qualities that are built into Hornby Trains and equipment generally. This will no doubt appeal to those of you who are hoping to begin Hornby railway activities later on this month, at Christmas, the time of the year when so many miniature layouts start operations.

Some of the buildings shown in the picture above are of course home-made, but there are others that have featured in the Hornby System but are no longer in production. Even so, I am sure that most readers will enjoy looking at the illustration, which should certainly give many beginners some good ideas. Of course, there is a fair amount of space available for railway purposes, so that the track winds about in a really satisfying manner, and the trains do not give the impression of simply going round and round. The track that passes across the picture, on which a goods train is shown passing over a Level Crossing, is part of the main line. From it a long branch is thrown off that goes round past the signal box in the background.

Coming nearer to the camera again, you will see that the grouping of the buildings near the Crossing has been carried out in a realistic manner. And good use has been made of the Turntable, with its various off-going tracks. Evidently some of the original rails have been pressed into use here as they seem to be of the original Hornby type with five sleepers to each length. It may be that these veterans are somewhat past main line service now, but they are obviously satisfactory for siding purposes.

The Turntable makes quite a good centre of operations, as engines can be diverted to the various tracks that are used for their accommodation, and it can also be used for the placing of wagons in the



Buffer Stops are used correctly here to finish off the two siding tracks.

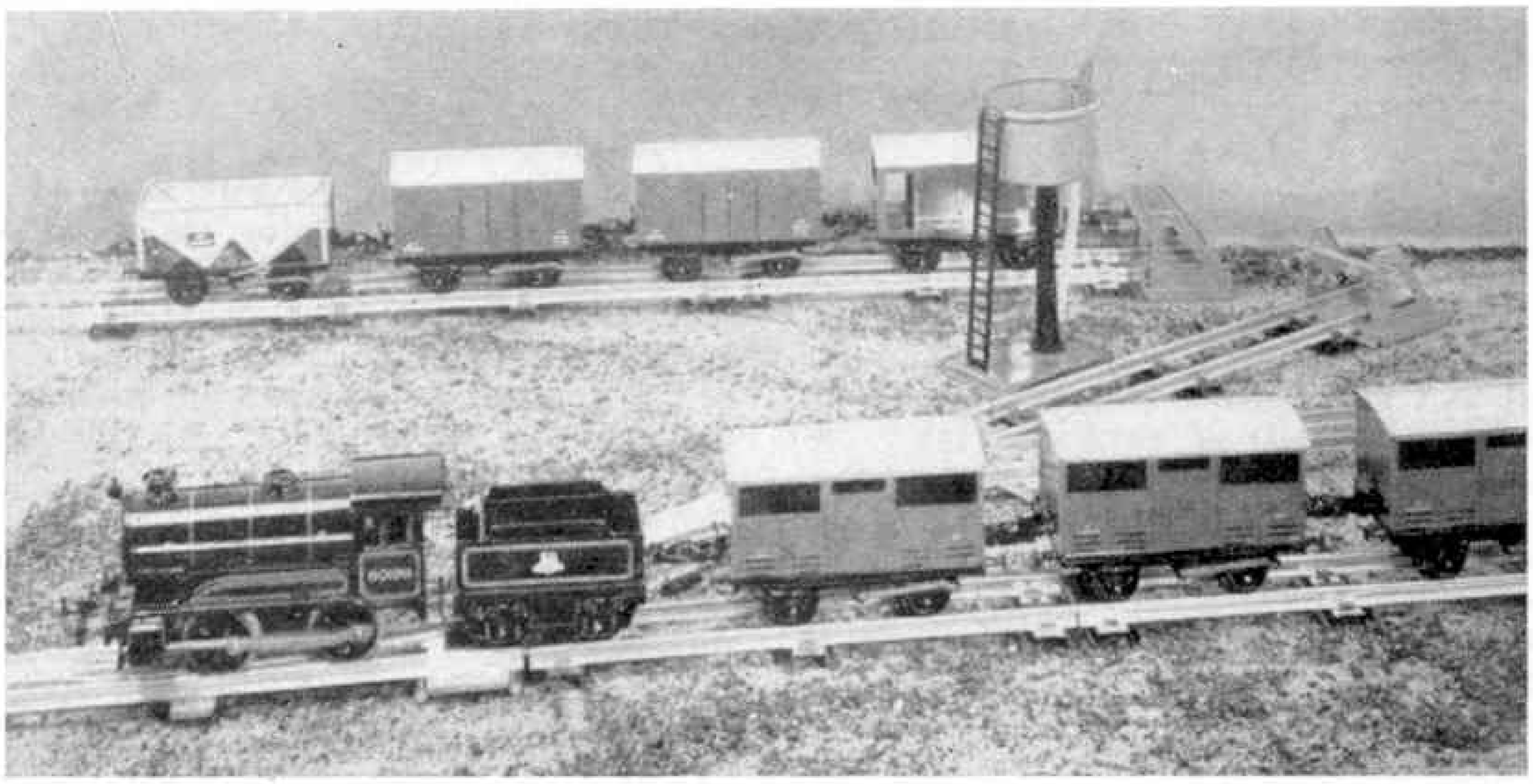
different roads if desired. A certain amount of "hand shunting" may be necessary for this, but on a Clockwork railway this can be forgiven!

The layout boasts two Level Crossings, both of which are seen in the picture, and there is a Dinky Supertoys Tank Wagon making its way from the Crossing at the top of the illustration. Other features include a tunnel, not visible here, and there are two stations, and a wayside halt, the latter showing just above the two Vans together in the goods train. The second of these Vans, by the way, is one of the original items of stock, the No. 1 Cattle Truck.

Nearly all scenery is home-made or built from construction kits. Although the railway is not run to a timetable, there is always a variety of trains such as local passenger, express passenger, fast freight and so on. Occasionally named expresses are represented, such as the *Devonian* and several others.

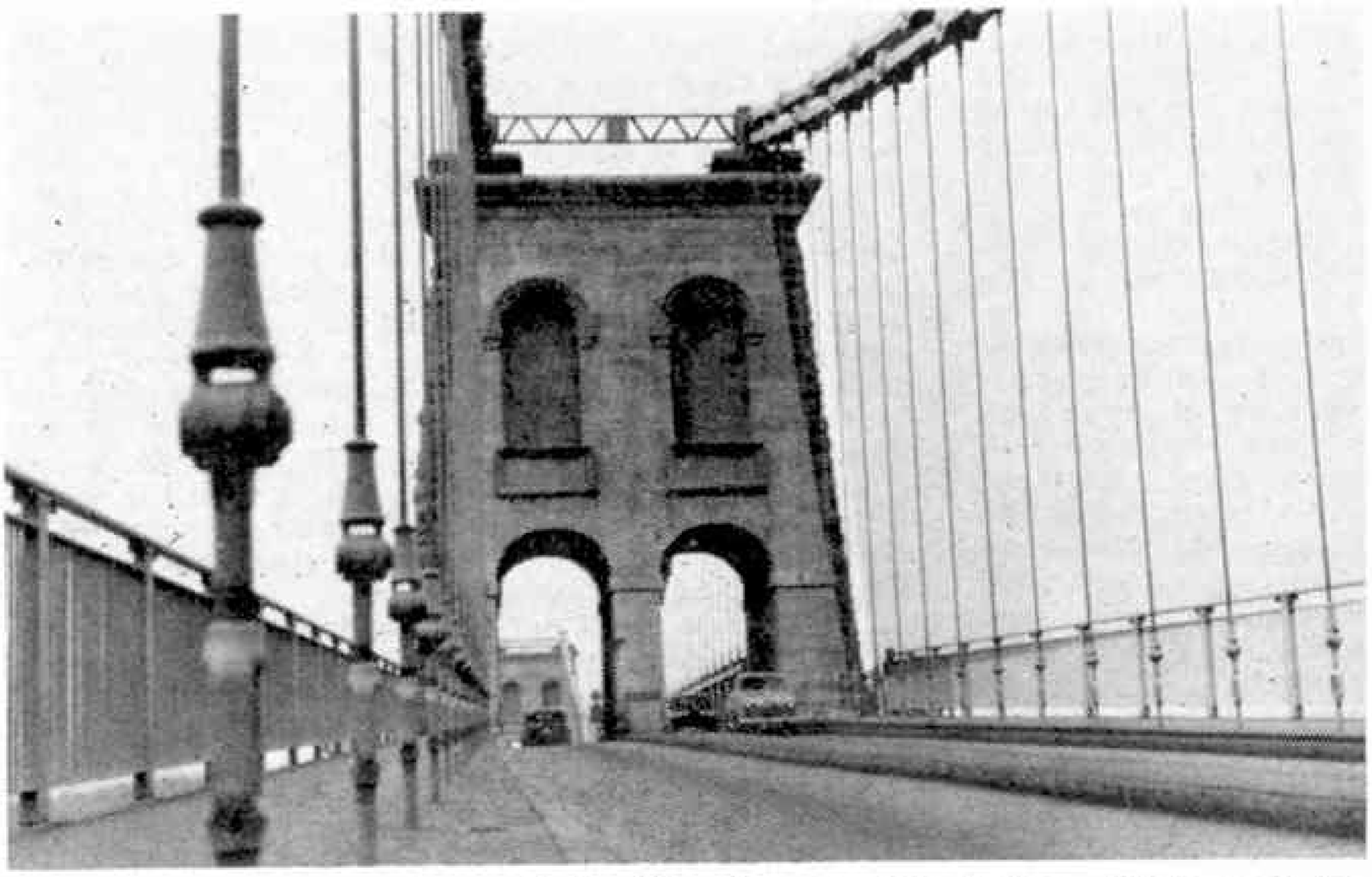
I am sure that our friend Richard will not mind my pointing out that, strictly speaking, each of the off-going siding tracks from the Turntable should really be completed by a Buffer Stop. Perhaps this will be done in due course. Our two other illustrations, by way of contrast, show the standard Hornby No. 1 Buffer Stop in use. In the upper picture on this page there are two of them, each finishing off a storage siding in a neat and appropriate manner.

Of course Buffer Stops do have some real use, because sometimes if we shunt a little bit too vigorously some of our wagons might tend to over-run the end of a siding if a Buffer Stop were not in place. The Buffer Stop should always be secured to the next Rail by means of the standard Rail Connecting Plate. This ensures that it will not part company with the rest of the layout under a sudden impact. Even if we don't expect such things to happen, *Be Prepared* is not a bad motto.



A Hornby No. 50 Locomotive with a train of Cattle Wagons is passing a siding used by Locomotives, as is suggested by the presence of the Water Tank.

Of General Interest



Looking along the roadway of the Menai Suspension Bridge. Photograph by P. Saxby, Hull.

THE picture seen above presents the view of the Menai Suspension Bridge seen by those who cross it. The bridge itself is rightly regarded as one of the most famous in the world, although in the 132 years since it was completed many far larger and heavier structures of the same kind have been built, for it was a pioneer structure built by Thomas Telford as part of his scheme for improving travel between Great Britain and Ireland.

The first London to Holyhead Mail Coach to rumble across this masterpiece of engineering did so on 29th January, 1826. It has been subject to severe tests by gales, and from time to time repairs and modifications have been made necessary. In 1938 a start was made with the rebuilding of the bridge, which was completed three years later without any dislocation of traffic having taken place while work was in progress.

There is nothing like a good Hornby-Dublo train display for attracting an interested crowd, and indeed any layout of this kind is sure to keep old and young absorbed for lengthy periods. This was realised again when the layout seen in the lower picture on this page was operated at Copland Fair, Wembley. The display was arranged by John Miley and a group of his friends, who were kept exceedingly busy.

A splendid Hornby-Dublo layout on exhibition at Wembley last summer. Photograph by courtesy of the Middlesex County Press.

BOOKS TO READ

Here we review books of interest and of use to readers of the M.M. With certain exceptions, which will be indicated, these should be ordered through a bookseller.

"TRAINS ILLUSTRATED ANNUAL 1959"

(Ian Allan, 10/6)

This 13th edition of what is now known as the *Trains Illustrated Annual* is well up to its usual standard of interest and variety. Among its contents, "The Aberdeen Road" introduced by *Toram Beg* will appeal specially to locomotive enthusiasts, and an entertaining account of the plucky London, Chatham and Dover Railway, now an S.R. component, covers an exciting phase of railway history, while traffic and operations generally at Bristol make an absorbing tale for any enthusiast.

The speeds of the World's trains and steam power in Europe form subjects of fascinating chapters, and a description of the Longmoor Military Railway and anecdotes of its operation will be enjoyed by every reader. A former Derby apprentice gives an insight into the life of young locomotive engineers before the days of apprentice training schools, and his story includes interesting tales of various engines and men.

As usual, illustrations are plentiful and well reproduced and there are several excellent photo features. A frontispiece and two other plates in colour are included, one of which shows *The Bristolian* at the romantically named Dr. Day's Bridge Junction, and this is also the subject of the attractive wrapper.

"AIRCRAFT ANNUAL 1959"

EDITED BY JOHN W. R. TAYLOR

(Ian Allan, 10/6 net)

The 1958 edition of this Annual is one of the most interesting and exciting yet produced. The Editor has enlisted the aid of experts in various fields in order to give a very wide survey of flight in all its aspects, and the result is a very satisfying amount of information conveyed in well written articles.

After a general survey of the position of aviation at the moment we come to a detailed and interesting account of what happens on an aircraft carrier in service. This is followed by other equally attractive contributions on such topics as the English Electric P.1B tail-end turbines, of which the Caravelle is an example, the use of aircraft in the recent operations in Kenya and the new German Air Force. Specially contributed articles deal with man in space, and the transport of animals by air, and there is also an account of the North American Air Defense Command.

Each contribution to this Annual is illustrated with excellent photographs well reproduced, and the book also has four pages in colour.

"BOAT TRAINS AND CHANNEL PACKETS"

BY RIXON BUCKNALL

(Vincent Stuart Limited, 35/– net)

The atmosphere that surrounds the departure of a boat train or its arrival at the port of embarkation is completely different from that of any other train. It is a train apart, and one whose passengers feel that they are really going somewhere! So many others besides those who have travelled from Dover or Folkestone across the Channel to France and who have savoured this atmosphere will want to read the book at present under review.

Boat Trains and Channel Packets is a sizeable volume of 218 pages which tells the whole absorbing story of the boat trains between London and Dover and Folkestone and of the ships that sail the Channel with which the train services connect. The story is a long one, beginning in 1843 as far as railways are concerned, for that was the year in which the South Eastern Railway reached Folkestone from London Bridge. Channel Packets had existed long before the coming of railways of course, but primarily the story concerns the South Eastern, and London, Chatham and Dover Railways, which both owned steamers and operated trains to connect with them. The two railways later joined forces under the South Eastern and Chatham Railways Managing Committee, which passed to the Southern system at the Grouping of 1923, and later became part of British Railways in 1948.

The book contains many diagrams of railways and harbour arrangements, and also a most interesting photographic section which includes many rare glimpses of steamers and trains of bygone days. The coloured frontispiece depicting the departure of a boat train from Dover on a stormy day in the early years will perhaps enable travellers of today to realise the enormous improvements that have made the lot of cross-Channel passengers so much better than in earlier days. Spray no longer washes the carriage windows at Dover and passengers entrain after their voyage in the sheltered calm of Marine Station.

The author deals not only with the history of the train and boat services, but also with the engines that have worked the trains and the ships that have provided the cross-Channel link, all of which have their due share of attention and provide an absorbing story.

To conclude, *Boat Trains and Channel Packets* is a valuable record by an earnest enthusiast of an important service that has not been amply recorded in the past. It can be obtained from leading booksellers, or direct from the publishers at 55 Welbeck Street, London W.1.

A PHOTOGRAPHIC YEAR BOOK

Every photographer knows the *Johnson Photographic Year Book*, which has been a reliable guide to all their operations for many years. The 1959 issue is fully up to the expected standard, and the enclosed diary section, which is separate from the Year Book itself, provides means for making a full record of exposures.

There is little need to describe the contents of this publication, for it is well-known to cover the whole subject of photography, including colour photography. It contains up-to-date information on such things as filters, flash photography, lighting, colour and cine-camera work. The sections on dark room work are remarkably complete and valuable, and the book includes the exposure calculator that has been the guide of photographers for many years, with full explanations of its working.

The new book can be strongly recommended to all photographers. Its price is 6/6 including purchase tax, and it is obtainable from booksellers and photographic dealers.

"LOCOSPOTTERS' ANNUAL, 1959"

(Ian Allan, 6/6)

As its name implies, this Annual will appeal particularly to the locomotive spotter, but it contains much that will be found of interest by railway enthusiasts in general. Locomotive running on the speedy *Caledonian* and *Talisman* services starts the book well, and the material that follows ably backs up this first section. Stories of rush hour traffic on the Southern and centralised traffic control on U.S.A. railroads bring into prominence modern railway operating methods.

The wild West Highland line forms the subject of a pleasing photo feature, but good pictures are by no means confined to this section alone. There is a useful series of views of B.R. Diesel railcars that will aid the spotter to recognise the various types, and three coloured plates including the frontispiece. The publication certainly is good value.

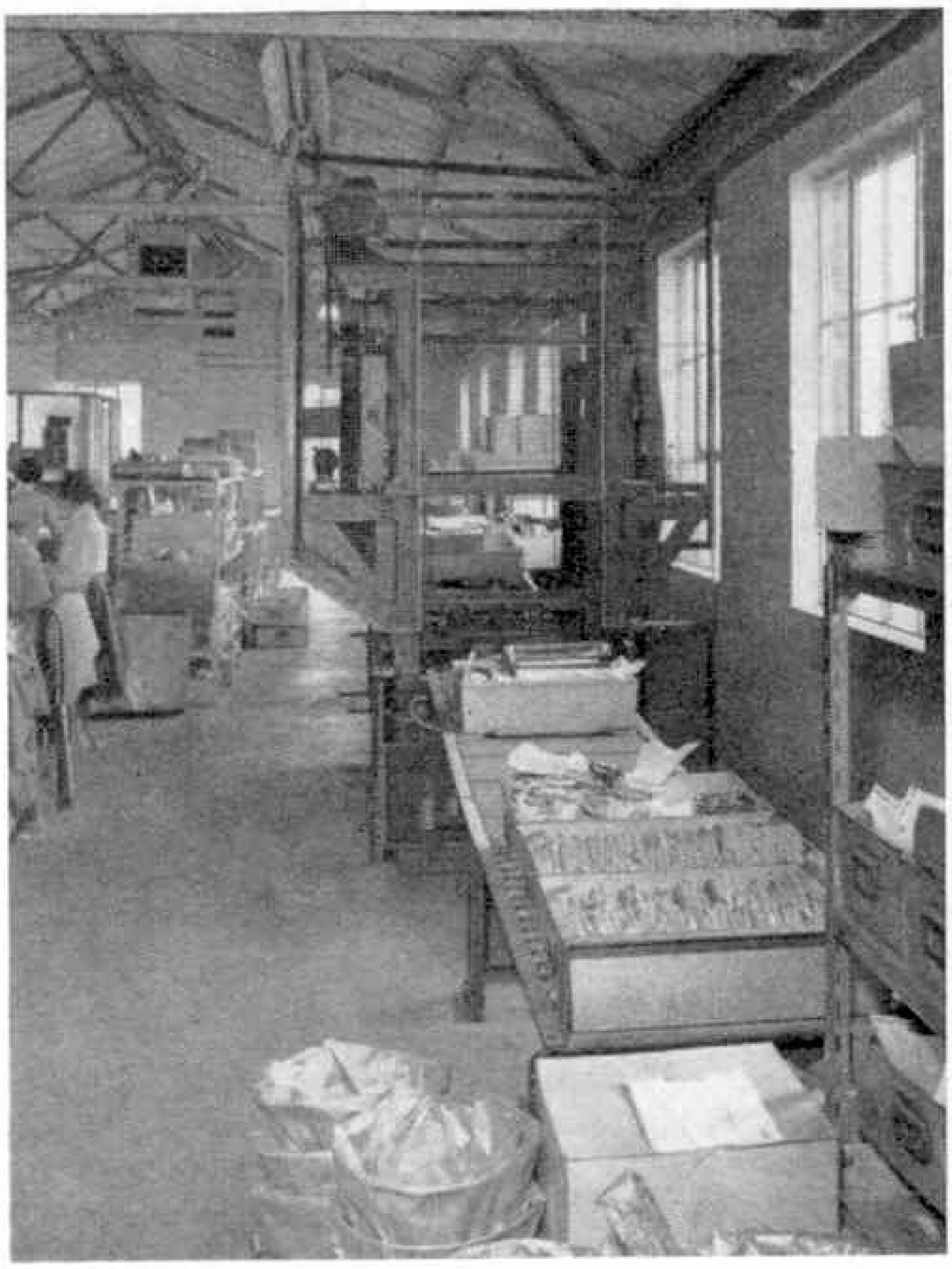
The VertiVeyor Competition

£100 in Prizes

ENTRIES are already beginning to arrive for the big Competition in which Prizes to a total value of £100 are being offered for Meccano models of The VertiVeyor, an appliance for conveying goods from floor to floor in a factory. Details of this attractive Competition first appeared in the October issue of the *M.M.*, together with a full description and illustrations of The VertiVeyor, and a repeat announcement appeared last month. As there is still time for entries to be prepared and sent in, we are taking this further opportunity of giving the main details of the Contest so that readers who did not see the earlier announcements may have a chance to compete.

The VertiVeyor is manufactured by Messrs. J. Collis & Sons Ltd., London and is designed to take its loads of goods automatically and also to discharge them automatically at pre-determined points. Full mechanical details and illustrations of it were given in the October *M.M.* and a further illustration of the VertiVeyor appears on this page.

The many interesting features of The VertiVeyor can be reproduced in different ways and with a variety of Meccano parts, so that building a model of it offers plenty of scope for ingenuity on the part of individual Meccano constructors. Readers who would like to enter the Competition, and who did not see the original announcement, can still obtain copies of the October *M.M.* as we have a few left, but they should apply for them immediately.



The VertiVeyor in action in a Factory, showing the "feed out" section of the installation in the foreground. Photograph by courtesy of Messrs. J. Collis & Sons Ltd., London.

The Competition is open to readers of all ages, living in any part of the world, and entries will be divided into two Sections, A and B. Section A will be for model-builders who will be under 15 years of age on 31st January, 1959, and Section B will be confined to model-builders who will be aged 15 or over on that date. A separate and complete set of Cash Prizes will be awarded in each Section.

Photographs or drawings are all that is required, and although the model itself must be the competitor's own unaided work, the photographs or drawings may be prepared by others if necessary. The competitor's age on the 31st January, 1959, together with his full name and address, must be written clearly on the back of each photograph or drawing and these should be sent, together with a short description of the mechanical features of the model, to "The VertiVeyor Model-Building Competition, Meccano Ltd., Binns Road, Liverpool 13".

