VOL. XLVII. No. 2 FEBRUARY 1962

MECCANO MAGAZINE

1/3

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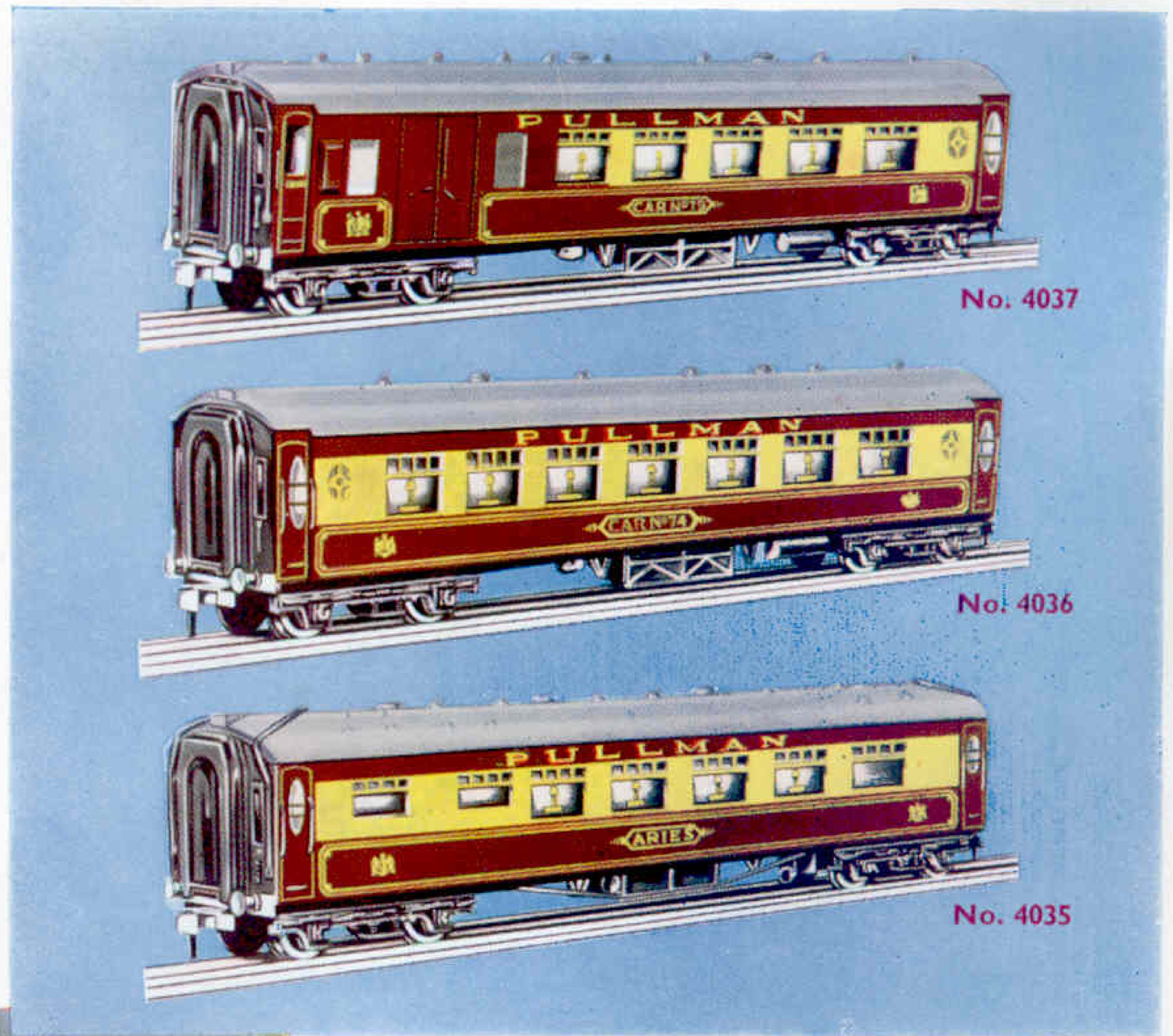

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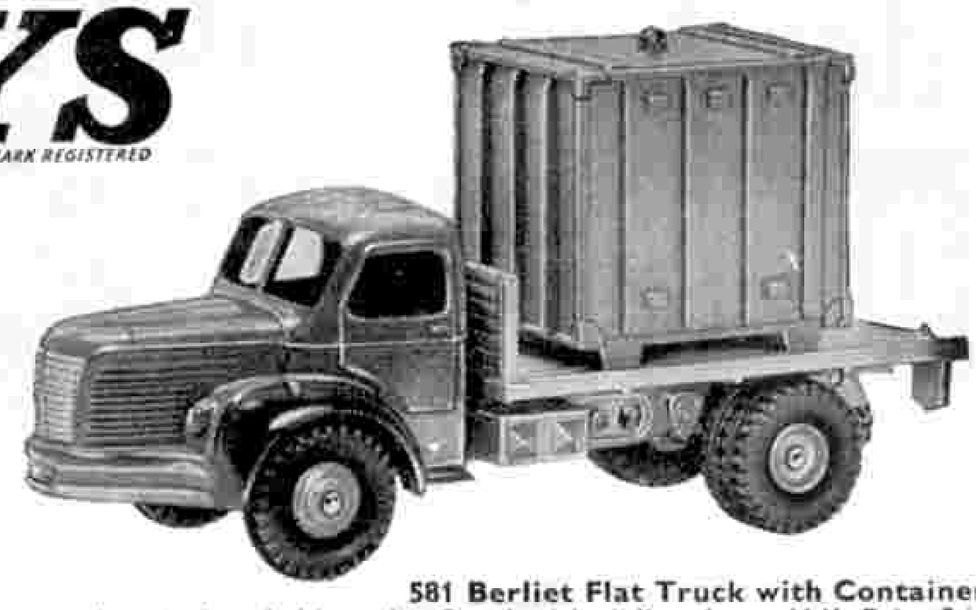
A separate range of Dinky Toys is made by Meccano (France) in Paris. Several of these French models have been imported into the U.K., and they are illustrated here. Ask your Dinky Toys dealer to show them to you.

★ ★ ★



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579 Simca Glaziers Lorry
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846

847

849

850

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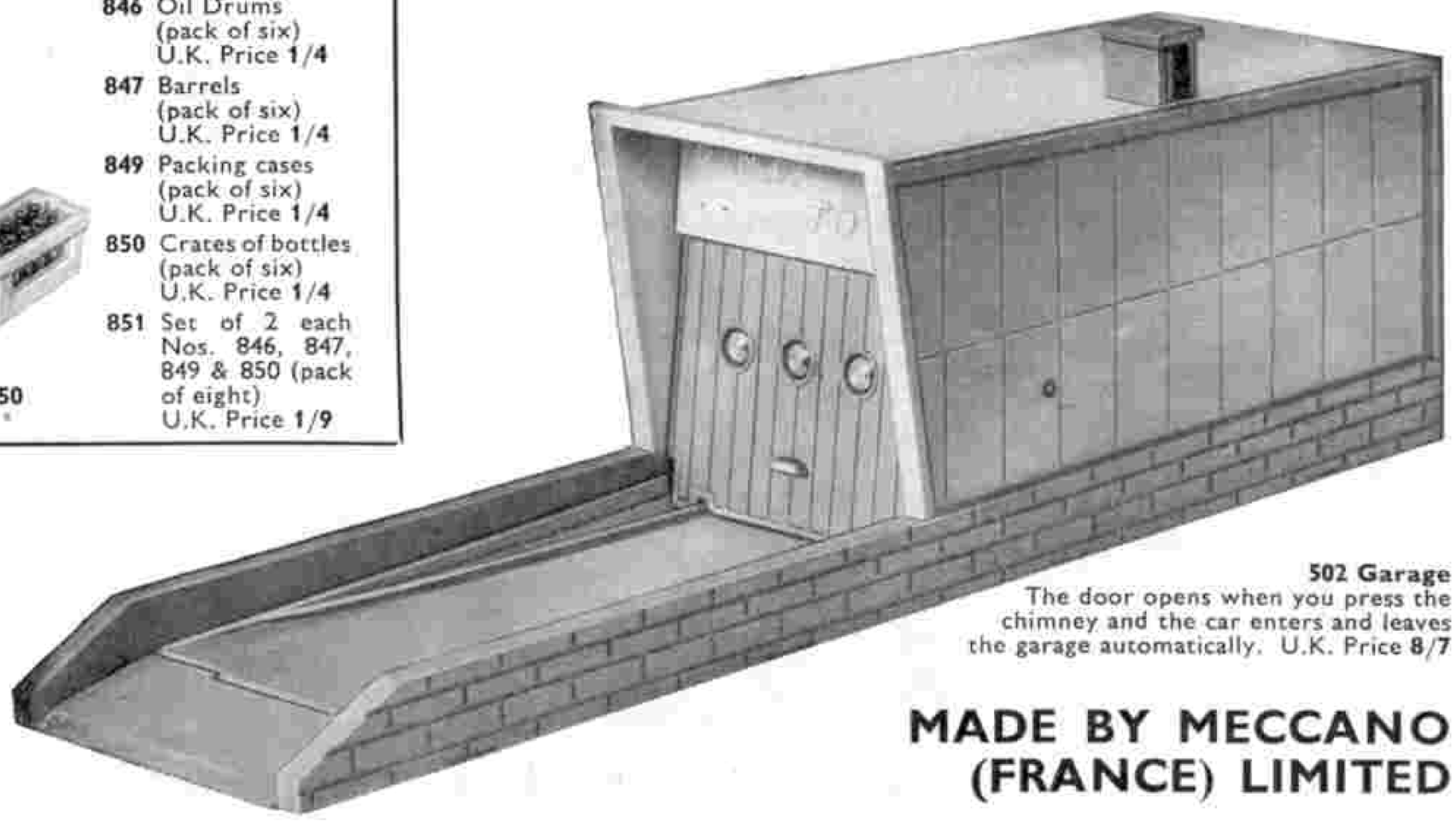
850 Crates of bottles (pack of six) U.K. Price **1/4**

851 Set of 2 each Nos. 846, 847, 849 & 850 (pack of eight) U.K. Price **1/9**



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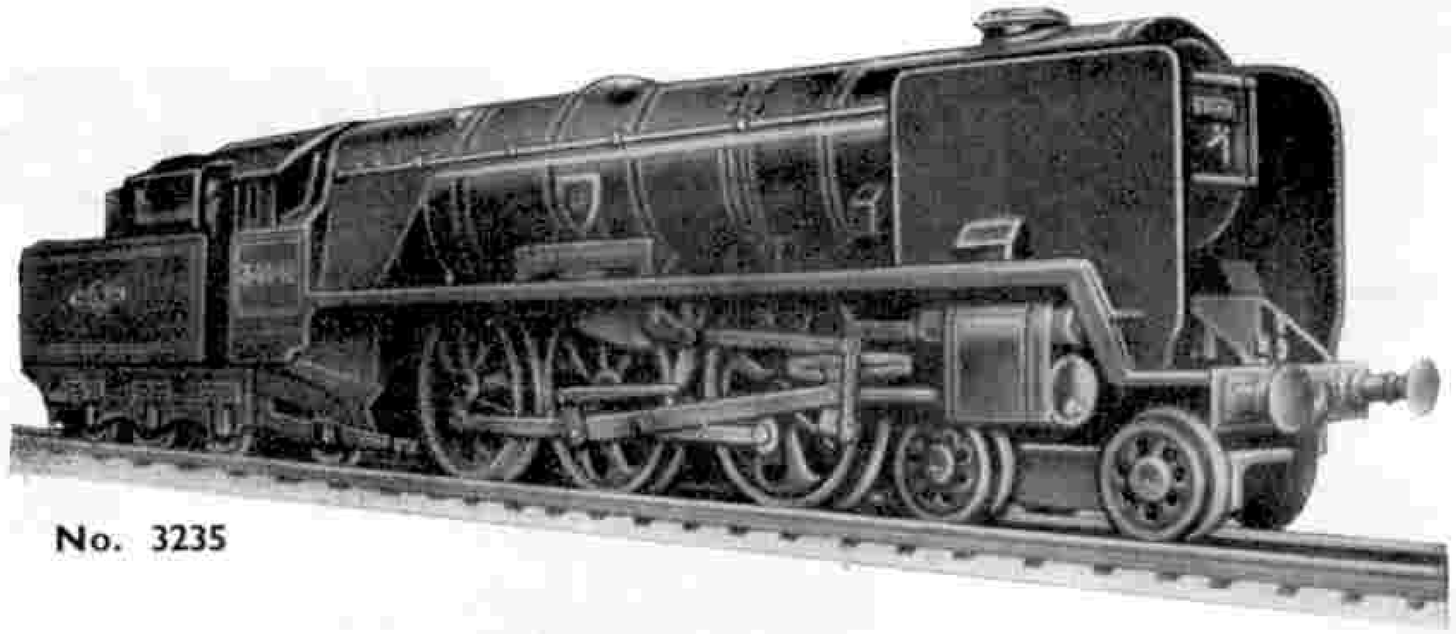

No. 3235

No. 3235 West Country Class 4-6-2 Locomotive and Tender "Dorchester" (Three-Rail)

The Three-Rail version of the rebuilt West Country Locomotive represents No. 34042 "Dorchester". An imposing engine, with characteristic wheels and outside valve motion. Fitted with Ring Field Motor. U.K. Price **£5.16.6**

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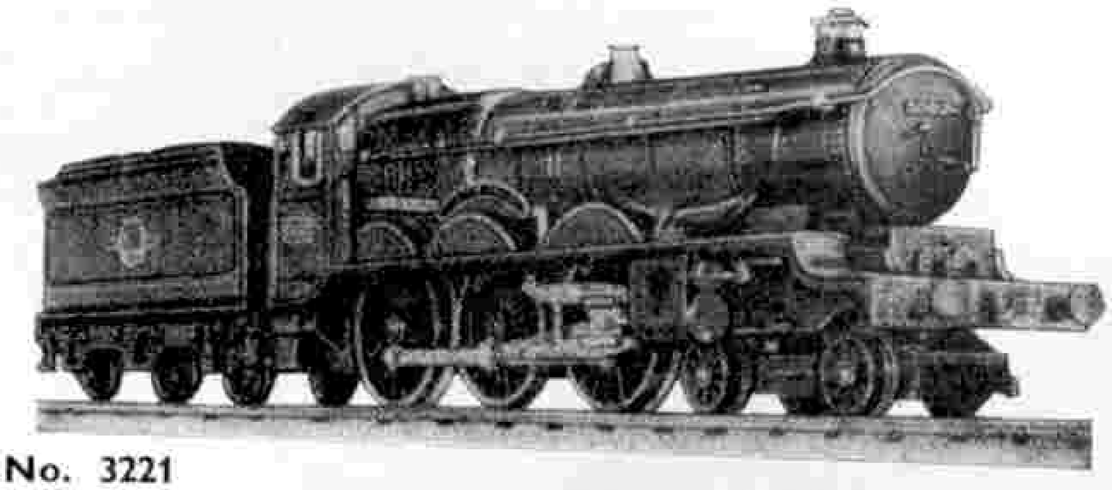
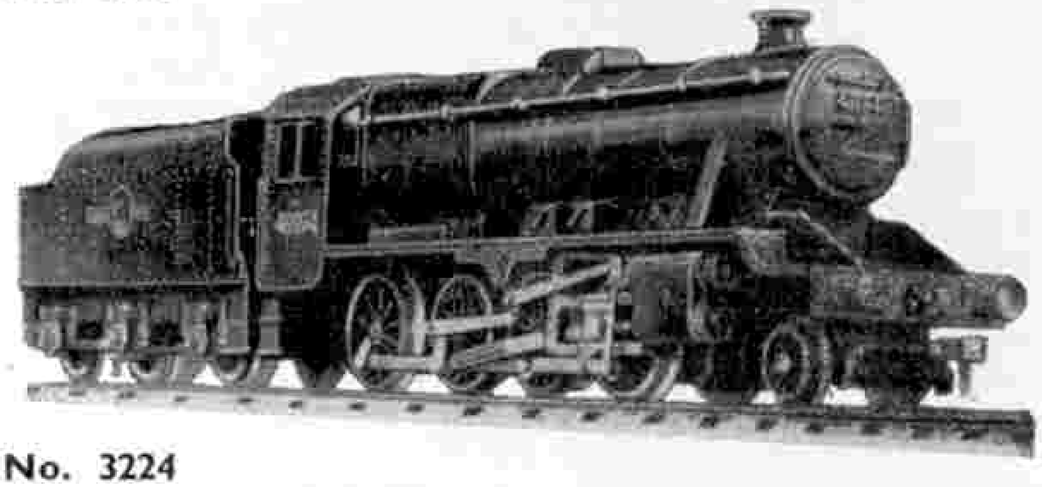


No. 3221

No. 3224 2-8-0 8F Goods Locomotive and Tender (Three-Rail)

This is the latest version of the Hornby-Dublo L.M.R. 2-8-0 in Three-Rail and is fitted with the remarkable Ring Field Motor. The Locomotive and Tender bodies are die-cast in stout metal and the engine now represents L.M.R. No. 48094. U.K. Price **£4.12.6**



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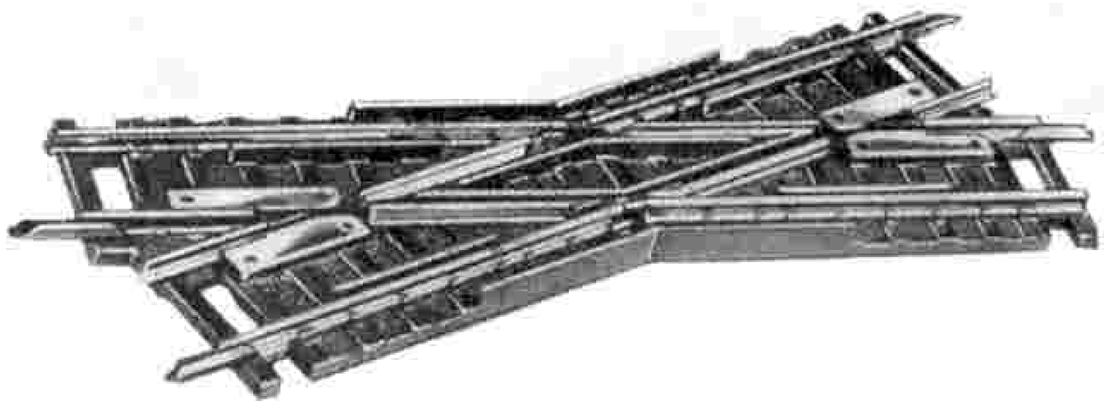

No. 2734 Diamond Crossing (Right-Hand) U.K. Price **11/9**
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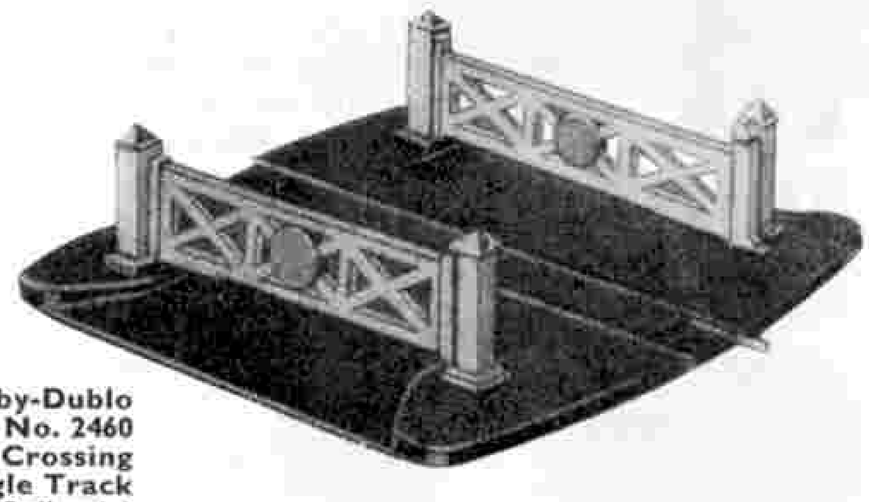

Hornby-Dublo No. 2460 Level Crossing Single Track
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Dublo Dinky Toys No. 052 Railway Passengers
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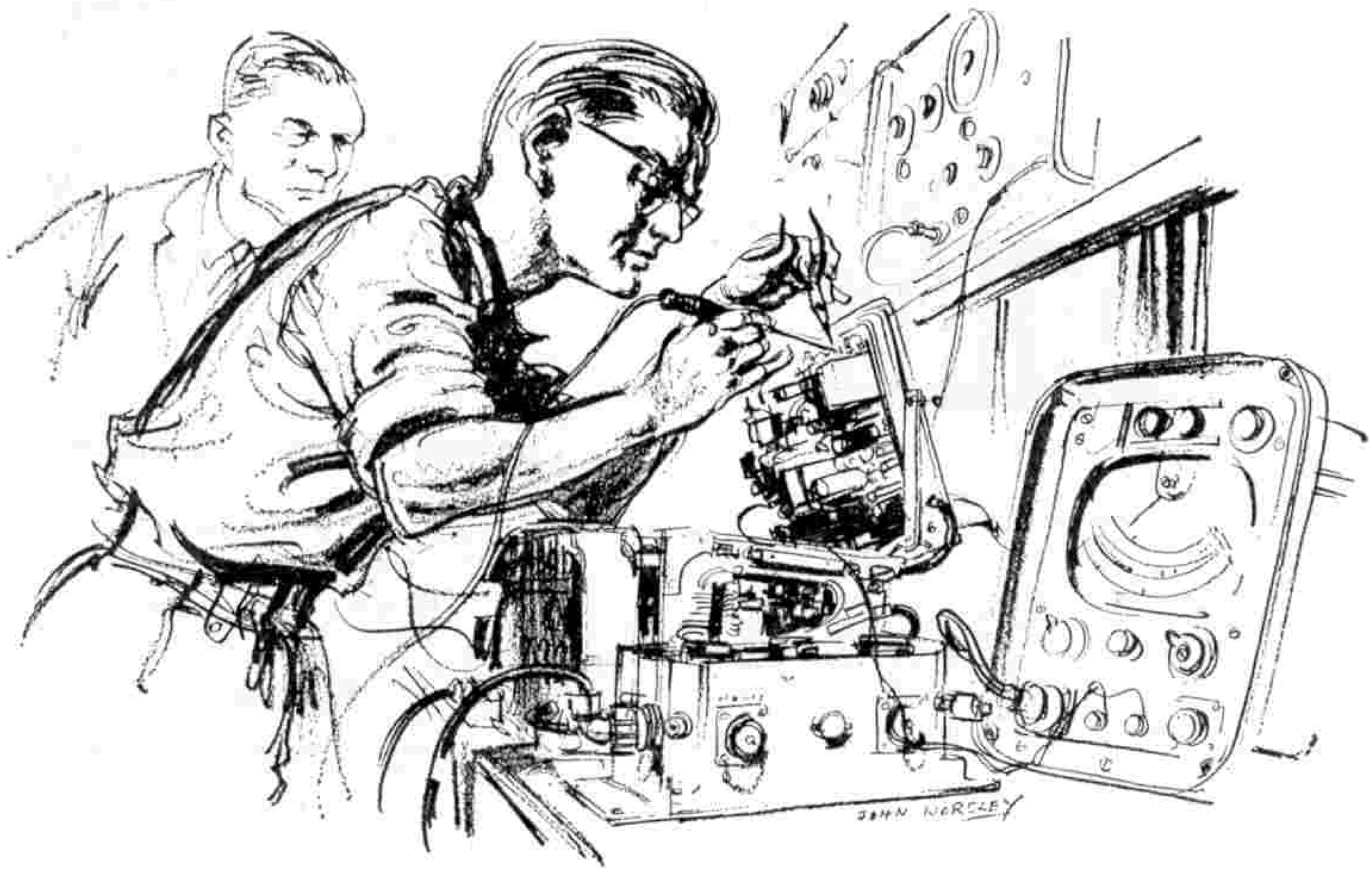

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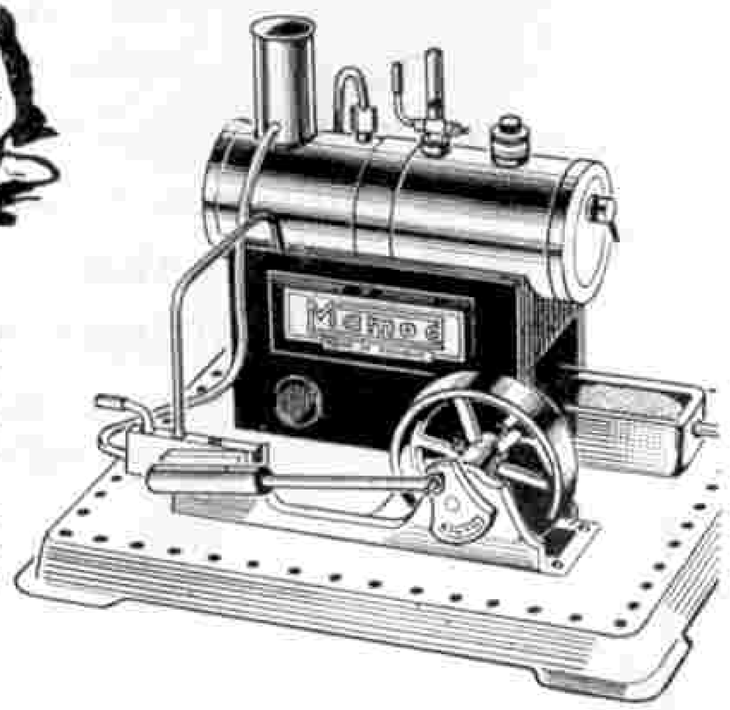

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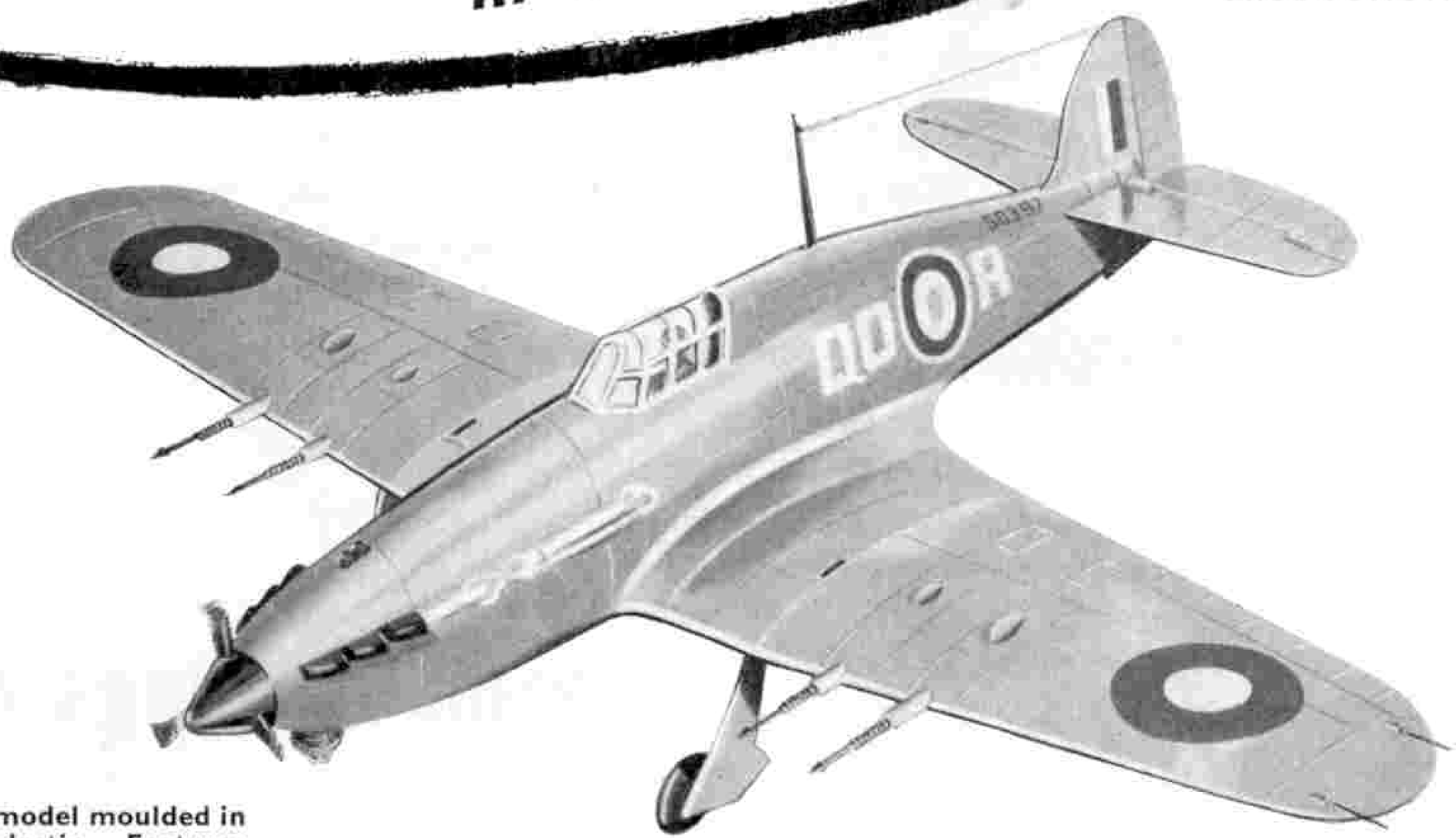

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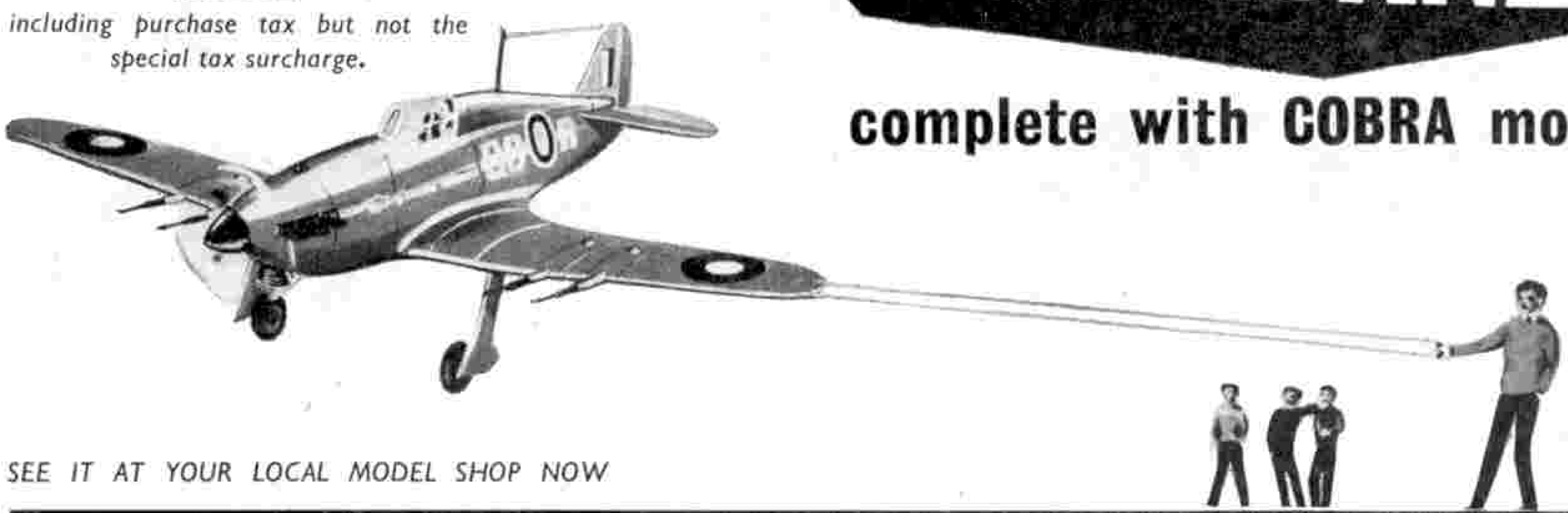

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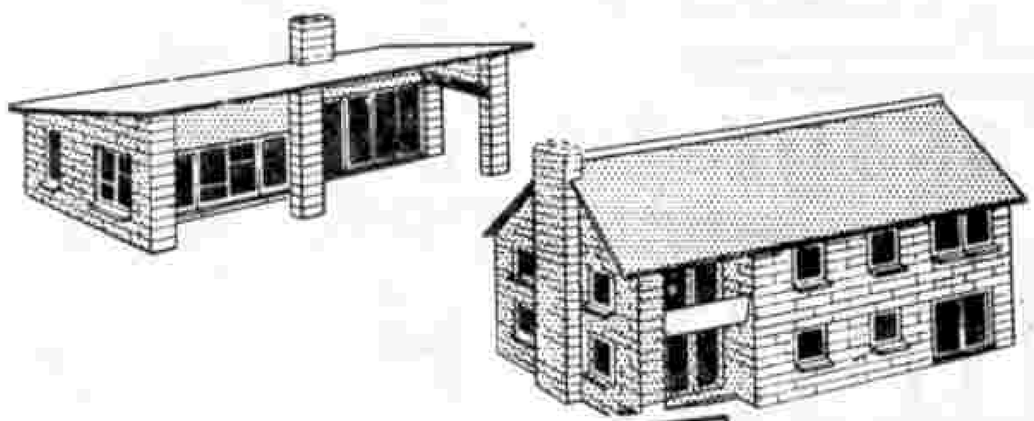

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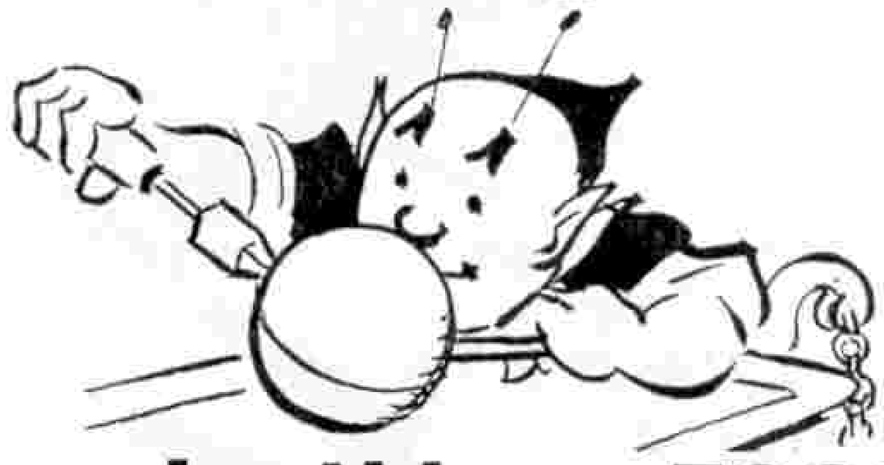
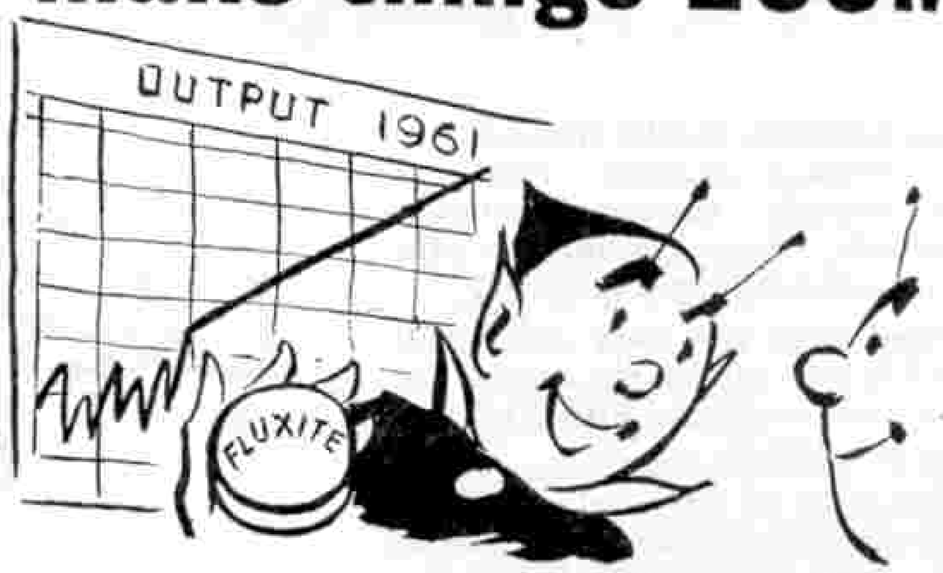


(c) make things ZOOM



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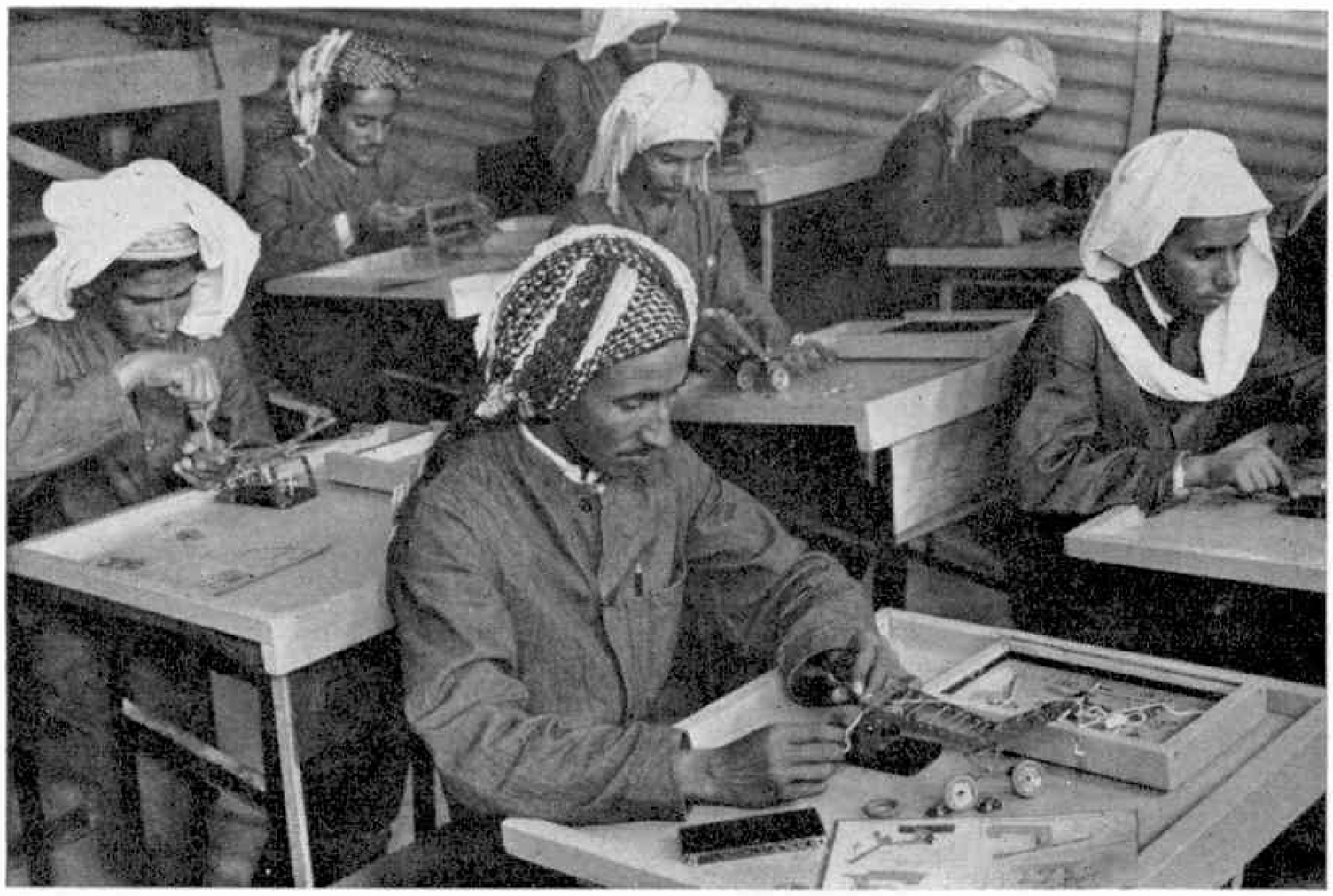
Volume XLVII No. 2 February 1962

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

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

Editor:
GEOFFREY BYROM

Asst. Editor:
ERNEST MILLER



The Onward March Of Meccano

EVER since it was invented by Frank Hornby, in the early days of the present century, Meccano has never stood still. A product of world renown, it has a multitude of followers whose enthusiasm is reflected in the wonderful working models they create. I am sure they will all be delighted at the news that Meccano, marching onwards with the years, has decided to introduce new Outfits, including additional and modified parts and new Books of Models, within the next few months.

The new Outfits will, in fact, be on the market very shortly and you will find details advertised on the inside back cover of this issue. The new Books of Models, printed in two colours, bring to Meccano a closer link with the real engineer working from his blueprints, for the instructions are entirely in pictorial form, with an absence of text.

The new and modified parts, which amount to something like 30 in number, will be available for separate sale in due course, but not before the new Sets have been distributed to our Dealers. How the new parts can be used to best advantage, and how they add to the realism of the Meccano system, will be demonstrated in models to be featured in future issues of the *M.M.* It will, of course, be possible to use the new parts in conjunction with existing ones.

This month's picture is an excellent illustration of the international appeal of Meccano. It comes from far-off Kuwait, the oil-rich sheikdom in the Arabian Gulf which has been so much in the news recently. There, in the Kuwait Oil Company's training centre, engineering skills are taught to young Kuwaitis, and to give them practical instructional experience the instructors use Meccano. Some Meccano models teach the correct order of assembly; others the need for making two or more sub-assemblies before the final one. In all cases, the trainees learn the correct way to put the pieces together as indicated on the plan.

Finally, I draw your attention to the new repairs scheme for certain items made by Meccano Limited, details of which will be found on page 76. **THE EDITOR**

Next Month: POLICE DOGS ON PATROL

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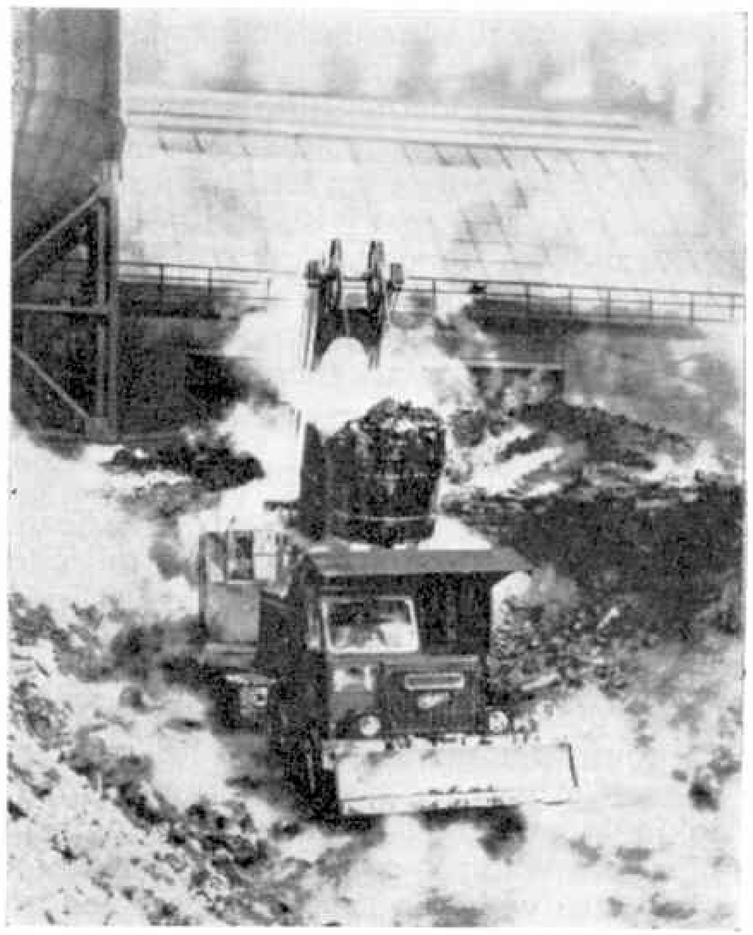
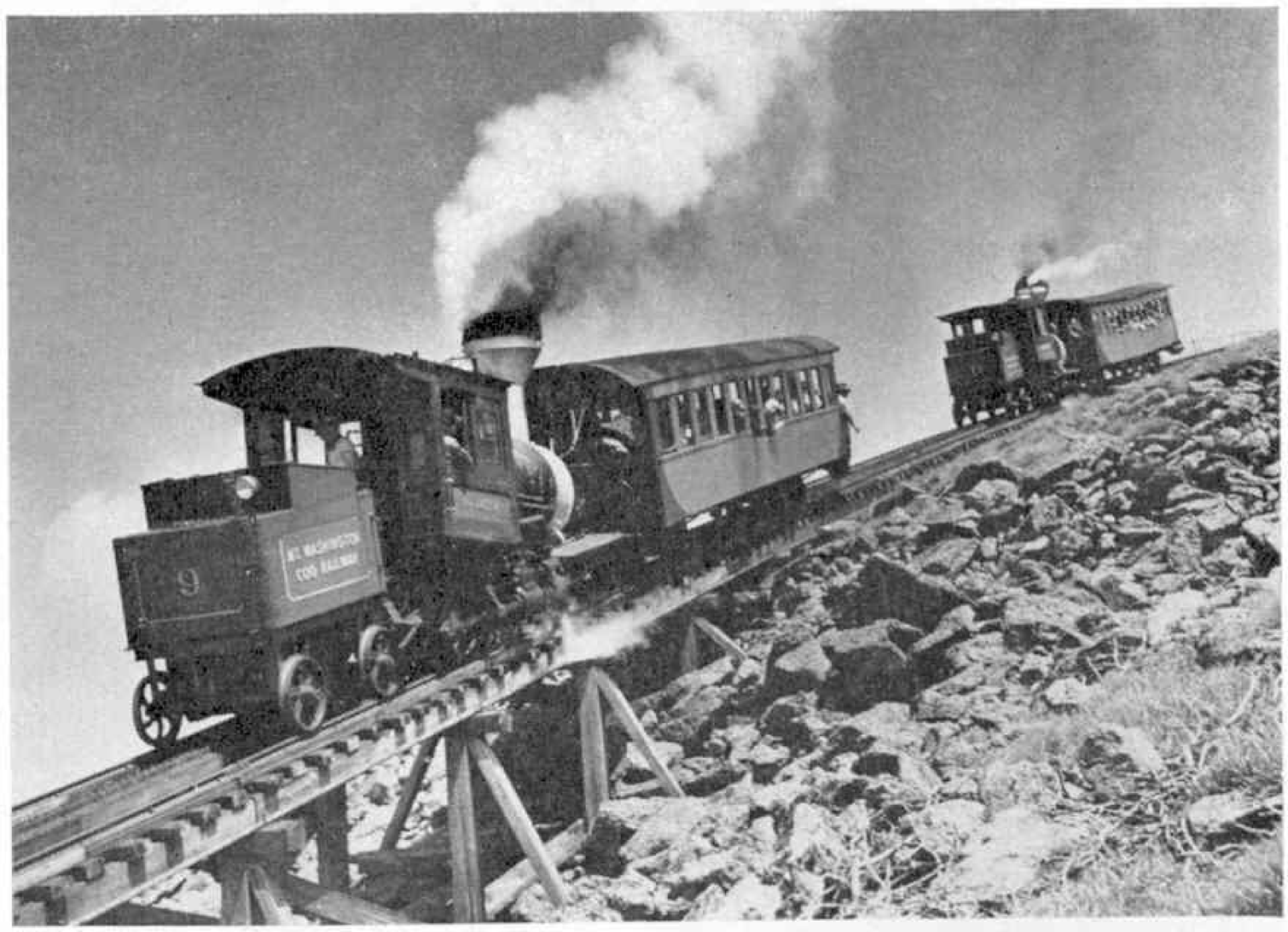
OUR FRONT COVER

A view from one of Britain's famous steelworks occupies our front cover this month. Close to the blast furnaces a Foden rear dump truck, which is a magnificent "worker" for industry, is being loaded with slag by crane. The actual photograph on which this cover is based was taken at Hawarden Bridge Steelworks, Shotton, which is owned by John Summers and Sons. Some details of this huge concern were given on the Editorial Page in last November's M.M.



MOUNT WASHINGTON COG RAILWAY

Intriguing Relic Of The Last Century



For more than 70 years these locomotives have been pushing coachloads of passengers to the top of Mount Washington. This illustration gives an idea of the gradients encountered on this fascinating railway line. Like the other photographs illustrating this article, it appears by courtesy of the New Hampshire State Planning and Development Commission.

IF you could take a ride on one of the trains which go to the top of Mount Washington, in the United States, you would be hauled to the summit by one of the strangest locomotives ever built. It looks what it is—an incongruous relic of the last century that one would normally expect to find only in a museum.

The boiler slopes forward at a crazy angle, as if it is about to slide forward and fall off, and although the pistons operate so quickly that they are almost a blurr, the train moves at no more than walking speed. Yet, these curious locomotives have been pushing coachloads of passengers to the summit of the mountain for more than 70 years without a single passenger fatality.

