VOL. XLVI. No.2 FEBRUARY 1961

MECCANO MAGAZINE

1/3

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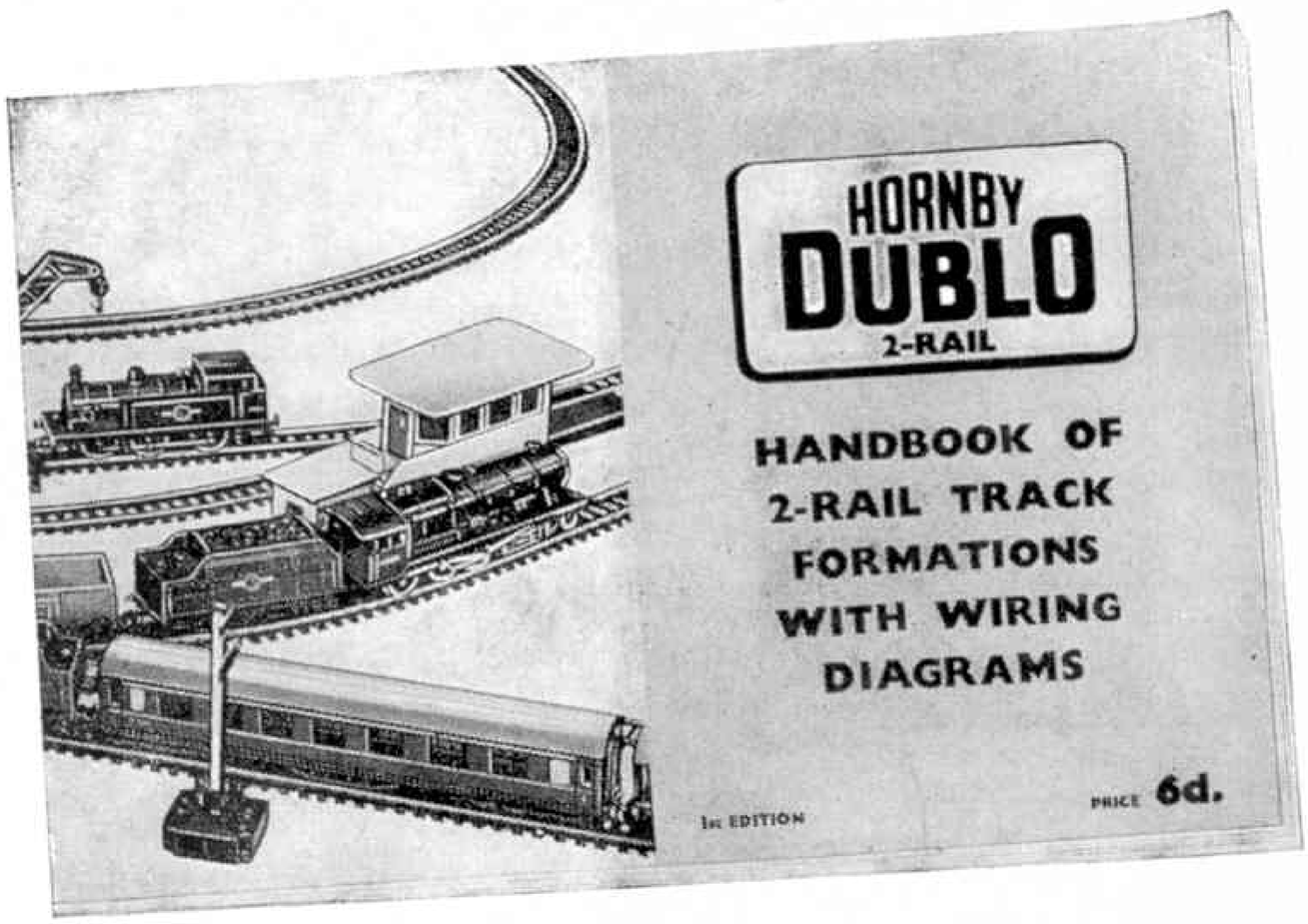

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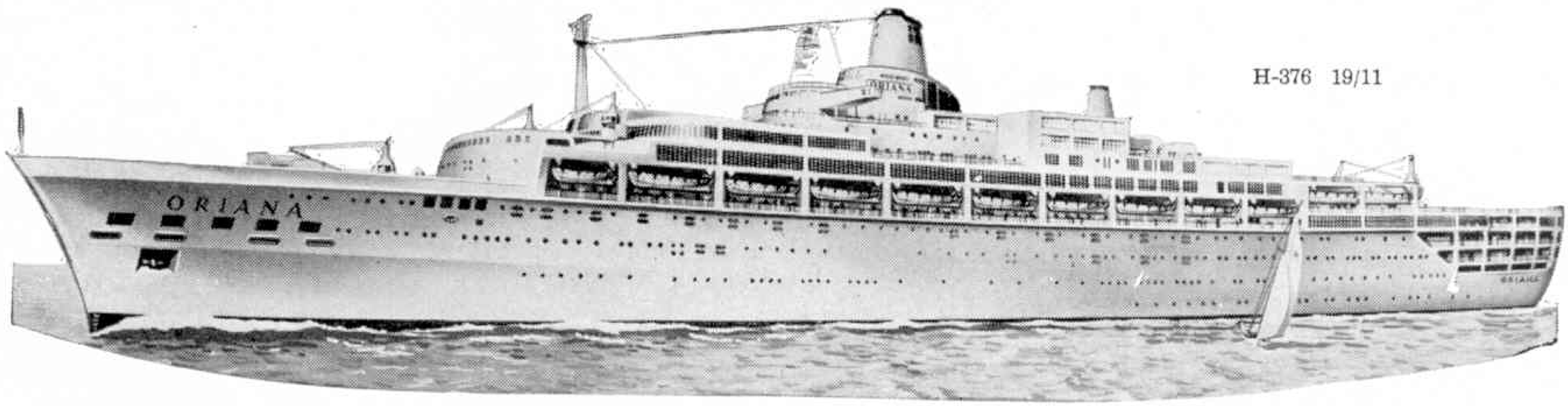

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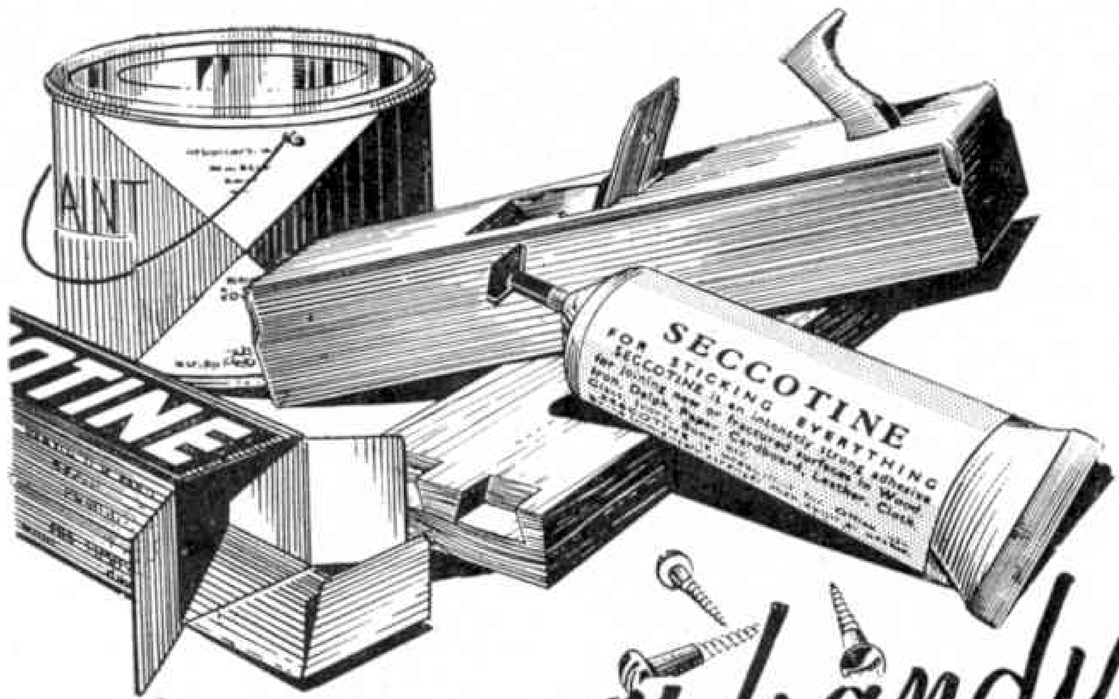

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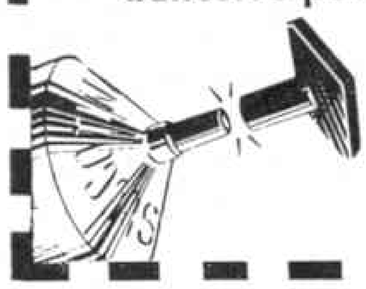

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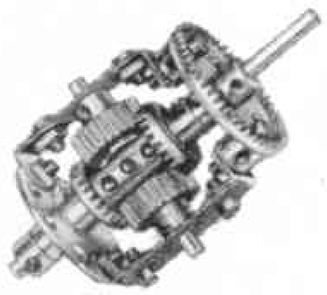

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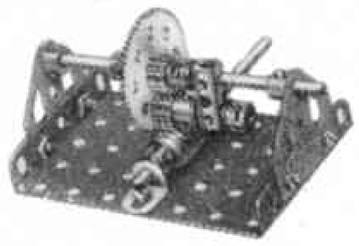

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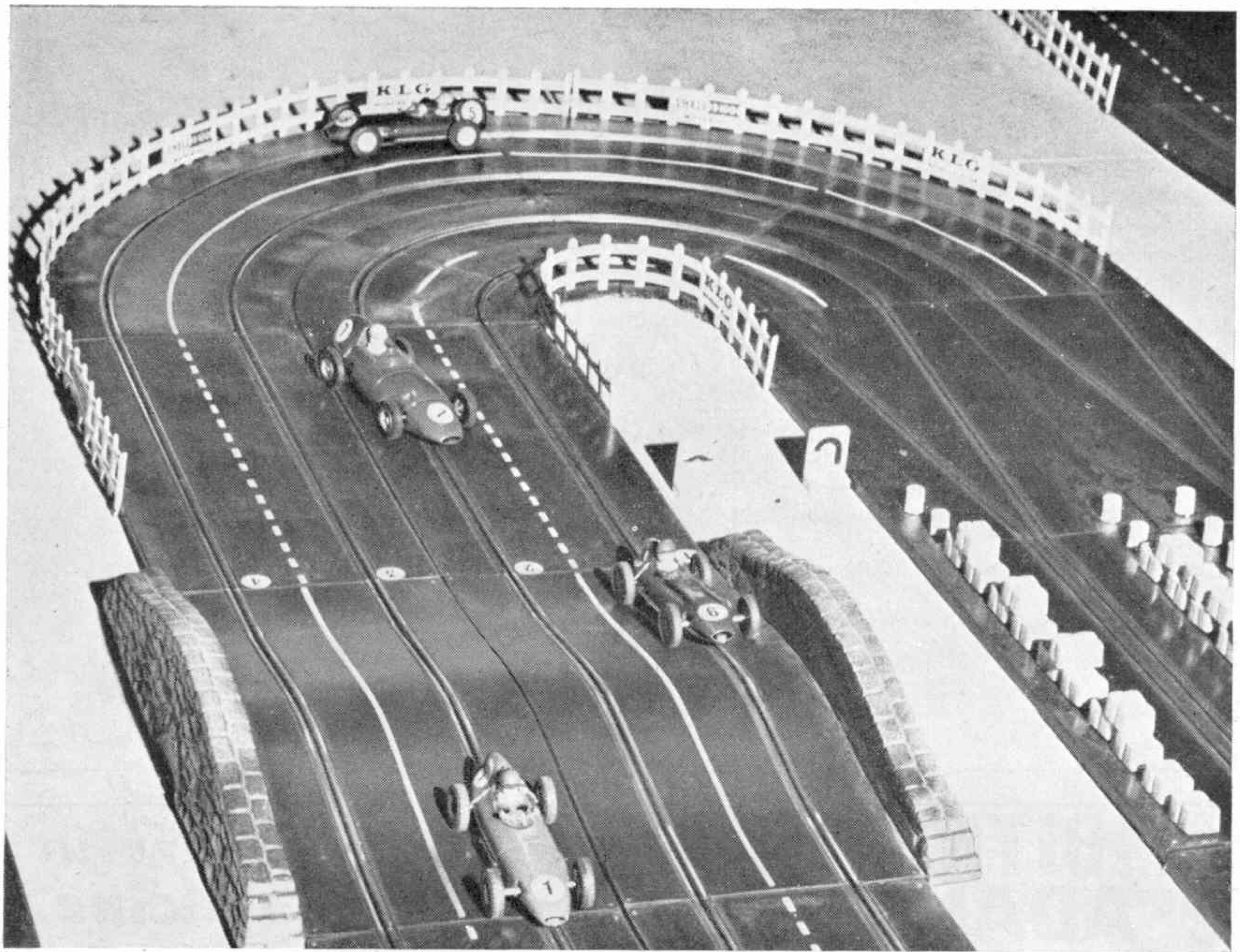

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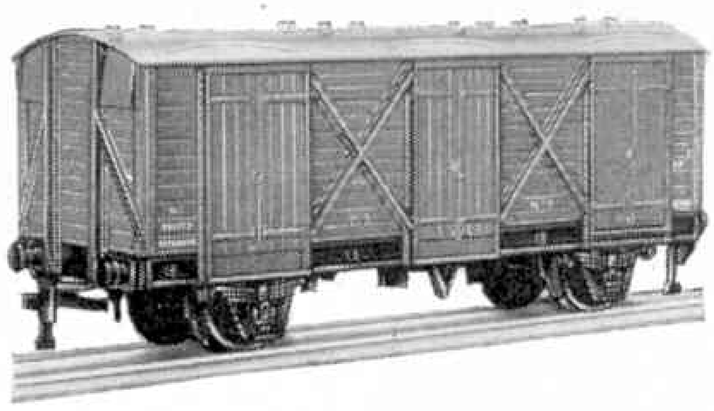

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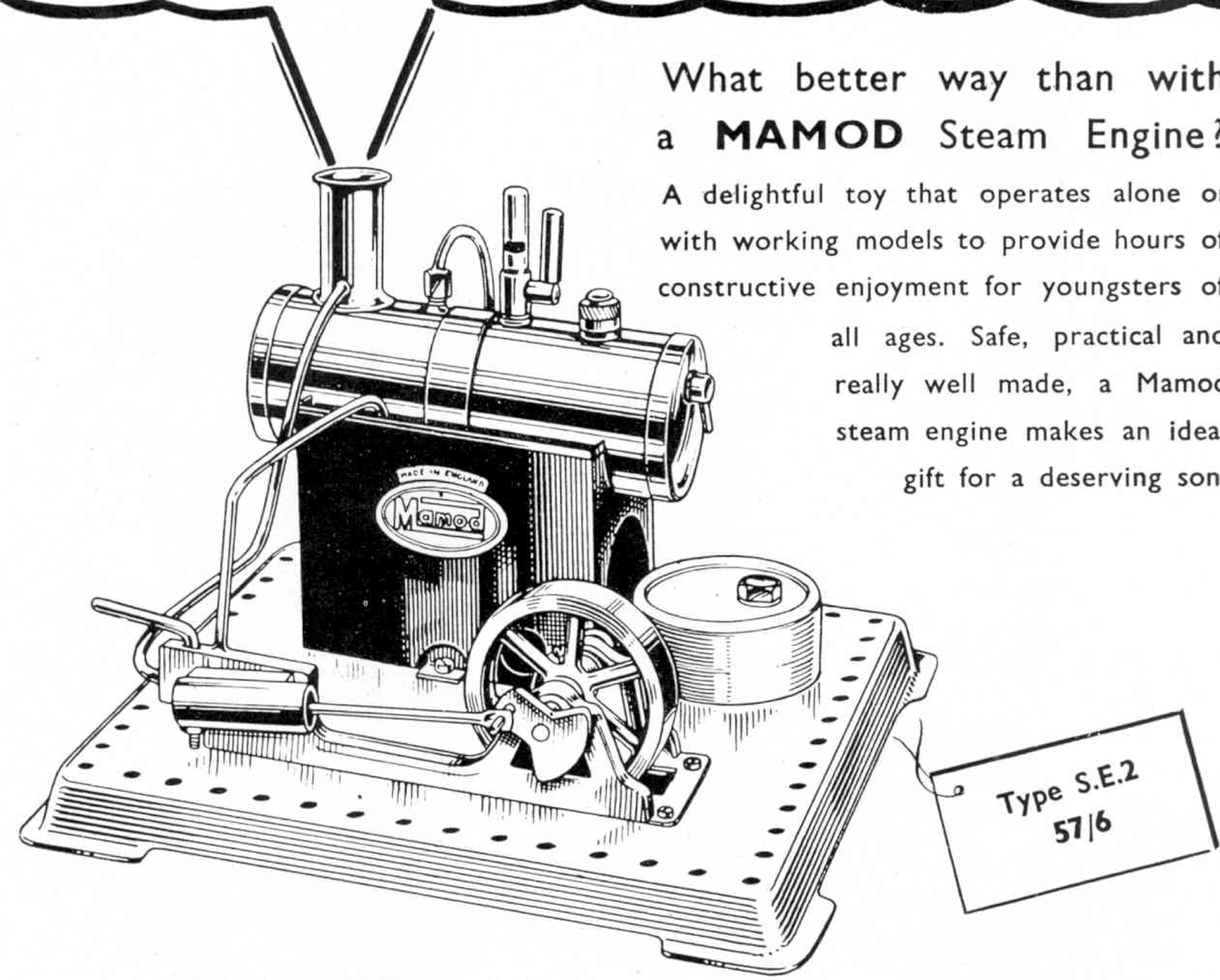

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Volume XLVI No. 2 February 1961

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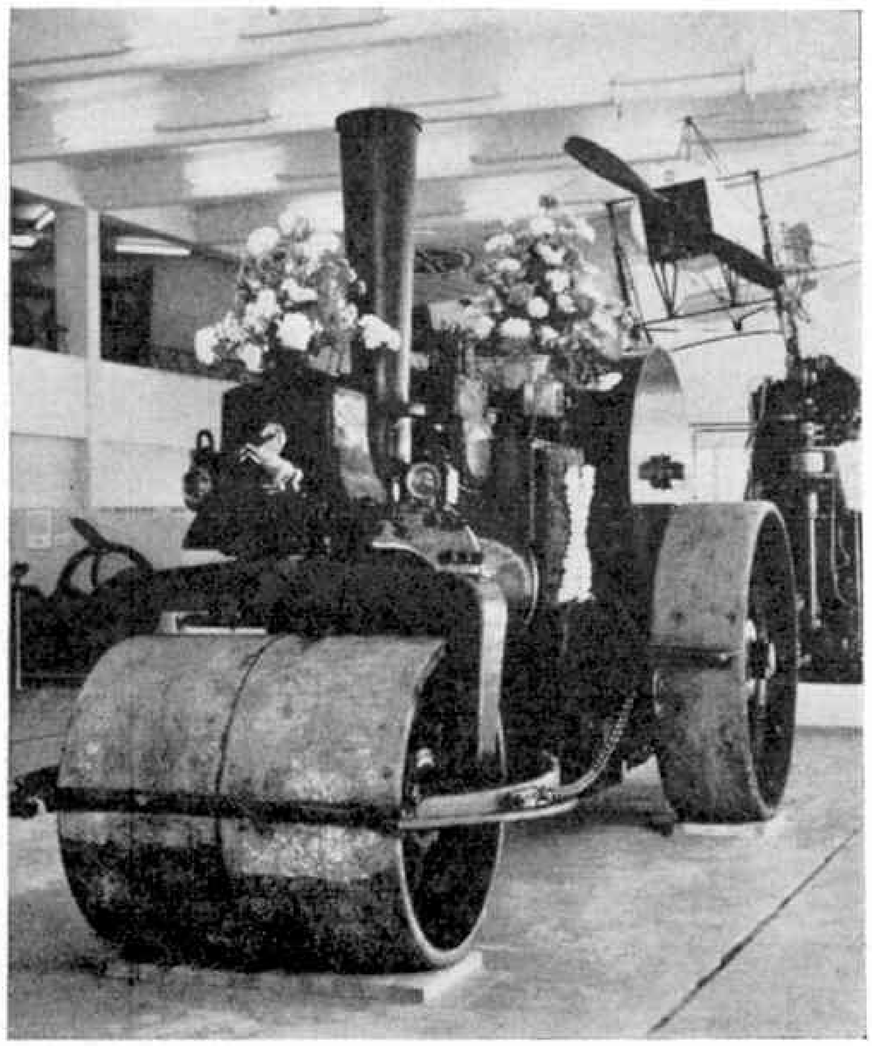
Hornby-Dublo Locos. On Parade

I WAS delighted, some little while ago, to be invited by the City of London School Railway Society to visit their twelfth annual one-day exhibition held in their own very fine building by the side of the River Thames. I managed to fit the visit in with other business in London, and I must put it on record that I received a very warm welcome from Mr. J. H. Wheeler, the Chairman, and the members.

The Society, which has a very keen and active membership, put on a wonderful display in Gauge 00 and Gauge 0. Of about 900 boys in the school, some 700 visited the exhibition during the course of the day, as well as a number of guests from outside. I was very impressed by the display of pre-war Hornby Clockwork locomotives and rolling stock which attracted much attention throughout the day. The boys also had on show some workmanlike layouts in Hornby-Dublo Two-Rail and Three-Rail and, in fact, there were 25 Three-Rail Hornby-Dublo locomotives on view, with dozens of items of rolling stock, and over 200 feet of track.



Into honourable retirement—the world's oldest steam roller.

Such keen youths as these, while they have facilities, not always available to other people, in which to operate, do deserve the success they achieve. The boys of the City of London School would be the first to admit that they owe a great deal to the encouragement given to them by Mr. Wheeler and other members of the school staff.

A lot of our readers, I know, are very greatly interested in steam rollers, traction engines and, indeed, all steam-driven vehicles and I am sure they will be intrigued by the picture which accompanies these notes. It shows the world's oldest steam roller as she arrived at her final resting place in the Norwegian Technical Museum, on the outskirts of Oslo, a few weeks ago. Flower bedecked and shining to the last brass, she made a very impressive final appearance in public before being handed over ceremoniously by the Mayor of Oslo to the director of the museum. There, she will overlook the city whose roads she helped to make and repair continuously for 82 years, within which period she rolled a distance equivalent to twelve complete circuits of the world. She was built for the Oslo Municipality by Thomas Aveling, in Rochester, in 1878—only thirteen years after he had proved that the steam roller was a practical engineering and economic proposition.

At the steam roller's controls on her last trip was Mr. Trygve Strömberg who retired last June, after operating the roller for 42 years, and who put on his overalls once more to take her along to the museum.

THE EDITOR

Next Month: THE HOUSE THAT DOWNING BUILT

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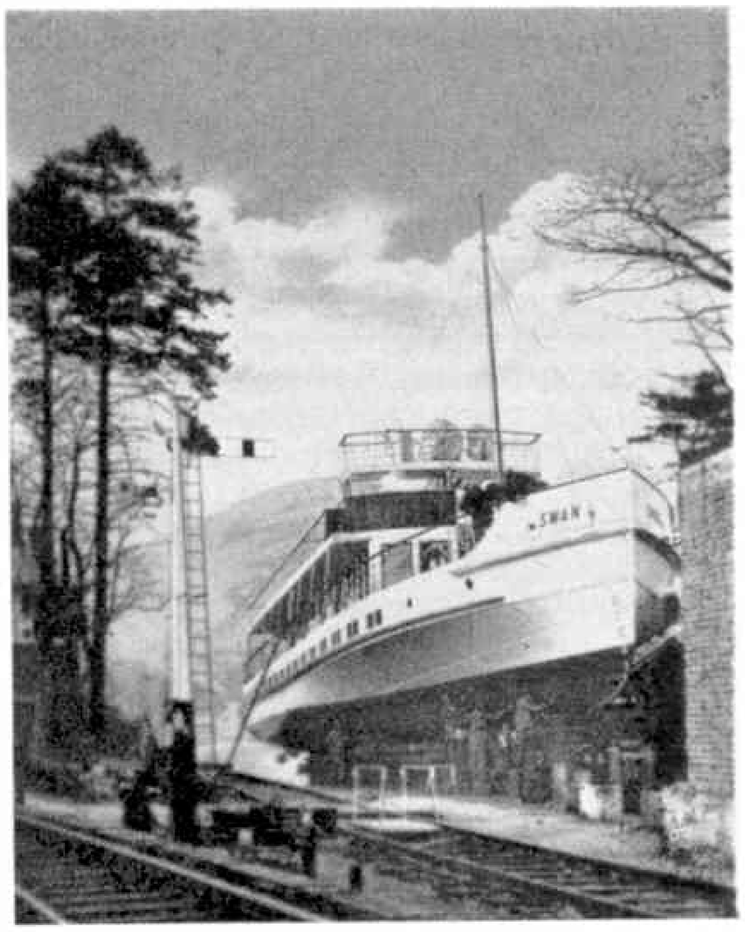
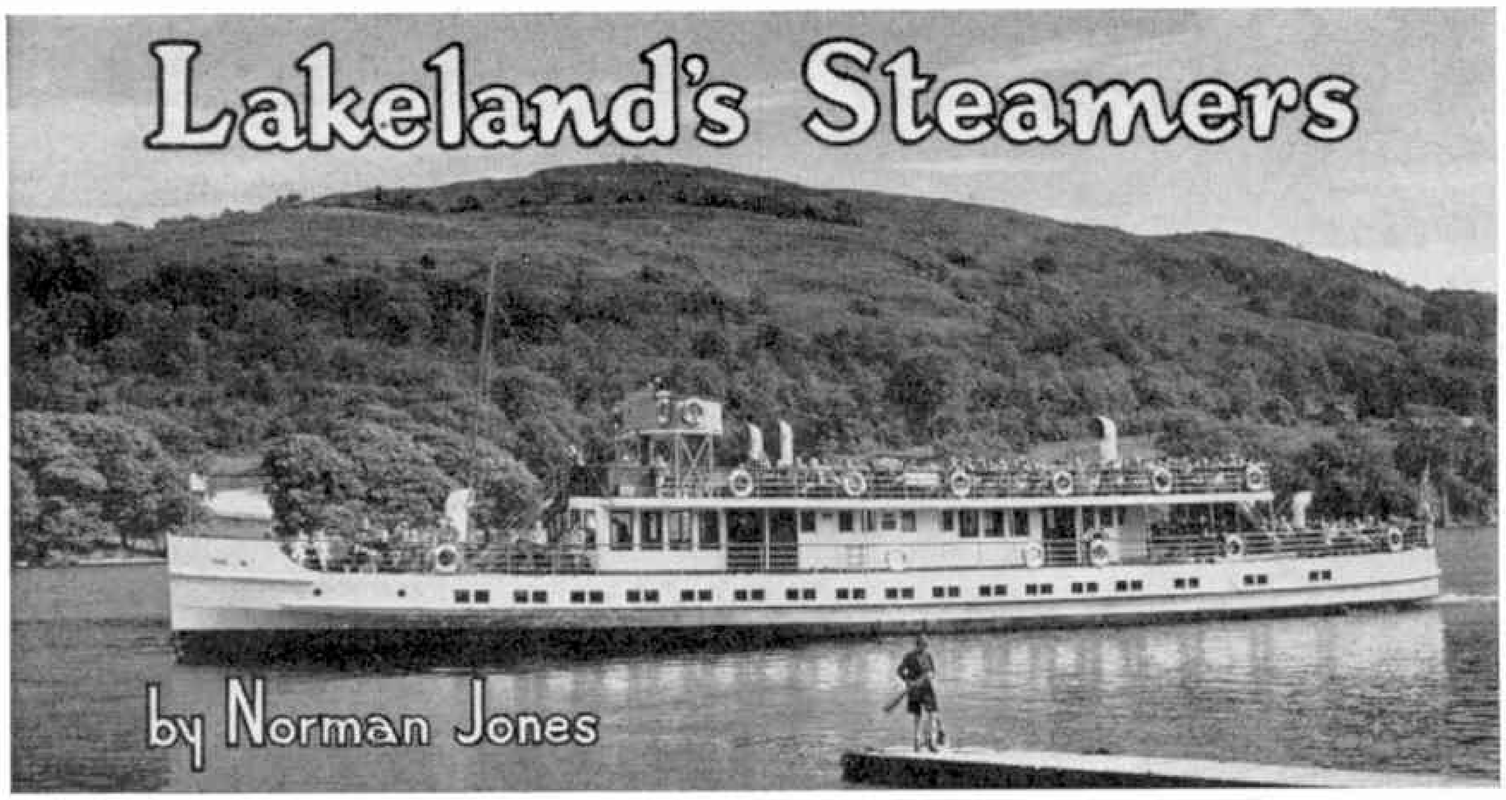
OUR FRONT COVER

Most people who have visited Britain's famous Lake District will have seen sailing, on Lake Windermere, the graceful vessel portrayed on our cover this month. The Swan is one of a popular fleet of vessels which carry tens of thousands of holidaymakers up and down the lake during summer. Norman Jones tells the story of these neat pleasure craft on page 38. On our cover Swan is seen hauled up on the slipway at Lakeside, at the southern end of the ten-mile long lake, to undergo repairs and redecorating ready for the "season". A comprehensive programme of maintenance and re-fitting is carried out on all vessels during the winter months.