Entries will be judged by Messrs. J. Collis and Sons Ltd., and Meccano Ltd., jointly.

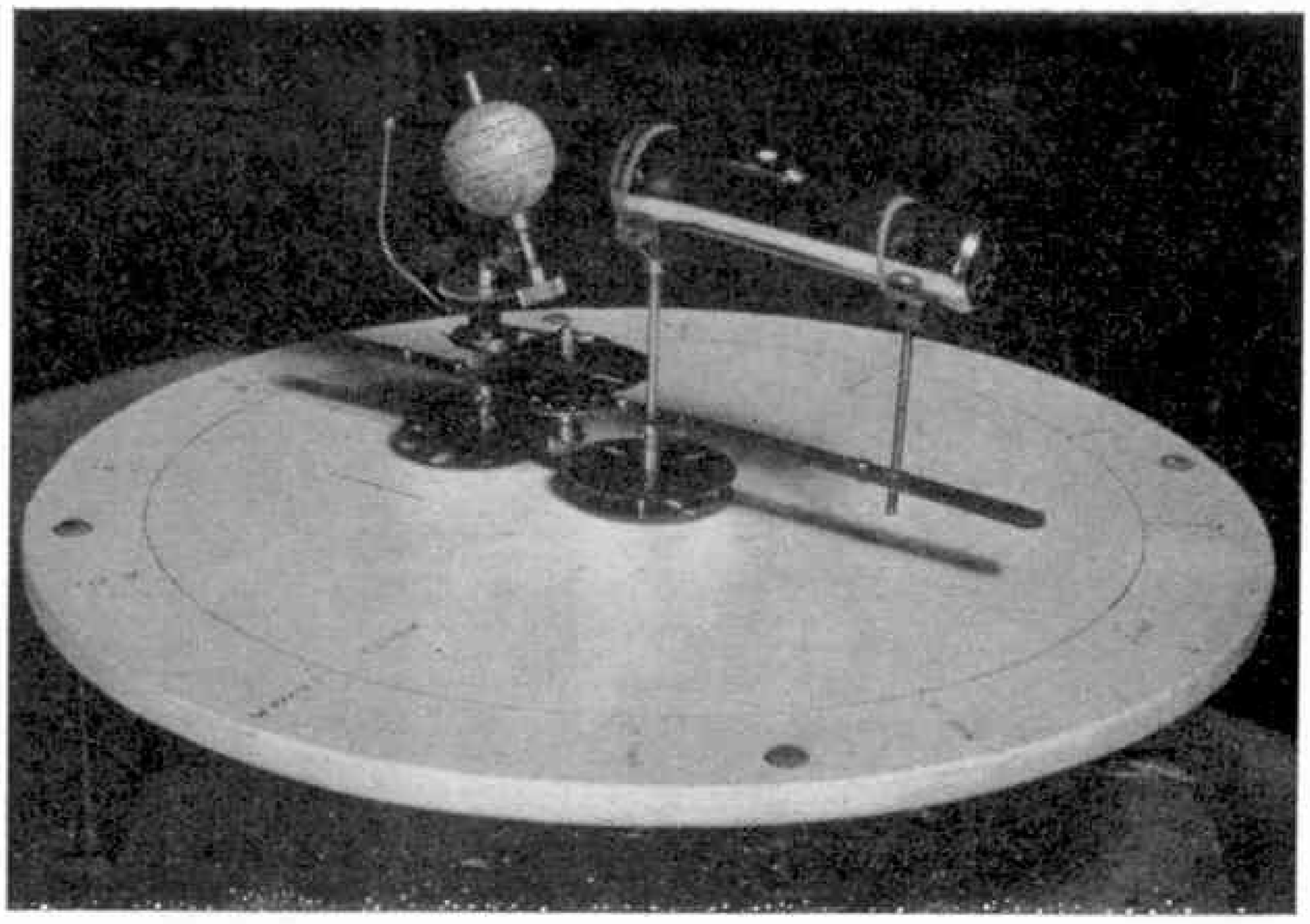
List of Prizes to be Awarded

	£	s.	d.
Section A			
First Prize, Cheque for	10	0	0
Second Prize, Cheque for	6	0	0
Third Prize, Cheque for	4	0	0
Ten Prizes, each of a Cheque for ..	2	0	0
Section B			
First Prize, Cheque for	16	0	0
Second Prize, Cheque for	9	0	0
Third Prize, Cheque for	5	0	0
Ten Prizes, each of a Cheque for ..	3	0	0

Closing Date for Entries: 31st January, 1959.

Among the Model-Builders

By "Spanner"



The model Tellurion that is referred to on this page. It was built by Surgeon Commander G. G. Newman, R.N.(Retd.), Sherborne.

A Model Tellurion

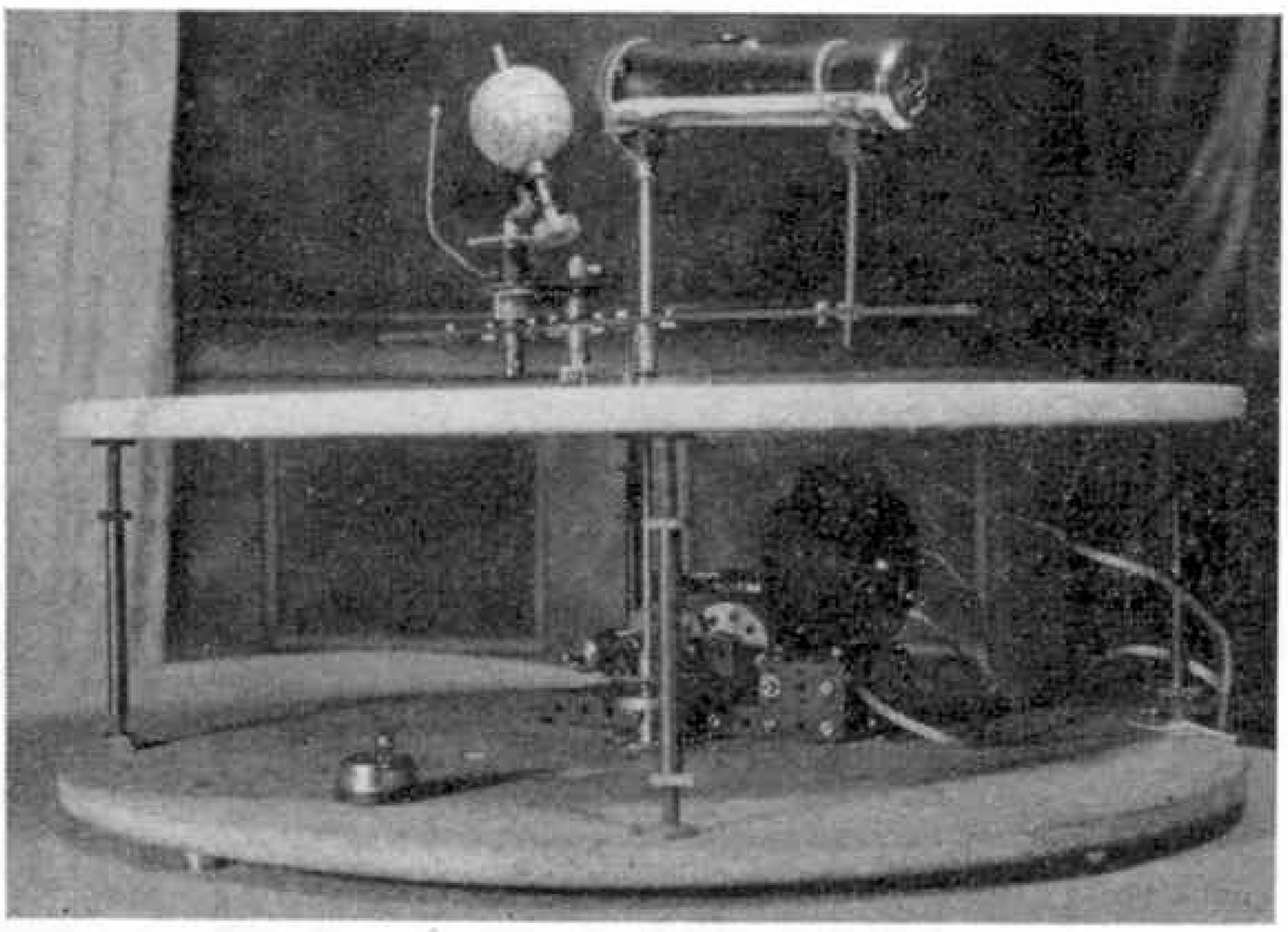
A tellurion is an instrument for illustrating the succession of day and night and the changing seasons of the year, and those Meccanoites who possess the parts required will find one of these devices most interesting to construct and operate. Recently I had the pleasure of seeing a tellurion built by Surgeon Commander G. G. Newman, R.N. (Retd.), Sherborne, and because I think it will interest other model-builders I am including two pictures and some details of it in these pages.

The Commander's model shows the rotation of the Earth and its revolution around the Sun, and the movement of the Moon around the Earth. It also illustrates the causes of day and night and the seasons. While it demonstrates the various movements quite clearly it is not pretended that the instrument is entirely accurate so far as the relative movements are concerned.

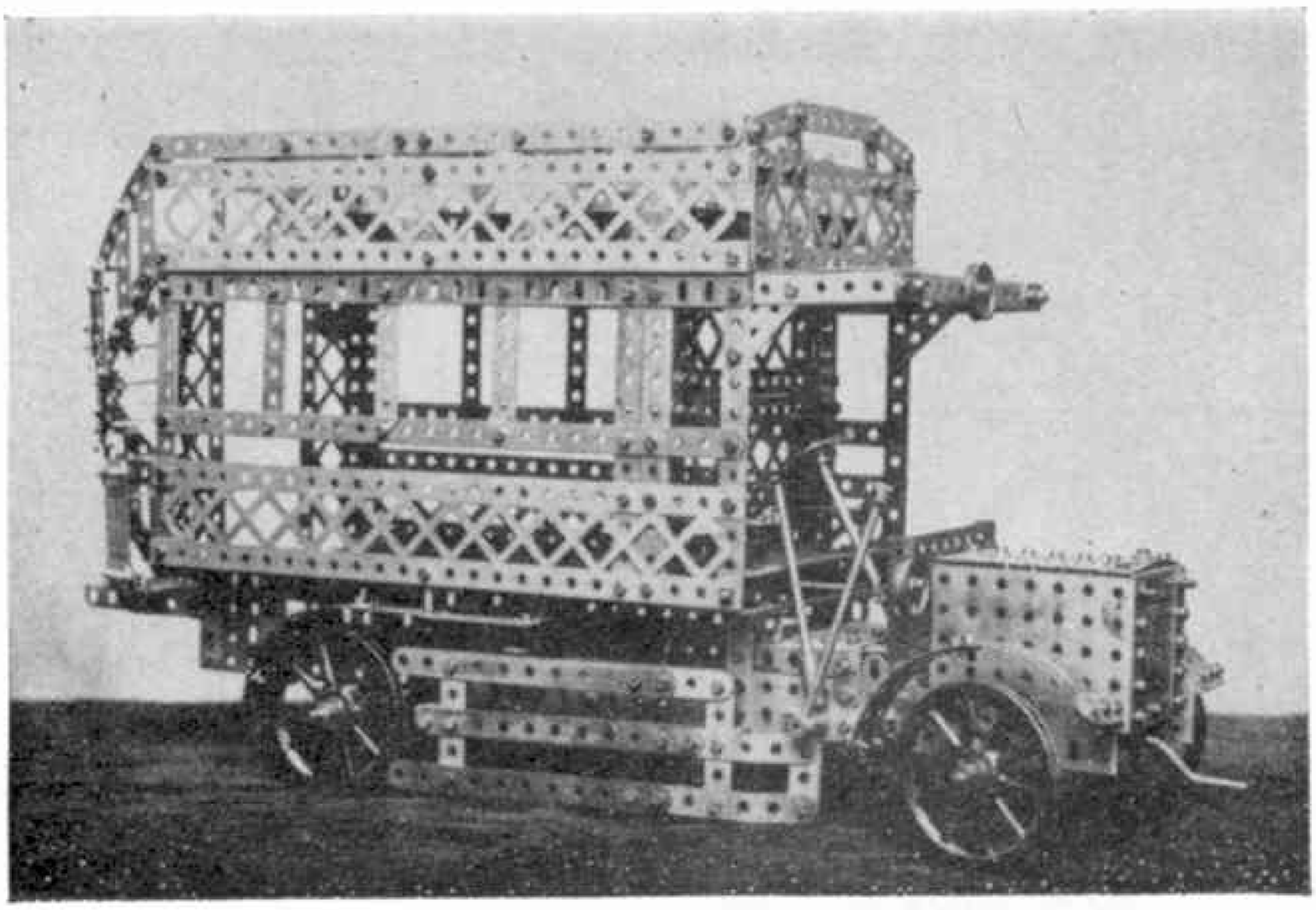
The model is powered by an EO20 non-reversing Motor, and the gearing employed has a ratio of 6498:1 which is obtained on the lines of the gearing shown in Fig 2, page 6, of the Meccano Gears Outfit 'A' Instructions Book. Fixed on Rod 3 of this mechanism is another Worm that engages a 57-Tooth Gear fixed on the centre vertical Rod of the model. Fixed to this Rod is a horizontal arm that carries all the gears that operate the Earth and Moon except one. The latter is a 2½" Gear, fixed, through the boss of which the main vertical Rod passes freely. The Moon, a small ball, is carried on a piece of wire fixed into the boss of a specially made pulley wheel, which moves freely over the boss of a ½" × ¾" face Pinion. (It might be possible to modify the model to make use of a Socket Coupling here.) The pulley is driven by a belt from a 2" dia. Pulley mounted on the same Rod as a 2½" Gear. A ½" Pulley also on this Rod meshes with the 2½" Gear through which the main vertical Rod passes.

The Sun is represented by a flashlamp torch, with a self-focusing bulb. The torch is mounted in place as shown.

The Earth globe is mounted on a Rod inclined at an angle of 23½ degrees to the vertical, and is driven through a ¾" Pinion by the arrangement shown in the illustrations.



Another view of the Tellurion showing the arrangement of the driving motor and gearing.



This model bus dates from the "good old days" before the first world war. It was an entry by Mr. S. H. Wilson, Morden, for a competition held in 1914, and it shows the style of Meccano construction of those early days. Braced Girders played a big part in many of the models built at that time.

A Model from the Good Old Days!

Fathers of many present-day Meccano boys, whose memories can take them back to the period before the first world war, will be interested in the model omnibus that is shown on this page, for it is a typical model of the early days of Meccano. It will also be of interest to model-builders of today, as it will give them a good idea of the style of construction that was usual in the days when Meccano, although already firmly established in this and many other countries, had not yet reached the stage of development that they are familiar with today. The bus was built by Mr. S. H. Wilson of Morden, who was, at that time, the Leader of the Holy Trinity Meccano Club, London, and who has been a very keen Meccanoite all his life. He built the model as an entry for a Meccano Model-Building Competition in 1914.

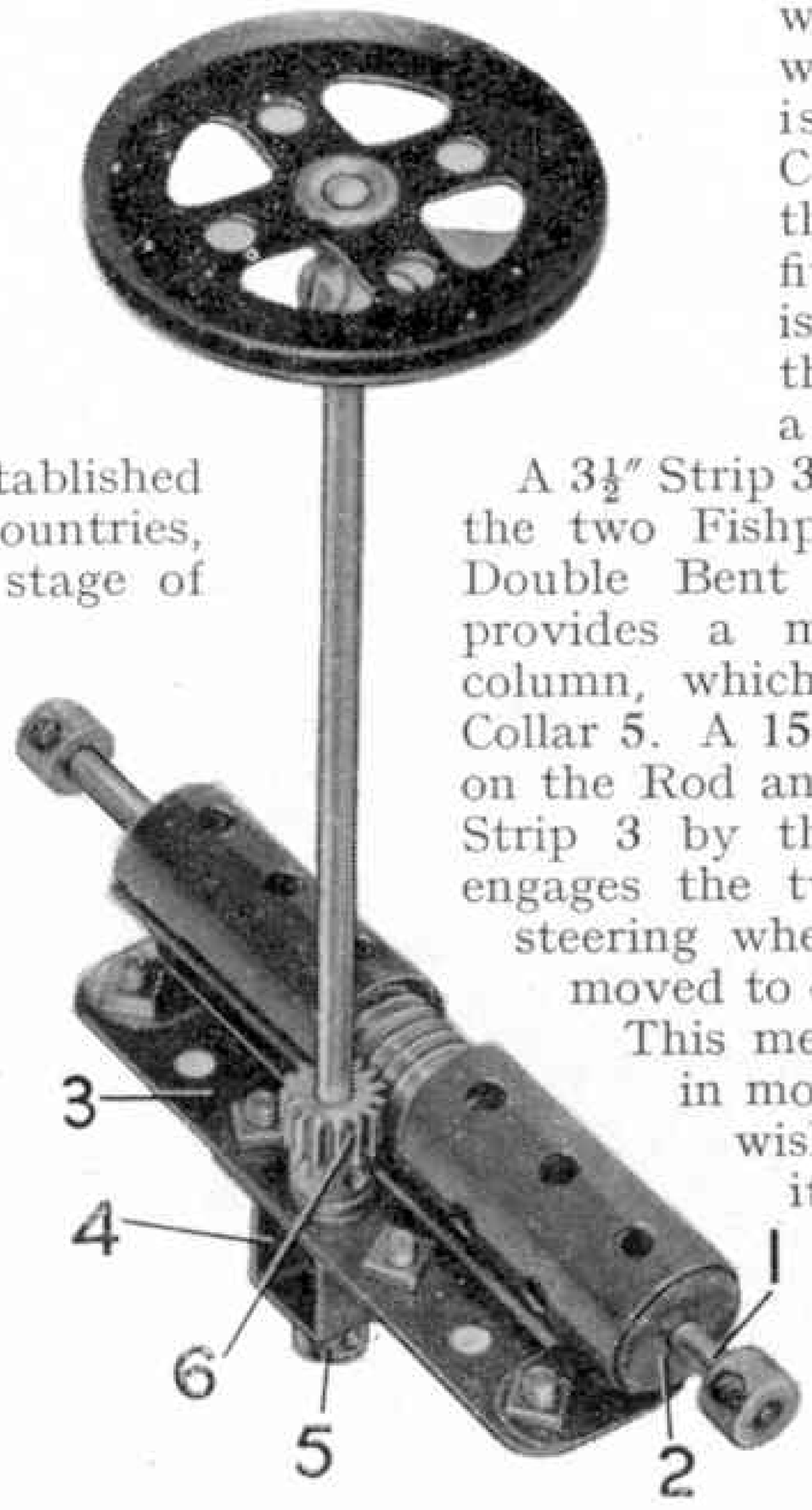
Readers will notice quite a difference in the style of construction from that of today; for example, great use is made of those very attractive and handsome parts, the Braced Girders. I often think it is a pity that more use is not made of these parts by contemporary model-builders, for they are very adaptable and add something to the appearance of a model. Notice also the massive outside gear and brake levers of the model. These are quite typical of motor vehicles of that period!

Novel Rack and Pinion Steering

An interesting use for the 15-Tooth Pinion (Part No. 26c) is shown in the lower illustration on this page, where in conjunction with two Worms it is used to form a steering operating gear. The Worms are mounted on a 5″ Rod 1 that passes through the end holes of two Chimney Adaptors, one of which is seen at 2, each fitted with a Sleeve Piece. A bolt is passed through each Chimney Adaptor, then through a 3½″ Strip and is fitted with a nut. A Fishplate is then placed on the shank of the bolt and fixed in place by a second nut.

A 3½″ Strip 3 is bolted in the free holes of the two Fishplates and to it is fixed a Double Bent Strip 4 as shown. This provides a mounting for the steering column, which is kept in position by a Collar 5. A 15-Tooth Pinion 6 is mounted on the Rod and is separated from the 3½″ Strip 3 by three Washers The Pinion engages the two Worms, and when the steering wheel is turned the Rod 1 is moved to one side or the other.

This mechanism is suitable for use in model lorries, and readers who wish to make use of it will find it readily adaptable to their needs.



A model steering operating gear in which a useful role is found for the 15-Tooth Pinion.

MODEL OF THE MONTH

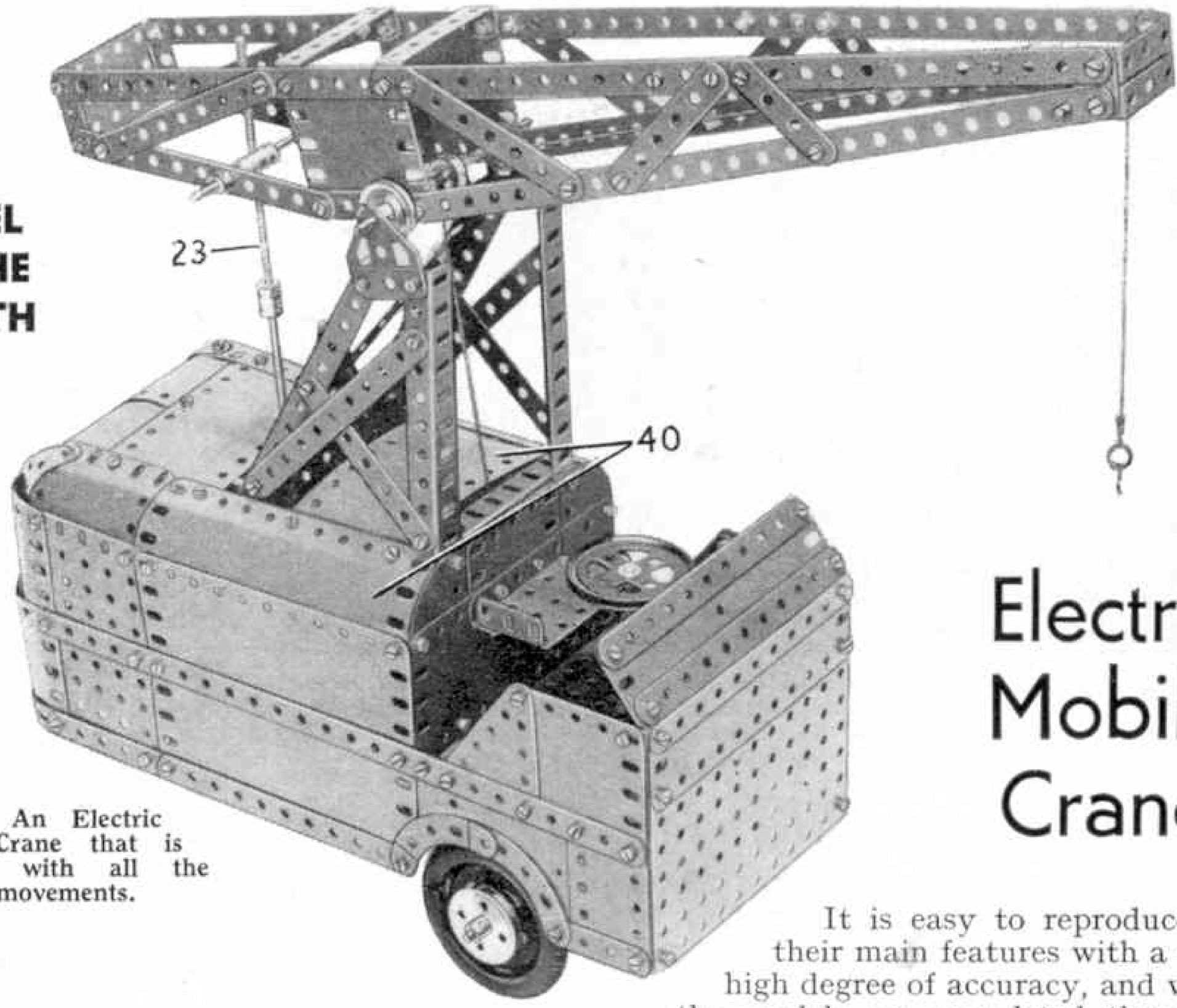


Fig. 1. An Electric Mobile Crane that is equipped with all the essential movements.