When somebody suggested recently that the Mount Washington Cog Railway should be modernised, there was an immediate outcry from the American public. Nine out of ten letters received by the railway said that it should be left just the way it is. It may look crazy, but it has become a part of American tradition and will probably still be carrying people up the mountain for another hundred years or more.

Without argument

When, back in 1858, an American, Sylvester Marsh, first proposed a railroad to the summit of the mountain, everybody told him the idea was absurd. When he asked the State Legislature for a charter to build the railroad they gave it to him without argument, thinking he had set himself a hopeless task, and one member jokingly proposed an amendment giving him permission to continue it to the moon —an idea which in those days seemed no more ridiculous than that of building a railroad to the top of a mountain.

But Sylvester Marsh was not easily deterred. He first built a half mile of level track, adding at one end a steep section which climbed one foot in three. His first locomotive had a wooden frame, supported on two sets of wheels, the forward wheels being much smaller than those at the rear in order to keep the locomotive level on the lesser grades. It had a vertical boiler pivoted on trunnions and an iron smokestack, flared at the top. When an onlooker saw the odd contraption for the first time he said, in a nasal American accent, "Looks like a peppersass bottle, don't she?" The name stuck and the locomotive became known as "Old Peppersass".

By Harry McDougall

The power produced by the two small cylinders drove a central cog wheel, through heavy reducing gears—and the cogwheel meshed with a "rack rail" in the centre of the track. Wood was used for fuel.

The locomotive was indeed a strange-looking contraption, but it worked well, and so construction of the three and a half mile railway to the summit was begun. Because the mountainside was so rocky, all except half a mile of the track had to be built on trestles.

In 1869, the railway was completed and *Old Peppersass* made its first ascent, chugging steadily upward to the summit at an altitude of 6,293 feet, proving for the first time that mountain railways were feasible. It was the forerunner of many others—and the Mount Washington Cog Railway is still being operated in substantially the way it was in the last century.

The "new" locomotives were introduced in 1878 and they are operating to this day. I recently took a ride on this strange railroad, which is vastly different from the modern electric mountain railways I have travelled on in Switzerland and other parts of Europe.

Trains Run in Threes

The trains operate in threes, and each locomotive pushes a single coach seating 48 people. The locomotive and coach are not connected to each other, so if, on the ascent or descent, the locomotive ran away, the brakeman on the coach could prevent the coach from being pulled down also.

There are several sets of brakes on the locomotive and on the coach, but it is the cog meshing with the rack that makes it perfectly safe and enables the locomotive to push the coach up gradients which average one in four.

There is no timetable. When several trains are ready they set off, one behind the other, for the summit. Part way up, a section of double track has been laid down, where the ascending trains can wait until similar convoys making the descent have passed. They also use the halt to take on water.

Mount Washington is the highest peak in the Presidential Range of the White Mountains of New Hampshire, and the views from the summit are magnificent. Until the railway was opened it was a long and arduous climb that could only be made on foot, but nowadays thousands of people make the ascent by rail every year. At the summit, in addition to an hotel there is, of all things, a jet engine test house, established there for cold weather testing.

During the winter, the summit of Mount Washington is one of the coldest spots on earth and even in summer time the view is often marred by mists and low-lying clouds in the valleys.

On the ascent, the brakeman on the coach has little to do except stand in readiness for emergencies. However, on the descent, which has to be made much more carefully, he has to operate the handbrake on the coach, to prevent all the weight being thrown on to the locomotive's brakes. If he operates the coach brake just a little too hard, the locomotive chugs on downwards and a gap appears between it and the coach. The brakeman then has to release the brake slightly to allow the coach to catch up with the locomotive. If the gap becomes rather wide, and he releases the brake a little too quickly, the coach begins to run a little too fast and bangs violently into the locomotive—a rather disturbing experience for passengers gazing down the steep length of track and imagining what would happen if the brakes gave way! However, they never do, and eventually the train arrives back, taking about an hour to traverse the three and a half mile route.

One reason for the great popularity of the Mount Washington Cog Railway is the affection which visitors have for its quaint steam locomotives like the two seen above.

Left: A popular background for amateur photographers is "Old Peppersass", the first locomotive to be used on the Cog Railway and pictured here.

Exhilarating trip

When the railroad was being built, the workmen laying the track had to climb up on foot every morning—but in the evening, they found a good way to descend. They built small sledges to fit on the track, with a board for a seat and a lever which could be made to rub against the sleepers between the rails to control the speed. It must have been a ride as exhilarating as the Cresta Run!

One of these old sledges can still be seen at the base station, although, needless to say, the management does not nowadays permit its employees to indulge in this hair-raising and rather dangerous method of transport.

When the "new" locomotives came into regular use, *Old Peppersass* was retired from service and sent to the 1893 Chicago World's Fair, the first of many at which it was exhibited.

Subsequently, it was donated to a museum, but recently it was taken out again and sent to the workshops of the Boston and Maine Railroad to be refurbished. On inspecting the old locomotive, officials were astonished to find that the vertical boiler, with its conical rivets headed by hand, easily met present-day water and steam pressure tests.

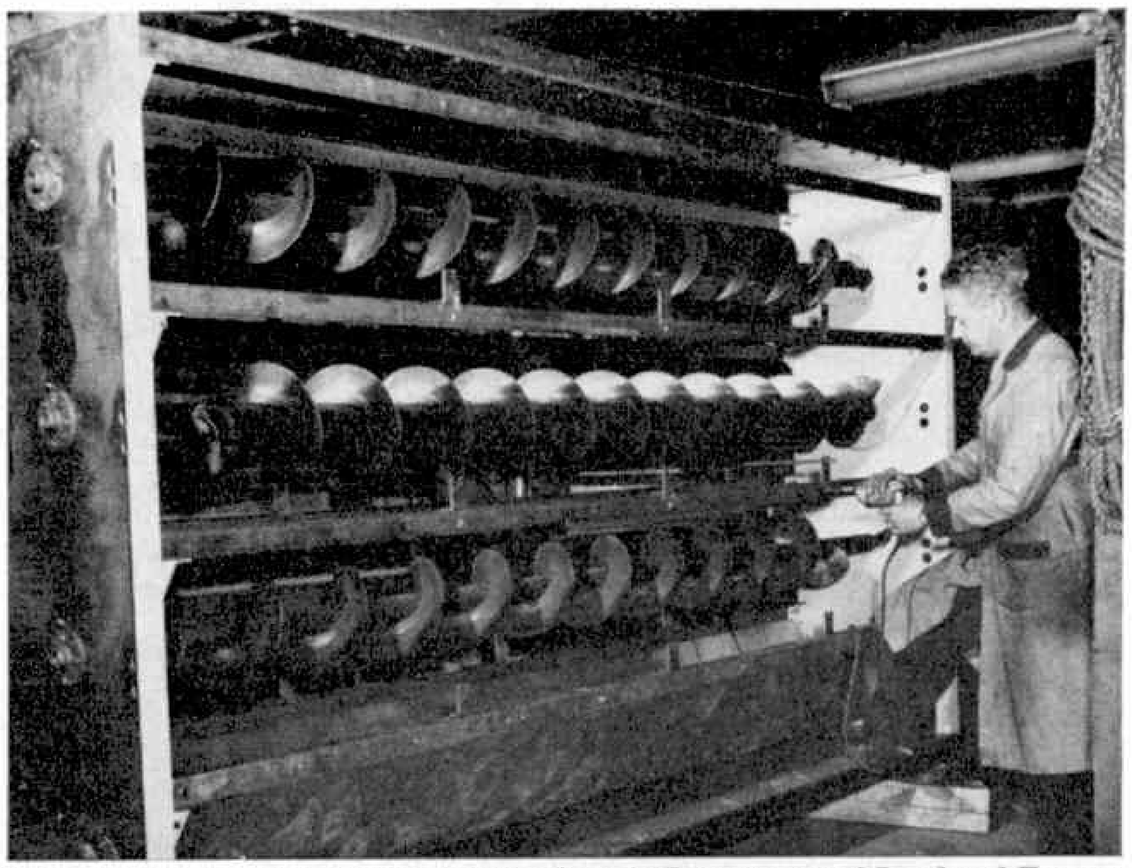
Only a few minor parts were needed to restore *Old Peppersass* to her original condition, and she has now been placed on permanent exhibition at the base station of the railroad.

PRESERVING NARROW GAUGE EQUIPMENT

The recently-formed Hampshire Narrow Gauge Railway Preservation Society has the object of preserving some of the remaining narrow gauge locomotives and other equipment before it is too late. The society further aims to construct a 2 ft. gauge railway on which eventually trains can be run, but it is hoped to make a modest start with a static exhibition.

The present urgent need of the society is for more members, and any readers interested should contact the hon. sec., Mr. W. B. Lyman, 1 Bishops Close, Totton, Southampton. Subscription is £1 per year, or 10/– for those under 18. Cheques and postal orders should be made payable to the Hampshire Narrow Gauge Railway Preservation Society.

An Oil "Well" —In Trees



This machine, specially designed at the Ontario Department of Land and Forests Southern Research Station, crushes several types of conifer. This illustration and the picture at the bottom of the page are reproduced by courtesy of R. Muckleston.

IN the pork-packing trade there is an old saying which has now become a cliché, "Nothing is wasted but the squeal". In Canada's richly-forested Province of Ontario a saying on somewhat similar lines is now applied to thousands of tons of the smaller branches of white cedar trees and other conifers: "Nothing is lost: even the pleasant odour is retained", for these branches, formerly left waste upon the ground, or burned, are now processed to create a new and valuable by-product—OIL! This resulted from the imagination, resourcefulness and combined experimental efforts of Ontario foresters. It may be that primitive Indians used similar methods for medicinal purposes in the past.

And today, as never before in North America, conservation is important, for during the past century the ruthless wasting of forests has been appalling. Conservationists have striven strenuously to stop this, with increasing success. In addition, new methods have been invented of turning to commercial use the by-products of trees of all varieties which were formerly destroyed.

This new experiment in oil distillation from conifer branches is being carried out by a private company at Vankleek Hill, Kemptville, Ontario, and by the Department of Lands and Forests at Maple, Ontario, Research Station. As the operators at both places humorously remark, "We are the only ones in Canada who are legally operating stills".

Added to the appeal of extracting something valuable from former waste is the ingenuity shown by the men concerned in distilling their new and unexpected product. Every piece of machinery in use except the crusher was salvaged. An old

By A. E. WALROTH

(as told to Francis Dickie)

threshing machine engine, automobile parts, hopper apparatus, piping and a distilling tort—even the bricks and some of the lumber adapted for the job were previously used for other purposes. Economy was a first essential since, at the start, doubts were entertained as to the possibility of making the scheme pay.

Not only is a small profit now being made, but it has been demonstrated that the source of material—from young conifers—can be maintained, for at least three years, by cutting the branches in such a way that the young trees remain not only healthily alive but in continuous growth, thus eventually maturing into commercial timber.

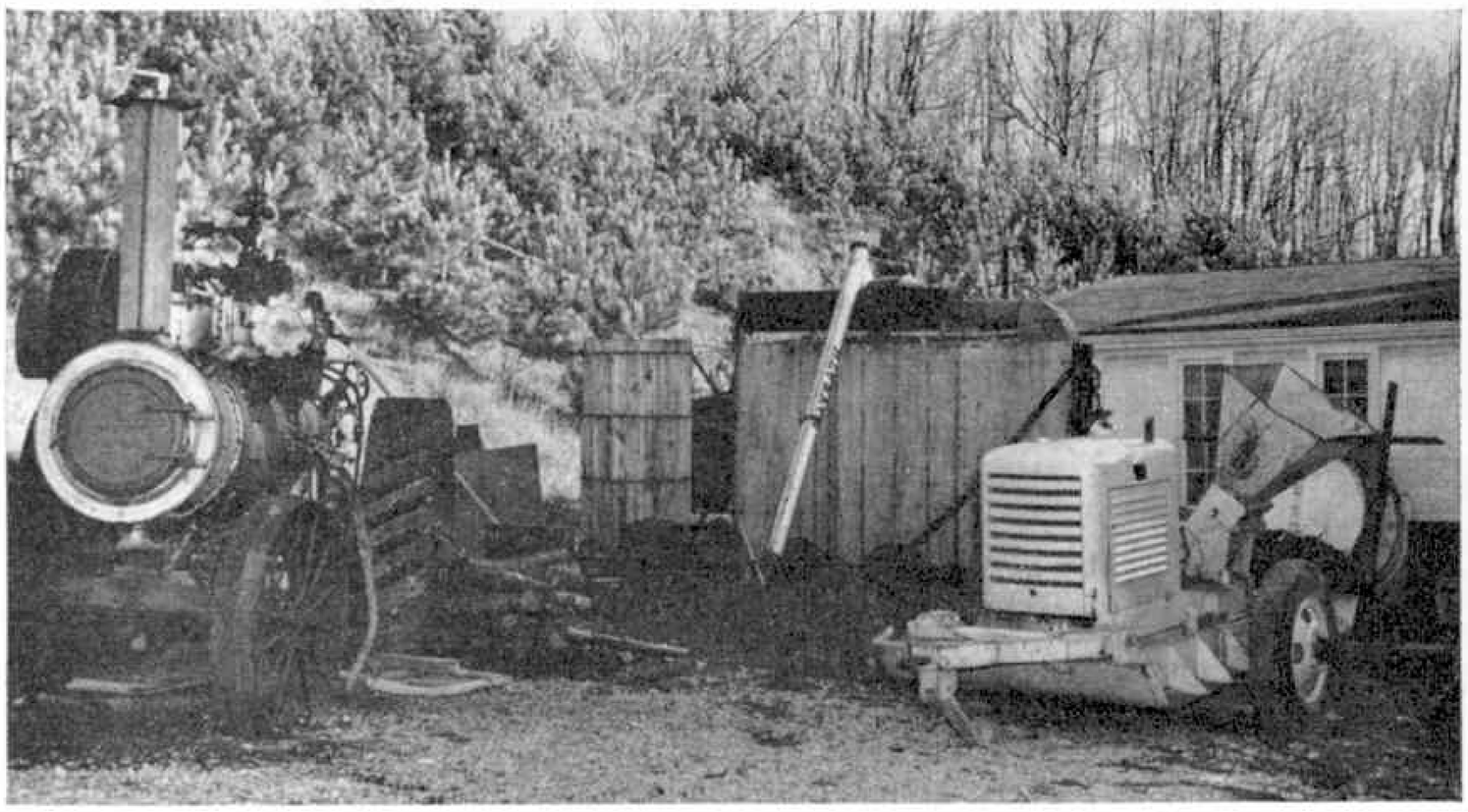
At the Vankleek Hill operation white cedar branches, purchased from local farmers for 20 dollars a ton, form the raw material. The product is cedar oil valued at 25 dollars a gallon.

Four and a half tons of branches, up to a diameter of one-quarter of an inch, are put in a circular upright cooking tank which is seven feet in diameter and eight feet in depth. The tank is tightly covered and steam is forced in at a pressure of 70 lb. per square inch. The branches are steamed for three hours. When the cooking period ends, the branches are removed from the tank by an overhead fork.

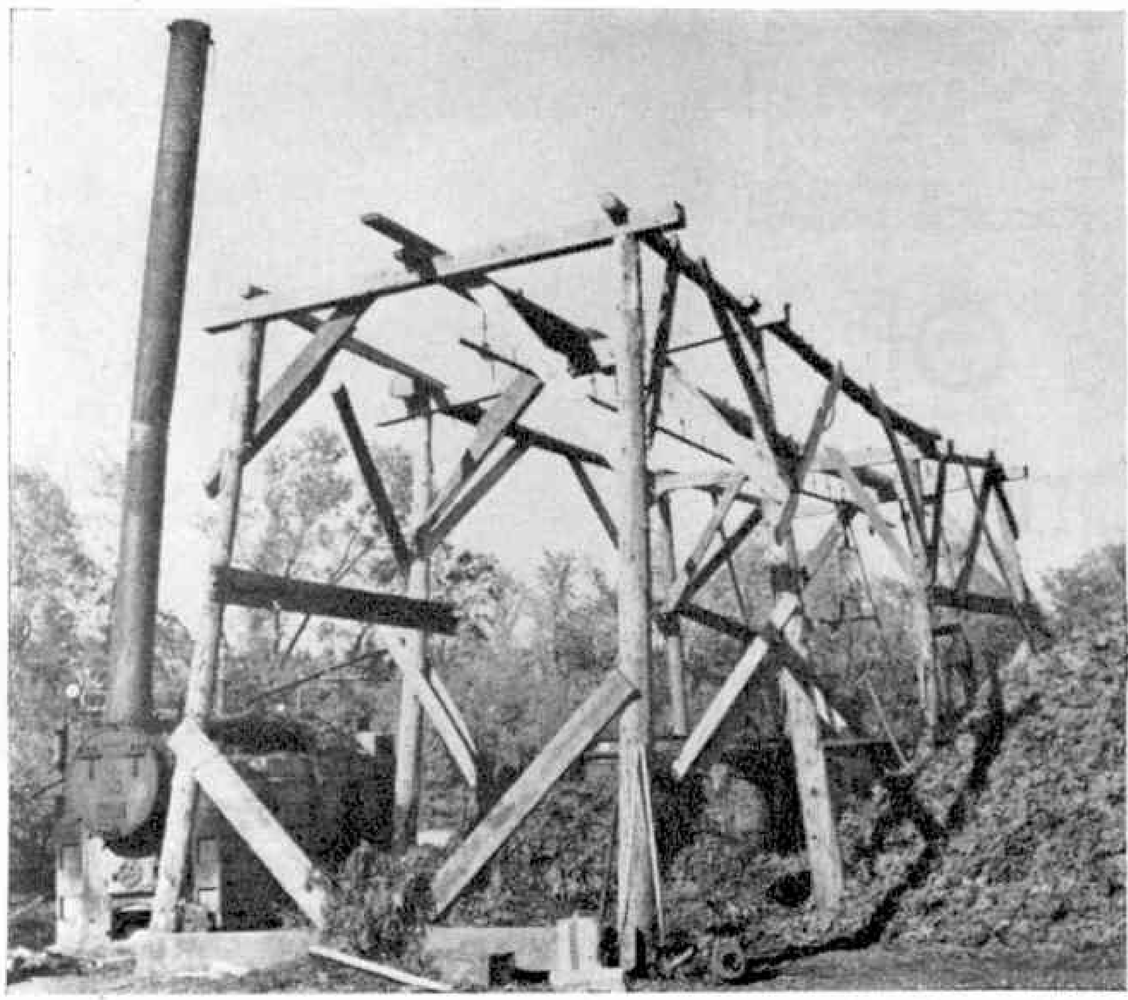
The oil and water mixture is then pumped out of the tank through a condenser coil cooled by water from a nearby creek. The mixture flows by gravity from the condenser into a container with a small spout near the top. The cedar oil floats on the water and runs off through the spout as the pumping process from the tank continues.

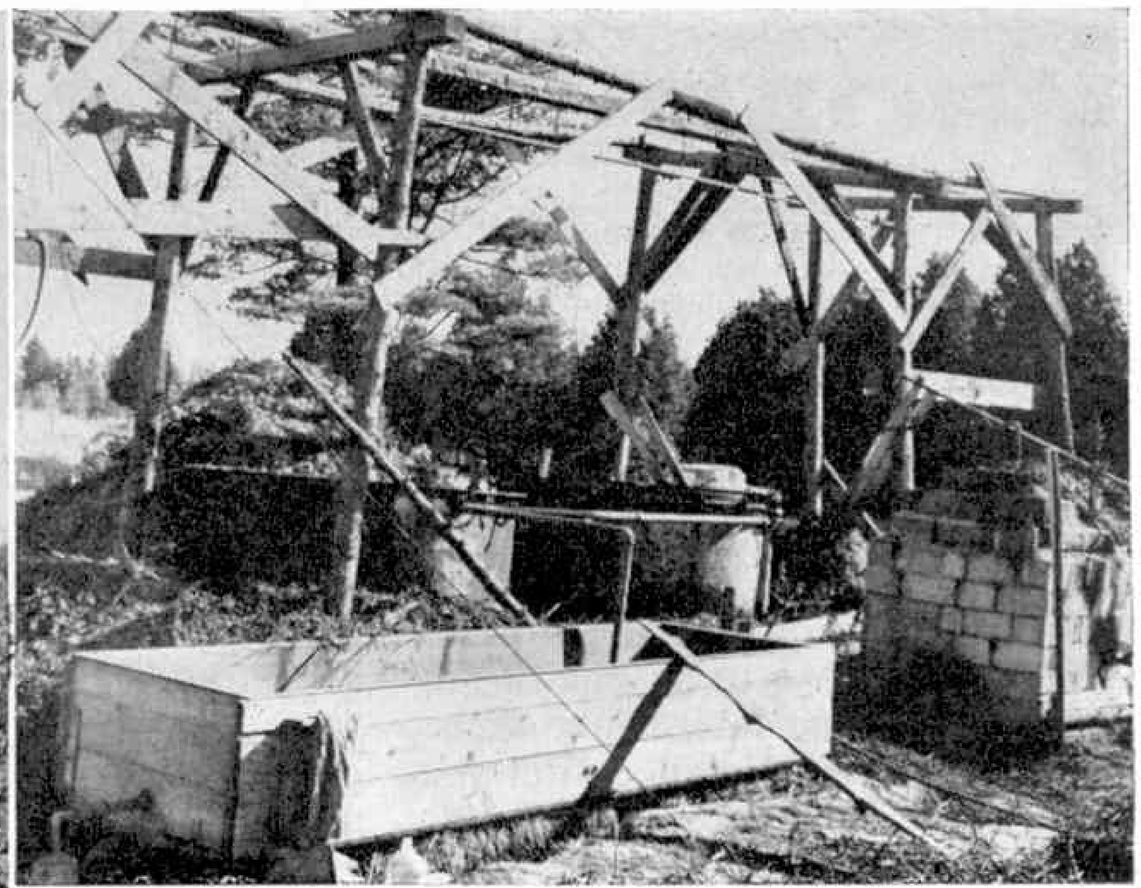
Approximately one gallon of oil, light brown in colour, is obtained from steaming one ton of branches, with the smallest branches giving the greatest yield. It has been shown that the best grade of oil comes from the white cedar that grows in the swamps.

When the branches come from the tank, the colour of the needles has changed from green to dark brown, and the leaf scale is greatly reduced in size. Selected trees are usually from four to fifteen feet in height. Branches atop the tree are not touched to a depth of three feet, and the side branches, rather than being cut flush



Old machinery helps new methods: a salvaged threshing engine (left) is among the equipment used at this conifer distillation plant.





This view of the Vankleek Hill distillation plant (left) shows the boiler and overhead fork for removing branches after steaming. (Above) A close-up of the condenser tank, run-off pipes and oil catch basin at the Vankleek Hill plant. Both these pictures appear by courtesy of the Department of Lands and Forests, Ontario.

to the tree, are left to protrude about six inches. By this method a harvest of branches can be gathered over a period of three years.

The Ontario Department of Lands and Forests has also been experimenting in cedar by establishing a still at its Southern Research Station, at Maple. The process there is similar to that already described. It was at Maple that an old threshing machine boiler was reconstructed to produce the necessary steam pressure, and other odds and ends of discarded machines were taken from the scrap-heap and put to re-use.

The cedar oil, after a certain amount of rectification, is used as an ingredient in some liniments and other therapeutical preparations which are only to be applied externally. On the other hand, cedar oil can, with little processing, become an important component in floor and furniture waxes. It has also been found useful as a residue carrier in insecticides.

"City Of Truro" Returns To Retirement

FOR the second time in 30 years the famous locomotive No. 3440 *City of Truro* has been withdrawn from active service and returned to a place of preservation.

Built at the Great Western Railway Locomotive Works at Swindon, in April 1903, she was one of twenty locomotives of the City Class designed by Mr. G. J. Churchward, who was Locomotive Superintendent at Swindon from 1902 until 1921. The City Class of locomotive was

By

ANDREW F. SMITH

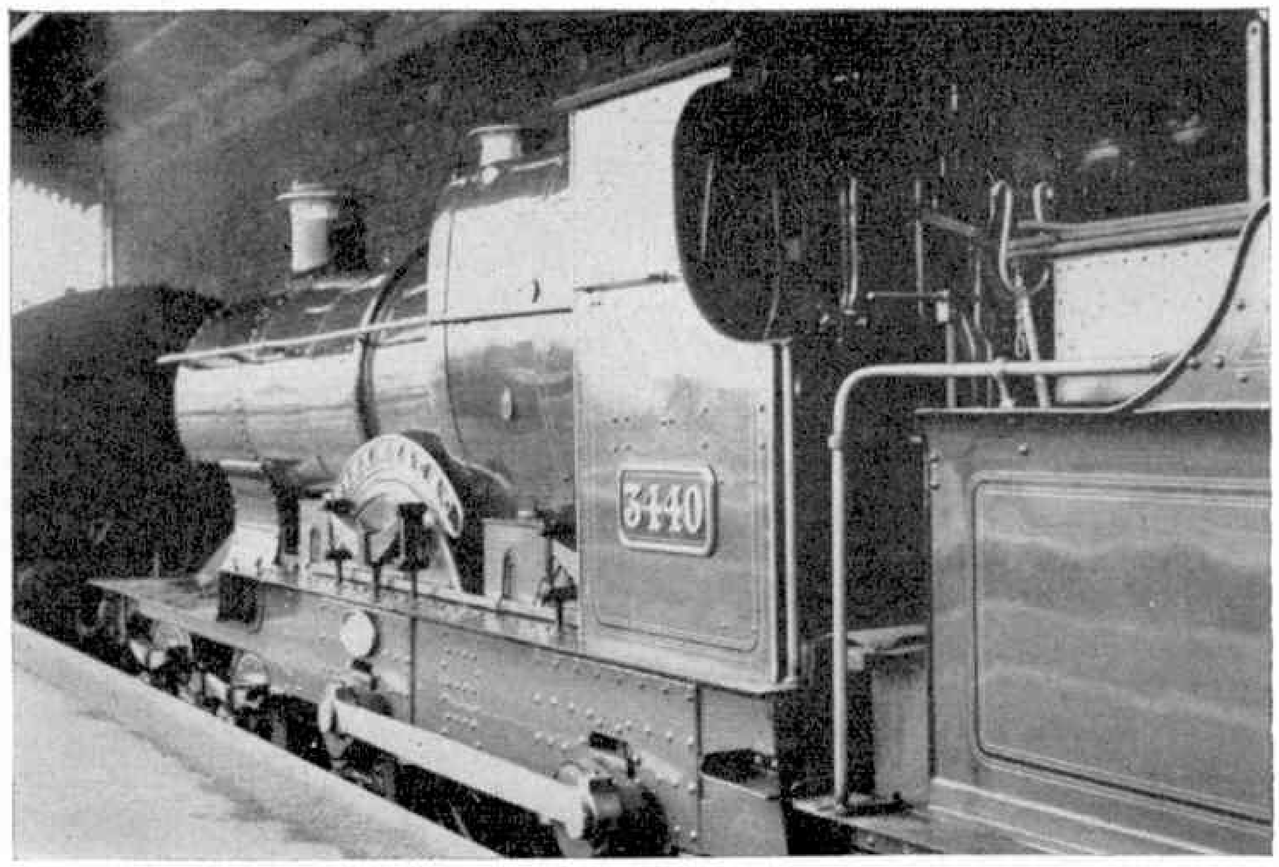
regularly employed on expresses between Paddington and Birmingham, Paddington and Bristol, and Paddington and South Wales, as well as working special Ocean Mail trains between Plymouth, Bristol and Paddington. It was on one of these such trains that, on May 9, 1904, *City of Truro* attained a speed of 102·3 miles an hour while descending Wellington Bank.

The trip, which was very carefully planned, was a climax to the competition that had been taking place between the London and South Western Railway and the Great Western Railway to gain control of passengers and mails traffic between Plymouth and London.

On April 23, 1904, a freelance journalist, Mr. Charles Rous-Marten, travelled on a train between Plymouth and Waterloo, on the invitation of the London and South Western Company, to publicise their travel facilities. When they heard of this, the Great Western Railway immediately invited the same journalist to travel on a special mails train between Plymouth and Paddington. It was on that very trip that *City of Truro* attained her speed of 102·3 miles an hour—the first occasion on which a railway speed of 100 miles an hour was attained.

The news that such a speed had been

(*Continued on page 89*)



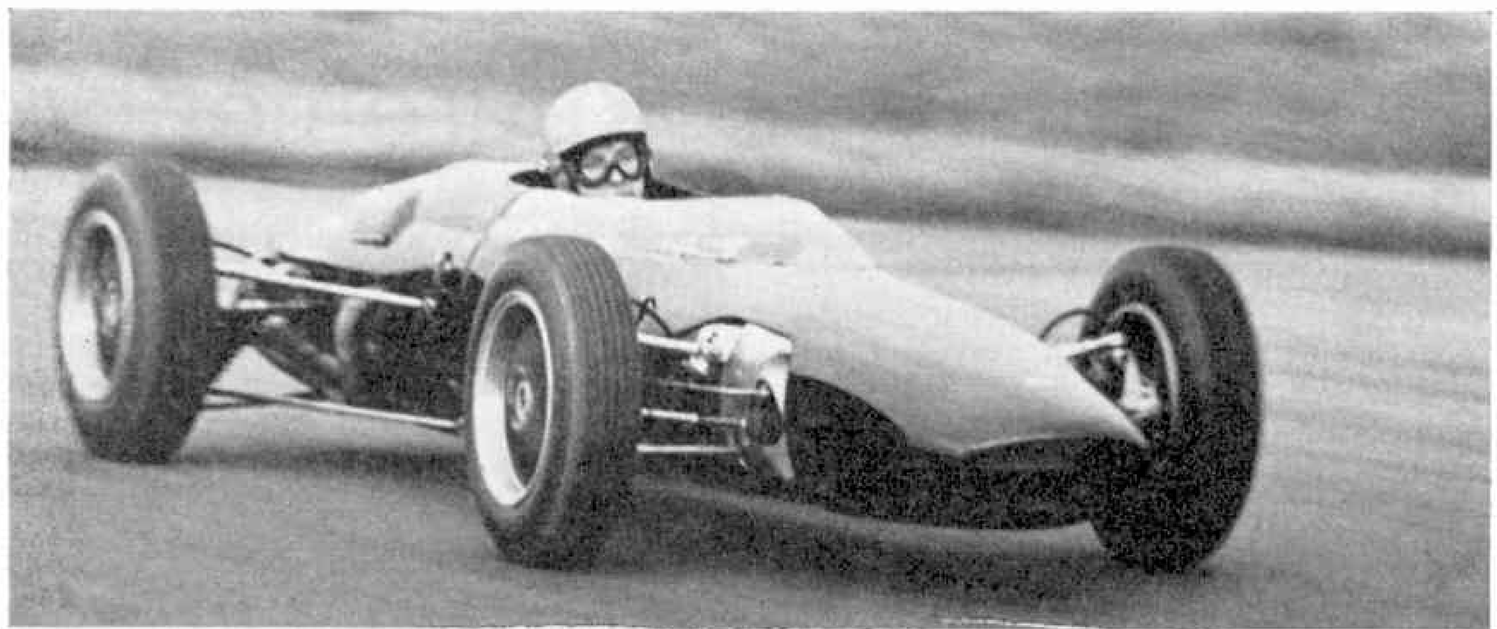
"City of Truro" photographed at Cardiff (Queen Street) Station while on exhibition there in April 1960.

Motor-Racing: Hopes Of An Exciting Season

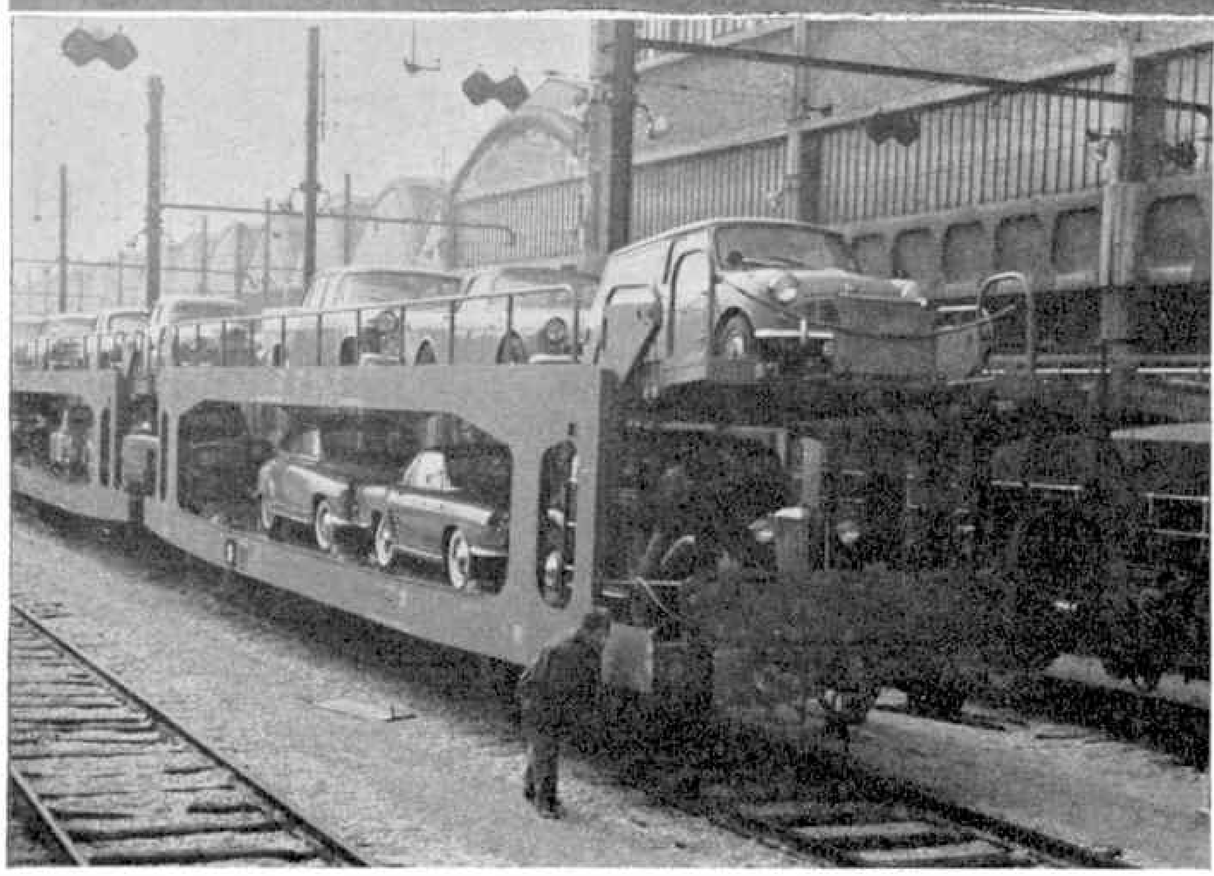
THE 1962 motor-racing season may well prove to be one of the most exciting and interesting of the post-war years. Provided that the problems with the new Coventry–Climax V.8 engine can be overcome, British cars will be able to compete on equal terms with the formidable Continental opposition, and the odds are that the Formula I World Championship of Drivers will be awarded once again to an all-British combination.

The pattern for 1962 is a most interesting one and I particularly welcome the entry of Lola into the Formula I field. The more *marques* there are on the grid the more likely we are to get closely-fought races, and the fabulous Lolas have undoubtedly brightened the sports car and Formula Junior field considerably since the first Lola (a 1172 Ford-engined special) was built in 1956.

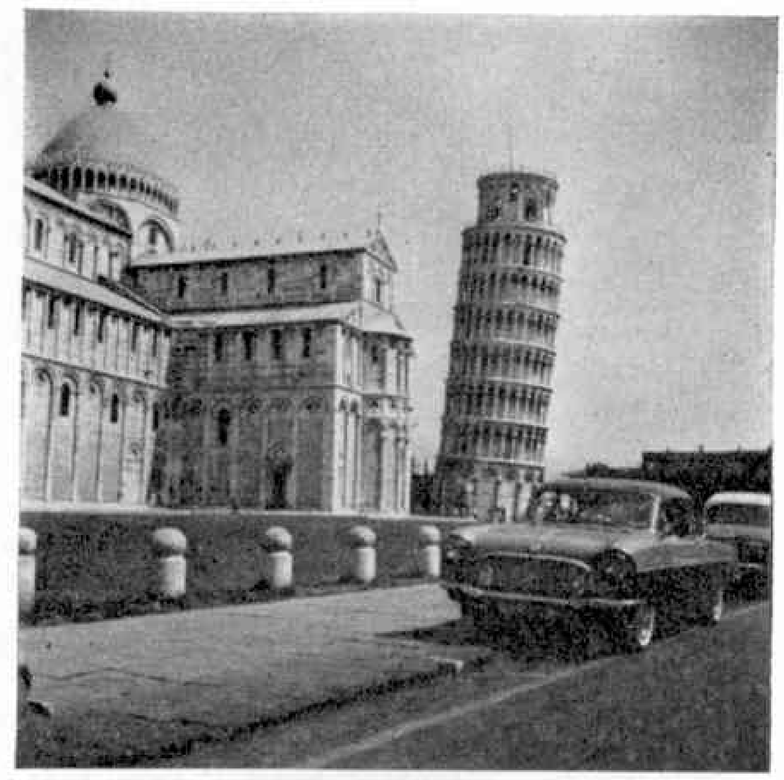
The new Formula I Lola, which will be driven by Bowmaker–Yeoman team drivers John Surtees and Roy Salvadori this year, is a beautifully proportioned machine and is, in fact, smaller than the Formula Junior Lola. The slim appearance of this sleek, 12 foot newcomer to World Championship racing—with its pigmented fibre glass body—is accentuated by a long nose, the driver sitting in a very low, reclining position with the pedals well forward.



John Surtees testing the new Lola Formula I car at Silverstone.



The two-tier trucks of the French car ferry referred to in this article are clearly seen in the illustration on the left.



The Vauxhall Cresta in which Peter Lewis travelled across Europe is seen here at Pisa, with the famous Leaning Tower in the background.

The Lola will have a 5-speed Colotti–Alf Francis gearbox, a V.8 Coventry–Climax engine at the rear, Girling disc brakes all round, a space frame, and double wishbone suspension. John Surtees, who has been putting the new car through its paces, is most enthusiastic about the performance and promise of the latest Broadley "baby" which is an entirely new car and not merely an F.I. version of the Formula Junior Lola.

The two Broadley cousins—Eric and Graham—have made remarkable progress since their 1100 c.c. sports cars swept the board in 1959, breaking the domination of Colin Chapman's Lotus cars in this class. Their impact on the 1962 Formula I

By
PETER LEWIS

scene—with drivers of the calibre of Surtees and Salvadori, and with Reg Parnell as Team Manager—may well be just as impressive. In any event, the combination of Roy Salvadori, who is driving better than ever, in spite of his years, and Broadley's Lola should be a truly formidable one.

TAKE THE CAR BY TRAIN

There is nothing unusual about crossing the Channel these days and thousands more motorists every year make for Italy, Switzerland, Greece, Yugoslavia and points even farther south. However, it has always been a boring business motoring across France—unless an E Type or something similar could be made available—and when I toured Italy last summer I welcomed the opportunity of trying the new Car Sleeper Express services of French Railways.

We left London in a Vauxhall Cresta at 8.30 on a Saturday morning, arrived in Dover at 11 a.m., crossed to France in the *Lord Warden* and were clear of Boulogne by 2.30 p.m., en route for the Charolais

Racing Personalities

GIANCARLO BAGHETTI

FOLLOWING a highly successful season in 1961, when Ferrari driver Phil Hill became World Champion, Enzo Ferrari will make another all-out effort in 1962 for World Championship honours. His task will not be an easy one, but it will be easier than that of young Giancarlo Baghetti, who will be the only Italian driver in the team and the only Italian for many years with the potentiality of a World Champion. Twenty-seven year old Baghetti, who has graduated to Formula I racing from Formula Junior, has a formidable task; the last Italian to win the World Championship was the great Alberto Ascari in 1953.

For seven seasons—while drivers of the calibre of Fangio, Gonzalez, Moss, Hawthorn, Collins, Brooks and Phil Hill won F.I. championship races for Italy—there was never the remotest possibility of an Italian World Champion. And then Baghetti won the 1961 French G.P. at Rheims, an occurrence which few people acknowledged, at the time, as the first F.I. championship victory for an Italian, driving an Italian car, since January 1956, when Luigi Musso shared the wheel—with Fangio—of the winning Lancia–Ferrari in the Argentine G.P.

By winning the French classic, shy, unassuming Baghetti confirmed the promise he showed at Syracuse a few months previously when, driving the only Ferrari entry, he won the Grand Prix in convincing fashion against the world's top F.I. drivers and on a circuit that demands skill and courage of the highest order. His victory at Syracuse ranked alongside Tony Brooks' similar achievement with a Connaught in 1955.

Syracuse was the first major event for this good-looking young Italian who, in 1960, was a comparatively unknown Formula Junior driver. Much of the credit for spotting and developing Baghetti's talent must go to that wily veteran and brilliant strategist, Piero Taruffi who, in his day, was one of Italy's greatest drivers. However, motor-sport has always been of absorbing interest to Baghetti who has progressed—like so many others before him—from motor-cycles to cars. I am told he first competed with a motor-cycle at the age of fourteen, but it was another seven years before he drove an Alfa–Romeo saloon in his first motor race.

In 1959—the turning point of his career as a driver—Baghetti raced a Formula Junior Degrada to such effect that Taruffi noticed him and so did F.I.S.A. (Federatzione Italian Scuderie Automobilistiche) a body formed to assist in the development of promising young Italian drivers. It was with a Ferrari entered by F.I.S.A. that Baghetti won both the Syracuse and the French G.P., but it was a "works" car that he drove in the British and Italian G.P. of 1961—crashing in the former and putting up the fastest lap in the latter before retiring with engine trouble.

I saw him in action at Monza and his driving is cool, forceful and relaxed—the sort of driving one would expect from a man who has been racing in the championship class for years.

This year, he will be at the wheel of a "works" Ferrari all the time, and when the Grand Prix circus arrives in this country for the British G.P. I shall be very surprised if Baghetti is not positioned well towards the front of the grid when the flag drops.

This happy picture of Baghetti was taken after his success in the Syracuse Grand Prix.

Goods Depot (near the Gare de Lyon) in Paris, which is the loading point for the Car Sleepers. Loading the Cresta on the train was almost as easy as driving aboard the *Lord Warden* at Dover. After we had taken our pre-packed overnight bags out of the car, it was driven up a ramp on to the top deck of an open, two-tier truck where it was held firmly in position by wheel chocks, then the passenger doors were locked from the inside and the driver's door was sealed with wire. Each deck of each truck accommodated three cars.

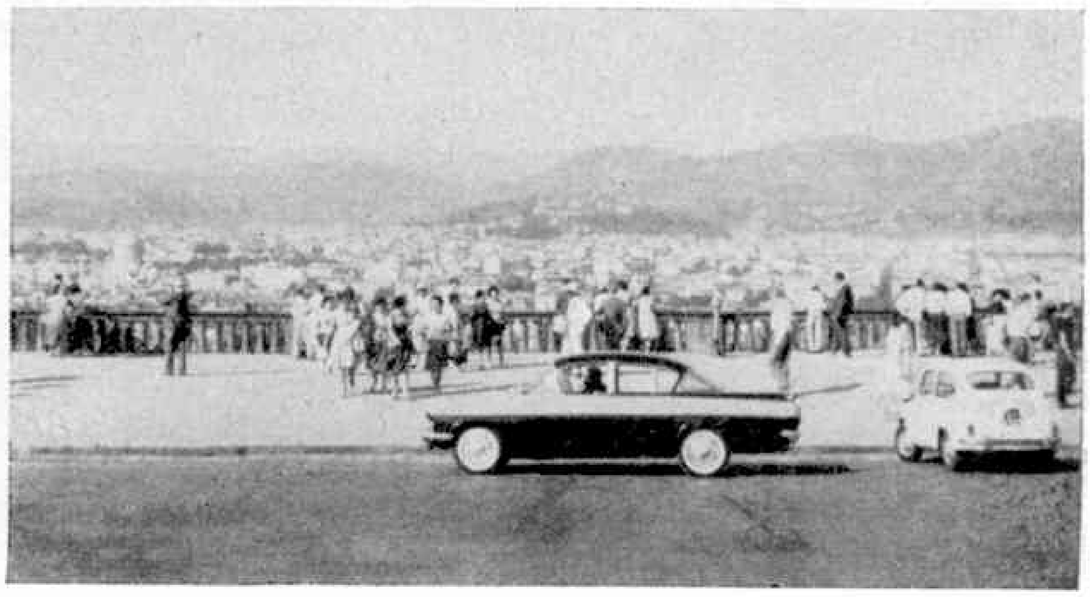
Sleeping accommodation is provided on these expresses for all passengers with cars, and after a meal opposite the Gare de Lyon we took possession of our six-berth couchette, wondering uneasily whether we should ever see the Cresta again. We need not have worried for the coaches and trucks were made up as one train shortly after 10 p.m. and after a few minutes of shunting we were on our way south. Looking back, as we passed through the suburbs of Paris, it seemed as though there were as many car trucks as there are wagons to one of those endless Continental goods trains.

As is usually the case with French Railways, the Car Sleeper was dead on time when we arrived in Avignon (435 miles from Paris) at 7.30 a.m. and the cars were off-loaded rapidly and efficiently by the railway staff.

Within an hour we were on our way south, and the 150 mile journey from Avignon to Cannes took only three and a half hours. We were lunching in the famous Riviera resort only 24 hours after leaving Dover. On the return journey, having watched the Italian Grand Prix at Monza, we used the Car Sleeper Service from Milan to Paris. Once again the comfortable, rapid French Railways express broke the back, overnight, of a long, tiring journey. We left Milan at 10.50 p.m. on the Sunday, arrived in Paris at 9.48 a.m. next morning, put in some very rapid motoring to Calais, crossed the Channel in the impressive French Car Carrier *Compiegne* and arrived in Dover at 6.45 p.m.

Exactly 24 hours after leaving Milan we were unloading the Cresta at Hatch End—and we had visited (*Cont. on page 89*)

Two more views taken during Peter Lewis's motor journey across Europe. Left: One of the mountainous roads in the region of Assisi. Below: A view of Florence.



THE CRAFT OF MAKING CHURCH BELLS

ENGLAND'S BIG TWO

The biggest bell in England is Great Paul, of St. Paul's Cathedral, London, which weighs 16¾ tons. Second largest is Great George, at Liverpool Cathedral, which weighs 14½ tons and which is claimed to have the deepest tone of any bell in the country.

CHURCH bell casting is a craft of great antiquity. The first use of bells in church is ascribed to Bishop Paulinus of Nola, in Campania, in A.D. 400. The oldest bells were constructed by hand chipping and consisted of thin iron plates which were usually riveted together in the shape of a rectangle, until casting was adopted. The early founders travelled about the country and where they found work they set up a temporary foundry.

Nowadays, the bell is first designed on paper to a scale of measurement so that it may be cast as close as possible to the note required. Then two moulds are made. One mould, called a cope, which forms the outside shape of the bell, is laid up inside a cast iron

By
R. D. BARRETT-LENNARD

moulding case. It is filled with loam, consisting chiefly of London yellow clay, and is smoothed to shape with a gauge.

The second mould—or core—which forms the inside shape of the bell, is smoothed to shape with a gauge or moulding board around its centre shaft.

The two moulds are placed in ovens until they are thoroughly dry, this process taking three days or more according to their size. When the moulds are removed they are only in a "rough" state, so a second coating of loam, of a much finer mixture, is applied. After the moulds have been dried in the oven again they are coated with graphite and given a clean, smooth finish.

Church bells leaving the Church Bell Foundry in Whitechapel, London, for Saint Michael's Church in Cornhill, London, after being recast.

The large tenor bell of Saint Michael's Church being lifted into the church from a lorry in the City. Illustrations by the author.

At this stage, the most delicate operation is performed. The completed cope mould is impressed with an inscription by the steady hand of a highly-skilled engraver, then the cope is slowly lowered on to the core. The two moulds are closed down and securely clamped together, but with a space between them, and this space is filled with the metal which makes the bell. This is the real casting process.

The bell metal is an alloy of copper and tin in proportions of approximately four to one which has to be melted down in a furnace. The molten metal is run off into a ladle, skimmed, and poured into the mould. Then it is left to cool—a process which may take from 24 hours to a whole week.

When the cooling process is over the cope is lifted off. The new bell is cleansed of any clay which may have adhered to the surface, and is sand blasted to remove grease. Now, the bell is ready for testing.