● Every year, thousands of holidaymakers from this country and abroad visit Britain's famous Lake District. On Lake Windermere, one of the area's best-known beauty spots, is a fleet of immaculate little ships which, in 1959 alone, carried more than 547,000 people up and down the lake. How this service began and developed is related in this article.

THE HISTORY OF AN INLAND FLEET

IN the nineteenth century, as railways spread across the country, travel, just for its own sake, became fashionable. Excursions were no longer simply for wealthy people; they became popular with members of the working classes.

In 1840, Mr. Thomas Cook, who founded the travel firm, arranged two excursions over the Midland Counties Railway and from this beginning the movement quickly grew. A favourite resort for excursionists, who came by the Ulverston and Lancaster Railway and the Kendal and Windermere Railway, was Lake Windermere. The lake, ten and a half miles long, divides Lancashire from Westmorland for most of its length.

Before the railways were built, travellers reached Windermere by stage coaches which ran between Ulverston and Lancaster. These connected with a few small sail, or oar-propelled, barges which ferried passengers and goods between Ambleside, at the northern end of the lake, and Newby Bridge, at the southern end. Windermere was navigable in the eighteenth century—when charcoal and iron were carried from bloomeries and charcoal-burning sites on the shores—and there has, in fact, been a ferry service across the lake for centuries. Its modern version is the car and passenger ferry operating between Ferry Nab and Ferry Landing, just south of Bowness.

THE FIRST VESSEL

As people flocked to the district it was realised that there was scope for a steamer service and, in 1845, a group of local businessmen formed the Windermere Steam Yacht Company. Their first vessel was a wooden paddle steamer, *Lady of the Lake*, built by Richard Ashburner, who had works at Greenodd.

The vessel, of approximately 50 tons, could carry 200 passengers and she operated between Newby Bridge and Ambleside. On her first trip there was typical Victorian revelry, the band of the Kendal Cavalry being embarked to play for dancing.

The *Lady of the Lake*, her hull painted in black and gold, was launched from a slipway near the Swan Hotel at Newby Bridge. She had a pink and white saloon fitted with carpets and mirrors. It was intended that she should be a screw steamer, which was unusual for those days when small boats were usually driven by paddles. But the water at Newby Bridge was too shallow for the original plan to be carried out and paddles had to be fitted after all. A very similar craft, the *Lord of the Isles*, was launched twelve months later.

When, earlier, the railways had been introduced into the area there had been considerable opposition from local landowners who considered them unsightly. Complaints again began to come in from the local gentry when it was learned that a plan was afoot to put steamers on the lake.

Wordsworth, then Poet Laureate, was among those who opposed the coming of the steamers but when, in their first season, the boats carried over 5,000 people, opinion swung in favour of the enterprise, for the vessels demonstrated that not only did they serve holidaymakers but were also of use to the local people.

By now, increasing numbers of tourists were coming to Windermere and in 1849 a rival company, the Windermere Iron Steam Boat Company, launched an iron paddle steamer *Firefly*, built by Macconochie and Claude of Liverpool.

FIERCE COMPETITION

A sister ship, the 95-ft. long *Dragonfly*, appeared in 1850 and the two firms engaged in fierce competition. Fare cutting took place. There were extravagant advertising offers and some spares for *Lady of the Lake* mysteriously disappeared. By 1858, however, both companies realised that they were equally matched, and they combined to form the Windermere United Steam Yacht Company. In 1866 the Lancaster Ship Building Company built, for the new concern, the 105-foot long *Rothay* which carried a rudder at each end and was the last paddle steamer to be built for lake service. She was also the last craft to be launched into the shallow waters at Newby Bridge.

In 1867 the Furness Railway, which served the district, built a line from Plumpton Junction, near Ulverston, to Newby Bridge. The railway also obtained shares in the United Yacht Company. Newby Bridge Station was later closed and the present terminus, Lakeside, which is on the eastern shore of Windermere, was opened in 1869.

Steamers were still being built. In the year Lakeside Station was opened, T. B. Seath of Rutherglen built the iron screw vessel *Swan*. During a storm in 1891 she sank at her moorings, but was raised by pontoons and continued in service until 1938. About 1871 the Furness Company put into service an odd, barge-like boat named *Raven*. Used mainly for carrying freight, she was tiller steered and was powered by a boiler on deck. In 1872 the Furness Railway Company took over the Windermere United Steam Yacht Company in its entirety.

In 1879 two almost identical, steel, screw-driven ships were launched—*Cygnet* and *Teal*. They had finely-carved bows and were built by the Barrow Shipbuilding Company. The first railway-owned steamers, they were 100 feet long with a gross weight of 50 tons and accommodation for 336 passengers. Both boats remained in service until 1920 and the name *Teal* is still carried by one of the

ships of the present fleet. *Cygnet*, transferred to a private owner, still sails Windermere.

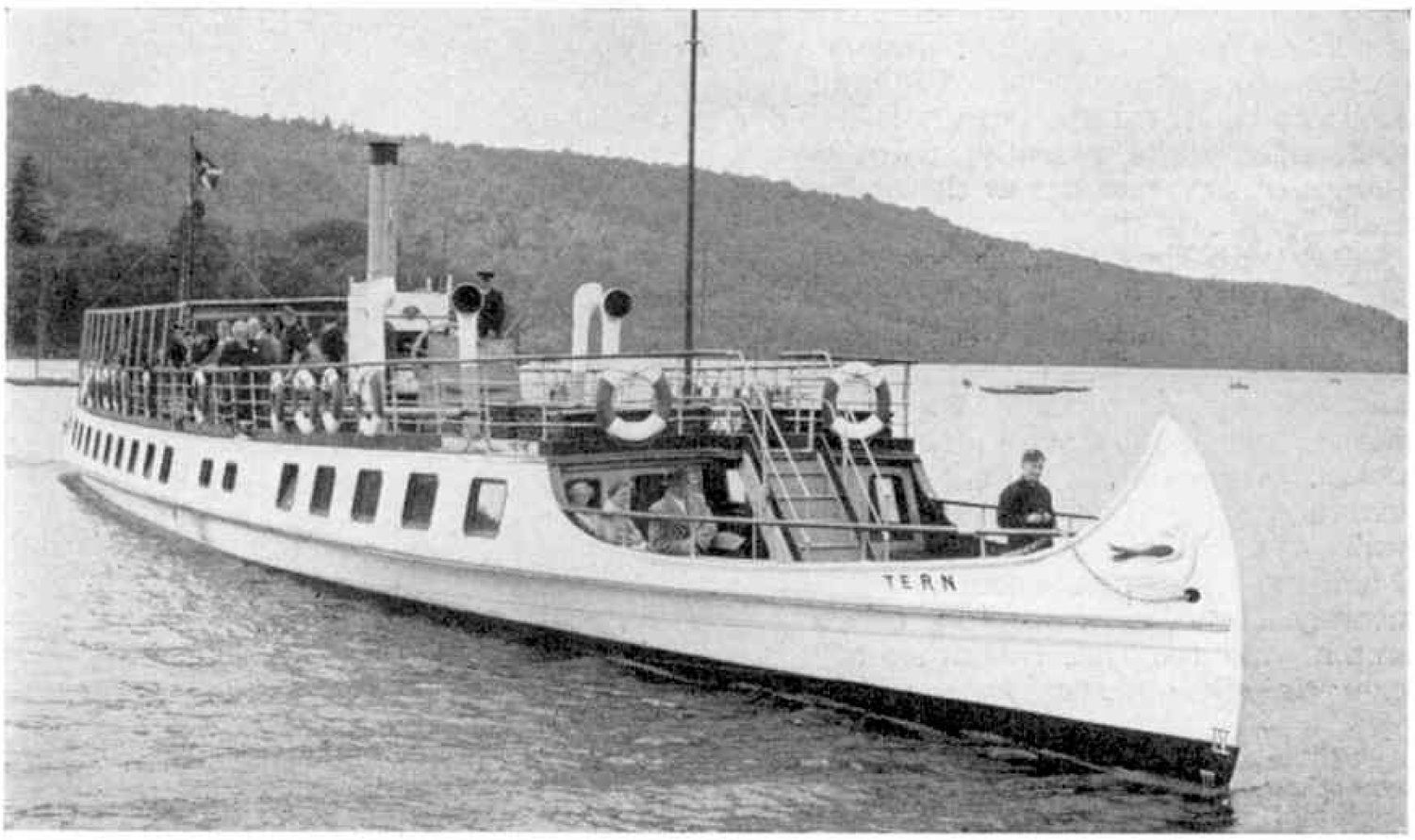
In 1891 *Tern*, a steamer with bows modelled on those of a Canadian canoe, was launched at Lakeside. Built by Forrest and Son of Wyvenhoe, Essex, she had a counter stern and, in those days, a tall, slender, bell-mouthed funnel. This graceful funnel was replaced in 1958 by a squat rakish one when the vessel underwent certain modifications. Her steam engines were removed and replaced by powerful diesel units. With a length of 140 feet, *Tern* can carry over 600 passengers.

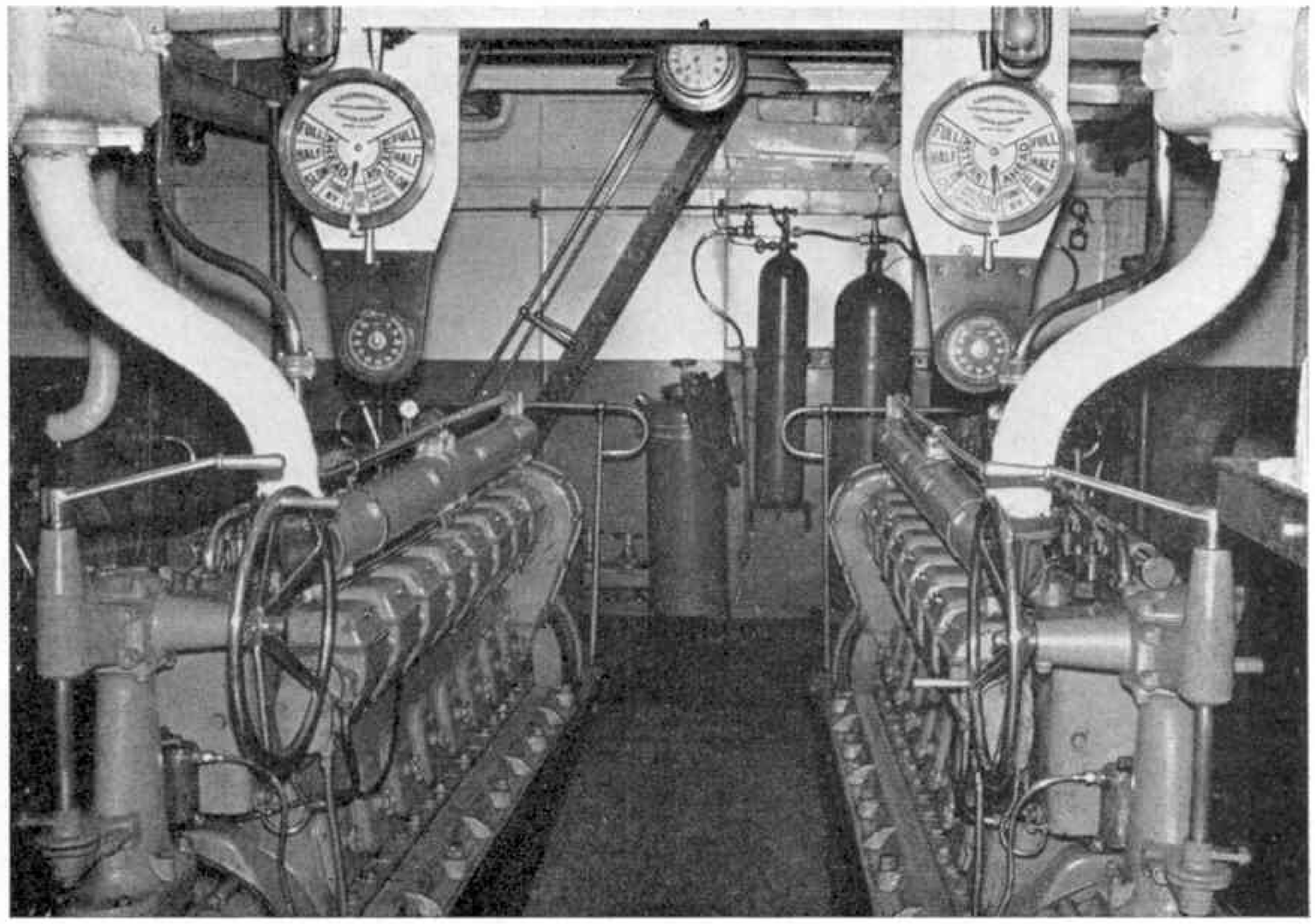
THE "SWIFT" ARRIVES

The year 1900 saw the arrival of the biggest vessel yet to sail the lake, the *Swift*. Built, like the *Swan*, by T. B. Seath, she cost £9,500 and was propelled by a four-cylinder, compound steam engine powered by a locomotive-type boiler. *Swift*, too, has been modernised and now has two 120 h.p. diesel engines and a modern-type funnel. She has accommodation for 700 passengers.

By about 1900, the fleet was really big enough to handle all available traffic but the Furness Railway Company could not resist a bargain which came on to the market some seven years later. This was the steam yacht *Britannia*, which had clipper lines and a long bowsprit. She was 110 feet in length and had a copper funnel which was raked back at an acute angle, as were her masts. She also had a carved counter stern and was, indeed, a lovely craft. Lit by gas which was generated on board, she carried 122 passengers. *Britannia* was originally built by Seath's, in 1879, as a private yacht at a cost of £12,000; the Furness Railway Company secured her for £350. Until she was broken up in 1919 her principal duty was to be hired out for private parties.

The Windermere steamer "Tern", with bows modelled on those of a Canadian canoe, seen on the lake before her conversion to diesel power. British Railways official photograph.





The engine room of "Teal II". Photograph: Norman Jones, Warrington.

For a time the company also had two vessels on Coniston Water, another Lakeland beauty spot. One of these was the *Lady of the Lake*, a vessel of normal appearance, the other a quaint, steam-powered craft called the *Gondola* which is still afloat on Coniston, being now converted into a houseboat.

In 1923 Parliament decided that the multitude of private railways should be combined to form four main groups and the Furness Railway Company was included in the London Midland and Scottish group which also took over the lake steamers. Now, of course, the vessels are the property of British Railways.

In 1936 and 1938 the L.M.S. put motor vessels of a new type on to Lake Windermere. They were *Teal II* and *Swan II*. These vessels have three decks consisting of a lower saloon, a main deck with a saloon and an open upper deck. They have very smart lines and no funnels. *Teal* and *Swan* were erected at Lakeside after being brought, in sections, by rail from their builders, Vickers-Armstrongs, of Barrow. Each of these two fine vessels can carry 800 holidaymakers.

The home port for the railway steamers is Lakeside, which is a combined railway station and steamer quay and a fine example of Victorian railway architecture. A cafeteria in an upper storey directly above the quay looks rather like a large and splendid grandstand. And so it should, for bands have played there on special occasions and, at one time, the Furness Railway had an orchestra there, complete with harp and bass viol, to entertain visitors.

BEAUTIFUL WOODLANDS

If you go by rail to Lake Windermere, the locomotive which hauls your train along the branch from Ulverston to Lakeside is not painted in the Indian red which was the colour of the Furness Railway's engines, and the green of the present British Railways diesel-set is very different from the blue and white paintwork of the old Furness Rail-Motors. But the beauty of the woods, the lakes and the hills all around you is just the same as it always was.

The present Windermere fleet, *Tern*, *Swift*, *Teal II* and *Swan II* are in service seven days a week from mid-May to mid-September. At the busiest time there are thirteen sailings daily between Lakeside, Bowness and Ambleside, and the round trip takes about three hours. Once, there were piers at Storrs, between Lakeside and Bowness, and Lowwood, between Bowness and Ambleside, but these have now been closed. In 1959 547,602 people used the steamers (*Cont. on page 71*)

THE PASSING OF THE "SPIRIT"

On her way towards Melbourne the "Spirit of Progress" (above) hauled by one of the latest 1800 h.p. "S" class diesel-electric locomotives is seen here crossing the Great Dividing Range. Picture: A. R. Lyell.

SPIRIT OF PROGRESS Australia's famous train, is doomed. The long overdue standard gauge rail link between Melbourne and Sydney is nearing completion. When it is finished this year, the *Spirit* is to be withdrawn.

Spirit of Progress runs non-stop every day in each direction between Melbourne and Albury, a distance of 190 miles on Victorian Railways' 5 ft. 3 in. gauge north-eastern main line. At Albury, on the Victoria–New South Wales border, the *Spirit* connects with overnight expresses to and from Sydney. N.S.W. Railways are standard 4 ft. 8½ in. gauge and, of course,

By H. G. FORSYTHE

the difference in gauge in the two states has always made through running impossible. Passengers must change trains and all goods have to be transhipped at the border.

Based, it is said, on the Baltimore and Ohio Railroad's very successful *Royal Blue* express of the 'thirties, *Spirit of Progress* was introduced 24 years ago. It was something new in Australian rail travel, being the first streamlined, all-steel, air-conditioned train to run anywhere in the Southern Hemisphere. The train was so carefully designed and constructed that even today it is second to none in modern luxury rail travel.

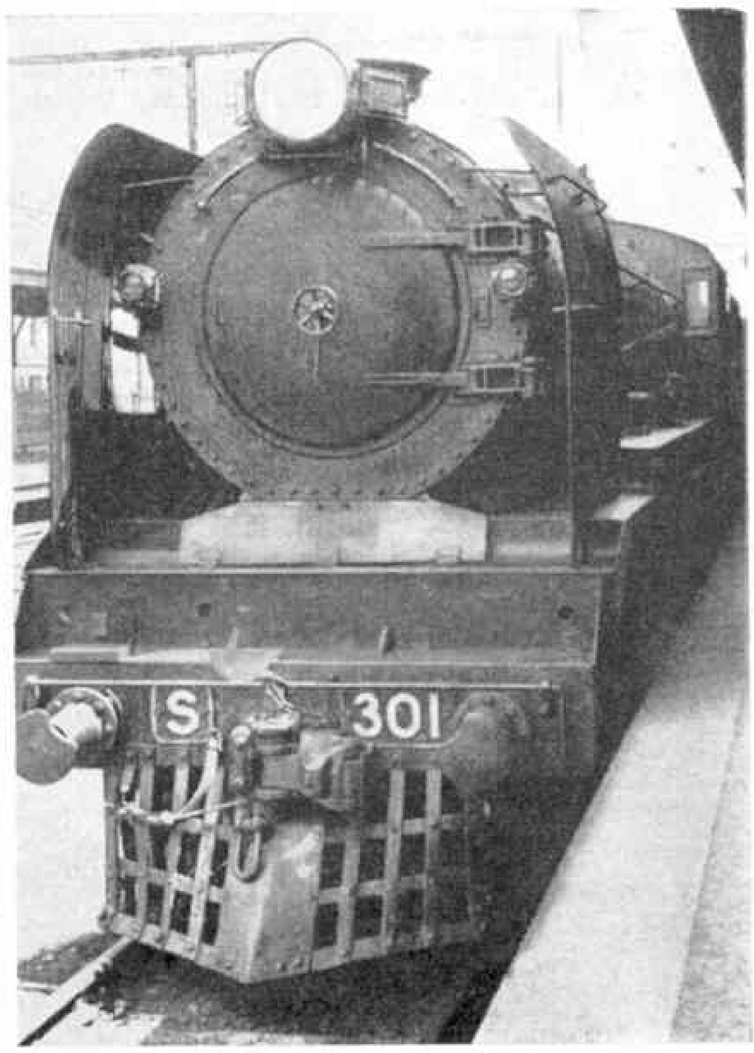
Right from the start the train was an enormous success and quickly captured public imagination. The fame of *Spirit of Progress* spread rapidly and today it is as well known all over the world as *The Queen of Scots* or *The Twentieth Century Limited.*

From its introduction in 1937 until 1954, *Spirit of Progress* was hauled by giant 3-cylinder "S" Class Pacific steam locomotives. These locomotives, designed and built in Victoria, originally worked the *Sydney Limited*, forerunner of the *Spirit*, on a fast schedule between Melbourne and Albury. For their new duties on the train they were sheathed in streamlined casings and painted blue and gold to match the new train. Weighing some 222 tons, the "S" Class engines had driving wheels of 6 ft. 1 in. diameter and their tractive effort, at 85 per cent. boiler pressure, was 41,000 lb. Each locomotive was named after a famous Australian pioneer.

The normal load of the *Spirit of Progress* is about 515 tons but it is by no means unusual for this to be increased to well over 600 tons, providing accommodation for up to 288 first class and 256 second class passengers. A dining car, well known for excellent meals, is included and, until quite recently, there was a lounge-observation car at the end of the train.

The train runs through some difficult and mountainous country. Victorian Railways north-eastern main line crosses the Great Dividing Range, reaching a summit of 1,145 feet only 33 miles from Melbourne, and severe grades are encountered even in the suburban area. For instance, Oliver's Bank, one and a half miles of 1 in 50, is only seven miles from Melbourne. But the schedule requires an average speed, start to stop, of over 50 m.p.h. and the run, therefore, calls for exceptionally high performance from the locomotive and sustained speeds well in excess of 60 m.p.h. over long distances.

A trip on the *Spirit* today is exciting, but when the train was first introduced it was a unique experience. In pre-war days travelling from Sydney was not always as comfortable as it might be. Passengers for Melbourne arrived at Albury hot, dirty and tired after the long overnight journey. What a contrast it was to join the sleek, blue and gold streamliner waiting at the other platform. Imagine you have just stepped inside. The cool, air-conditioned atmosphere and soft carpet underfoot makes the train appear more like a luxury hotel; at its head, an "S" Class "steamer" waits for the "All clear".