Electric Mobile Crane

CRANES are among the most apt of all subjects for reproduction in Meccano. It is easy to reproduce all their main features with a very high degree of accuracy, and when the models are completed they can readily be set to work just like the real things and will carry out all their essential movements. The result is that a good Meccano crane is a lovely piece of work in both

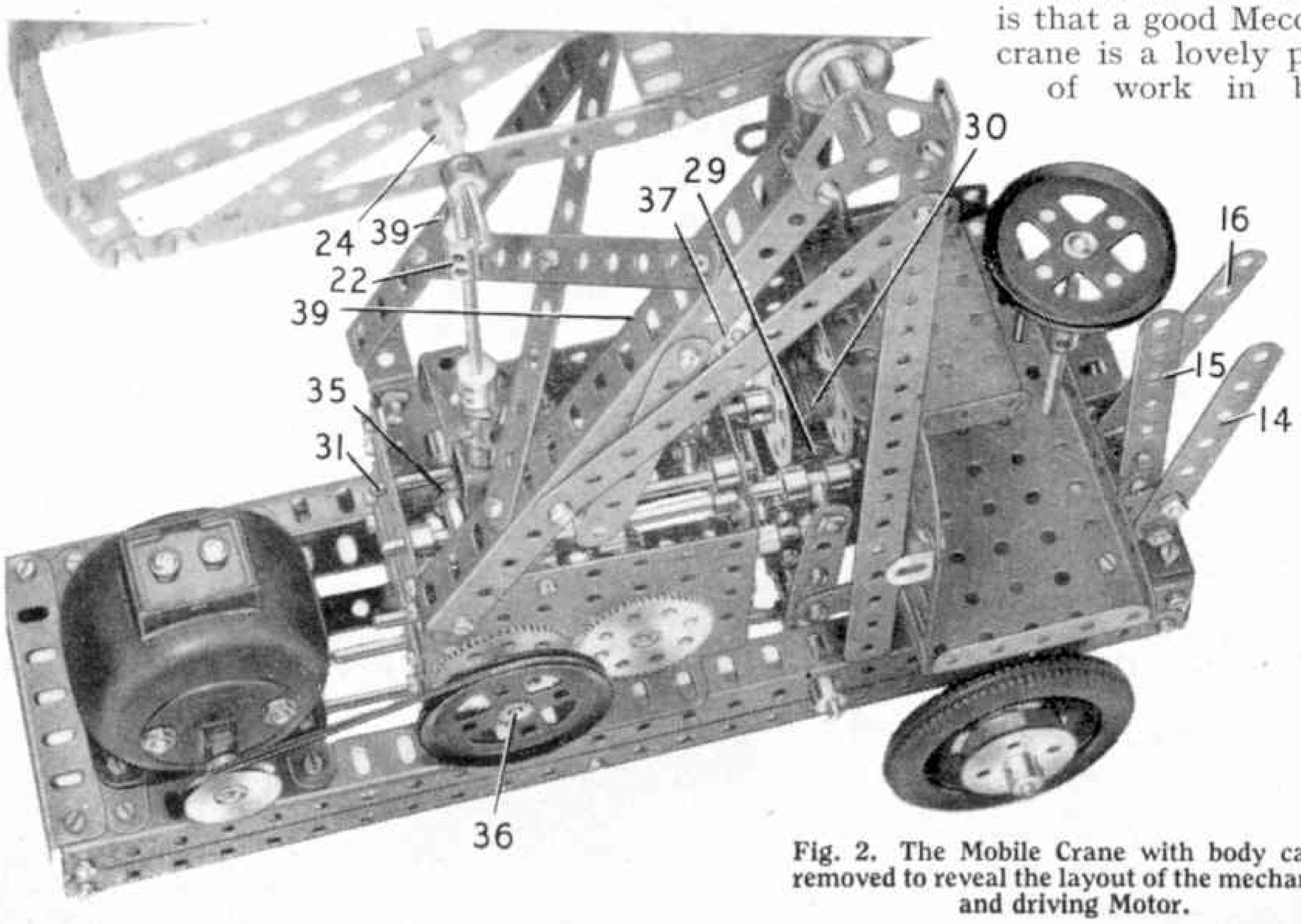
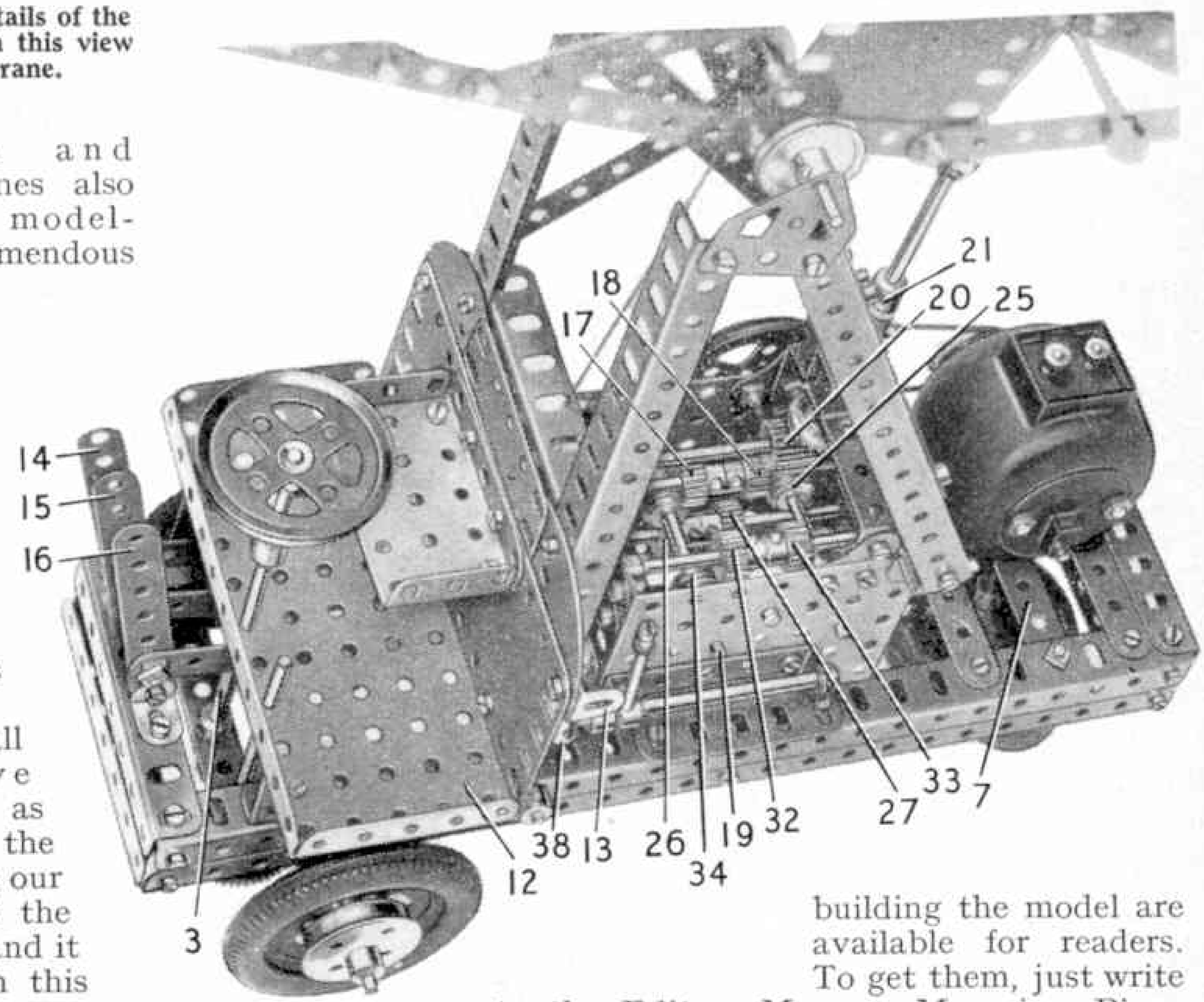


Fig. 2. The Mobile Crane with body casing removed to reveal the layout of the mechanism and driving Motor.

Fig. 3. The chief details of the gear-box are seen in this view of the Mobile Crane.



appearance and operation. Cranes also provide the model-builder with tremendous scope for using gearing, and any model that gives this facility is bound to be popular with Meccano enthusiasts, who love to watch the wheels go round!

In view of all this we have chosen a crane as the subject for the second model in our new "Model of the Month" series, and it is illustrated on this and the facing page.

The model is based on a crane of a popular mobile type that is used in works and industries of all kinds for carrying crates and goods from one department to another.

As usual full constructional details for building the model are available for readers. To get them, just write to the Editor, *Meccano Magazine*, Binns Road, Liverpool 13, enclosing a 2d. stamp. Readers living in Canada, Australia, New Zealand, South Africa, Ceylon, Italy, Rhodesia and the United States of America, should write to our main agents in those countries for their copies of the current Model of the Month instructions, also, of course, enclosing suitable stamps for postage.

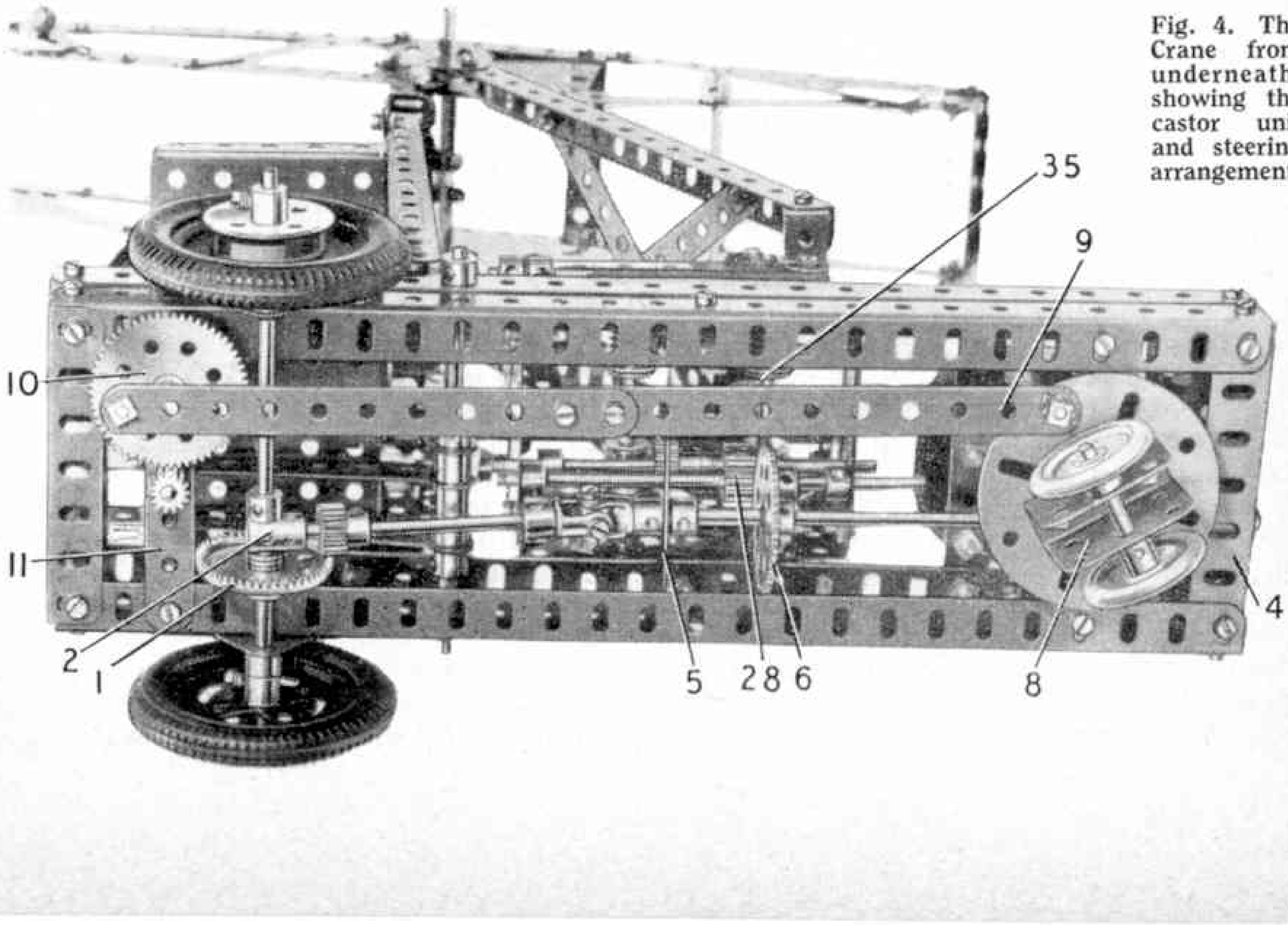


Fig. 4. The Crane from underneath, showing the castor unit and steering arrangement.

A Model Harmonograph

Build this fine Designing Machine

THE complete Harmonograph is seen in Fig. 1. It consists of a pendulum that carries a table at its upper end and is mounted pivotally in such a manner that it is free to swing in any direction. When the pendulum is set in motion a ball pen suspended above the table traces out a design on a piece of paper attached to the table. The addition of a second pendulum, flexibly attached to the lower end of the first one, makes the designs produced by the machine more intricate.

The base of the Harmonograph is a box-shaped structure built by joining the ends of two 12½" Angle Girders by 5½" Strips. Four 2½" Strips are bolted vertically to the ends of the Angle Girders; the upper ends of the forward pair are connected by a 5½" × 2½" Flanged Plate 1 and those of the rear pair by Angle Brackets and a 5½" Strip. Two 12½" Strips are also bolted between the shorter flanges of Plate 1 and the rear 2½" Strips.

Each side of the base consists of two 4½" × 2½" Flexible Plates and one 2½" × 2½" Flexible Plate, which are bolted between the 12½" Strips and the Angle Girders. The top of the base consists of a 4½" × 2½", a 2½" × 2½" Flexible Plate and a 2½" × 1½" Flexible Plate, together with one 5½" × 1½" Flexible Plate 2. A 5½" Angle Girder is bolted to Angle Brackets that are fixed in the 6th from end holes in the 12½" Strips of the base. The Flexible Plates are arranged as shown in the illustration and are supported at the sides of the base by Angle Brackets. A 9½" Strip 3, bolted down the centre of the base, strengthens the structure

Two 12½" Angle Girders are bolted at one end to a 5½" Strip 4 fixed to the base in the position shown. They are bolted also to the Flanged Plate 1, and to them two Flat Trunnions 6 and 7 are fastened, each bolt carrying two Washers on its shank between the Flat Trunnion and Angle Girder. Reversed Angle Brackets, one of which is shown at 8, are then bolted to the inner sides of the Flat Trunnions, and through the free end hole of each Bracket a bolt is fastened to form the supports for the swivel frame 9, which is constructed by joining two 2½" × ½" Double Angle Strips with 1½" Strips. Two 3" Screwed Rods passed through the centre holes of the 1½" Strips are screwed into the boss of a 1" Pulley 10,

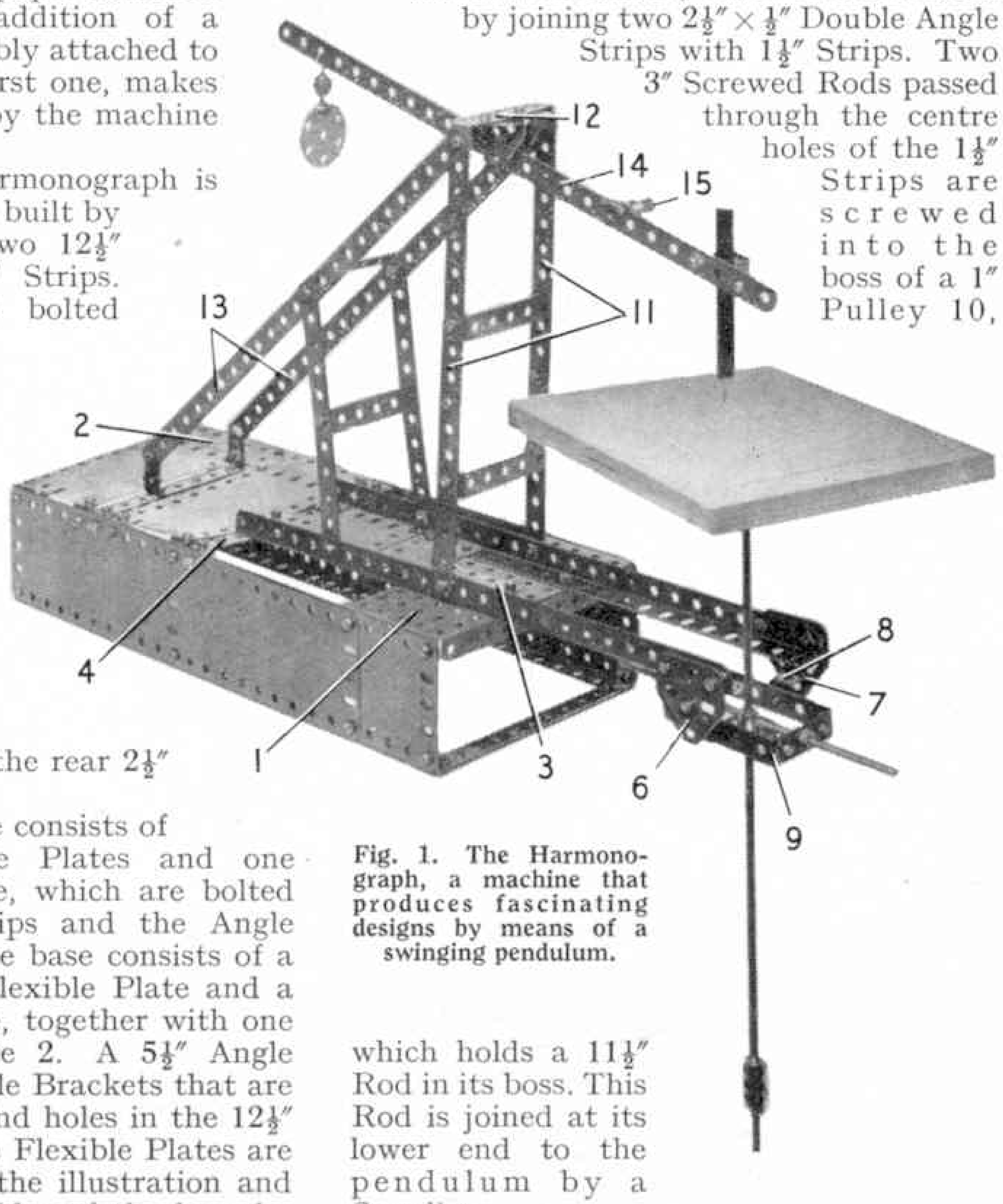


Fig. 1. The Harmonograph, a machine that produces fascinating designs by means of a swinging pendulum.

which holds a 11½" Rod in its boss. This Rod is joined at its lower end to the pendulum by a Coupling.

The pendulum consists of three or four 11½" Rods coupled end to end, and carries a bob weight, which can be made up from any convenient parts or pieces of metal available. The weight should be about 1 lb.

The designs are drawn on sheets of paper pinned to the table, which is of wood and is approx. 6 in. square. A Bush Wheel is

screwed to its underside and this is fixed on the end of the 11½" Rod held in Pulley 10. If desired a Hinged Flat Plate can be used as a table by fastening it to the Bush Wheel by two Double Brackets. The paper used should be of good quality and have an even surface. Rough paper, and also paper with a highly finished surface, should not be used. Ordinary writing paper will do.

The support for the pen arm consists of two compound strips 11, each comprising two 5½" Strips overlapping four holes, which are secured to the 12½" Girders on the top of the base. The Strips 11 are joined at their upper ends by a Double Angle Strip 12, the bolts holding also two 12½" Strips 13. The lower ends of the 12½" Strips are fastened to Fishplates bolted to the lugs of a further 2½" × ½" Double Angle Strip that is fixed to the base of the model. The pen arm 14 is a 12½" Strip and is pivotally mounted on a lock-nutted ¾" Bolt to Trunnions bolted underneath the Double Angle Strip 12. Washers and nuts are used to space the arm centrally on the Bolt. It is best to use a ball pen and this can be held in a Double Bent Strip fixed to the pen arm as shown. A lock-nutted Bolt can be used to grip the pen lightly and hold it in place.

The pressure of the pen on the paper can be regulated by adjusting a balance weight 15, which is moved along the arm until the pen just rests lightly on the paper. Another weight at the rear end of the arm can be used to give additional adjustment. When the model is completed some very interesting effects can be obtained by superimposing one design on another, and by using a compound pendulum designs of a more intricate type can be produced. A compound pendulum is made simply by making up a weight, such as a quantity of nuts and bolts enclosed in two Boiler Ends and then connecting the extra weight to the end of the main pendulum by a piece of string about 6" in length. Also by adding extra weights to the pendulum the latter will continue to swing for a longer period. Another way of introducing variety into the designs is to vary the weights on the two pendulums, increasing the load on one and slightly decreasing that on the other.