Final tuning is effected by removing metal from the inside on a large vertical lathe. The art of (*Continued on page 89*)

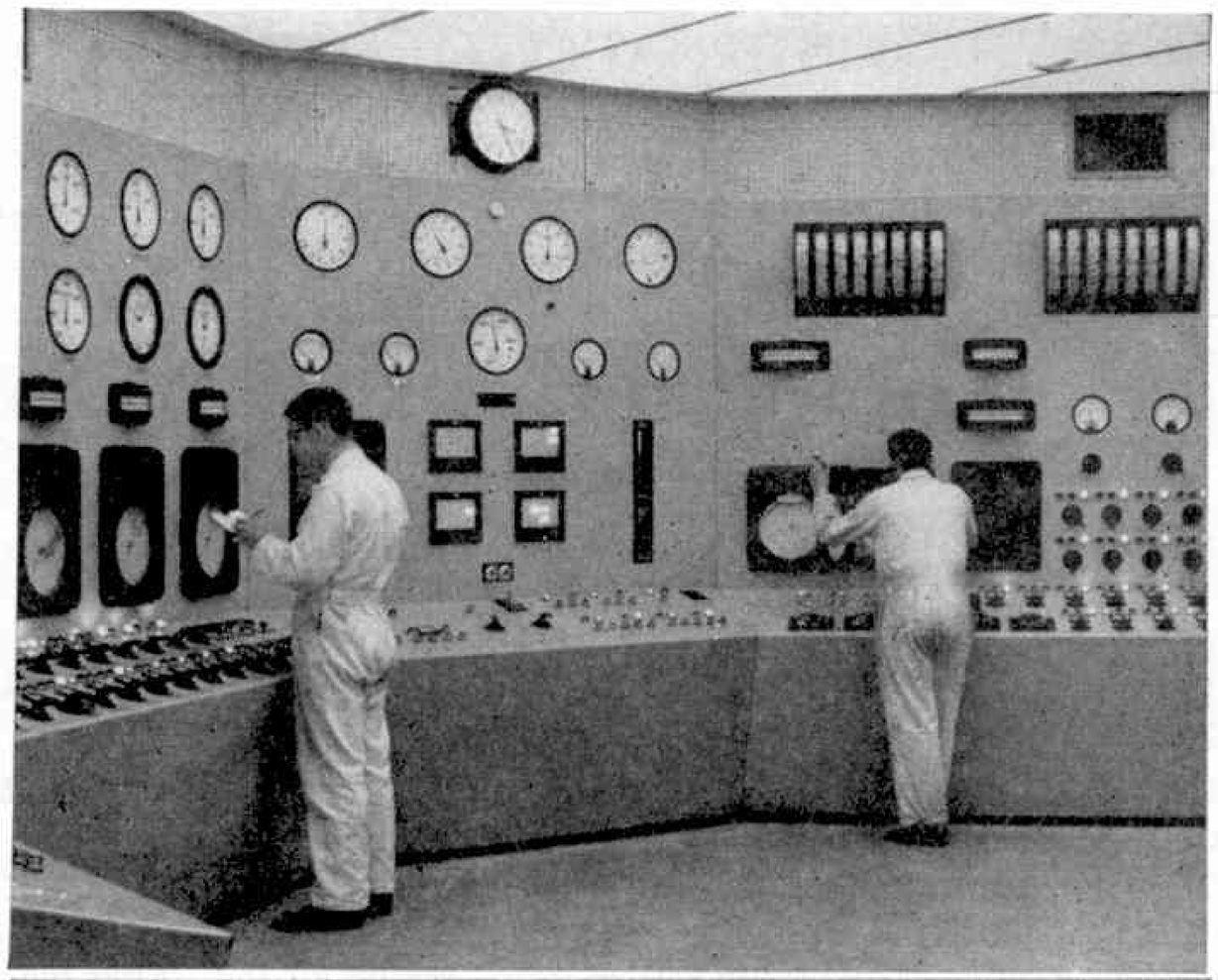
Of General Interest

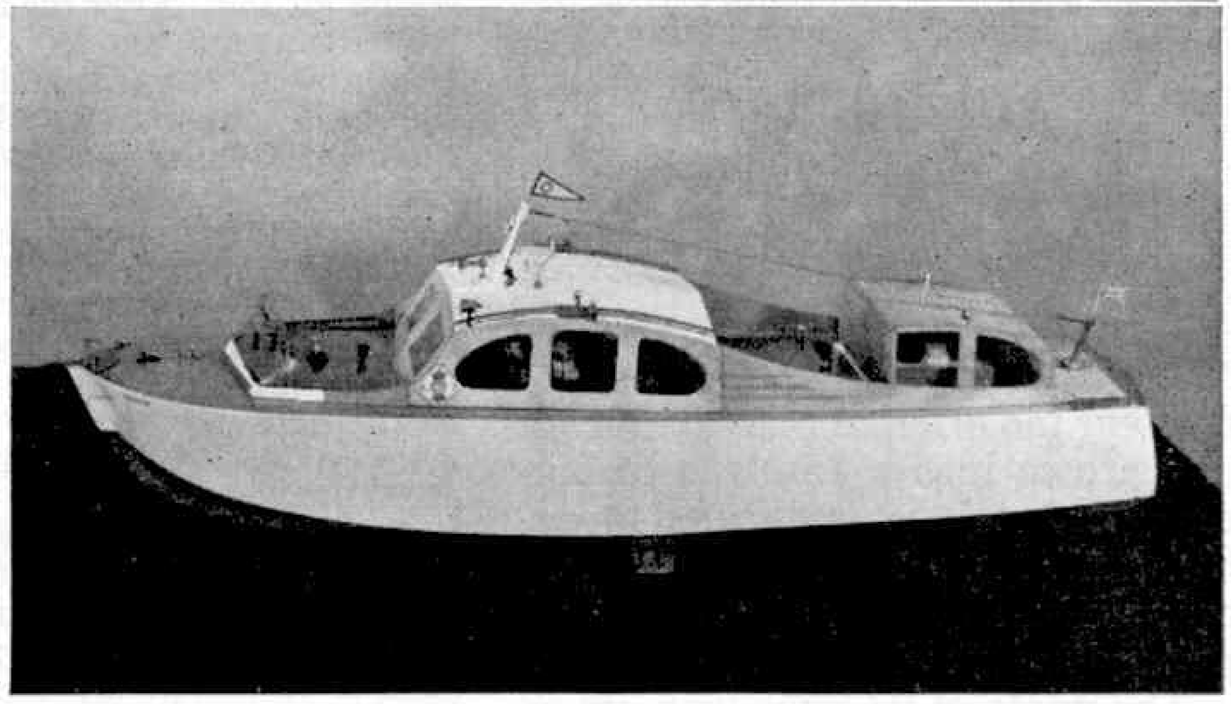
THE picture on the right shows final adjustments being made to equipment in the first of three control rooms to be completed at the new Uskmouth B Power Station in South Wales.

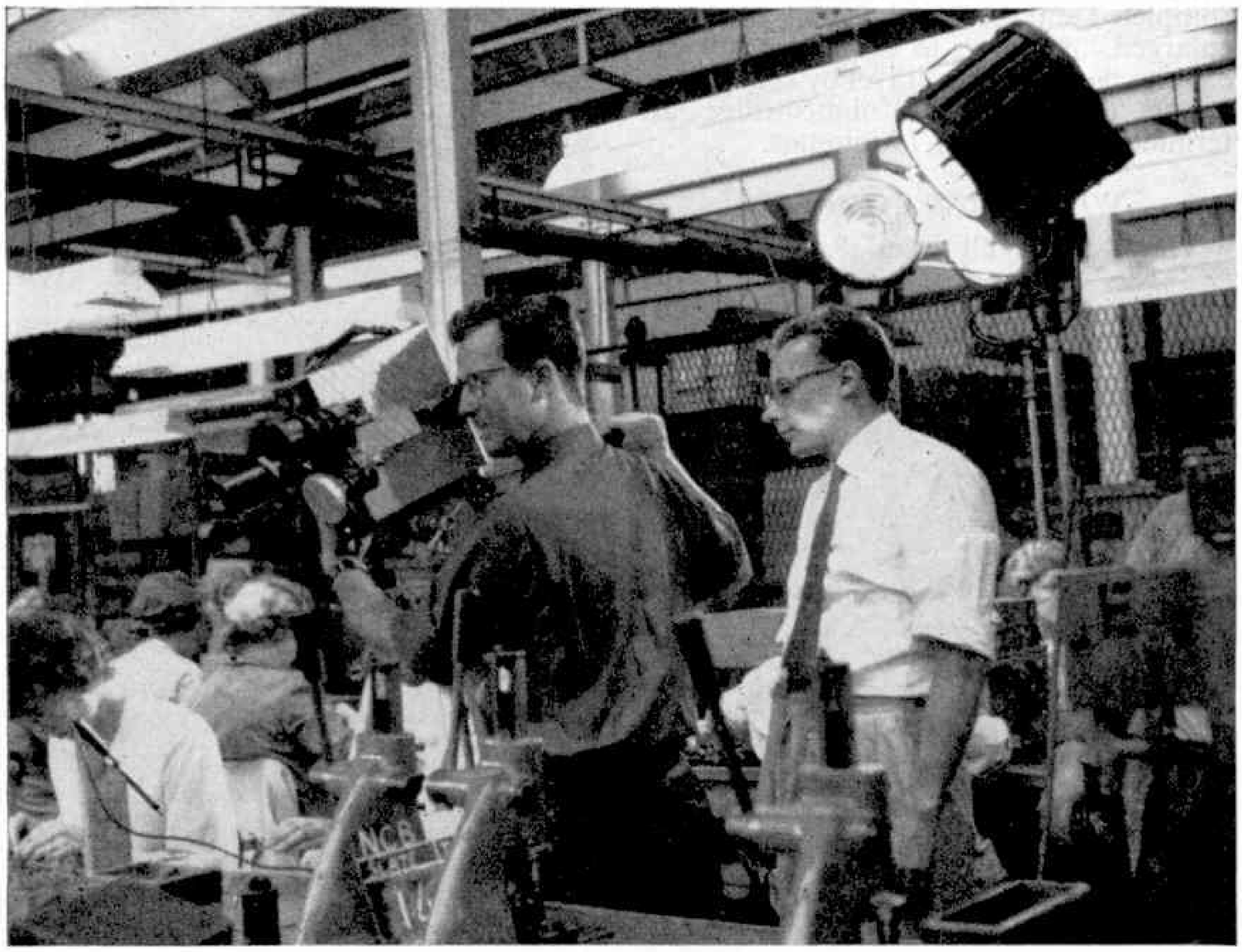
Uskmouth B has three turbo-alternators made by the English Electric Co. Ltd. They are the biggest to be installed in South Wales, each having a capacity of 120 MW. The three boilers, by Babcock and Wilcox Ltd., are each capable of producing 860,000 lb. of steam per hour. George Kent Ltd., of Luton, have supplied more than £100,000 worth of instrumentation equipment for boilers, turbo-alternators and control rooms. The station is not scheduled to be fully commission until later this year, but the first set is already in service.

Automatic combustion control equipment will maintain a constant steam pressure of 1,600 lb/sq. in. at the boiler outlet and, at the same time, maintain the correct level of excess air through the furnace to ensure optimum combustion efficiency. Even a small percentage increase in efficiency is extremely valuable at a station which will have an estimated weekly coal consumption of 1,500 railway wagon loads (20,000 tons).

The marine cruiser "Sheila" (right) built by Hornby-Dublo enthusiast Mr. C. H. Meyerhoff of Buckie, Banffshire, is radio-controlled and attracts many admirers whenever she takes to the water. At the time these notes were written she was on the stocks until the coming spring. The vessel is 36 inches long with a 10¼ inch beam and is 19 lb. dead weight. She is fully fitted and is driven with a "Taycol" super-marine motor. The cruiser can be switched to ahead or astern, and the rudder moved (*Cont. on page 89*)







The camera at work during the filming, at the Meccano Factory of "Mining Review" (No. 3, 15th Year) which shows how the rebuilt West Country Class locomotive *Barnstaple* is produced. (See "Hornby-Dublo Film"—page 65)

INTERNATIONAL AEROBATS

MILLIONS SAW THE BLUE DIAMONDS

DURING their first season as R.A.F. Fighter Command's No. 1 aerobatic team, the "Blue Diamonds" of 92 Squadron put on 43 displays in six countries. More than 500,000 people watched some of these shows, not counting millions of TV viewers. They had their money's worth, for by the end of

AIR NEWS
By
John W. R. Taylor

the year the original nine-man team had grown into a 16-plane formation, performing complicated loops, rolls and turns at 450 m.p.h. with only four feet between the blue-painted Hunter fighters.

The pilots of 92 Squadron are as international as their audiences. Commanded by Squadron-Leader Brian Mercer, they include two New Zealanders, two South Africans, one man from Northern Rhodesia, one from Hong Kong and one from Pakistan.

These fine flyers have few spare moments, as each display must be preceded by up to ten rehearsals and the squadron also has to play its full part as one of the front-line fighter units for the defence of the United Kingdom.

LOW FREIGHT FARES

The cost of flying freight across the Atlantic has become so low since the big four-turboprop Canadair Forty-Four entered service that one British shoe manufacturer is exporting his products to New York at a transport charge of less than half-a-crown a pair.

Nor is this all, for cargoes delivered to Seaboard World Airlines' freight shed at London Airport before ten o'clock in the evening are flown to America the same night. This means that the shoes reach the shops in New York before even ladies' fashions have had time to change!

LESS GLOOM AT LUTON

Passengers on board the K.L.M. Viscount *Sir Charles E. Kingsford Smith* on October 30 last year were probably startled to learn that they were to be disembarked at Luton Airport instead of London. However, there was a good reason for this. After the aircraft had left Rotterdam, fog had reduced visibility at Heathrow to 80 yards and at Gatwick to 200 yards. By contrast, Luton Airport, situated 500 feet above sea level, offered a visibility of at least two miles, making possible a safe and easy landing.

K.L.M. had announced its intention of diverting aircraft from Heathrow to Luton in bad weather only four days earlier. It was welcome news for the people of Luton, because improvements being made to the airport will cost £1,000,000 over a five-year period and will be worth while only if some of the major airlines use it regularly.

Already a 5,500-ft. main runway has been built and equipped with the finest lighting system in the country for night flying. New terminal buildings have been completed and the Customs halls are being enlarged. Nearness to the M1 motorway enables passengers to travel by coach from Luton to K.L.M.'s Knightsbridge air terminal, London, in 75 minutes.

WEST–EAST JOURNEY

The wall built along the frontier between East and West Berlin has made travel between the two parts of the city difficult and even dangerous. Yet one party of B.O.A.C. air travellers passed through it just before Christmas without even having to show passports.

No ordinary passengers, they included five baby elephants, three blue bulls, two barking deer, two bison, two cases of geese, three cases of birds, one case of pheasants and one cage of pandas. Their airborne Ark—a Super Constellation airliner—left Calcutta on the morning of Wednesday, December 20, and landed them at Tempelhof Airport in West Berlin. There they were transferred to lorries and taken by road across the Berlin border to help re-stock East Berlin's zoo.

Four "Blue Diamonds" make an almost vertical ascent. This illustration and the one below are from Air Ministry photographs.

The pilots and ground crews of the "Blue Diamonds" in front of their machines.

EASY-TO-FLY 'PLANE

Umbaugh Aircraft Corporation is a company with big ideas. Convinced that tens of thousands of people would take to the air if they could buy a cheap, safe, easy-to-fly aircraft, it has designed, built and flight-tested a neat little two-seat autogyro which it calls the Umbaugh–18, and has taken over a 10,000,000-dollar factory in which to mass produce it in thousands.

Irish International Airlines is now offering American fishermen special all-inclusive salmon fishing trips to Ireland.

A booklet with a giant salmon on the cover, dwarfing a happy angler in the background, gives full details of where to fish, how to fish and even where the successful sportsman can have his catch stuffed by a taxidermist. Transportation to and fro across the Atlantic is by Boeing 707 "Shamrock Jet".

An autogyro is, perhaps, the ideal kind of aeroplane for the ordinary family man. It needs no large airfield, being able to take off in a few yards and land almost vertically. It is far easier to fly than a helicopter, will not stall or spin, and "parachutes" down in complete safety if its engine should fail in flight.

The Umbaugh–18 is powered by a 180 h.p. Lycoming engine, driving a pusher propeller. A clutch enables the engine to turn the rotor on the ground, to "spin it up" for take-off. Once the rotor is turning sufficiently fast, the power of the engine is transferred to the propeller and the aircraft takes off. In cruising flight, the rotor auto-rotates, or free-wheels, providing only lift to keep the machine airborne. The pusher propeller gives the Umbaugh–18 a maximum forward speed of 115 m.p.h.

A Canadair Forty-Four at London Airport. The picture gives an excellent idea of the great height of a modern air freighter. Photograph by courtesy of Brenard Photographic Service.

The whole aircraft is designed for quick and easy production, and Umbaugh hope to sell it for under 10,000 dollars.

WANTED A CHANGE

The films which T.W.A. put on regularly in the cabins of their Boeing 707 jet-liners have proved popular with passengers, but create a few problems.

For example, a man who arrived at the New York ticket desk recently, to check in for his flight to Rome, asked what film would be screened during the journey. On being told what the film was he asked to have his ticket changed to another flight. The receptionist pointed out that this would take him to Los Angeles, not Rome, to which the passenger replied, "I know, but I've already seen the movie on the Rome flight."

NO MORE SKYWRITING

Since the beginning of this year, sky-writing, banner-towing and all other forms of aerial advertising have been banned in Britain. It is sad to see any flying activity come to an end, but there are good reasons for the ban. Most advertising flights are made over crowded places, such as seaside beaches or sports stadiums, where an engine failure might endanger hundreds of people. The noise of low-flying aeroplanes can also be a nuisance to holiday-makers in search of peace and quiet.

Even more important is to avoid danger to other aircraft. The skies over Britain are so full of airliners and military aircraft, nowadays, that there is no room for lightplanes to commandeer a large area of the sky for an advertisement written in smoke, or to tow a banner to and fro at about 80 m.p.h.

The ban applies equally to the use of gliders, kites and balloons for advertising. So watch your step!

BABY CROP-SPRAYER

When Igor Bensen designed his little single-seat Gyro-Copter autogyro, he intended it to be a sporting aircraft that almost anybody could build cheaply at home. But it was not long before ranchers, prospectors and other people with outdoor jobs began putting Gyro-Copters to use as runabouts and as power-line patrol and forest fire-spotting aircraft. Now, D. Napier & Son of Acton, London, have adapted a Gyro-Copter for crop-spraying duties.

Illustrated on the left this tiny aircraft, re-named the Agri-Copter, is the smallest and the simplest agricultural aircraft in the world. It is powered by the usual 72 h.p. McCulloch target-drone engine, but has a floor-type control column and is fitted with spray-bars measuring 14 feet from tip to tip. These are supplied with chemical spray from a six-gallon tank which forms the pilot's backrest.

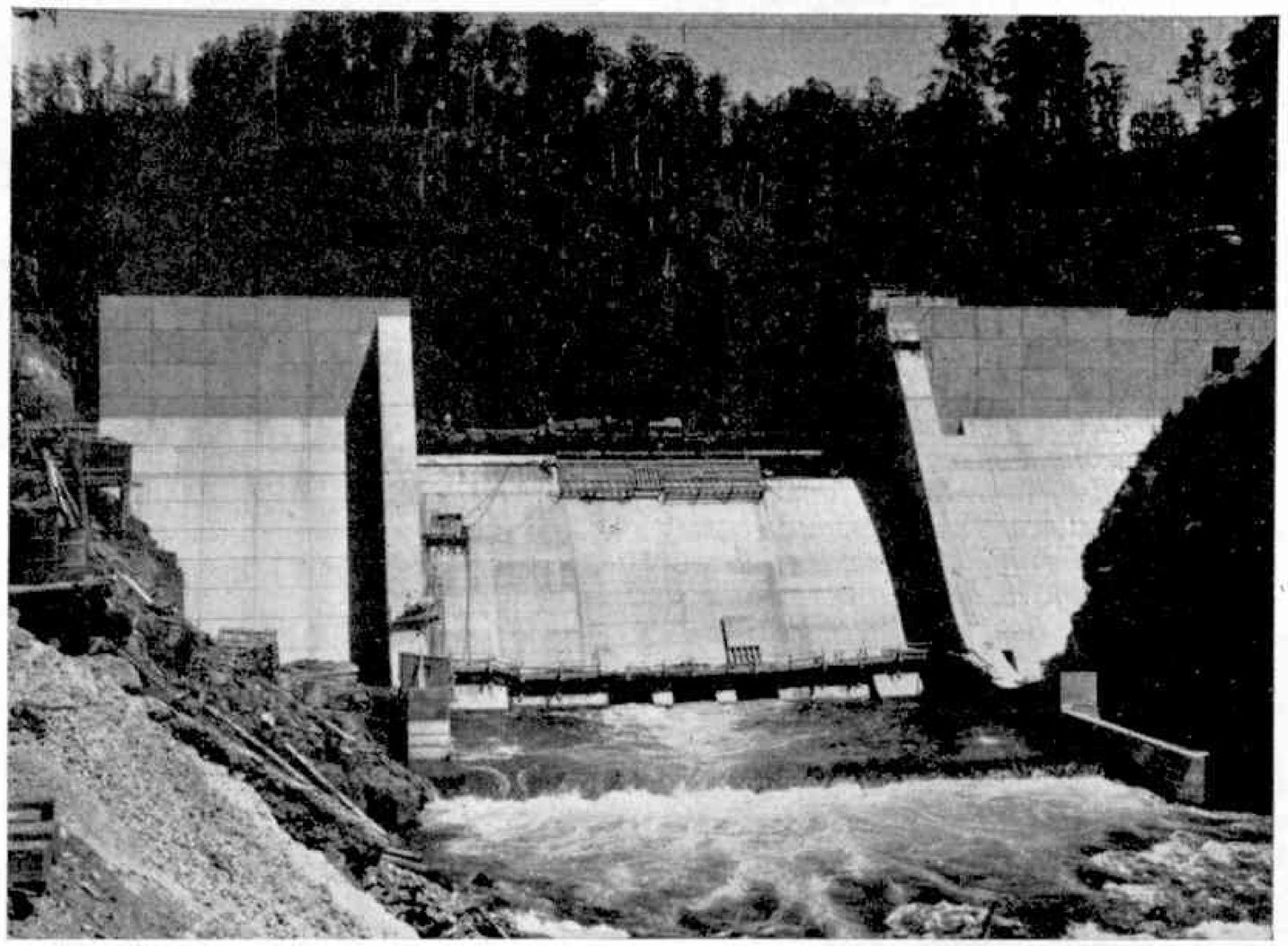
Napier plan to build a second Agri-Copter with a larger-diameter rotor and improved propeller, which should permit the payload to be increased to ten gallons of spray. This would be sufficient to treat an average of two acres per flight, and as the aircraft can operate from the edge of the field being sprayed, there is no reason why it should not make twenty flights an hour.

The Napier Agri-Copter agricultural gyroplane in the air. The spray-chemical tank is mounted behind the pilot's seat and feeds, by flexible polythene pipes, the spray booms extending on either side of the aircraft.

Mountain State Makes The Most Of Its Resources

HYDRO-ELECTRIC POWER IN TASMANIA

BY
ROBERT GARVIE,
B.Sc., M.I.C.E.



Liapootah Dam under construction on the Nive River. The steel drum gate fills the gap between the side abutments. The gorge is 1,000 feet deep at this point.

IT is not very widely realised that the biggest hydro-electric power producer in Australia is not the famous Snowy scheme, but the generating system of the smallest state of the Commonwealth, Tasmania. Moreover, Tasmania is a pioneer in hydro-electric engineering, for the development of its water resources goes back to 1895, when such schemes were few in number and small in size. It was still the age of the steam engine. Today, some of the most spectacular works of the engineer are those associated with hydro-electric power, and it is no exaggeration to say that the world-famous Snowy scheme is a grandchild of a little power station opened in Launceston, Tasmania, in 1895.

Tasmania is an island of many mountains, with a rugged central plateau where peaks rise to 5,000 feet above sea level, and the whole of it is intersected by deep gorges, which sometimes fall as much as 2,000 feet from crests to the river bed below. The island lies in the path of the westerly winds, and, unlike the mainland states, has abundant and reliable rainfall. The combination of mountains, gorges, lakes, and rainfall is ideal for the development of hydro-electric power.

Water Power Potential

Launceston is unusual among cities in that is has a considerable water power potential on its very doorstep. Barely a mile from the post office clock tower, the hills rise steeply to more than 500 feet above sea level, and through the ridge in a precipitous gorge tumbles the South Esk on its way to the sea. In the 1890s, the engineers were content to exploit quite a small bend of the river, by means of a half-mile tunnel and a wrought iron penstock down the face of the cliff to a power station 110 feet below. The original turbines, totalling 579 horsepower, were supplied by the famous old firm of Gilbert Gilkes of Kendal. Those pioneers built better than they knew, for their little power station, named Duck Reach, continued in operation till 1955, when it was supplanted by a new development which exploited the maximum possible head of this stretch of the gorge, 415 feet, to drive turbines totalling 112,000 horsepower.

Nowadays the generating system includes ten power stations with a total installed turbine capacity of 800,000 horsepower, mostly situated on the catchment of the Derwent, a river that drains the central plateau and empties into the Southern Ocean past the capital, Hobart. Difficult terrain has led to many works of considerable size and technical interest. At the head of the Derwent, the 200 feet high Clark Dam created an artificial lake, eight miles long and 2,342 feet above sea level. The dam is a concrete gravity arch structure, 1,110 feet along the curved crest, and with a total volume of concrete of 200,000 cubic yards.

"Ski Jump" Spillway

A feature of special interest is the spectacular "ski jump" spillway, by means of which the excess water, following very heavy rains on a full dam, is able to cascade down to the gorge below.

Some miles below Clark Dam, the River Derwent is joined by the River Nive, which drains another area of the Central Highlands and moves along through a steep gorge. The Nive Gorge possesses the unusual feature of two large hydro-electric power stations on opposite banks of the river, within sight of each other, and drawing their water from different catchment areas. On the right bank, the Tarraleah Power Station has six Pelton wheel turbines each of 21,000 horsepower, operating under a head of 982 feet. On the left bank stands the Tungatinah Power Station, and under a head of 1,005 feet its five Francis turbines each possess a capacity of 35,000 horsepower.

Diverting The Waters

At the higher altitudes, the severity of the winter raised the usual problems, but it also brought an interesting solution to one of them. The plan included the diversion of a river through eight miles of canal in an area 3,000 feet above sea level. A four-mile length of this canal was designed as a rectangular reinforced concrete section, ten feet wide and eight feet high. As everyone knows, low temperatures can prevent concreting and can seriously affect any concrete recently poured, so the engineers were faced with the possibility of many interuptions to the work. A covered factory was set up near the construction camp, and there the side slabs were pre-cast, as units, in working conditions which were excellent at all times. The heavy side slabs were then transported by specially fitted lorries to the site of the canal where a bed had previously been prepared. The slabs were picked off the lorry by a travelling gantry and lowered into their final position to be fixed and grouted in place. The number of men required for erection was quite small, outside work was reduced to a minimum, and remarkably few interruptions were caused by the weather.

In developing the Derwent catchment,

the principle has been to make the maximum use of the water on its course to the sea, and the power stations are, therefore, in a series. After turning the turbines of the Tarraleah and Tungatinah Power Stations, the tailrace waters combine and flow further down the gorge of the Nive, and are then diverted by another dam into a four-mile tunnel. This is the Liapootah Power Development, and the dam is interesting in having a very large hydraulically-operated drum gate. The gate is 120 feet long and 20 feet high, and it acts automatically as a variable crest for the dam, to maintain a constant water level upstream all the way back to the Tarraleah Power Station. When the river runs in flood, the drum gate falls as the river tends to rise, and in its fully lowered position the gate will safely pass the maximum possible flood likely to occur on this river.

Woodstave Pipelines

The water diverted by the dam travels by the tunnel and steel penstocks to the Liapootah Power Station, which has three Francis turbines of 117,000 horsepower operating under a head of 369 feet. Below this power station, a rockfill dam creates a lagoon on the River Derwent, and the water is diverted yet again to another power station bearing the name Wayatinah (61,500 horsepower). To reach the Wayatinah Power Station, the water travels part of the way through twin woodstave pipelines, each 4,300 feet long and 13½ feet in diameter. While woodstave pipelines are not as common as they used to be, they are still used extensively in Norway, the United States, and Australia. They are assembled stave by stave, as a barrel is made, and bound at close intervals with steel bands. They are easy to erect, and so do not make heavy demands on costly skilled labour. Properly designed and maintained, they have a long life.

The rugged centre of Tasmania has very few human habitations, and the state's Hydro-Electric Commission has had to build many miles of roads, and establish camps for the working force. Few amenities of the city are lacking in a modern construction village. The houses for the married workers are all-electric and pre-fabricated, so that they may be transported in three sections on flat-topped lorries. They are erected in well-planned villages, together with shops, school, churches, recreation hall, and sports facilities, in addition to the offices and workshops necessary for the job on hand. When the work in the area is completed, the temporary structures are removed, leaving only a small permanent village to accommodate the power station operating staffs. At present, two such villages are in use—Wayatinah and Poatina, each the home of close on 2,000 men, women and children. It is a healthy life, and the mixture of nationalities reflects Australia's immigration programme.

Electricity from water power is cheaper than that generated in coal or oil-fired power stations, and the comparatively low price of power in Tasmania has attracted a number of large industries engaged in the manufacture of zinc, aluminium, newsprint, fine papers, carbide, chemical fertilisers and cement, together with a wide range of other products.

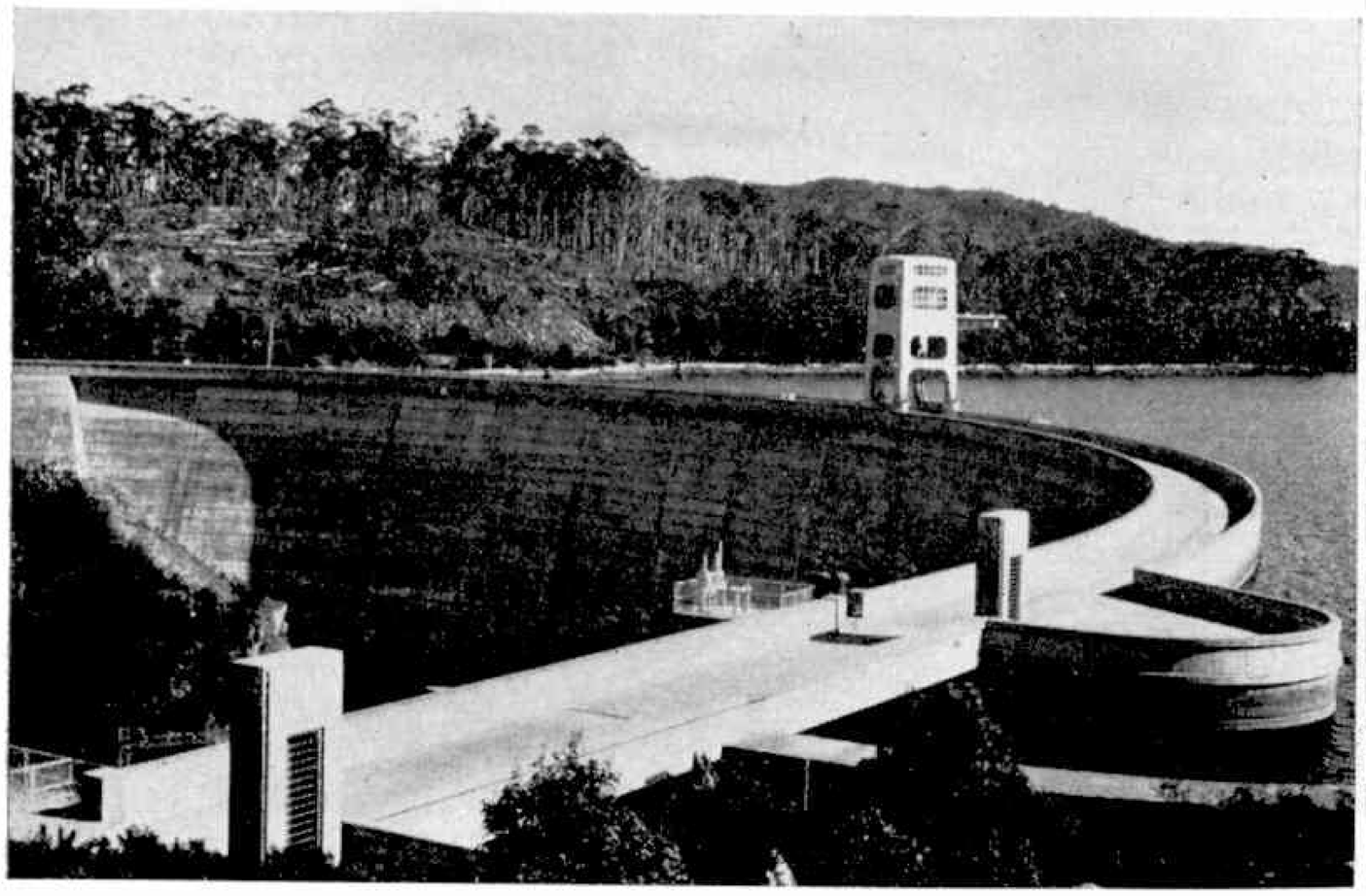
Electricity in large quantities, and at a low price, is essential in electrolytic processes, which explains why Tasmania is the home of Australia's only producer of zinc, carbide, and aluminium. It is claimed that Tasmania ranks second only to Norway in usage of electricity per head of population. The Tasmanian figure is now about 7,200 kilowatt-hours per annum, a striking contrast to the 1,800 of the nearby, and much more populous, mainland states of Victoria and New South Wales. (Annual consumption per head in England and Wales is about 2,000 kilowatt-hours). In line with experience in most countries, Tasmanian consumption increases at a rate of eight or nine per cent. each year. Inevitably, this calls for more power stations, so that the electricity authority is engaged in a continuous programme of construction.

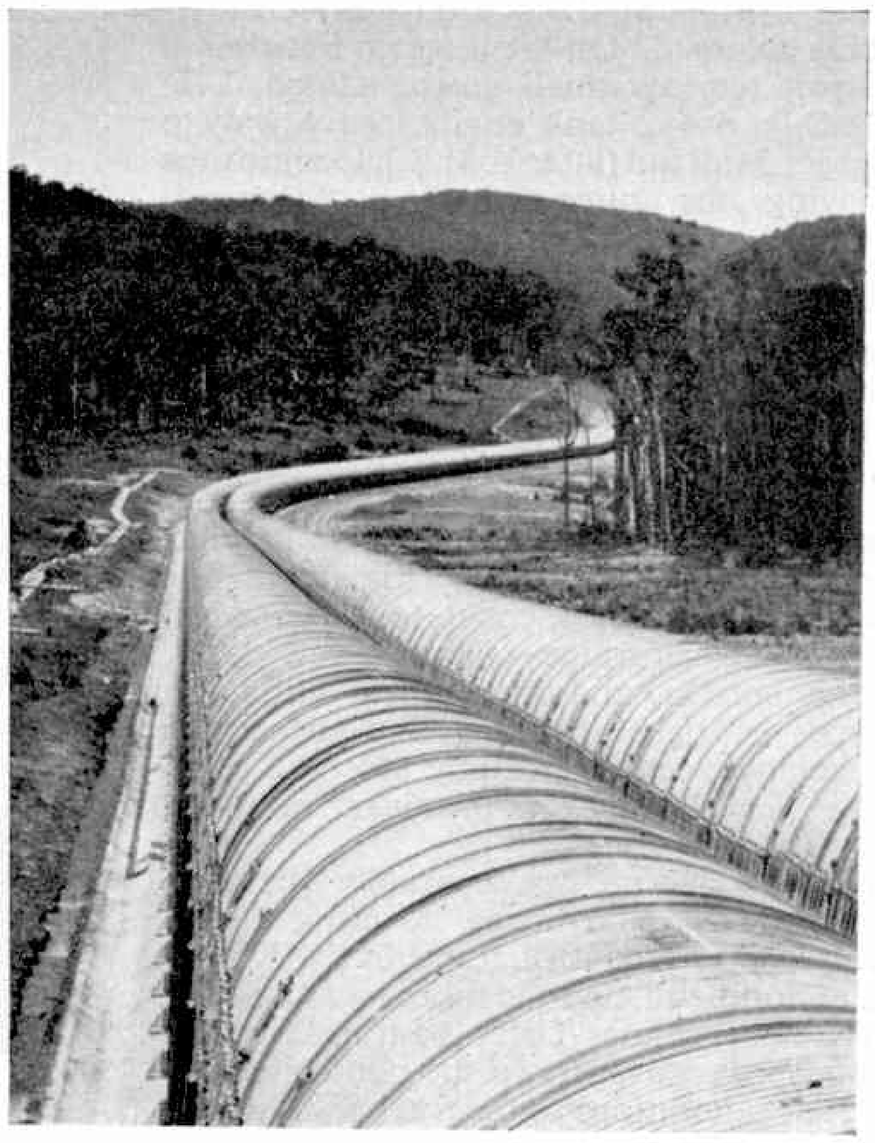
Of Pre-Stressed Concrete

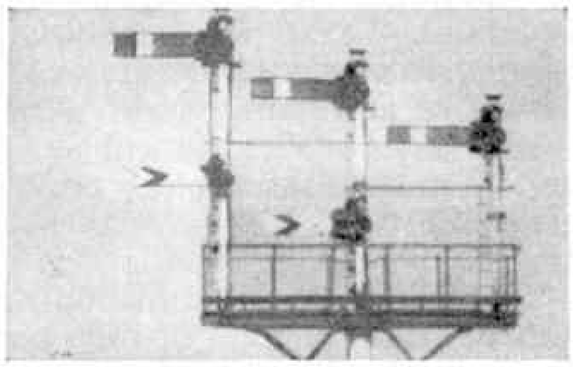
Two new power developments are under way at the present time, and the first of these is attracting wide attention. Below the Derwent schemes already mentioned, a new one is being built with the name Catagunya. This scheme includes a pre-stressed concrete dam, 150 high, which so far is the biggest of its type. An ordinary mass concrete dam retains the water by virtue of its own weight. In a pre-stressed concrete dam, a large part of the overturning force is resisted by high tension steel cables embedded deep in the foundation rock. As a result, the dam can be much thinner in design, with consequent saving in concrete. In the pre-stressed concrete dam at Catagunya, the volume of concrete required is almost halved by adopting the pre-stressing technique. When completed this year the Catagunya Power Development will add another 66,000 horsepower to the Tasmanian system.

The second of the new developments takes advantage of a striking geographical feature. The Great Lake, 3,380 feet above the sea, is separated (*Continued on page 89*)

Below: The Clark Dam, a gravity arch structure 200 feet high which creates the artificial Lake King William at the head of the River Derwent. The tower in the centre is a travelling crest crane for placing stop gates over the power station intakes when this is necessary for repair or maintenance. Right: Twin woodstaves pipelines, 13½ feet in diameter and 4,300 feet long, in typical Tasmanian highland bush country.







RAILWAY NOTES

Contributed by R. A. H. Weight

Tilbury and Southend Line Transformation

ON the London, Tilbury and Southend Line, E.R., from Fenchurch Street to the Essex coast, electric trains employing the high-voltage, overhead traction system began running last autumn, initially for trial and training purposes as a prelude to probable changeover for nearly all passenger services during 1962. Many extension and improvement works to enable more and faster trains to run with less risk of delay have been associated with this big scheme, planned a long while ago, and then unavoidably postponed.

I have boyhood memories of Barking Station, seven and a half miles from the London terminus. Barking then had only two platforms, with level crossings to the east, on the diverging lines to Shoeburyness and to Tilbury. The lines ran through miles of open fields and market gardens which are now covered with houses and railway yards.

When London Underground electric trains began running to Barking before the first world war the station was considerably enlarged. On the through Fenchurch Street services small green, named, L.T. & S.R. 4–4–2 tank engines gave way to larger Midland (later L.M.S.), locomotives having the same wheel arrangement. Traffic grew enormously and Barking became more and more a key point, with numerous trains liable to foul one anothers' paths on the flat junctions, and consequent signal stoppages at each end, and with thousands of passengers changing there daily.

Modernisation and complete reconstruction have now provided an impressive eight-platform station. This features a spacious, canopied, concrete entrance hall on the overbridge (East Street) level; large booking and other offices with latest types of ticket printing and dispensing machines; central heating; splendid lighting; new subway and passenger ramps at the London end.

Two adjacent, but separately operated, all-electric signal boxes, covering a considerable area control, respectively, Tilbury and Southend, and the more local London Transport trains. There is a train-actuated loudspeaker system on the platforms.

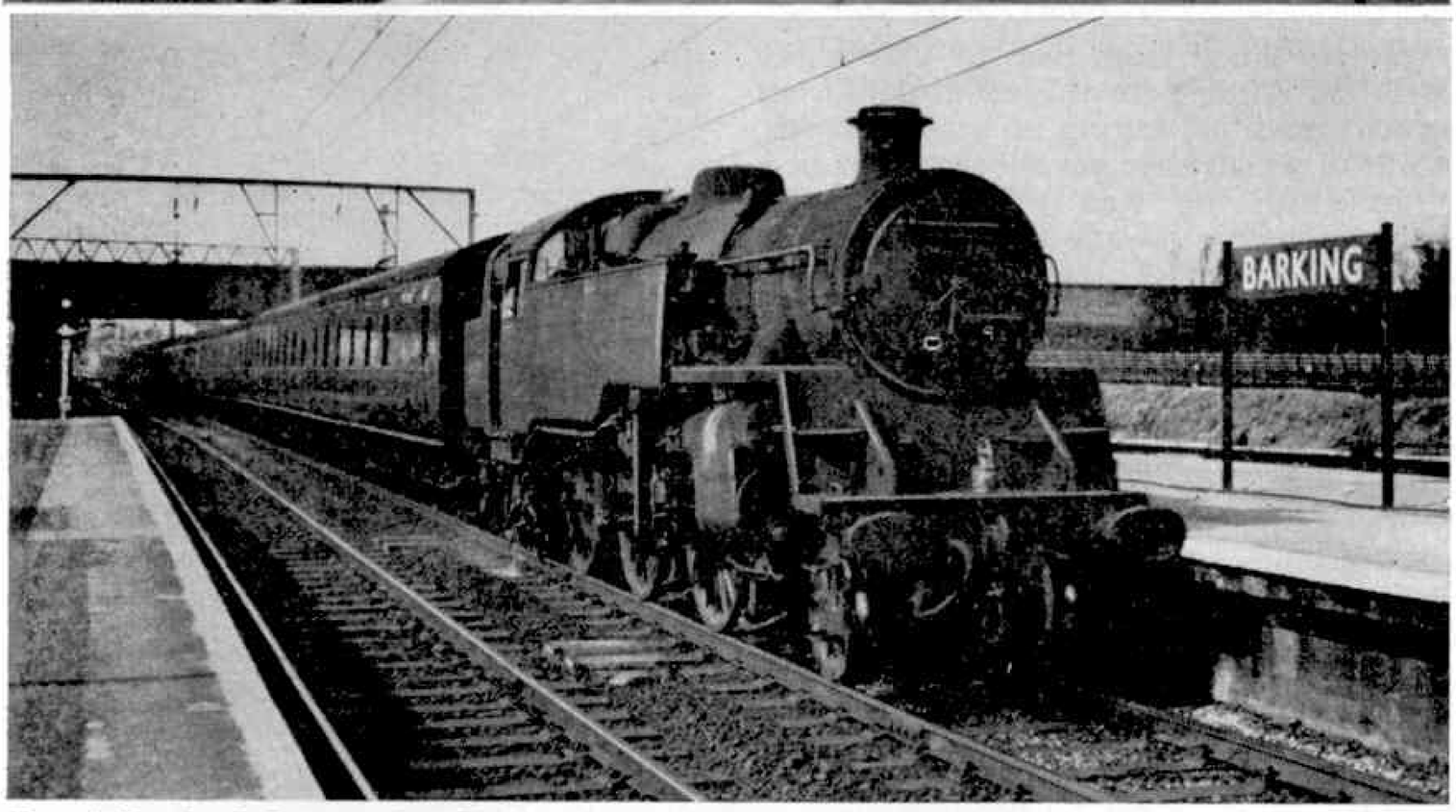
Vast alterations to the track level enable westbound London Transport electric trains employing the four-rail traction system, from Upminster, nearly eight miles beyond Barking, to dive under the main coast lines and provide cross-platform interchange at Nos. 5–6 with the Fenchurch Street service. After departing westward on their way to Central London, they cross over the through lines by way of one of the two new flying junction bridges. The other bridge carries Southend or Tilbury trains, passenger and freight—steam or diesel hauled—to and from the Woodgrange Park–South Tottenham route, providing connections with St. Pancras as well as various Eastern, Western or London Midland Region routes in the London suburbs. Eastbound Underground trains have a clear run through, although some terminate at a bay platform, with cross-platform connection with the Southend services.

INTENSIVE SERVICES

The London–Southend–Shoeburyness passenger service, operated in recent years entirely by steam 2–6–4T locomotives of the L.M.R. two and three-cylinder series, or the B.R. Standard 80,000 class 4, has been unique, particularly as regards the intensive morning and evening service with 9–10 trains per hour over distances up to 40 miles. Many of the passengers travel more than 30 miles each way daily and all trains are partially fast, with stops staggered to spread the full loads.

Last summer, I watched traffic for a typical hour and a half during the evening peak, when all was working smoothly. Some trains were passing through Barking, some stopping. Mostly they were made up to eleven bogie coaches, and in a few

In this fine action picture by "M.M." reader C. Stevens, Green Arrow 2–6–2 No. 60929 is passing New Barnet on a fully-braked express freight train bound for the North of England.



Top: A Fenchurch Street train at Barking, before the erection of the overhead electric wires. Photograph by S. Creer. Below: B.R. Standard 2–6–4T No. 80079 runs under the overhead wires installed for electric traction. Photograph by R. F. Roberts.

instances the tank engines were running bunker first. There were also trains of shorter formation to Tilbury, diverging at Barking and calling at a separate platform, No. 7. A few of those were hauled by Brush Type 2 D5500 class diesel-electric locomotives which now intermingle with the steam ones, although mainly engaged on freight duties. So, with the multiple-unit electric sets gradually coming more into the picture, as mentioned at the beginning of these notes, there is for the time being much interest and traction variety.

In addition to steam services, local diesel passenger sets run in and out of Tilbury (Riverside) Station, a fine modern terminal adjacent to the long quay where ocean liners and other foreign-going ships berth for loading and unloading passengers, mails and baggage, etc. There are other vessels on pleasure voyages in summer, together with frequent and busy railway-owned passenger and vehicle ferry crossings all the year to and from Gravesend, Kent, on the south side of the wide Thames, with through booking facilities from the Tilbury and Southend Line.

DAILY EXPRESS FREIGHT

There is a triangle of tracks at Tilbury with a connection to the main Southend route at Pitsea, also the the refineries and oil installations at Thames Haven. By the side of the lines towards Barking and London after Tilbury (Town) Station —adjacent to the docks in which the Port of London Authority's freight trains operate—there are large cement and other works, more oil depots and so on. Fast freight trains in some cases formed entirely of one firm's tank wagons, including "Presflo" bulk cement carriers, run daily at regular times from South Essex to destinations far and wide in England and Scotland by a rather fascinating variety of routes. They fit in between express and other passenger trains, with return workings of similar importance. There are motor car trains from Dagenham and general through freight services either to and from big centres in the Midlands and North directly, or connecting at yards in the London area with Eastern Region and other principal express goods trains. These provide next-day delivery for many consignments in accordance with current accelerated British practice.

As rostered last year, Brush diesel locomotives (a batch of which is based at Ripple Lane Depot, close to the modern Barking marshalling yard) were working through to and from Didcot, W.R., Cambridge or March, E.R., to the L.M.R. main lines, etc. On the heaviest tank car trains two are coupled for multiple unit control by one driver. Steam 2–8–0s and 2–10–0s were also employed.

The L.T. & S. Section is small in mileage, although of great importance, and is a substantial revenue earner!

MOTIVE POWER MISCELLANY

Additional B:B. 2,200 h.p. diesel-hydraulic W.R. Warship class main line locomotives recently entering service are numbered and named as follows: Nos. D854, *Tiger;* D855, *Triumph;* D856, *Trojan.*

* * * *

The Brush Traction Company's prototype diesel-electric Co–Co express locomotive, at present numbered D0280, *Falcon*, painted a pale green-yellow, has been undergoing trials on the main line from King's Cross and elsewhere. It is understood that a new series of similar units, having a rated h.p. of about 2,700, will be built for the East Coast route.

* * * *

Some months ago great interest was evinced throughout Yorkshire and Lancashire when, for the first time, an A4 streamlined Pacific—none other than the famous *Mallard*—looking in perfect condition, hauled a heavy excursion special including kitchen and observation cars to Blackpool. The route from Retford and Doncaster was by way of Wakefield, Burnley, Blackburn and Preston, and arrival was made with a little time to spare after a difficult and steeply-graded cross-country run. Up the sharp climb to Copy Pit, before Burnley, W.D. 2–8–0 No. 90348 assisted in rear.