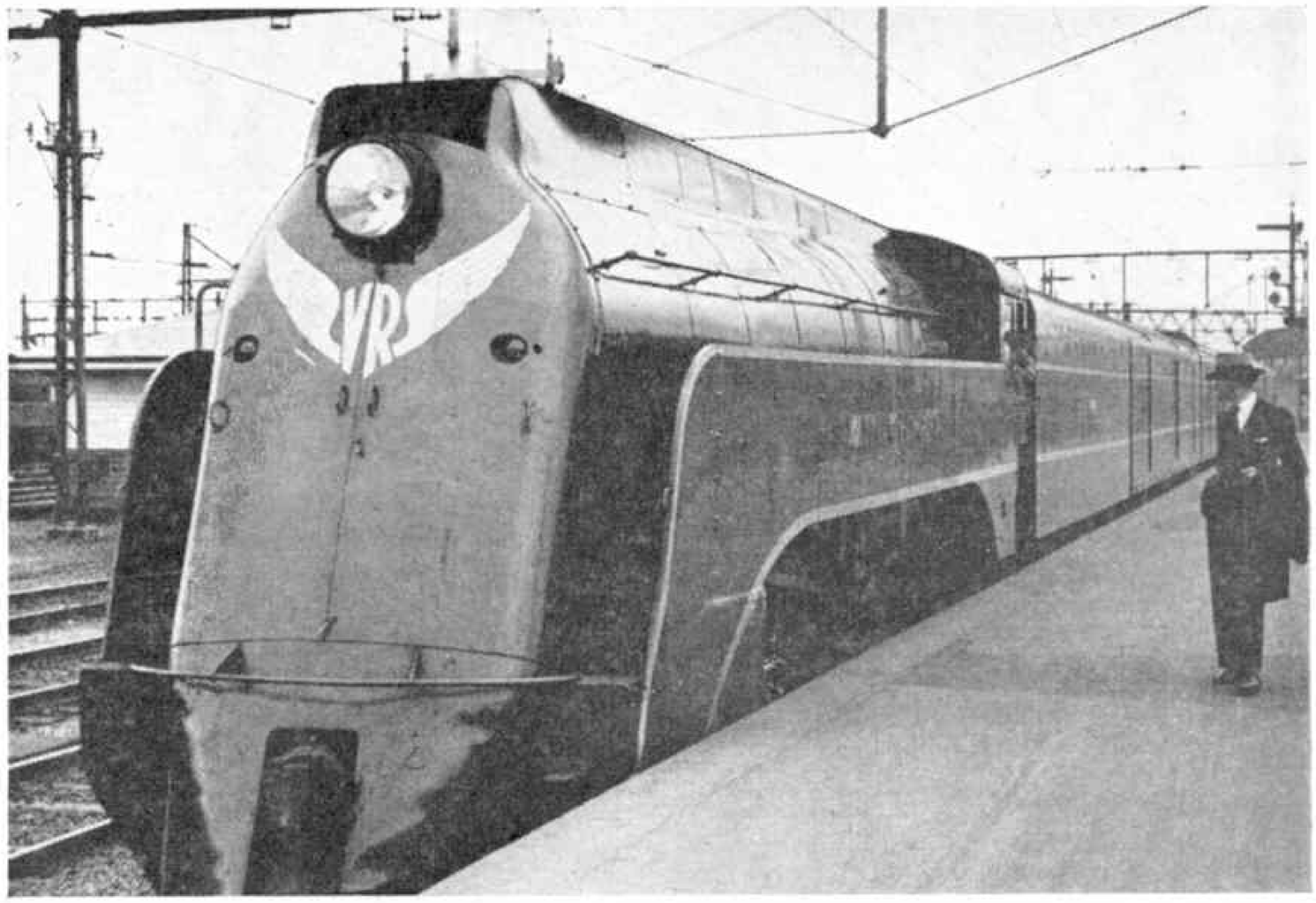
An "S" class Pacific in its earlier form (right). This type of locomotive was later streamlined for use with the "Spirit of Progress". Picture: H. G. Forsythe.

Then we're off! Slowly at first, until we cross the River Murray, Australia's greatest waterway and border between Victoria and New South Wales. Then, with sharper exhaust and rapidly picking-up speed, we are soon thundering along at over 60 m.p.h. Sitting in the lounge-observation car we have a magnificent view of the countryside of North Victoria. Past Wangaratta and through Glenrowan we roar. At Benalla can be seen, over to the east, the famous Mt. Buffalo, centre of Victoria's Alpine playground.

From Albury to Mangalore, 68 miles from Melbourne, the main line is single tracked. Other trains wait on passing loops at stations and if we look very closely we might just catch sight of the automatic tablet-changing apparatus at the line side. The *Spirit* is a most important express and has priority over all other trains.

At Seymour we cross the Goulburn River, which supplies a vast irrigation system in the Goulburn Valley. Now the train is climbing and although Melbourne lies fewer than 60 miles away the Great Dividing Range must still be crossed. The sun-drenched, gum-tree covered slopes of the foothills now flash by the windows. Speed is falling and the beat of the exhaust deepens to take the first of several 1 in 50 grades. Over the summit at Heathcote Junction, nothing but down grades lie ahead. Speed rapidly rises—50, 60, 70. All too soon the overhead electric wires of Melbourne's suburban railways system are in sight and we are at Broadmeadows with only ten more miles to go. A few minutes more and the *Spirit* glides gently into Spencer Street Station, Melbourne's country line terminus. It is 11.30 a.m. The *Spirit of Progress* is, as usual, dead on time.

(*Continued on page 71*)



Now the streamlined version—the "Spirit of Progress" (top right) arriving at Spencer Street Station, Melbourne, soon after its introduction in 1937 and pictured by H. G. Forsythe. (Below) This photograph, reproduced by courtesy of the Victorian Government Railways, shows the comfortable lounge-observation coach of the "Spirit".

East Coast Survey Flotilla

Although the ships of the Royal Navy are essentially fighting units there are other, lesser known, aspects of the peace-time work of the Senior Service.

The three ships pictured above—from left to right, H.M.S. Echo, H.M.S. Enterprise and H.M.S. Egeria—form the East Coast Survey Unit. The Flotilla recently completed a survey of the harbours, inlets and coastal waters from Yarmouth to Ramsgate.

Their main work is in sounding the channels used by shipping to ensure that the depth of water shown on nautical charts is correct, and that shoals have not moved position as sometimes happens.

These waters contain many wartime wrecks and it is the Flotilla's duty to ascertain that those not marked by wreck buoys are still lying in sufficient depth of water to present no hazard to shipping, and that buoys over those wrecks which do present danger are still in their correct position—**Holmes L. Hall.**

ROAD AND TRACK

AS a member of the Guild of Motoring Writers, I was present at the R.A.C. in London when Pat Moss and Ann Wisdom were presented with the Guild's Driver of the Year Trophy for their magnificent achievements during the 1960 season.

By winning outright the classic Liege–Rome–Liege Rally, the toughest rally in the international calendar, they proved themselves the equal of the world's greatest male rally drivers, for never before have women won a classic rally of world championship status. And successes in the Monte Carlo, Geneva, Tulip, Alpine, Viking, German and R.A.C. Rallies gave these two girls—both 26 and unmarried—the Women's European Championship. What a fine record to supplement the great victories of Britain in the motor-racing field!

Pat and Ann have worked together since 1954, when they entered their first rally. Pat does most of the driving, while Ann looks after the all-important and highly complicated problems of navigation. I had a long talk with Pat, who told me she has been a full-time professional on the payroll of the British Motor Corporation since 1955.

Like her brother Stirling Moss, who was a fine horseman before he became an even greater driver, Pat loves horses and emphasises that horse riding has helped her develop the sense of balance and quick reactions required in motor sport. It has also won her more than 2,000 cups and awards in show jumping and hunter trials since she was six years old.

Pat prepares for a major event by getting as much sleep as possible and takes a special kind of tablet to help keep awake. I wonder how many people could drive from Monte Carlo to Holland without relief, over a gruelling route that takes 36 hours. This is what Pat did in the 1960 Tulip Rally, and in the Liege–Rome–Liege she drove the B.M.C. 2·9 litre Austin-Healey "3000" for 92 out of 96 hours.

PETER LEWIS
writes about events in the motoring world

From what she told me, I think we shall be seeing quite a lot of Pat in circuit racing this year, following her debut in a Sebring Sprite at Brands Hatch on Boxing Day.

NOT SO JUNIOR

Unusual cars are always fun to drive, and just before Christmas I was loaned a D.K.W. Junior for a few days. With a three-cylinder, in line, two-stroke, valve-less engine of 741 c.c., having synchromesh on all four forward gears, and front wheel drive with brake drums mounted inboard on the differential shaft, this is indeed an unconventional car.

Pat Moss.

The main advantage of the engine—which has petroil lubrication—is that it can stand up to continuous running at high revolutions, thus guaranteeing long life. The two-stroke system is simplicity itself: fresh gas is introduced into the cylinders and exhaust gas removed from the cylinders via a system of intake, transfer and exhaust ports. No wear, such as one has in a normal engine with valves, etc. is involved. The ports are so arranged in the cylinder walls that the pistons, carrying out the function of valves, ensure the utmost in economy and performance. There are, in fact, only seven moving parts in the D.K.W. Junior engine; a crankshaft, three connecting rods and three pistons. Service maintenance is only required at intervals of 4,500 miles and there is, of course, no sump to refill periodically. Oil is added to the petrol, in the ratio of 2½ per cent. every time a garage is visited.

Small as it is, I found the Junior an exhilarating car to drive and well able to keep up with bigger and faster machinery. She will cruise tirelessly at 60–65 m.p.h., and 70 m.p.h. is a maximum easily held on roads such as M1. Acceleration is impressive and 50 m.p.h. comes up in third gear in 17 seconds, but I liked the Junior most for its sure-footedness when cornering and its excellent rack and pinion steering. It is, in fact, a car that encourages hard driving, and a driver new to the car very quickly feels at home. At £800 it is not an inexpensive car but it *is* economical, and it *is* different.

WHILE-YOU-WAIT SERVICE

At a cost of nearly £50,000, Lamberts of Kingston, Surrey, have installed a unique "Rapid-Flow" service system. It is a real while-you-wait service and a 1,000-mile service takes only six minutes to complete. The 5,000-mile service takes one hour and the capacity of the "Rapid-Flow" is 184 cars in a day.

The Austin-Healey "3000" with which Pat Moss and Ann Wisdom gave Britain a great rally victory.

Racing Personalities: Roy Salvadori

Roy Salvadori. A great driver who never gives up. Photograph by Maxwell Boyd.

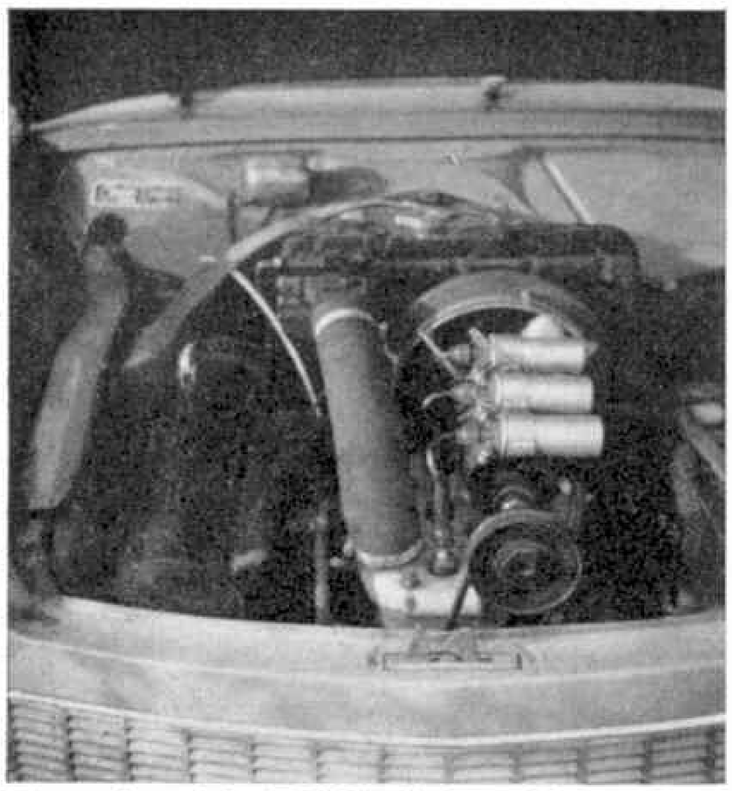
AT the ripe old age of 38, Roy Francesco Salvadori is one of the veterans of the post-war school of drivers. Since he first raced, in 1947, Salvadori has at one time or another held the outright lap record for every motor-racing circuit in this country, and is undoubtedly one of the most popular drivers with British motor-racing enthusiasts. The reason is not far to seek: "Salvo", as he is popularly known, is never happier than when fighting against heavy odds—a situation in which he has often found himself in the past when racing S. Greene's Formula 1 250F Maserati, the C. T. Atkins Cooper and the works Formula 1 Aston-Martin. On form, none of these cars should have allowed Salvadori to get to grips with the works teams from Italy and this country but, on countless occasions, he has delighted British enthusiasts by achieving the seemingly impossible and harrying the world's finest drivers in the world's best cars. And he has frequently "stayed" a gruelling race until the finish, keeping up a blistering pace that has cut fields of G.P. cars by a half and sometimes more.

It is this dogged determination in the G.P. field that has kept Roy Salvadori in the forefront of the world's racing drivers for so many years: that and his remarkable series of victories on every track in this country with works Aston-Martins sports cars and with the privately-entered Cooper belonging to his friend John Coombs.

He first drove for Aston-Martin in 1953 and, in the years that followed, won race after race for the Feltham equipe. In 1959, partnered by the jovial Texan Carrol Shelby, he gave Aston-Martin victory in the Le Mans 24-Hour Race—a victory that fulfilled the greatest ambition of Aston-Martin patron David Brown. When the Feltham cars retired from sports car racing in 1959 Salvadori signed on with John Coombs. With the astonishing Cooper-Monaco, Salvadori won ten of the twelve sports car races in which he was entered in 1960. In the two others he was second to Stirling Moss and abroad, at Le Mans, he was third, with Jimmy Clark, in the Border Reivers Aston-Martin.

Roy Salvadori, if my guess is correct, will be motor-racing for many more seasons, and for 1961—when the new 1½ litre formula will be in force—he has signed on with the Yeoman Credit team. This outfit, with Reg Parnell as Team Manager, and with adequate financial backing, should make its presence strongly felt this year, particularly with Salvadori as one of the team's drivers.

A master control panel shows the progress of each car through the maintenance pits, and there is a visible illuminated master panel, with a light for each job, linked with similar panels in the pits. As each item of the service is completed the information is signalled back to the main control by the mechanic switching off the corresponding indicator light. Both the foremen controlling operations and the owner of the vehicle can check the progress of the car on the master panel.



The engine of the D.K.W. Junior, with a separate ignition coil for each of the three cylinders.

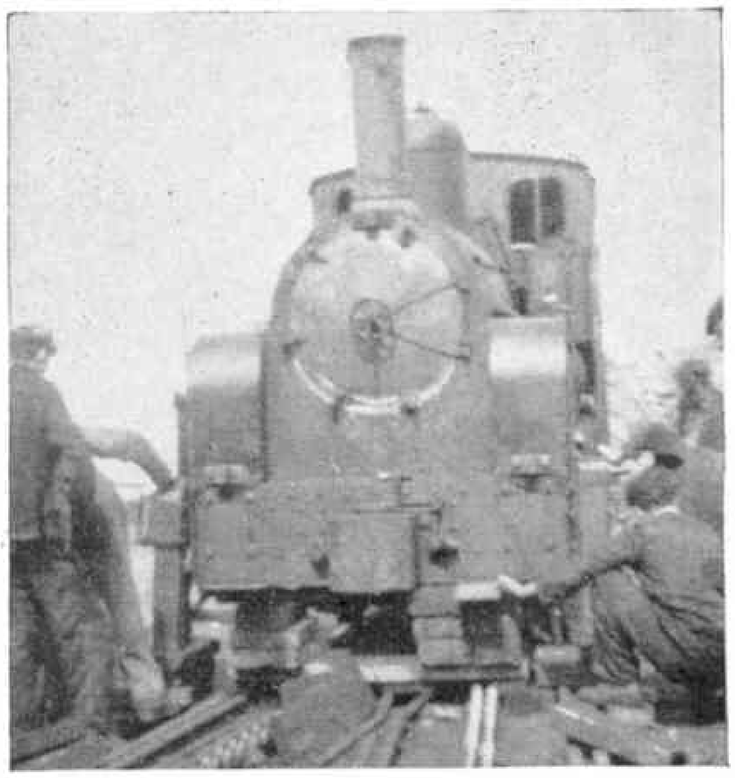
Hillman Minx—(*Continued from page 53*)

1948, a new 1265 c.c. engine in 1950, new body styles were introduced in 1953 and a new overhead-valve engine in 1954. When yet another entirely new Minx was born in 1956, Sir Reginald Rootes said the car was being sold in over 150 countries. Three years later the word "Easidrive" appeared in the Minx's list of optional equipment, denoting the first fully-automatic transmission system to be successfully applied to a volume production car of this size.

The Rootes brothers were certainly right in their recipe for mass motoring. In 29 years of Minx history engine efficiency has increased by some 40 per cent., engine capacity by 27 per cent. and peak net power output by 78 per cent. Yet fuel consumption is still in the 35–40 m.p.g. range. William Hillman was right, too. We have become a nation of light-car motorists. The Minx is his memorial.

(The Hillman Minx in the Dinky Toys series is No. 175, price 2s. 11d.)

FROM OUR READERS



OFF THE RAILS

While on holiday last year in Wales, my two brothers and I climbed Snowdon. When we reached the summit, *Padarn*, one of the locomotives of the Snowdon Mountain Railway, had been derailed on the points. We asked the engineer if this had happened before and he told us that as far as he knew it had never previously occurred in the history of the railway.

A. FISHER (Birstall, Leicester).

AN OLD WINDMILL

I came across this old, deserted windmill while on holiday in Wiltshire. It is situated on a hill overlooking the village of Wilton.

Although most of the moving parts on the outside have been dismantled, the interior still retains all the original mechanism. At the time a local farmer was using the building for storage purposes.

BARRY J. HAYNES (Christchurch).

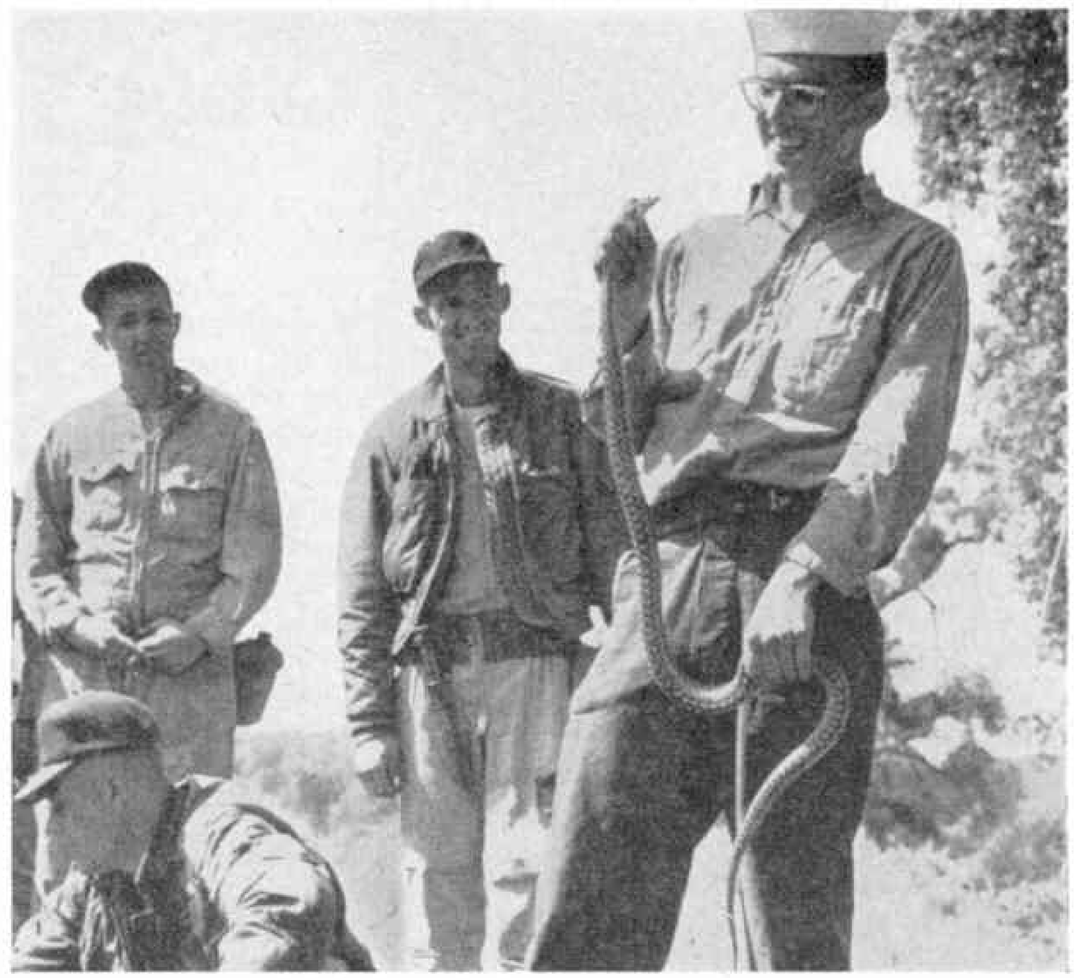
Pass the Snail Juice, Please!

A SURVIVAL COURSE MENU

SNAIL-JUICE and rattlesnake steak are not items one would expect to find on the menu at the best hotels; but they could mean the difference between life and death for a pilot who was forced to take to his parachute over a desert or jungle.

During World War II, dozens of aircrew died of thirst after crash-landing in North Africa. Yet, the deserts in that part of the world abound in large, white snails which, when crushed, provide a fluid on which a man can survive for days in great heat, without other food or water.

By
John W. R. Taylor



A snake such as that in the picture on the right is not everybody's idea of a meal, but it can provide food for a survivor.

To prove this, Flight-Lieutenant John Billingham of the R.A.F. Institute of Aviation Medicine existed solely on a daily ration of four pints of snail-juice for four days last year, in a room kept at a temperature of 118°F. At the end, he had lost eleven pounds in weight but was otherwise completely fit.

Other members of the Institute have spent long periods underwater, on moving seats in dark rooms, on whirling-arm centrifuges, in high altitude test chambers from which the air has been pumped, and in all kinds of painful and hazardous conditions, to find ways of keeping airmen alive and safe in emergencies.

We see the results of their work in the pressure-suits and air-conditioned clothing worn by R.A.F. pilots, in the ejection seats on which they sit and the rubber dinghies in which they float after a forced landing at sea. Other lessons learned at the Institute are passed on to airmen during their training at places like the Jungle Survival School of the Far East Air Force at Changi, on Singapore Island.

Toughest school in the world, it is attended by all aircrew members of the F.E.A.F. within two months of their arrival in Malaya. The course lasts two weeks and the 1,500 Servicemen who have taken it so far are unlikely to forget the experience.

First of all, pupils are given a series of lectures dealing with methods of survival after bailing out over the jungle or sea. Lesson No. 1 is that the best hope of a quick rescue is for the pilot to stay by his crashed aircraft or parachute for 48 hours, on land. There are several good reasons for this. Radar operators keep track of all aircraft flying over Malaya, so, if an aeroplane crashes, it is possible to pin-point its position within a radius of about ten miles. An aerial search is at once begun, and the wreckage of an aeroplane or a parachute is far easier to spot than a man hacking his way through the jungle.

Normally, the pilot can expect search aircraft to reach his area within about three hours, and he then starts to use his SARAH (Search And Rescue And Homing) radio beacon. This is a small, cigar-shaped device which he wears in his inflatable life-jacket. It is fitted with a foot-long aerial which sends out signals to guide the searchers towards the scene of the crash, and a microphone through which the pilot can speak to them as soon as he sights the aircraft approaching. Even if he is unconscious, SARAH does its work, sending out homing signals automatically for 24 hours.

TWO DAYS TO DECIDE

After two days, a crashed pilot must make up his mind whether he will stick by his aircraft or try to walk out. Whatever he decides, he must never change his mind later, for he will already be weaker than when he was forced down, and not an hour must be wasted.

In the old days, with only a tin of bully beef, a machete and the barest of training, a pilot's chances of getting out of the jungle would have been negligible. Today, he is taught that the jungle can be an ally instead of a killer.

He learns to recognise hundreds of plants that are safe to eat, or which are carriers of water, and the few that are poisonous. If in doubt, he can watch the monkeys eat and follow their example. Unlike men forced to bail out over a desert, he will have little difficulty in finding streams of water which can be purified with tablets carried in his survival kit.

While he is learning all this, during his first week at Changi, the F.E.A.F. airman lives on a reduced-calory diet, which gives

A Whirlwind helicopter from No. 110 R.A.F. Squadron picks up a soldier, clad in jungle green, in the Malayan jungle by means of a thick rope. This rescue method is used when a helicopter cannot use a landing zone.

Left, pupils on a survival course in Florida learn the value of the Yucca cactus. (Right) An aircrew brushing up their survival training search for grubs and worms in the dense swamplands of Georgia. They are men of the Seventh Logistical Support Squadron.

him an idea of the run-down in physical condition he will experience in the jungle. He also spends a day at sea, out of sight of land, in a tiny rubber dinghy and, as he floats around—feeling lonely, and probably wondering if there are any sharks about—he can try his hand at fishing for a meal.

If he is lucky, an aeroplane might circle overhead and drop a series of canisters containing a bigger dinghy and good supply of food; if he is luckier still, a helicopter might arrive, lower a hoist and haul him up into the cabin for a quick trip back to Changi.

By the end of the first week, therefore, the pupils taking the course are not quite so fit and strong as when they first started, because of the reduced diet, but they are much better equipped mentally to cope with the jungle. They are then given an opportunity to prove this for themselves by being sent into the jungle, for six days, with no more food or equipment than they would have after a parachute jump from a crashing aeroplane.

At first, they are split up into small groups, and spend each day hacking through the jungle before setting up a camp in which to spend the night. In some places the trees are more than 200 feet high, and there is little undergrowth. Other areas consist of dense undergrowth and mangrove swamps. The men learn that the only way to travel is by compass and the only way to measure distance by counting their paces as they walk. They discover that if they cover 1,000 yards a day (1,500 paces) they are doing well, and that it is unwise to carry on after 3 p.m. because the nights are so black that it is almost impossible to prepare a camp at a later hour than that.

Their enemies are sandflies, mosquitoes, leeches, ticks and crocodiles; but wild animals seem to give no trouble. Quite often the aircrew come across the spoor of tigers, elephants and wild pig, but the animals scurry away when they hear the noise of the men approaching, and some airmen report seeing no more than a single snake during their whole stay in the jungle.

Having pitched camp for the night, the "survivors" can settle down to their main meal. A typical menu might begin with soup made from boiled turtle legs, with the shells of the turtles used as dishes. Fish, baked in mud or steamed in leaves, might follow if the men are lucky, with a main course of hot roast rat with ferns and leaves.

INFORMALITY THE KEYNOTE

Informality is the keynote of the banquet. Bare chests and grimy denim trousers are permissible, and the use of fingers for eating is not frowned upon. What does hot roast rat taste like? According to one graduate of the course it is quite tasty.