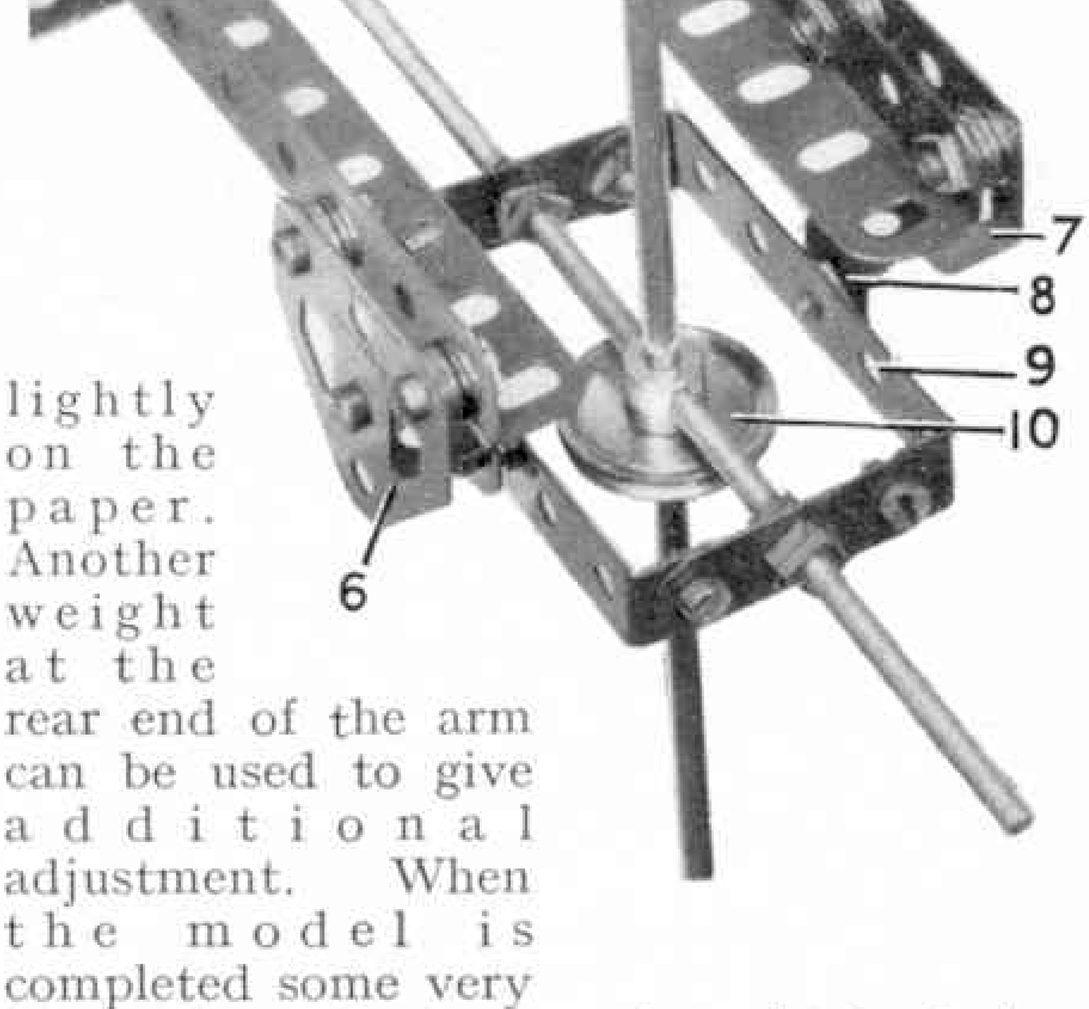


Fig. 3. The method of mounting the pendulum so that it is free to swing in any direction.

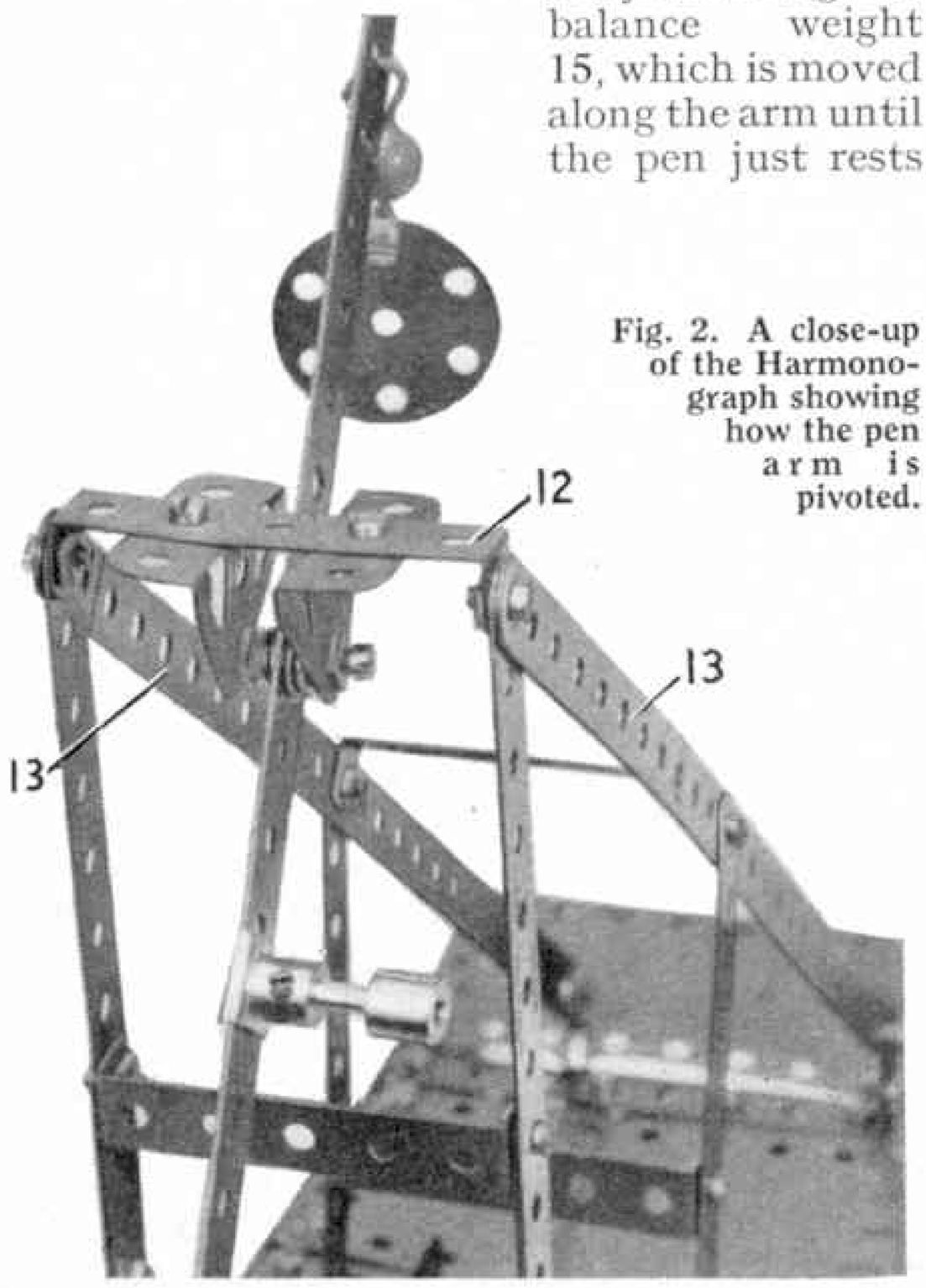
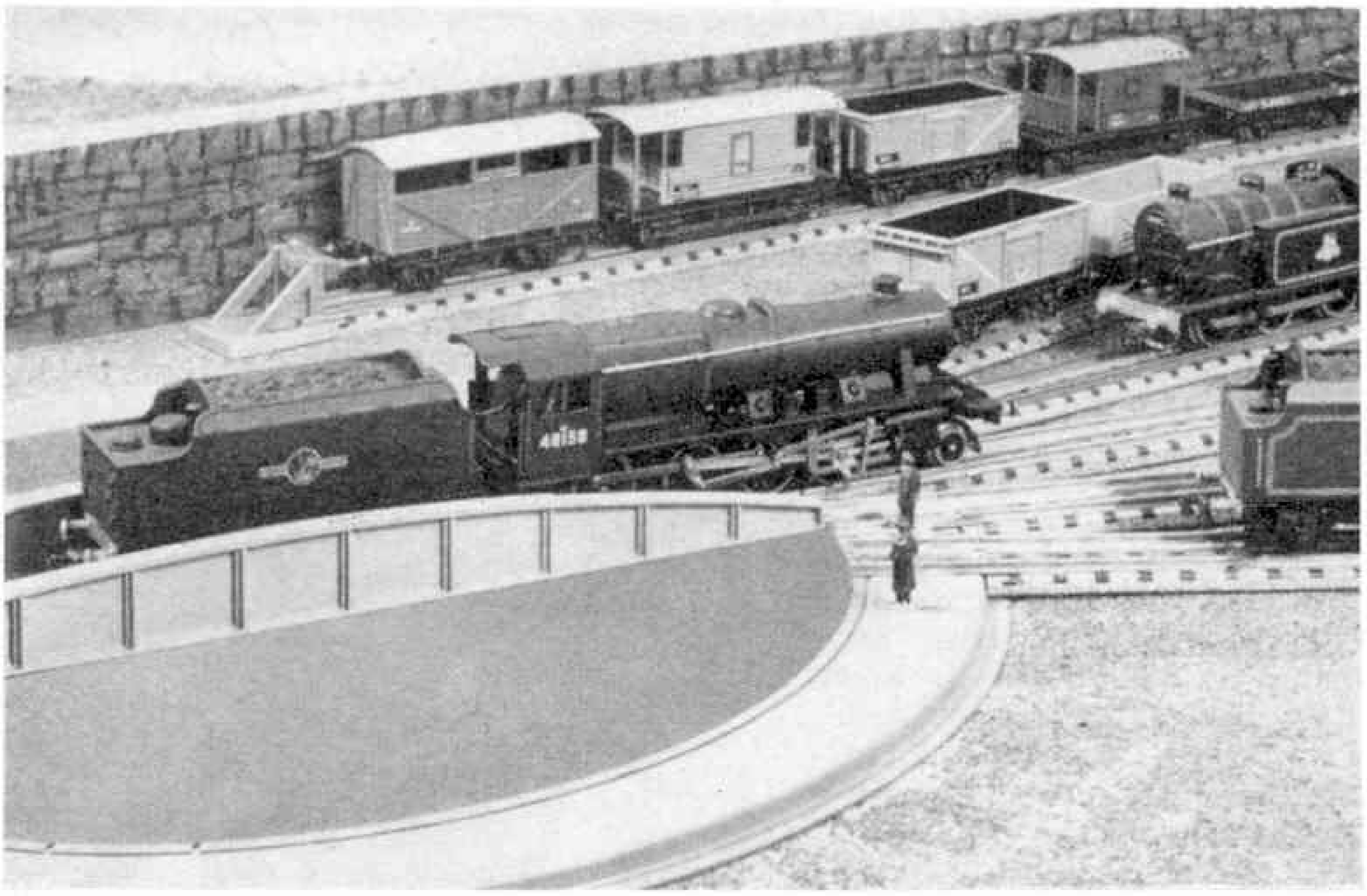


Fig. 2. A close-up of the Harmonograph showing how the pen arm is pivoted.

Parts required to build the Harmonograph: 5 of No. 1; 1 of No. 1a; 10 of No. 2; 4 of No. 5; 2 of No. 6a; 4 of No. 8; 3 of No. 10; 9 of No. 12; 4 of No. 13; 1 of No. 22; 1 of No. 24; 1 of No. 24c; 95 of No. 37a; 89 of No. 37b; 14 of No. 38; 1 of No. 45; 8 of No. 48a; 1 of No. 50; 1 of No. 52; 1 of No. 57c; 1 of No. 63; 2 of No. 80; 1 of No. 111a; 6 of No. 111c; 2 of No. 125; 2 of No. 126; 2 of No. 126a; 1 of No. 173a; 1 of No. 188; 1 of No. 189; 4 of No. 190; 2 of No. 191; 4 of No. 192.



The Hornby-Dublo 2-8-0 backs on to the Turntable. The easy control at slow speed characteristic of this engine makes such movements a real joy.

HORNBY RAILWAY COMPANY

By the Secretary

Good Things in Abundance

OUR talks recently have been keeping pace, more or less, with Hornby-Dublo developments, but occasionally I have had to refer back to items that have already made their appearance. I must do so now in connection with the Colour Light Signals that you no doubt saw in the advertisement pages of the *M.M.* last month, and the G3 Switch specially intended for them. From the brief details given there you will have gathered that the new Signals are of the two-aspect type, that is each signal head has two coloured lamps or aspects, the colours for the Home or "stop" Signal being green and red, and those for the Distant green and yellow. A Hornby-Dublo Junction type of Colour Light Signal is to become available this month.

I expect that some of you have already installed one or two Colour Light Signals, with the necessary G3 Switches. This new Switch must be used, having been designed specially for the purpose. Its outer casing is of the same size and shape as the older D1 and D2 Switches, so that all three types can be grouped together in a single "bank". The G3 Switch is readily distinguished by its colour, which is green.

To attach a lead to one of these Signals, all that is necessary is to press down a spring-loaded button with one finger, to pass the end of the wire through the opening then revealed, and to remove the finger. The opening is large enough to allow more than one wire to be led to each terminal.

Bulbs are easily replaceable when the rear cover plate on the Signal head is removed.

Lately these pages have been providing almost a monthly news bulletin on the wonderful super-detail goods vehicles of the Hornby-Dublo SD6 series, the finest of their kind yet produced. An interesting recent addition is the U.G.B. Sand Wagon. The initials in this title stand for the United Glass Bottle Manufacturers Ltd., who operate a fleet of such vehicles for sand traffic in connection with glass production.

This new Hornby-Dublo vehicle is similar in construction to the 5-plank 13-ton Standard Wagon, but the bodywork is finished in the striking yellow livery employed by the firm concerned and bears their name in the usual neat manner along the top plank on each side. Other wording includes the *Non Pool* markings on each side, these denoting that the vehicle is not for common-user service and must only be loaded with its owners' traffic. In addition the name *St. Helens* also appears, thus

The 2-8-0 on the way with a fast freight train of SD6 vehicles.

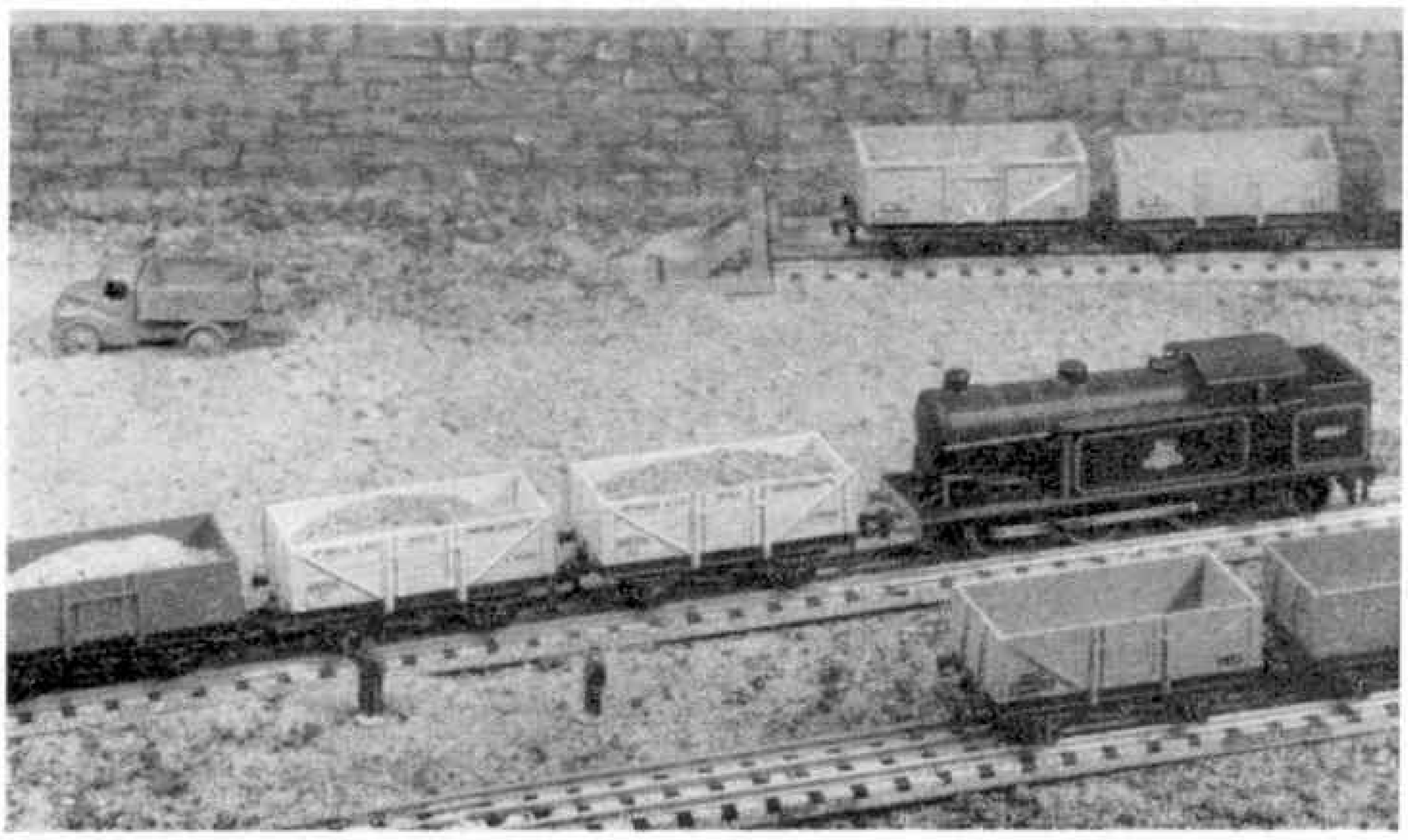
indicating the centre to which the real fleet of vehicles belongs.

Another new private owners' wagon in this series is the SD6 Saxa Salt Wagon, a vehicle of striking appearance and livery. Its unusual and characteristic peaked roof justifies the name "cottage" often applied by railwaymen to salt wagons of this kind, and its characteristic yellow colour makes a splendid background for the prominent name and other markings which include a *Non Pool* indication and fleet number. Planking, strapping and corner plates and the stout vertical timbers on the ends are beautifully reproduced and, as in other SD6 vehicles, the door details are perfect. These doors don't open, but you can be forgiven for thinking that they do!

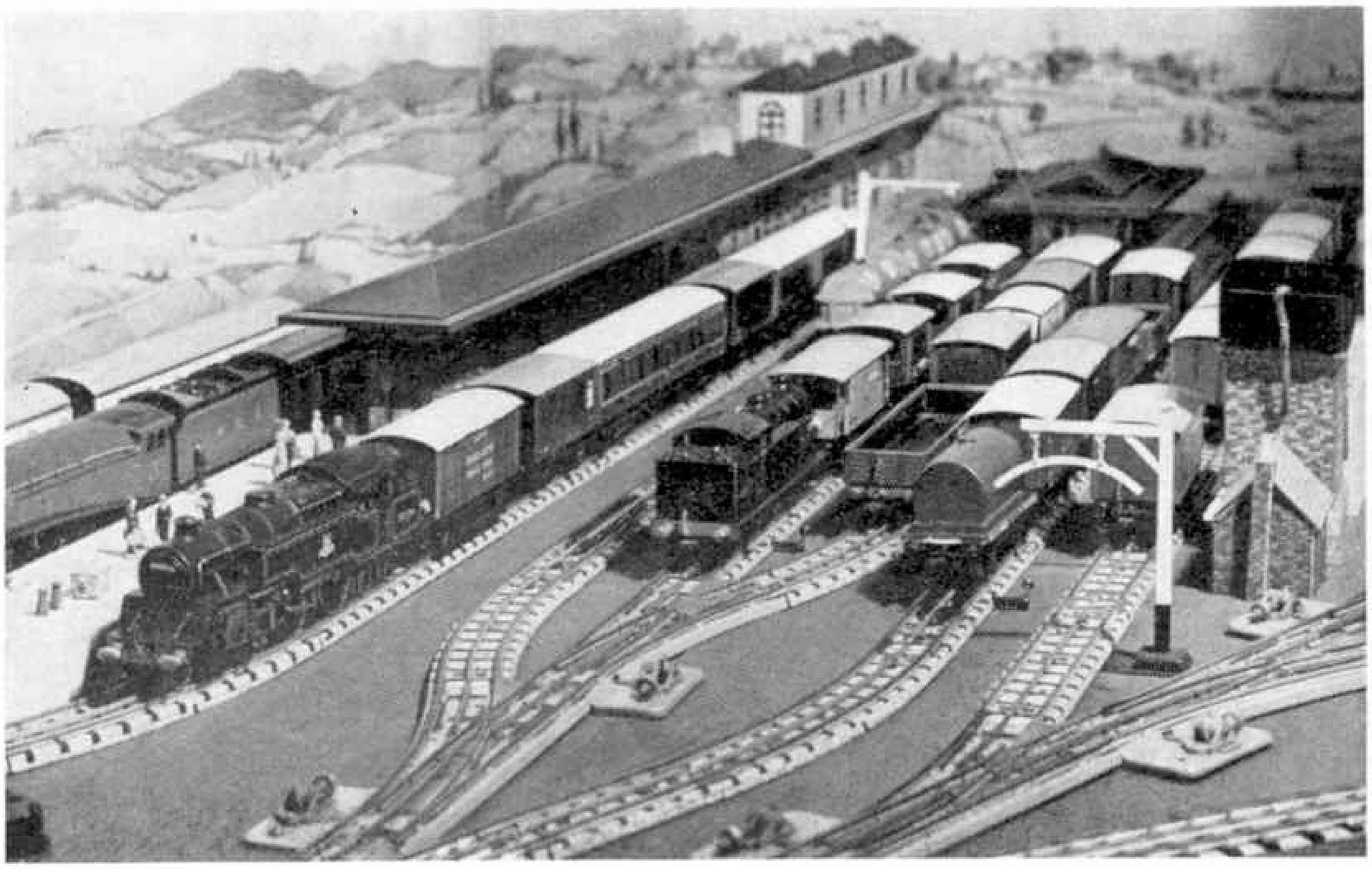
Then there is the new SD6 Coal Wagon, a further variation of the 13-ton Standard Wagon. In this form it contains a realistic load of "coal", and so is just the thing for coal trains and for standing near your locomotive premises.

All of you will be keen to know something about the Hornby-Dublo Diesel-Electric Locomotive, which is to appear this month. You will have gathered that it is of the 8-wheeled double-bogie type described technically as a Bo-Bo, and it represents the first B.R. Standard class of diesel-electrics for other than shunting duties. If you just look at the picture of one of these new locomotives on the inside front cover of this issue, you cannot fail to admire it.

There is bound to be a tremendous demand for this new locomotive. I am sorry that it is not possible for me to include pictures this month showing this new product at work, but I hope to be able to do something about this—and more new things!—in next month's *M.M.*



A recent addition to the SD6 series is the U.G.B. Sand Wagon, two of which are included in the train in this picture. Other SD6 vehicles, including Mineral, Goods and 13T Standard Wagons, also are shown.