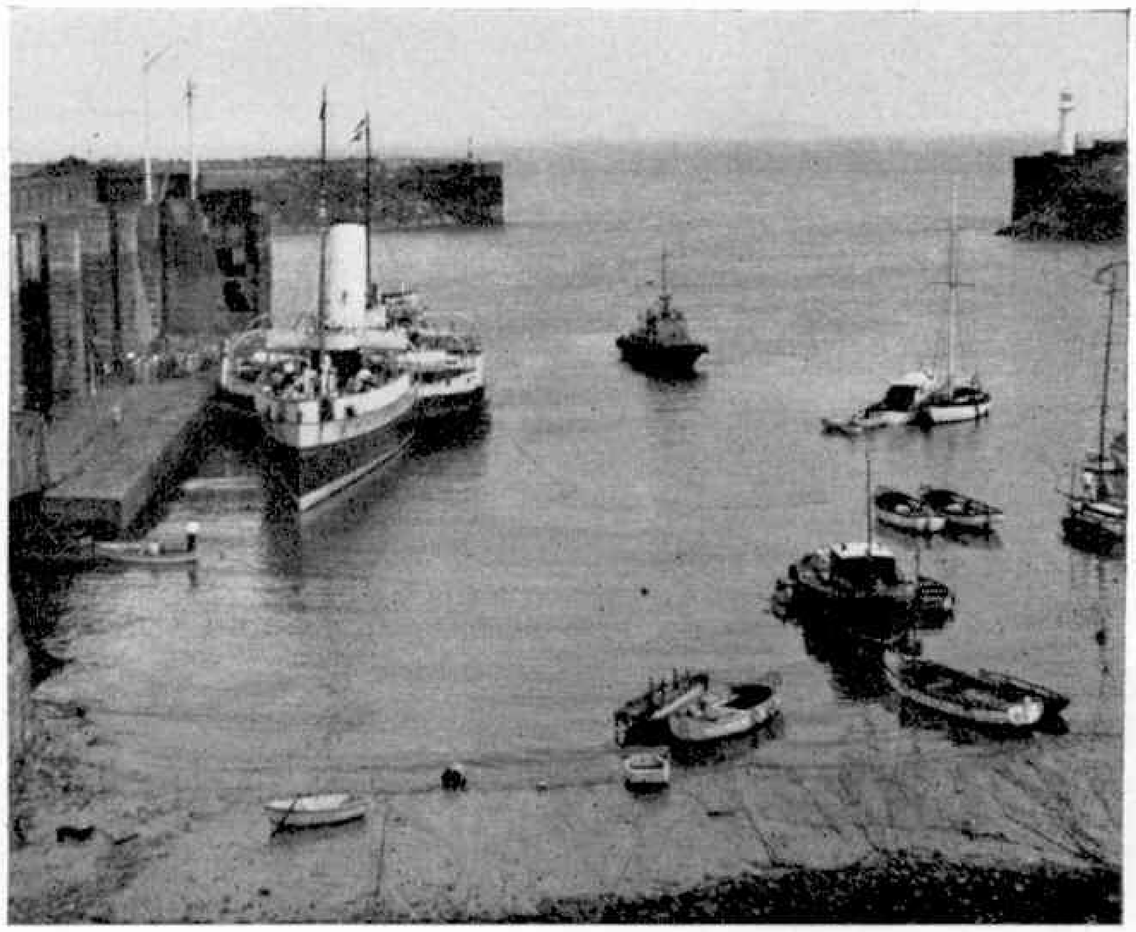
Even more astonishing was the return journey with two sleeping cars added, as the restored former Midland Railway 4–4–0 Compound No. 1000, was attached in front to assist *Mallard* all the way from Blackpool to Stansfield Hall summit, Lancashire, but as the departure hour was midnight fewer photographers and sight-seers were about!

* * * *

On the S.R., Type 3, diesel-electric additions to locomotive stock have included Nos. D6567–74; in the 350 h.p. diesel-electric shunting class: Nos. D4099–4100. Withdrawals for scrapping in that region have lately included more representatives of the popular Lord Nelson, King Arthur 4–6–0s; Schools and other 4–4–0 express classes.

SHIPS OF THE BRISTOL CHANNEL

The "White Funnel" Fleet



P.S. "Glen Usk" is seen here at Barry embarking passengers for Weston.

TODAY, the paddle steamer is becoming almost a thing of the past, for only a few remain to operate around the coasts of Britain. The majority of these are used as pleasure boats, while a few paddle tugs and paddle ferries still ply the waterways.

The Bristol Channel has for many years been the home of famous paddle steamers—the *Waverley*, *Devonia*, *Cambria* and *Britannia* must bring back vivid memories to older people.

Today, P. & A. Campbell, Ltd.—or simply "Campbell's"—is a household word for the families of the Bristol Channel region, as indeed it has been since 1887, when the *Waverley* arrived from the Clyde to form the beginnings of the White Funnel Fleet.

Competition was extremely severe in those early days, but nevertheless the company grew from strength to strength, and soon another paddle boat was purchased—the *Ravenswood*—which stayed in service until the end of the 1954 season, a total of 63 years' service.

In 1893 came P.S. *Westward Ho!* which at that time was of revolutionary design. Her decks were extended from bow to stern and she was the most comfortable and best fitted ship afloat of that type.

In the years around the turn of the century, competition grew to an even greater extent. The Barry Railway Company, who operated two paddle steamers, joined forces with the Barry and Bristol Channel Steamship Company, to form the Red Funnel Line. These steamers sailed from pier to pier along with the White Funnel Fleet at the fastest speeds possible, setting up many records, some of which have never been surpassed.

In 1910, the Red Funnel steamers' fortunes began to wane and the company's vessels were sold.

By Michael J. Cornick

Throughout the two world wars, the White Funnel Fleet steamers played their part in the defence of the nation, and had many notable feats to their credit, especially their rôle at Dunkirk.

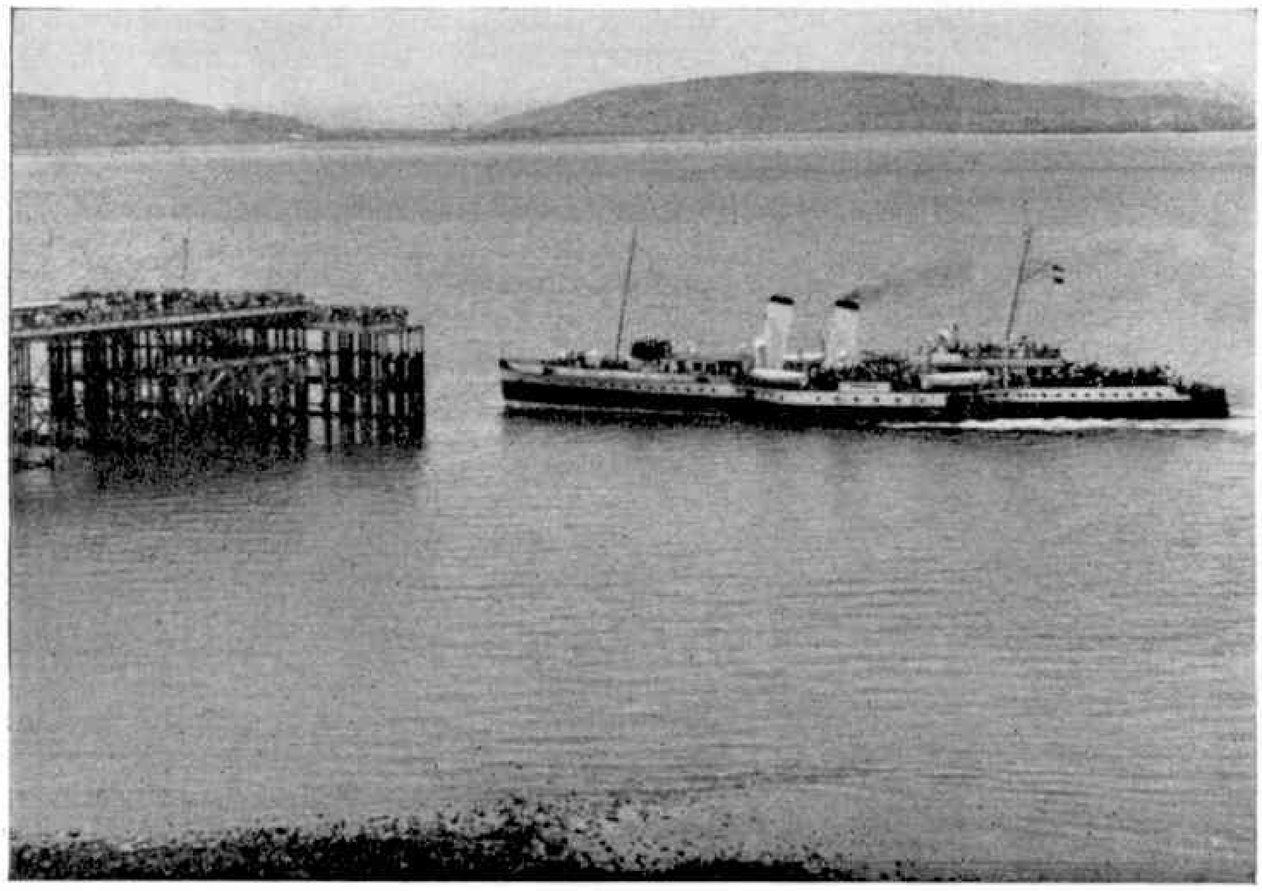
After the second world war, owing to the loss of boats through enemy action, the company set about building two new paddle steamers, *Bristol Queen* (1946) and *Cardiff Queen* (1947), which are among the most modern and luxurious paddle steamers in the British Isles.

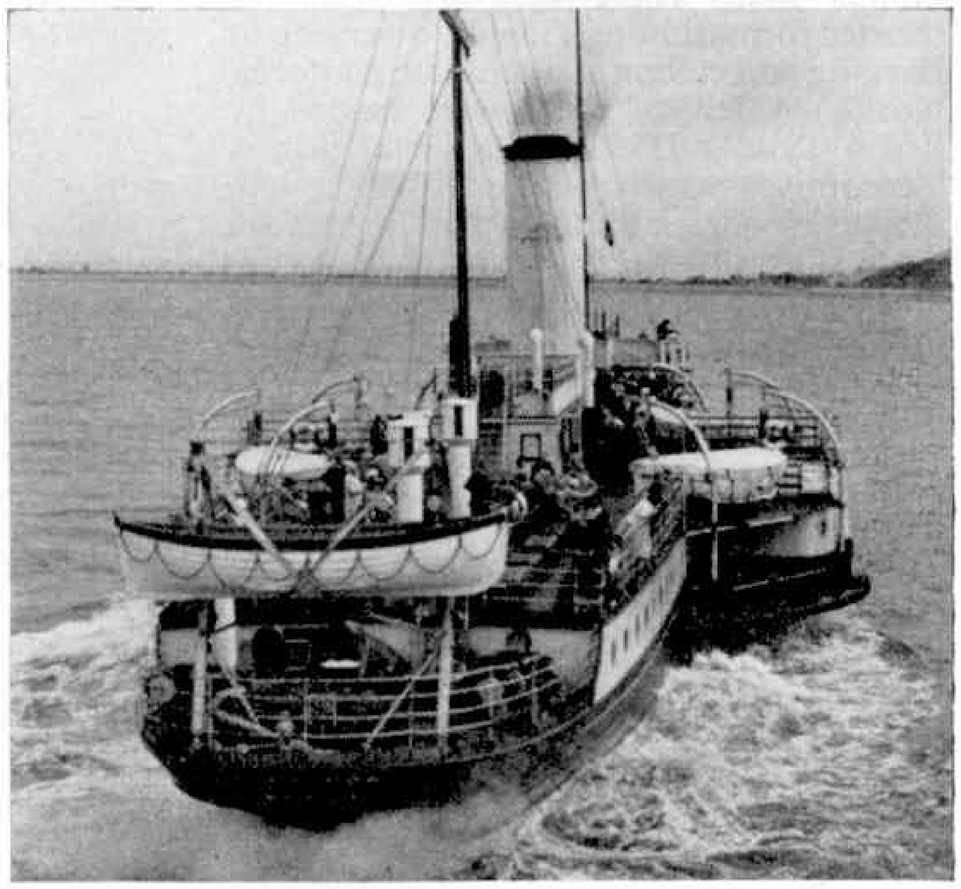
Leaving the historical side for a moment, let us take a look at some of the trips which are run by the "White Funnellers". From time to time, the company have operated from Torquay, Plymouth, and other points along the South Coast, but these services have now been suspended, and the Bristol Channel provides the only ports of call.

Today, most Bristol Channel seaside resorts, including Bristol, Clevedon, Weston, Minehead, Lynmouth, Ilfracombe, Lundy Island, Tenby, Mumbles, Porthcawl, Barry, Penarth and Cardiff, are visited by the steamers. The Newport service was discontinued in the 1950's.

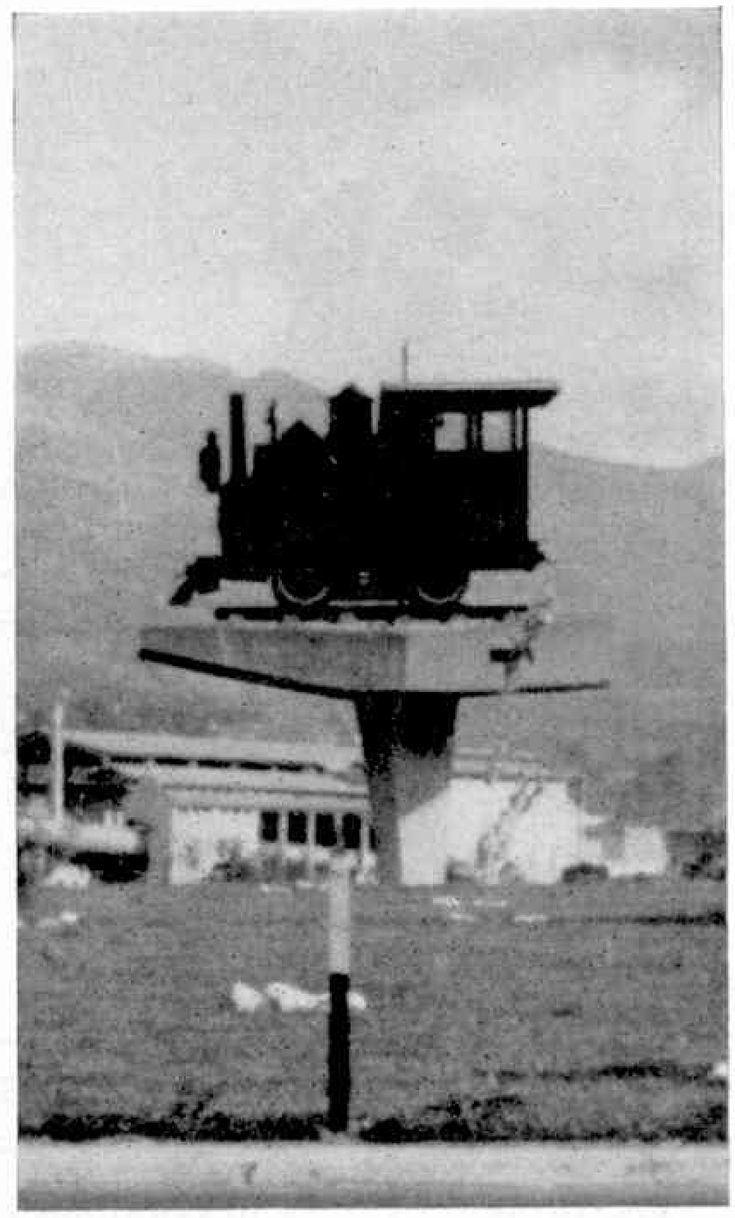
During the season, from Easter until October, one of (*Continued on page 89*)

Left: "Cardiff Queen" arriving at Mumbles. Below: Another view of "Glen Usk" leaving a wide wake as she sails from Weston for Cardiff. All the photographs illustrating this article are by the author.





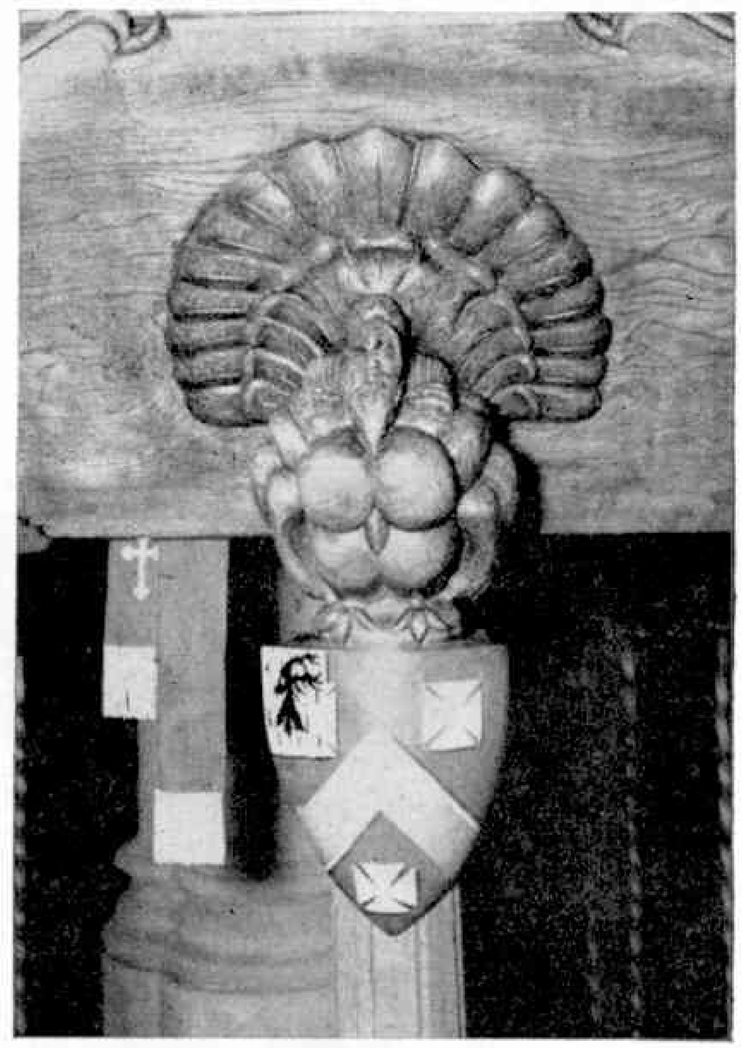
FROM OUR READERS



"I am an assiduous reader of your Magazine, which I receive monthly," writes Francisco Arbelaez C., of Medellin, Colombia, who has contributed the illustration on the right. "The picture shows the first locomotive to arrive in Medellin in 1875. In 1925, after it had been retired from service, it was placed on a beautiful pedestal which stands on the way to the city's airport. Medellin was founded by the Spanish conquerer Miguel de Aquinaga in the year 1675. Today, this modern city has a population of 635,000. The average temperature throughout the year is 71 degrees Fahrenheit."

Frank Walsh of Braintree (Essex), sends the picture of automation and the scissors grinder (top left) and adds, "He was pictured in Lloret de Mar, in Spain and, as you can see, has a grinding wheel driven from the flywheel of his small Moto Guzzi Hispania motor-cycle. Centre (left): Dennis Gill of Hazel Grove, Stockport, writes, "A new department store in the centre of Ludwigshafen, Western Germany, has two unusual features—it is circular, and part of it has been built over the focal point of the town's tramway system. The photograph shows a tramcar leaving the tram station under the store."

On November 27 last year, I had the honour of riding on the footplate of locomotive No. 60022 *Mallard* from King's Cross to Leeds. The train was the 9.20 a.m. (*The White Rose*). Here is a picture (left) taken from the footplate. The round plate on the side of the locomotive boiler carries the message, "On 3rd July 1938 this locomotive attained a world speed record for steam traction of 126 m.p.h."—D. A. Lewis, Chester.



In the churches of England there are hundreds of eagle lecterns, perhaps six pelican lecterns but only one turkey lectern. This is at Boynton Church, in East Yorkshire. "A Turkey in his Pride" is the crest of the family of Strickland, of Boynton Hall. Young William Strickland sailed with Sebastian Cabot to the New World, on a voyage that made history. He is believed to have become the expedition's turkey boy and to have tended and fed, on board ship, on the return journey, the first turkeys ever to be brought to England.—P. Stephens, Minehead, Somerset.

A touch of modern-day magic

TRANSISTORS

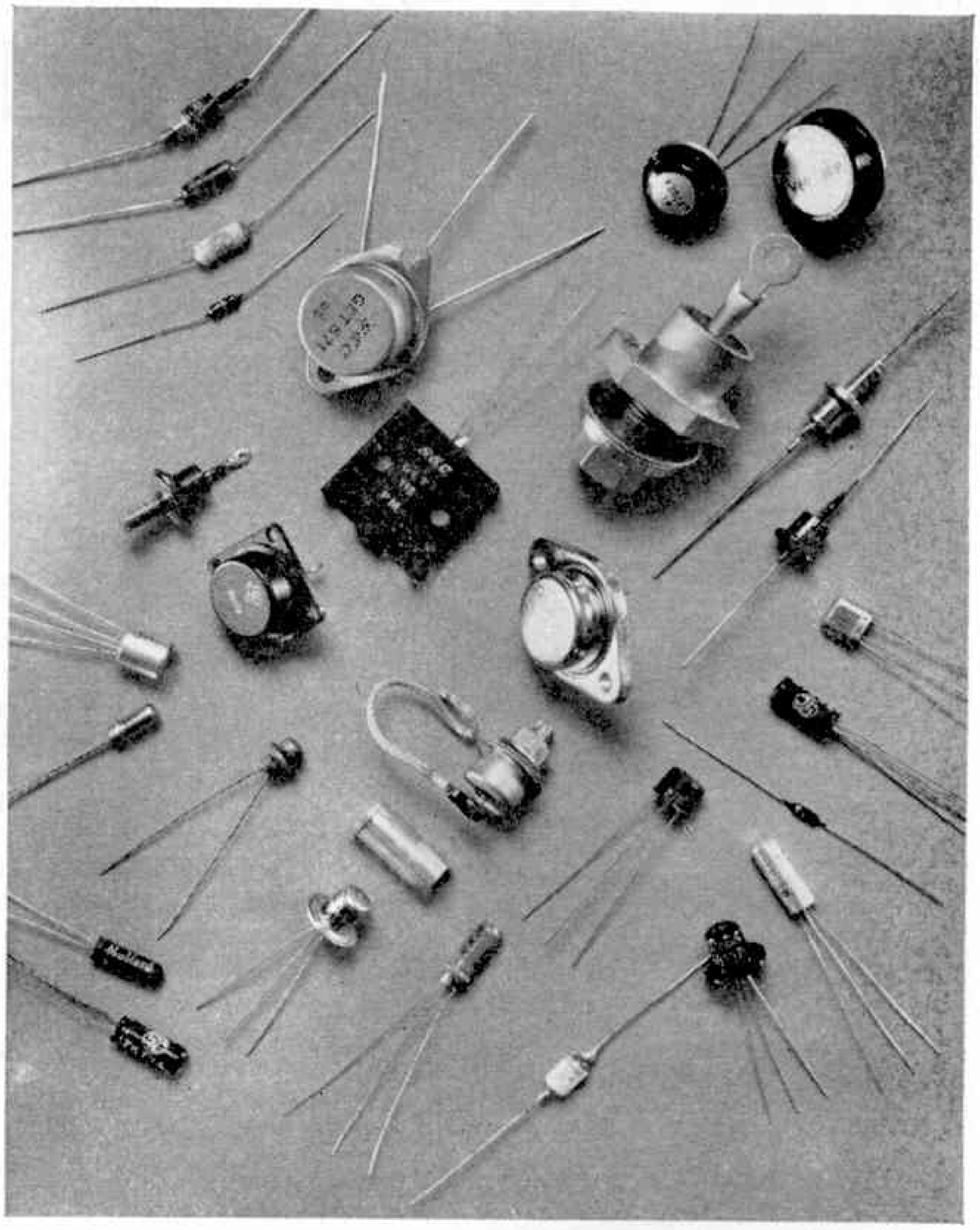
● Today, the transistor has made possible what was, yesterday, impossible; a computer the size of a room reduced to that of a suitcase; missiles guided with uncanny accuracy, and the wrist watch radio, so popular in science fiction, no longer fictional. And all this has taken place in little more than a decade.

THE discovery of the transistor, or, more precisely, of the "transistor action", by J. Bardeen and W. H. Brattain, working together at the Bell Telephone Laboratories in America, in 1948, has perhaps contributed more to the science of electronics than any invention before it or since.

By GEOFFREY M. SHERIDAN

The properties of semi-conductor devices (see footnote) of which the transistor is one, were known as early as 1850, but the principles underlying their behaviour were not clearly understood.

The first real major step forward arose from the use of germanium diodes, in radar equipment, during World War II. The diode was a development of the "cat's whisker", or "crystal", used in the early days of broadcasting, and it led to a renewed interest in semi-conductors. For a year or two after the war there was considerable activity in the field, until, on June 30, 1948, the transistor was formerly introduced to the public; a new semi-conductor device, which appeared to be able to perform many of the jobs of the long-established thermionic valve with much greater efficiency.



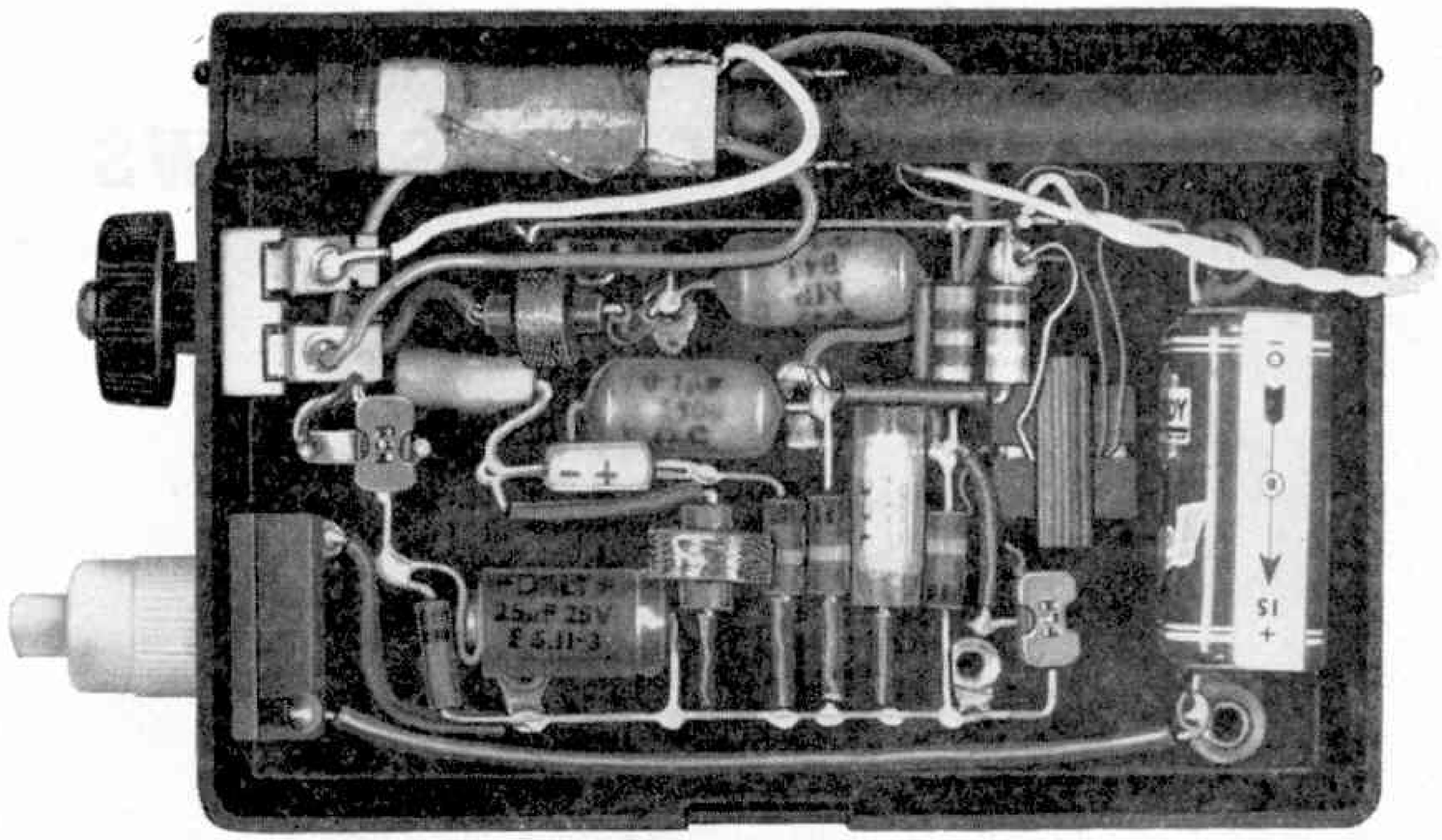
Ten years ago, semi-conductor devices were little more than scientific curiosities but today they form the basis of a large and expanding industry. Above is a selection of such devices. Photograph by courtesy of Johnson, Matthey and Co. Ltd.

Before a new type of transistor is issued, it is put through exhaustive tests to determine its characteristics and performance under different conditions and on various circuits. Such measurements are being made by an engineer in the picture below. Photograph by courtesy of Associated Electrical Industries Ltd.

Immediate demonstration was given of a radio employing only transistors, without the aid of valves. The effect was astounding. One technical journal remade its July issue in order to include details of this magical new device. It is reported that the sales of normal radio sets slumped for several weeks—the public believed, temporarily, that valves were obsolete; but that, of course, proved not to be the case.

Since then progress has known no bounds. Transistors are now available for a very wide range of applications and have made

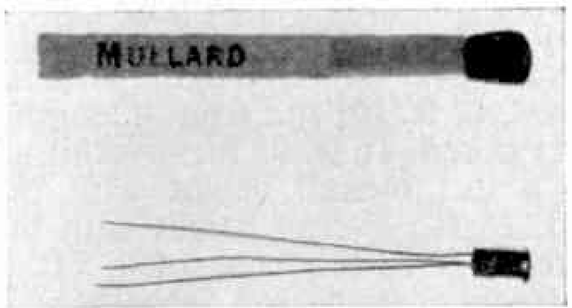
The transistor offers to electronics possibilities so vast as to be almost beyond conception. In everyday life, it has made possible radios small enough to fit the pocket. The two-transistor set on the right is only 4½ inches long, weighs less than four ounces and needs no external aerial or earth, yet it gives good volume on a deaf-aid earpiece. Note the miniature components and compact layout. Photograph by courtesy of Henry's Radio Ltd.



possible equipment which was previously impracticable for reasons of size, heat or power consumption.

The transistor has several advantages over the thermionic valve—invented by Fleming in 1904—the first of which is its size and weight. The valve, which is cylindrical in shape, is quite large, measuring anything from one to four inches in height. The transistor is extremely small—half a dozen will fit into a thimble—and weighs a mere ounce or so.

As transistors began to enter into common usage, so the other components employed in apparatus were made smaller and lighter, thus reducing overall measurements. This has enabled hearing aids to be made so small that they can be built into spectacle frames, and transmitting and recording equipment will now fit into a satellite the size of a football.



A sub-miniature transistor designed primarily for use in hearing aids is seen (above) with a match for comparison. Photograph by courtesy of Mullard Ltd.

A second advantage is the fact that the transistor does not need bulky power supplies. The valve requires a mains supply or, if the equipment is to be portable, heavy, high tension batteries, which are a costly matter. The transistor, on the other hand, works off a small, inexpensive pocket lamp battery; and the current drawn is extremely low. This has made possible the production of powerful portable radio receivers that fit into the pocket.

Many Years of Service

Finally, the transistor has no parts to wear out, burn out, or break, whereas valves have filaments, which, like those in an electric lamp, will burn out with continued use. In addition, valves, being enclosed in a glass bulb, are susceptible to damage by rough handling. The life of the transistor has, in fact, been said to be infinite, but this is probably an exaggeration. At any rate, it will give very many years of service, with no fall off in performance.

The prices of transistors run from about five shillings upwards and compare quite favourably with those of valves. However, with increased demand and improved production techniques, prices may be expected to fall substantially in the next few years.

Until a short while ago, mass production on a large scale was extremely difficult. This was largly due to the fact that in the nine months or so it takes to design and set up machinery to manufacture a transistor, further progress has taken place, and the transistor it was designed to make is already out-dated; hardly a financial proposition!

But developments are not taking place quite so rapidly now, and it is conceivable that in the not too distant future transistors will be turned out by the thousand at a cost of a few pence each.

Importance established

The transistor has established its importance in many fields. Its uses extend from outer-space exploration and guided missile development to advanced electro-medical equipment for the observation and measurement of heart and brain behaviour; from the record player amplifier to the most elaborate computer.

With the advance of automation, in which, no doubt, it will play a leading rôle, the transistor may well bring about as great a change in the social and economic scene as it has in the field of science.

FOOTNOTE: All materials can be classified as conductors, semi-conductors or insulators. The first-named will allow electricity to pass through them easily—they include silver, copper and most other metals—while insulators, which include most common substances such as paper, wood and glass, will not. Semi-conductors, such as germanium or silicon, lie between these two extremes—they will allow a little electricity to flow. Semi-conductor devices are contrivances which function by means of a semi-conducting material.

HORNBY-DUBLO FILM

During February, many more cinemas in this country will be showing the film "Mining Review" (Issue No. 3, 15th Year), which includes scenes showing production of the Hornby-Dublo locomotive *Barnstaple* at the Meccano Factory. Pressure of space prohibits publication of the complete list of cinemas, but principal towns at which the film is due to be screened are listed below, the number of days on which the picture is to be shown being given in brackets after the name of the cinema.

LONDON AND HOME COUNTIES—Feb. 5, Dome, Worthing (14). Feb. 19, Rex, New Haven (3); Regent, Wantage (6); Regent, Hungerford (6). Feb. 26, Rex, Islington (6); Regent, Deal (6). SOUTH WALES—Feb. 5, Palace, Ammanford (3). Feb. 26, Workmen's, Caerphilly (6). WEST OF ENGLAND—Feb. 12, Grand, Frome (6); Savoy, Exmouth (6). Feb. 19, Regal, Bristol (3). MIDLANDS—Feb. 4, Paris, Coventry (7). Feb. 12, Ritz, Coventry (3); Futurist, Kidderminster (6). Feb. 15, Lyric, Coventry (3). Feb. 19, Standard, Coventry (3). DERBYSHIRE—Feb. 11, Empire, Glossop (4); Odeon, Alfreton (4). LANCASHIRE—Feb. 12, Palladium, Blackburn (3); Empress, Preston (6). Feb. 19, Windsor, Bolton (3); Alexandra, Blackburn (6). CHESHIRE—Feb. 19, Court, New Brighton (6). YORKSHIRE—Feb. 5, Hippodrome, Featherstone (6). Feb. 12, Star, Leeds (6). Feb. 15, Hyde Park, Leeds (3). Feb. 25, Oxford, Bradford (7). NORTHUMBERLAND AND DURHAM—Feb. 12, Empress, Horden (3). Feb. 18, Queens, Chester-le-Street (7). Feb. 19, Picturehouse, Whitley Bay (6). Feb. 26, Essoldo, Spennymoor (6). SCOTLAND—Feb. 12, Astoria, Possilpark, Glasgow (3); Seamore, Maryhill, Glasgow (3); Odeon, Greenock (6); Orient, Bridgeton, Glasgow (3). Feb. 19, La Scala, Greenock (6). Feb. 26, Vogue, Cardonald, Glasgow (6).

DINKY TOYS NEWS

BY THE TOYMAN

No. 437 Dinky Toys Muir-Hill 2/WL Loader.

AN ATTRACTIVE NEW LOADER

WELL, the hands of the clock continue to turn and here we are at the start of another month—February—a month which I have always associated with the very heart of winter. To many people it must seem the coldest, dampest and most dreary month of the year; not a month for working out-of-doors—although lots of people must necessarily do so—or even for playing out-of-doors. But even the coldest month with long dark nights has its compensations when one has interests in such things as collecting Dinky Toys, building Meccano models or enjoying the pleasures of Hornby Trains.

It is on evenings such as these that the enthusiast tends to re-plan or extend his layout and, of course, he has the golden opportunity of building up, indoors, the sort of scenes that go on, summer and winter, in the big world outside.

Readers often write to me saying how much they appreciate the earth-moving equipment which is part of the impressive range of Dinky Toys and they, and many thousands more, will be delighted at the news that this month we have been able to add still a further most attractive model to the list. It is the sort of vehicle that can provide plenty of fun for a long, long time. You see it in the illustration at the top of this page and in the scene on the opposite page, and it is a miniature of a vehicle which can be seen at almost any building site or excavation area today—the Muir-Hill model 2/WL Loader.

In common with many people I have my likes and dislikes in regard to vehicles, but this type of machine has always held an attraction for me. I find myself fascinated watching this powerful machine manoeuvring backwards and forwards, digging and tipping, shovelling earth and filling lorries, and I have even seen it used as a bulldozer. With such a liking for this type of vehicle you can imagine how delighted I am that Meccano Limited are producing a miniature version of the Muir-Hill model, and no doubt very many of my readers will share my feelings. In fact, I am certain that this will be the case since I have recently received a large number of letters from enthusiasts who collect earth-moving vehicles. In my estimation, the Muir-Hill Loader ranks with the best of them.

The actual machine is manufactured by E. Boydell and Company Ltd., of Old Trafford, Manchester 16, the name "Muir-Hill" being the registered Trade Mark. It is fitted with an extremely powerful Fordson Major diesel, overhead valve, four-cylinder engine of 3,600 c.c.s or 3·6 litres capacity which develops a maximum brake horse power of 44 at 1,800 r.p.m. The overall dimensions of the Loader are rather complex, owing to the moveable bucket and arms, but they are as follows: Overall length, with bucket lowered, 17 ft. 10¾ in.; overall length with bucket raised, 16 ft. 0¼ in.; overall width, 6 ft. 8 in.; overall height with bucket raised, 15 ft.; overall height with bucket lowered, 7 ft. 8½ in.; front track, 5 ft. 5 in.; rear track, 5 ft. 5¾ in.; wheelbase, 7 ft. 5½ in.

As a loader is used a great deal on building sites, etc., it is necessry for it to "nip" smartly in and out of innumerable obstacles, and accordingly a reasonably small turning circle is required. The Muir-Hill has a left hand turning circle of 35 ft. diameter and a right hand one of 38 ft. diameter.

Now enough of the actual vehicle. Let us see what the Dinky Toys model, numbered 437 in our lists, has to offer. It carries the official name "Muir-Hill

David McManus, of Fulham, with the layout which is referred to in this month's Notes.

2/WL Loader, Taylor Woodrow". The body and moveable bucket arms are red, and the imitation hydraulic rams through which arms and bucket operate are black and silver. Special "V" tread heavy duty rear tyres are fitted and spare tyres are available (front tyre No. 095 and rear tyre No. 093).

Dimensions of the Dinky Toys model are approximately as follows: Overall length with bucket lowered, $4\frac{9}{16}$ inches; overall length with bucket raised, $4\frac{1}{16}$ inches; overall width, $1\frac{9}{10}$ inches; overall height with bucket raised, $3\frac{5}{8}$ inches; overall height with bucket lowered, $1\frac{11}{12}$ inches.

The cab is fitted with windows and a driver, but the feature which I personally like best is the excellent replica of the engine—meticulous in detail and finished in silver, with the result that it gives a sparkling look to the whole model.

The base is die-cast and shows underchassis details of the actual vehicle, adding considerable authenticity to the model. The rear of the chassis is formed in such a manner as to provide a counterbalance for the load in the bucket.

Taylor Woodrow, the well-known civil engineers whose name appears at the back of the driving cab, use a large number of these vehicles in their various schemes.

The illustration at the top of this page is an example, in miniature, of a typical civil engineering operation. The girder framework of a building is being erected on a piece of waste ground and two of the new Loaders are being used to level-off the surrounding terrain. As the building is in a town the surplus soil and sand obviously cannot be shifted to one side out of the way, but must be hauled to a dumping site. One Loader can be seen filling a Rear Dump Truck with sand while the other is just scooping up a bucket load ready to fill the Dumper Truck which is returning for another load.

Two Muir-Hill Loaders are seen at work, with other Dinky Toys earth-moving vehicles, in this busy scene at a construction site.

Now I want to pass on some hints about the arrangement of Dinky Toys winter scenes and layouts. Naturally, real snow cannot be used indoors but an excellent substitute is ordinary table salt. Arrange your scene in the usual manner and then sprinkle salt to represent snow. To obtain the most realistic effect do not make the layer too even, but heap it into drifts and thinner patches, as in real life. Let me give you a few examples: snow will drift against the sides of houses or other obstacles which are exposed to a wind, whereas the ground on the sheltered sides of obstacles will have little or no snow on it. Another important point is the appearance of snow on roofs. No doubt you have noticed how it usually melts around the chimneys and how, after a time, it tends to slip down from the apex of a roof into the gutter. Yet again, a busy road will have less snow on it than a field, say, and even this will often be "churned-up" and far from white in colour.

Let me add this important word. If you use salt so that it comes into contact with your Dinky Toys vehicles—wheels, axles, etc.—please be sure to clean the models thoroughly and to wipe off all traces of salt before you put them away.

Finally, I draw your attention to the picture, on page 66, of David McManus, of Fulham, London S.W.6. His father, Mr. P. McManus, tells me that David has 120 Dinky Toys. Mr. McManus has made the splendid fire station and drill yard which are seen in the picture for the "Littlethorpe City Fire and Ambulance Brigade". The appliances that the Brigade uses are: two Dinky Supertoys Pumps; one Turntable Ladder; one old-type Guy Warrior Van (now a hose lorry); one ex-Breakdown Lorry painted red and fitted with a searchlight, now called a breakdown tender; one Mersey Tunnel Police Van fitted with a searchlight and dummy generator, and used as a light emergency tender; one ex-Kodak Bedford Van, now a light salvage tender; one Fire Chief's Car and two Ambulances.

This picture of a modern American car photographed against a background of towering buildings is, in fact, a clever product of the studio artist. The car is actually the Dinky Toys Ford Fairlane No. 148, super-imposed against a skyscraper background. The car's complete realism is made clear in this illustration.

NEW LAMPS FOR OLD

By F. W. ROBINS, F.S.A.

IT is a far cry from the flickering light of a textile or reed wick burning in a saucer to Neon lighting—but the revolution in the methods of artificial lighting has been a matter of the last century and a half at most. Until the nineteenth century—unless one counts the gas lighting experiments at the end of the eighteenth—although lamp forms changed during different times and in different places, the principle was the same—that of an oil or fat-soaked wick in an open or closed container. Even paraffin lighting, with its closed-in reservoir and glass chimney, did not come into vogue until the middle of the nineteenth century, more than half a century after Murdoch's gas lighting trials.

For nearly 4,000 years the lamp was a simple oil reservoir with a wick projecting from one side or end, and a naked flame. Leonardo da Vinci invented a glass chimney for lamps nearly 500 years before they actually came about, but, as in other cases, he was before his time.

The earliest lamps were hollowed-out stones, filled with fat and provided with some sort of wick floating at one end, or hanging over the side, as with the Eskimo lamp. This type of lamp, no doubt discovered accidentally by the dripping of fat from the family joint into a hollow stone into which, perhaps, a clump of hair or dry grass had fallen, served to illuminate the cave-dweller's home many thousands of years ago.

In the Near East, however, the first lamp seems to have been a sea shell, which served in similar fashion, primitive people in areas as far apart as Northern Japan and the Shetland Islands and remained in use there, as well as in Cornwall and Wales, up to periods that are almost within living memory.

This was succeeded by the pottery lamp—made in imitation of the open shell—which actually goes back some 4,000 years in Palestine and Mesopotamia.

In ancient Egypt, where no early lamps have been positively identified, it is probable that the housewife, or the slave, filled any handy bowl or saucer with vegetable oil, a suggestion that is borne out, in tomb paintings, by pictures of Egyptians carrying bowls from which a flame is rising and by hieroglyphics which plainly show the same thing.

A wick floating by means of a disc on the surface of the oil would leave little trace for modern identification, and the float wick lamp, such as is used in mosques and churches today, made its first historic appearance in the land of the Nile, obviously with some ancestry behind it.

Neapolitan peasant lamp.

Chinese lamps remained, until modern times, simple spoutless saucers, with the wick hanging over the side. The Indian peasant lamp merely added a lip in which the wick rested.

The ingenuity of the ancient Greeks, who traditionally copied their first lamps from Egypt, started a train of progress which marched towards the closed-in pottery, ornamental lamps of the Romans. Sometimes a handle was added and, at the same time, the nozzle was bridged to hold the wick securely.

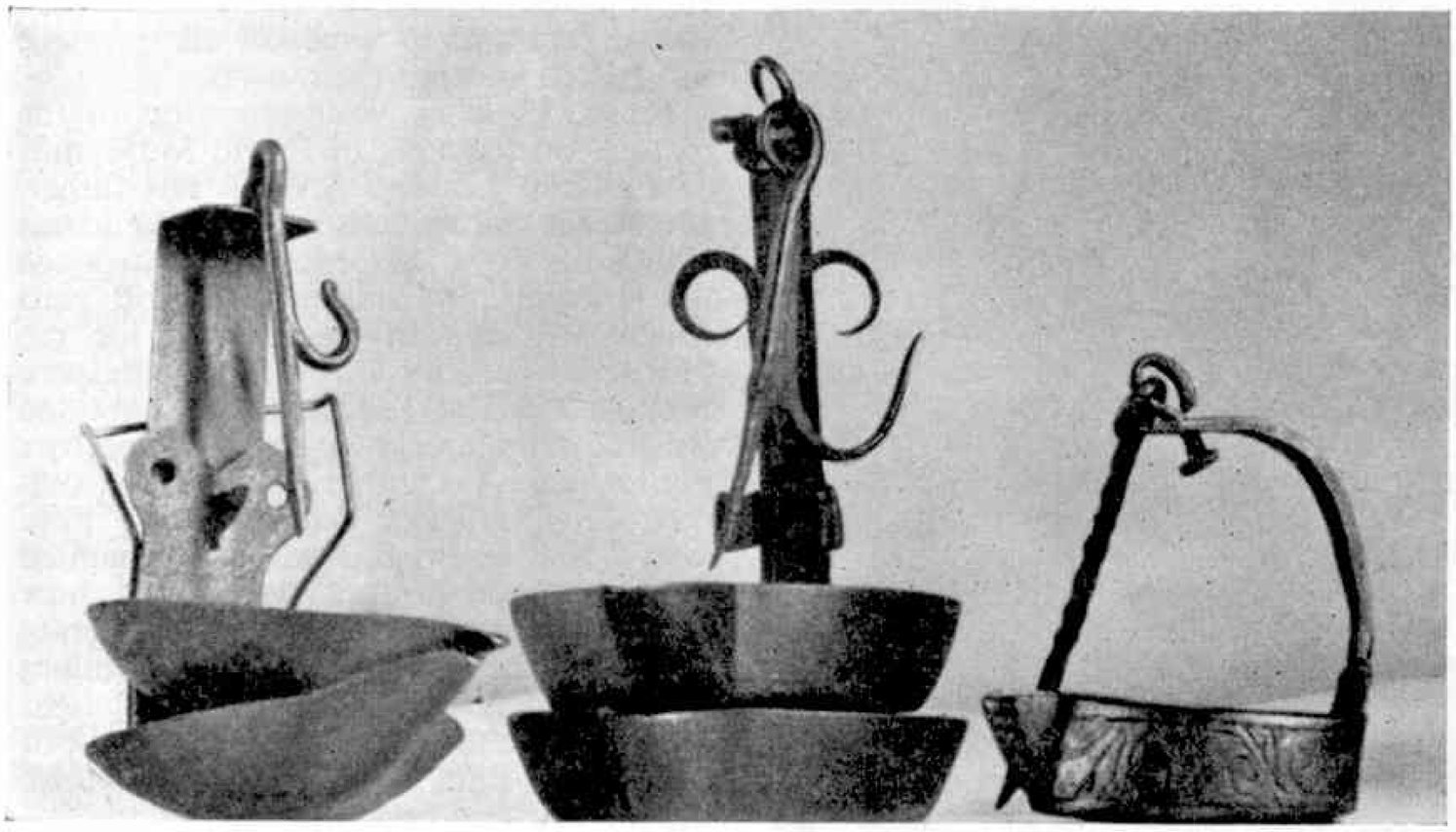
Something similar, perhaps under Greek influence, happened in Persia, and the familiar form of Aladdin's lamp is, in fact, Persian—not Chinese. This is naturally so, since the Aladdin story comes from Persia, despite the Chinese dress that pantomime producers give it.