"A bit strong, perhaps, but a lot better than starving to death," was his comment.

On the last night the pilots sleep about 100 yards away from each other but, in such conditions, the distance might as well be 100 miles. By this time their mental and physical condition is much lower than when they started, but the hardest part of all is still to come. On the last afternoon, they are dropped off on the road nine miles from Changi Camp and told to make their way along a small corridor back through supposedly enemy lines. They are given eight hours in which to do this, while ground parties search for them, the object being to elude the troops and get back to Changi undetected.

Afterwards, the mistakes made are discussed and, despite all the discomforts the men have experienced, they no longer have any doubt about the value of what they have done.

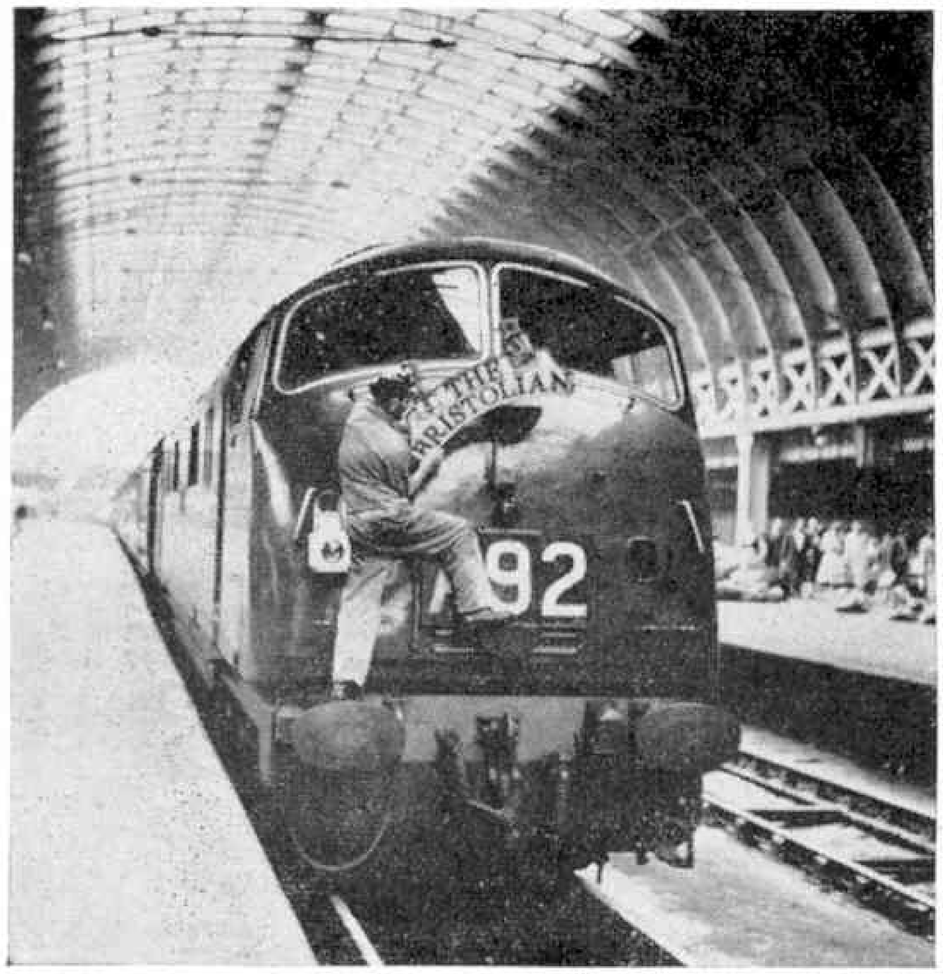
Nor is this school at Changi unique, for survival courses are run by most air forces and many airlines. SAS, for example, teach all aircrew flying on their Polar routes how to ensure safety for themselves and their passengers in the unlikely event of a forced landing in the frozen wastes of the Arctic. Even the seven American astronauts who are training to orbit the Earth in Mercury satellite capsules have been given a thorough training in what to do if they finish up in the desert instead of in the sea, as planned.

One fact taught on all courses is the value of a parachute, which can be made into a tent, an Arab-style head-dress to keep off the hot sun, or many other things.

Individual lessons vary according to where the school is situated. For example, pupils taking the U.S. Marine Corps' survival course in Florida learn that the heart of a yucca cactus is not only good to eat but can be used to trap ants which have a nut-like flavour.

They sometimes get a shock when the tough-as-nails sergeant who teaches them what to eat—and what to avoid—produces from behind his back two writhing rattlesnakes and states that these formidable reptiles are among the most tasty mobile meals they are ever likely to encounter.

As you read this, perhaps sitting in an armchair by the fire at home, you may shudder and think you would prefer to starve. But a year ago an Auster pilot crashed in Malaya and walked back to civilisation after three weeks in the jungle soon after completing the Changi survival course.



On arrival at Paddington the fireman removes the "Bristolian" headboard from the front of diesel-hydraulic No. D811 "Daring". Photograph by M. Edwards.

Railway Notes

Contributed by R. A. H. Weight

DIESEL DEVELOPMENTS

THERE is much to chronicle just now. Construction of the English Electric type 4, 1 Co–Co 1 main line diesel-electric locomotives has continued apace; more than 100 have been completed, the latest series allocated to the L.M.R. being numbered D295–310, etc. Nos. D11–14 and D76, of the more powerful type 4 "Peak" class, lately emerged from Derby and Crewe works respectively.

The numerous and widely distributed 6-wheeled diesel-electric shunting units have entered the D4000 numbering range. Production of these and other series goes ahead. The A1A–A1A Brush locomotives now coming into service on the Great Eastern Line, largely taking the accelerated Cambridge line duties, have been uprated to 1,600 h.p. type 3 and numbered D5655–70. No. D6700 will be of a fresh type 3 design of 1,750 h.p.

Diesel-hydraulic locomotives of the B–B 2,200 h.p. Warship class are also being multiplied and the latest announced names appear in a subsequent paragraph. An order has been placed with Beyer, Peacock (Hymek) Ltd. for another 50 of the 1,700 h.p. type incorporating gearboxes and oil-operated torque converters, making 95 such units to be put in hand.

In addition to numerous sets of bright and comfortable multiple-unit electric train rolling stock for suburban or shorter distance services lately introduced, some high-speed, more powerful refreshment car trains have been ordered for Liverpool Street–Clacton-on-Sea express services.

New Names for Locomotives

There is little doubt that a named engine attracts greater interest not only among enthusiasts, but among passengers and observers, than one that simply carries a number. At the time of writing new naming had been announced as follows, although in a few cases the plates had not then been fixed.

Steam: Britannia 4–6–2 No. 70049, *Solway Firth;* leaving only No. 70047 unnamed. Ex-King Arthur names on standard class 5 4–6–0s, S.R.: Nos. 73080–1, *Merlin, Excalibur;* 73087–8, *Linette, Joyous Gard;* 73111, *King Uther;* 73116–7, *Iseult, Vivien.*

Diesel-hydraulic W.R. "Warship" class: Nos. D827–9 respectively, *Kelly, Magnificent, Magpie;* D836–9, *Powerful, Ramillies, Rapid, Relentless.*

Diesel-electric type 4 L.M.R.: Nos. D211–2, *Mauretania, Aureol.*

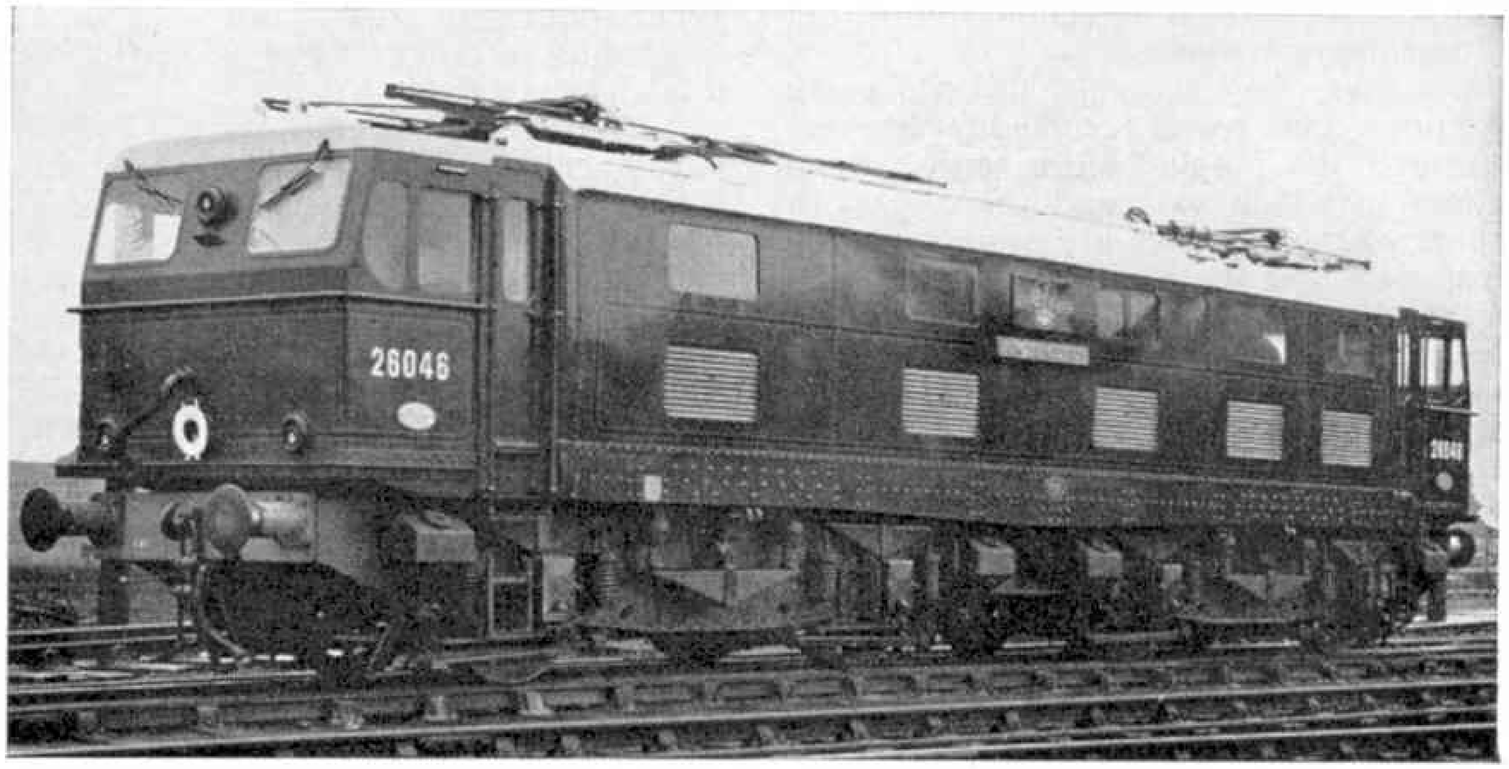
Electric, Manchester–Sheffield service: Nos. 26047, *Diomedes,* 26049–50, *Jason, Stentor;* Nos. 26052–4 respectively: *Nestor Perseus, Pluto;* No. 27003, *Diana.*

An Electric Boat Express

Electric locomotives have hauled the Continental boat trains between Newhaven and London, Victoria, for a number of years and since the summer of 1959 there has been similar handling of certain South Eastern Division London–Dover services, via Faversham, including the very heavy *Night Ferry* sleeping car express. For the first time as a regular feature, however, complete electrification of the Chatham main line produced multiple-unit electric boat trains, mainly in connection with the Dover–Ostend sailings.

On a recent occasion the 9 a.m. from Victoria (winter timings), consisted of two of the new 4-car corridor sets as used for the fast Ramsgate service, which diverges at Faversham, together with one of the powered vans capable of use as light haulage units, and of running on battery current into non-electrified sidings. The weight was about 380 tons in all.

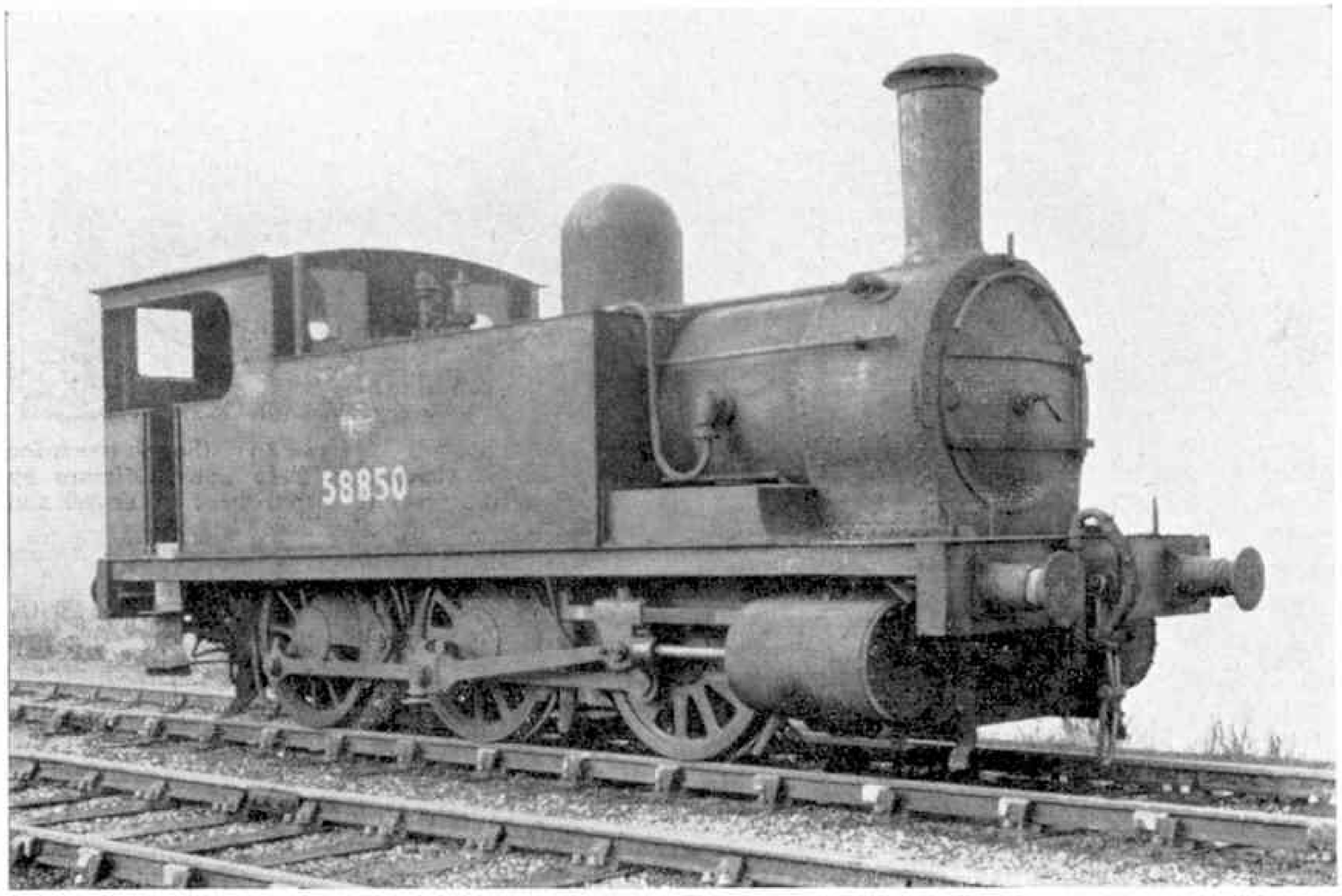
The first steep climb on that difficult



One of the Manchester-Sheffield electric locomotives, No. 26046 "Archimedes", showing the style of nameplate applied to these engines. This illustration, and that on the next page, are from B.R. London Midland Region photographs.

route in the suburbs up to Sydenham Hill and the tunnel beneath the Crystal Palace grounds was surmounted at no less than 56 m.p.h. With other typically lively uphill work and acceleration after normal or extra slowings, Chatham was passed with the usual caution in 40½ minutes and Sittingbourne, 44¾ miles in 51 minutes, punctually, without exceeding about 74 m.p.h. There was no high speed—such as I reported in the October, 1959, *M.M.* when logging, for the first time after electrification, the quickest down Ramsgate express with a slightly faster intermediate schedule—yet, on passing Canterbury East, then descending the subsequent bank gently, time was in hand. As the striking views over Dover town and castle unfolded, Priory Station and the junctions were carefully negotiated to give a 2-minute early arrival in the Marine terminal.

Overall time was not quite 1½ hours, comparing favourably with good steam performances over the less arduous Tonbridge–Ashford route. This interesting run was recorded by Mr. D. S. M. Barrie, M.B.E.



No. 58850, the last North London locomotive to remain in service. Some notes on these engines appear on this page.

Remarkable B.R. innovations

The first *Roadrailers* have been undergoing thorough trials and have been exhibited in London and elsewhere. They are trailer-type goods containers that can be of various sizes capable of being hauled on road and railway. There are retractable road and rail wheels operated in much the same manner as an aircraft undercarriage, being raised or lowered quickly by a mobile compressed air unit. The loaded vehicle can be hauled by any suitable road tractor to railhead or freight depot, then assembled into a train of similar units to run as express goods to any principal destination. There, with little delay on the final stage to consignee's premises, it reverts to the care of a road tractor. There is ingenious gear for coupling and braking.

A *Travolator* or twin-track moving pavement, described as the first in Europe and the longest in the world, has been brought into use beneath the heart of the City of London, for up and down transport of passengers to and from the Bank S.R. underground platforms. It glides up a gradient of 1 in 7 over a distance of 104 yards and saves the tiring series of steps and uphill subways hitherto traversed for many years by thousands of daily travellers using the Waterloo and City line. This S.R. electric underground line connects Waterloo terminus with the Bank stations. It is an extremely busy little self-contained section at peak periods, and is separate from the London Transport system, although quite near to it.

The *Travolator* rests on continuous-belt tracks moving on 3,904 wheels at up to 180 feet a minute, powered by two 85-h.p. motors. As there is now less platform congestion, more trains can be sandwiched in during peak hours.

Western tidings

For the first time since their introduction over 30 years ago as the pride of the Western express locomotive stock, no King 4–6–0s are shedded at Plymouth, where Laira Depot is being rebuilt to cater for diesel maintenance. There are, however, Kings stationed at Cardiff now and they have been spotted heading the *Capitals United*, *Red Dragon* and other Paddington expresses to and from that city.

Another stage in the big modernisation scheme for Plymouth was the recent introduction of colour light signalling, controlled from a master signal box at the west end of the reconstructed station, covering all movements including junctions and crossovers in either direction over a distance of four miles. There are control panels, track circuits and illuminated diagrams in accordance with latest practice at important points, and, in addition, code train describers indicating, in separate panels, the description of each approaching train. This description moves visually, in similar manner to the track circuit light indicators, as a train comes nearer and its position is reported electrically.

Ealing Broadway Station is surrounded by a vast residential district on the main line, 5¾ miles from Paddington, having London Transport Central and District terminals and offices alongside. The whole is to be rebuilt and amalgamated, with much improved accommodation, in conjunction with the renewal of the road bridge over the W.R. tracks to provide greater width.

Last North London locomotive

The North London Railway is now only a memory, for it is more than 50 years since its working was taken over by the former L.N.W.R. But its line still connects the six main routes north of the Thames and is much used for freight transfer traffic. Broad Street Station, the North London terminal, handles passenger traffic to and from Richmond, which is electrically-operated, but there are still some steam or diesel services between suburban stations on the former North Western, and Great Northern, main lines and the City.

Prior to electrification under L.N.W.R. control North London passenger services were operated with sets of close-coupled, four-wheeled coaches remarkable for the hardness of their seating and generally spartan riding. Like other railways with some doubtful passenger accommodation, the North London was well served by its hard-working locomotives, all of them tanks and for many years of only two wheel arrangements, 4–4–0T for passenger, mostly with outside cylinders, and 0–6–0T for goods. Although the 4–4–0 tanks have long since disappeared, one of the 0–6–0s dating from 1879 has only just been withdrawn from service and it was the last North London engine to survive.

The 4–4–0 tanks of both inside and outside-cylinder types owed their origin to W. Adams, a noted Victorian locomotive engineer who was associated later with the Great Eastern and the L.S.W. Railways. But the 0–6–0 tanks, although designed by J. C. Park, his successor at Bow Works, had similar characteristics, that is, distinctively-shaped cabs with the minimum of side protection, and enclosing a small coal bunker, and having unusually large rectangular look-out windows. All had massive, yet handsome, chimneys and an exceedingly shrill whistle. Boilers were small, but were pressed at 160 lb. per square inch even at the time when Crewe was still using 120 lb.

The last survivor, B.R. No. 58850, had in its time carried (*Cont. on page 71*)

● *History has many interesting tales to tell. In this article the writer describes how nations now living in peace once fought bitter battles around the shores of Niagara.*

Fortresses Of Lake Ontario

BRITAIN and America have been allies for so long it is hard to visualise the days when they were deadly enemies. But that period of history comes very much alive if you drive along the road which leads from Niagara Falls, around the north shore of Lake Ontario and along the St. Lawrence River, for strung out around the edge of the lake, and along the banks of the river, is a series of massive forts.

It cost millions of pounds to build the forts in the last century to keep Americans out — and the Canadians have spent many millions of dollars more in this century renovating and restoring them to bring the Americans back—this time as tourists!

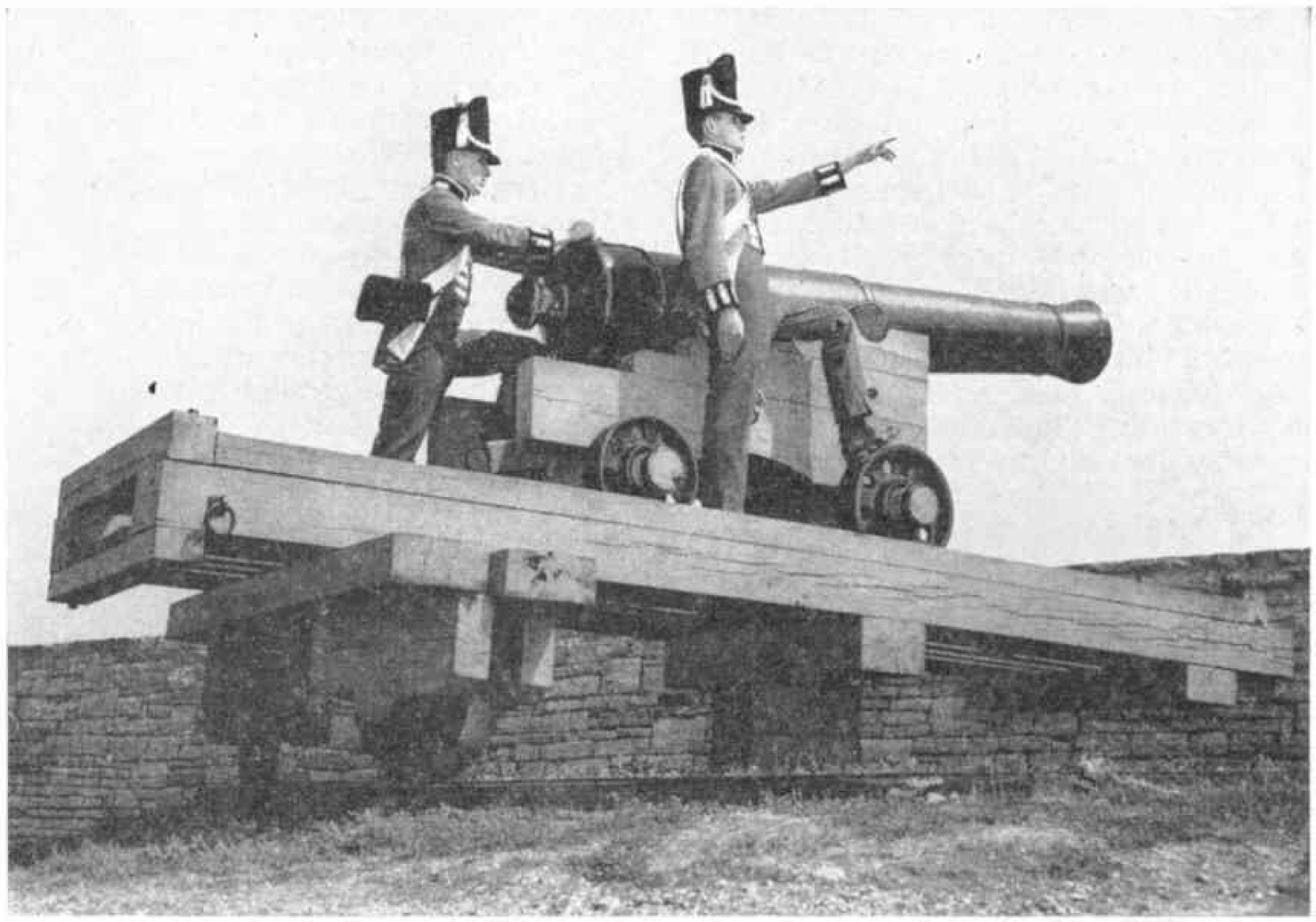
By
Harry McDougall

The Niagara River, downstream from the Falls, enters Lake Ontario and near the mouth of the river you can stand on Canadian soil and look across at Fort Niagara which is on what is now United States territory.

Fort Niagara was originally built by the French. They signed a treaty with the Seneca Indians which permitted them to build "a stone house for the purpose of storage." This storehouse, used as a trading post, was designed to resemble a French chateau so as to deceive the Indians. In fact, it was a complete fortress with massive walls and a gun deck concealed behind the windows of the topmost storey.

Force was Ambushed

Britain fought against the French in Canada in 1754. In 1759 they sent a force of 2,200 troops and 900 Iroquois Indians against Fort Niagara. A French force dispatched to relieve the fort was ambushed by the British and virtually annihilated and when the French commander learned what had happened, he surrendered the for. Two months later, the last French forces in Canada capitulated.



Uniforms of bygone days add an authentic touch for the benefit of visitors to Fort York. Picture by courtesy of the Ontario Department of Travel and Publicity, Toronto.