News from "*Newark*"

OUR "News from *Newark*" refers to a Hornby-Dublo railway that has already been described in the *M.M.* It is always interesting to record the development of home layouts, and in this instance notable progress has been made by the joint owners of the *Newark and Westbury* line. These enthusiasts, Messrs. R. Wild and F. Walton, are to be congratulated on the success of their layout re-organisation. This has been carried out without upsetting the basic idea of the system as originally described in the *M.M.* in April 1956, although the former single level railway has become a rather more extensive affair with tracks at three levels. Improvements generally have been incorporated too, and the baseboard supporting the line now occupies the whole room, except for two "wells" in which the operators can sit.

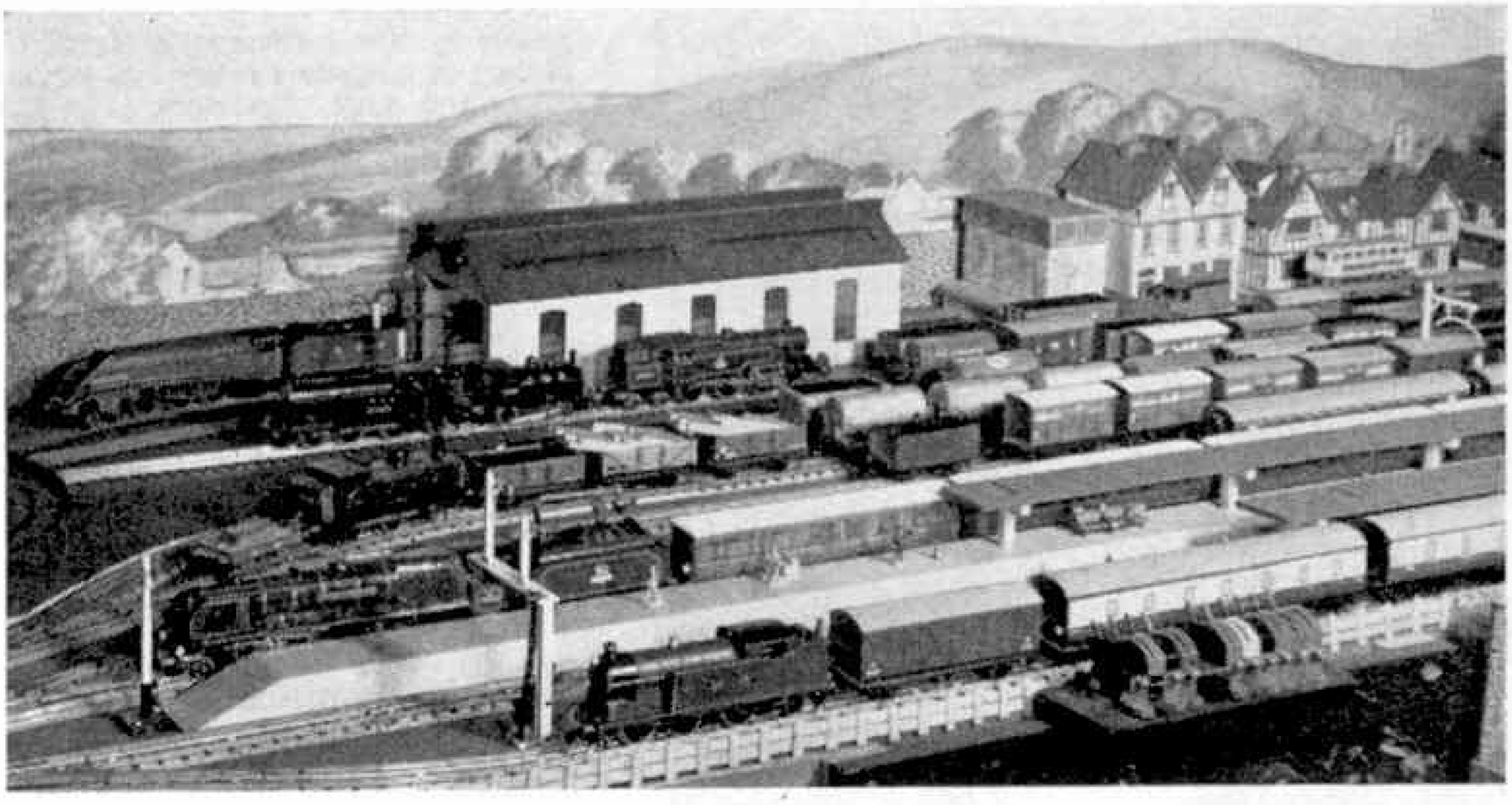
The illustration above shows the station and yards at "Newark" on the layout jointly operated by "M.M." readers R. Wild and F. Walton. Recent progress is described in this article.

At *Newark*, shown in the picture above, things are much the same as they were. *Newark* is a port where oil, timber, and metal scrap represent the heavy freights, while more perishable traffic such as fish and meat also is dealt with. All this activity requires the provision of suitable rolling stock and train services.

A train leaving *Newark* passes the engine shed and carriage sidings and taking a curve goes through a tunnel under the two other levels of the layout. At the other end of this, by *Clee Hill* signal box, it begins to climb up a bank at 1 in 33. At the top, the line from *Newark* joins the intermediate or normal level of the layout and then runs into another tunnel, actually under *Westbury*.

Emerging from this tunnel, *Overton* is reached. This is in fact the central junction, situated on the main circuit and it is the place where Points and Crossings bring together the low-level branch from *Newark*, the level continuous main line and the high-level branch from *Westbury*.

The Points at *Overton*, forming the junction, are all electrically operated, which is of great convenience when working the line. All the main line Signals are similarly operated. *Overton* is a typical country junction, local products being chiefly milk, cattle and bricks. For the milk traffic some home-built tanks are in use and these are loaded for rail conveyance on the usual Low-sided Wagons.



The layout at "Westbury", an extensive traffic centre. The engine in the foreground is a Hornby-Dublo 0-6-2 as originally made in G.W.R. style.

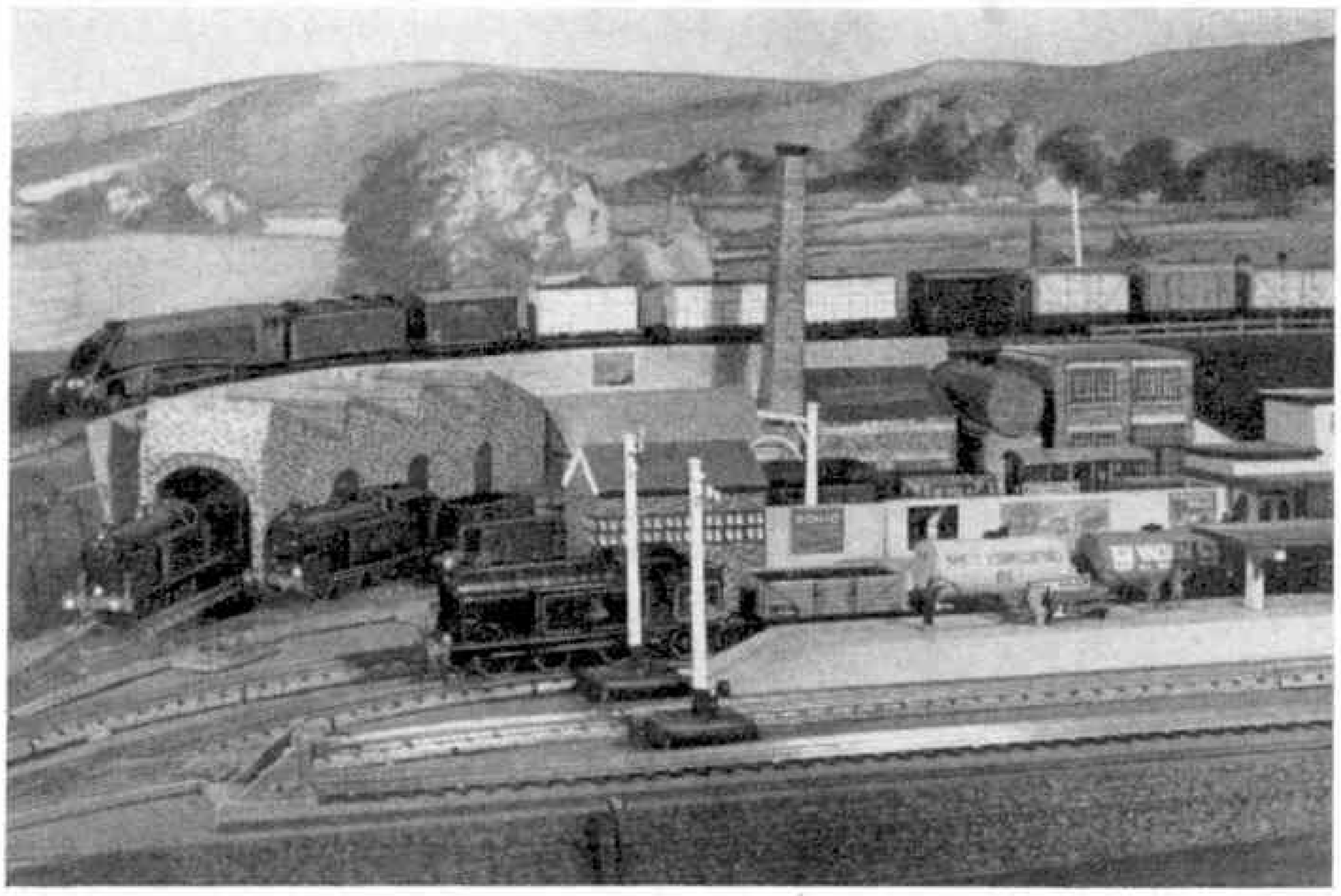
Another place on the intermediate level is *Crawford*. Here is some heavy industry, represented by a wagon works and a boiler making establishment. There is light industry too, notably the manufacture of furniture, the movement of which calls for a road-rail Container service. The third illustration shows something of the busy atmosphere of this active little town. In the background will be noticed a "Gresley" Pacific coming down from *Westbury* with a train of empty perishable Vans and Containers bound for *Newark;* obviously a return trip corresponding to a loaded journey in the opposite direction.

A train making a normal level circuit leaves *Crawford* and enters the tunnel under *Westbury*, which brings it again to *Overton*, but this time instead of going through the station it branches off, avoids the platforms and begins the climb up the incline to *Westbury*, the gradient here being 1 in 39. This is the incline that the Container train mentioned before is descending.

The intermediate or level section of the track still forms a continuous layout. Actually the arrangement of connections between the two branches and this main line are such that a train reaching this section from one branch can make as many circuits of the main lines as required, before being diverted to the other branch and so to the terminal station or sidings situated there.

At *Westbury* the layout is fairly extensive, for the station consists of four platforms, the main ones being capable of accommodating a 6-coach train. The goods yard is kept very busy, for besides dealing with arriving traffic it has to handle the despatch of local products, which are numerous and varied.

This layout in its earlier form was arranged in two main sections. Now, each station has its own control area. Each operator controls two areas, but it is possible for either operator to manage the whole layout.



A fitted freight behind a Hornby-Dublo A4 Pacific makes its way round the curves in the background. The station is "Crawford", where a small engine shed and various industrial buildings are situated.

Obviously their smiles show that these happy young people are the owners of a Hornby-Dublo railway. A picture of it appears below and you can read about it on this page. Photographs by I.. Carruthers.

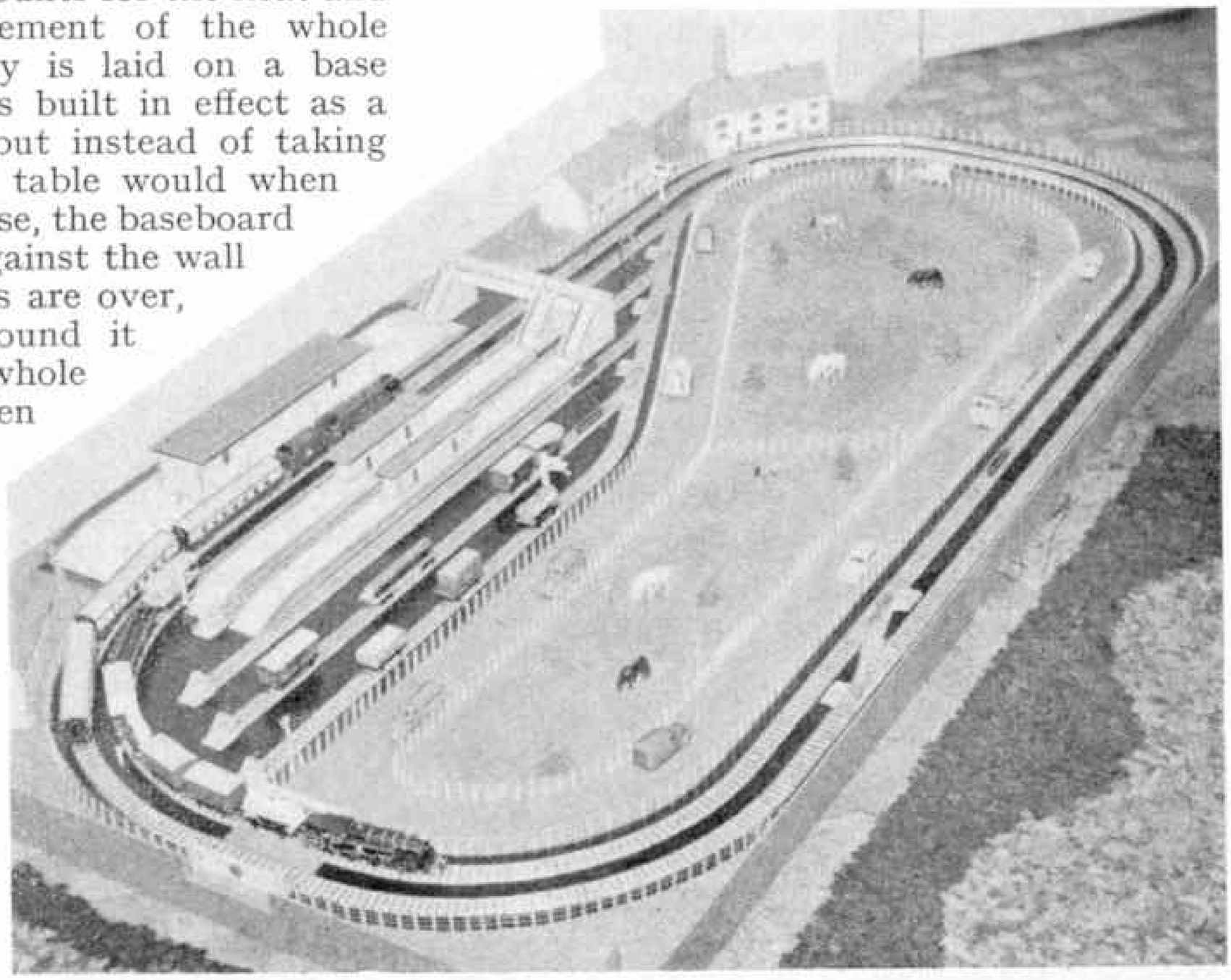
A Neat Family Layout

HERE are the brothers Barry and John Morgan and their small sister Muriel, the happy owners of the Hornby-Dublo layout shown below. Naturally the two boys do most of the train running, but their sister can manage things too, except when the movement of Points is called for.

The interest and help of their father Mr. J. Morgan, of Egremont, Cumberland, to a great extent accounts for the neat and workmanlike arrangement of the whole system. The railway is laid on a base 8 ft. × 4 ft., which is built in effect as a table without legs, but instead of taking up floor space, as a table would when the railway is not in use, the baseboard is made to fold up against the wall after train operations are over, the raised edging round it meaning that the whole system is enclosed when this is done. An interesting feature of the baseboard is that everything is attached to it, except the trains, the Dinky Toys and the animals in the fields. Once these are in place and the electrical connections are made the layout is ready to use.

I am sure that you will admire the neat appearance of the system as a whole. The railway premises are fenced in by nearly 700 matchsticks, joined up with three strands of white cotton, the whole representing post and wire fencing. The part of the baseboard covered by the track is painted black, which shows the track up nicely and quite well represents the cinder formation commonly found on railway property. The road sections are coloured grey, which is also used for the centre "paving" of the two-track level crossing. This by the way is a home-made affair, as are the buildings and telegraph poles seen on the layout.

The surface of the fields was produced by covering the required area with adhesive and sprinkling sawdust over this. When this had dried the surplus was shaken off and the field surface painted.



Club and Branch News

WITH THE SECRETARY

CHRISTMAS GREETINGS

Again I have the opportunity of wishing a Merry Christmas to every member of the Guild and H.R.C., and to all Clubs and Branches, and I do so with the greatest pleasure. In many Clubs and Branches preparations will be already in hand for the traditional grand Christmas party with which the first of the Winter Sessions generally concludes. The goodwill and cheer so much in evidence then express admirably the spirit of the Meccano Guild and the Hornby Railway Company.

Clubs and Branches which have not yet planned a Christmas party still have time to do so. Remember to include the parents of members, who will be equally pleased to help "stock the larder" and to share in the fun of the evening.

MECCANO CLUB RECENTLY AFFILIATED

PENWORTHAM COUNTY SECONDARY SCHOOL M.C.—*Leader:* Mr. J. Dawson, Penwortham County Secondary School, near Preston.

H.R.C. BRANCH RECENTLY INCORPORATED

No. 571. PENWORTHAM COUNTY SECONDARY SCHOOL.—*Chairman:* Mr. J Dawson, Penwortham County Secondary School, near Preston.

CLUB NOTES

BORDEN GRAMMAR SCHOOL (SITTINGBOURNE) M.C.—The term began with a recruiting session, and the Club has doubled its membership. A race meeting with Dinky Toys cars was a great success. An outing to Ashford Works is being arranged. *Secretary:* B. L. Sedge, 19 Cavour Road, Sheerness, Kent.

MILE END (PORTSMOUTH) M.C.—The Club and its associated H.R.C Branch now have permanent quarters in the basement of the Congregational Church Hall, and members have been decorating and preparing their new quarters. The Woodwork Section are making cupboards, shelves, etc., for the Club's stock of Meccano parts. Meccano models constructed have included a guitar by A. Young, which could be played. The Meccano Robot is almost completed. The Variety Section will stage a Christmas variety show in aid of Club funds. *Secretary:* Mr. A. J. Nicholson, 213 Sultan Road, Buckland, Portsmouth.

AUSTRALIA

MAYLANDS M.C.—Members have been busy preparing models for the Club display at a Hobbies Exhibition. Outings have included a visit to Helena Valley. On another occasion the cycling members left their machines at home and joined the Victoria Park Youth Club in an outing by diesel railcar to Chidlows, in the Darlington Ranges, and thence to Lake Leschenaultia, a very popular picnic resort in the hills. *Secretary:* T Down, 16 Kennedy Street, Maylands, W. Australia.

NEW ZEALAND

CHRISTCHURCH M.C.—The Club's fine display at the Shirley Parish Doll Show included a revolving illuminated Ferris Wheel and a set of smaller models of subjects that can be built with Outfits Nos. 0, 1, 2 and 3. A Meccanograph with two pens each using a different colour of ink was another attraction. Outdoor activities have included a visit to Train Control at Christchurch railway station, and to the local automatic telephone exchange. *Secretary:* R. Boundy, 6 Walsall Street, Riccarton S.W.1., Christchurch, New Zealand.

BRANCH NEWS

STOURPORT-ON-SEVERN.—Several new members have been enrolled, and more newcomers will be welcome. Work has begun on the development of a permanent Branch layout. *Secretary:* J. Baker, 9 Baldwin Road, Stourport-on-Severn.

POTTERS BAR.—The Treasurer has built a fine model of a concrete coaling stage for the loco. yard on the Branch layout, and a tunnel is being made by a relative of one of the members. Interesting talks on railway subjects have been given by guest speakers, and visits paid to King's Cross and to Potters Bar signal box. Meetings are held on the second Friday in the month from 6—8 p.m., and on the first and third Saturday mornings from 10 a.m. onwards. There is room for more members, and Hornby or Hornby-Dublo enthusiasts in the locality who would like to join the Branch will be welcomed. *Secretary:* R. Woods, 120 The Walk, Potters Bar, Middlesex.

Some of the enthusiastic members of the Kidderminster H.R.C. Branch No. 560 photographed in an appropriate setting during a recent visit to the Kidderminster Motive Power Depot. Next to the engineman is A. J. Potter, the Branch Secretary.

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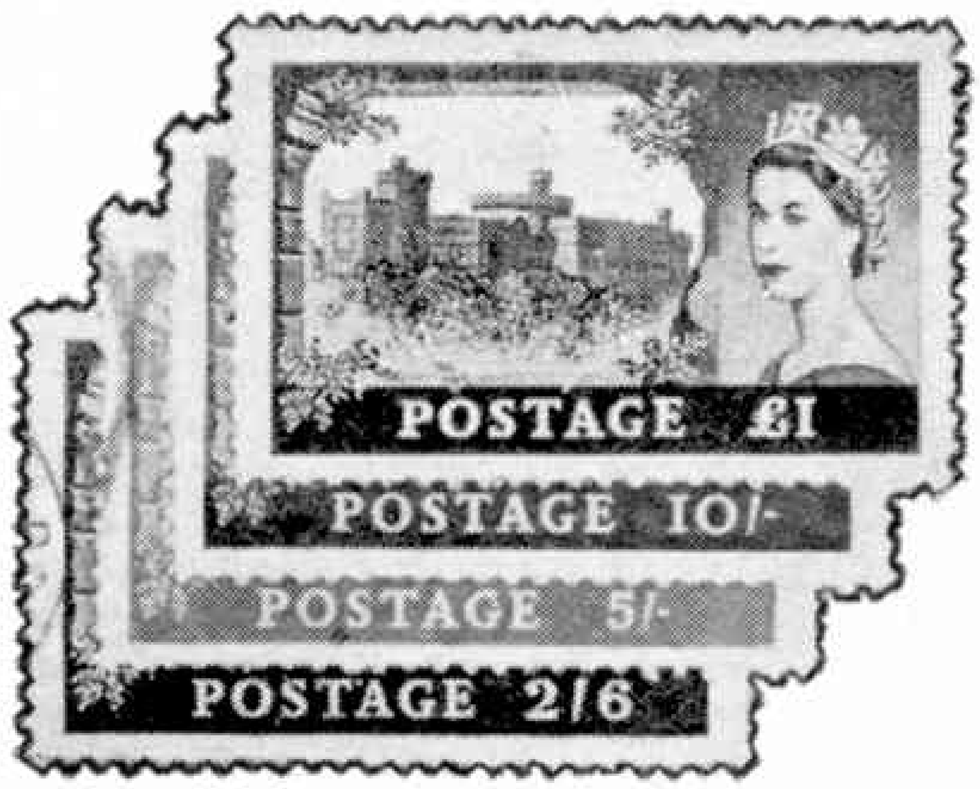

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For other Stamp Advertisements see also pages 600 and xxvi

Stamp Collectors' Corner

By F. E. Metcalfe

THE "REGIONALS"

As I indicated in the November *M.M.*, I am this month dealing with our own "Regional" stamps. These are now quite the rage, not only here in Great Britain but in a number of overseas countries as well, and I think they are well worth fairly detailed consideration.