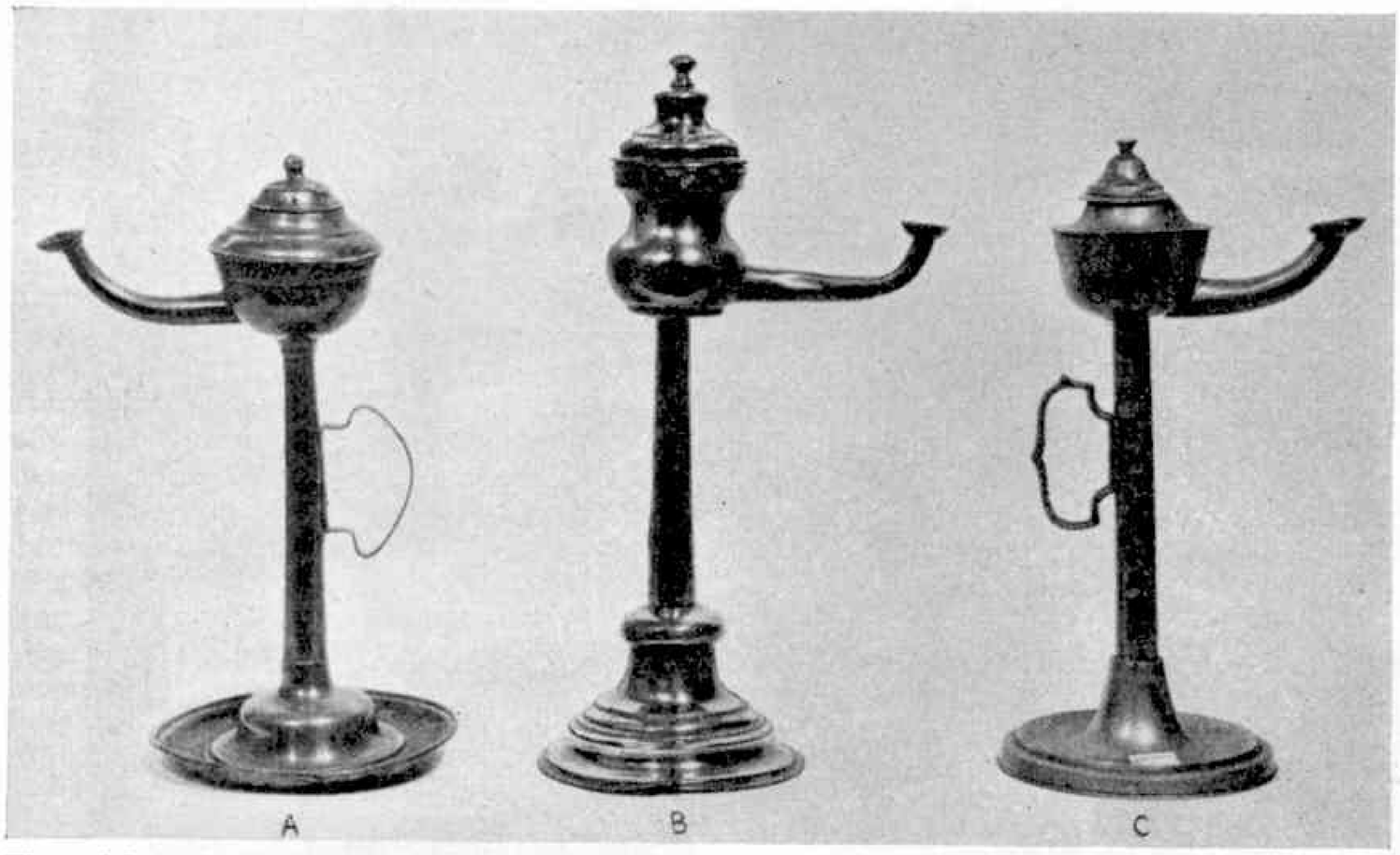
Many Variations

On these simple foundations the household lamp was based through many succeeding centuries. Many a Mediterranean peasant lamp, especially in Italy and Sicily, plainly shows the shell form of the early pottery lamp, though often mounted on a candlestick-like stem. The only improvement usually made was to provide the bowl with a channel or tube into which to insert the wick.

By the beginning of the Christian era, the pottery lamp, wheel-made and practically devoid of decoration among the Greeks, was produced in moulds, with a flat or concave top, bearing a design. The variations on this are so prolific that the Roman lamps, especially in the first and

These three open iron lamps below are (left to right) Jersey crosset, Scottish crusie (fish oil or tallow) and an Italian lamp (olive oil).





These eighteenth century lamps for whale oil are from the Low Countries or Germany. Lamps A and B are in brass and C is in pewter. Lamps A and C stand about 11½ inches high and B measures about 12½ inches.

second centuries A.D., were almost an encyclopædia of Roman life.

So many modern ideas have ancient prototypes that one expects to see, before long, the gladiators and their equipment so often portrayed on Roman lamps paralleled by the portraits of favourite footballers on electric light globes! On those powerful lamps from a far-distant age chariots race, ships sail, lions chase their prey, Cupid carries his torch, and flowers flourish. Indeed—if the phrase may be excused—such lamps probably throw more light on the social life of the day than on the actual occupations of their users.

Of almost equally ancient lineage is the Scottish crusie and its relations, which, in southern lands, is a single iron bowl, attached to a backstrap which is provided with hook and spike. Thus, the lamp can either be hung from a rafter or stand, or fastened to the wall by means of the spike. In northern latitudes, this type of lamp is a double one with an under bowl for catching drips, a provision which sounds as if it might first have come from Scotland, where the crusie was in use until quite modern times. The changed shape was no doubt due to the fact that the fuel in the north was mutton fat or fish oil, as against the less messy olive oil of the Mediterranean. In Egypt, castor oil was used for lighting; in Asia, coconut oil or even tea oil—it was a question of local materials.

There is distinct boundary line all through between north and south—rather than between east and west—in the development of the lamp. When—and this applied in general after the Middle Ages—the reservoir became completely closed in (even though some open bowl lamps on stands remained until the eighteenth century) the lamp in the south took the form of the Italian "Lucerna", a teapot-like body sliding up and down a stem, with from one to four spouts. It was usually made in brass for ordinary use, but was occasionally in silver. North of the Pyrenees, and in the Alps and the Balkans, the lamp reservoir was usually globular; in the Low Countries it resembled a coffee pot mounted on a stem with semi-circular base, weighted with sand. It could be hung, or could stand against a wall.

Although throughout the eighteenth century, and well into the nineteenth, experiments with other fuels were frequent, there was little real change in the lamp until, first, the advent of the gas lamp and, later, the use of the paraffin lamp during the mid-nineteenth century. By this time, strange to say, the first experiments in electric lighting were already on the threshold.

This painting of an indoor scene from the nineteenth century shows a room lit by a suspended paraffin lamp.

Land of few lamps

It is said that the spread of gas lighting during the nineteenth century actually increased the sale of oil lamps—probably because rural areas, out of reach of gas mains, sought some improvement for themselves over the candle lighting which, in this country, was for a long time more usual than the use of lamps of any kind.

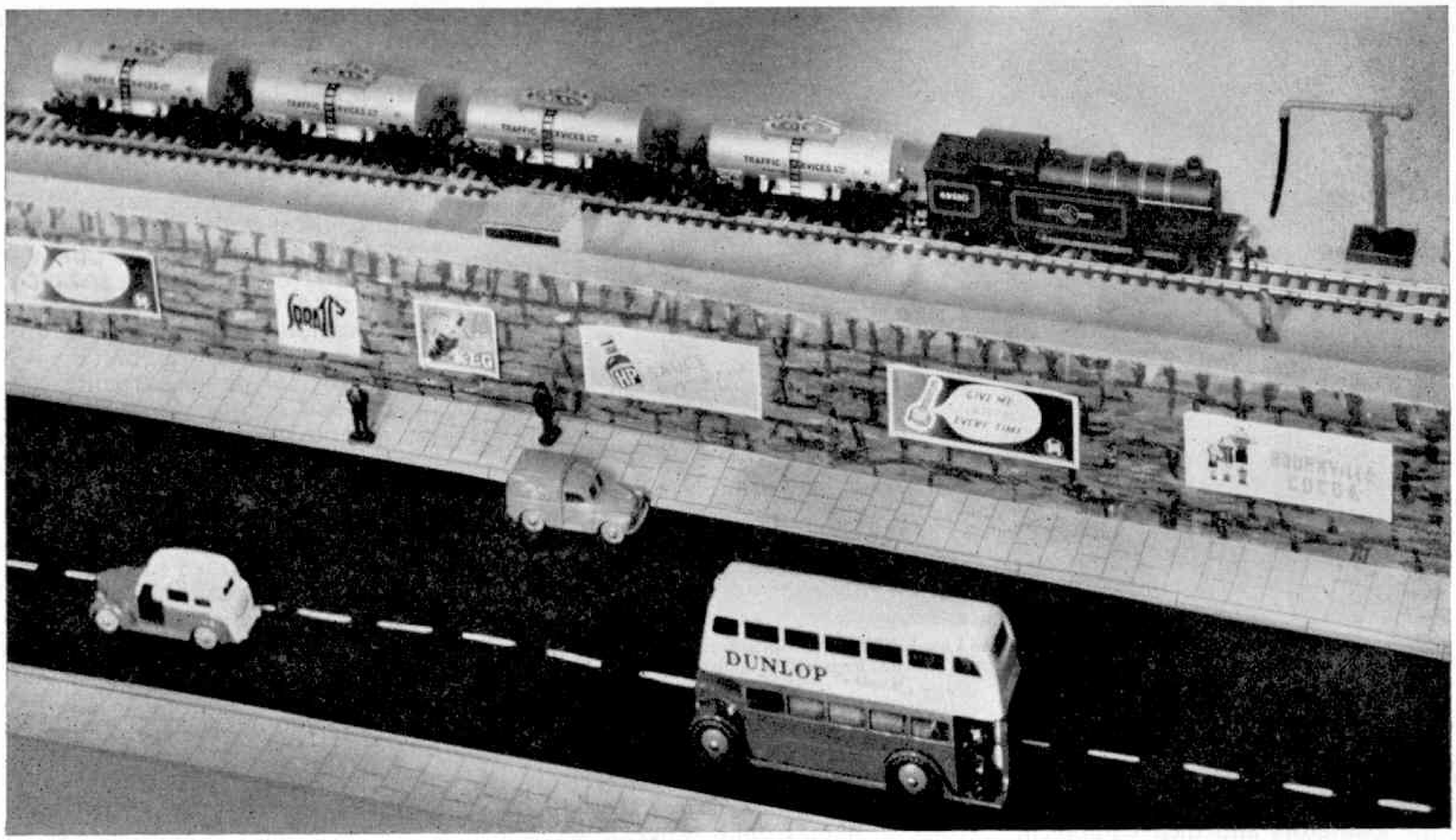
Rushlights and dips were made in the countryside by the people themselves, often from household waste fats, just as the mediæval monasteries would call in the candlemaker to make tallow candles from kitchen refuse. England, indeed, from the time the Romans left until the late Georgian era, had few lamps but many candlesticks and rushlight holders. The lamp was more common on the Continent and in the American colonies, where the flourishing whale industry provided a ready supply of fuel.

Relying on familiar modern amenities and the ever-handy switch, few people today have oil lamps in reserve against a black-out. The author has over a thousand —but hardly sufficient fuel to light them.

CYCLING BOOK OF MAINTENANCE

The fifth edition of this popular handbook (Temple Press, price 6/–) has been carefully revised in the light of recent developments, and provides a complete and up-to-date guide to the care and maintenance of the bicycle. Every part of the machine is described, and its fitting and adjustment explained simply and clearly. Numerous detail drawings add point to the text.

Other aspects of the bicycle dealt with include variable gearing—both hub and Derailleur systems—lighting equipment, transmission, steering, brakes and wheels.



HORNBY RAILWAY COMPANY

SOME TALKING POINTS

By

THE SECRETARY

OUR pictures this month suggest several talking points, and I cannot do better than begin with the one above. This shows a railway track and a miniature roadway running parallel to one another—the sort of thing often found in miniature as well as in real life. The train of Traffic Services Ltd. Tank Wagons headed by the 0–6–2 Tank Locomotive is without a Goods Brake Van, and you may wonder why this is so. Last month, you will recall, we had a chat about the "Blue Spot" fish train services, on which it is possible for some of the special-type vans, so well represented by the No. 4300 Hornby-Dublo "Blue Spot" Fish Van, to be attached in the rear of the goods brake van, for reasons that were explained at the time.

In the present instance there is no Goods Brake Van because the train movement is taking place along a track representing a line leading to a harbour and docks, over which passenger trains are not run. In such circumstances in real life it is permissible to run without a goods brake van in the rear. The trains move only slowly, and braking of the wagons can be carried out as necessary by the shunter or brakesman in charge. With the Traffic Services tank wagons as shown in our picture the brakesman is fortunate. At one end, these tankers incorporate a platform for his use, and the hand brake wheel he operates when required is represented on the Hornby-Dublo model.

The idea behind the picture is that the wagons are being taken down to the dockside where they will be run on to a train ferry vessel, on which they will be carried across the English Channel to resume their journey to a Continental destination.

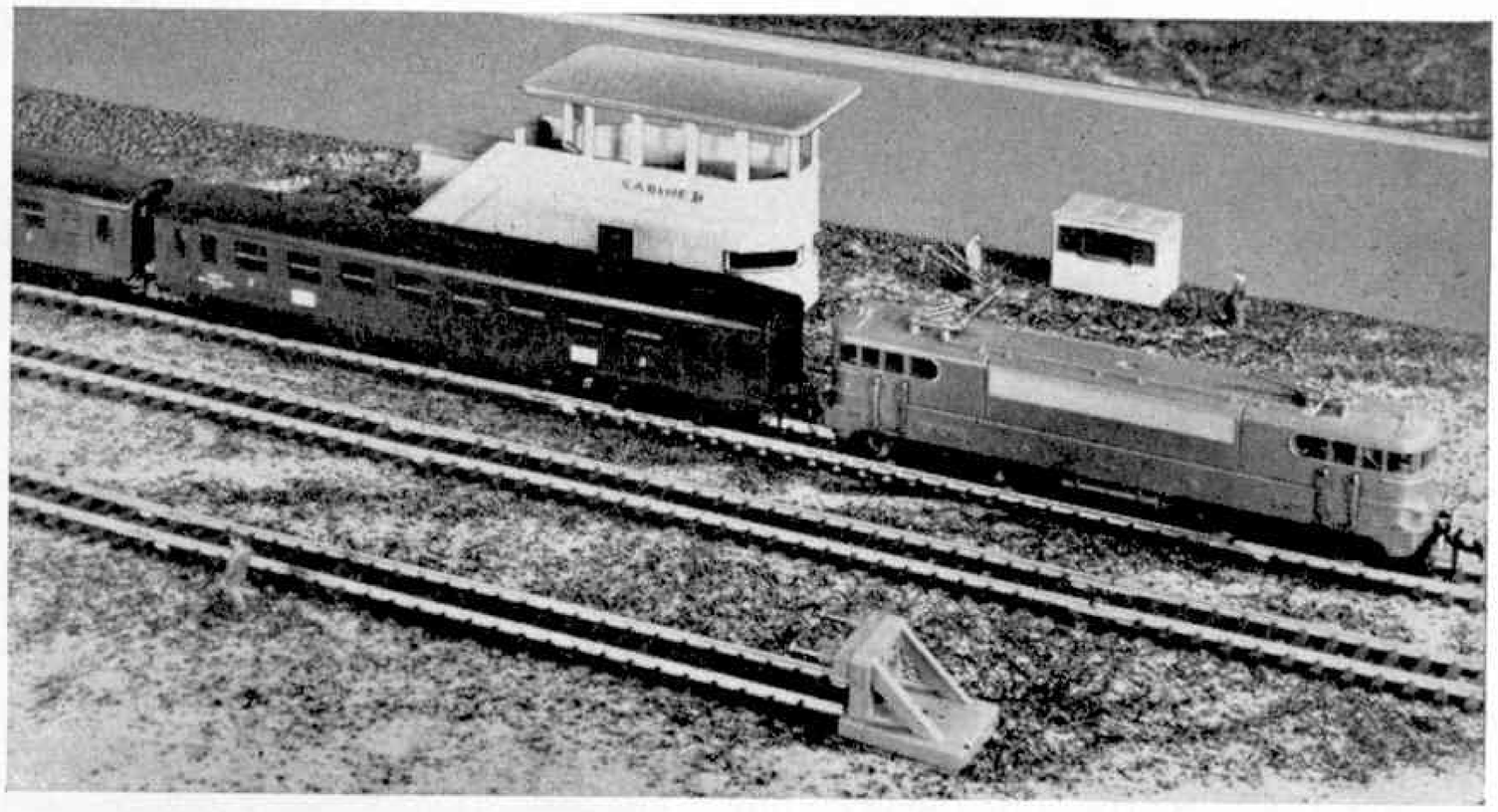
The Hornby-Dublo Tank Wagons carry the markings appropriate to vehicles that are constructed and fitted up for international running of this kind. Traffic between Britain and the Continent, via train ferry, is big business nowadays and it adds to the interest of operations in miniature if it can be represented on a Hornby-Dublo layout. I know from correspondence that many of my readers take a special interest in this sort of thing.

Reference to Continental travel reminds one immediately of the most attractive French-type Bo–Bo Electric Locomotive of the HOrnby-acHO range which is produced in our Paris Factory and was made available in this country, together with a small selection of the appropriate rolling stock, some months ago. I have heard about it from many enthusiasts, who are delighted with the appearance and performance of this fine Locomotive.

On some layouts it is operating with its

In the scene above railway and road run parallel to one another. The 0–6–2 Tank is waiting with a train of Traffic Services Ltd. Tank Wagons.

The French-type HOrnby-acHO Electric Locomotive runs past the Signal Cabin with a train of S.N.C.F. Passenger Coaches.



French-type rolling stock in company with British equipment in the Hornby-Dublo range. Such combined operations in miniature possibly represent the state of things that may be expected if and when the long-projected Channel Tunnel between England and France becomes a reality.

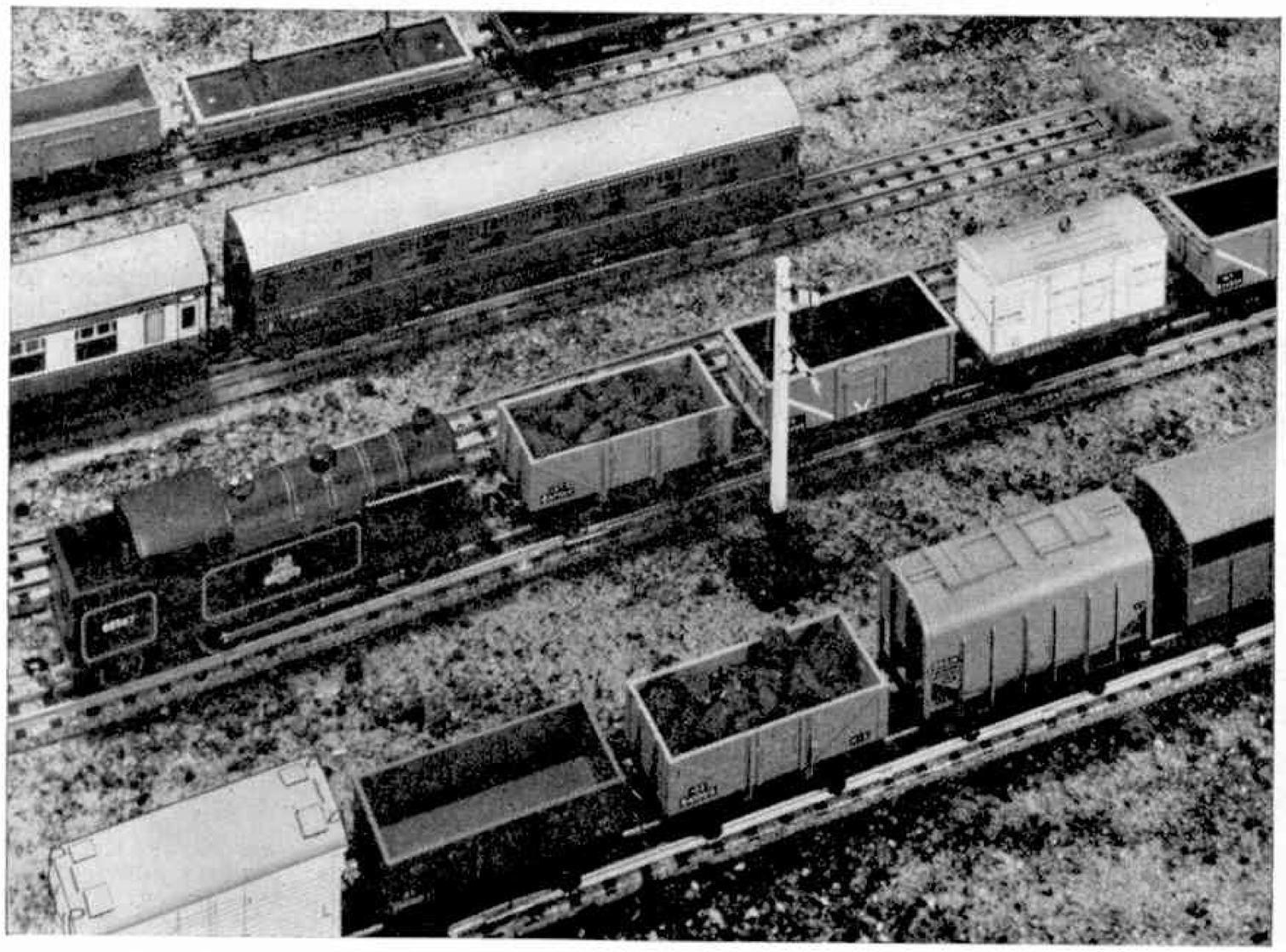
In miniature railway practice, a certain amount of licence is always permissible and it can very often add considerably to the interest and appeal of a given layout. Therefore, many Hornby-Dublo owners have not hesitated to add the French-type Electric Locomotive to their stock, using it to haul their B.R. Standard Coaches and varied freight wagons in company with the steam-type Locomotives and the growing fleet of Diesels now available for Hornby-Dublo traffic operation.

At certain stations on real railways the change from one form of motive power to another has become familiar. Electric locomotives have hauled passenger and freight trains for some years over the Pennine route through the new Woodhead Tunnel, between Manchester and Sheffield. More recently, the electrification of the London Midland route between Manchester and the busy Cheshire junction of Crewe, and the partial extension of the same system to services between Crewe and Liverpool, have given rise to a great deal of engine-changing activities at Crewe. Steam or diesel locomotives are exchanged for electric ones, and vice versa, so there is every justification for carrying out similar operations in miniature. When planning such working it is, of course, necessary to allow for electrical sections and Uncoupling Rails at suitable spots, so that the operations can be carried out smoothly and easily.

The fine additions that have been made to the range of Hornby-Dublo rolling stock in recent times make it interesting to recall that the first Hornby-Dublo freight vehicle with a fully-detailed plastic body was the Bulk Grain Wagon, which has now been in service on many layouts for several years. Its popularity is well maintained, which is not surprising when the attractive nature of the vehicle is considered.

A Bulk Grain Wagon is prominent in the lower picture on this page, and it will be of interest to many of you to know that British Railways recently reported grain traffic to be a large and growing type of business, for which many farmers producing the grain prefer the use of bulk grain wagons.

Busy times on a Three-Rail layout! The viewpoint of this picture shows the on-top detail of various Hornby-Dublo wagons to advantage.



Bulk handling eliminates sacks, and large tonnages are dealt with this way nowadays. Elevators for loading purposes are in use at numerous despatch points. There is, therefore, plenty of excuse for running, on Hornby-Dublo layouts, trains which include several Bulk Grain Wagons. Those people who are keen on lineside detail may well consider the modelling of the elevators used for loading, and for unloading in certain instances.

Of the more recent freight vehicles of special interest, I have already told you about the Nos. 4626 "Presflo" Bulk Cement and 4627 I.C.I. Bulk Salt Wagons. Although a single vehicle of each type makes a worthwhile addition to the stock on any layout, those who like to specialise in the handling of particular kinds of traffic will be quite justified in running complete trains of either type of wagon.

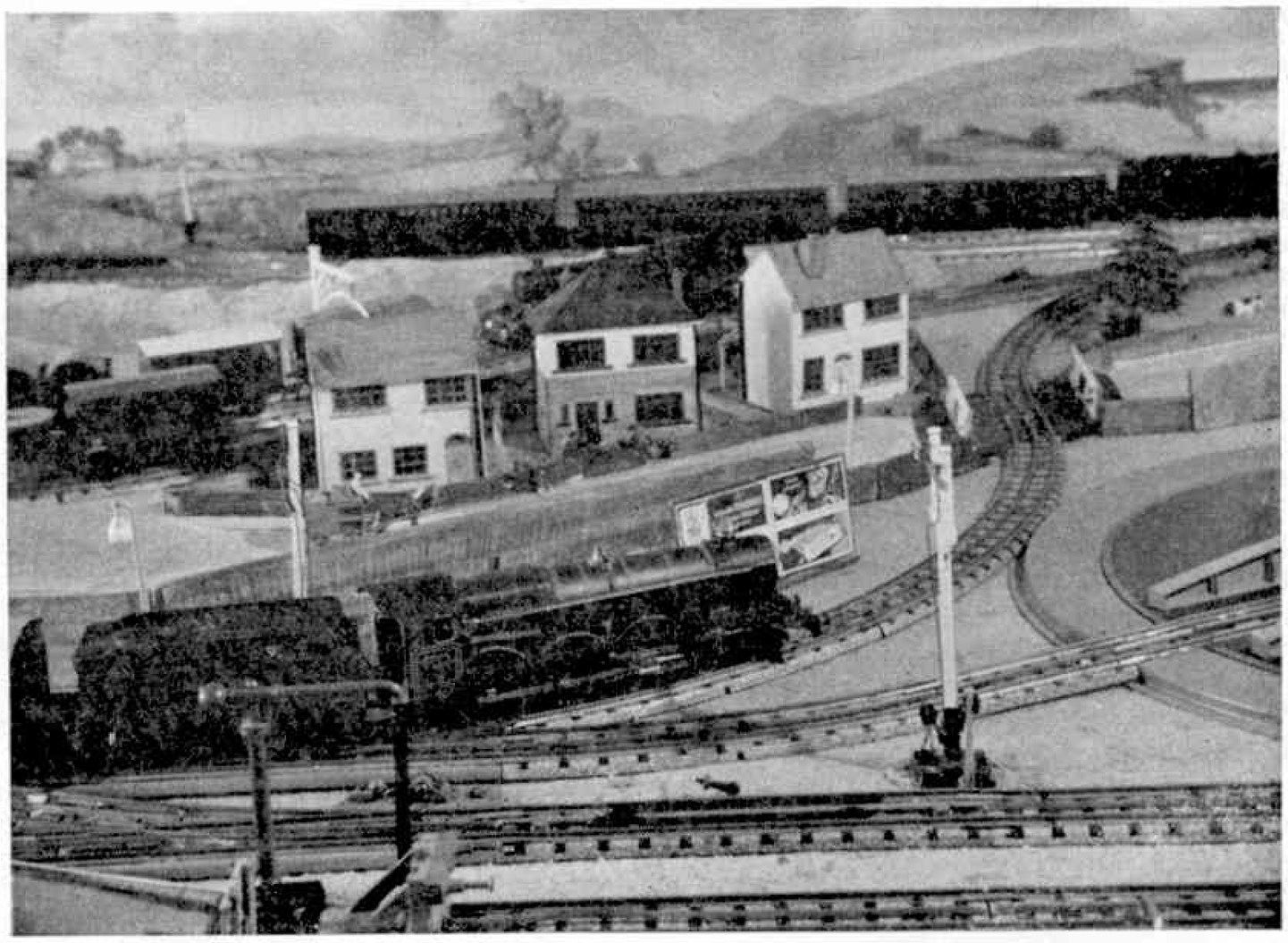
In "Railway Notes" in this month's issue, R. A. H. Weight tells us about regular transits involving Presflo wagons, and I am sure that many of you are likely to follow up similar operating schemes on your own layouts. We will have another talk about this later.

LIGHTING-UP TIMES FOR 1962

Legal lighting requirements for 1962 are given in a handy, pocket-sized Lighting-up Timetable and Mileage Indicator published by the Royal Automobile Club. However, the R.A.C. gives this advice in the chart to all drivers, "Switch on side and rear lamps *immediately* driving conditions make it necessary to do so, in order that vehicles can be readily visible to other road users."

The R.A.C. Lighting-up Timetable includes times for each day of the year for London, Bristol, Birmingham, Leeds, Manchester, Newcastle-upon-Tyne, Glasgow and Belfast. The inclusion of cities in all parts of the British Isles enables the motorist to calculate the appropriate lighting-up time wherever he may be. The chart is free to all R.A.C. members and is available from any R.A.C. Office.

A 3-RAIL SCHEME RE-STYLED



A fine view across the present layout of John Mason that is described in this article. A Hornby-Dublo Castle is here entering the reverse loop.

YOU have read before about the Hornby-Dublo Three-Rail layout of John Mason, of Ruislip, in the *M.M.*'s for December 1959 and January 1960. By the time the previous notes on this line were published the layout had practically reached the limit of extension possible on the baseboard then available, which measured 8 ft. by 4 ft. As further development was desired, our friend John wisely decided to rebuild the whole system throughout, in order to take advantage of an additional section, measuring 3 ft. 6 in. by 1 ft. 9 in., which he could fit to the baseboard, converting the layout into an "L"-shaped system.

In planning the new system the idea has been to provide continuous running as before and, in addition, to have a fairly extensive station located on the extension site. The main continuous track is approximately oval is shape, following broadly the outlines of the main baseboard. Double track running is provided and the two main lines pass through *Upton Central* Station, part of which you can see in the upper picture on the next page.

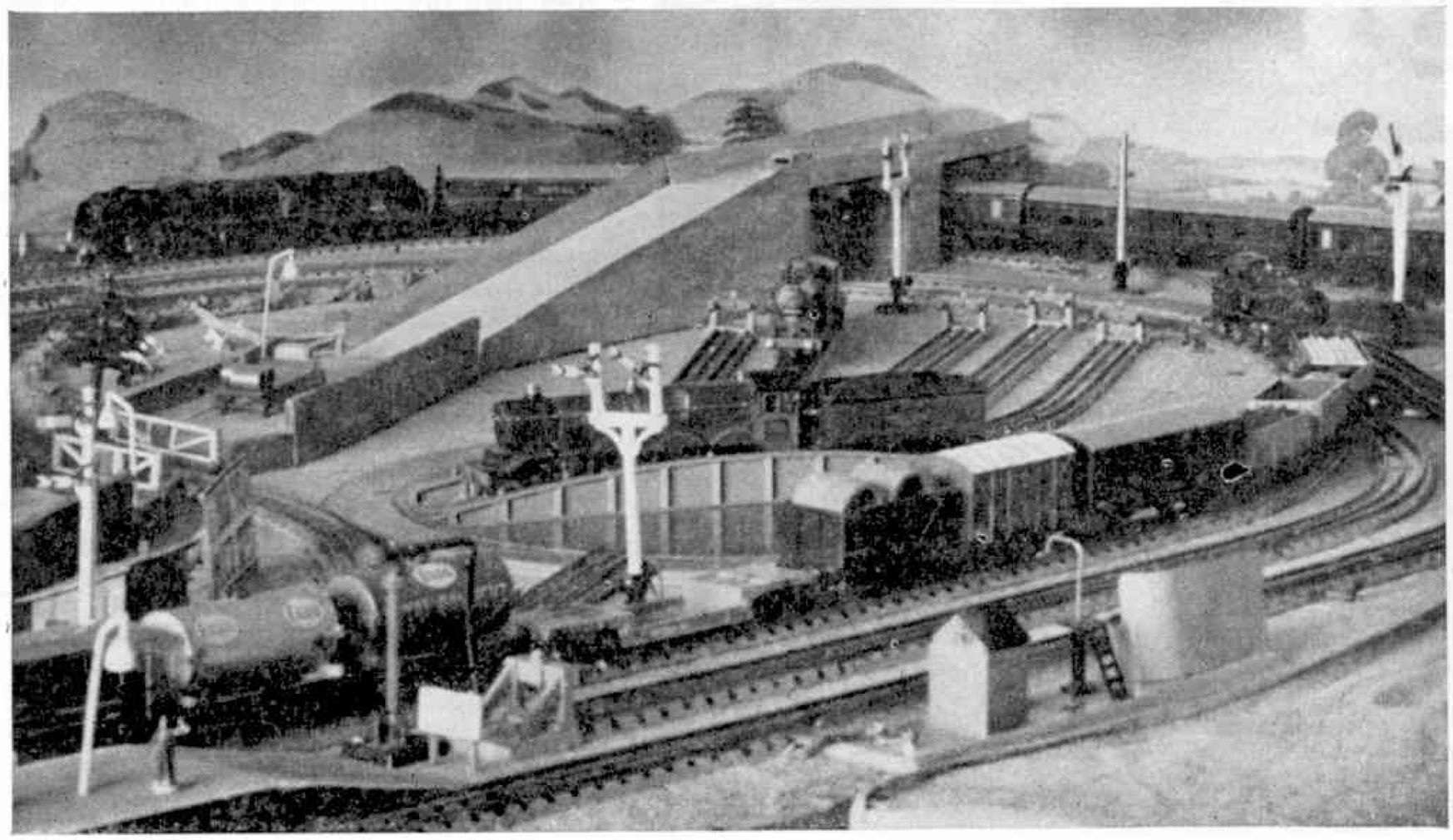
On the opposite side of the main baseboard from *Upton Central* are arranged the various connections that together

BY LAYOUT MAN

constitute the junction for the terminal branch leading to *Upton* Station. In this junction standard Points and Diamond Crossings are arranged in an ingenious manner, the diverging track being single, momentarily, where two opposing facing Points form what is in effect a double-slip crossing. This is a focal point for up and down traffic, to and from the *Upton* terminus. From this point the terminal tracks are double, and they finally branch out further to form three platform lines and two carriage roads.

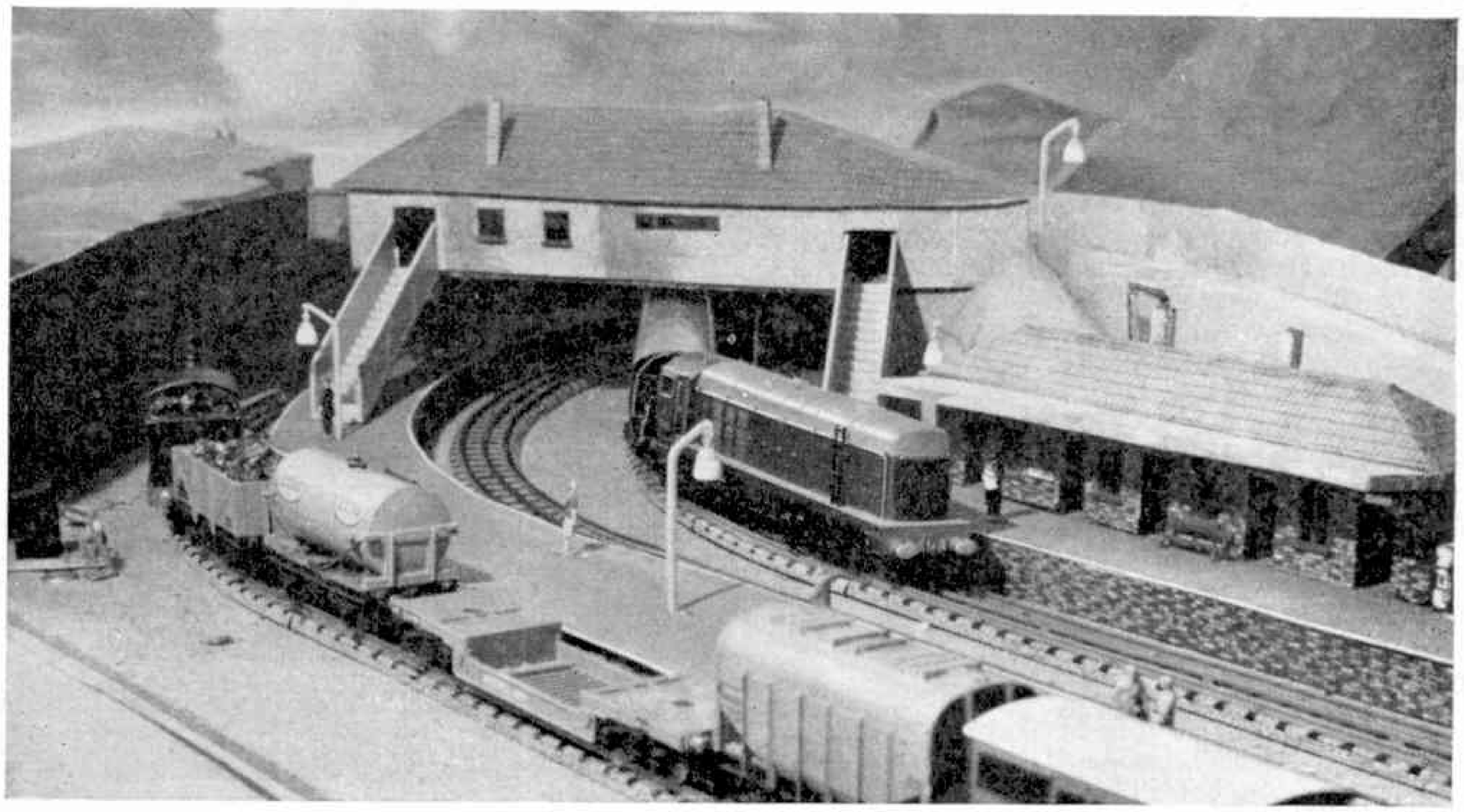
As the main oval incorporates an "S"-shaped reverse loop, as well as conveniently-situated Points forming crossovers between inner and outer main tracks, it is possible for a train to leave the terminal station and make as many circuits as required of the main track, then reverse its direction, regain its correct track and eventually make its way back to the terminal. Part of this operation is seen in progress in our upper picture here, where *Bristol Castle* is diverging on to the "S"-shaped reverse loop. The track immediately to the right of the engine leads to the Turntable. Had the train shown been continuing its journey along the main inner track, which is clearly visible in the foreground, it would have negotiated the Points forming the crossover just below the tender and the first coach in the picture.

In addition to the reverse loop, the centre of the layout also accommodates the Turntable and five off-going



In this picture "Bristol Castle" is on the Turntable, while in the background a mail train is running on one of the outer tracks.

A Bo-Bo Diesel enters the station with a passenger train, while in the foreground an 0-6-2 Tank takes a freight past the nearside platform.



tracks that form a convenient engine yard. So far, John has not incorporated an Engine Shed, but this is no doubt a future possibility.

Opposite the Turntable is a two-road goods yard, which is provided with an appropriate depot building, the yard itself being reached by road traffic by means of a descending ramp leading from an overbridge that crosses the main line. There is, in addition, a further road section that runs more or less in a diagonal fashion across the main board. This begins at an overbridge, which you can see in the picture of *Upton Central*. The road then descends to baseboard level, and passes the houses situated near the level crossing on the reverse loop. After that the road rises to cross the main tracks once more on another overbridge, and it is this corner of the layout you can see in the lower picture opposite.

Road access to the terminal station also is provided in a similar manner by a separate overbridge and sloping ramp.

Electrically, there are two main control sections, so that independent working is possible on the up and down tracks at the same time. In addition the "S"-shaped reverse loop and the terminal junction connections, as well as the terminal section itself, can be operated from either main control as required, a special switch being incorporated in the power distribution arrangements to make this possible.

The situation of isolating sections has been carefully worked out, so that station working, train marshalling and engine movements can be made without difficulty according to the requirements of traffic. Uncoupling Rails are situated at strategic points, and there is, as you can see in the lower picture on the opposite page, a T.P.O. Lineside Apparatus on the outer main track approaching *Upton Central*.

Points that are readily reached from the control site, which is situated in the angle of the "L" shape baseboard, are hand-operated, but those out of reach are of the Electrically-Operated kind.

Layout For Two-Way Operation

MONTHLY 2-RAIL FEATURE BY LINESMAN

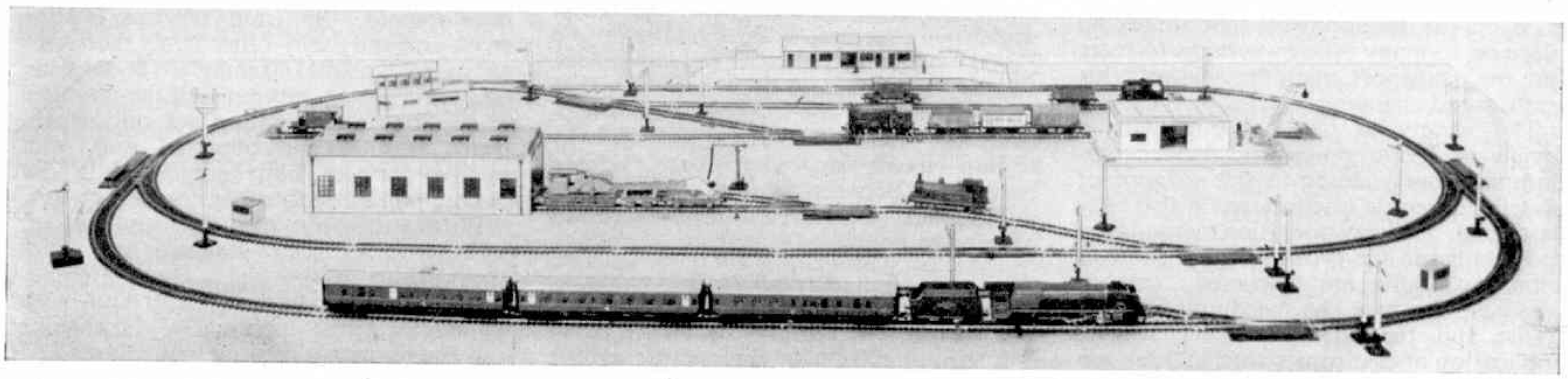
THE interesting track formation featured this month is designed to fit on a baseboard measuring 7 ft. × 4 ft. 6 in., which allows a margin round the outer perimeter of the track. The Power Control Unit and any Switches for electrically-operated accessories can also be accommodated on a board of these dimensions.

Basically, the formation consists of an oval track with an inner loop line, from which a siding leads to an engine shed. A siding also leads off the lower main track which is useful for accommodating rolling stock or a locomotive not in immediate use. From the upper main track two sidings are also taken, and one includes an extension leftwards which can be used for the disposal of rolling stock. If desired, an Uncoupling Rail could be included, although it is not shown.

The track wiring, shown in the diagram overleaf, is indicated as usual by dotted lines, and the wiring of electrically-operated accessories by dash and dotted lines. This month the accessory chosen is a Single Arm Home Signal, which is wired with the Electrically-Operated Left-Hand Point immediately ahead of it, so that when the Point is set against the lower main track the Signal arm is in the danger, or stop, position.

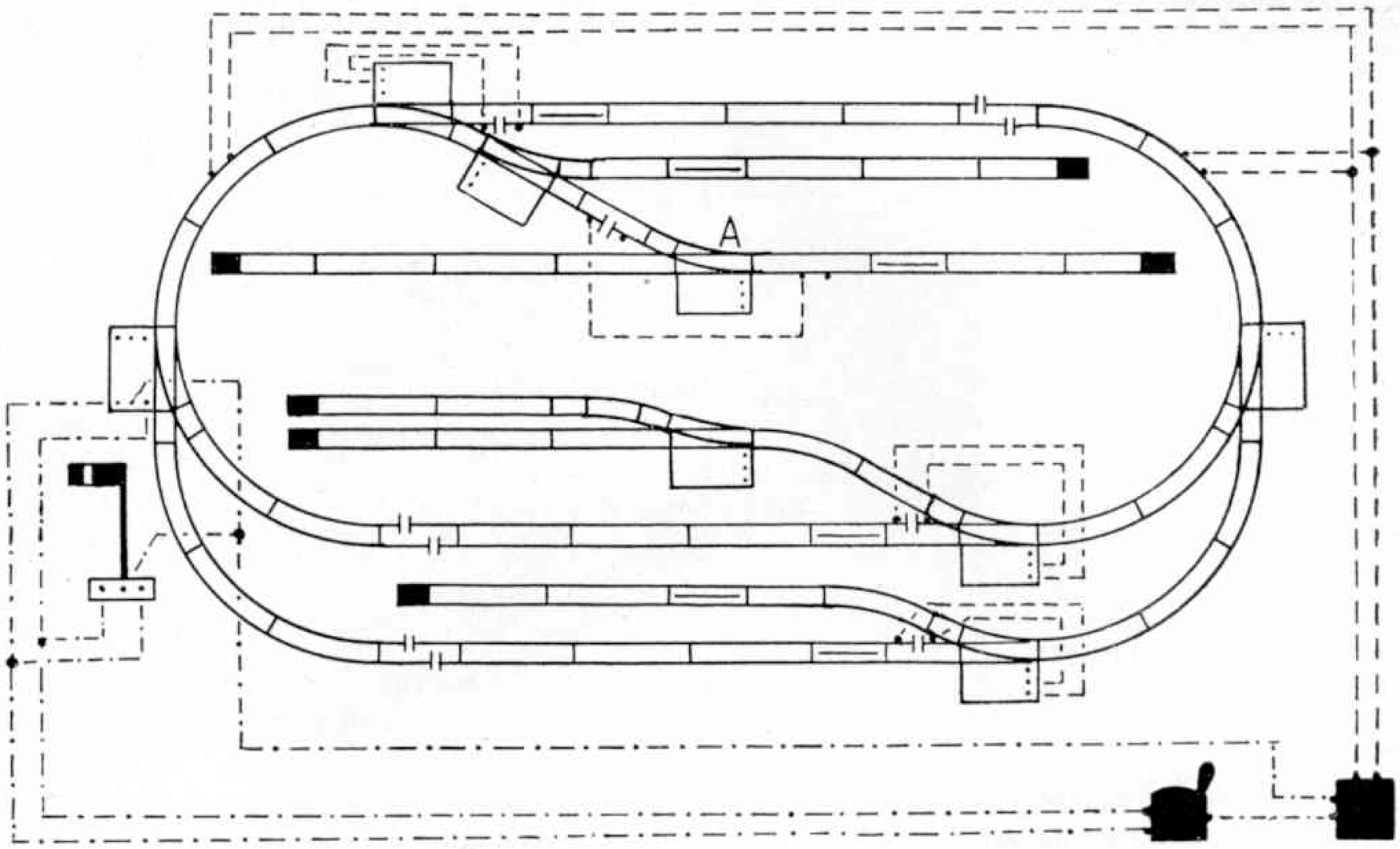
The action of moving the 1614 Switch to alter the Point for the lower main track

A panoramic view of the layout described in this article.



ITEMS REQUIRED

16 Curved Rails ..	2710
2 Curved Terminal Rails with Suppressor	2714
1 Curved Half Rail ..	2711
8 Curved Quarter Rails	2712
22 Straight Rails ..	2701
1 Straight Terminal Rail with Suppressor	2707
4 Straight One-Third Rails	2703
5 Straight Two-Third Rails	2702
4 Straight Two-Third Single Isolating Rails	2738
3 Straight Two-Third Double Isolating Rails	2739
6 Uncoupling Rails. Hand Operated ..	2745
6 Right Hand Switch Points	2728
1 Left Hand Switch Point	2729
1 Left Hand Point. Electrically Operated	2732
1 Switch	1614
6 Buffer Stops ..	2450



will also cause the signal to move into the clear position. This, while not being strictly in accordance with real railway practice, does add extra interest to the layout. In prototype practice, points and signals are operated separately by their respective levers or switches, and the interlocking, either mechanical or electrical, prevents wrong indications and settings being given.

The Single Isolating Rail immediately behind Point "A" prevents a short circuit occurring when Point "A" is set to straight, and the single wire from the left-hand Terminal of the Single Isolating Rail to the Terminal Rail on the inner siding is to provide current for the siding to the left of Point "A", when this is in use. On this layout three isolating sections are provided, two on the main line between the Single and Double Isolating Rails behind the turn-out to the upper and lower sidings, and one on the inner loop between the Single and Double Isolating Rails behind the turn-out to the middle sidings.

The Single Isolating Rail for each section is wired to the switch incorporated with the Two-Rail Hand and Electrically-Operated Points and brought out to the three terminals at the toe end of the Points. When the Point is set to curve, the centre Terminal marked 0 is automatically connected to Terminal "C", and when the Point is set to straight, the centre Terminal is switched to Terminal "S". Thus the isolating section is dead when the Point is set to turn-out. This allows a locomotive to be left stationary on the isolated section.

The track has been designed for two-way operation, but for shunting movements the train should be travelling anti-clockwise so that it can back-shunt into sidings for the disposal or sorting of rolling stock. There is no reason why clockwise operation should not be followed, however, except that a train will head into a siding, engine first, if this practice is observed.

When it is desired to leave a train on the main line to allow another locomotive to draw in and out of a siding for shunting purposes, it is necessary that the first engine should be brought to a stop between the Single and Double Isolating Rails, so that the section in which it stands is electrically isolated when the Points are set for the siding.