The British strengthened Fort Niagara by building several stone blockhouses near the original building, and each was a self-contained miniature fortress. During the American Revolution Fort Niagara was used as a British base but, in 1796, after the conclusion of that particular conflict, it was relinquished to the Americans. In place of it the British built, on what is now the Canadian side of the river, a new fortress which they called Fort George. With the outbreak of the War of 1812, the position was reversed and the Americans used Fort Niagara as a base for raids on Fort George and the towns north of the river. They occupied Newark (now a peaceful Canadian village called Niagara-on-the-Lake) and later, retreating in the face of a large British force, burned the village to the ground.

"Chateau" Still Stands

Thirsty for revenge, a force of 1,000 British troops with their Indian allies quietly crossed the river several miles upstream and, in a surprise assault, easily gained entrance to the fort (the drawbridge gate was found open) and took it at bayonet point. They then carried out reprisal raids against nearby American communities. However, they realised that Fort Niagara, being on the far bank of the river, was too difficult to hold and eventually, when peace was restored, relinquished it for the last time.

Fort Niagara has been completely restored and the flags of France and Britain now fly over it, as well as that of the United States. The original "Chateau" is still standing, as are the stone redoubts built by the British and even the drawbridge which gives the fortress the appearance of a medieval castle.

Fort George, on the Canadian side of the river, has also been restored. Today the bastions, stockade, officers' quarters, men's barracks, powder magazine and other structures can be seen much as they were nearly 150 years ago.

At the end of the War of 1812, when the inhabitants of the town of Niagara-on-the-Lake returned to their shattered homes, they decided that Fort George did not give them sufficient protection, so a more substantial fortress, called Fort Mississauga, was built. It had a central keep and was surrounded by earthworks in the form of a five-pointed star and was garrisoned until 1860, but was never attacked. Nowadays, you can still see the remains of the fort, which is entirely surrounded by a golf-course, and from its commanding position on the edge of the water you can get a wonderful view across Lake Ontario.

Fort Erie, also on the Niagara River but upstream of the Falls, has also survived to the present day. A rather primitive fort was built there as early as 1764 by a Captain Montresor of the British Army as protection from the attacks of marauding Indians. It was undermined by the waters of the lake, and after being rebuilt again suffered the same fate. Construction of the third fort was begun but was only partially completed when the War of 1812 commenced. On July 3, 1814, it was attacked and captured by American forces. They strengthened its defences and were able to repulse a strong British attack but, at the conclusion of the war, they abandoned it and it stands now just as it was at that time.

The reason why fortresses of the Niagara frontier saw so much action, and were so frequently bombarded and

attacked, is because the River Niagara is quite narrow and was easy to cross. Further along the shore of Lake Ontario there was more danger of attack by enemy fleets than by land forces, so when Lieutenant-Governor Simcoe, who did much to develop this part of Canada, moved his headquarters to what is now Toronto, but was then known as "Muddy York", he decided to protect the excellent harbour by developing the primitive defences established by his predecessors, the French. He completed the town defences by building Fort York, which is also still standing much as it was then.

In April 1813, an American fleet crossed Lake Ontario and landed a large military force near York, under the general command of Major-General Henry Dearborn. The defenders, a small British and Canadian contingent, put up a spirited resistance but the town and the fort were captured and largely destroyed. Ironically, Brigadier-General Zebulon Pike, who led the Americans in capturing the fort, was killed, along with many others of the invading force, by an explosion in the fort's powder magazine.

Visitors to Fort York, knowing its history, are always puzzled to find that instead of standing on the edge of the lake, it is about a quarter of a mile inland and is, in fact, almost obscured by a railway that passes on one side and a new modern highway that runs across a high bridge on the other. It seems a very curious place in which to have built a fort. Actually, at the time it was built it was on the edge of the lake, but when Toronto began to expand, it was decided to fill in a portion of the lake just off the coast and build a large railway marshalling yard there. Then a further area of the lake was transformed into a highway, so that the fort has not been moved inland, as it appears, but the land has moved out into the lake.

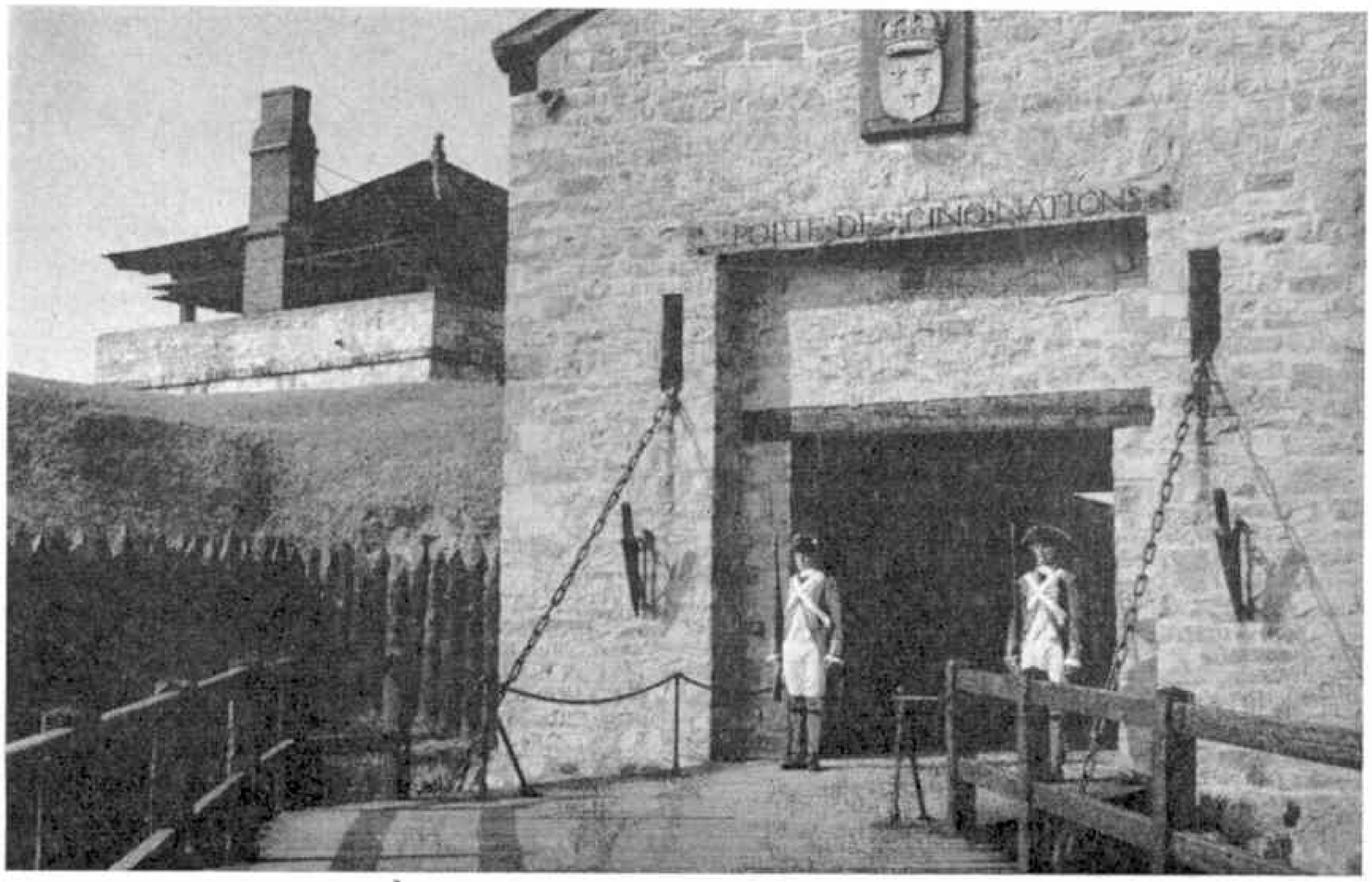
Fort York is similar in many respects to Fort Wellington, which was built while the War of 1812 was in progress. Fort Wellington stands on a hill overlooking the St. Lawrence River and was erected in an attempt to prevent the passage of American ships along the river. It is one of the best preserved of all the forts and as one walks around the grounds it is easy to recapture the atmosphere of bygone days.

Visitors walking round the ramparts of an ancient fort recapture the spirit of bygone days.

Fort Wellington was never attacked, but it served as a base for British attacks across the river against the town of Ogdensburg. The first such attack was unsuccessful but the second resulted in the capture of the town. The armament of the fort consisted of four 24-pound guns, two 18-pounders and three 12-pounders and this was put to good use in 1813 when an American fleet moved along the river heading for Montreal. Although the bombardment did not cause much damage to the fleet, it must have discouraged the attackers, for shortly afterwards the expedition was abandoned.

Of all the forts along the frontier, Fort Henry, at Kingston, is by far the most impressive, although it never saw action. Whereas the designs of most of the forts involved in actions against the Americans were based on the primitive forts built in the wilderness as protection against Indians, Fort Henry is a massive stone building. It sprawls across the crest of a promontory and is ideally situated to protect the town and harbour. It bristles with mounted cannon and is defended by glacis, ditch, caponniere, reverse fires, flanking towers and all manner of ingenious devices to make it virtually impregnable to attack either from the lake or from the landward side. It was part of a system of fortifications which included four Martello towers similar to those built on the south coast of England.

Drawbridge and gate of the Five Nations—this drawbridge at Fort Niagara was part of the defences to keep the marauding Indians at bay.



Fort Henry has been almost completely restored to its original state, even to many of the furnishings in the men's quarters and was the centre of Canadian military life for almost 80 years. Imperial troops were stationed there from 1813 until 1870 and Canadian troops from then until 1890. After that it was abandoned and fell into decay, until more recent times, when it was restored to its original state.

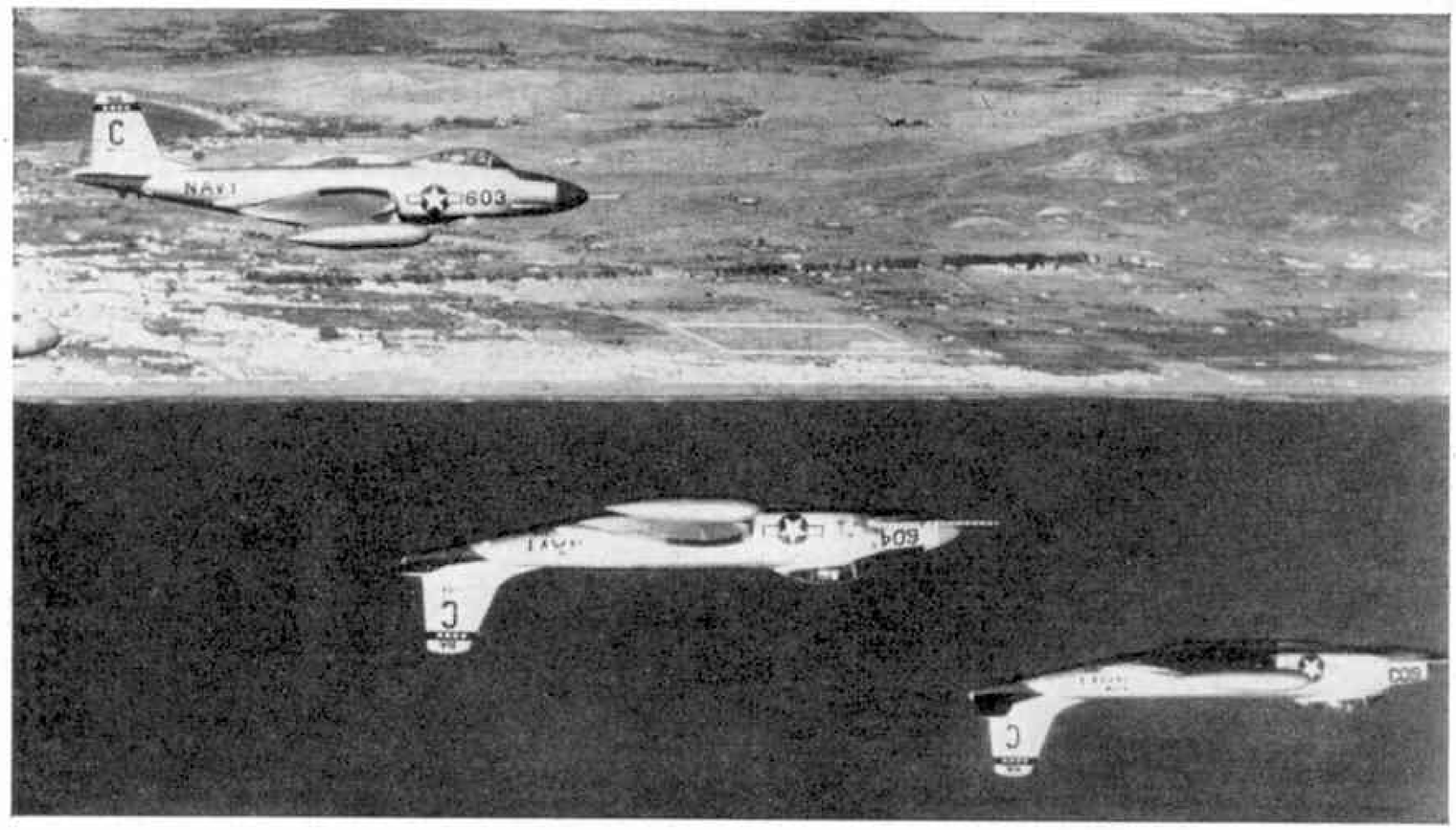
A Famous Escape

You can still see the "Gun Room", scene of a famous escape. In 1837 there was a rebellion in Canada and John Montgomery, the owner of an hotel where the rebels had gathered, was captured, tried, sentenced to death and imprisoned in Fort Henry, along with six compatriots. They soon learned that their cell had only recently been constructed and that the mortar had still not completely set. Using only a single piece of iron ten inches long, and a nail, they removed enough

(*Continued on page 71*)

AIR NEWS

Which Way Up?



WHEN I first saw the picture at the top of this page, I thought it must have been made up of two photographs wrongly stuck together. Then I tried turning it upside down. Finally, I read the caption on the back and was assured by the U.S. Navy photographic department that the pilots of the two lower McDonnell F2H Banshee fighters had simply grown tired of flying straight and level and had done a quick flip on to their backs for a while. But I wonder if someone is not trying to pull our legs.

All U.S. Navy aircraft have a number painted on their noses for easy identification from the ground, and all these numbers are different. Yet, the top and bottom aircraft are both numbered "603". What is more, the two inverted Banshees have the shadows of their tailplanes going upwards, whereas the shadow on the top one is under the tailplane, as we should expect. So, unless the sun was in two places at once when this photograph was taken, I believe all is not what it seems. What do you think?

The RF.01 single-seat lightplane, seen here in flight, is to visit England soon.

BOYS REBUILD ROCKET-PLANE

A group of aircraft apprentices at the R.A.F.'s No. 1 School of Technical Training at Halton (Bucks.) have been working one evening a week in their spare time, since last August, to rebuild a Messerschmitt Me 163 Komet rocket-powered fighter.

BY

JOHN W. R. TAYLOR

One of the most interesting aeroplanes of World War II, the Me 163 was a tiny, tail-less, swept-wing aircraft which flew for the first time in August 1941, powered by a 1,650 lb. thrust HWK R.II rocket-engine. The version flown in action against U.S.A.F. formations of Fortress day bombers took off on a pair of wheels, which it dropped shortly after becoming airborne, and landed on a retractable skid. It was armed with two 30 mm. guns and carried up to 24 R4M rockets under its wings. Its normal top speed was 596 m.p.h., which was tremendously fast in those days; but the rocket-engine used up its fuel so quickly that the little fighter had an endurance of only eight minutes. Pilots were able to stay up longer by switching off the engine and gliding for short periods, but the Me 163 was not easy to fly, and many were lost when their fuel exploded.

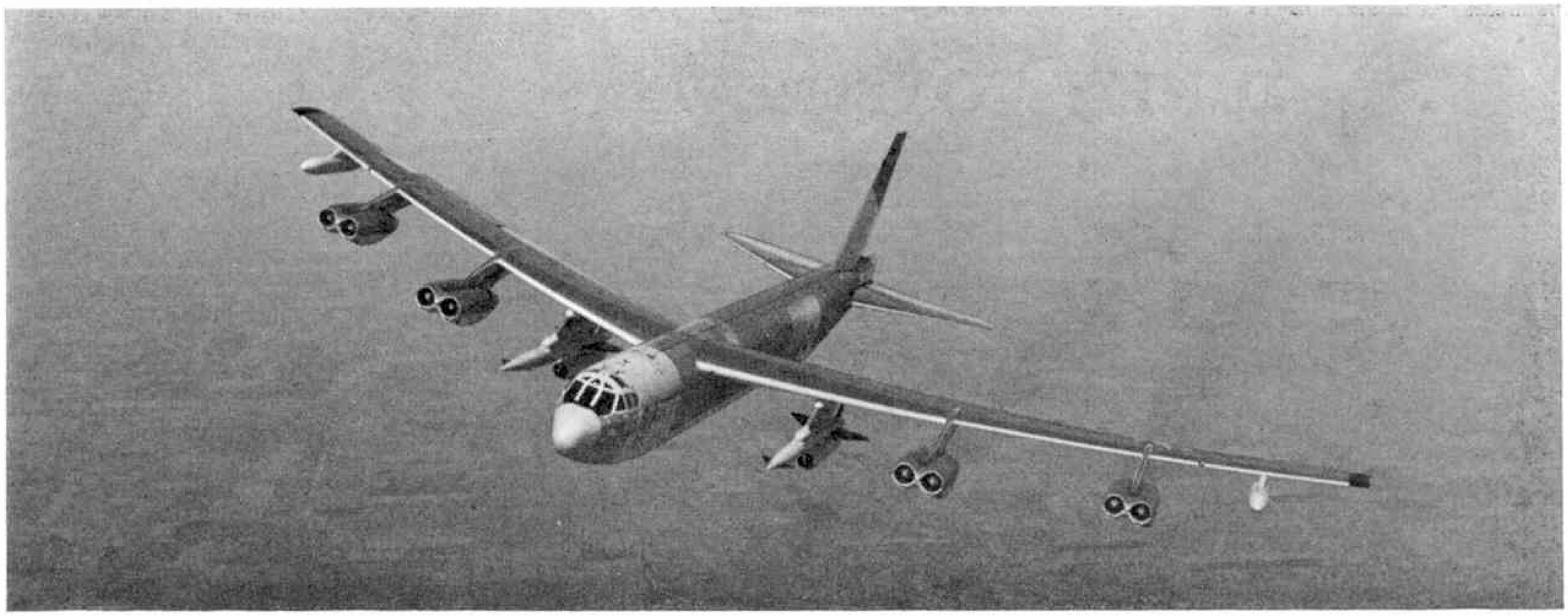
The aircraft which is being rebuilt was brought to England after the war and now belongs to the Science Museum, London. Its paintwork and skin were damaged and there were several holes in the wooden wings. But, by the time the apprentices have finished with it, in May, it will look like new, with an authentic paint scheme and all its original markings. The guns and rocket-engine have been removed and will be displayed separately in the museum.

HIGH-FLY SNAPS

Passengers on board TWA's Boeing 707 jetliners are now invited to "watch the birdie" as they cruise along in 600 m.p.h. luxury six miles above the Atlantic. Believing that many passengers would like to have a photograph of themselves to show the folks back home, the airline has provided each aircraft with a Polaroid camera which can take a picture and produce a print within two minutes. All flight hostesses and pursers have been trained in their use, and the service is so popular that it is using up some 500 reels of film each month.

HOME BUILT U-2

The Lockheed U-2 reconnaissance aircraft, one of which made headline news when it was brought down in Russia last year, has a baby brother in the shape of the RF.01 single-seat lightplane, illustrated on this page. Designed and built by a young Frenchman named René Fournier, the RF.01 has sailplane-type wings like the U-2, so that its pilot can shut off the engine and glide, to increase its endurance. It has also a similar type of undercarriage, with a retractable main wheel under the centre fuselage and underwing "balan-



Carrying a Hound Dog under each wing the B-52G can release its weapons hundreds of miles from the target.

cers", consisting in this case of heavy wire loops. The wing span is 36 ft. 9 in., and empty weight only 463 lb.

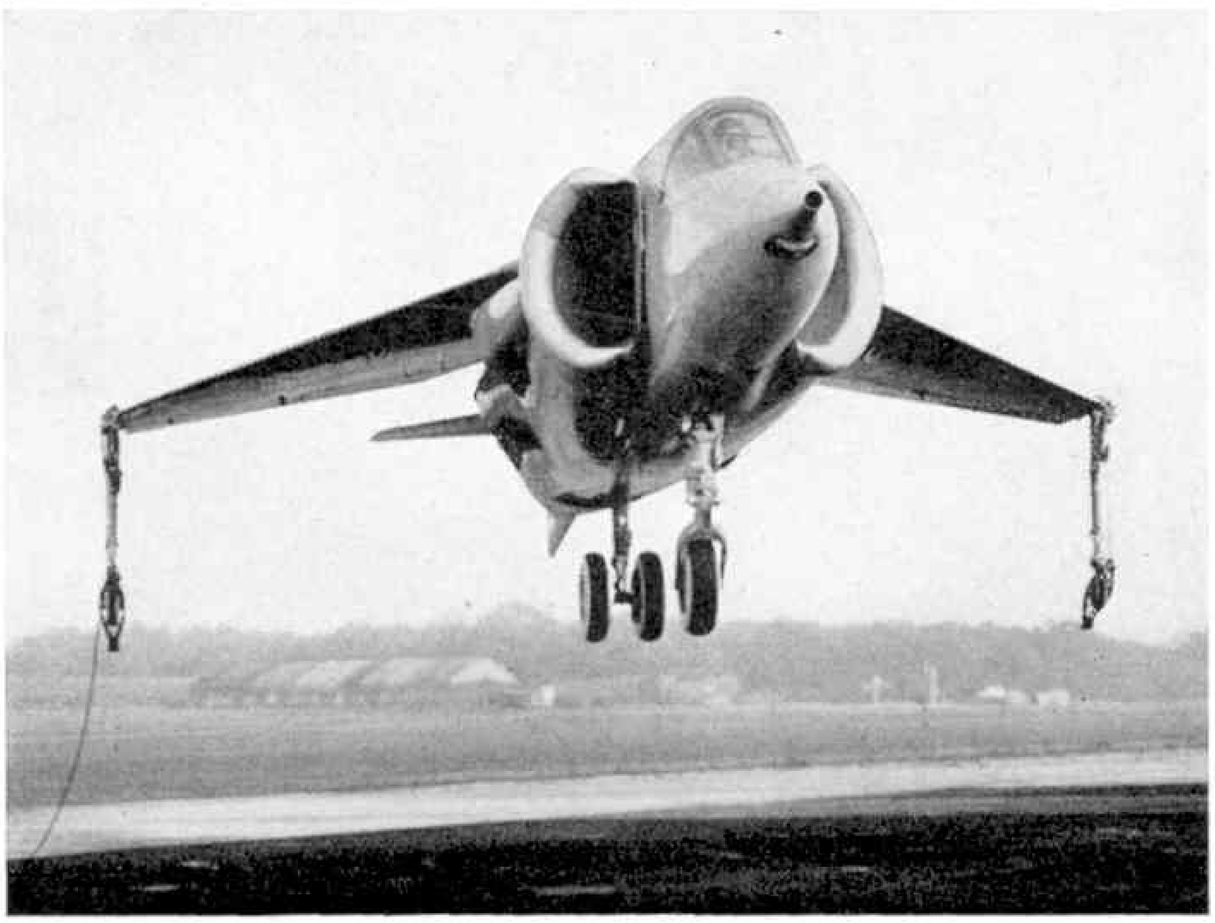
Powered by a 35 h.p. converted Volkswagen motor car engine, the RF.01 will cruise at up to 112 m.p.h., but flies normally at about 56 m.p.h. At this speed, it will travel more than 50 miles on a gallon of petrol, which is better than the average small family car. We shall have a chance to see it over here soon, because René Fournier is bringing it to England in the Spring. By then, it may be in production in France.

HAWKER'S WORLD-BEATER

Britain's leadership in VTOL (vertical take-off and landing) flight has been made even more apparent by the appearance of the Hawker P.1127 strike fighter. It is the aeroplane military leaders have dreamed of for years, combining a performance better than that of the Hunter with the ability to go anywhere a helicopter can go. And it does so with only a single engine.

Developed by Bristol Siddeley, the BS 53 ducted-fan turbojet which powers the P.1127 has four exhausts, two on each side of the fuselage. These are fitted with swivelling nozzles, and by turning the nozzles to face downward, the entire thrust of the engine can be used to raise the aircraft vertically off the ground at take-off. Once a safe height has been reached, the nozzles can be rotated gradually to give forward thrust as well as lift. When the aircraft is moving forward quickly enough for its wings to provide all the lift required, the nozzles can be turned to a horizontal position. The engine power is then used for forward propulsion in the normal way.

There is no room for wheels in the thin wings or centre-fuselage; so the P.1127 has a bicycle-type undercarriage. The nose-wheel retracts forward in front of the engine, the twin rear wheels retract behind the engine, and there are two small, wingtip balancer wheels which retract to a horizontal position in flight. All bombs, rockets and other weapons are carried under the wings, which span 24 ft. 4 in. The length of the prototype is 41 ft. 2 in., and its height is 10 ft. 3 in.



No visible means of support. This picture of the Hawker P.1127, the world's first VTOL strike aircraft, shows the aircraft making its first untethered flight at Hawker's airfield, Dunsfold, Surrey.

AUTOMATIC ROUND TRIP

Two Republic F–105 Thunderchief fighter-bombers of the U.S.A.F. recently made a round trip from Eglin Air Force Base, Florida, to George Air Force Base, California, and back, in two 1,600-mile hops under complete automatic control, except during take-off and landing.

After taking off, the pilots of the 1,400 m.p.h. fighters set the latitude and longitude of George Air Force Base on an instrument in their cockpits and switched on the Doppler radar navigator, autopilot and other secret equipment. They then simply sat back and checked that all was working properly as the F–105's cruised along a Great Circle course at 35,000 feet. They landed at George to refuel, but this could have been avoided if they had wished, as the Thunderchief can be refuelled in flight.

Altogether, F–105's had logged some 20,000 miles of "hands-off" flying by November 1960. On one mission, the pilot (Republic test pilot Carl Ardery) simulated delivery of a nuclear bomb off the Atlantic coast. The jet's various robot "brains" sought out the target, brought the aircraft in on it, simulated the bomb release and half-looped the 'plane on to its escape path to head it back home at normal altitude—all automatically.