The most surprising thing about the Regionals is that they exist at all. Let me explain what I mean. The Post Offices of the important countries of the world, with the exception of our own, have long since realized how important postage stamps are as a publicity medium—how else will publicity more than pay for its cost by the sale of itself as do stamps? Our own postal authorities have done their utmost to prevent any issue of special stamps, even odd values.

An example of this came when London was the venue for the Inter-Parliamentary Congress. Britain was a founder member. Wherever one of the Congresses had previously been held the host country had issued a set of stamps to commemorate the event. A number of our Members of Parliament, knowing this, requested the Postmaster General to arrange for Britain to continue the custom. The Post Office urged as strongly as it could that there should not even be a single stamp, and it only caved in when it was agreed that the design of the current 4d. stamp with the frame slightly adjusted, be used. And there was nothing that could be done about it.

This was the position when the Postmaster General announced that there were to be twelve new stamps, to be used in the various regions, with the Isle of Man included as well as the Channel Islands. That certainly made people sit up and take notice.

The arrangement was that the stamps were to be more or less as at present on issue, for the United Kingdom and Northern Ireland, but with frames depicting symbols related to the regions to which the stamps were assigned. I suppose most Postal Administrations would have arranged such adjustments in a matter of a few weeks. But not our Post Office. They intended to make a real meal of it and, believe it or not, committees were appointed to select the symbols for the six regions, the number of members being so large that it took up ten foolscap pages to give their names and degrees.

So we were all sure that we were in for a real treat, particularly as a full two years elapsed before the stamps were ready for issue. As for the symbols selected, to be quite candid, they were nothing more original than thistles for Scotland, dragons for Wales, Legs of Man for the Isle of Man, etc. It is not known just how long the experts took to make these decisions, but I don't think ordinary folk such as ourselves would have needed more than a day or so to think up similar emblems.

There is just one of these that might puzzle the uninitiated, and it is one that fits in with the rest of the design so ill as to almost spoil the stamp. I refer to the gate at the bottom of the 1/3d. value for Northern Ireland. In one of the further seventeen foolscap pages—yes, seventeen!—released when the stamps were to be issued, it is explained that this field gate, as it is described, shows typical Ulster pillars. As for typical, why Ulster? I am sure that any readers of these lines, living in the country in any part of Great Britain, will find a similar gate, just round the corner.

Now I don't think I need give all the names and honours of the gentlemen who selected the symbols, but I think that on listing the stamps I should give the names of the artists who were finally chosen to produce the designs, just to show how distinguished they all are. I will also give their degrees, as mentioned on the seventeen pages already referred to.

Wales and Monmouthshire: 3d., 6d., 1/3, by Reynolds Stone, C.B.E., R.D.I., Welsh Dragon, and on the 3d. and 1/3 values the leek is included as well. Can you spot the leek?

Scotland: 3d. by G. F. Huntly, D.A., M.S.I.A., St. Andrew's Cross and Crowned Thistle; 6d. by J. B. Fleming, D.A., M.S.I.A., Scottish Thistles; 1/3 by A. B. Imrie, Unicorns, with Lion Rampant Flag, and St. Andrew's Cross Flag.

Northern Ireland: 3d. by W. Hollywood, Red Right Hand of Ulster and Flax Plant; 6d. by L. Pilton, A.T.D., ditto; 1/3 by T. Collins, ditto, plus the gate to which I have already referred.

Guernsey: 3d. by E. A. Piprell, Guernsey Lily and William the Conqueror's Crown; Jersey 3d. by W. M. Gardner, A.R.C.A., M.S.I.A., F.R.S.A. (this should be good) Royal Mace and Jersey Coat of Arms.

Isle of Man: 3d. by J. H. Nicholson, R.I., B.W.S., F.I.B.D., Three Legs of Man and border of a Celtic ring-chain device.

And, perhaps in spite of all that weight of merit, we finally got the stamps. On the whole, they are attractive and collectors have taken to them in a big way. There is quite a contest among some of them to get as many of each as they can, showing clear and neat postmarks. Fortunately most of the stamps, particularly the 3d. values, are not hard to come by, and I have already heard of one collection of used that contains over 400 copies, each with a different postmark.

That may be a bit beyond what most of us will be able to do. But I would suggest that collectors in England should try to get a nice selection of all used. And those living in the regions as many, showing nice postmarks of their own country at least.

It must be admitted, that once the Post Office received its orders to go ahead, it spared no pains to produce the best designs obtainable, and it is rather a pity that those selected for the picking of the symbols did not display a bit more originality.

But it is all a big step forward, and I would not be surprised if we get other regional stamps later (*Cont. on page 602*)

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For other Stamp Advertisements see also pages 598 and xxvi

Stamp Gossip

HIGH VALUES

Recently a London collector wrote and asked me why the catalogues do not list New Zealand stamps above £5, when there are values that not only go higher than that, but are also in constant postal use? He went on to say that he has several copies of the £10 stamp, all of which he obtained directly from postal parcels. At the same time, stamps for several other countries, such as the Nyasaland £10 as well as stamps actually up to 1,000r. for Ceylon, etc., have been recognized, though it is doubtful if any of the latter were ever used postally.

This question has been raised before by *M.M.* readers. It is not easy under present conditions to justify the present position regarding New Zealand high values. Actually the stamps in question go up to £50. but it is safe to say none above £5 value was being used for anything but fiscal purposes when it was decided to limit catalogue inclusion to this value. Now existing high air-mail charges have changed all that, as far as the £10 stamp is concerned at least, and I suppose one day this denomination will find its way into the catalogues. In the meantime I strongly urge collectors who come across a nice copy to keep it. You never know!

SPEED THE MAILS

I thought I knew a bit about stamps and postal transport as it affects the public, but recently I learned much more from an exhibition in Liverpool arranged with the object of instructing the public to help themselves indirectly, and the Post Office directly, to get their letters delivered with the least possible delay and trouble.

I was sorry to see that there were so few visitors to this exhibition. One of the exhibits was a normal sorting frame, and above each cubby hole was the name of a well-known town. Visitors were handed a bundle of about 24 cards and given a minute to place the cards, which bore addresses as they would normally be written on letters, in the right sections. I had a go, and though I am much more practised in the art of reading script than the average, I still made three mistakes.

There is certainly a lot of bad writing about, but that is not the point I want to make. I often have to type an address on an envelope, and when the letter is going to an important town I think there is no need to put in the county, as the place concerned is well-known enough. That may be so, but the inclusion of the town and county and putting its name and that of the town in block letters, is a great help to the Post Office, and in making sure that letters reach their destinations without delay. So here is one good thing that all stamp collectors can do.

INDUSTRIALISATION

I wonder what our country will look like in a hundred years? As it is, it is impossible to escape the pylons that are stretching out over our lovely countryside. But as the population rises, and the material standard of living increases. I suppose we shall get more and more of them. We may even get a countryside similar to the nightmare picture on the Polish stamp illustrated on this page. I was rather amused at the "puffing billy" in the centre, but there is little to amuse one, taking the design as a whole. It makes one shiver. Can we find a remedy?

CLASSIC GREECE

No stamps issued today could be more popular than some of the sets issued by Greece. Some months ago a stamp from the Greek "ships" set was illustrated, and collectors who bought a set at the time have done very nicely, for its value has gone up quite a bit. I think this will happen with the flower set from Greece, one of which is pictured here.

This issue was made on 15th September, on the occasion of the International Congress for the Protection of Nature. There are eight stamps in the set. I am afraid that not all of us can afford to buy up to the top value, but a short set will be within reach of all of us, and each stamp is a gem. The one illustrated is officially described as a free composition based on the myth of Narcissus, who is shown looking into the pool where he fell in love with his own image.

MUSIC HATH CHARMS

Recently a collector mentioned that it was some time since a "music" stamp was illustrated in the *M.M.*, so the stamp issued in Belgium on 1st September to commemorate the centenary of the birth of the great violinist Ysaye will be welcomed by him, and also by countless others interested in both stamps and music. The design is first class and, what is more important, a copy can be had for a copper or so.

THE TIP OF THE MONTH

We are getting near Christmas, so why not a nudge about Christmas stamps. The fact that Australia has brought out two sets, and will continue to bring out similar sets, is bound in the long run to make these stamps very popular. Popularity means increased prices, so why not collect Christmas stamps, mint and used? But don't confuse them with Christmas *labels*.

Christmas Nuts from English Orchards—

(*Continued from page 557*)

shrivels up with the ripening of the fruit and becomes a horny sort of husk that resembles a withered green plum. When the outside hull is taken off, however, there is an oval nut inside enclosing a sweet kernel.

Although almonds are chiefly planted as ornamental trees in England, there are some that in suitable conditions are propagated for edible purposes. The shells of almonds vary a good deal in their texture, and some can only be broken by a coal hammer. In contrast, by a very careful selection of those seeds with quite thin shells, and by constantly breeding from them, a type of almond tree has been raised that bears nuts with shells thin enough to be broken with the fingers. This variety of tree is called the paper-shelled almond.

A small proportion of English almonds is sold with mixed nuts at Christmas, and they also feature as decorations for Christmas cakes, and for making almond paste for this festive confection.

Testing Black Knight—(*Continued from page 560*)

rocket motor under test at a similar site in the Santa Susana Mountains, California.

After passing its tests at High Down, Black Knight is sent out to Woomera; and the success of the first firing, when it reached a height of over 300 miles, promises well for the future. Nor will its usefulness be limited to military research. There would be little point in duplicating the work already done by U.S. and Russian Earth satellites. But if Black Knight were used as part of a multi-stage rocket, perhaps with Blue Streak itself as the first stage, the result might well put Britain in the lead in the race to explore the Moon.

"Catch-Me-Who-Can"—(*Continued from page 569*)

had ever heard of building engines that would have to be dismantled into parts for transporting on mules on a crazy mule-track touching 17,000 ft. at points on the way to the mines?

The disconsolate Uville, before leaving for Peru, happened to pass through Fitzroy Square, London, and there he caught sight in a shop of a model of a stationary high-pressure steam engine built by Trevithick. He bought the model, took it back on that long voyage round Cape Horn, and showed it to the owners of the mines. He was then authorised to go back to Britain to find this man Trevithick and order three engines. Once again he rounded Cape Horn, arriving off Falmouth a sick man after the long voyage, and set about his task. In this he was fortunate, and before long he was brought by the Cornishman to Bridgnorth to arrange for engines to be built that would be taken literally to the ends of the earth—or the top of the world!

Today, anyone visiting Bridgnorth should take a look at the site of this foundry where *Catch-Me-Who-Can* was built. It is still called Foundry Yard, a patch of cottage gardens and waste land by the swirling Severn, a battlefield on which a giant Cornishman struggled to put his plans into practice.

Stamp Collectors' Corner—(*Continued from page 599*)

on, if our Postmaster General will take it upon himself to make the decision, and not delegate it to others. After all stamps nowadays are not merely bits of paper, produced either to amuse a few collectors, or by their sale to produce a trifle of extra revenue for the Post Office.

Most people get letters, and while only a relatively small percentage collect stamps, just watch how an attractive stamp draws attention to itself, whether the recipient is a collector or not. These regional stamps may not in themselves provide the publicity some stamps would, but their popularity shows how worthwhile their emission was.

As for my own collection, I am carefully putting away all used copies that come my way, providing they have a clear round postmark. Alas not many do have such a cancellation, but my collection is growing quite nicely, and I thoroughly recommend the idea, for the cost is infinitesimal, and if other "regionals" are issued, these early birds may be worth their keep.

And a final word. Just have a look at the watermark, with the crown only. Similar paper is to be used for all our stamps in future.

SOLUTIONS TO PUZZLES FOR BEGINNERS

The eight guests named in Fig. 1 on page 572 are: William, Frances, Hilary, Roderick, Hector, Raymond, Kathleen and Thelma.

When complete the Word Square in Fig. 2 reads: GALE; AMEN; LEND; ENDS.

The name of the town hidden in Fig. 3 is BARNSLEY and the industry mentioned is MINING.

Tracing the motor racing tracks in Fig. 4 is tricky, but you will find that there are SIX separate tracks.

On sorting out the letters in Fig. 5 you will discover that the famous person named is LORD NELSON.

The solutions to the Crossword Clues in Fig. 6 are as follows: ACROSS—Sad, Web, Christmas, Shot, Utte, Toe, Was, Son, YC, Santa, CD, Oats, Rook, S1, Birth (rev.), Oar, Pie (rev.), One, Stop, Sage, Elephants, Etc., SOS. DOWN—Shoe, Art, Di, WT, Emu, Bats, Chocolate, Scan, Santa, Sty, End, Waste, Strip, Sth, AOB, SOS, Rich, Tee, Role, Oats, Pet, Sn, PC, As.

When you have sorted out the mix-up of camp furniture in Fig. 7 you will know that the pile contains TEN tables and ELEVEN chairs.

Finding the correct way down the chimney in Fig. 8 is quite a job.

Fig. 9 is a much easier problem and the six vegetables —shown by letters—in Bunty's box are (top to bottom): Cauliflower, Artichoke, Asparagus, Cabbage, Spinach and Pea.

PLASTIC MODEL BUILDING

For those who enjoy building models of plastic material the Revell range of kits can be recommended. We have built up the Revell model of the U.S.A. battleship *New Jersey*, following the instructions provided with the kit for the construction of this battleship, and have had no difficulty in handling the parts and in completing the model itself, which is quite a handsome production.

All that is required in addition to the parts in the kits is the special cement needed to make the parts adhere well, but a sufficient quantity of this is included in certain kits.

GAMAGES 1959 BOOK OF MODEL TRAINS, SHIPS, AIRCRAFT, CARS, ETC.

This publication is a fully illustrated and very complete handbook, the scope of which is only briefly indicated in its title. The price is modest, yet the book deals in a comprehensive and an informative manner with miniature trains, particularly those made for Gauge 00 railways. Of course these include Hornby-Dublo Trains and there are facts and figures about the various makes available and some useful notes on the electrical systems and appliances in use.

In addition to ready-made models of cars and aircraft by different manufacturers there is a specially useful section dealing with the plastic kits for model construction that are so popular nowadays.

Useful hints on using the different items listed are included and, adding to the interest and providing some background to the various hobbies dealt with, there are numerous illustrated and other references to trains, cars and ships gathered from official sources.

Copies are available from Gamages Ltd., Holborn, London E.C.1, price 1/6 including postage.

The plaque at Louth, in Lincolnshire, that marks the position of the Greenwich meridian. Photograph by R. G. Avent, Southampton.

The Greenwich Meridian

Many of us, at some time, have stood astride the stone strip at Greenwich with one foot east of latitude 0° and the other foot west of it.

As far as I know the only other place where one could definitely stand with one foot east of the meridian and the other foot west is in Louth, Lincolnshire. In Eastgate in that town is the meridian mark seen in the accompanying picture. It was erected just over ten years ago.

Do any readers know of any other point where the Greenwich meridian is marked, or of any other town or village of which it can be said that it is on the meridian.

RONALD G. AVENT (Southampton)

From Our Readers

This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

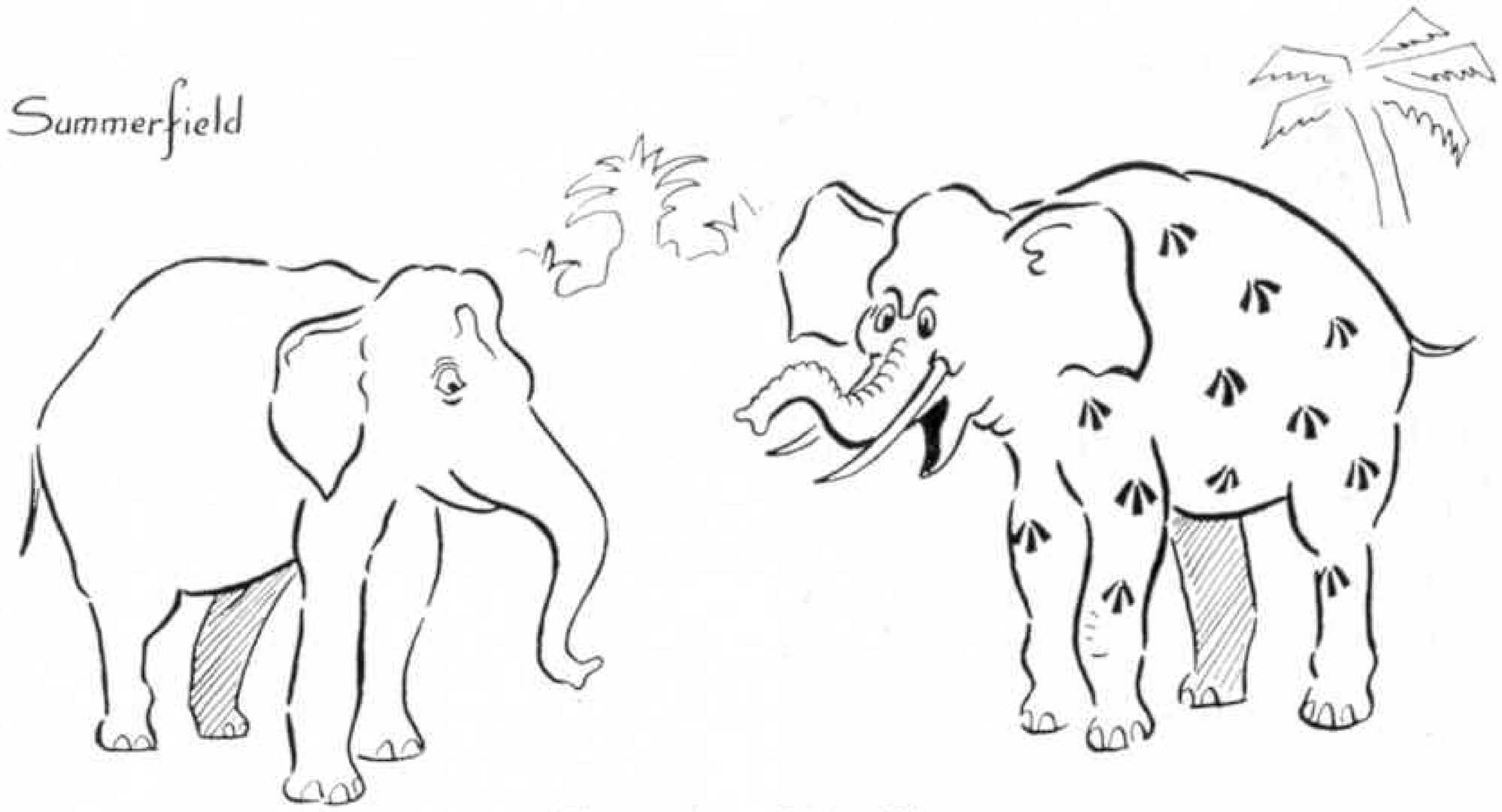
Tutbury Castle

While I was on holiday recently in Derbyshire, I visited the pleasant town of Tutbury, which is on the Staffordshire side of the River Dove. One of my objects was to see the ruins of the castle there.

The latter has had an eventful history. The present ruins are of the third castle, built by the second Earl of Lancaster in 1298. When fleeing from Edward II's army in 1298, this Earl dropped a chest full of treasure into the River Dove, and in the 1830's some 150,000 silver pennies were recovered. Mary Queen of Scots was imprisoned here on two occasions, and the castle was captured by Oliver Cromwell in 1646. In the following year, there was mentioned in a local inventory: *To 15 men for pulling down Tutbury Castle*—£2 18*s*. 4*d*.

J. A. FLEMING (Hampstead Heath)

Tutbury Castle, on the Staffordshire bank of the River Dove. Photograph by J. A. Fleming, Hampstead Heath.



"I'm a rogue elephant!"

Fireside Fun

Johnny was the centre of an admiring crowd after he had rescued a playmate from an icy pond.

"You splendid lad," exclaimed one woman. "Tell us how you came to be so brave and save your friend."

"I had to," said Johnny. "He was wearing my skates!"

* * * *

Schoolmaster: "Is this essay your own work, Carson?"

Scholar: "Not entirely, sir. Father did the rough draft and I knocked it into shape."

* * * *

The little boy was attending the Christmas Carol service for the first time, and he stared at the surpliced choir with his eyes popping out.

"Daddy," he whispered, "are they all going to have their hair cut?"

* * *

"Gosh, it was so freezing last night I couldn't sleep. I just lay in bed and shivered."

"Did your teeth chatter?"

"I don't know—we don't sleep together."

* * * *

Diner (sarcastically to second diner who is smoking a cigar at the same table):

"I do hope you don't mind my eating while you smoke?"

Second Diner: "Not at all, provided I can still hear the band."

* * * *

A girl of five was asked by the family about her first day at school.

"I was the prettiest child there," she replied.

"Who said so?" asked her mother.

"Well, I was there. I could see the others."

FUN FOR YOUR CHRISTMAS PARTY

A Match Puzzle

Give each of your friends 3 matches and ask them to make a triangle Now give them 3 more matches and ask them to make seven additional triangles without altering the size or shape of the original triangle.

* * * *

TANGLED TEACHERS

At a School there are five masters, whose names are Mr. English, Mr. French, Mr. Grammar, Mr. Science, and Mr. Music. Each master teaches two subjects, neither of which corresponds to his name.

Mr. Grammar plays bridge with the two English masters. Mr. Music is married to the sister of one Science master; his own sister is married to the other. Mr. English knows no French. Mr French knows no Music. Mr. Science spent last holidays with the two Grammar masters. The teaching of one subject is shared by Mr. Grammar and Mr. Music. French is not taught by the namesake of a subject taught by Mr. French.

French and Science lessons take place at the same time.

Who teaches what?

* * * *

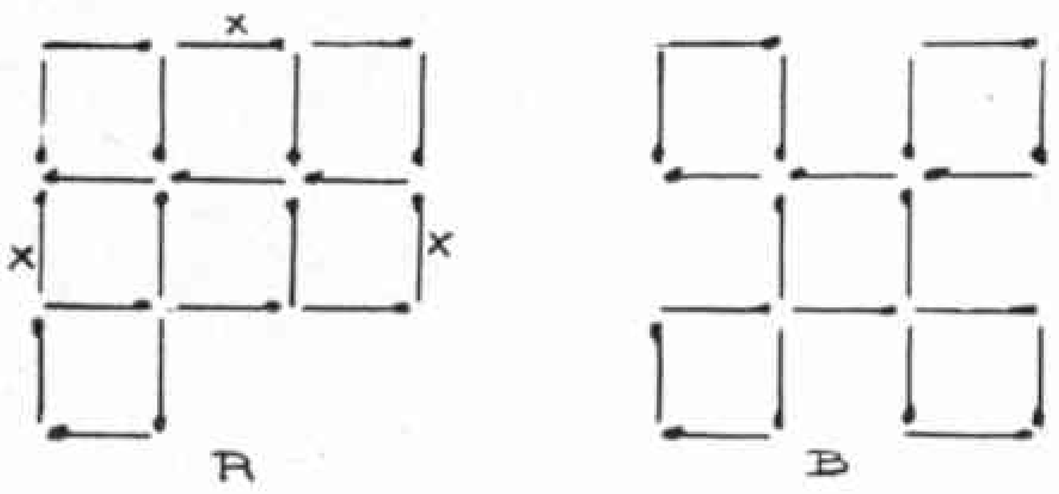
ANSWERS TO LAST MONTH'S PUZZLES

A Curious Word

An English word that reads the same, backwards and forwards and upside down is NOON. No doubt you found this one quite easy.