RAILWAY BOOK REVIEWS

Modern Railways the World Over (Ian Allan, 15/–) is a new work, the broad scope of which is indicated by its title. Railway progress and changes have been so rapid since the author, G. Freeman Allen, compiled **Railways the World Over** a few years ago that mere revision was not enough; hence the work under review. It covers the developments that are taking place on so many railway systems to cater for the transport requirements of this restless and changing age.

The variety of topics begins with a review of steam power, no longer predominant but yielding to the advance of diesel and electric traction that is also fully described. Railway operating methods are dealt with and the problems of peak-hour suburban traffic are discussed. Luxury passenger services, the speeding of freight traffic and the advances made in the application of electronics to signalling are well covered. There is little need to add that the pictures are plentiful, including sixteen in colour. For such a guide to the latest world railway developments the price is distinctly attractive.

* * * *

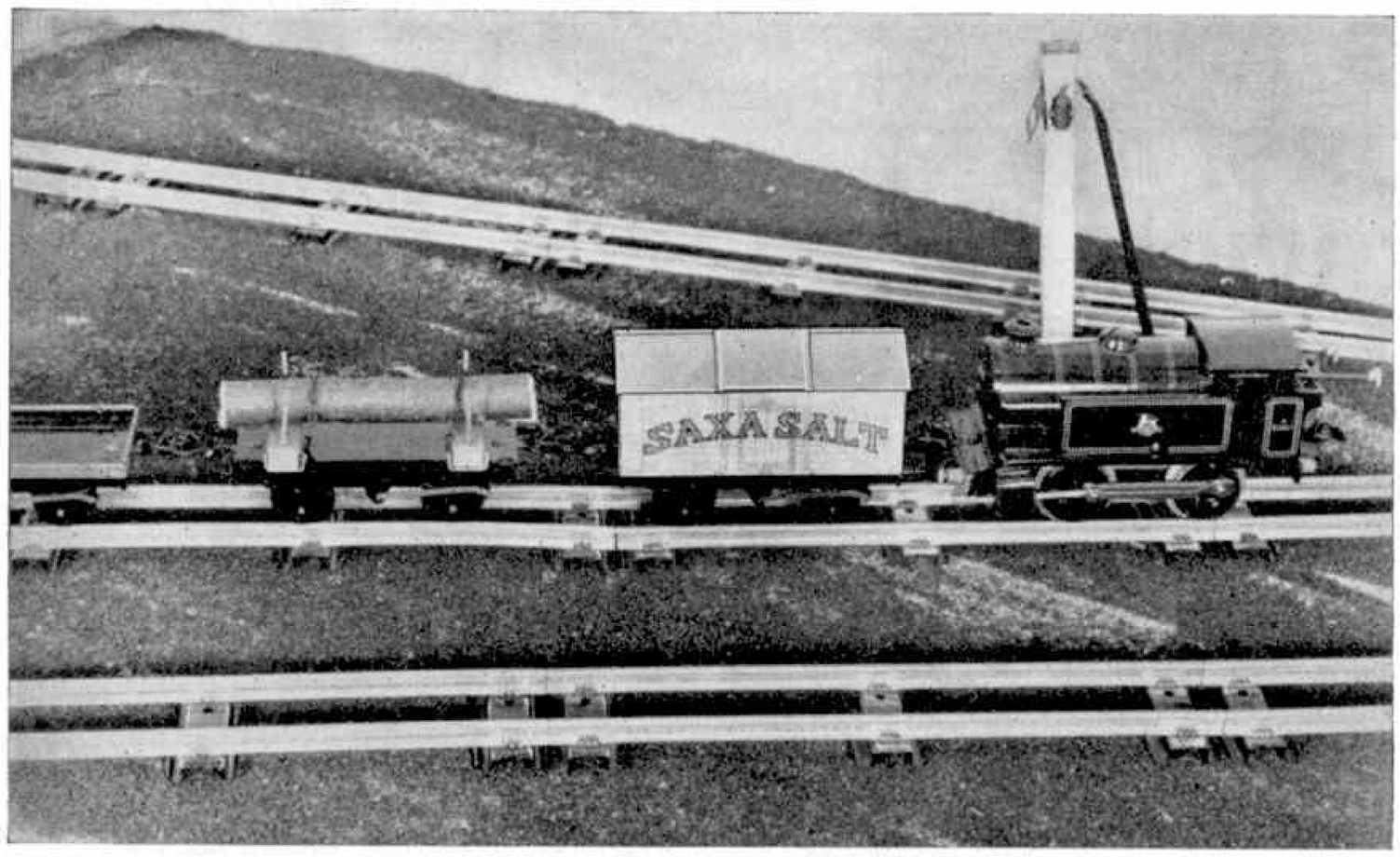
Travel Refreshed (Ian Allan, 2/6) is a pictorial review of British Transport hotels and catering services. The book, well printed and excellently illustrated with many coloured pictures and half-tones, deals in six sections with the "How" and "Why" of the activities of railway hotels, and of Pullman, and other, services that provide food for the traveller. On British Railways—the world's busiest railway system—meals on wheels are serious business. Between eleven and twelve million meals are served in B.R. restaurant cars in the course of a year.

* * * *

The Lancashire and Yorkshire Railway in the Twentieth Century (Ian Allan, 25/–) is a revised edition of the comprehensive work under the same title that appeared some years ago. It incorporates various amendments, additional details and certain number corrections.

Although the author, Eric Mason, himself a former L. & Y. locomotive man, writes with an intimate knowledge of the engines and the jobs they did, he does not confine himself to locomotives alone. The book includes a general survey of the Lancashire and Yorkshire system and its development, the train services, rolling stock and the many other items that went to make up the "Lanky". It was an efficient railway, serving well the counties of its title and operating not only steam trains but electric ones as well, and steamer services, both independently and in conjunction with other companies.

Illustrations are plentiful, and varied, and there is no lack of diagrams and tables appropriate to the text. There are two appendices, dealing respectively with statistical items, locomotive dimensions and the gradients of principal routes.



TRACK NOTES

BY "TOMMY DODD"

Use Care In Preparing Your "Road"

IN our talk last month I told you something about Hornby track and mentioned several things that deserve attention when you are using your Rails. As the track is a most important part of a miniature railway system—your trains can't run without it—I hope that the further notes that follow will be of interest, not only to those who are newcomers to miniature railway matters, but also to those who have had a certain amount of experience.

I expect that many of you in the course of your journeys by train have sometimes seen groups of long bogie wagons stacked with lengths of what can be described as ready-made track waiting to be used. I call it ready-made because the rails are already laid on their sleepers and, in this way, these lengths of track resemble the standard Rails of the Hornby Gauge 0 System.

Real railway engineers have not always used this method of track laying. Whether they can be said to have followed what has long been the standard practice in miniature I am not able to say. I wonder if experiences with Hornby or similar miniature rails may have given the idea to some railway engineer?

When you buy Hornby Rails, they are ready for immediate use, and when full-size track is laid in assembled form, the road bed, as it is called, on which it rests, is always carefully prepared. In this respect the Hornby Railway Engineer should endeavour to follow full-size practice.

If you can employ a baseboard on which to arrange your railway you will be certain of a nice level surface. Such boards, as I have frequently told you, must be properly framed up, or they may become a bit wavy and, of course, the condition of the track and the running of the train will be affected.

* * * *

It is not always possible to use a baseboard and nowadays not many tables provide space sufficient for the ambitions of the Hornby Railway Engineer. Therefore, given permission, of course, he makes use of whatever floor space he can find. A good flat stretch of carpet or linoleum can be quite inviting from the track point of view. Here and there levels may change if the odd mat or rug, or anything similar, is encountered and it may be necessary to pack up the sleepers of the rails as the track approaches this "higher ground", otherwise there may be something of a see-saw action when the train comes along. For packing, a few bits of hardboard or something similar will do quite well. Cut them neatly to size; they will look quite good.

In the scene above a Hornby No. 40 Tank Locomotive, running bunker first, takes a mixed freight train along the main line of a Hornby layout.

It is better, of course, if you can avoid such changes of level, and it can add to the interest of the layout if your Rails have to make their way round and about any obstacles, such as furniture and so on, that cannot be moved. A lot will depend on the nature of these items. You may well have to pretend that a table or a big chair represents a long tunnel. It is always necessary to use one's imagination to a certain extent in arranging a miniature railway of almost any kind.

* * * *

Except where Rails can be screwed to a baseboard the standard Connecting Plates should always be employed at rail joints, while Points should be anchored, at their facing ends, to adjacent lengths of track by means of PCC Point Connecting Clips. I have mentioned these things before, but I do not think that there is any harm in some repetition, in view of their importance to the success of your train running.

Where there is a fair amount of space, more than a single track may be possible and if you can have two tracks side by side—perhaps a loop line section in part of the layout—a more realistic appearance results. See that tracks laid alongside one another run truly parallel, just as they do in real practice. In this way, a neat and tidy look will be given to the line.

I think that some Hornby Railway owners occasionally regard sidings as the places in which to use up odd lengths of track. This can result in some peculiar shapes, but it is not at all a bad idea. It may even be necessary for tracks that diverge from the main line to weave about to a certain extent, owing to the "geographical" difficulties I mentioned earlier. It is much better, of course, if a siding can be kept nice and straight, like the one in the background of the picture on this page. The Buffer Stop, incidentally, should always be joined to a straight length of track, if at all possible. If there is a curved approach to the Buffer Stop, any vehicle that happens to strike it in the course of shunting, etc., will not do so fairly and squarely, and a derailment or similar upset may be caused.

* * * *

Reference to sidings and Points should remind you of the importance of working the Point lever correctly, making sure that the moving switch-rails do fit up closely to the fixed rails whichever way the Points are set. You may need to make one or two small adjustments from time to time, but normally Hornby Gauge 0 Points give reliable service for long periods. Always make sure that the switch rails of the Points are set correctly for the movement to be carried out. This may seem almost too elementary, but it is surprising how often one can be caught in this manner, especially if the layout incorporates several Points.

HORNBY TRAINS AND MECCANO MOTORS: A NEW REPAIR SERVICE

A NEW Repair Service to handle Hornby-Dublo locomotives and tenders (2-rail and 3-rail), Hornby Gauge 0 Clockwork Trains and Clockwork and Electric Meccano Motors has recently been introduced by Meccano Limited. It operates in counties throughout the length and breadth of the country and also in Northern Ireland and the Channel Isles.

Repairs to the items mentioned above will now be handled by a large number of accredited Service Specialists whose names and addresses are given below. The areas in which these Service Specialists are situated are listed below in alphabetical order. For the further guidance of customers, the firms mentioned display an "Accredited Repairs Specialists" sign.

Repairs may, of course, still be sent to Meccano Limited's Service Department at Hanson Road, Aintree, Liverpool, which has previously dealt with all repairs, but it is hoped that the spreading of the Repair Service will prove of considerable convenience to customers and will result in a saving of time.

If you have any of the products mentioned which require repair, you should consult your nearest Accredited Service Specialist.

Charges for all such repairs will be based on the time and labour involved.

The accredited Service Specialists are:

ABERDEENSHIRE

Angus—Brian Sherriff, 93 Victoria Road, Dundee.

BEDFORDSHIRE

Bedford—H. J. Banks, 23 St. Peters Street.
Luton—Aeromodels, 59 Wellington Street.

BERKSHIRE

Reading—E.A.M.E.S. (Reading) Ltd., The Model Shop, 24 Tudor Road.

CHESHIRE

Birkenhead—Birkenhead Model Supplies Ltd., 32 Grange Road West.
Moreton—Mortimer Ltd., 254–260 Hoylake Road.
Neston—J. Bailey, The Model Shop, Parkgate Road.

DENBIGHSHIRE

Wrexham—Craftoys Ltd., 4 Centenary Buildings, King Street.

DEVONSHIRE

Barnstaple—E. Gale & Son Ltd., Joy Street.
Bideford—E. Gale & Son Ltd., 2–3 Mill Street.
Exeter—John Webber (Sports) Ltd., 50–51 High Street.
Plymouth—F. T. B. Lawson Ltd., New George Street.

CUMBERLAND

Carlisle—R. M. Hill & Sons, 36–40 Castle Street.

DURHAM

Durham—C. T. Applegarth, The Model Shop, 92 Claypath.

ESSEX

Chelmsford—Chelmsford Model Co., Baddow Road.
Colchester—West End Cycle Stores, 65 Crouch Street.
Ilford—Pages of Barkingside Ltd., 19 Broadway Market, Fencepiece Road, Barkingside.

GLAMORGAN

Cardiff—James Lendon, 194 Fidlas Road, Llanishen.
The Model Shop, 9 Mill Lane.
Neath—Pearms Ltd., 16 Alfred Street.

GLOUCESTERSHIRE

Bristol—The White Tree Electrical and Toy Bazaar, 28 North View, Westbury Park.
Cheltenham—I. Newman (Cheltenham) Ltd., 127–9 Bath Road
Gloucester—O. & N. Ash, 106 Westgate Street.

HAMPSHIRE

Bournemouth—The Sports Shop, 14 Seymoor Road, Westbourne.
Portsmouth—Robin Thwaites Ltd., The Hobby Shop, 28 Arundel Street.
Southampton—Woodkraft Supplies Ltd., 38 Northam Road.

HERTFORDSHIRE

Royston—H. C. Green, 25 High Street.
St. Albans—Bold and Burrows Ltd., 12–18 Verulam Road.
Watford—H. G. Cramer Ltd., 127a–127b High Street.

KENT

Beckenham—Furley & Baker, 69 High Street.
Bexley Heath—W. J. & H. G. Jennings Ltd., Department Store, Broadway.
Canterbury—Barretts of Canterbury Ltd., 2 St. Georges Street.
Gillingham—J. R. Baker (Gillingham) Ltd., 14 Canterbury Street.

LANARKSHIRE

Glasgow—Caledonia Model Company, 478 Argyle Street.
Clyde Model Dockyard Ltd., 22–3 Argyle Arcade.

LANCASHIRE

Ashton-under-Lyne—Ashton Model Supplies, 201 Old Street.
Darwen—Arnold Leaver, 65–67 Duckworth Street.
Liverpool—Lucas's (Hobbies) Ltd., 7 Tarleton Street.
Rushworth, The Model Railway Shop, 137a Kensington.
Manchester—Bassett-Lowke Ltd., 28 Corporation Street.
The Sports Depot (Manchester) Ltd., 4–10 Princess Road, Moss Side.
Wigan—J. J. Bradburn, 76 Market Street.

LEICESTERSHIRE

Leicester—North's Toy and Model Stores, 5 Melton Road.
Loughborough—Clemersons Ltd., 43 Market Place.

LINCOLNSHIRE

Cleethorpes—H. Loftis, 196 Grimsby Road.
Lincoln—S. A. Nobbs & Son Ltd., 2 Norman Street and 16 Sincil Street.

LONDON

London—Allan Brett Cannon Ltd., 32 Railway Approach, London Bridge Station, S.E.1.
H. A. Blunt & Sons Ltd., 133 The Broadway, Mill Hill, N.W.7.
Hamblings (Models) Ltd., 10 Cecil Court, Charing Cross Road, W.C.2.
Model and Tool Supplies, 604 Kingston Road, Raynes Park, S.W.20.
Models (City) Ltd., 2 The Arcade, Liverpool Street Station, E.C.2.
Palace Model Shop, 13 Central Hill, Upper Norwood, S.E.19.
W. & H. (Models) Ltd., 23 Paddington Street, Baker Street, W.1.

MIDDLESEX

Edgware—Cresta, 1 Cinema Parade, Manor Park Crescent.

MIDLOTHIAN

Edinburgh—Harburn's Hobbies Ltd., 116 and 122–124 Leith Walk.

NORTHAMPTONSHIRE

Peterborough—Oliver Carley, 35 Broadway.
Wellingborough—Littlefolk, 24 Market Street.

NOTTINGHAMSHIRE

Nottingham—Beecroft & Sons Ltd., 16 Pelham Street.
Gee Dee Ltd., Friar Lane and Goose Gate.

PERTHSHIRE

Perth—Bob Croll, 75 High Street.

SOMERSET

Bath—Pram and Toy Shop Ltd., 22–23 Southgate Street.
Cyril Howe's of Bath Ltd., 15 Abbey Churchyard.
Taunton—Westlakes (Cycles) Ltd., Station Road.
Yeovil—H. J. Perris (Retail) Ltd., 9–11 Princes Street.

STAFFORDSHIRE

Burton-on-Trent—J. W. Belfield, 2–4 and 12–14 West Street and Market Street, Swadlincote.
Cradley Heath—Dunns (Cradley Heath and Dudley) Ltd., 65 Lower High Street.
Stafford—John Bagnall, South Walls Road.
Walsall—S. H. Granger, Caldmore Models, 108 Caldmore Road.
Wolverhampton—A. J. Chamberlain, 39 Darlington Street.

SURREY

Coulsdon—R. Wills (Scientific Hobbies) Ltd., 92 Brighton Road.
Croydon—Priors, 107 High Street.
Guildford—Guildford Dolls Hospital Ltd., 13 Swan Lane.

SUSSEX

Bexhill-on-Sea—Arber's Model and Toy Shop, 46 Weston Road.
Crowborough—Regent House, High Street.
St. Leonards-on-Sea—A. Hammonds, 5/6 Marine Court.

WARWICKSHIRE

Birmingham—Bearwood Model Supplies, 53 Parade.
The Perrys, 769 Alum Rock Road, Ward End.
J. Williams, 51 Comberton Road, Sheldon.
Sutton Coldfield—W. Gill & Son, The Parade.

YORKSHIRE

Bradford—Bradford Model Railway Centre Ltd., 202 Keighley Road, Frizinghall.
Leeds—King Charles Sports Centre, 18 and 20 King Charles Street.
Sheffield—Fred Shaw, 42 Church Street.
The Redgate Co. (Sheffield) Ltd., Moorhead.

CHANNEL ISLES

Jersey—George D. Laurens, 3/5/7 Queen Street.

NORTHERN IRELAND

Belfast—The Model Shop, 36 Wellington Place.
Thornton & Co. Ltd., 40/42 Donegal Place

WITH THE SECRETARY

Club and Branch News

Club Displays Overseas

MERIT MEDALLION AWARDS

News from the farthest outposts of the Meccano Guild make up most of this page this month, and in the list of Merit Medallions awarded during the past Club year Australian and New Zealand Clubs are well to the fore. The year just ended was one of progress on the home front, too, and by this time next year the several new British Clubs and Branches which have been formed during 1961 should be well established and their activities adding to the interest of this page.

I congratulate the following winners of Guild Merit Medallions in 1961.—CHRISTCHURCH (NEW ZEALAND) M.C.—Archer, D.; Curtis, J.; Satterthwaite, P. MAYLANDS (AUSTRALIA) M.C.—Bransby, W.; Carter, J.; Christensen, R.; Criddle, T.; England, L.; Montagu, H.; Seaward, R.; Vidler, A. NORTH END (PORTSMOUTH) M.C.—Chase, T.; Chenery, L.; Garland, D.; Paine, R. 30th BRISTOL LIFE BOYS M.C.—Davies, S.; Lane, R.

CLUB NOTES

MAYLANDS (AUSTRALIA) M.C.—Bairds Limited asked for a party of boys to stage a demonstration of working models in their Toy Department on a Saturday morning last December, and the Club was delighted to have this opportunity of showing what it can do in this way. What promises to be one of the most interesting models ever built in the history of the Club is now taking shape. It is Alan Vidler's Remote Controlled Dragline, and although the general idea of the model was suggested by some photographs in a German trade magazine, Alan deserves all the credit for the design and construction of the model. It is powered by two Meccano E20R Electric motors and seven 12 volt solenoids operating through a rectifier from a 12 volt A.C. transformer.

A member of the staff of the Australian Glass Manufacturers took two small parties of members over the works, and showed them every phase in the manufacture of bottles. The boys were given an opportunity to look in the furnaces, and wore welding masks to protect their eyes from the glare. *Secretary:* Trevor Criddle, 17 Kenilworth Street, Maylands, Australia.

NEW ZEALAND

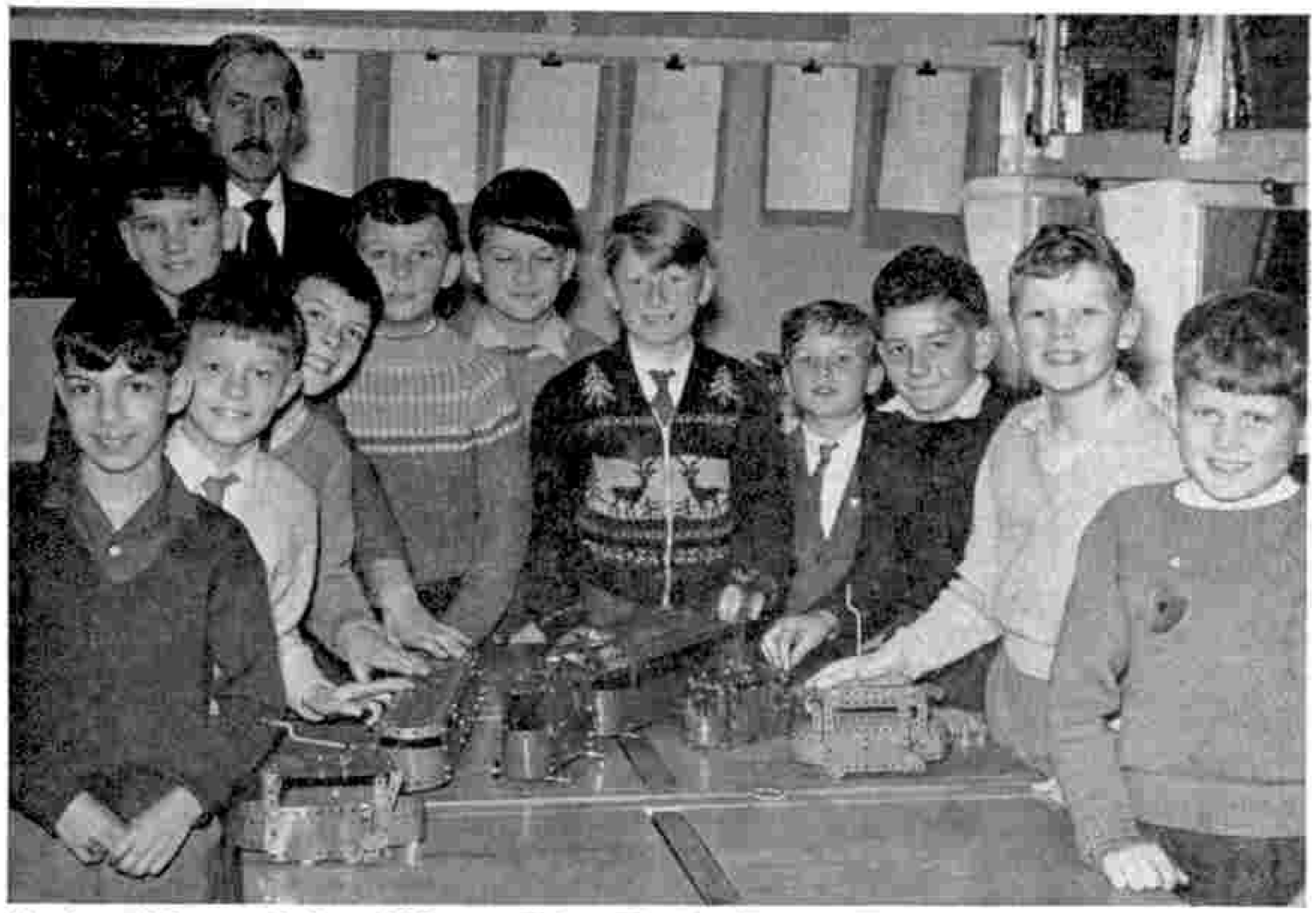
CHRISTCHURCH M.C.—The Club display of working models at the New Zealand Industries Fair was a record success, as was the Fair as a whole. Various interesting subjects, such as different forms of gearing, have been set at model-building meetings. One meeting was devoted to Cranes, and an excellent variety of models built. The session ended with a Parent's Night early in December, when nearly 60 parents and members attended. It was also the occasion for presenting Merit Certificates and the Ellison Cup. The 1961 Cup competition resulted in a draw, David Archer attaining a total of 221 marks for model-building and 100 for attendance, and John Curtis 226 marks for his model-building and 95 in respect of attendance; making a total of 321 marks in each case. David Archer was the 1959 winner of the Cup. The best junior member was Barry, with 230 points for model-building and 80 for attendance. *President and Leader:* Mr. C. E. Saunders, 6 Walsall Street, Riccarton, Christchurch 2, New Zealand.

ST. JOHN'S (DUNEDIN) M.C.—There were some excellent entries for the model bridge building competition, which was judged by Mr. King, a senior member. B. Collins won first place (20 marks), R. McLean second place (15 marks) and W. Earl third place (10 marks). Unsuccessful members were given 5 marks in acknowledgment of their entering the contest. Mr. King commented on the very good standard of model-building attained.

About 30 people, including several past members, attended the Club's end-of-year meeting in St. John's Parish Hall, when members' parents and friends were given ample opportunity to examine the excellent display of working Meccano models. Interesting films loaned by Mr. F. L. Duncan, the father of one of the members, were screened. Mr. P. S. Baird, Leader and Patron, made a short speech and presented the model-building shield to B. Collins, the 1961 winner. The evening ended with a sumptuous tea provided by the members. It is hoped to arrange a visit to a local newspaper printing works. *Secretary:* William Earl, 60 Ann Street, Roslyn, Dunedin, New Zealand.

BRANCH NEWS

NORTH END (PORTSMOUTH)—The first section of the new layout by Mr. R. J. Enfield, the Leader, has been completed. A novel feature to be included will be a Scalextric Roadway on which Dinky Toys cars, etc., will be substituted for racing cars. The models will be controlled independently, and the Roadway will have illuminated traffic lights. On the Branch layout a realistic railway accident has been staged, and this was followed by an "official inquiry". *President and Secretary:* Mr. A. J. Nicholson, 213 Sultan Road, Buckland, Portsmouth.



Members of the recently-formed Meccano Club at Woodley Church of England School, Berkshire, with some of their Meccano Models. In the background is Mr. H. W. Mason, Leader of the Club. Colin Macleish Secretary, is third from the right.

EASY MODEL-BUILDING

Spanner's Section For The Juniors

Radio Jeep And A Railway Crane

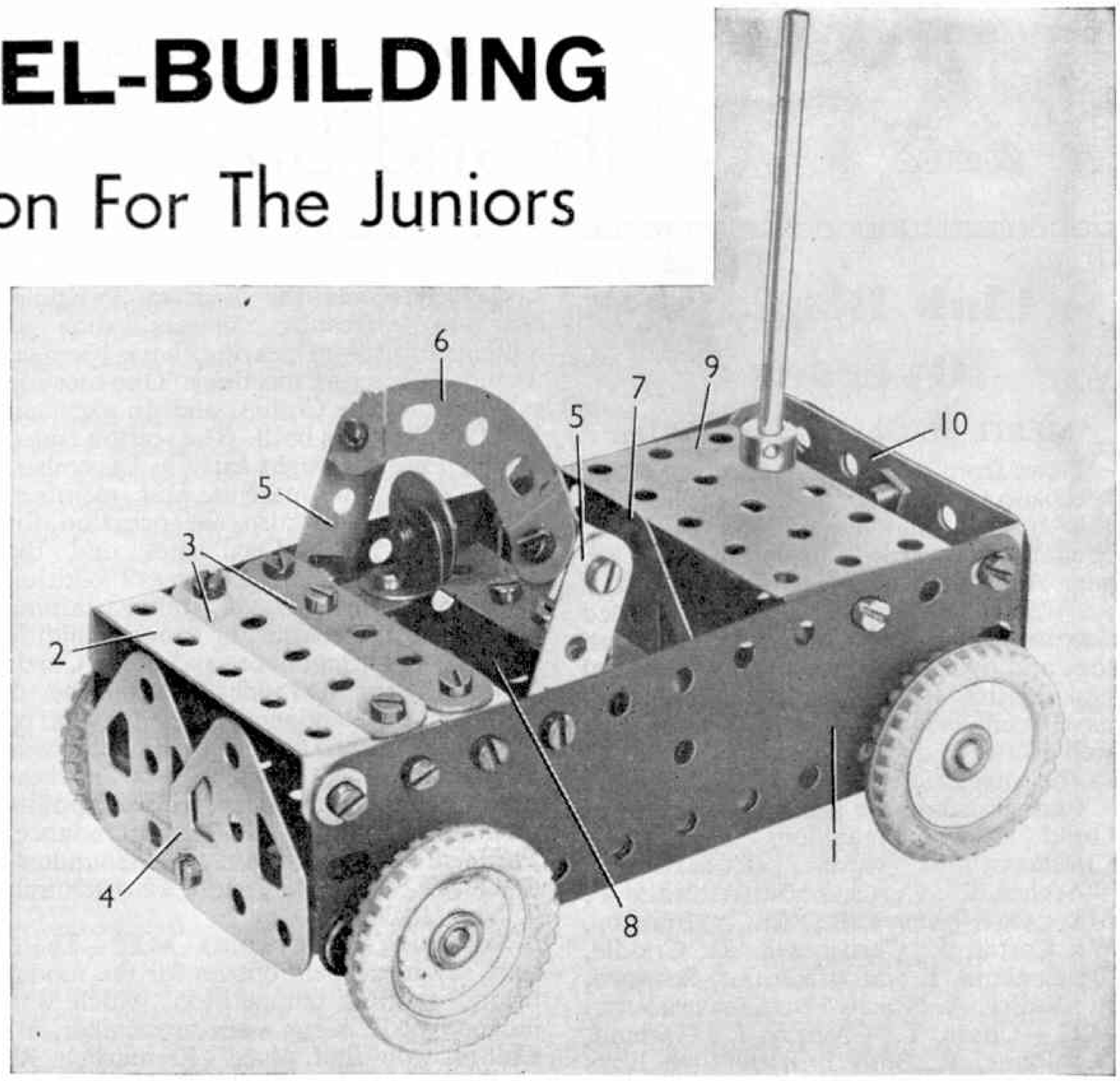


Fig. 1. An easy-to-build model of a Radio Communications Jeep for the younger Meccanoite.

FIRST of two attractive new models I want to describe this month is the Radio Communications Jeep shown in Fig. 1. It is easily built-up by proceeding as follows: Fix two $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates 1 to the Flanges of a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate to form the base and sides of the vehicle. Now make the bonnet, which is formed by a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 2 fixed to the Plates 1, and two $2\frac{1}{2}''$ Strips 3 fixed to the sides by Angle Brackets. For the radiator, two Flat Trunnions 4 are bolted to the Flanged Plate. Next, two $2\frac{1}{2}''$ Strips 5 are fixed to the sides and a Curved Strip 6 is fixed between them on Angle Brackets to form the Windscreen. The steering wheel is a $\frac{3}{4}''$ Washer bolted to an Angle Bracket, which is, in turn, bolted to a Fishplate fixed to the Strip 3.

You can make the seats from two Trunnions 7 bolted together and then secured to the Plate by a $\frac{1}{2}''$ Reversed Angle Bracket 8. You should then bolt a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flanged Plate 9 between the Plates 1; this forms the "radio", the aerial being a $3\frac{1}{2}''$ Rod held by Collars. A $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 10 is fixed between the Plates 1 and to this is bolted a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate. Now attach the wheels, which are 1" Pulleys with Tyres fixed on $3\frac{1}{2}''$ Rods. The Rods are passed through the Plates 1 and the flanges of the $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate.

To build the model Radio Communications Vehicle you will require the following parts: 4 of No. 5; 1 of No. 10; 7 of No. 12; 3 of No. 16; 4 of No. 22; 34 of No. 37a; 32 of No. 37b; 6 of No. 38; 1 of No. 38d; 2 of No. 48a; 1 of No. 51; 2 of No. 59; 1 of No. 90a; 2 of No. 111c; 1 of No. 125; 2 of No. 126; 2 of No. 126a; 4 of No. 142c; 1 of No. 188; 2 of No. 189.

Railway Service Crane

FOR owners of Outfit No. 3, or above, I have a working model Railway Service Crane. This is seen in Figs. 2 and 3 and is quite simple to construct. The underframe consists of a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate to which is bolted four Fishplates 1, and two $5\frac{1}{2}''$ Strips 2, extending four holes past the Flanged Plate. Two $5\frac{1}{2}''$ Strips 3 are now bolted to the other lugs of the Fishplates 1 and they are extended four holes by $2\frac{1}{2}''$ Strips 4. A Flat Trunnion 5 is bolted to each pair of Strips and these are connected by a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 6 to which a Semi-Circular Plate is fixed by means of $\frac{3}{8}''$ Bolts. The axles are formed by $3\frac{1}{2}''$ Axle Rods mounted in the Strips as shown, and the wheels are 1" Pulleys with boss.

The near side of the crane cab is made up from a $4\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate 7 and a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate 8 to which is bolted a $2\frac{1}{2}''$ Strip 9 held by Bolt 10. The off side consists of a $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate and a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate to which is bolted a further $2\frac{1}{2}''$ Strip as on the near side of the cab. The two Plates are bolted in the shape of an "L", the long $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Plate forming the base and the $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Plate forming the upright. The resulting space is the cab window. The sides are strengthened by two Trunnions, joined by a $2\frac{1}{2}''$ Strip to which is bolted an eight-holed Bush Wheel 19.

The back of the cab is a $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate attached to the side

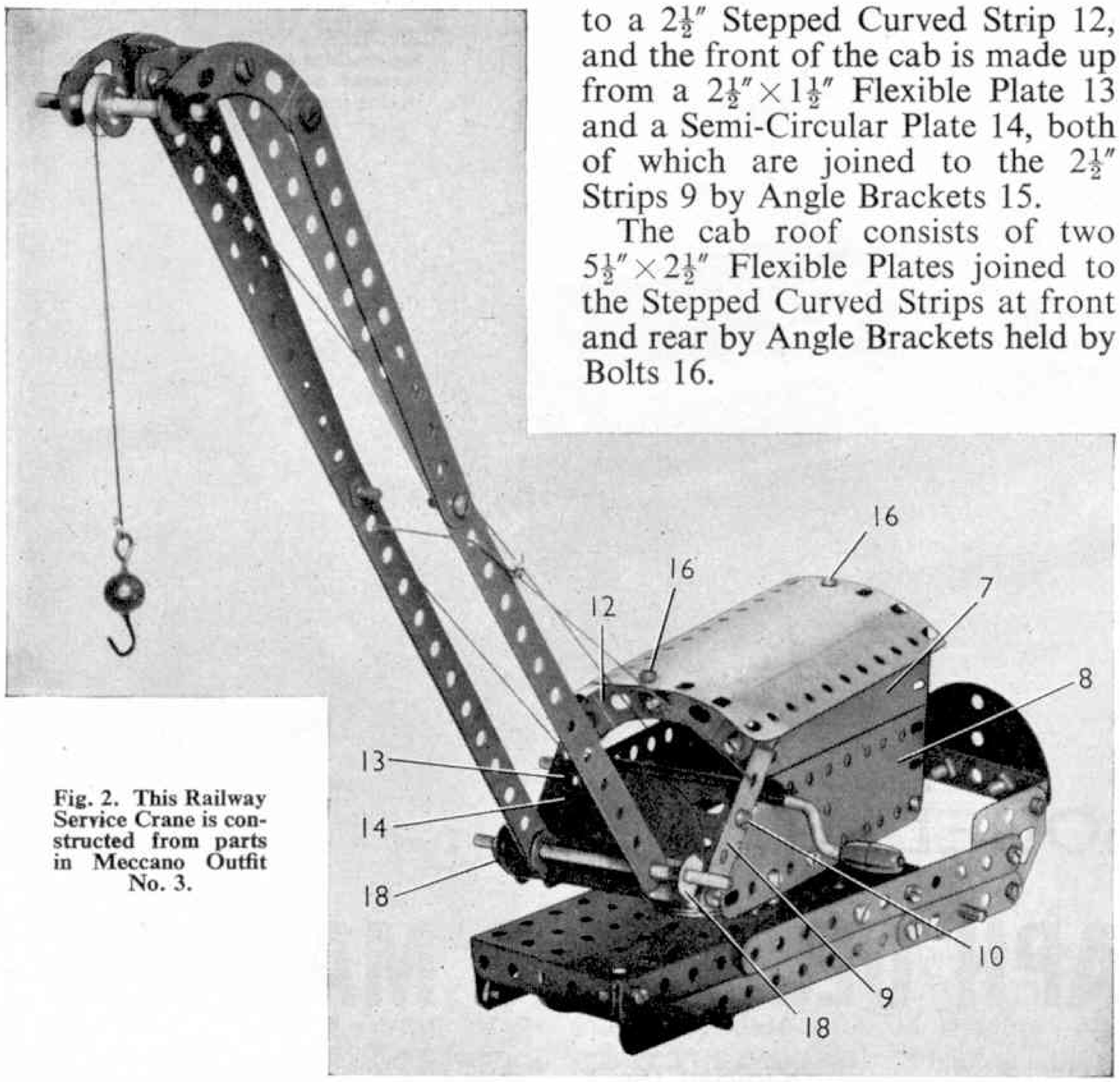


Fig. 2. This Railway Service Crane is constructed from parts in Meccano Outfit No. 3.

by a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 11 at the base, and by Angle Brackets at the top, the same bolts holding a $2\frac{1}{2}''$ Stepped Curved Strip in place over the Flexible Plate.

The $2\frac{1}{2}''$ Strips 9 are connected at the top by Angle Brackets attached to a $2\frac{1}{2}''$ Stepped Curved Strip 12, and the front of the cab is made up from a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate 13 and a Semi-Circular Plate 14, both of which are joined to the $2\frac{1}{2}''$ Strips 9 by Angle Brackets 15.

The cab roof consists of two $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plates joined to the Stepped Curved Strips at front and rear by Angle Brackets held by Bolts 16.

The crane jib is made up from two $12\frac{1}{2}''$ Strips, two $5\frac{1}{2}''$ Strips and two Stepped Curved Strips joined by two Reversed Angle Brackets 17, as shown. A $\frac{1}{2}''$ loose Pulley is mounted on a 2″ Rod journalled in the end holes of the Stepped Curved Strips and held in place by Spring Clips. The jib is attached to the cab by means of a $3\frac{1}{2}''$ Rod passing through the lugs of the Double Brackets 18 and the end holes of the $12\frac{1}{2}''$ Strips of the jib. Spring Clips hold the Rod in place.

The cab itself is mounted on the underframe by a 2″ Rod passed through the boss of the Bush Wheel 19, two loose eight-holed Wheel Discs 20, the $5\frac{1}{2}''$ Flanged Plate and a Road Wheel 21.

A length of cord runs from the crane hook, around the $\frac{1}{2}''$ Pulley on the jib and through the front window, to a $3\frac{1}{2}''$ Crank Handle with Grip, which is held in place in the cab sides by Spring Clips.

The jib is held in position by cords running from midway up the jib to the $2\frac{1}{2}''$ Strips 9.

Parts required to build the Railway Service Crane: 2 of No. 1; 6 of No. 2; 5 of No. 5; 4 of No. 10; 2 of No. 11; 8 of No. 12; 3 of No. 16; 2 of No. 17; 1 of No. 19g; 4 of No. 22; 1 of No. 23; 1 of No. 24; 2 of No. 24a; 6 of No. 35; 56 of No. 37a; 50 of No. 37b; 2 of No. 38; 2 of No. 48a; 1 of No. 52; 1 of No. 57c; 4 of No. 90a; 6 of No. 111c; 2 of No. 125; 2 of No. 126; 2 of No. 126a; 1 of No. 187; 1 of No. 188; 2 of No. 189; 2 of No. 190; 1 of No. 191; 2 of No. 192; 2 of No. 214.

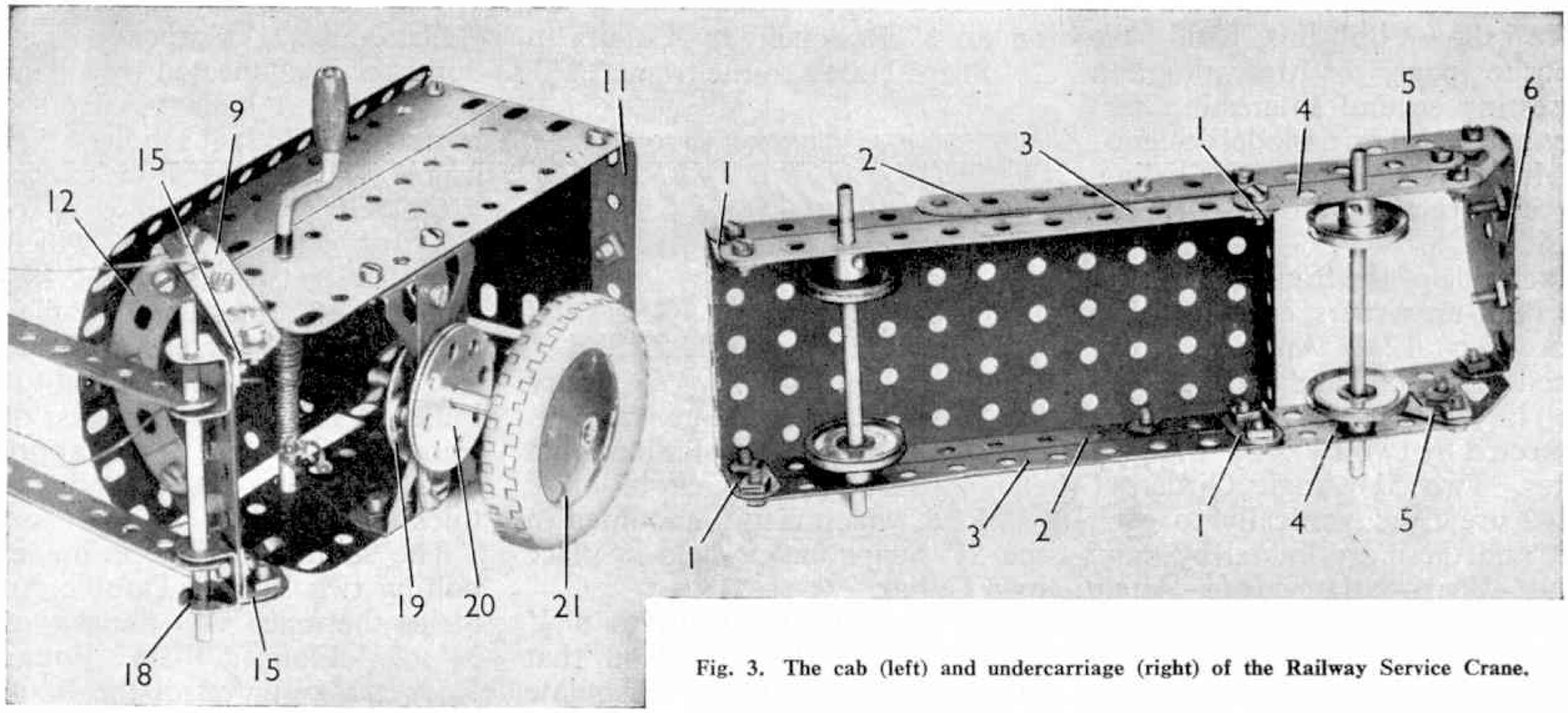


Fig. 3. The cab (left) and undercarriage (right) of the Railway Service Crane.

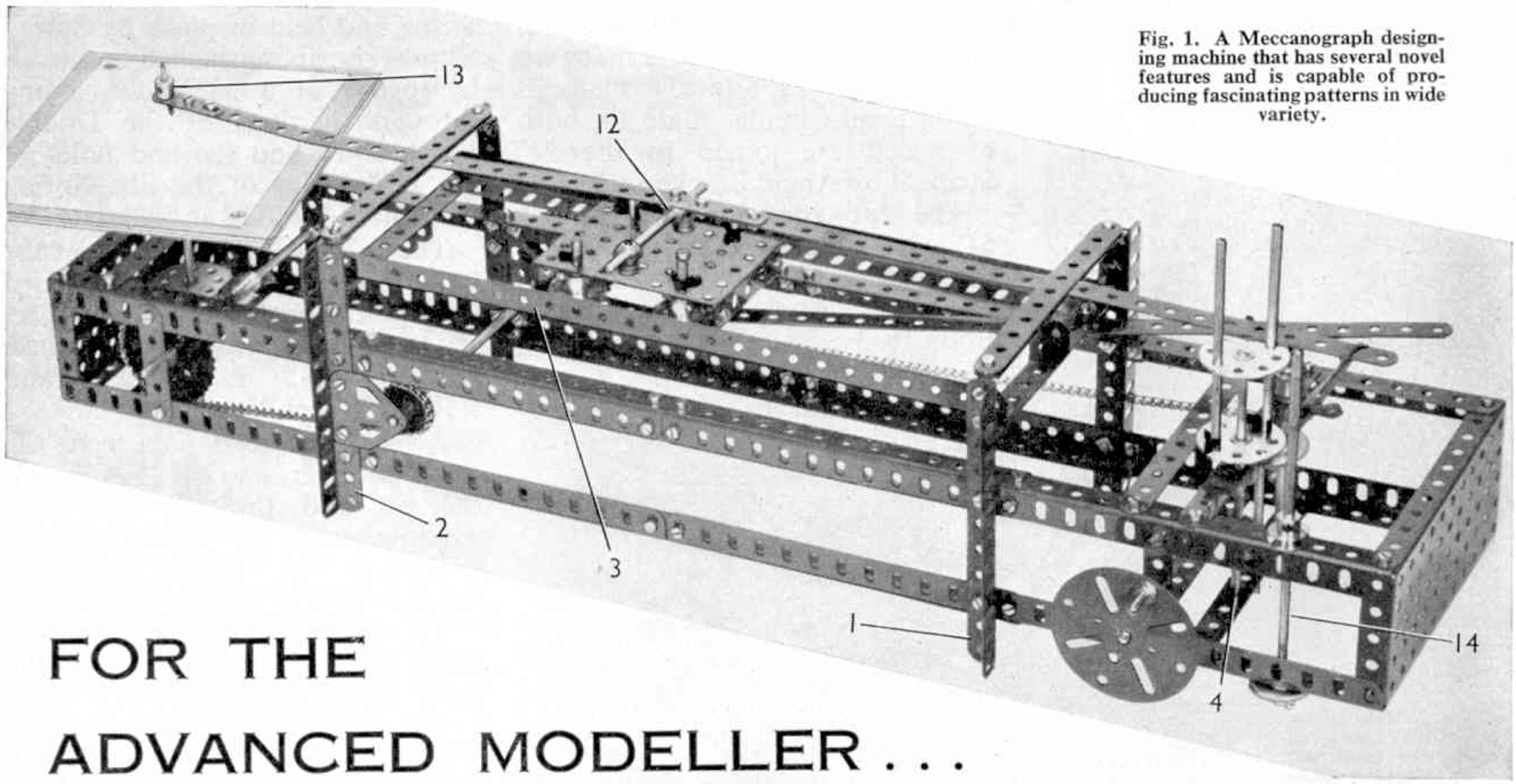


Fig. 1. A Meccanograph designing machine that has several novel features and is capable of producing fascinating patterns in wide variety.

FOR THE

ADVANCED MODELLER . . .

MECCANOGRAPH DESIGNING MACHINE

MECCANOGRAPH designing machines have been one of the most popular subjects for Meccano models ever since the first model of this kind was introduced in the very early days of Meccano. One reason for this is the scope that they provide for experimentation, for it is possible to vary the constructional details considerably.

We show on this, and the opposite page, a Meccanograph possessing several interesting features and based on a model designed by Mr. M. R. G. Spiller, of Stirling, for construction from parts in Outfit No. 8.

Each side of the frame consists of two built-up girders, each made up from two $12\frac{1}{2}''$ Angle Girders placed end-to-end and connected by two $12\frac{1}{2}''$ Strips. The sides are connected by two $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plates. Two $5\frac{1}{2}''$ Angle Girders 1 and 2 are fixed vertically to each side, and these are linked by pairs of $5\frac{1}{2}''$ Strips attached to Angle Brackets. Washers are placed on the bolts to separate the Strips in each pair, so that the pen arm 13 is able to slide freely between them. A $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip is fixed to each Girder, and these Double Angle Strips are connected in pairs by $5\frac{1}{2}''$ Strips. The Double Angle Strips support two $12\frac{1}{2}''$ Angle Girders 3, which must be attached by their slotted holes.

The operating handle is a Threaded Pin in a Face Plate, fixed on an 8″ Rod held by Collars in $2\frac{1}{2}''$ Strips bolted to the frame. The

BY SPANNER

Rod carries a Worm Gear that drives a $\frac{1}{2}''$ Pinion on a 5″ Rod 4. Rod 4 is mounted in two $5\frac{1}{2}''$ Strips fixed across the frame, and it carries a second $\frac{1}{2}''$ Pinion that engages a 57-tooth Gear 5 on a $3\frac{1}{2}''$ Rod, which also is mounted in the $5\frac{1}{2}''$ Strips and is held in place by a Collar.