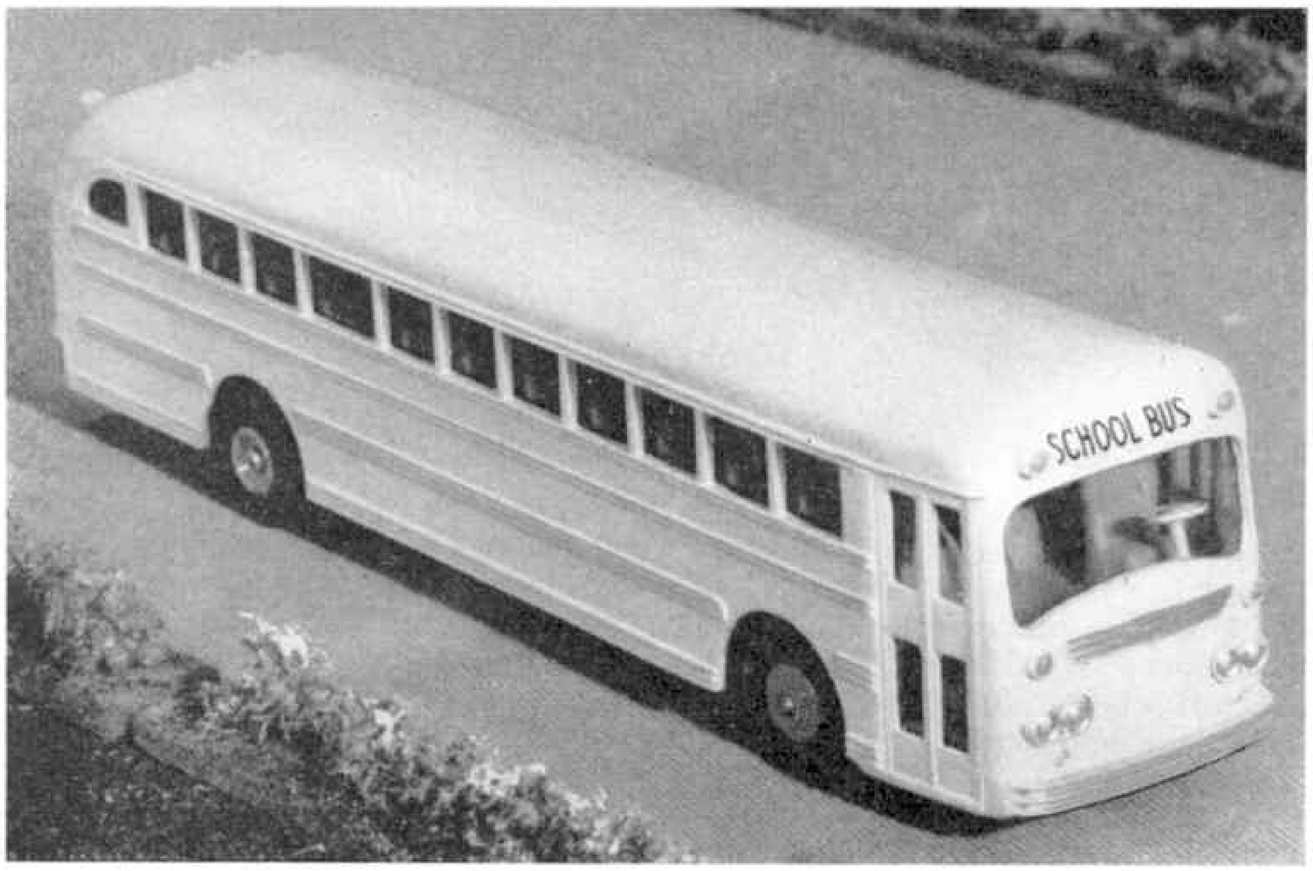
MISSILES SHORTEN TAKE-OFF

Once upon a time it looked as if guided missiles would bring to an end the use of piloted bombers; instead they are now helping to make the bombers more efficient.

By carrying air-to-ground missiles, or stand-off bombs, like the North American Hound Dog or Avro Blue Steel, the aircraft can release their weapons hundreds of miles from the target and turn for home, without having to battle past the inner defence rings of fighters, anti-aircraft missiles and guns. (*Cont. on page 71*)

DINKY TOYS NEWS

By "THE TOYMAN"



New School Bus And A Luxury Car

I WOULD like to start this month's notes by expressing thanks to all who sent Christmas cards and New Year greetings to the staff at Dinky Toys Headquarters. I am afraid I did not get the chance to acknowledge these last month, but I do want readers who sent greetings along to know that their kind thoughts are warmly reciprocated.

By now, of course, you will have got over the bustle and excitement of the Christmas holidays, but I imagine many of you are still working on new layouts to accommodate Dinky Toys which reached you as gifts, or which you bought yourselves, during the Christmas period. Quite often, the acquisition of two or three models does give a collector the chance to bring out a quite different atmosphere in his road schemes, to give his old layout a "face lift", so to speak, or to re-model it entirely.

The Snowplough about which I wrote last month is one of those models which provides ample scope for a layout of a particular nature. Another special vehicle comes into my notes this month, and I am sure it will be eagerly received by Dinky Toys enthusiasts. Named the Wayne School Bus it is one of two new models just introduced into the Dinky Toys list and you see it pictured left and (in an appropriate country setting) below. It is No. 949 in the Dinky Supertoys range and will be a welcome sight to the many collectors who have written to us, from time to time, suggesting a new bus in a scale larger than that used for our present models. The new model, although a Supertoy, is manufactured to the scale of Dinky Toys and can therefore be used in conjunction with other Dinky Toys models without looking out of place. The full official title for the actual vehicle is "Wayne Superamic Transit Coach". Manufactured by the Divco-Wayne Corporation of Richmond, Indiana, in the United States, it is becoming increasingly well-known all over that vast continent. There are a number of interesting aspects about this fine vehicle, one of the most important of which is that the engine can be installed either at the front or back of the bus. Another feature is the wide-vision windscreen with low-dip, wrap-around corners, the great advantage of which is that all the forward vision blind spots are illuminated. Yet another outstanding point is that the Wayne Transit Coach can carry up to half as many passengers again as a conventional bus of equal wheelbase.

Above Impact Line

Last, but by no means least, is the fact that the passengers ride above the line of impact from cars. As you probably know, most buses have internal posts which are anchored to the floor. In the Wayne Bus, extra strong posts by the side of each seat are securely anchored below the floor to give greater security.

Now for a description of the Dinky Supertoys model. Eight and threequarter inches in length, it has windows, seats and steering wheel, and is finished in a most

The picture above shows the clean-cut lines of the Dinky Supertoys Wayne School Bus. (Right) The new model in a sylvan setting.

attractive deep yellow gloss with the bumpers, headlights and nameplate in silver, and red fluting along the sides. There are ten simulated lights on the front of the vehicle which, working upwards from the bumper, are: two sidelights, two headlights, two spotlights, two direction indicators and two "School Bus" sign illuminators. The model is two inches wide and has six wheels, twin sets being fitted at the rear.

In the illustration at the bottom of page 52 the bus is seen travelling along a country road in America. Notice the Tudor-style house in the background which is probably owned by an American tycoon who has a whim about old-English architecture. The bus itself is depicted on its way to an airfield to collect a party of school children returning from a flight.

The other model to come into the shops this month is a further addition to the line of luxury Dinky Toys models started by the ever-popular No. 150 Rolls-Royce Silver Wraith. The new model is a miniature of the Mercedes Benz 220 SE and is No. 186 on the list. Finished in mist-blue gloss, with silver-plated radiator, bumpers and headlamps, this fine model is also equipped with directional control or "fingertip steering", as many of our enthusiasts call it. In addition, it has four-wheel suspension, windows, seats and a steering wheel fitted on the left hand side, since the actual car is a popular continental vehicle. The Dinky Toys model is three inches long and one and a half inches wide.

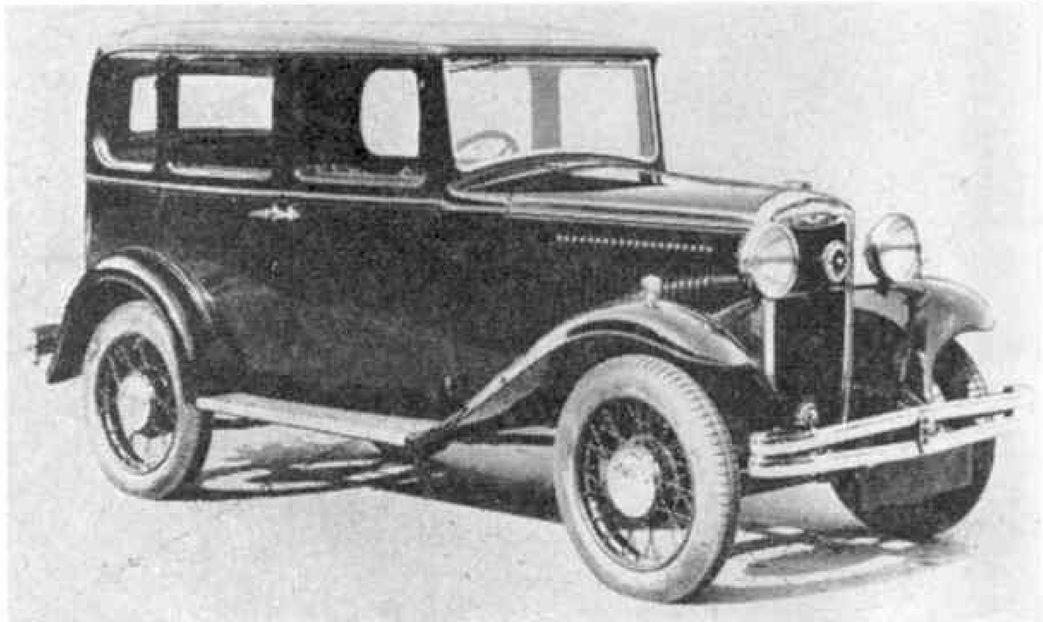
A new addition to the Dinky Toys "luxury" models —No. 186 Mercedes Benz 220 SE.

Here are some details of the actual Mercedes Benz 220 SE which I am sure will interest you. It is approximately 16 ft. long and 5 ft. 11 in. wide, with a wheelbase of 9 ft. 0¼ in. It has a maximum speed of just over 105 miles an hour and a fuel consumption of 26.4 miles per gallon when used with mechanical clutch. When the car is fitted with an automatic clutch consumption falls to an average of 25⅞ miles per gallon. The engine develops a gross horse power of 134, but the final net horse power is 120.

Now, here is the list of prizewinners in the "Spot the Mistake" contest held in the November 1960 issue of the *Meccano Magazine*. Prizes have been sent to each of the following for their good work in this Competition: B. J. Stewart, Ramelton, and S. Burrows of Belfast 4, N. Ireland; J. C. Peak, Rye; G. K. Lambourne, Sanderstead; B. Carter, Gosport; E. Belfield, Birmingham 11; M. A. Vogwell, Eastham; G. Gaskell, Newcastle-upon-Tyne 5; T. Sidford, Alberta, Canada, and I. Johnson, Darlington.

THEY WERE DIFFERENT THEN

Hillman Minx



THE history of the Hillman goes back to 1907 and begins in the small Coventry engineering works of William Hillman, a pioneer motorist. There, with the co-operation of a brilliant young French designer named Louis Coatalen, Hillman produced his first car. This was not, as you might imagine, an early attempt to produce a family Minx, but a massive 25-h.p. racing machine built to compete in the 1907 Tourist Trophy race. The car did not win, but in the hands of the masterly Coatalen —it created a new lap record of over 60 m.p.h. And what do you think is the first entry in the Hillman Company's books? The £5 entrance fee for the race paid to the R.A.C.

First In A New Series by
PATRIC BAKER

This first Hillman was an orthodox-sized car for its time, but Hillman, the man, was no orthodox thinker. He felt that a lot of power was being wasted in big-engined cars and that the real future of the British industry lay in light family cars. In 1909 he began to prove his theory by turning out a Laundaulette with a 12.15 h.p. engine and, three years later, a successful 9 h.p. model. After the first world war Hillmans reverted to larger size and it was not until 1928, when the Rootes brothers took over the company, that serious thought was again given to William Hillman's ideal.

The evolution of the first Minx was approached with typical Rootes efficiency. Four of the burliest employees at the Hillman works were sent to the styling studios to act as muscular mannequins and the dimensions of the new body were, quite literally, planned around them. They even wore tropical topees to ensure that enough head-room was allowed for all markets. William Rootes—Now Lord Rootes—was determined that the car should be suitable for use anywhere in the world. With driver George Vallet he covered many thousands of prototype miles in Europe, North Africa and the Near East. When the car was finally put on to the market in 1931, it had been tested, virtually to destruction, in every possible way.

The first Minx was not only the cheapest 10 h.p., four-door British car—it sold for £155—but also the most spacious. It had a maximum speed of about 60 m.p.h. and a petrol consumption of 35-40 m.p.g. It was a success from the start and within five years the production rate had risen to more than 52,000 cars a year. In 1934 a semi-sports version of the car, the Aero-Minx, was produced. Next development, in 1936, was the Minx Magnificent, with new streamlined bodywork and a box girder chassis frame. A further variation on the Minx theme was introduced in 1940 when a then revolutionary type of body structure —unit construction— was adopted, giving greater strength with less weight. This system is now used for most of the world's small cars.

The first new post-war model appeared in 1947 with a restyled body and 1184 c.c. side-valve engine. This was the first British light car to have steering-column gear-change. Subsequently, improvements to the Minx have been many. Independent suspension was fitted in

(Continued on page 43)

NOW FOR THE SHUNTING DIESEL

THIS month, I want to tell you a little more about the Hornby-Dublo 0–6–0 Diesel-Electric Shunting Locomotive to which I referred in the December *M.M.* This is one of the two new diesel types introduced into the range during the current season, the other being the large Co–Co main-line Diesel-Electric Locomotive of which full details were given last month.

HORNBY RAILWAY COMPANY

By the Secretary

It is obvious from your letters that already very good use has been made of the shunting engine on many layouts. This is in keeping with the situation in real practice for the B.R. Standard diesel shunters on which the Hornby-Dublo reproduction is based are extremely numerous and hard-working. They can operate continuously for long periods and at the time of writing their serial numbers have, in fact, passed into the D 4000 range, as noted elsewhere in this issue. So, as might be expected, these useful locomotives are to be found on yard shunting duties here, there and everywhere on the British Railways system.

There is scarcely any need to tell you that the locomotive which is the subject of our talk is fitted with the peak-performance Ring Field Motor. In operation, the degree of control afforded by this motor, especially on pulse-power, gives remarkable realism as it allows yard shunting work to be carried out in an effective manner at the appropriate speeds. There is a special fascination about this engine when in motion on such work. The slowly-revolving outside cranks and coupling rods, the latter finished in red as are the real ones, provide practically the only evidence of movement, there being no other apparent "works" owing to the generally closed-in appearance of this type of diesel locomotive.

I want to draw your attention to the need for carrying out correctly the maintenance requirements of this and other locomotives fitted with the Ring Field Motor. Not that a great deal of attention is required, as high-degree performance over long periods is one of the features of this type of motor and many of you will already have found this out, to your complete satisfaction. But, even if you are an experienced Hornby-Dublo Locomotive owner or operator, *do* make sure that you read carefully the instruction booklet that is packed with your engine.

The Ring Field Motor embodies features of design that distinguish it from the other motors used in Hornby-Dublo Locomotives and it is important to do exactly what the instruction booklet says when attending to cleaning and maintenance. The enclosed nature of the motor and its precision design and assembly ensure that it will not readily get out of order. The maintenance "drill" is simple and straightforward, but it must be carried out in the right manner.

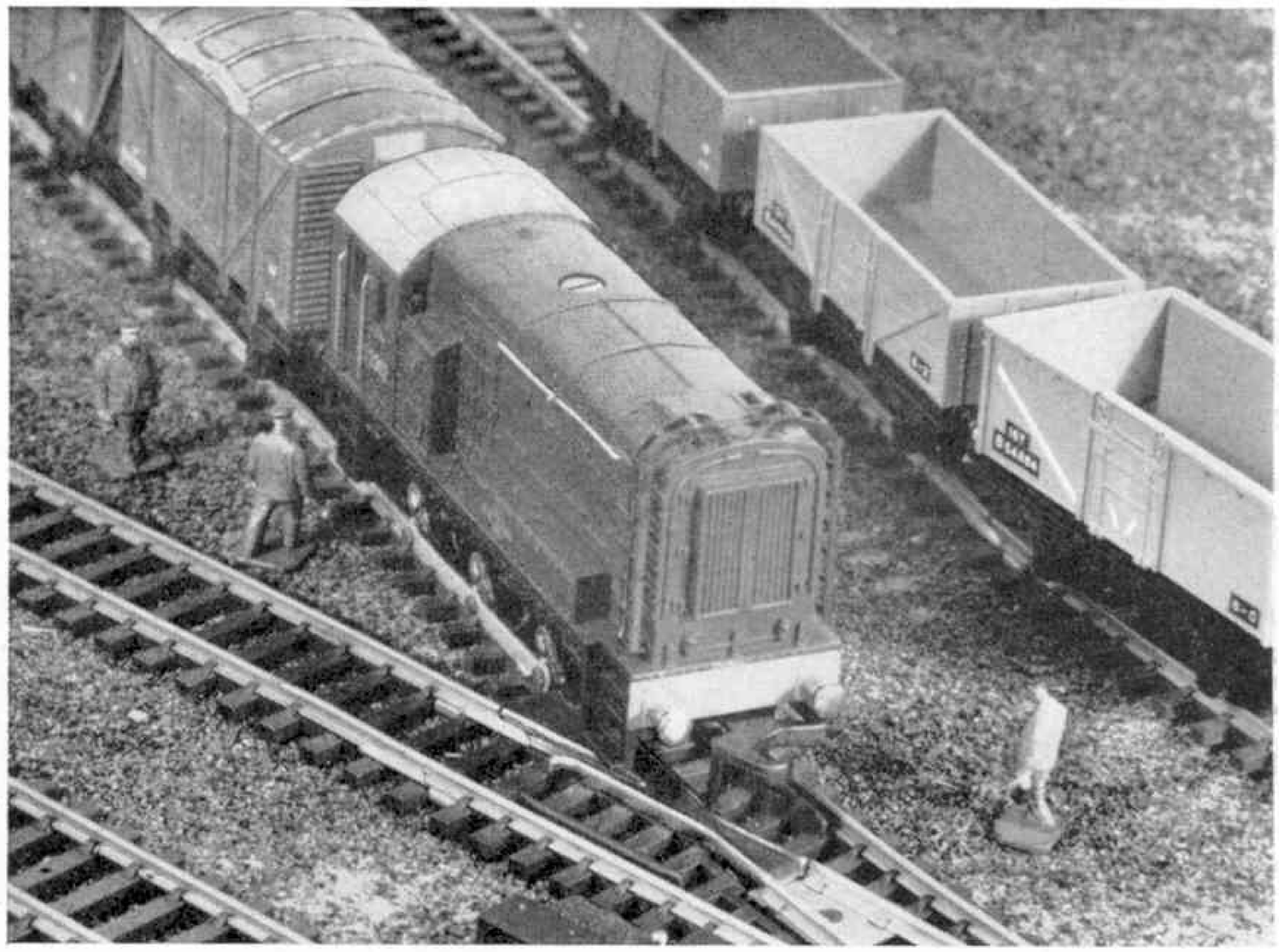
* * * *

The clean and compact nature of the motor assembly and of the underframe generally of the 0–6–0 Diesel Shunting Locomotive cannot fail to impress you. There is adequate adhesion weight, which is important in a shunting locomotive. This, and the fact that the wheels are coupled, means there is no need for rubber tyres to be fitted to any of the wheels of this particular Hornby-Dublo Diesel.

So much for the working parts and movement of the engine; what about the exterior? The "top", or more correctly the housing, of this Locomotive is, from front to rear, a remarkably well-detailed moulding. Unlike the larger Co–Co type,

Diesel and steam power in Hornby-Dublo are represented in the illustration at the head of this page. The Hornby-Dublo Diesel-Electric Shunting Locomotive is on yard duties, while the 0–6–2 Tank is bringing in a train for re-marshalling.

Here the Hornby-Dublo 0-6-0 Diesel-Electric Shunting Locomotive is moving out of a siding with a "rake" of Vans while busy in the shunting yard.



which has a driving cab at each end, there *is* a front and rear to this type of Diesel. As confusion sometimes can arise among enthusiasts as to which end is which, I must tell you right away that the cab end is regarded as the rear, as in steam locomotive practice, and this applies as well to the Bo–Bo Diesel which is already well established in the Hornby-Dublo System.

At the front of the engine the radiator shutters and surround are effectively modelled in relief as well as the electric headlights and other small details. An attractive feature on this end of the engine is the reproduction of the ladders on each side that give access to the top of the locomotive for servicing, and so on. On the sides of the radiator section are the slots that are characteristic of the real thing. They are there, although the rungs of the ladders tend to hide them.

* * * *

What are, in effect, the side panels of the "bonnet" or structure between the radiator end and the front spectacle plate of the cab—in which, incidentally, the front look-out windows are correctly modelled—consist on the real engine almost entirely of doors for inspection and maintenance purposes. The modelling of these and the typical setting of their hinges is most effective, as is the reproduction of the special doors giving access to the generator compartment.

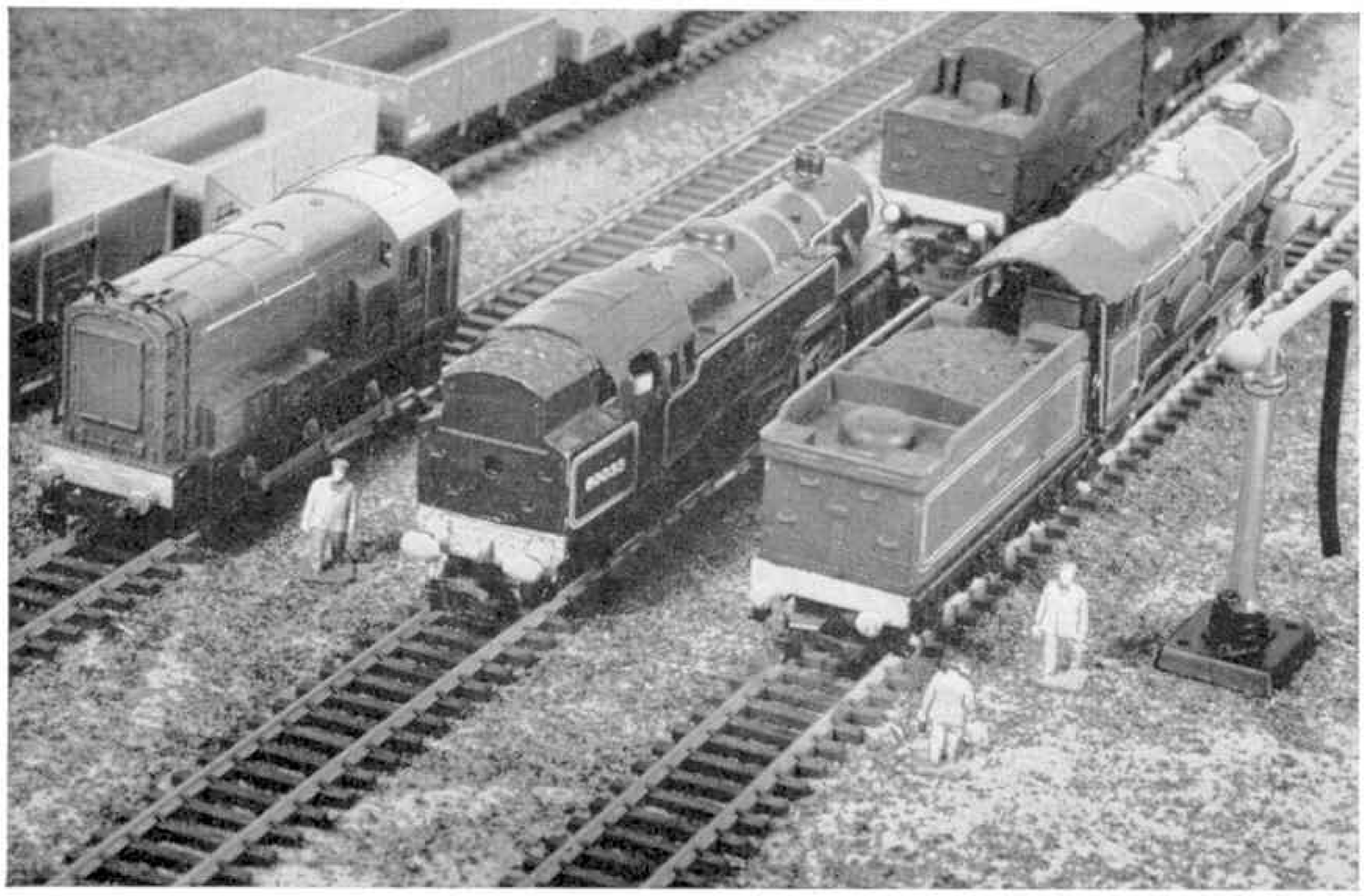
"On top" detail shows how the various sections of the locomotive as a whole are divided. At the front is the radiator section, followed by the exhaust trunk —one can scarcely call it a chimney—that leads from the 350 or 400 h.p. diesel engine located under the next two sections, which are divided lengthways by the top centre line of the bonnet. Then follows the generator compartment, readily identified by its side doors with air intakes. Finally comes the fuel compartment, which stretches right across the diesels of this type like a large bulkhead.

The tanks project outward from the bonnet below the cab front look-out windows and, in our model, these projections carry reproductions of the manhole covers on each side of the engine, while on the right side only is a minute representation of the clock-like fuel gauge. These locomotives carry sufficient fuel for 10–15 days' working. In addition to these tank projections there are other "boxes" on the footplating, such as are used to house the batteries necessary for starting purposes, and other auxiliary equipment. The handrails provided for the use of those working round the engine also are modelled.

Below the footplate level the special steps fitted at the front end for the convenience of shunters are well reproduced, as also are those by means of which the driver mounts to his cab. Another below-footplate feature is the outside framing which comes between the driving wheels and the outside cranks. On these the axleboxes and springs, spring hangers and brackets and other items appear in a convincing manner.