The Match Puzzle

The solution to the Match Puzzle is shown in the sketches below. The three matches marked X in Sketch "A" are moved and re-arranged as shown in Sketch "B".



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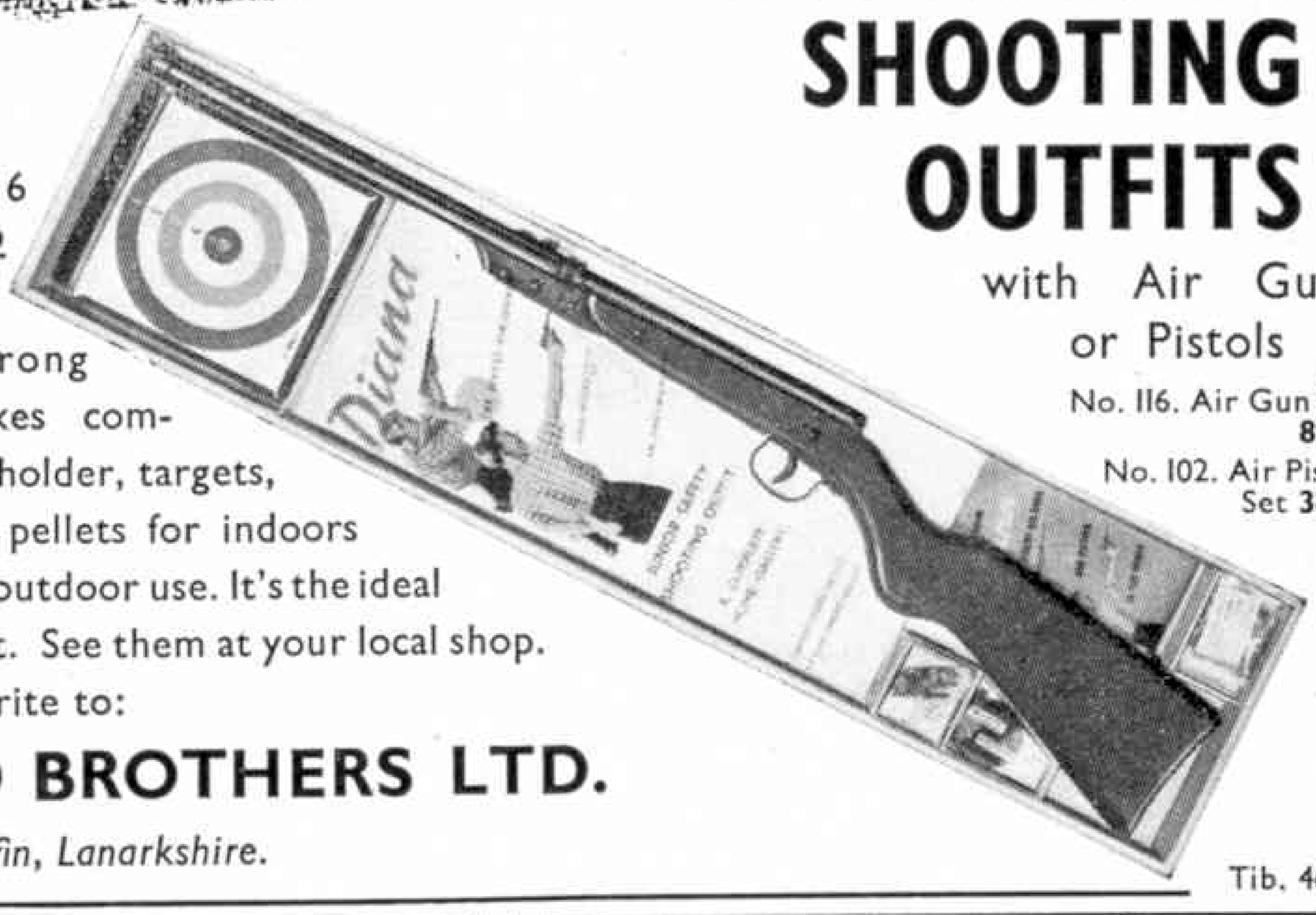

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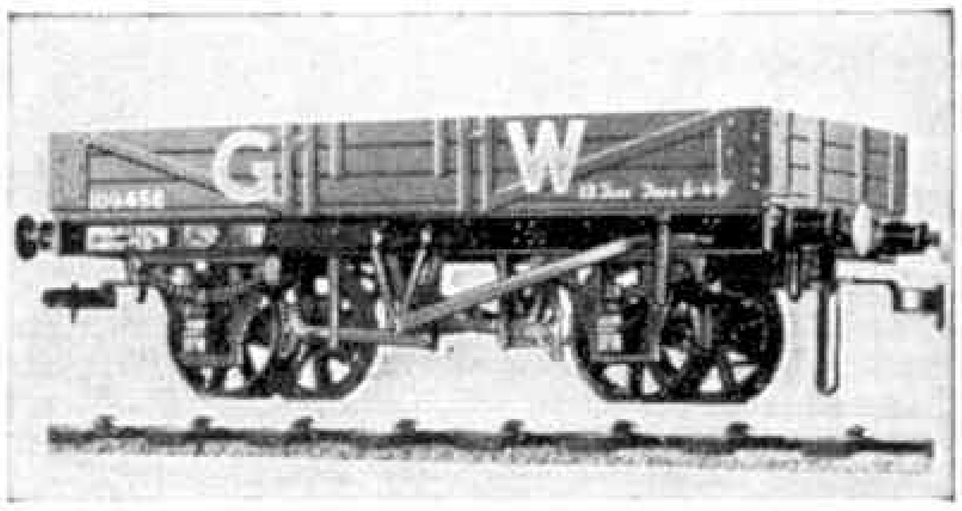

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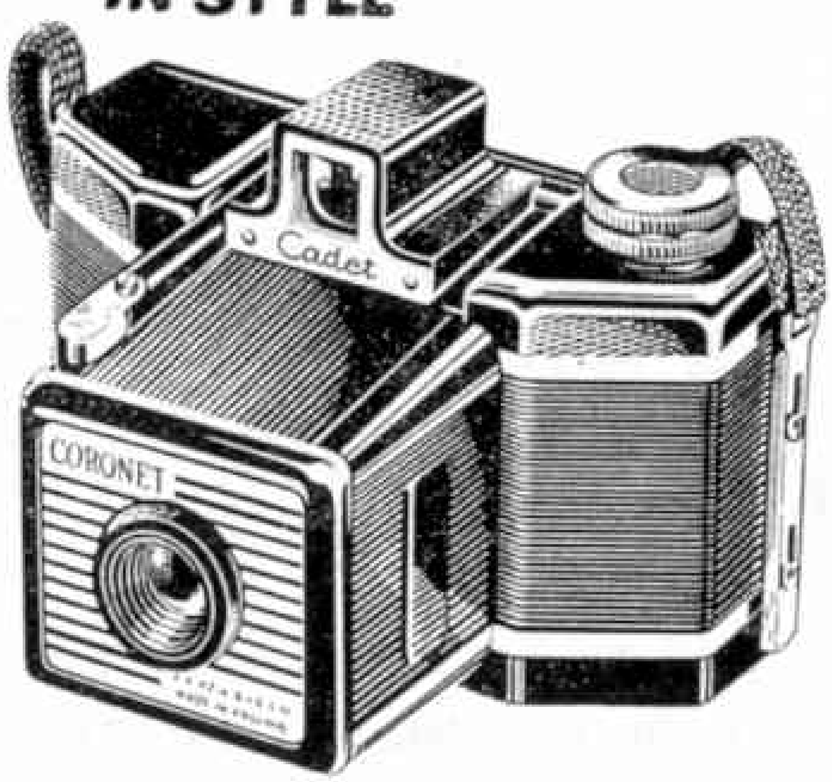

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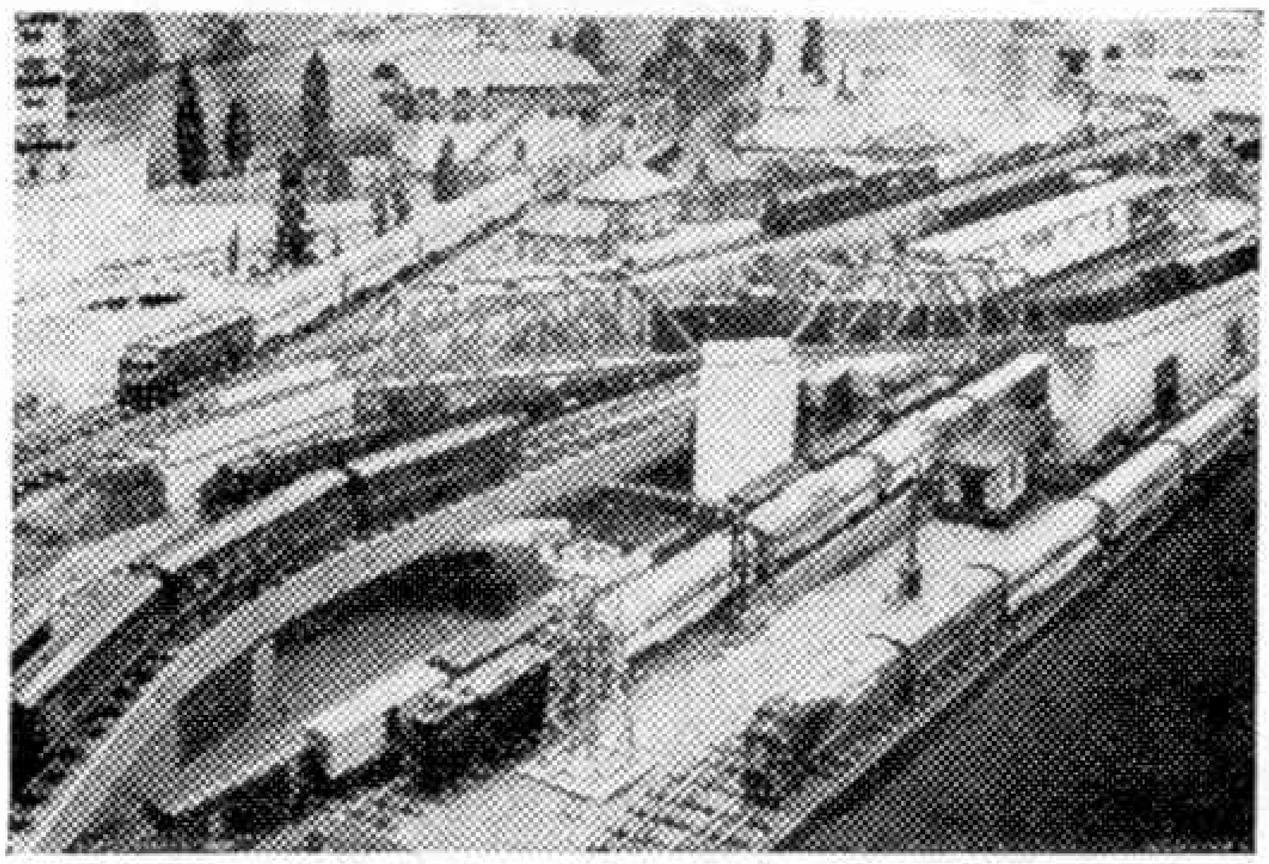

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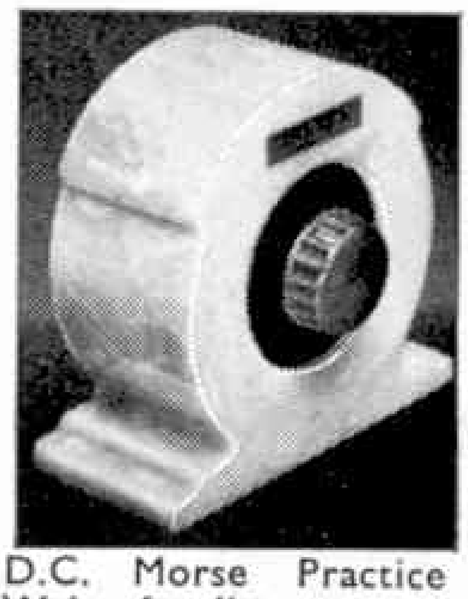

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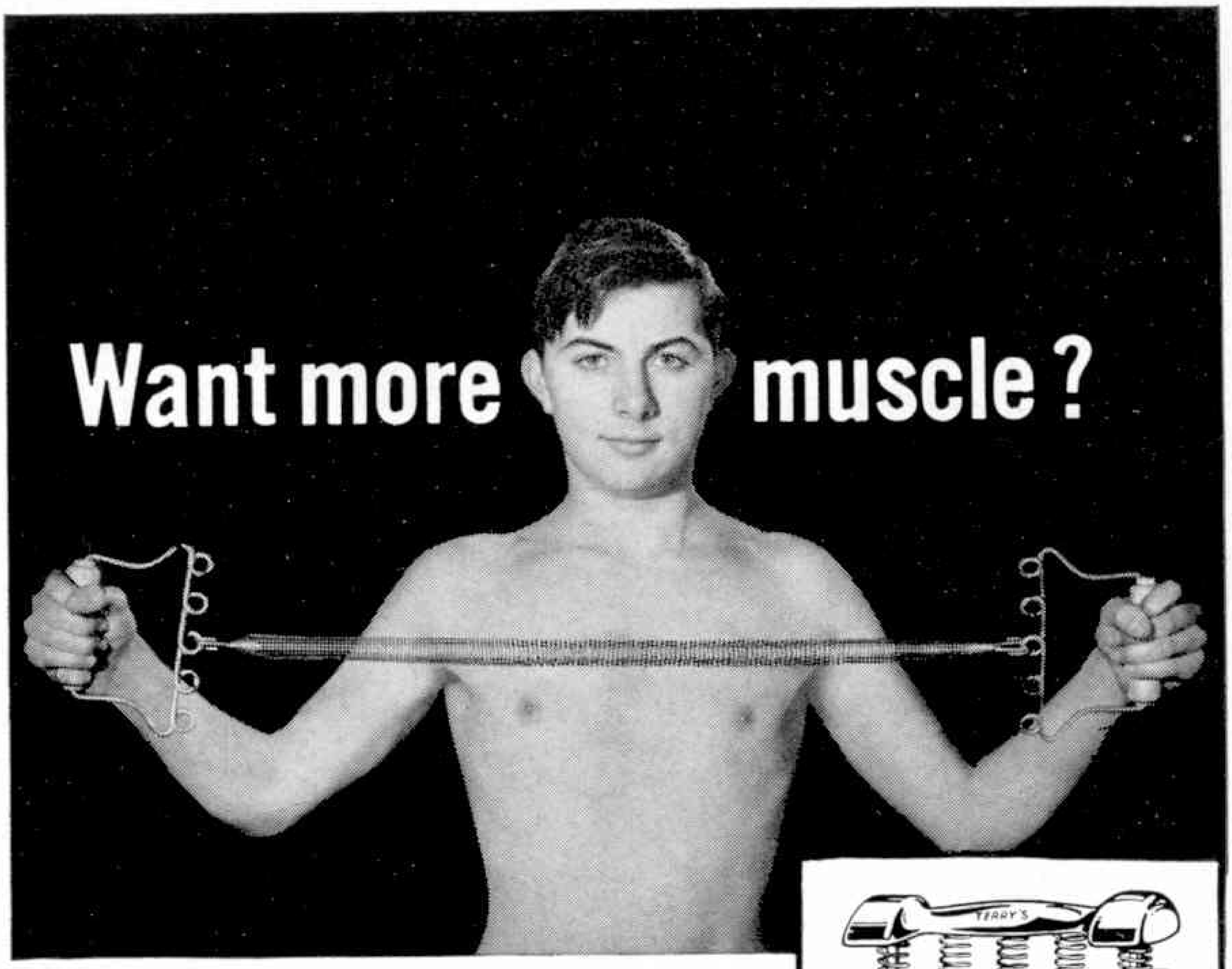

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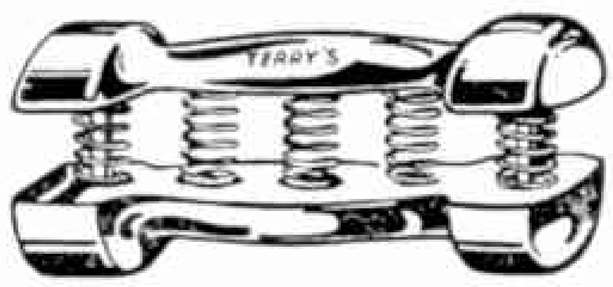

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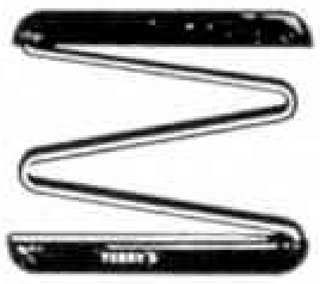

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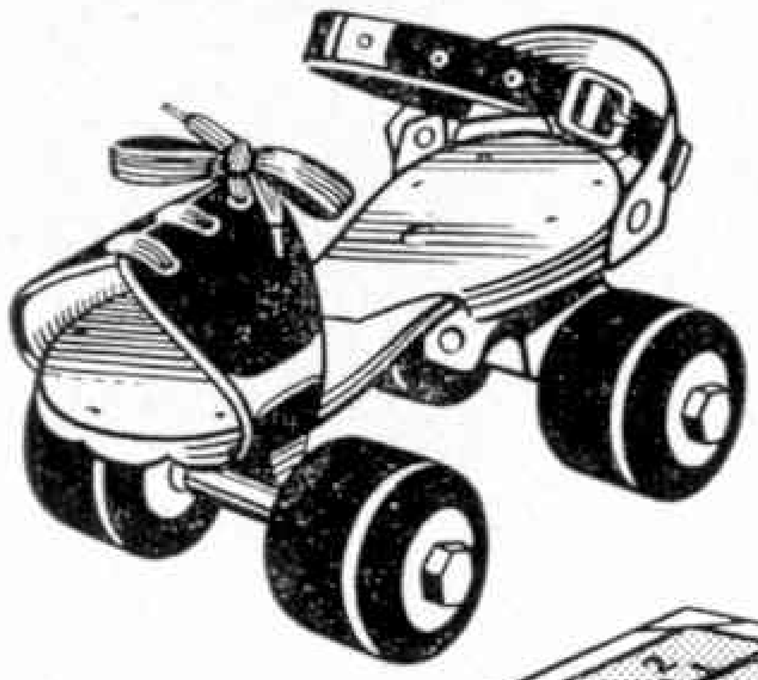

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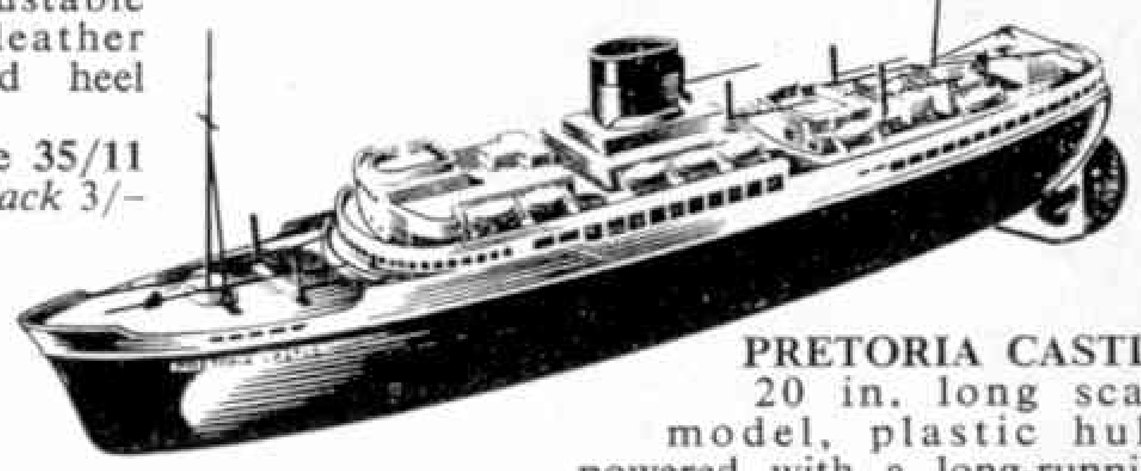

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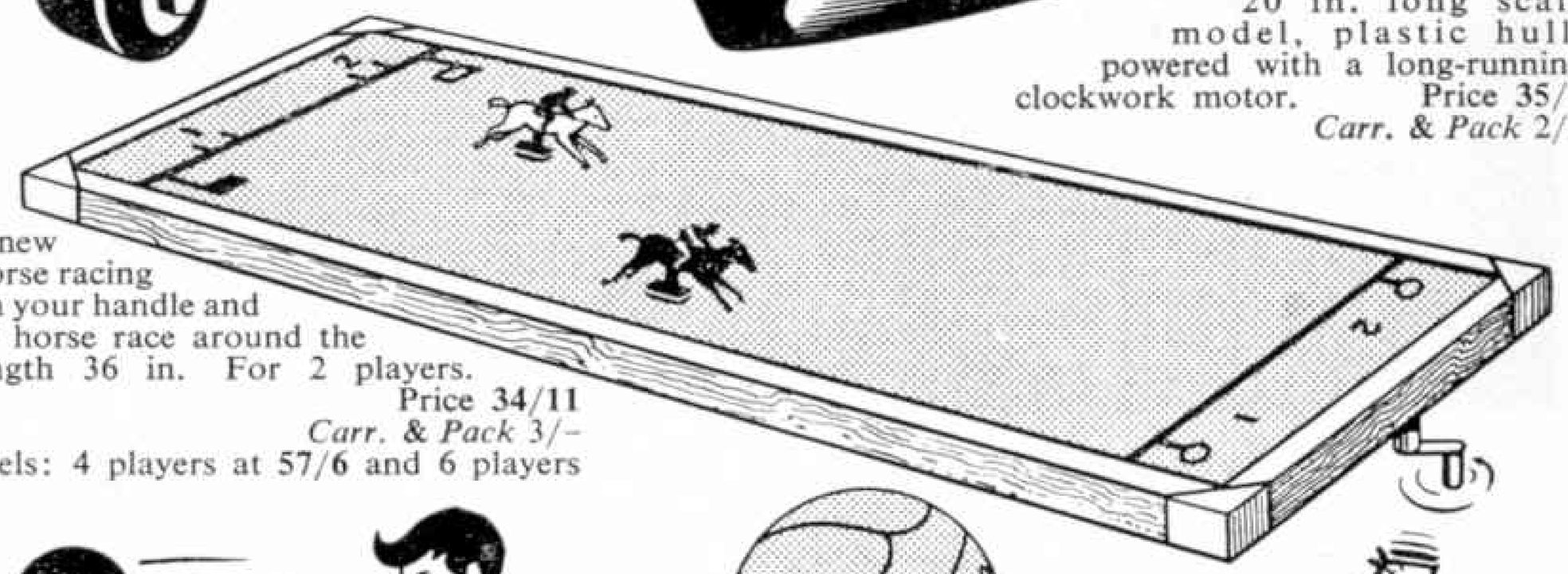