The 57-tooth Gear drives a $\frac{1}{2}''$ Pinion on another $3\frac{1}{2}''$ Rod that carries a Crank 6. A Fishplate bolted to the Crank is fitted with a $\frac{3}{8}''$ Bolt 7. Two Bush Wheels fixed to the upper end of Rod 4 support 4″ Rods 8, which are held in place by Spring Clips.

A $\frac{3}{4}''$ Sprocket on the 8″ Rod is connected by Chain to a 2″ Sprocket on a $6\frac{1}{2}''$ Rod 9, which is mounted in Flat Trunnions bolted to the Girders 2 and held in place by a Collar and a 1″ Sprocket. The 1″ Sprocket is connected by Chain to a 2″ Sprocket on a $6\frac{1}{2}''$ Rod supported in $2\frac{1}{2}''$ Strips bolted to the frame. The latter Rod carries a Worm Gear that drives a 57-tooth Gear on a 5″ Rod 10, which is mounted in two $5\frac{1}{2}''$ Strips bolted across the frame. A 2″ Pulley is fixed to the upper end of Rod 10 and the design table is bolted to the Pulley. The table consists of a smooth piece of wood approximately 6 inches square and $\frac{1}{4}$ inch thick.

The sliding carriage is made by bolting two $3\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips between the flanges of a $3\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate. Four $1\frac{1}{2}''$ Rods are mounted in the Flanged

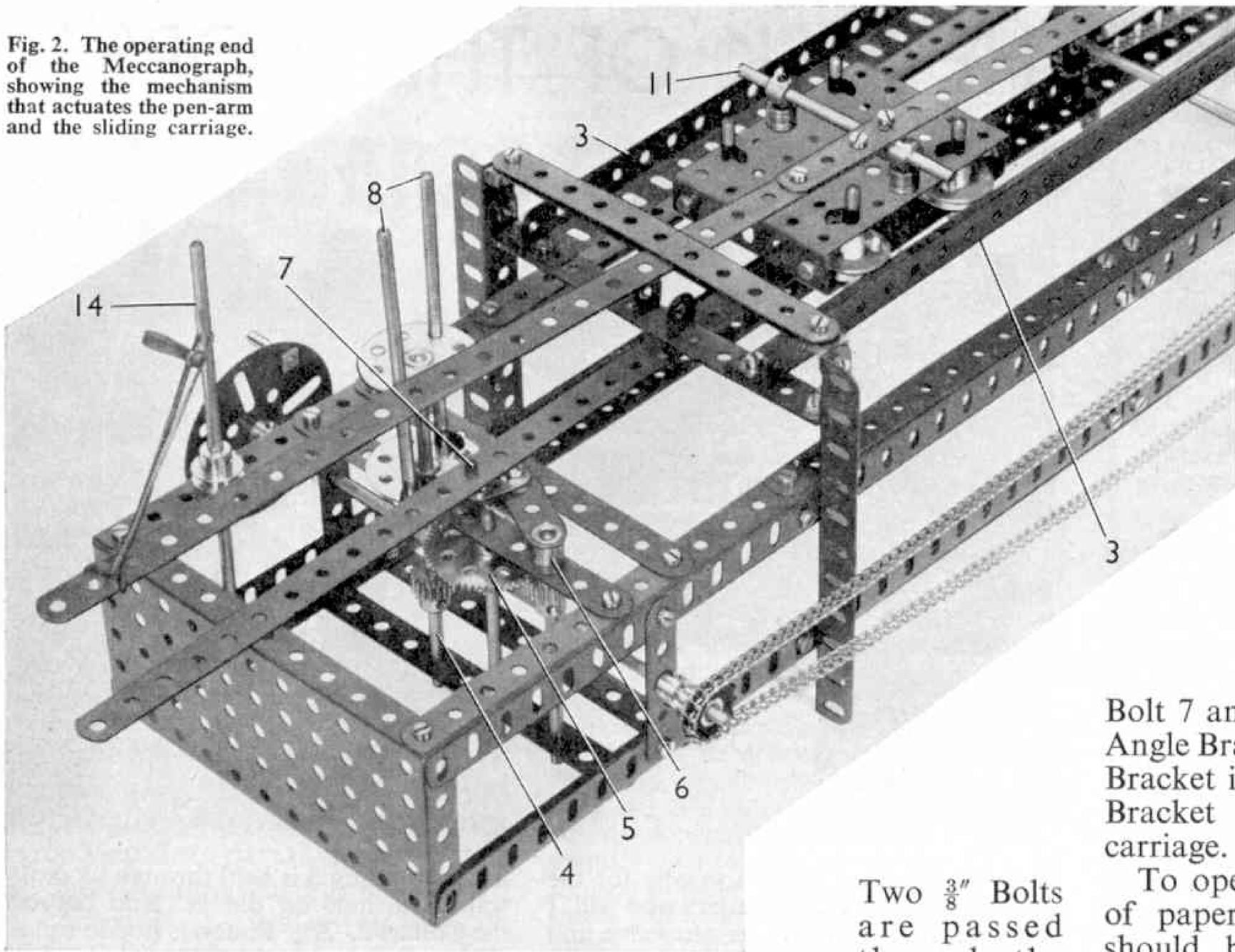


Fig. 2. The operating end of the Meccanograph, showing the mechanism that actuates the pen-arm and the sliding carriage.

Plate and the Double Angle Strips as shown, and each of them carries a 1″ Pulley and a Spring Clip. The boss of each Pulley is spaced from the Flanged Plate by two Washers. Two $\frac{3}{8}$″ Bolts are passed through the Flanged Plate, and six Washers are placed on each Bolt before a Collar is screwed on to it. The Collars support a $3\frac{1}{2}$″ Rod 11 that carries a Collar 12. The carriage is arranged so that the 1″ Pulleys run freely on the inner edges of the Angle Girders 3.

The pen arm 13 consists of two $12\frac{1}{2}$″ Strips overlapped three holes and fitted with a Crank at one end. The arm pivots on a bolt screwed into Collar 12, and it is held against the Rods 8 by a rubber band looped round the arm and passed over a $6\frac{1}{2}$″ Rod 14.

The carriage is actuated by a $12\frac{1}{2}$″ Strip passed over Bolt 7 and bolted to a $\frac{1}{2}$″ Reversed Angle Bracket. The Reversed Angle Bracket is lock-nutted to a Double Bracket 15 fixed underneath the carriage.

To operate the machine, a sheet of paper about 5 inches square should be pinned to the design table, and a ball pen refill fixed in the Crank 13. The design is produced simply by turning the operating handle.

Variations in the patterns produced can be made by altering the positions of the pen arm and the arm that operates the sliding carriage, on their pivots. Further

(*Continued on page 83*)

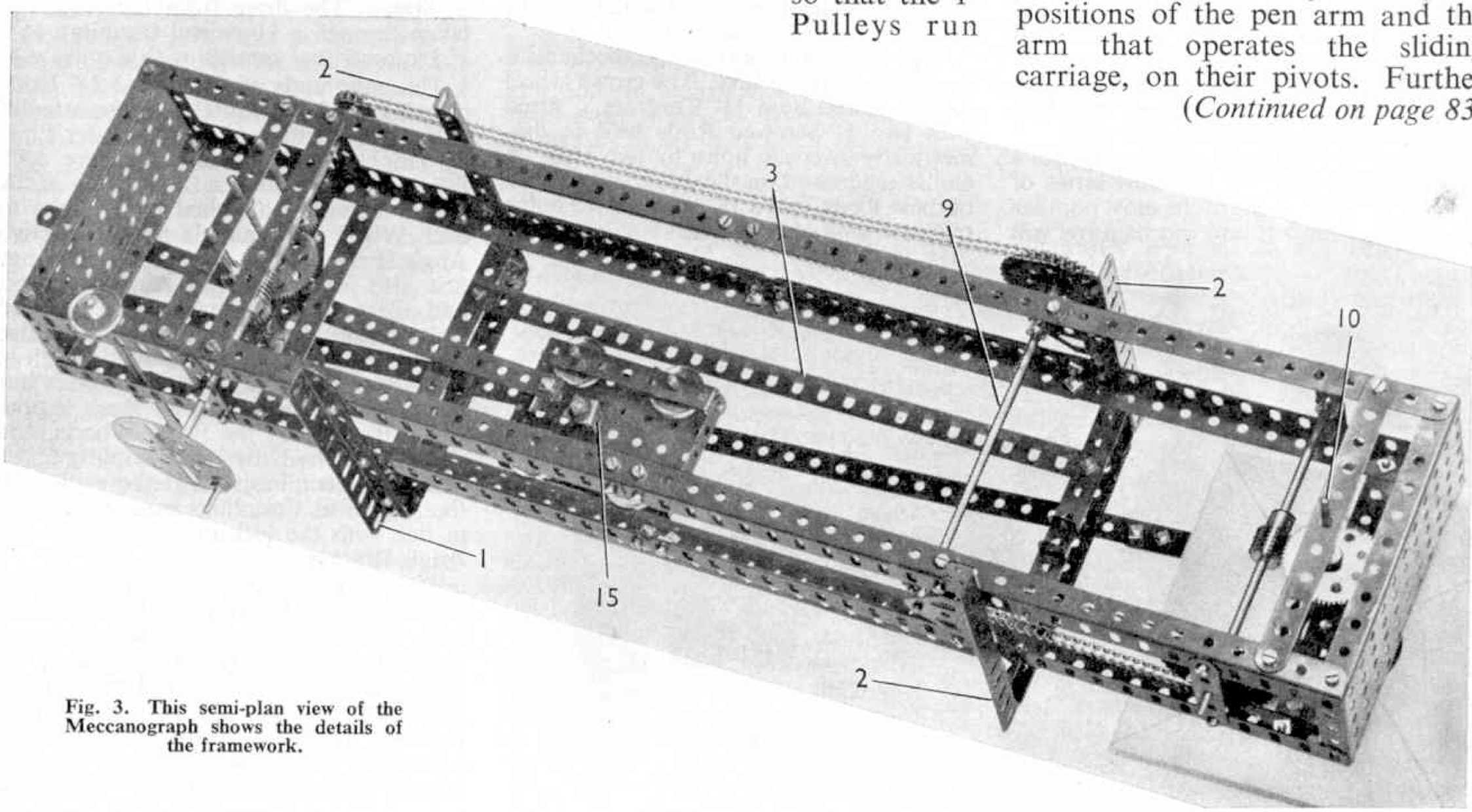
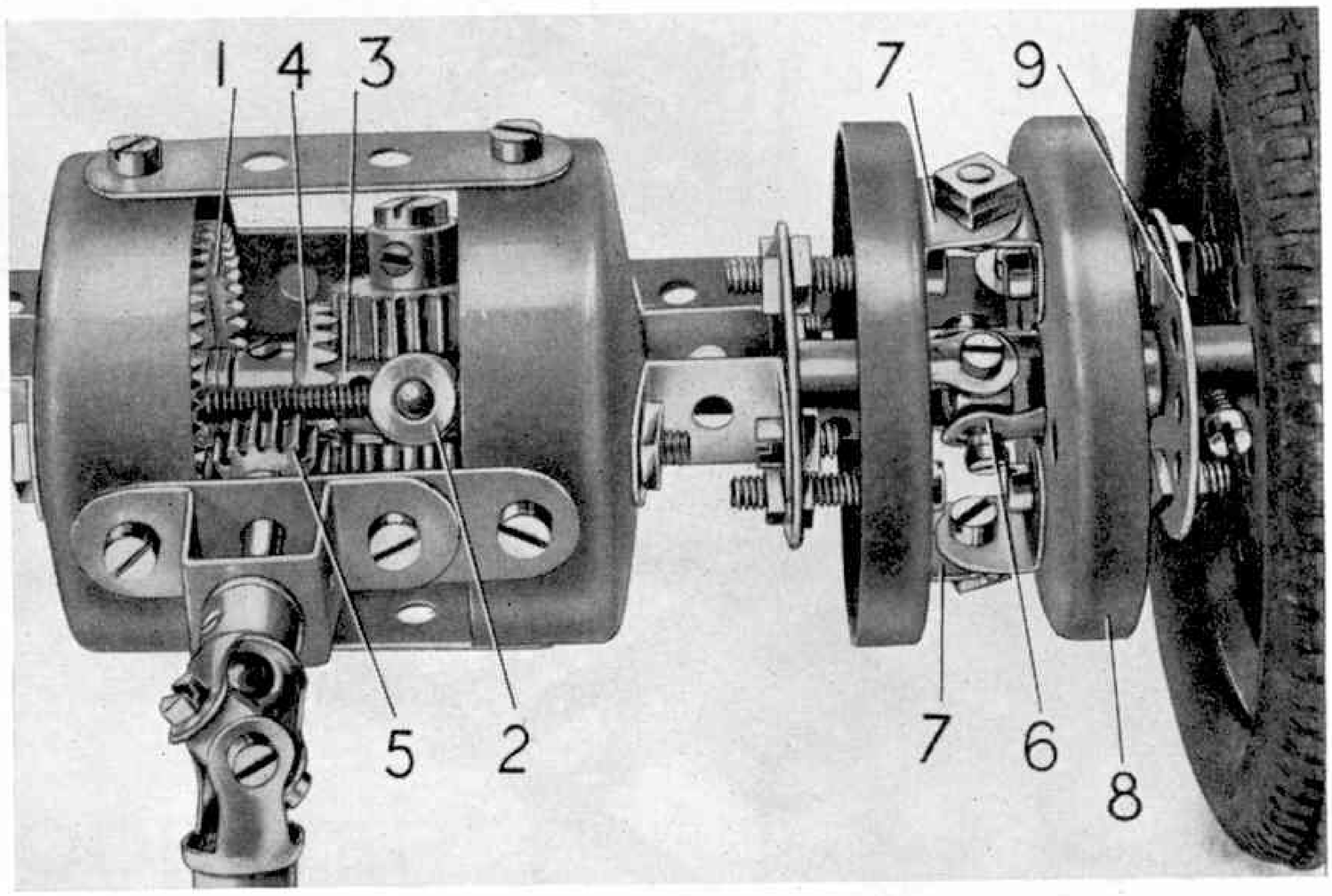


Fig. 3. This semi-plan view of the Meccanograph shows the details of the framework.

MECCANO—THE PICK OF THE "POPS"

Spanner's New Series For The Older Enthusiast



AMONG the hundreds of letters I receive each week are many from adult Meccanoites who have been enthusiasts since their boyhood days and who now have sons of their own enjoying the hobby. These "old" Meccanoites have long memories and, in many cases, nostalgic ones.

They remember many of the outstanding models and mechanisms that appeared in the *M.M.* in the days before the last war, and from correspondence with them it is obvious that they consider that the best of those earlier models and mechanisms should again be included in the *M.M.* for the benefit of the present generation of Meccano modellers.

I am, of course, delighted to know that so many of the models and features that appeared in my pages in the period 1925 to 1950 were so much appreciated, and while some of the old models and mechanisms are now out-dated, many are equally applicable to the conditions of today. They include some of the best constructions in Meccano's history.

In view of this I have, with the Editor's blessing, decided to start a new series of articles, in which some of the most popular of the older models and mechanisms will again be given an airing specially for the benefit of "not so old" readers who will, I feel sure, find them just as attractive and instructive as did their fathers before them.

One very frequent request I receive is from model-builders who wish to construct car chassis and want to include drive transmission to the front wheels. For this first article in the new series, therefore, I have chosen an interesting type of front-wheel drive transmission that appeared in the *M.M.* some time ago. The mechanism is illustrated in Figures 1 and 2.

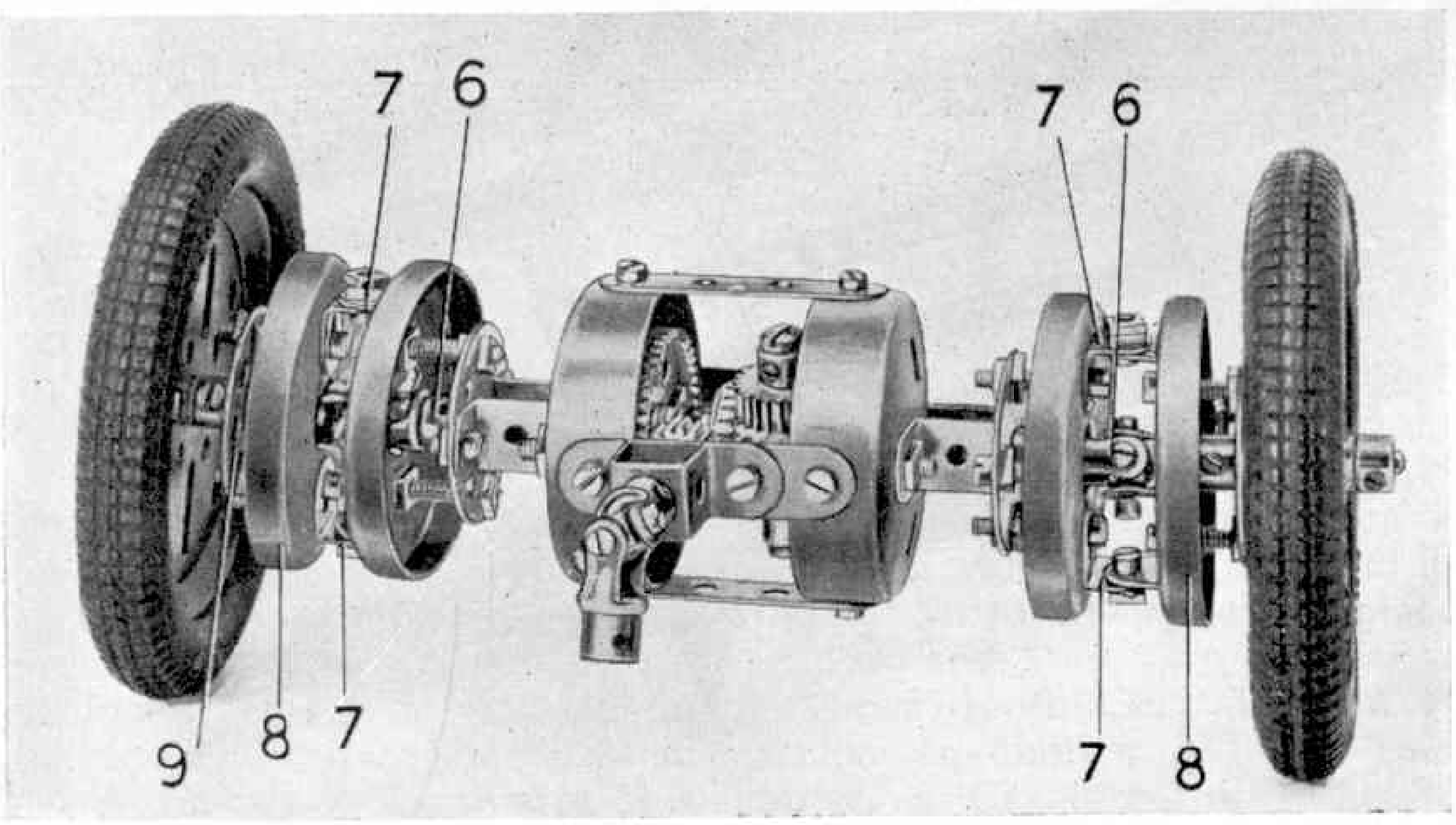
The differential part of the mechanism should be built up first. The crown wheel is represented by a 1½″ Contrate 1, fitted with two 1″ Screwed Rods held in diametrically opposite holes by two nuts. A Collar is screwed on the outer end of each of these Rods, and a 1½″ Rod is fixed in the Collars. One of the Collars can be seen at 2. A Coupling 3 is held through its centre transverse hole on the 1½″ Rod between the Collars 2. A ¾″ Pinion is free to run on a Pivot Bolt screwed into each side of the Coupling 3. A ¾″ Contrate 4 is fixed on a 2½″ Rod passed through the Contrate 1 and into the Coupling 3. A second ¾″ Contrate is fixed on a 2″ Rod passed into the opposite end of the Coupling 3.

The differential is housed in a cage consisting of two Boiler Ends connected by 2″ Strips. The drive from the engine is taken through a Universal Coupling to a ½″ Pinion 5 that meshes with Contrate 1.

The outer ends of the 2″ and 2½″ Rods carrying the ¾″ Contrates are supported in Wheel Discs attached to the Boiler Ends by Double Brackets, and they are each fitted with a Universal Coupling 6. A Wheel Flange is attached by ¾″ Bolts to each Wheel Disc, and is fitted with two Angle Brackets 7. A second Wheel Flange 8 is also fitted with two Angle Brackets and these are connected by lock-nutted Bolts to the Angle Brackets 7. A Bush Wheel 9 is attached by ¾″ Bolts to each of the Wheel Flanges 8, and a 1½″ Rod is free to turn in the boss of each Bush Wheel. These Rods carry the Road Wheels, and are fixed in the Universal Coupling 6.

I should emphasise that the spiders of the Universal Couplings must be exactly in line with the lock-nutted Bolts in the Angle Brackets 7.

This form of front wheel drive has been used in many Meccano models with great success but care must be taken during assembly to ensure that the gears of the differential run smoothly and easily inside their cage, and that the various rods are in proper alignment. A little light machine oil applied to gears and bearings will assist in obtaining a smooth-running mechanism.



Winter Model-Building Contest No. 2

CASH AWARDS FOR WINNERS

THE second in our series of Winter Model-Building Competitions was announced last month, and for the benefit of new readers—and as a reminder to others—we repeat the main details here. These contests are open to every owner of a Meccano Outfit, and we are offering cash prizes, which are considerably bigger than those awarded in recent competitions, for the most original and best-built Meccano models of any kind.

Models need not be confined to the parts actually contained in a given Outfit. Any amount of extra parts may be used as required.

HOW TO ENTER

If you wish to enter this Competition all you have to do is to think of a new model and then set to work to construct it, as neatly and realistically as possible, from standard Meccano parts. Models that are merely copies of models shown in Meccano Instruction Books or other Meccano publications will not, of course, be eligible.

When you have completed your model the next thing is to obtain either a good, clear photograph, or, if this is not possible, make a good sketch of it, and send this to us. *The actual model must not be sent in any circumstances.* However, if you cannot obtain a photograph and you are not good at sketching, you can ask one of your pals to produce the sketch for you. The model, itself, however, must be your own unaided work.

It is also advisable to enclose with photographs or drawings a short description of the principal features of your model, mentioning any points of special interest you wish to bring to the attention of the judges.

In order to give every one a fair chance entries will be divided into two separate Sections, as follows: Section A, for competitors who will be under 14 years of age on March 31; Section B, for competitors aged 14 years or over on that date. In each of these Sections a separate set of prizes will be awarded, and full details of these are given in the panel alongside.

The judges will award the prizes for the models that are original in subject, and are well-proportioned and sturdily constructed. Competitors who possess only small Outfits need not feel that they will not stand much chance against competitors with large Outfits at their disposal. Small, well-built, sturdy and original models will have a far better chance of success than a large and complicated structure that is rickety in construction and poor in design, and which does not show much originality in its subject.

THE PRIZES

The following prizes will be awarded in each Section of the Competition:

SECTION A

(Competitors under 14 years of age on March 31 next)

First Prize	**Cheque for £5.5.0**
Second Prize	**Cheque for £3.3.0**
Third Prize	**Cheque for £2.2.0**
Ten Prizes each of 10/6	

Certificates of Merit also will be awarded in this Section to those competitors whose entries just fail to reach prize-winning standard.

SECTION B

(Competitors who will be aged 14 or over on March 31 next)

First Prize	**Cheque for £7.7.0**
Second Prize	**Cheque for £5.5.0**
Third Prize	**Cheque for £3.3.0**
Ten Prizes each of £1.1.0	

HOW TO POST YOUR ENTRY

Before posting your entry write your age, name and address, and the letter A or B (to indicate the Section in which you are entering), in block letters on the back of each photograph or drawing.

You should address your envelope to: "Winter Model-Building Competition No. 2, Meccano Limited, Binns Road, Liverpool 13".

CLOSING DATE

Intending competitors should note that this Competition will remain open for entries until March 31.

Meccanograph Designing Machine—

(*Continued from page 81*)

variations can be produced by varying the ratio of the Sprocket drive to the table, by adjusting the angle of the Fishplate fastened to Crank 6, and by altering the positions and the numbers of the Rods 8 in the Bush Wheels. The position of the pen arm on the design paper can be altered by moving the Collar 12 along its Rod.

If it is intended to use the machine extensively, the bearings for the Rods can be strengthened by using two or more Strips placed face to face.

Parts required to build the Meccanograph: 11 of No. 1; 12 of No. 2; 4 of No. 5; 10 of No. 8; 4 of No. 9; 1 of No. 10; 1 of No. 11; 4 of No. 12; 1 of No. 13a; 3 of No. 14; 2 of No. 15; 2 of No. 15b; 3 of No. 16; 4 of No. 18a; 1 of No. 20a; 5 of No. 22; 1 of No. 23a; 2 of No. 24; 3 of No. 26; 2 of No. 27a; 2 of No. 32; 6 of No. 35; 106 of No. 37a; 105 of No. 37b; 38 of No. 38; 4 of No. 48a; 2 of No. 48b; 2 of No. 52; 1 of No. 53; 10 of No. 59; 2 of No. 62; 1 of No. 94; 2 of No. 95; 1 of No. 96; 1 of No. 96a; 1 of No. 109; 3 of No. 111c; 1 of No. 115; 1 of No. 125; 2 of No. 126a.

SCOOTER RIDING

"Scooter Riding", recently published by Educational Productions in collaboration with the R.A.C., makes available to the scooter enthusiast the vast experience and knowledge of the R.A.C.'s motorcycle and scooter training experts.

Tips for the learner cover the driving test, the Highway Code, and a "drill for any hazard". The advanced scooter-rider can profit from "Driving Under Difficult Conditions", "Law and the Scooterist", "Care of Your Scooter" and "Join a Club". The hints on safe riding are backed by easy-to-follow diagrams and illustrations.

"Scooter Riding" is on sale at R.A.C. Offices all over the country, and at bookstalls, price 3s. 6d.

RAILWAY TELEVISION NEWS

A 27-inch television screen, linked to teleprinter equipment, has been introduced experimentally at Paddington Station by the Western Region of British Railways. The first of its kind, it was installed on January 1, in the circulating area ("The Lawn") of the station. It carries messages on the screen giving advice to passengers of train arrangements.

Should the innovation prove successful, it will be developed by the provision of additional screens at other vantage points at Paddington.

Eventual use of the system, if approved, will be for the teleprinter at Paddington to transmit simultaneously the same information to principal stations in the London Division, such as Ealing Broadway, Slough, Maidenhead, Reading, Didcot, Oxford and Newbury.

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FOR OTHER STAMP ADVERTISEMENTS SEE ALSO PAGE 86

For Stamp Enthusiasts

Lonely Islands

By F. E. Metcalfe

THOSE of us who are used to an urban existence find it difficult to realise that those good people who were living on Tristan da Cunha would probably prefer to be back on what has been described as the most lonely island in the world to living in the tightly-packed island we know as Great Britain.

I was discussing this recently with a collector, and he was surprised when I told him that I quite understood how they felt, for before the first world war I lived in Patagonia, which, although by no means as lonely as Tristan da Cunha, was cut off from the rest of the world to the extent of one mail delivery about every three weeks by coastal steamer. Now they have a regular 'plane service from Buenos Aires which does the journey in just as many hours as it took days at the time I lived there. Yet during that war, when I was serving in the British Navy, I never for a moment longed to get back to England

—where I had lived most of my life—but to dull, drab, windy Patagonia, where you hadn't a single care in the world.

After all the years that have passed since then I still long for those carefree days. That's the point about living in the lonely spots; all the worries and complications of an urban existence are completely lacking. Isn't that worth something? Yes, I know how the Tristaners feel, and why.

Which brings me to an interesting set of stamps issued on November 15 last year to mark the centenary of the return of the Pitcairn Islanders to the island which nothing had changed them from looking upon as their home, although we might consider it nothing more than a lonely island.

The history of Pitcairn is known to all who ever went to the movies and saw Charles Laughton, bigger than life, as Captain Bligh. The mutineers of the *Bounty* founded a settlement there in 1790, but for one reason or another they were persuaded to abandon the island on two occasions when it was feared that over-population would bring about starvation. The first migration took place in 1831, and Tahiti was the island for new settlement, but the Pitcairners soon drifted back.

Over a century later, in 1956, after a severe drought in Pitcairn had brought suffering from famine, the entire popula-

tion of 187 were taken off in a chartered transport, the *Morayshire*, to Norfolk Island. But the call of their lovely homeland was strong within them, and eventually they managed to return; and it was to celebrate this move back home that the interesting set of three stamps came out last November. There is no need to detail this issue as the stamps tell their own story, and with such romantic associations it is no wonder that they are selling very well indeed.

Of course, Pitcairn stamps have been popular ever since the first issue was made in 1940. This is not surprising, for the designs have always been attractive, every one telling a story. Incidentally, one stamp—the 4d. value of the 1953 issue—told the wrong story as the caption read "Pitcairn School", and this had to be corrected later to "Schoolteacher's House". For collectors this stamp is of particular interest, as the money raised by their purchases of Pitcairn stamps paid for the school; and if anyone can tell me a better reason for buying postage stamps I would like to hear of it—although I don't suppose that the Lower Fourth will agree with that sentiment one little bit! Anyhow, the sales of Pitcairn stamps continue to be brisk, so maybe the islanders will be able to add a swimming pool one of these days.

But what of the lonely island which was spurned—Norfolk Island? Considerably nearer to the Australian and New Zealand market (I am told that Norfolk Island oranges are the world's best,

although those depicted on a Pitcairn ½d. stamp look good enough for me) the economic possibilities of Norfolk Island were so much better that you might have thought the Pitcairners would have been content to stay!

With the stamps of Norfolk Islands becoming so popular, a word about them will not be out of place. The first issue appeared as recently as 1947, and how well I remember the rush there was for them. A good job, for so many were bought that sets of 5/- (the top value) can still be obtained at very little over face value, but I think that with the increased popularity this first set will soon cost more.

All the stamps have the same design, which depicts Ball Bay and a number of the famous Norfolk pines. Incidentally, the normal perforation of these stamps is 14, but recently some appeared perforated 11, and collectors thought they had obtained something very rare; but the Australian Postal Authorities have issued a statement that these stamps were stolen from their archives in 1947. Apparently they were never issued with this perforation.

In 1953 new stamps appeared, beautifully printed—the Australian Government

printers can do a wonderful job of recess printing, and their engravers are second to none, as these and many other stamps prove—but the subjects were of a rather grim nature. In the old days Norfolk Island was a penal settlement, and this was depicted in the design. The next issue, that of 1956, is of great interest, as it consists of two stamps which were introduced to mark the centenary of the arrival of the Pitcairn Islanders.

A new set of stamps began to appear last year. This is the set which, for sheer beauty, could hardly be beaten, and which must be the reason for the growing popularity of Norfolk Island stamps. The stamps depict either flowers or birds, and they are an absolute delight. The engraving, colours and, above all, the skilful designs place them right at the top. Collectors who miss them are missing something very special.

To end my notes I am going to suggest that collectors should consider taking up the stamps of these lonely islands, Norfolk and Pitcairn. None of the stamps is expensive, and I have a great opinion of their future, as far as investment is concerned. Apart from all that, the stamps are worth collecting just for their beauty of printing and designs, especially those of Norfolk Island.

(*See Stamp Gossip page 87*)

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FOR OTHER STAMP ADVERTISEMENTS SEE ALSO PAGE 84

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Stamp Gossip—(*Continued from page 87*)

Channel Islands, were able to issue stamps purporting to be "Europa" issues, and collectors eager to get everything in that line snapped them up at fancy prices. Now more "Europa" stamps are to be issued this year, and no doubt—as was the case last time—countries such as our own, as well as Holland, France, Switzerland, Spain, Germany and Italy, will be all right, and will not attempt to exploit collectors.

So if you want to go in for these "Europa" issues, well and good, but leave alone those countries which issue insufficient quantities of stamps, and thereby enable outsiders to cash in at your expense.

UNITED NATIONS

It came as a great shock to everybody when news was received that Mr. Dag Hammarskjold had been killed in Africa in a 'plane crash. As was to be expected, the inevitable postage stamps appeared. Suriname again led the field, as they did when America's aeronaut made his fine jump into space. I suppose that with the world now so stamp conscious we can expect stamps to mark every event of importance, although they will not always be issued by the countries most concerned—as in the case of Suriname's Dag Hammarskjold stamp.

THE TIP OF THE MONTH

I am afraid that I have not much room this month to pass on my tip, but I would like to suggest that the recently released special issues for countries in the Commonwealth, such as those for British Guiana, Antigua, Seychelles, Tonga, etc., should not be overlooked. There is a growing interest in "QEII" stamps, and attractive issues such as these are sure to benefit from the bigger demand—you know what that will mean.

BACK NUMBER "M.M.s"

To clear small stocks still in hand of all issues January to December 1961 the price per copy has been reduced to 1/–, including postage, etc.

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

Stamp Gossip

WEST AFRICAN ROYAL VISIT

IT was to be expected that the stamps issued by those countries visited by the Queen last November would be very popular, and popular they were, which means, of course, that there are a lot about, and thus they are never likely to become very rare. The scarcest are those of Ghana. The high face value of the set deterred many collectors from buying them, for they felt the occasion was being used to exploit them.

The miniature sheet alone had a face value of £1, whilst the single stamps came to 6/6d. so there we had 26/6d. face value alone. It is a great pity more moderation is not shown at such a time, for everybody's sake. As it is nobody gains, for those who are supposed to buy the stamps refuse to do so in many cases. Still, on the whole these "Royal Visit" stamps have proved very popular, as I have already stated, and they do make attractive additions to "QEII" collections.

GHANA ISSUES

During the past few months I have had several letters, and heard many discussions, as to whether or not one should go in for Ghana stamps. The important point is that Ghana issues a lot more stamps than any other member of the Commonwealth, and to take them all means that the average collector, in doing so, has to leave alone many other stamps which are perhaps not quite as attractive. What should a collector do about it?

Well, first of all it must be admitted that the stamps of the West African country in question may appear a bit garish to many, but they are attractive to those who like plenty of colour, and from a technical point of view—that is as printing jobs—they are simply magnificent. We can be proud of the British firm which prints them. If you want to see what I mean, just compare any one of them with the issue released October 30 last year by Malaya to commemorate the Colombo Plan. The latter stamps were printed in Japan by the Government Printing Bureau. When stamps are finely printed it does help their sale, and my reply to collectors asking what to do about Ghana has always been that if you can afford to buy them, without unduly straining the pocket, and can do so when they are issued—thus obtaining them at new issue prices—by all means go in for them. But in doing so, do not overlook the rest of the Commonwealth, be they stamps of the more important countries such as Australia, Canada, New Zealand, and South Africa, or of lesser countries.

"NELSON'S DOCKYARD"

The countries in our own Commonwealth are issuing so many interesting stamps just now that it is not a case of what to include in *Stamp Gossip* but what to leave out. Well, there was one set issued on November 14 last year which I simply must include and this is the pair of stamps issued by the British West Indian Island of Antigua to commemorate the completion of the restoration of Nelson's Dockyard.

As those who have visited these out-of-the-way islands know, the spell of the period of Nelson's day still prevails quite strongly. Nelson's Dockyard is situated in English Harbour, on the southern coast of Antigua, and was so named from the fact that it was once the headquarters not of one of Britain's greatest sailors, as the official notice termed it, but of Britain's *greatest* sailor.

For more than 150 years, in the 18th and 19th centuries, this dockyard afforded shelter for the ships of our Navy operating in the Caribbean area when we were fighting it out with France and Spain. When the Navy no longer wanted this distant harbourage, the dockyard buildings there suffered neglect, but ten years ago a society was formed titled "Friends of English Harbour" and the funds they raised have sufficed to restore the dockyard not merely as historic monument, but also as a centre for ocean-going yachts. This commemorative set can be bought (while current) for around 3/–, so who would miss buying one?

"EUROPA"

Collectors will remember what a rush there was (and still is), for the "Europa" stamps issued last year. So much so that countries like San Marino, and even privately-owned islands like Herm, of the

(*Continued on previous page*)

By E. W. Argyle

Locomotives On Stamps

THIS 5 cent stamp, issued by Uruguay in 1895–9, shows locomotive No. 1, built by Patrick Stirling at the Doncaster works of the Great Northern Railway in 1870. It was a 4–2–2 with huge 8 foot 1 inch driving wheels and outside cylinders and was considered as one of the boldest departures from orthodox railway locomotive construction at that time. A feature was the domeless boiler. The locomotive weighed 38½ tons. Its appearance on the stamp is something of a mystery, as it was never in Uruguay. Probably the stamp printers had no other locomotive picture they could copy.

To commemorate 125 years of German Railways, the East German Republic issued three stamps. The 25 pf. shows the locomotive "Adler" of 1835 (mentioned earlier in these columns) and the modern diesel locomotive "V180" pulling the "Express of Young Socialists", a train with carriages built on two floors like a double-decker bus. This train is also shown on the 10 pf. stamp, and the 20 pf. shows the new Sassnitz Harbour Station.

Specially For Photographers

By H. G. Forsythe

Pictures At Night

DARK winter evenings and fast films—a suitable combination for trying your hand at night photography.

Undoubtedly the easiest night subjects are bright lights such as Neon signs, seaside illuminations, etc. These can be recorded on almost any films, even quite slow ones. Exposures for night lights can be short—1/25, or even 1/50 second, at *f*8 is likely to give satisfactory results.

More difficult is taking pictures of things which are illuminated by night lights. If you use ordinary films, time exposures, sometimes running into minutes, are needed. Time exposures are satisfactory provided the subject is stationary and you can support your camera firmly for the necessary period of time. For action at night, however, you need one of the new fast films such as Kodak Royal X Pan, Ilford HPS or Agfa Isopan Record. These films are so fast that a picture such as our illustration this month is possible with even the simplest camera.

Simply because they are so sensitive to light, fast films need a little extra care in handling to get good results. It is a wise precaution to put a small piece of black Sellotape over the red window on your camera, lifting it only for winding on the film. When loading or unloading the camera make sure it is well shaded. These films are so fast that even small amounts of stray light can spoil results.

Fast films are meant for work where light is very dim. Never use them, therefore, in bright daylight conditions, even to finish up a reel. The shortest exposure your camera can give will still heavily over-expose the film.

Matter for experiment

Estimating exposure for night shots is a matter for experiment. A brightly lit town centre might need as little as 1/50 second at *f*5·6, while a dimly lit station platform could easily require 1/10 second or more at the same aperture. When first trying fast films, make careful notes of the exposure you give each picture, basing your exposure, where possible, on the directions enclosed with your film.

Your exposure notes will be very useful later, when you look at your negatives, and will give you a guide to the correct exposure next time. Professional photographers always do this when they are not sure of the right exposure.

Negatives of night shots look very different from negatives of daylight pictures, and the final result depends very much on the way they are printed. For the most satisfying results the photographer should be able to print his pictures himself. Next month the subject is making your own prints—and how Meccano can help.

A fast film (Agfa Isopan Record) was used for the action shot above taken in Piccadilly Circus, London.

HERE IS DAVID KAYE . . .

Calling All Bus Spotters

LAST October, Albion Motors Ltd. announced that they were to start production of a new double-decker called the "Lowlander", which would have a Leyland 0·600 diesel engine of 9·8 litre capacity rating 140 b.h.p. at 1,700 r.p.m.

This means that yet another vehicle has entered the market for low height double-deckers. There must be, in Great Britain, hundreds of railway—and other—bridges, which are so low that only single deckers or modified forms of double-deckers, can pass beneath them. This was not such a serious problem in the first 30 years of this century, since most double-deckers had no roofs anyway, but with the coming of the top deck roof in the mid-twenties these routes had to be served by the low height version of the Leyland "Titan" TD1, and other famous vehicles. These buses had a sunken gangway on the off-side and a system of four seats in a row on the top deck, which could cause delays during the rush hour when the person sitting against the near side of the vehicle wanted to alight. Downstairs, those sitting on the off-side had to mind their heads when they tried to rise from their seats. Perhaps this design helped to kill chivalry?

* * * *

Towards the end of 1949 the nationalised firms of Bristol and Eastern Coachworks produced the first "Lodekka" LHY 949 for Bristol Tramways, who put it into service on their routes 2 and 2A. Since then, thousands must have rolled off the production lines for this operator—and for Hants and Dorset, Crosville, United Automobile, Brighton, Hove and District and all the other many B.T.C. firms. The revolution in bus design had been achieved by splitting the transmission into two propeller shafts (one for each pair of wheels). This made it possible to lower the bottom deck floor sufficiently to enable a body with the orthodox seating of a high bridge type of bus to be fitted, without making the overall height more than that of the normal double-decker. Passengers entering the lower saloon were surprised to find there was no step to negotiate, and that a row of five passengers could be seated with their backs to the driver's cab and front bulkhead, above the gear box.

With the coming of high capacity buses in the late 'fifties, the "Lodekka" was extended from 27 feet to 30 feet, which enabled seating to be increased from 60 to 70. Air suspension and air brakes have been tried out in these newer models, with the 8·14 litre engine enlarged to 8·90 and

(*Continued on page 90*)

"City of Truro" Returns to Retirement—

(*Continued from page 51*)

achieved took a long time to reach the public, although quite extensive reports about the trip appeared in local newspapers in the Plymouth area. The General Manager of the Great Western Railway asked that the actual speed attained during the journey should not be published as he was afraid the public would be perturbed at the high speed achieved. Not until eighteen years later, in 1922, was the record speed officially disclosed.

On March 12, 1931, after travelling 1,000,483 miles, *City of Truro* was withdrawn from service and received a thorough overhaul before being presented, on May 27 of the same year, to the York Railway Museum. She remained there until January 9, 1957, when she was returned to the Western Region for another overhaul before being reintroduced into British Railways' locomotive stock to work special trains and loco-spotters' excursions.

But after her further four years of working life she has once again been withdrawn and has returned to her birthplace, Swindon, to await her final journey to the new museum now under construction there.

Although *City of Truro* will never be seen in steam again, it is comforting to know that such a famous and handsome locomotive is being preserved.

Road and Track—

(*Continued from page 53*)

the French and Italian Rivieras, Florence, Rome, the Adriatic coast and Venice in seventeen days, thanks to taking our car by rail. I must admit I never thought I would agree to cover 1,000 miles of a car-touring holiday by train—but it certainly has its points, and it's not all that expensive. The cost of the Cresta and five passengers, outwards from Paris to Avignon and inwards from Milan to Paris, was just under £18 per person, including the couchette berths.

SPACIOUS VAUXHALL CRESTA

One day, when I no longer enjoy driving a car for the sheer fun of driving, I shall probably settle down to the American way of motoring—a large car, with a powerful engine, and a gearbox that rarely has to be used, gliding along effortlessly, an armchair on wheels, in fact. However, I have just discovered that I do not have to go to the extreme of buying an American car, for a Vauxhall Cresta would suit me very well indeed. I used one on the continental holiday referred to above and really got to know this excellent motor-car under a variety of trying conditions. To sum up, I was amazed by the excellent roadholding, handling and snappy acceleration of an economical family saloon that can accommodate five adults with ease (room for six when necessary by using the bench seat in front) and has an enormous luggage boot that swallowed five large suitcases and two overnight bags as well as an assortment of loose coats and odds and ends.

The Cresta, with its powerful 2·6 litre engine, eats up the miles at a remarkable rate in an easy, effortless fashion. The car was equally at home speeding along the straight, tree-lined roads of France, coping with a succession of climbs, descents, twists and turns as we crawled along the Riviera in the sweltering heat, or cruising at a steady 85 on the Autostrada.

The Cresta, although a large car, is no "Rock and Roller" and the three passengers in the rear had nothing but praise for the smooth, steady ride and firm suspension. This product of Luton rapidly grows on one, and I soon found myself driving it like a sports saloon, encouraged by excellent drum brakes (discs on the 1962 model are optional but not, in my opinion, an absolute necessity), better-than-average all-round visibility, sure-footed roadholding, and a three-speed gearbox with synchromesh on all forward gears.

With petrol consumption in the region of 27 m.p.g., driven hard, this is a perfect example of a large family car that would be more than acceptable to the large number of enthusiasts who have had to give up something of a sporting nature for something that (on the surface, anyway) is a little more sedate.

Of General Interest—

(*Continued from page 55*)

to port or starboard with servo motors. Fittings include radar aerial and D/F loop. She is sprayed deep red under water, pale blue to deckline, with decks and superstructure varnished. The main motor is powered by 12-volt accumulators (Varley 7/7). Dry, batteries for the receiver and the servos are stored in the forward compartment. In the lower (right) illustration on page 55 Mr. Meyerhoff is seen ready to put the craft through her paces.

The Craft of Making Church Bells—

(*Continued from page 54*)

tuning is complicated by the fact that there are five partial tones in every bell, but through skill and patience each one is brought accurately to its final pitch.

A good bell properly struck possesses a full round tone and should last through the ages. There are cast bells still in existence which date from the beginning of the thirteenth century.

Oddly enough, the most famous "church" bell in the world is not in a church at all. It is Big Ben, weighing more than thirteen and a half tons, which was made on April 10, 1858, at the Church Bell Foundry in Whitechapel, London. Church bells have been made at this foundry since it was founded by Robert Mot during the reign of Elizabeth the First.

One of Mot's bells, the only survivor of the famous ring of "Oranges and Lemons" from Saint Clement Dane's Church, in London, was cast in 1588—the year of the Armada. Another famous bell is Great Tom, at Oxford, which was hung so crudely in 1680 that to swing it required sixteen men. Yet, in spite of its six and a quarter tons, Great Tom is a mere dwarf. The largest bell in the world, which is in Moscow, weighs approximately one hundred and twenty-eight tons.

A well-known custom with which church bells have been associated through the centuries is that of curfew, a regulation introduced into Europe in the Middle Ages. On the ringing of a bell, at a given hour, all fires had to be covered up or else extinguished.

The "White Funnel" Fleet—

(*Continued from page 62*)

the "White Funnel" steamers ply daily between the South Wales ports of Cardiff, Penarth or Barry, and Weston on the Somerset coast. Another sails on long day trips, such as Cardiff or Bristol to Ilfracombe and Lundy Island or Porthcawl, Mumbles, Tenby and the Gower Coast.

Since the second world war, the private car and the motor coach have greatly increased in popularity and this has affected the number of passengers using the steamers. Consequently, the number of steamers in operation has been cut down in the past 15 years. The *Ravenswood* and *Britannia* have been broken up, while the *Glen Gower* was recently sold for use on the continent.

Fortunately the *Glen Usk*, built in 1914, the *Cardiff Queen* and the *Bristol Queen* still remain to provide many a happy hour's sailing in the channel on "the Campbell's".

Hydro-Electric Power in Tasmania—

(*Continued from page 59*)

at its northern end by a single mountain ridge from a precipitous fall of half a mile to the plain below. It is this great fall that is now being exploited to develop 400,000 horsepower in an underground power station. With a static head of 2,750 feet, this scheme will rank among the world's highest head developments. It includes seven miles of tunnels and the underground station, together with a high pressure steel pipeline on the steep mountain face.

In excavating some of the tunnel sections, the Hydro-Electric Commission is employing, for the first time in Australia, an American-built tunnelling machine known as the "Mole". It operates like a gigantic borer, and with rotating teeth at its working face cuts a neat hole to the designed dimensions. This is a great advance on the jagged hole formed by even the most experienced tunnelling teams using the orthodox method of drilling and blasting.

When the developments now under construction are complete, Tasmania's power stations will have a total installed capacity of almost 1,250,000 horsepower. Ample water power remains to be exploited, because so far the western mountains have not been touched.

Calling All Bus Spotters—

(*Continued from page 88*)

the cylinder bore from 110 mm. to 115 mm. In 1957, Dennis Bros., of Guildford were beginning to build their "Loline", which was virtually the "Lodekka" built under licence. Their first customers were the local Aldershot and District (who took delivery of 34 of these fitted with East Lancs 68-seater rear-entrance bodies) and Walsall Corporation (with car 800 fitted with a Willowbrook 70-seater front entrance body).

The 1956 Earls Court Commercial Motor Show had introduced the public to the A.C.V. "Bridgemaster", which had its transmission on the near side of the chassis, and a gear box based on that of the popular "Regent" V. It was powered by an A.E.C. 7·68 litre AV470 engine. Bodies fitted to the "Bridgemaster" vary from 76-seaters for Sheffield to 68-seaters for Western Welsh, in both cases by Park Royal.

The 1958 Show saw a 73-seat low version of the popular Leyland PDR 1 "Atlantean" on the market. This could achieve a low floor for the front three-quarters of the body by having the engine at the rear, but this has enforced a return to four seats in a row on the top deck, although it does dispense with inconvenience to lower saloon passengers caused by the sunken gangway. The 1959 Scottish Show at Kelvin Hall, Glasgow, included West Riding car 863, the first production Guy "Wulfrunian" with its 75-seat Roe body, having an overall height of only 13 ft. 5 in. The front vertical engine was retained but by setting back the front axle, a front entrance level with the driver—already the practice with many coaches and single-decker buses—was achieved. The model could be powered by a Leyland 0.600, Leyland 0.680, Gardner 6LW or Gardner 6LX engine. Disc brakes and Guy's own air suspension system were added.