The cab sides are effectively detailed with door and window openings, and vertical handrails. The cab rear spectacle plate, with its large rectangular windows, carries representations of the lamp irons, and of the electric headlamps and associated conduit tubing that are found on the real thing. All told, the complete engine looks most effective in B.R. Standard green, with correct diesel-style numbering and the B.R. emblem.

This scene in the engine siding on a Two-Rail layout gives an impressive view of a selection of Hornby-Dublo motive power.

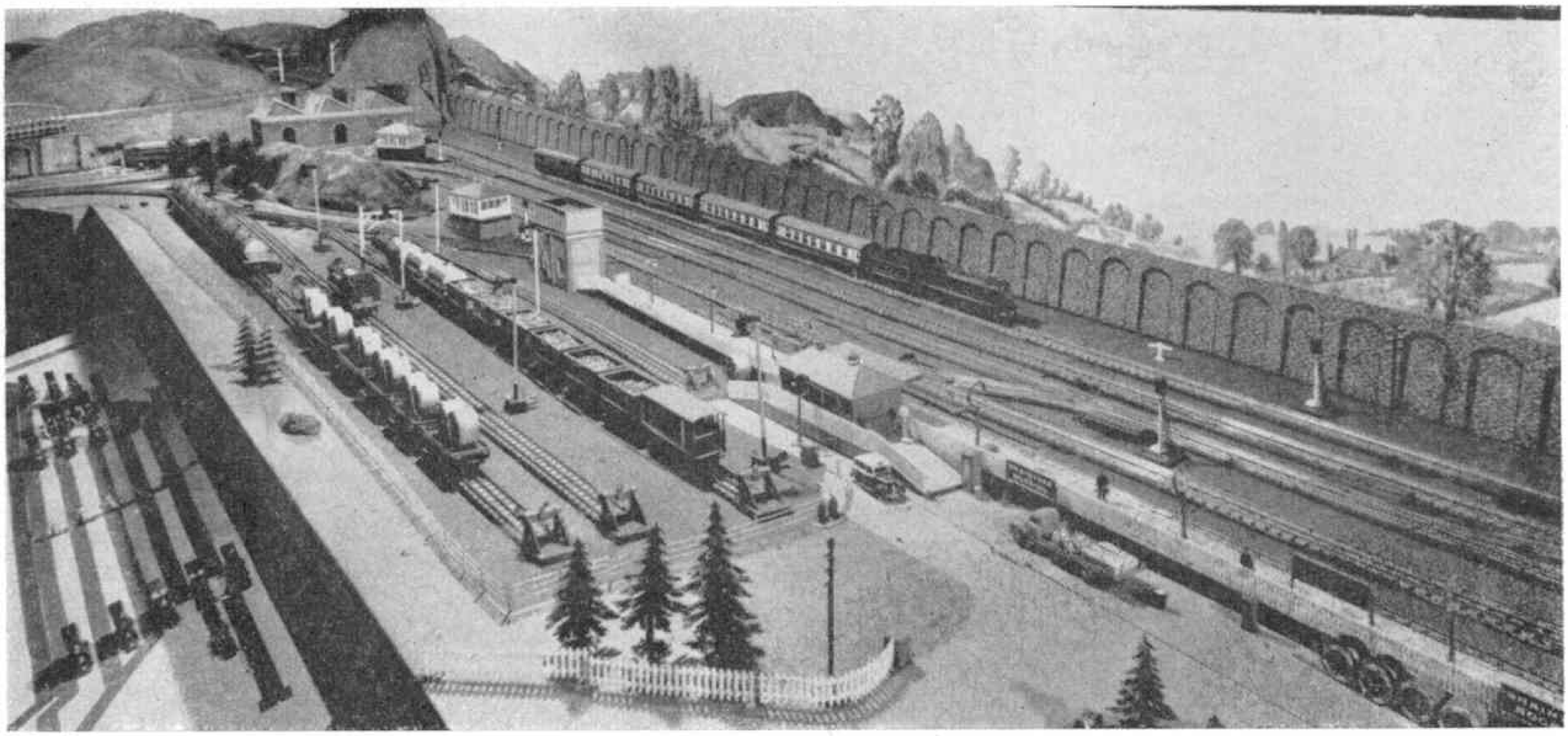


A Station Scene—(*Continued from page 59*)

This means that a fresh engine for the outward journey waits to back on to a train that has arrived. When this train has again departed, its original engine makes its way to a conveniently-placed siding and, in its turn, waits to repeat the performance with the next train in.

LAYOUT MAN WRITES ABOUT

A 60 ft. TWO-LEVEL RAILWAY



A fine stretch of track on the Hornby-Dublo Three-Rail layout referred to in these notes.

I AM taking the rather unusual course this month of describing a Hornby-Dublo layout which no longer exists in the form shown. Owing to removal, its owner R. J. B. Carruthers, of Caversham, has had to pack it away, but the photographs and notes that he submitted were of such interest that I felt it was a pity not to let our readers see them, for they describe a wonderful display.

Baseboard Construction

The layout began, as many do, with a single locomotive and a small track, but this was extended readily as opportunities presented themselves. It was not possible at the time to install a permanent system, because of Mr. Carruthers' successive moves from one part of the country to another. But these changes of site meant that various layouts were experimented with until finally, just over five years ago, a more permanent home was afforded in the large roof space above a bungalow.

Here, after the final plan had been settled, the first operation to be carried out was the preparation and erection of suitable staging and baseboard. The essential work of construction and of ensuring a sound, level foundation took a considerable time; but it was time well spent, as always. This was proved by the easy and trouble-free running of the trains that became the rule once the rails had been mounted on the baseboard and had settled down in position.

There were in all five main running tracks, each with its own power supply and control arrangements. There were connections between certain of the tracks for through running and indeed the system was planned in order to provide for continuous operation. The layout was arranged on two levels blended together by hilly country in order to appear part of the same system, although having no actual mechanical or electrical connection between the upper and lower tracks.

One of the main ideas in planning was to afford the greatest possible interest for those watching train operation in progress, and this was achieved by attention to one or two important points. In the first place a requirement was that the trains should not be in view of the spectators during the whole period of their travel, but should be concealed by means of scenic arrangements of various kinds. In actual fact about one-third of the total running "mileage" was hidden or covered over in this way.

Independent Operation

Secondly, it was the intention to have several locomotives in operation at the same time under independent control, each locomotive or train appearing to be part and parcel of a comprehensive system with no visible "ends". In addition to this, variation was attained by the use of two or more trains alternately on each main circuit, a concealed loop line with electrical isolating arrangements being provided to accommodate the train not in use. The result certainly intrigued visitors to the layout and helped to further the illusion of size of the system as a whole.

Remote Control

In the arrangement of the sections of line that were concealed, or under cover, due regard was paid to the necessity of cleaning and maintenance from time to time. Therefore, all such stretches of track were made readily accessible, so that derailments, or suspension of services caused by the failure of a locomotive in a concealed section of track, were things that simply did not happen. Such incidents are most annoying to an operator and certainly do not add to the enjoyment of those who go to see such a railway in operation.

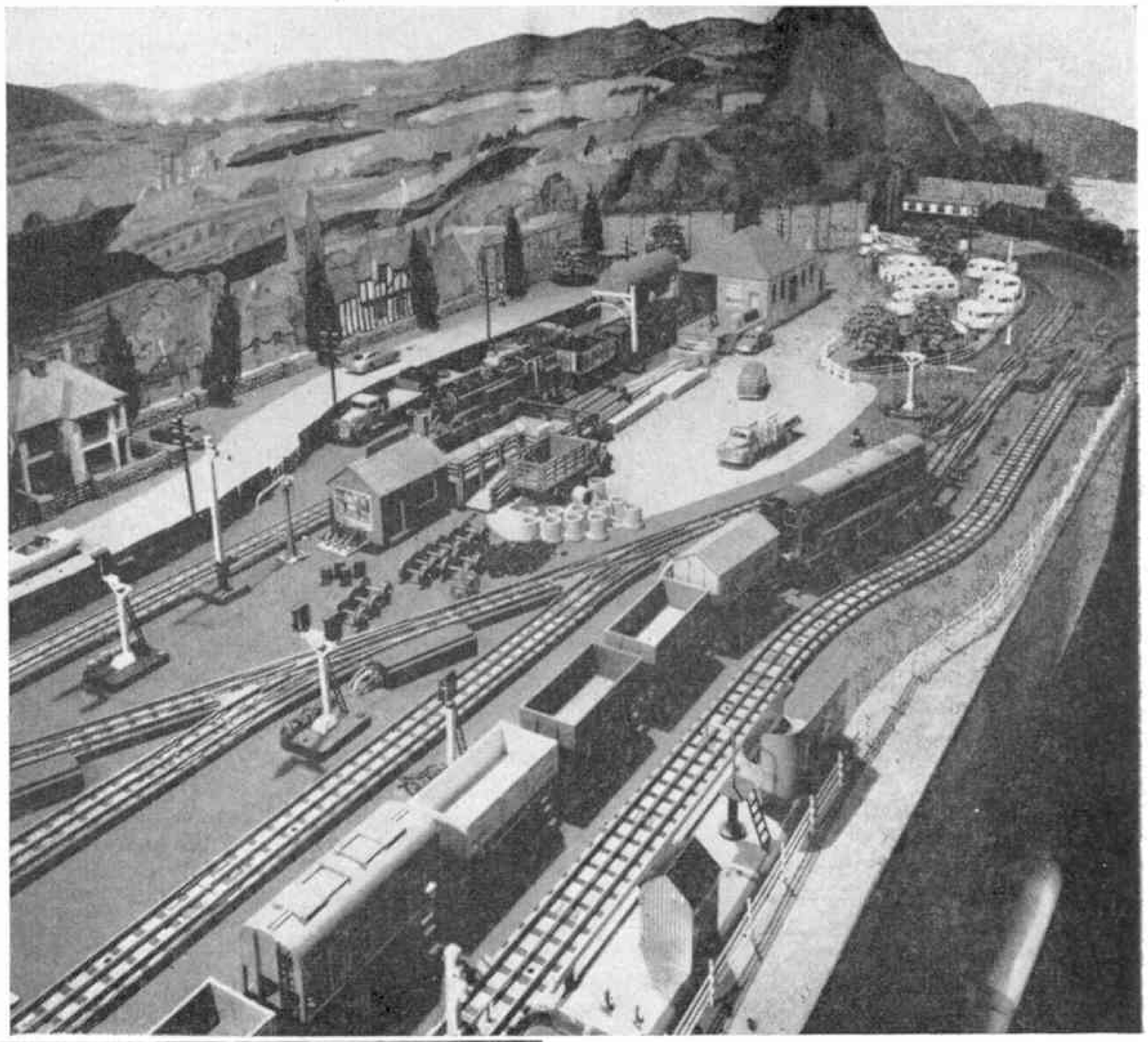
In view of the extent of the system, it was thought wise to provide supplementary track feeding points here and there, so that ample current supply throughout the track system was ensured. The care taken in such details as these was amply rewarded by the ease of control and running throughout. As far as possible all operations were controlled remotely. The use of push-button Switches, Isolating Rails and Insulating Tabs, made it unnecessary for the operator to touch the trains at all in the course of a running programme.

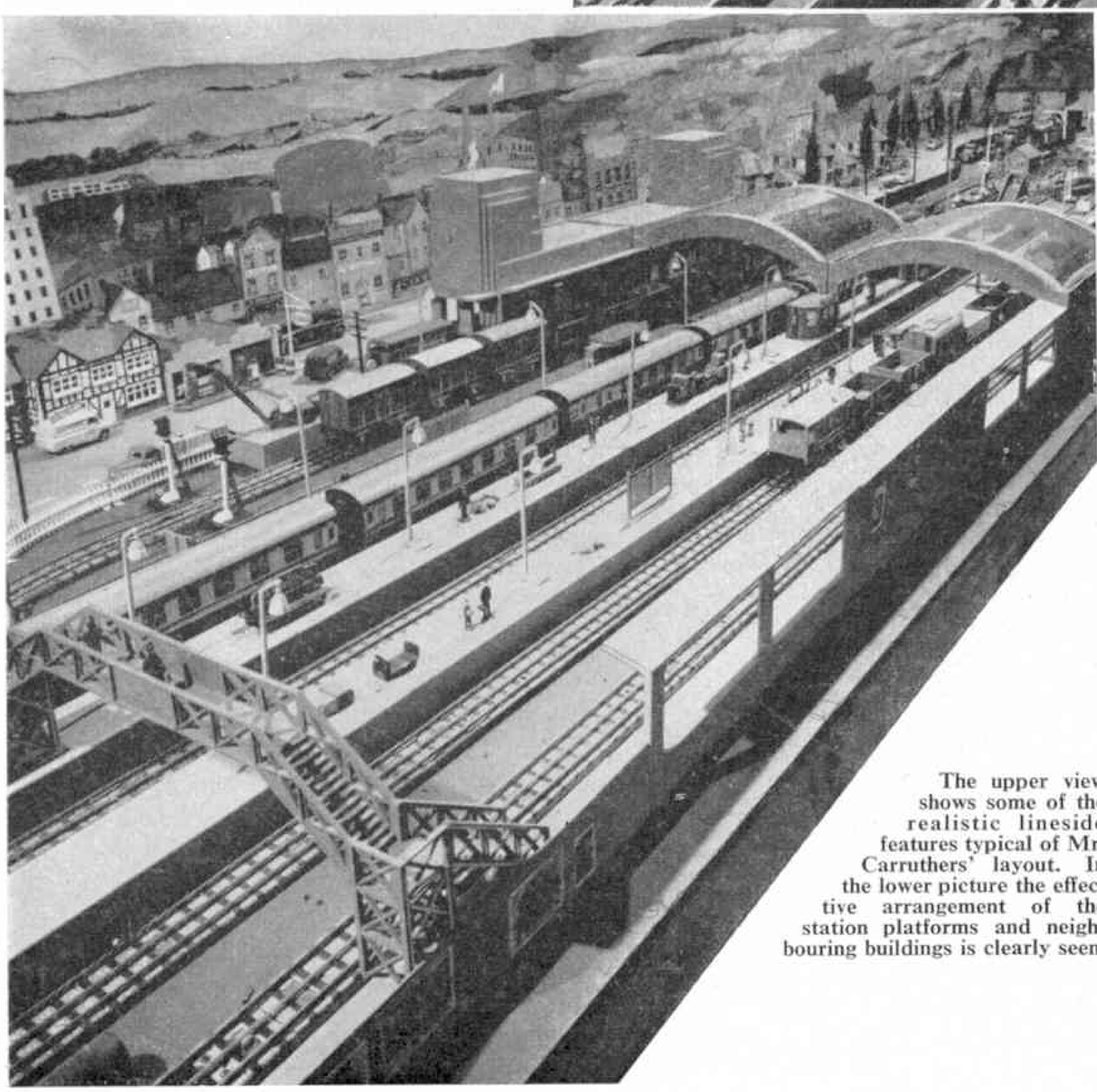
Signals were almost entirely of the Hornby-Dublo Colour Light variety, although there were a few of the semaphore type here and there. All the Colour Lights were worked from switches on the control panel, but some of the semaphore Signals appear to have been hand-operated —at least, those in subsidiary positions. Naturally, the job of wiring the layout involved a considerable amount of work and wire. In fact, the owner reports that more than 4,000 feet of wire was required to provide the main track and section feeds, and to cover Electrically-Operated Signals, Points, Colour Lights and so on.

Circuit Indicators

A refinement was the provision of a series of tell-tale lights on the control panel indicating the particular section in use at any given time. This was found most useful in operation in view of the concealed nature of much of the track. Switches and lamps for various purposes were mounted "geographically", as it were, on a panel on which the actual track formation was represented. Part of this mimic diagram can be seen in the picture on the opposite page.

A point to note regarding the general character of train operation was that on no part of the layout where the trains were visible were they allowed to work in the wrong direction on any particular line. Therefore, the effect of completely realistic working was achieved, although on the concealed sections of the layout operating considerations sometimes called for "wrong line" movements.





The upper view shows some of the realistic lineside features typical of Mr. Carruthers' layout. In the lower picture the effective arrangement of the station platforms and neighbouring buildings is clearly seen.

The average length of the main line trains can be gauged from the Castle-hauled formation in the illustration at the head of these notes. Since track conditions and levels were good, even heavier trains could be taken, but the use of such longer formations was found to detract from the air of spaciousness given by the layout as a whole. Further, particularly long trains, when standing-by, occupied a considerable amount of loop line space. When actually operating they seemed to re-appear a little too soon from their temporary concealment on the covered stretches of line. "Frequent trains to all parts" is a well-known announcement, but if applied too literally in miniature it can sometimes be too much of a good thing.

Silent Running

To form the trains there were some 45 coaches and about 90 assorted goods vehicles, together with a Breakdown Crane and a T.P.O. The lineside apparatus for the latter is prominent in the foreground in the upper picture on this page. It is interesting to know that all the rolling stock in use had nylon wheels and it was found that this so reduced the noise of train running, even with five trains in use at one time, that no special sound-proofing measures were necessary under the track, even though the (*Continued on page 71*)

Club and Branch News

A Word About Merit Medallions

THIS is the month when I have the pleasure of publishing details of the Meccano Guild Merit Medallions awarded during the past twelve months. The names of members nominated by their respective Leaders to receive this official recognition of good work for their Club, and for the Guild, during that period are:

CONSETT AND DISTRICT Y.M.C.A. M.C. —Craig, C.; White, M.; Wilson, W.

MAYLANDS (WESTERN AUSTRALIA) M.C. —Carter, C.; Christensen, R.; Head, R.; Ingram, I.; James, R.; Montague, E.; Porteous, R.; Sheppard, R.

NORTH END (PORTSMOUTH) M.C.— Watson, D.; Williams, P.

This year's list is not as long as I would have liked it to be, and I feel there is scope for greater use to be made of this attractive award.

I want all Leaders to make the best possible use of this premier award of the Meccano Guild.

For the benefit of new Clubs I will mention again that every Club is entitled to two Merit Medallions each Session, and that they are awarded as an official acknowledgment of good service rendered by the members on behalf of the Guild and the Club. By service, I mean such things as putting forward constructive items for improving the Club programme, successful recruiting of new members, initiative in welcoming new members and helping them to feel "at home" in the Club room, and so on.

Thus Medallion awards are quite distinct from prizes awarded by Clubs themselves in respect of particular model-building or other achievements.

Meccano Club Recently Affiliated

30TH (BRISTOL) LIFE BOY TEAM M.C.— *Leader:* Mr. Graham H. Horlick, 44 Hartgill Close, Bristol 3.

Proposed Hornby Railway Company Branch

In the November 1960 *M.M.* I referred to plans for forming a Meccano Club in Cornwall. Now comes news of efforts to form a Branch of the Hornby Railway Company there. The organiser of the proposed Branch is Mr. A. R. Newport, "Asni", Lane Reddin Terrace, Newlyn, Penzance. Readers living in or near this locality who are interested should get in touch with Mr. Newport, enclosing a stamped addressed envelope for reply.

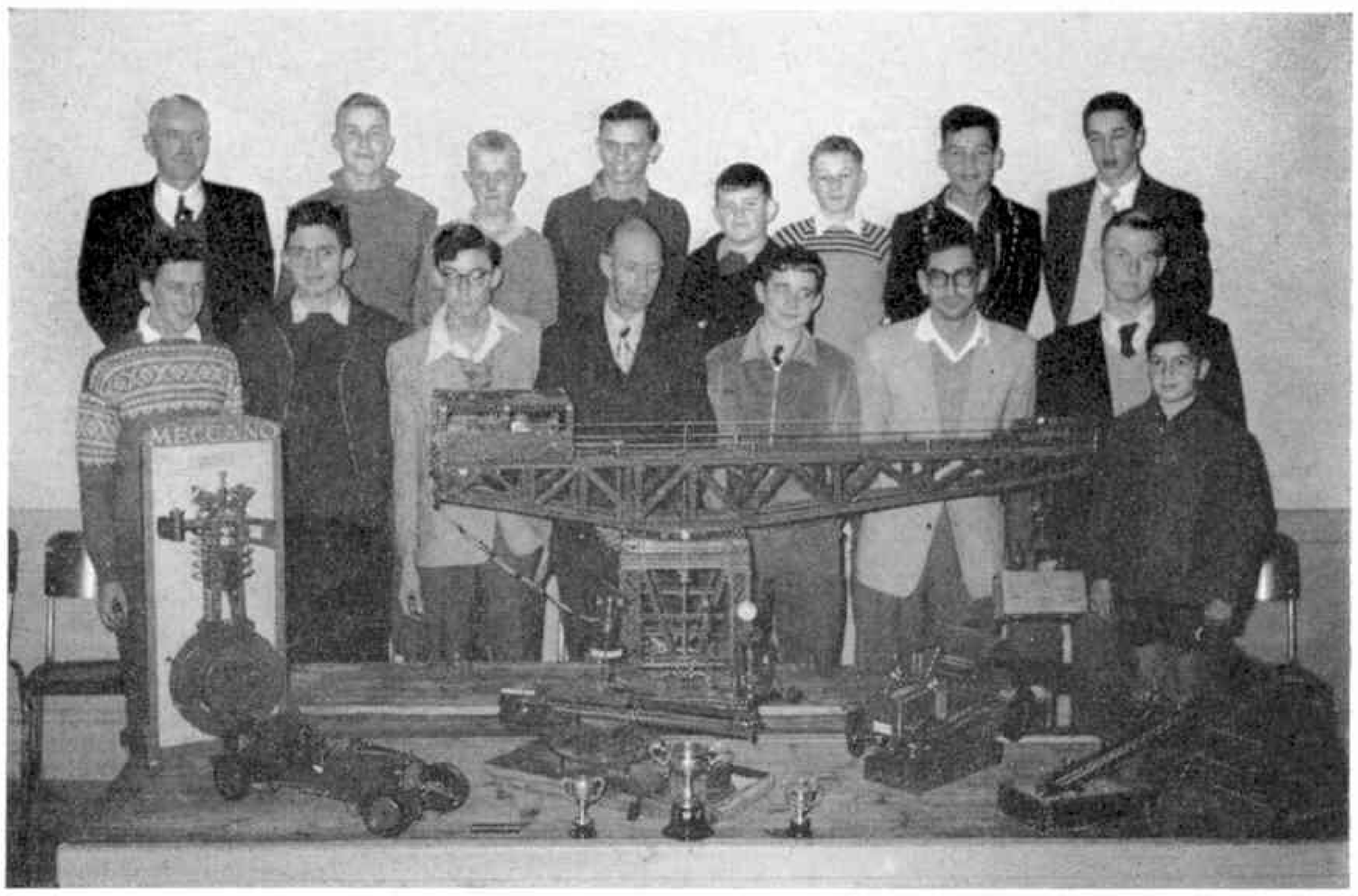
CLUB NOTES

ASHTEAD FREE CHURCH M.C.—An occasion to which the members had been looking forward keenly was the recent visit of Mr. John West, the designer of the P. & O. liner *Canberra*. He gave a very interesting talk on the recognition of ships, and on their uses, and showed colour slides illustrating various stages in the construction of the liner. A subsequent meeting was devoted to a Meccano model-building competition, in which all models entered had to have some connection with aircraft, flight, etc. The resulting models were excellent, and included a helicopter, a novel Autogiro, airport luggage trailer, and an aircraft launcher of the type fitted aboard merchant ships during the last war. At one meeting Mr. Price, the Leader, and his son gave a talk on, and demonstration of, photographic printing and enlarging. *Secretary:* Brian Allen Mayes, 54 Newton Wood Road, Ashtead, Surrey.

NORTH END (PORTSMOUTH) M.C.— Here are some details of the joint Club and Branch displays at the Co-operative Toy Fair, last December, which was referred to briefly in last month's *M.M.* The Meccano set-up included fine working models of a workshop and a battleship, and was a great attraction. The splendid model railway which the Branch members laid out also came in for high praise. The railway was operated by Mr. P. E. Leggatt a former Leader of the Club, who is an employee of the store, and it was retained until after Christmas. The members feel that the great success of the joint displays at the Fair made the long and enthusiastic preparations well worth while. *Secretary:* Mr. A. J. Nicholson, 213 Sultan Road, Buckland, Portsmouth.

AUSTRALIA

MAYLANDS M.C.—The Club was asked by the Parents' Committee to exhibit models at the Annual Club Fête, to build a Chocolate Wheel and to install a public address system for the event. The Committee decided to hold the Fête in a new suburb about three miles from the Club rooms. Several members of the Club electrical section assisted Warren Bransby in constructing the Chocolate Wheel, which had lights flashing as the indicator was spun. The winner of the spin was shown by the light which stayed on when the arrow stopped spinning. Other models exhibited included two Baltic tank locomotives, a road-sweeping



Officials and members of the Cape Peninsula M.C., South Africa, with some of the fine models displayed at the Club's winter model-building competition. Mr. F. Korck (extreme left, back row) and Mr. Z. A. de Beer (fourth from left, front row) retired from the positions of Chairman and Leader-Treasurer respectively at the end of last year, and have been elected Honorary Life Members in acknowledgment of their fine service to the Club. Mr. Colin Cohen (sixth from left, front row), another member of long standing, is the new Leader. Anthony Ritchie, Secretary, is sixth from the left in the back row.

machine, a 1A motor chassis and a four-wheel drive chassis. Many of the parents had spent a lot of time sewing, and preparing cakes, jams and pickles for the Fête, which made a clear profit of just over £80. The Club, in two parties of senior and junior members respectively, visited a local cinema to see the film *Ben Hur*. *Secretary:* Warren Bransby, 90 Crawford Road, Maylands, Western Australia.

NEW ZEALAND

ST. JOHN'S (DUNEDIN)—Several new members have been enrolled. The Washers faction have been constructing a small Meccano jeep designed by B. Earl. The parents of members were invited to the final 1960 meeting, and from 2.30 to 3 p.m. had the opportunity of examining the fine range of models on display. At 3 o'clock the Sprockets faction presented their play *The Good Old Days of School*, written by the Secretary. The Washers also put on an act, and S. Harbour gave an excellent conjuring display. This was followed by afternoon tea, after which Mr. Parr, on behalf of the parents, thanked the members for a very enjoyable afternoon. *Secretary:* W. J. Earl, 60 Ann Street, Roslyn, Dunedin, N.W.1, New Zealand.