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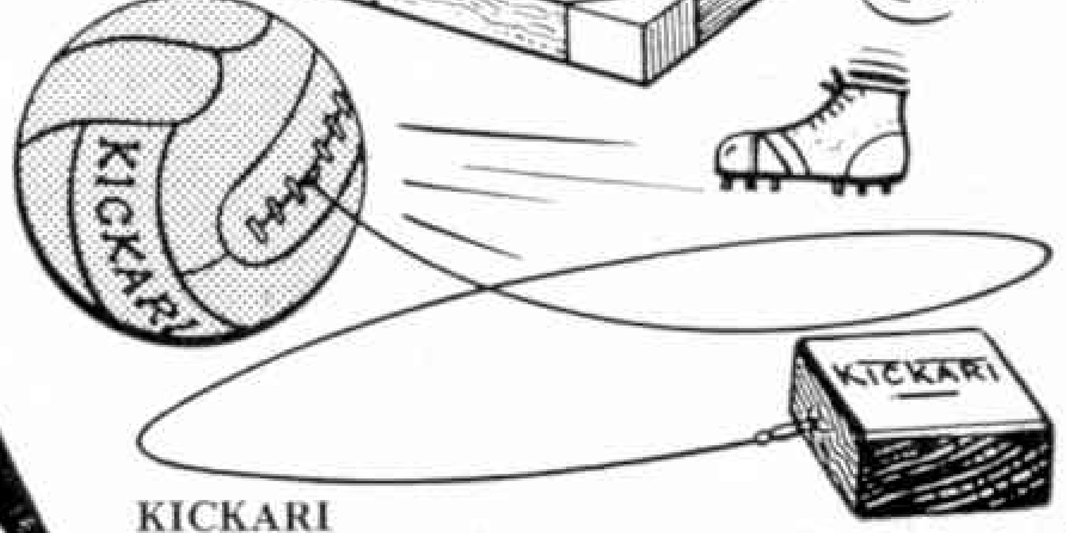

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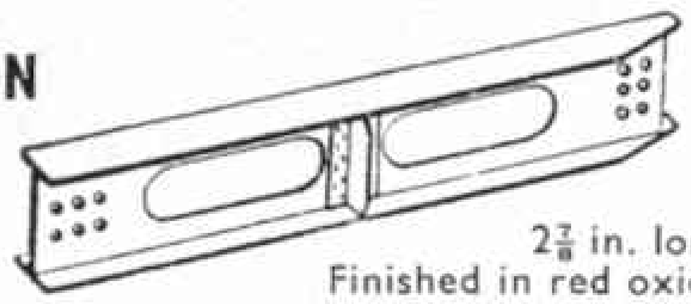

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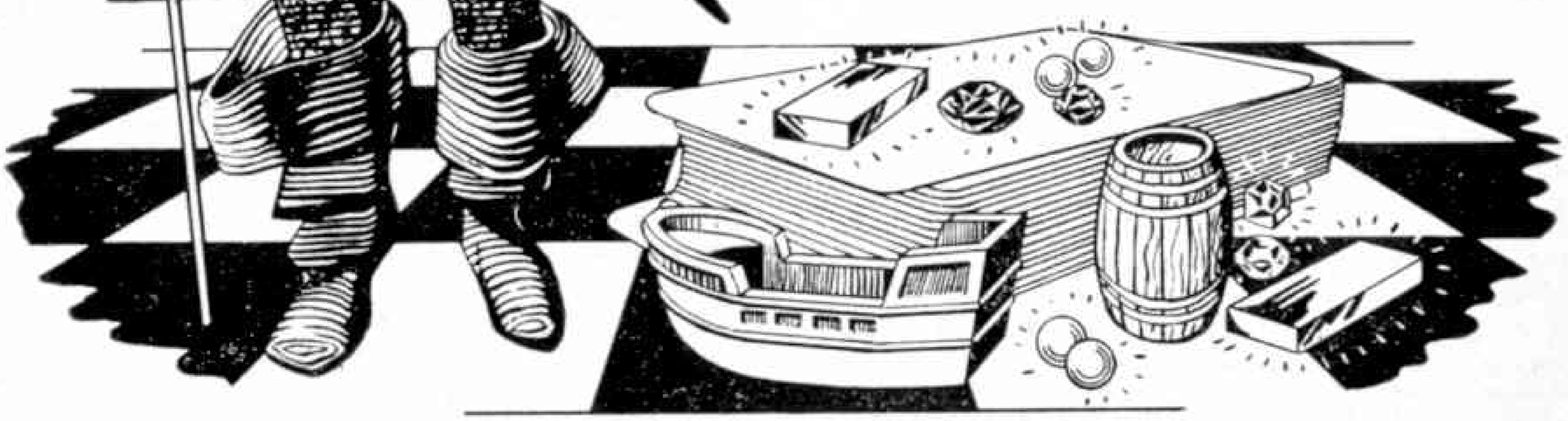

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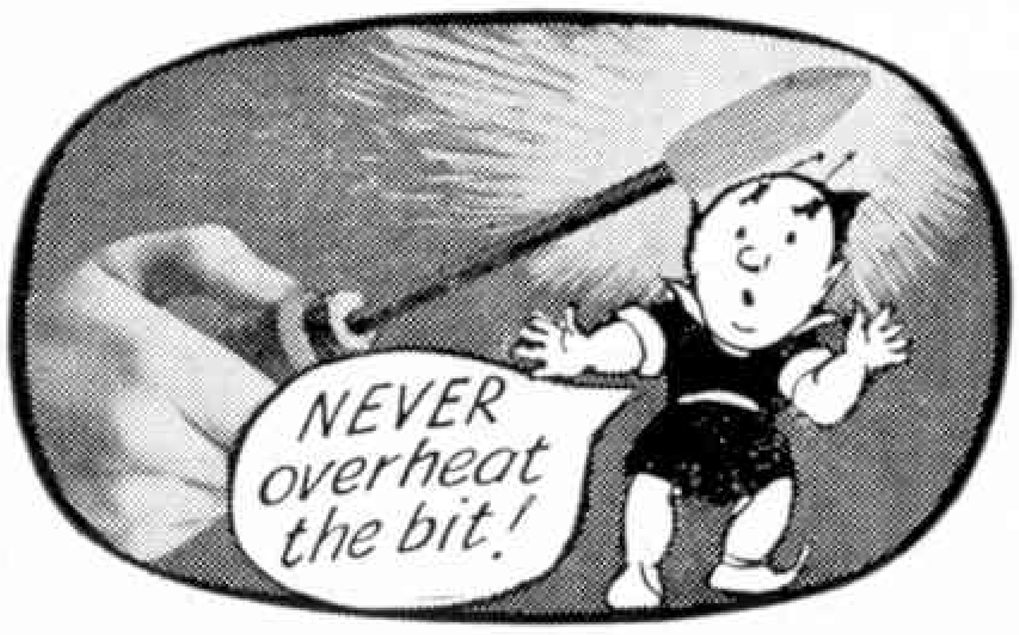

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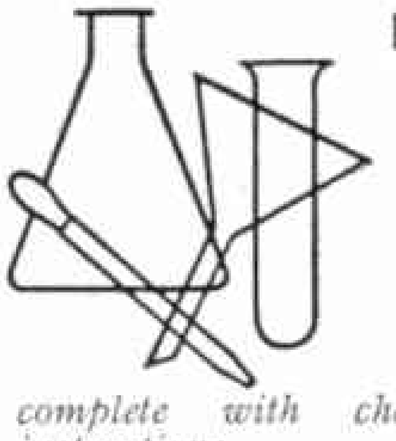

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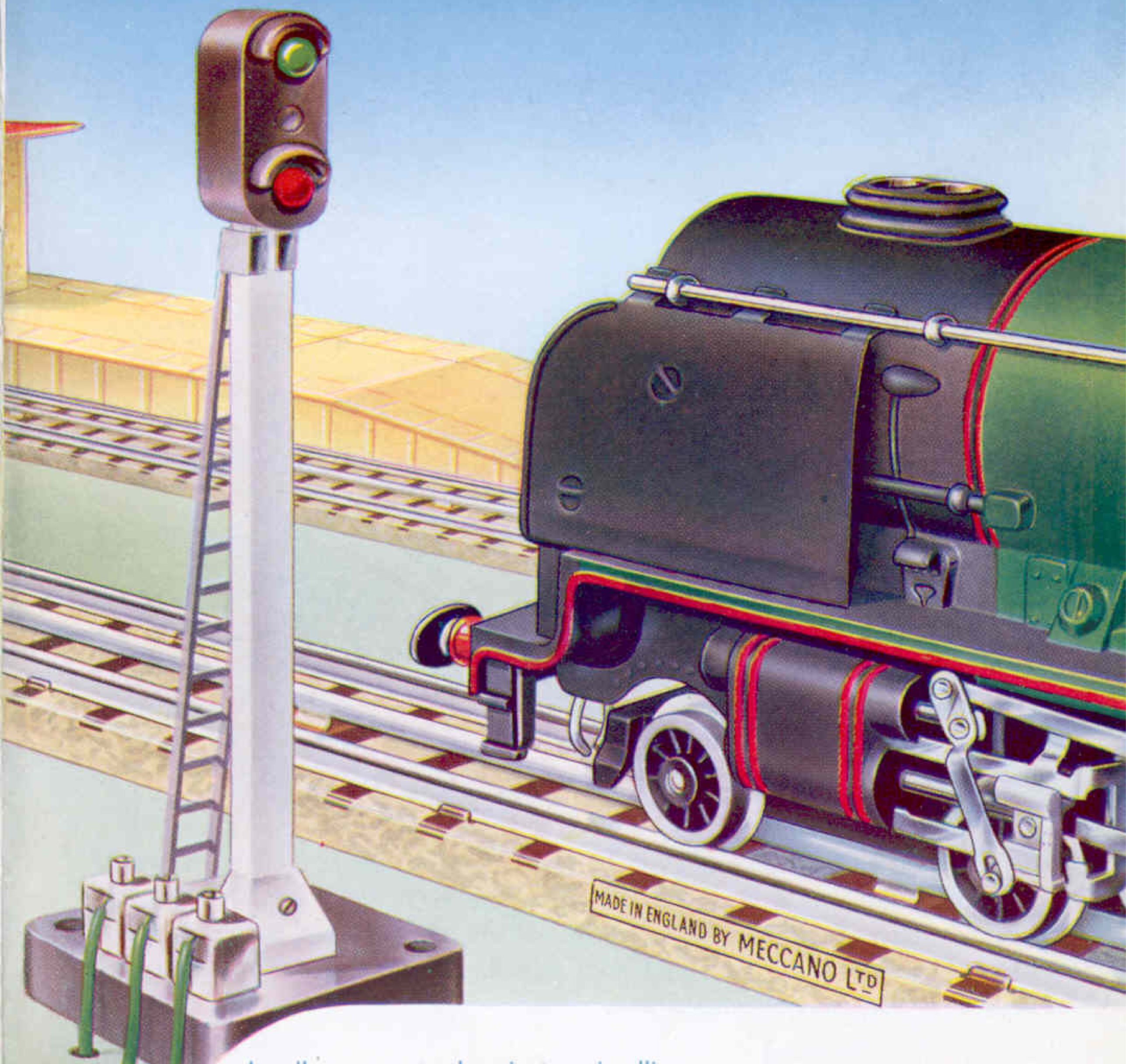

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MODEL OF THE MONTH.

MOBILE CRANE.

Illustrated in the December, 1958, issue of the Meccano Magazine.

Construction of the Chassis.

Each side of the chassis is made up from two 12½" Angle Girders joined together at each end by Fishplates. The sides are then connected together at each end by 3½" Angle Girders. The front wheel axle, a 6½" Rod, is mounted in two Trunnions bolted to the sides of the chassis and carries a 1½" Contrate 1 and a Short Coupling 2, which is free on the shaft and is spaced from the Contrate by three Washers. A Collar is used to retain the Coupling in place.

The road wheels are 2" Pulleys fitted with Tyres, and 1⅛" Flanged Wheels are used to form hub caps.

A 6½" Rod is mounted in a hole of the 3½" Angle Girder 4 and in a 3½" x ½" Double Angle Strip 5 bolted across the chassis in the position shown in the illustrations. This Rod carries a 57-teeth Gear 6 and at its inner end is joined by a Universal Coupling to a 2" Rod that carries a ½" Pinion that meshes with Contrate 1 and is journalled at its front end in the longitudinal bore of the Short Coupling mounted on the front axle.

The rear wheels are mounted in a pivoted castor unit that is steerable from the cab. The castor is mounted on a 1½" Rod that is journalled in the 3½" Strip 7 and in a similar Strip bolted across the lower 12½" Angle Girder of the chassis.

The castor unit itself consists of a Channel Bearing 8 bolted to a Face Plate fixed on the 1½" Rod already mentioned. The wheels are 1" Pulleys with Rubber Rings and are fixed on a 1½" Rod passed through the Channel Bearing. A made-up strip 9 consisting of two 5½" Strips overlapped two holes serves to connect the Face Plate of the castor unit to a 57-teeth Gear 10 mounted on the lower end of the steering column 3. The latter is a 4½" and a 1½" Rod joined by a Short Coupling, and is mounted in a 3½" Strip 11 and in a hole in the 5½" x 2½" Flanged Plate 12 that forms the floor of the driving cab. The back of the cab consists of a 2½" x 5½" Flexible Plate, a 2½" x 1½" Flexible Plate and two Semi-Circular Plates. It is important to note that at the back of the 2½" x 5½" Flexible Plate an Angle Bracket 13 is bolted on each side. These are used for attaching the body as explained later.

The Mechanism.

The crane has the following movements: raising and lowering of the jib, controlled by lever 14, raising and lowering of the load, controlled by lever 15, and a reversible travelling movement along the ground, controlled by lever 16.

The mechanism that operates these movements is housed in a casing formed by two 3½" x 2½" Flanged Plates connected at each end by two 2½" Strips bolted in the top two holes of their flanges, and by a further two 2½" Strips bolted in the bottom two holes.

Lever 14 is lock-nutted to a Double Bracket, which is bolted to the upper 3½" Angle Girder at the front of the chassis, and a 4½" Strip is attached by lock-nuts to the lever. The other end of the 4½" Strip is lock-nutted to a Crank. The boss of the Crank is mounted freely on a 4½" Rod so that it is free to swivel. A 2½" Strip is bolted to the Crank in such a manner that the Rod passes through the end hole of the Strip. A ⅜" Bolt in the other end hole of the 2½" Strip engages between two Collars fixed on a sliding Rod journalled in the side of the mechanism casing. Also mounted on the Rod are two ½" Pinions 17 and 18. When the lever 14 is moved forward the Pinion 17 engages with a Worm mounted on a 4½" Rod 19. The rear Pinion 18 is in constant mesh with a ½" diam. ½" face Pinion 20. This Pinion engages with a ¾" Contrate that is mounted on a 1½" Rod. The 1½" Rod is journalled in a 2½" x 1" Double Angle Strip and a Double Bent Strip as shown and it is connected to a 3" Rod by a Universal Coupling 21. A Short Coupling 22 is fixed at the top of the 3" Rod and a 5" Screwed Rod 23 is held in the Short Coupling. The Screwed Rod passes through the centre transverse bore of a Coupling 24 that is held on two 2" Rods mounted in the sides of the jib.

With the lever 14 in the forward position the jib is raised. Movement of the lever to the rear causes the jib to be lowered due to Pinion 18 being brought into mesh with the Worm 25.

Lever 15 is similar in construction to lever 14 except that the 4½" Strip is lock-nutted to the lower hole of a Crank. A bolt fastened in the slotted hole of the Crank engages between two Collars mounted on a Rod journalled in the mechanism casing. Two Pinions 26 and 27 are also mounted on the Rod and when the lever 15 is pulled forward the Pinion 26 is driven by one of two Worms that are fixed on Rod 19. Pinion 27 is in constant engagement with a ½" diam. ½" face Pinion 28 which drives the 57-teeth Gear 6. Thus the vehicle is driven in a forward direction. When the lever is pulled backward the action is reversed.

The arrangement of lever 16 is similar to that of the other two and the 4½" Strip is lock-nutted to a Crank to which is bolted a 2" Strip. A Fishplate 29 is bolted to the top of the 2" Strip and engages between the ends of a winding drum 30 consisting of two Bush Wheels arranged boss to boss on a sliding Rod 31 as shown. Also mounted on the Rod are two ½" Pinions 32 and 33.

When the lever 16 is moved forward the Fishplate 29 bears against the winding drum and slides the Rod longitudinally, thus bringing a Pinion 32 into engagement with a Worm 34 mounted on the Rod 19, and the cord is paid out. When the lever is moved rearward the other Pinion 33 engages with a Worm 35 mounted on the input shaft 36.

A brake is provided by a Collar 37 pressing against the winding drum 30. It consists of a $3\frac{1}{2}$" Rod mounted in the lugs of a $2\frac{1}{2}$" x $\frac{1}{2}$" Double Angle Strip. The $3\frac{1}{2}$" Rod passes through the longitudinal bore of the Coupling 38 in which is held a 1" Rod. The Collar 37 is mounted on this 1" Rod. A $1\frac{1}{8}$" Bolt held in a Collar mounted on the $3\frac{1}{2}$" Rod, is held by elastic against the side of the $3\frac{1}{2}$" x $2\frac{1}{2}$" Flanged Plate so that the Collar 37 presses against the winding drum.

The Motor used in thismodel is an E020(S) Electric non-reversing Motor.

The Jib and its Supporting Framework.

The supporting tower for the jib is made up of two $9\frac{1}{2}$" Angle Girders bolted to the rear flange of the Flanged Plate that forms the floor of the cab. These two Angle Girders are joined together by a $3\frac{1}{2}$" Angle Girder and they are also connected by Trunnions to a pair of $7\frac{1}{2}$" Angle Girders 39 arranged as shown. Two crossed $5\frac{1}{2}$" Strips brace the framework at the rear, and to each side a $5\frac{1}{2}$" and a $3\frac{1}{2}$" Strip is bolted.

The top of the jib consists on each side of two pairs of $12\frac{1}{2}$" Strips bolted together overlapping eleven holes to form a built up strip $19\frac{1}{2}$" long. The two pairs of $12\frac{1}{2}$" Strips are connected at the jib head by a $1\frac{1}{2}$" x $\frac{1}{2}$" Double Angle Strip, and the bolts hold also Fishplates. The $19\frac{1}{2}$" built up strips are spaced apart by two $2\frac{1}{2}$" x $\frac{1}{2}$" Double Angle Strips. Each side of the lower jib member consists of a $12\frac{1}{2}$", $2\frac{1}{2}$" and a $5\frac{1}{2}$" Strip. They are joined at the jib head by a $1\frac{1}{2}$" x $\frac{1}{2}$" Double Angle Strip, the holding bolts passing also through the free holes of the Fishplates. At the rear the sides of the jib are spaced apart by a $2\frac{1}{2}$" x $1\frac{1}{2}$" Flanged Plate. The jib is braced by Strips of various sizes arranged as indicated.

The jib pivots on a 5" Rod mounted in the Flat Trunnions at the top of the framework and is held in position by two 1" Pulleys. A $\frac{1}{2}$" loose Pulley is also mounted on the Rod and is kept in a central position by Spring Clips. A 1" loose Pulley is mounted on a 2" Rod at the jib head. The Rod is held in place by Spring Clips.

The Bodywork.

The bodywork of the model is made up of Flexible Plates, Flat Plates and Triangular Flexible Plates of various sizes and its details can be seen in the main illustration.

The body should be built up as a separate unit and then bolted in place on the chassis after the latter is completed. It should be noted however that to enable the body to be manoeuvered into position the Plates 40 should be added afterwards.

The body when in position is bolted to the Angle Brackets 13 fixed at the back of the cab on each side and is also bolted to the rear of the chassis.

Parts required to build the Mobile Crane:-

8 of No. 1; 14 of No. 2; 5 of No. 2a; 11 of No. 3; 2 of No. 4; 11 of No. 5; 5 of No. 6; 4 of No. 8; 2 of No. 8a; 2 of No. 8b; 2 of No. 9a; 5 of No. 9b; 3 of No. 9d; 7 of No. 10; 1 of No. 11; 3 of No. 12; 2 of No. 12c; 2 of No. 14; 3 of No. 15; 4 of No. 15a; 1 of No. 15b; 3 of No. 16; 1 of No. 16a; 2 of No. 16b; 2 of No. 17; 5 of No. 18a; 1 of No. 18b; 2 of No. 20; 4 of No. 20a; 5 of No. 22; 1 of No. 22a; 1 of No. 23; 2 of No. 24; 7 of No. 26; 2 of No. 26a; 1 of No. 26c; 4 of No. 27a; 1 of No. 28; 1 of No. 29; 4 of No. 32; 4 of No. 35; 234 of No. 37a; 220 of No. 37b; 15 of No. 38; 1 of No. 40; 1 of No. 45; 1 of No. 46; 2 of No. 48; 3 of No. 48a; 1 of No. 48b; 2 of No. 51; 1 of No. 52; 1 of No. 52a; 2 of No. 53; 2 of No. 53a; 1 of No. 57c; 28 of No. 59; 3 of No. 62; 2 of No. 63; 3 of No. 63d; 1 of No. 80b; 4 of No. 90a; 1 of No. 109; 3 of No. 111c; 1 of No. 111d; 4 of No. 124; 2 of No. 125; 4 of No. 126a; 2 of No. 133a; 2 of No. 140; 2 of No. 142a; 2 of No. 155; 1 of No. 160; 1 of No. 186; 1 of No. 186a; 4 of No. 188; 4 of No. 189; 4 of No. 190; 2 of No. 191; 9 of No. 192; 1 of No. 198; 6 of No. 200; 2 of No. 214; 2 of No. 215; 4 of No. 221; 2 of No. 222; 1 E020(S) Electric Motor.