* * * *

Earls Court, 1960, added yet another member to this growing family—the Daimler "Fleetline" prototype 7000 HP with its 77-seat Weymann body, a Daimler CD 6 mark VIII, 8·6 litre, rear-positioned engine and an overall height of only 13 ft. 4 in. The production models will, however, be given a Gardner 6LX engine of 10·45 litres. The last word must go to Barton's "Loline" 861, which combines this low-slung chassis with a Northern Counties old style sunken gangway body and has a height of only 12 ft. 5 in. Such a bus could well take over single deck routes, but perhaps, in this era of ever-decreasing passengers, such a revolution has come too late.

Lodekka, Loline, Bridgemaster, Atlantean, Wulfrunian, Fleetline and Lowlander—which do you feel really answers the challenge of the low bridge? Why not arrange these seven types in order of merit and send them to me, with or without observations. The results of this poll will, I hope, appear in the May *M.M.*

Fireside Fun

Hostess: Won't you have something more, Tommy?

Tommy: No, thank you I'm full.

Hostess: Well, then, put some fruit and cakes in your pockets to eat on the way home.

Tommy: No, thank you, they're full, too.

* * * *

"How many people work in your office?" an employer was asked by his friend.

"Oh, I should say, at a rough guess, about two-thirds of them."

* * * *

"The 6.20's running late at the bridge, Harry."

"I packed my parachute myself," said the nervous student pilot, "but I'm sure it won't open."

"In my opinion," replied the instructor, "you are jumping to a hasty conclusion."

* * * *

An airline passenger noticed a parachutist floating past the window.

"Want to join me?" called out the parachutist.

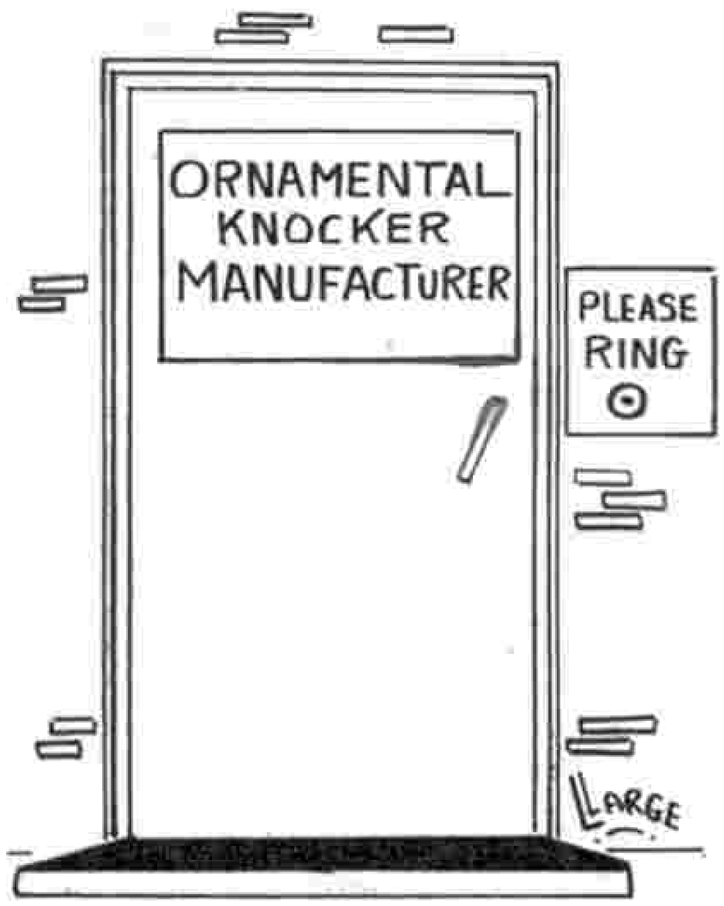
"Not on your life," replied the passenger, "I'll stay right here."

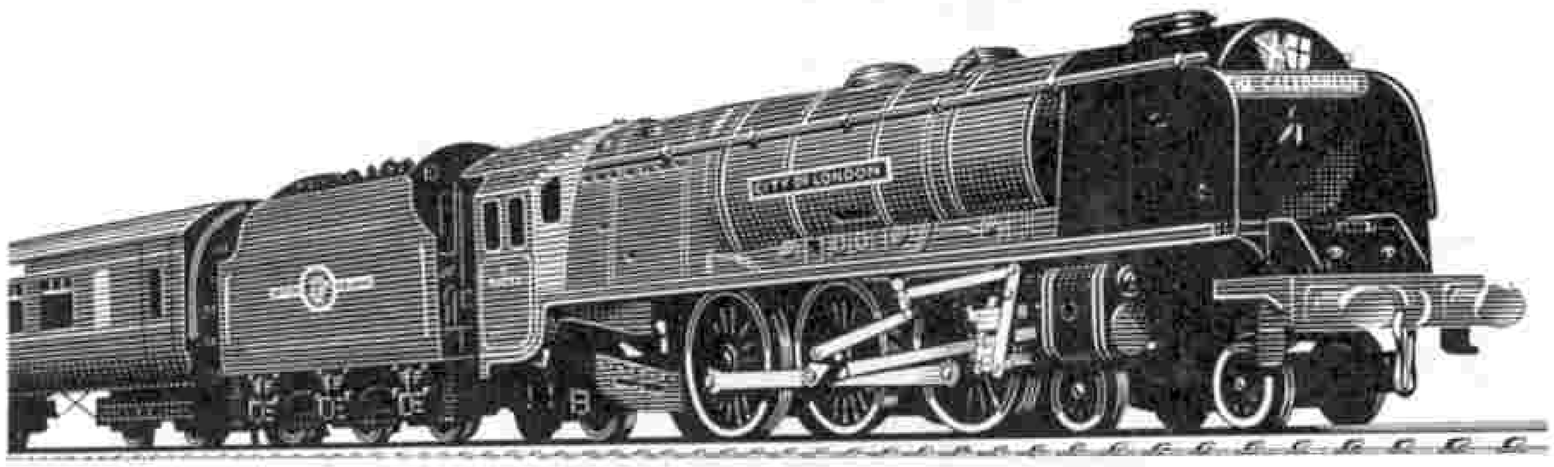
"Suit yourself," said the parachutist, "I'm the pilot!"

"I hear you're mighty quick on the draw!"

A party from a tiny village was taken on a tour of the London Docks. All were interested in a dredger at work, and the endless procession of buckets so fascinated one villager that he remained behind when the others went on to further sightseeing.

Four hours later they returned to see if they could discover what had become of him. He was still there. "I've counted 11,973 of those buckets," he said, "and I mean to see the last of them if I stay here all night."





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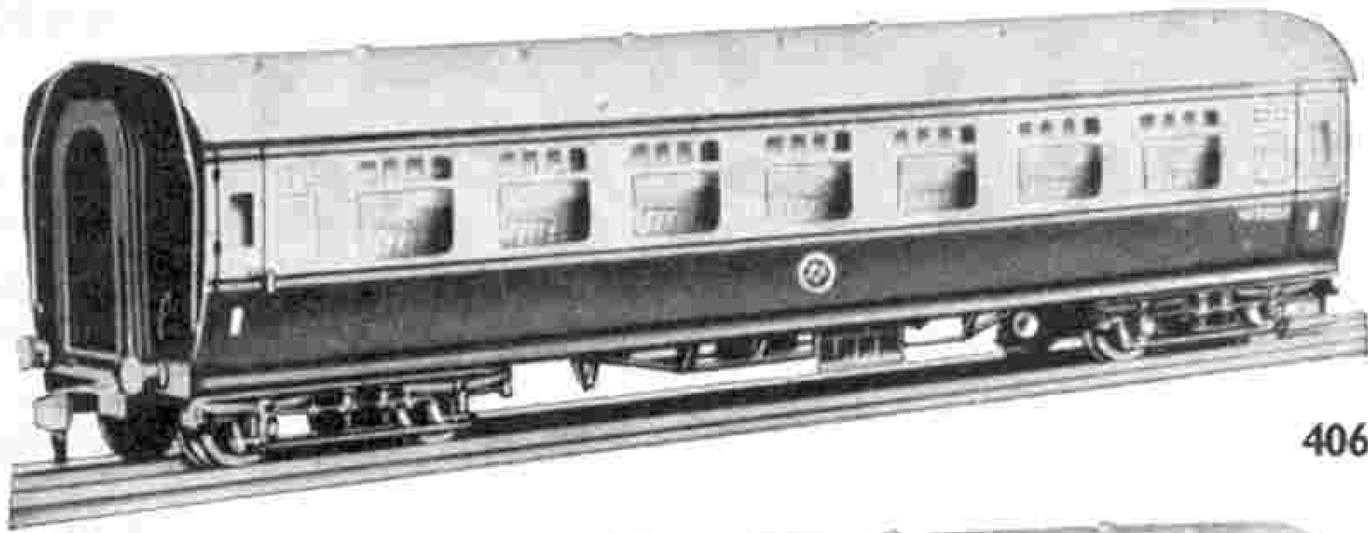

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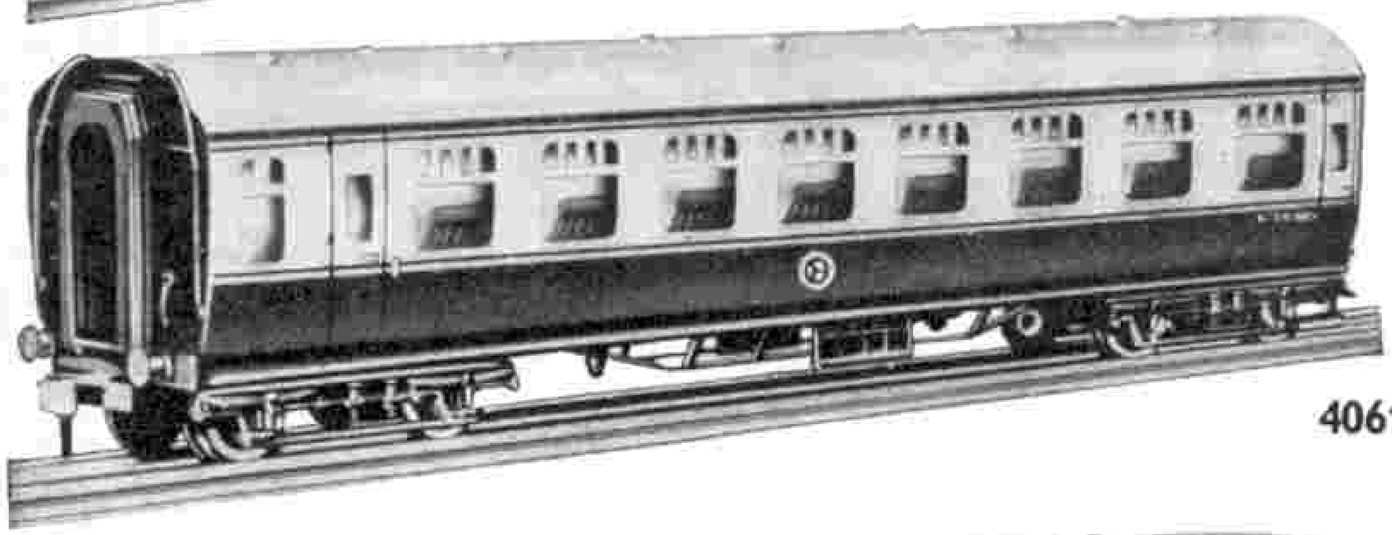

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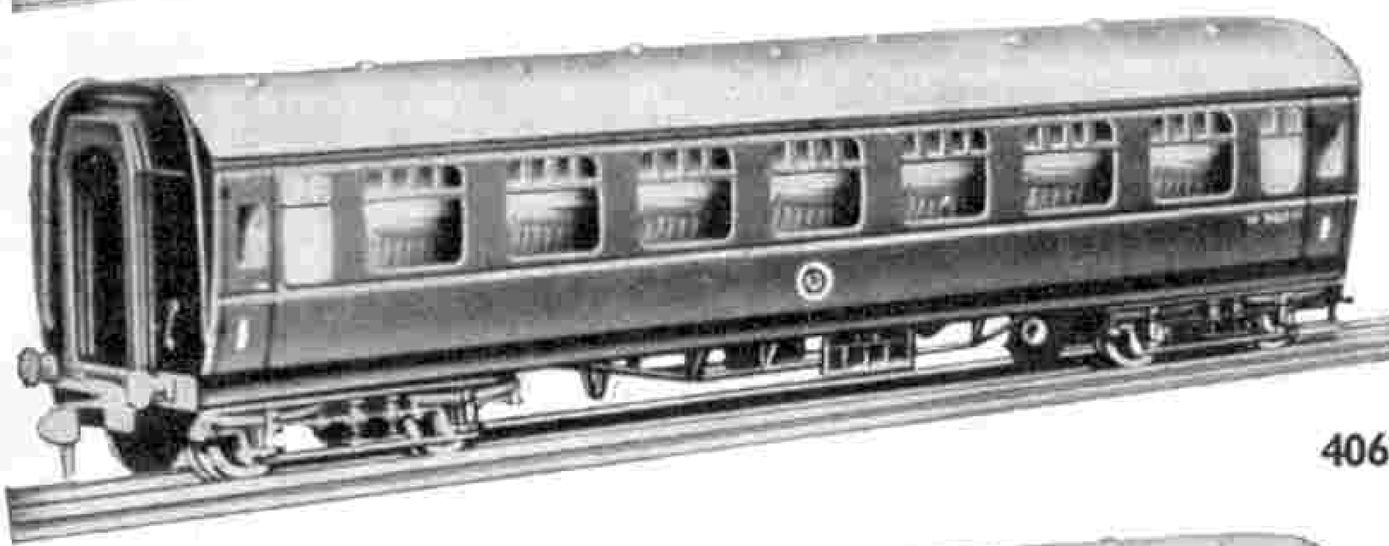

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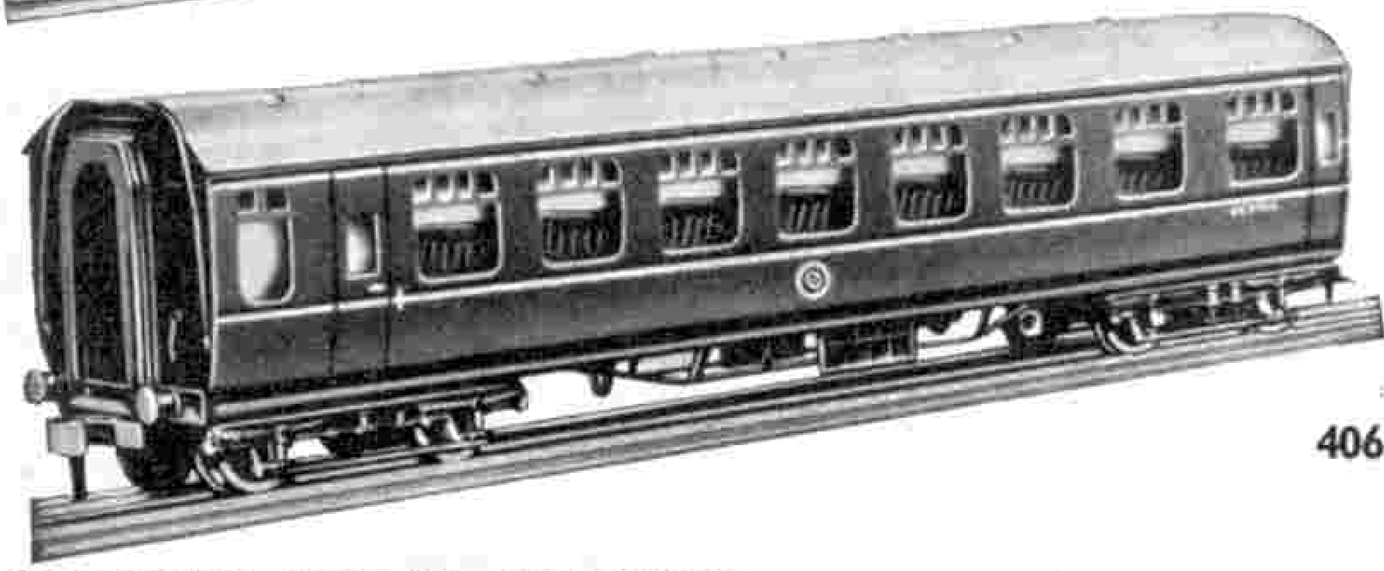

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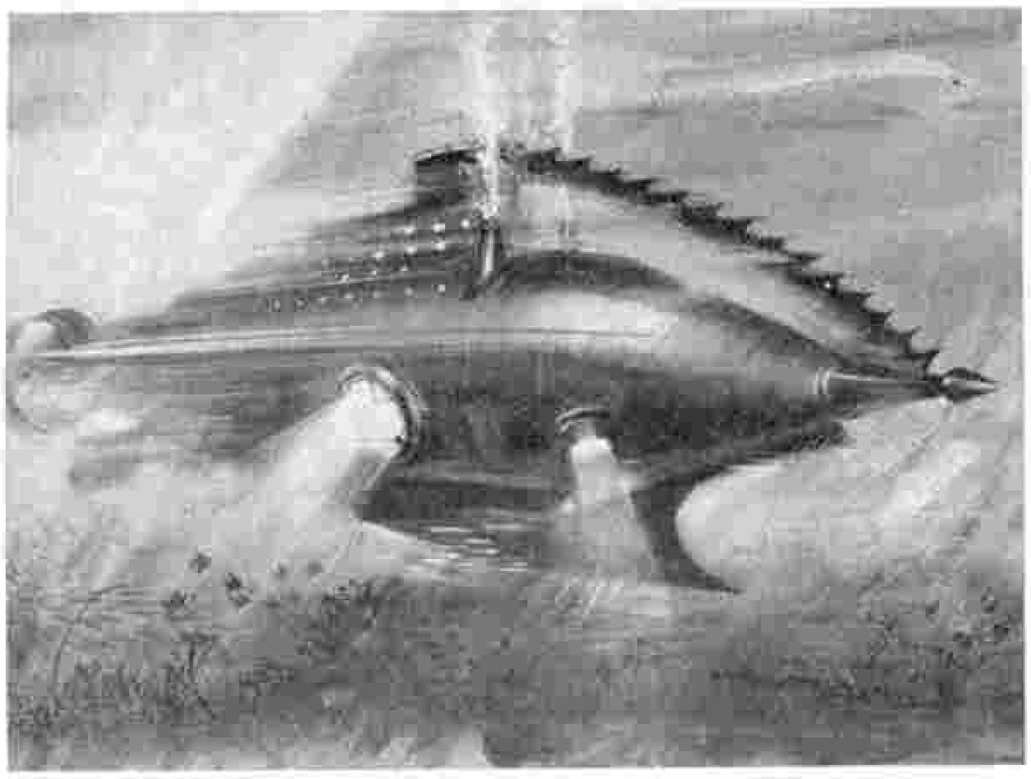

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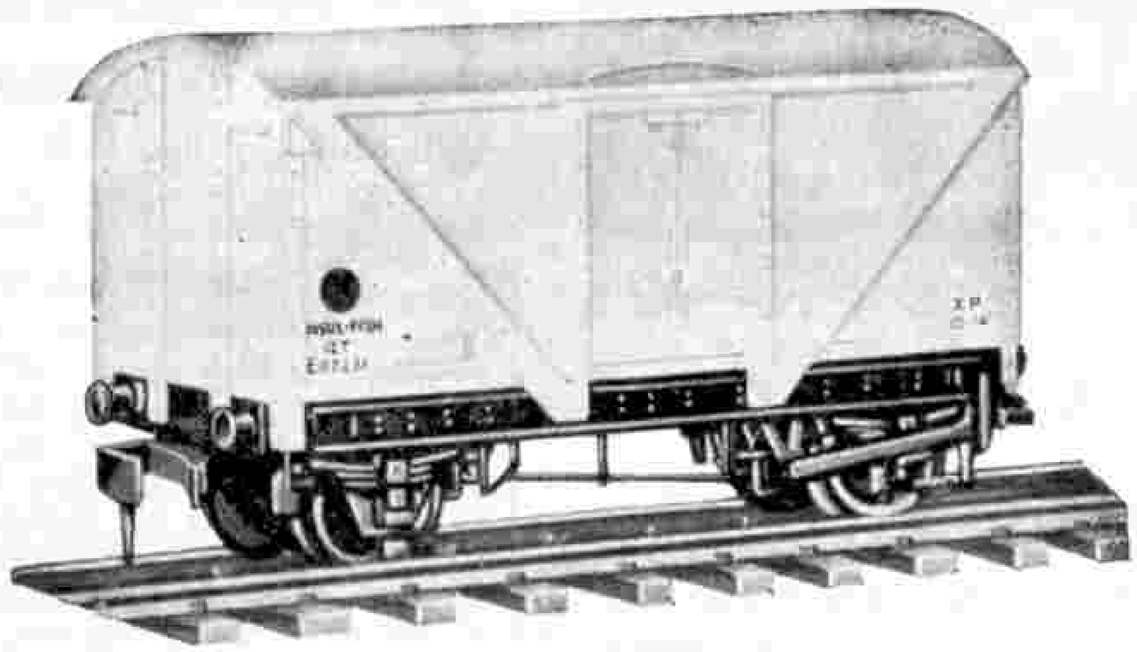

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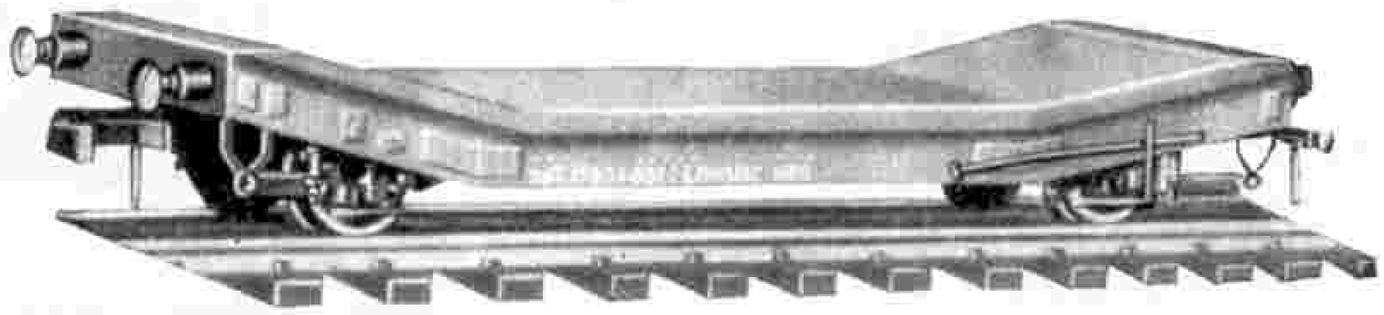

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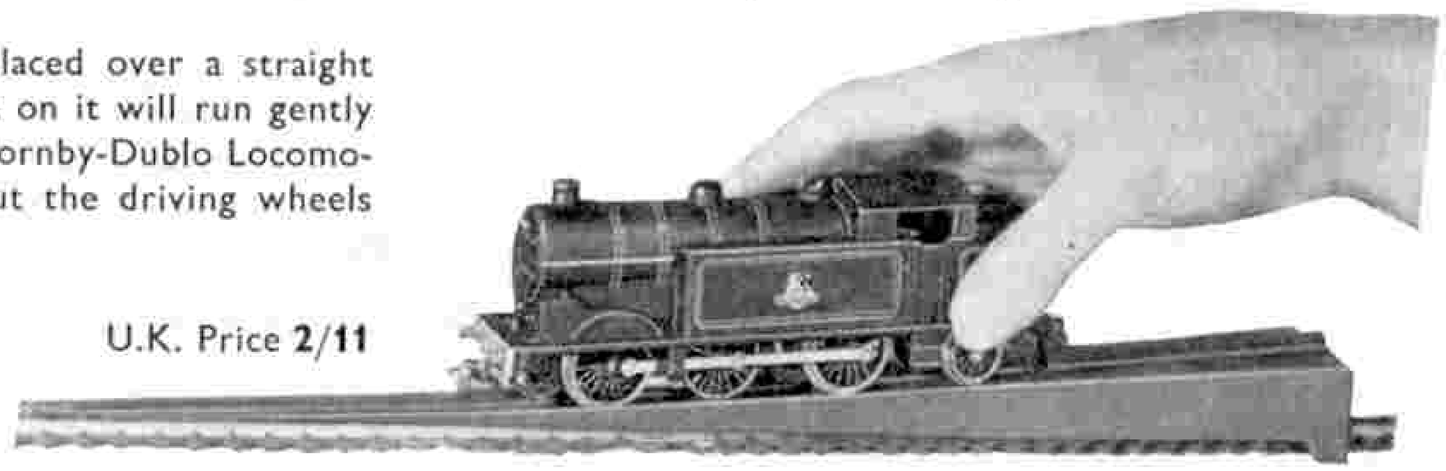

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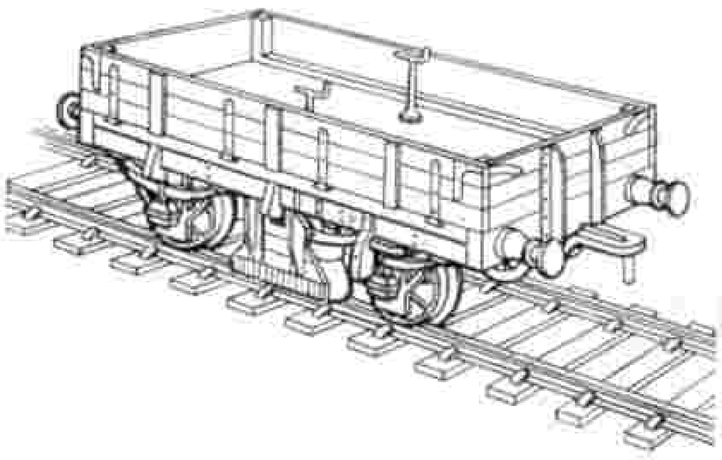

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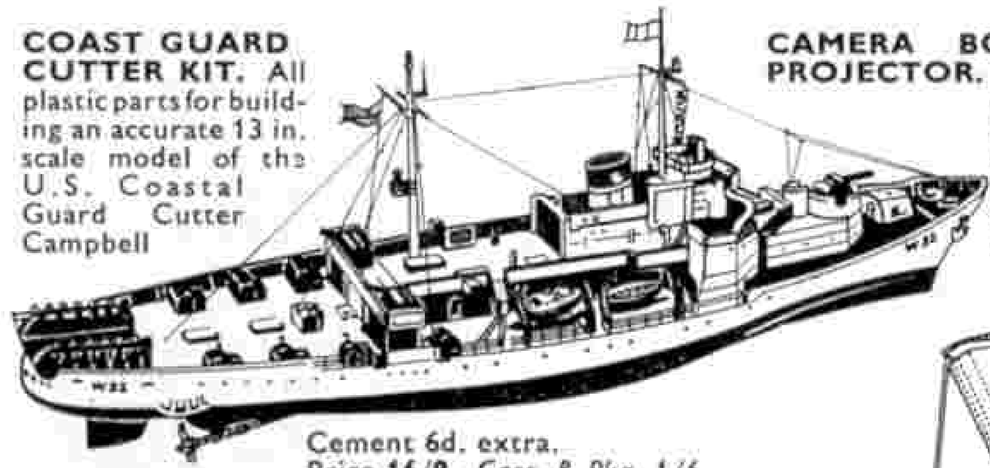

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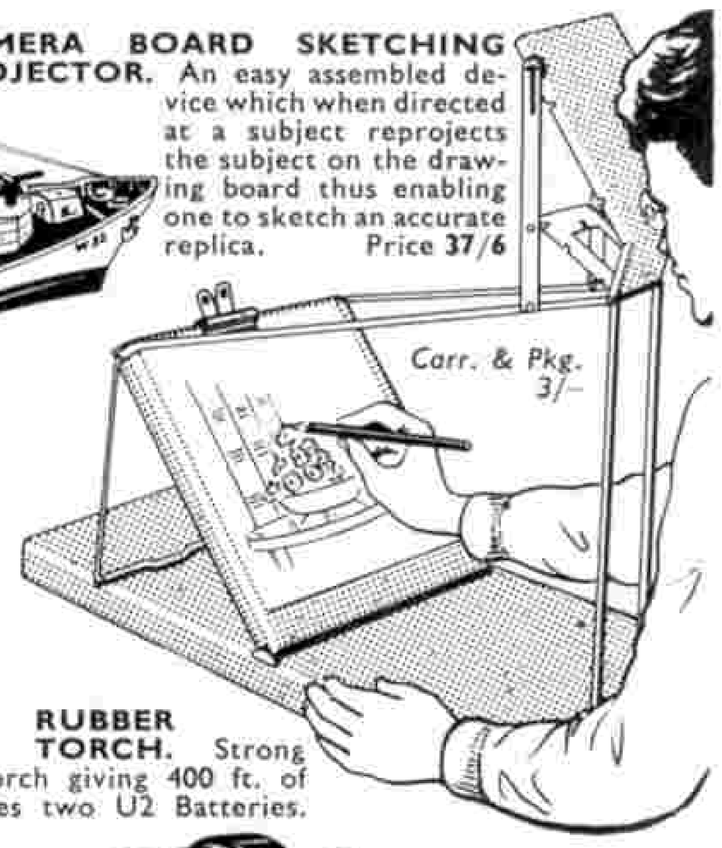

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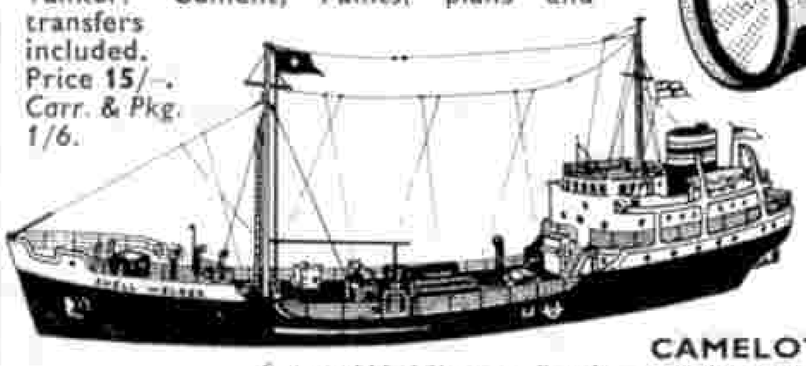

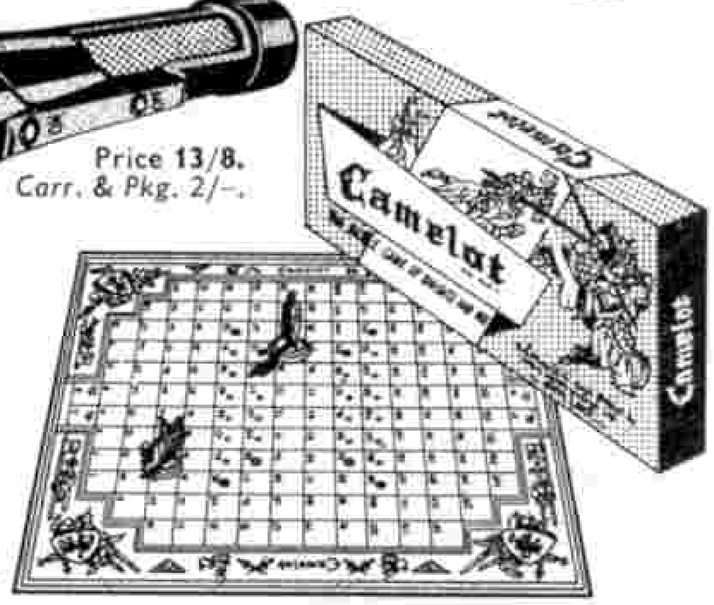

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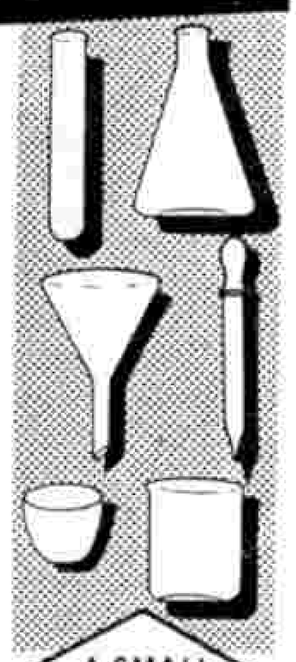

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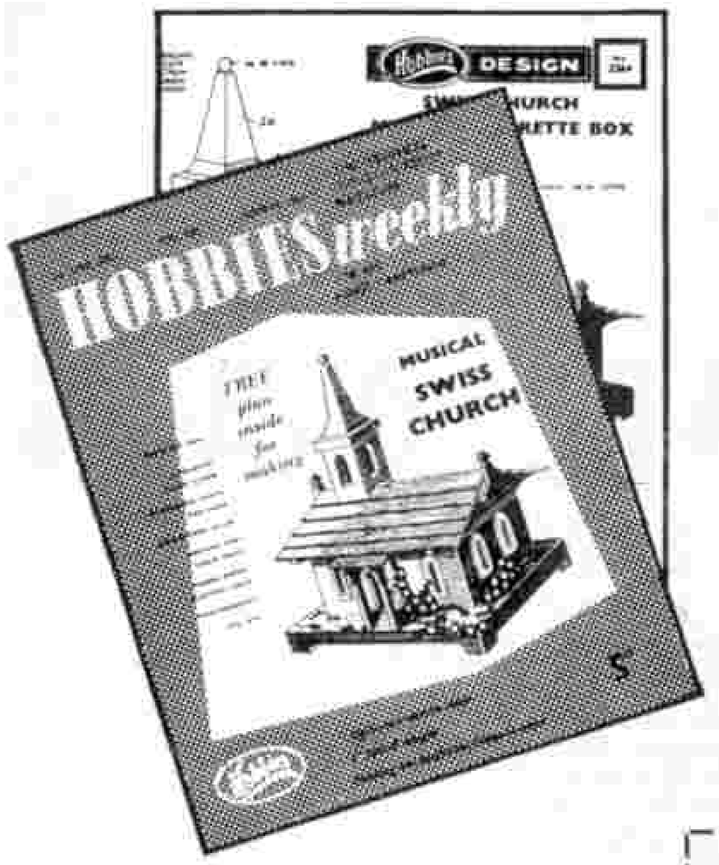

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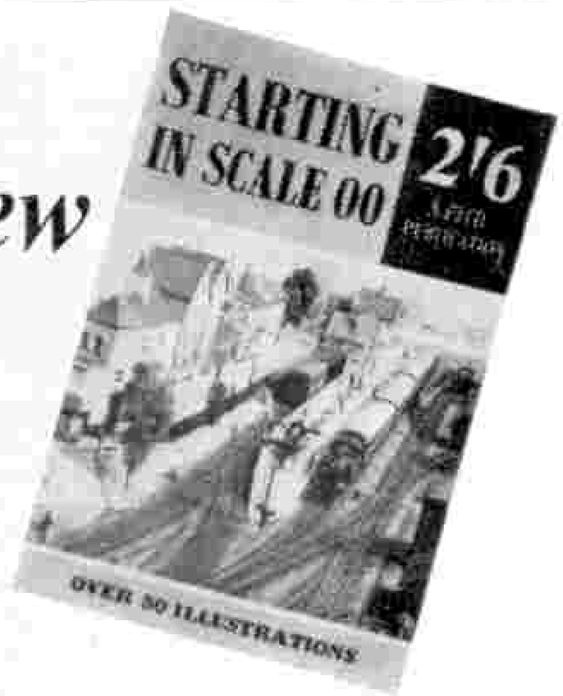

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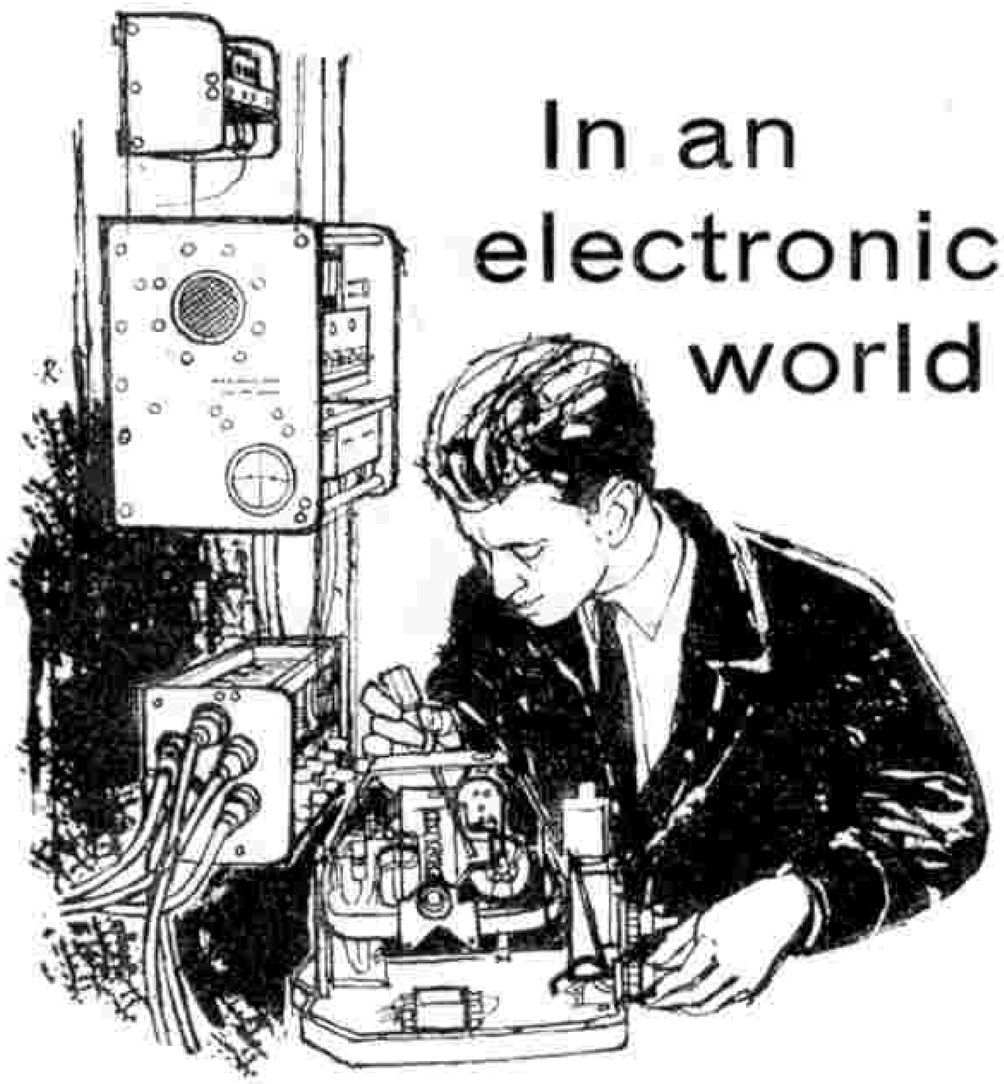

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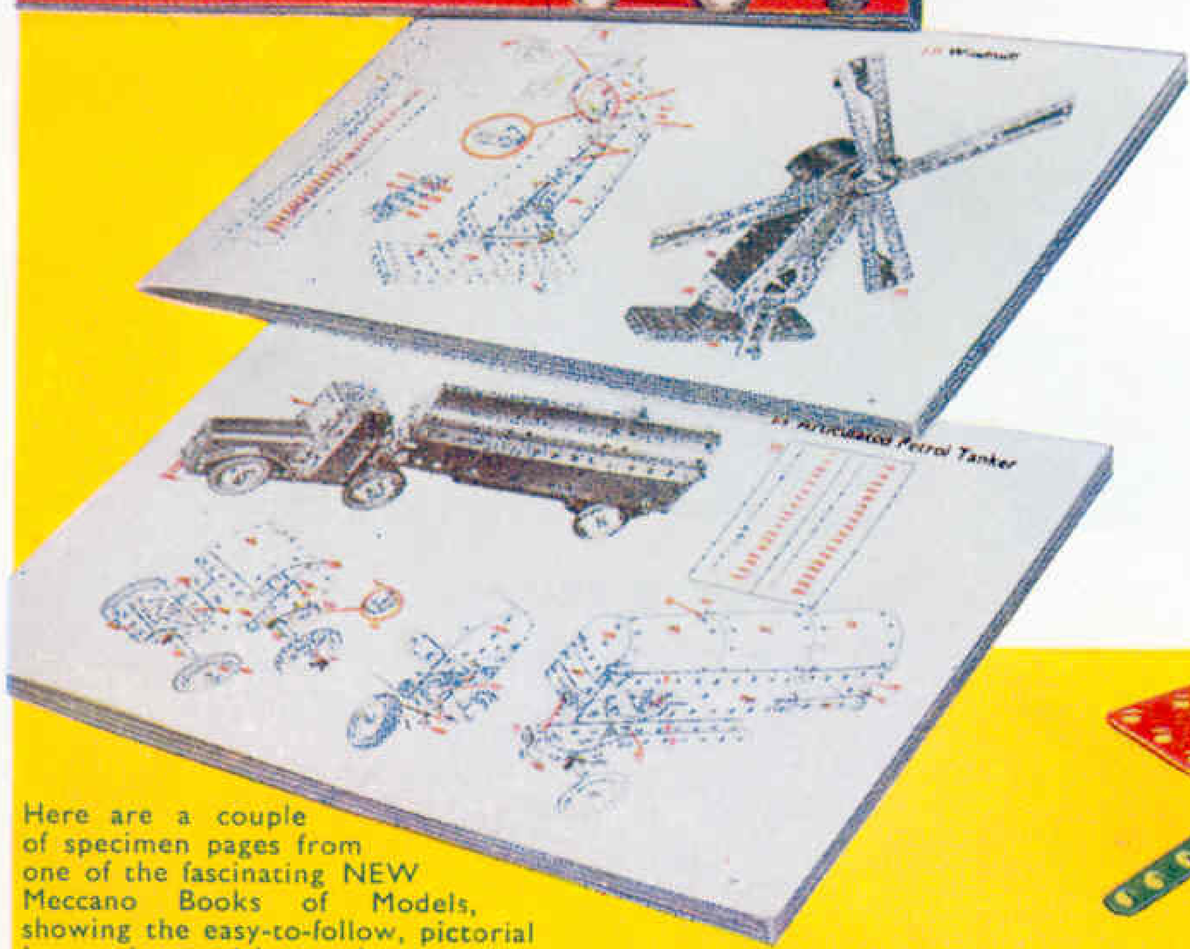

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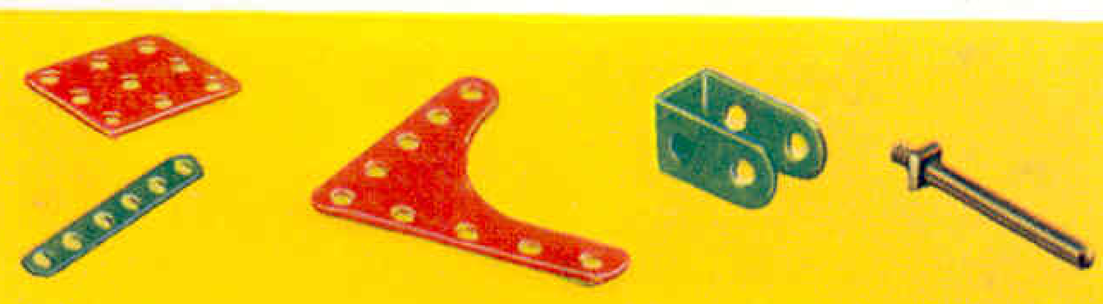
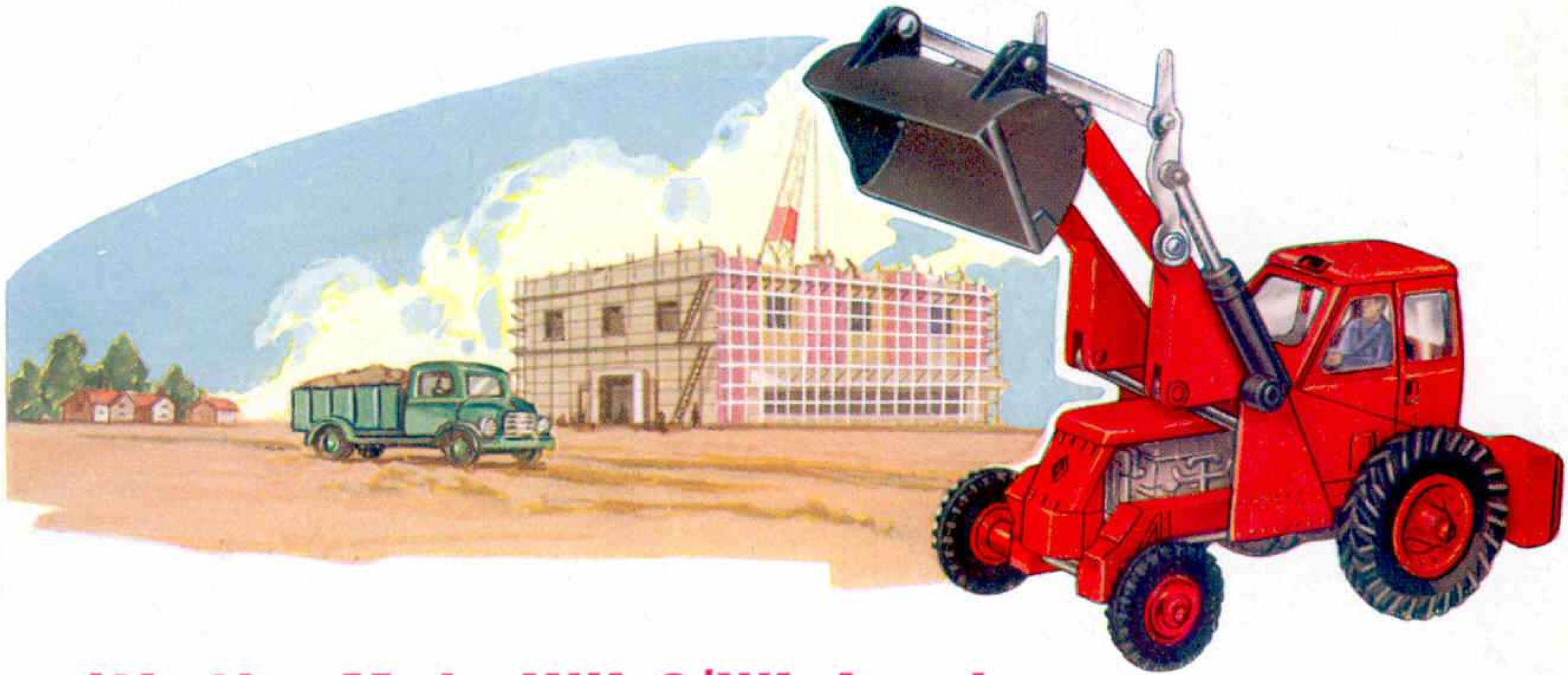


Tip it out . . . or dig it up



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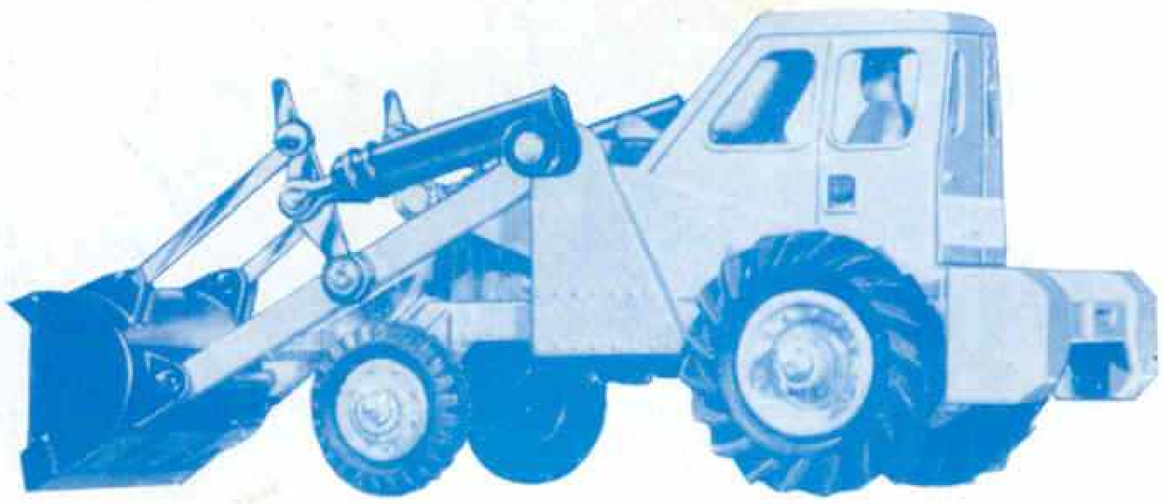

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