INDIA

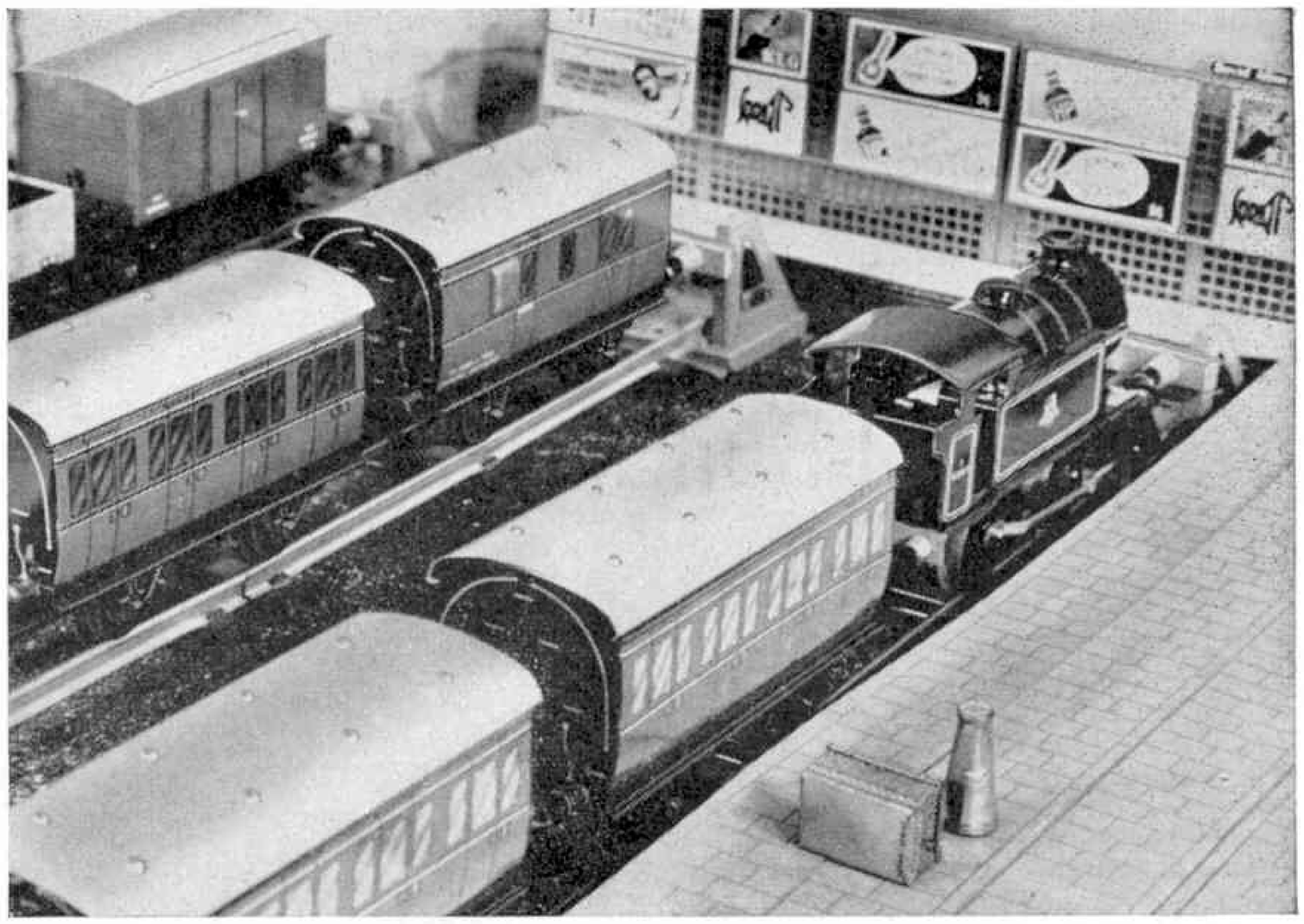
MYSORE M.C.—The Club has been busy arranging film shows at various colleges and institutions in the city, with a view to making the Club better known to students and the public generally. Recent film shows have included one given at the Rotary Club of Mysore and another at the Sunny Side Club. These shows have been made possible by the generous loan of 16 mm. film projection equipment by the U.S. Information Service. *Secretary:* Sri. M. N. Radhakrishna, B.Sc., 1096 Chamaraja Puram, Mysore 1, India.

SOUTH AFRICA

CAPE PENINSULA M.C.—The Club again took part in the Annual Hobbies Fair organised by the Round Table, and displayed a large variety of models. Several new members were enrolled. *Secretary:* Antony Ritchie, "Eldoret", Crescent Road, Kenilworth, Cape Town, South Africa.

BRANCH NEWS

AVIARY MODEL RAILWAY CLUB—Now that two layouts are in operation all members are able to engage in track operations at the same time, and the Quiz in which half of the members took part while the remainder were operating the layout has been discontinued. Important additions have been made to the scenic features of the layouts, including an embankment on the Gauge "0" system and a viaduct on the Gauge "00" layout. Subjects of recent discussions have been the *Merits and demerits of Television*, the *Racial Problem*, and the *Exploration of Space*. *Secretary:* J. Baker, 10 Salisbury Terrace, Leeds 12.



"Train now arrived" might well be the title of this picture. The No. 40 Tank Locomotive has brought its train to rest alongside the platform.

"TOMMY DODD" TELLS YOU ABOUT:

A STATION SCENE

WE do not often have a station scene to illustrate our talks, so I hope the picture above will be something of a change for you. It is, perhaps, of more than usual interest as it shows several platforms arranged to form a station of the terminus type. So long as you have the space for this sort of thing it is not really difficult to arrange suitable platforms, and you will see that in the picture the components of the Dinky Toys No. 754 Pavement Set have been used to finish off the top surface of the platform structure. Single pieces of wood of suitable size could be used for the platforms, or you could use separate pieces cut and built up to form the sides and ends. Again, if preferred, you could use cardboard, suitably strengthened with wood strips.

A station of this kind provides a splendid opportunity for the use of one or more Hornby Buffer Stops. The Buffer Stop appears to have a special fascination for younger Hornby railway owners, for they invariably make it an early addition to their original equipment. You will notice also that in the picture good use has been made of the Dinky Toys No. 765 Road Hoarding. Its actual purpose is indicated by its name, but there is no reason at all why you should not use it as part of your railway station scheme.

Don't forget that once a train has arrived and its "passengers" have left the station the engine that brought the train in must stand where it is until its empty coaches are moved away. You may be able to arrange Points in order to form a loop line layout so that the engine can be run round the train, but the precise details of siding and loop lines will depend very much on the amount of space that you have. Space will also affect the arrangement of tracks at the other end of the station.

Incidentally, I am sure many of my present-day readers will be interested to know that, many years ago now, Hornby Gauge 0 Trains and Rails were used in the course of experiments carried out by a real railway company who were planning to build a fine new terminal station. Different methods of arranging the various tracks and the rail connections between them were tried out in order to determine the best possible layout for handling heavy suburban traffic in and out of the station.

* * * *

You, too, may have to see what results you obtain from various ideas before you finally decide on the arrangement that really meets your requirements. For instance, if you cannot make use of loop lines so that arriving engines can run round their trains, you will have to use what is called the turnover method of engine working. (*Continued on page 55*)

"Spanner's" Special Section for Juniors

Easy Model-Building

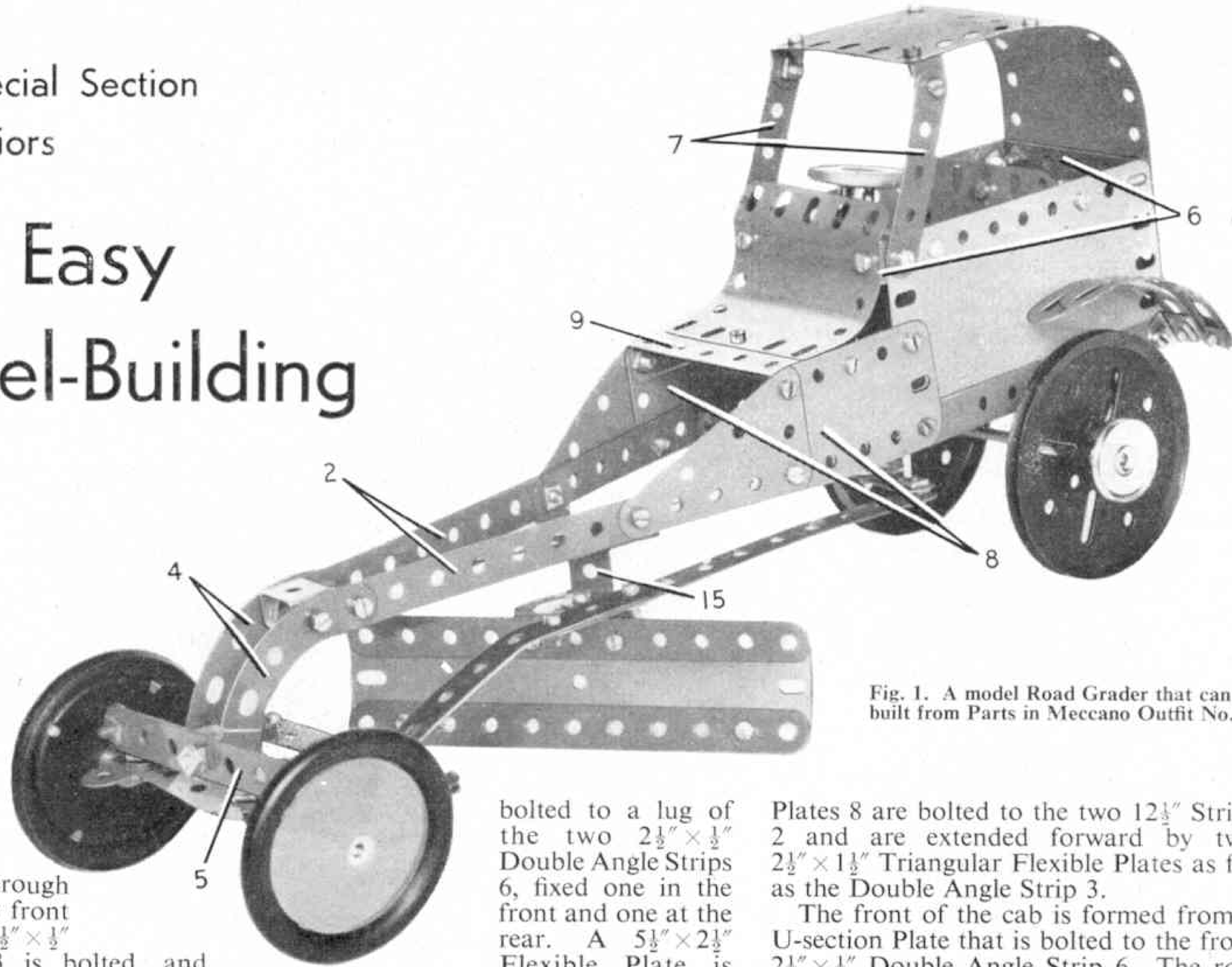


Fig. 1. A model Road Grader that can be built from Parts in Meccano Outfit No. 4.

A Model Road Grader

The model road grader shown in Fig. 1 can be built from parts in Outfit No. 4.

The chassis of the model is built up on a Flanged Plate 1. To the side flanges of this Plate two $12\frac{1}{2}''$ Strips are bolted so that they project 16 holes beyond the front end of the Plate. Through the ninth hole from the front of the Flanged Plate a $1\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 3 is bolted, and through the last two holes of each of the Strips 2, a Stepped Curved Strip 4 is fixed in position, overlapping the $12\frac{1}{2}''$ Strip 2 by two holes. A Double Bracket holds the ends of the two $12\frac{1}{2}''$ Strips 2 together, and another Double Bracket is bolted through the end holes of the two Stepped Curved Strips 4.

A $3\frac{1}{2}''$ Strip 5 is lock-nutted to this Double Bracket by its centre hole, and this carries the front wheels, which are steerable.

To construct the sides of the cab two $4\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plates are bolted to the side flanges of the Flanged Plate 1. The four top corners of these two Flexible Plates are each bolted to a lug of the two $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips 6, fixed one in the front and one at the rear. A $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate is bolted to the end flange of the Flanged Plate 1 at the rear of the cab. It is also bolted to the rear Double Angle Strip 6, and extended at its end by a $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate overlapped one row of holes. This extended Flexible Plate is now curved over to form the roof of the cab, its end row of holes being bolted to a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip. This Double Angle Strip is bolted in the end holes of the two $2\frac{1}{2}''$ Strips 7, which form the roof supports of the cab at the front, one being bolted to each of the two top corners. At the front of the cab two $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates 8 are bolted to the two $12\frac{1}{2}''$ Strips 2 and are extended forward by two $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Triangular Flexible Plates as far as the Double Angle Strip 3.

The front of the cab is formed from a U-section Plate that is bolted to the front $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 6. The row of elongated holes is allowed to project upwards over the Double Angle Strip 6, while the other row is bolted to the centre hole in the centre row of holes in the $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flanged Plate 9. This Flanged Plate 9 is bolted by its flange to the two $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates 8.

The rear wheel assembly consists of a 4" Rod passed through the apex holes of

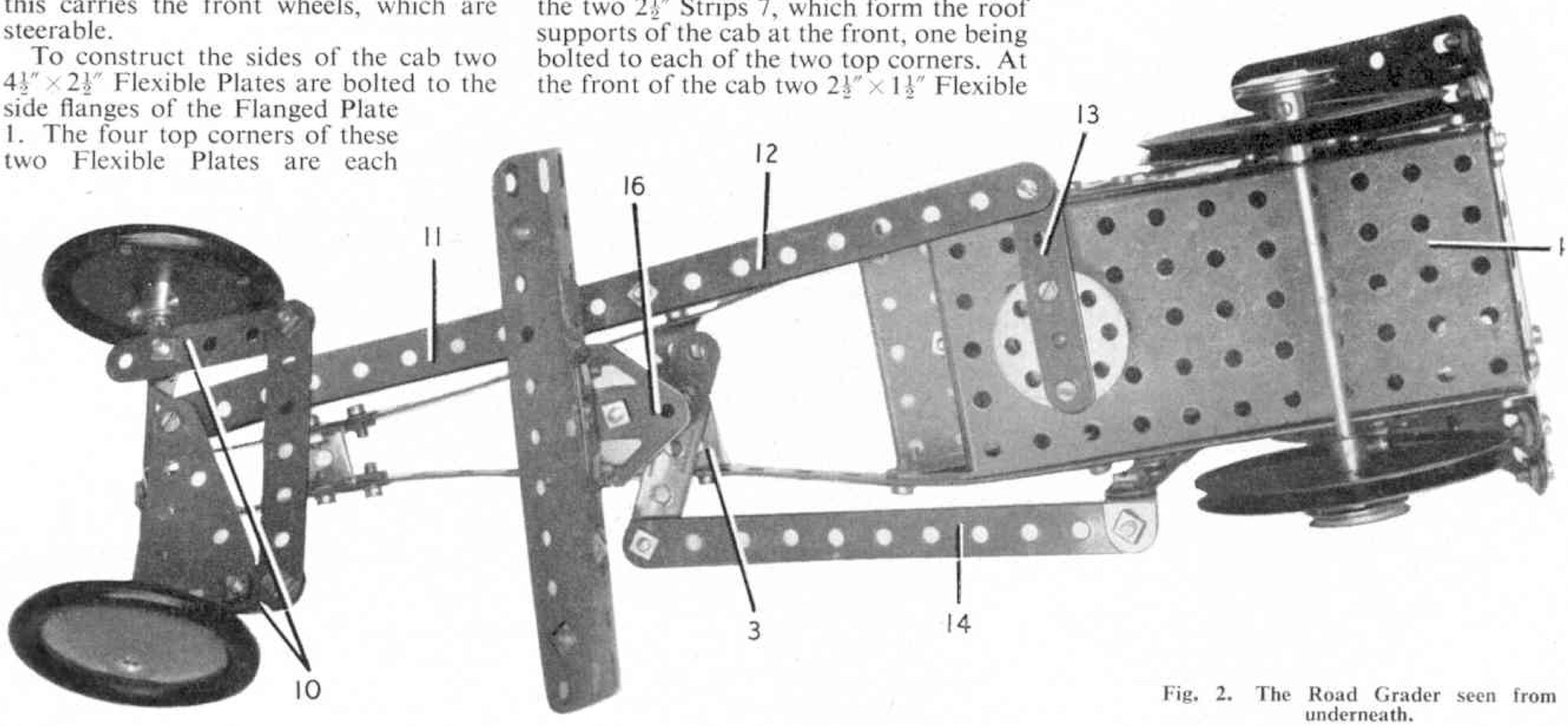


Fig. 2. The Road Grader seen from underneath.

two Flat Trunnions bolted on each side of the Flanged Plate 1. This Rod carries a 3″ and a 1″ Pulley Wheel at either end to form the rear wheels.

The front wheel assembly is mounted on the 3½″ Strip 5, which is pivoted on a lock-nutted bolt in the centre hole. In each end hole of the 3½″ Strip 5 an Angle Bracket is bolted by its elongated hole. A ⅜″ bolt passes down through each of these Angle Brackets, and each bolt is lock-nutted to another Angle Bracket that carries a front wheel on a ⅜″ bolt, so that 2½″ Strips 10 are free to pivot. A 3½″ Strip connects the Strips 10 together through their end holes. To the offside Strip 10 a 2½″ × 1½″ Triangular Flexible Plate is bolted leaving Strip 10 extending one hole at each end. A 5½″ Strip 11 is lock-nutted in the apex hole of this Triangular Plate. The other end of the 5½″ Strip is extended by a further 5½″ Strip 12 that overlaps three holes. The end hole of the 5½″ Strip 12 is lock-nutted to a 2½″ Strip 13.

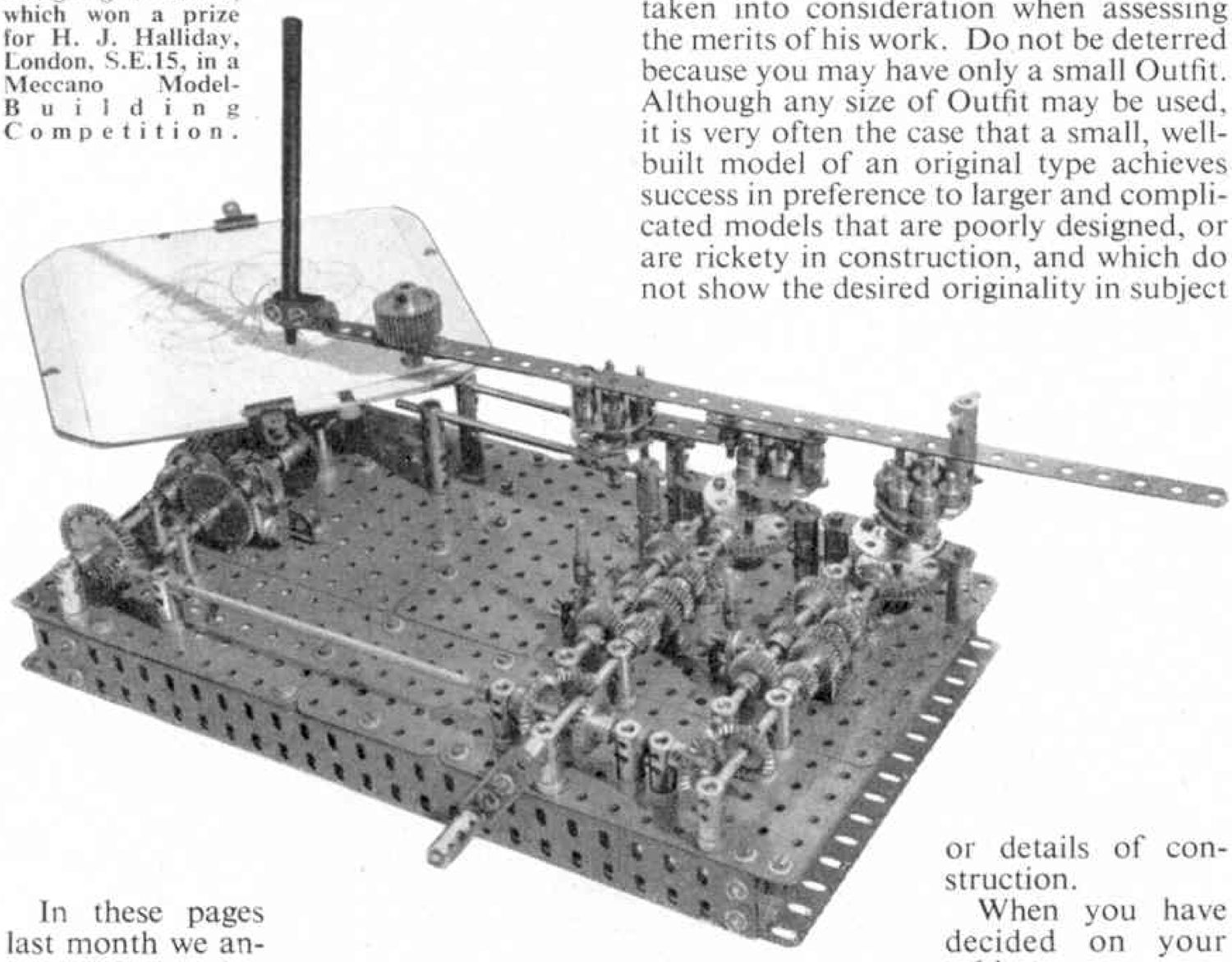
The Strip 13 is bolted across a Bush Wheel fixed to the end of a 3½″ Rod that forms the steering column. This Rod passes up through the centre hole of a 2½″ × ½″ Double Bent Strip bolted across the front of the cab immediately behind the roof supports, and it is held in place by a Spring Clip. A 1″ Pulley with Rubber Ring is fixed to the upper end to represent the Steering Wheel.

A seat is provided in the cab by bolting a U-Section Curved Plate to a 2½″ × ½″ Double Angle Strip fixed by its lug to the side of the cab.

A lever, fixed to the offside of the cab, operates the blade of the plough. It consists of two 2½″ Strips bolted together overlapping two holes. This lever is then lock-nutted through the 12½″ Strip 2 to the Flange of the Flanged Plate 1. To the lower end hole an Angle Bracket is lock-nutted and this has a 5½″ Strip 14 firmly bolted to it. The other end hole of Strip 14 is lock-nutted to a 2½″ Strip, that is in turn lock-nutted by a ⅜″ bolt to the centre hole of the 1½″ × ½″ Double Angle Strip 3. This ⅜″ bolt also passes through the Reversed Angle Bracket 15 secured by its other lug to a Trunnion 16. Trunnion 16 carries the blade of the plough bolted to its flange. The blade is made up of a 5½″ × 1½″ Flexible Plate edged by two 5½″ Strips.

Parts required to build the Road Grader: 2 of No. 1; 5 of No. 2; 2 of No. 3; 8 of No. 5; 2 of No. 10; 2 of No. 11; 7 of No. 12; 1 of No. 15b; 1 of No. 16; 2 of No. 19b; 3 of No. 22; 1 of No. 24; 1 of No. 35; 88 of No. 37a; 72 of No. 37b; 2 of No. 38; 1 of No. 48; 5 of No. 48a; 1 of No. 51; 1 of No. 52; 2 of No. 90a; 6 of No. 111c; 1 of No. 125; 1 of No. 126; 2 of No. 126a; 1 of No. 155; 2 of No. 188; 1 of No. 189; 2 of No. 190; 2 of No. 191; 1 of No. 192; 1 of No. 200; 4 of No. 215; 3 of No. 221.

NEW MODEL-BUILDING COMPETITION



An unusual form of Meccanograph Designing Machine, which won a prize for H. J. Halliday, London, S.E.15, in a Meccano Model-Building Competition.

In these pages last month we announced another of the popular Meccano general Model-Building Competitions, in which we offer useful cash prizes for the most original and best-built Meccano models sent to us. Models may be of any kind whatever—cranes, ships, machines of all kinds, cars and lorries all form suitable subjects for entry in the contest.

Any competitor, no matter what his or her age may be, has an equal chance of winning one of the fine prizes in this Contest for each entrant's age will be taken into consideration when assessing the merits of his work. Do not be deterred because you may have only a small Outfit. Although any size of Outfit may be used, it is very often the case that a small, well-built model of an original type achieves success in preference to larger and complicated models that are poorly designed, or are rickety in construction, and which do not show the desired originality in subject or details of construction.

When you have decided on your subject you must then set to work and construct it as neatly and as realistically as possible, using only standard Meccano Parts. When you have completed the model the next thing is to obtain a photograph of it, or make a good sketch, and send this to us. The photograph or drawing need not be your own work and it will be quite in order for you to get a friend to prepare these for you if you cannot prepare them yourself. However, photographs are preferable if you can manage to obtain them, as you may then have the chance of seeing your model illustrated in the *Meccano Magazine*, should it win a prize.

The Competition is open to readers of all ages living in any part of the world, and is in two Sections: A, for competitors under 14 years of age on April 29 next; B, for competitors aged 14 years or over on that date. A separate set of prizes, as announced in the panel at the foot of this page, will be awarded in each Section. The judges will award the prizes for those models that are the most original in subject and are well proportioned and built on correct mechanical principles.

You will find it a good plan to choose a model that works, or may be put to some practical use, rather than one that is merely static.

You should write in block letters your name, address, and the age you will be on April 30 next, on the back of each photograph or drawing you send. The envelope bearing your entry should be addressed to, *Meccano Model-Building Competition, Meccano Ltd., Binns Road, Liverpool 13*, and it must be posted in time to reach us on or before April 29 next.

THE PRIZES IN THIS COMPETITION

The following prizes will be awarded in each of the Sections A and B:

First Prize, cheque for	**£4**	**4**	**0**
Second Prize, cheque for	**£2**	**2**	**0**
Third Prize, cheque for	**£1**	**1**	**0**

Five Prizes each of 10s. 6d.
Five Prizes each of 5s. 0d.

Certificates of Merit also will be awarded.
Closing date: 29th April, 1961

HAVE FUN WITH THIS MODEL

A Meccano "Aunt Sally"

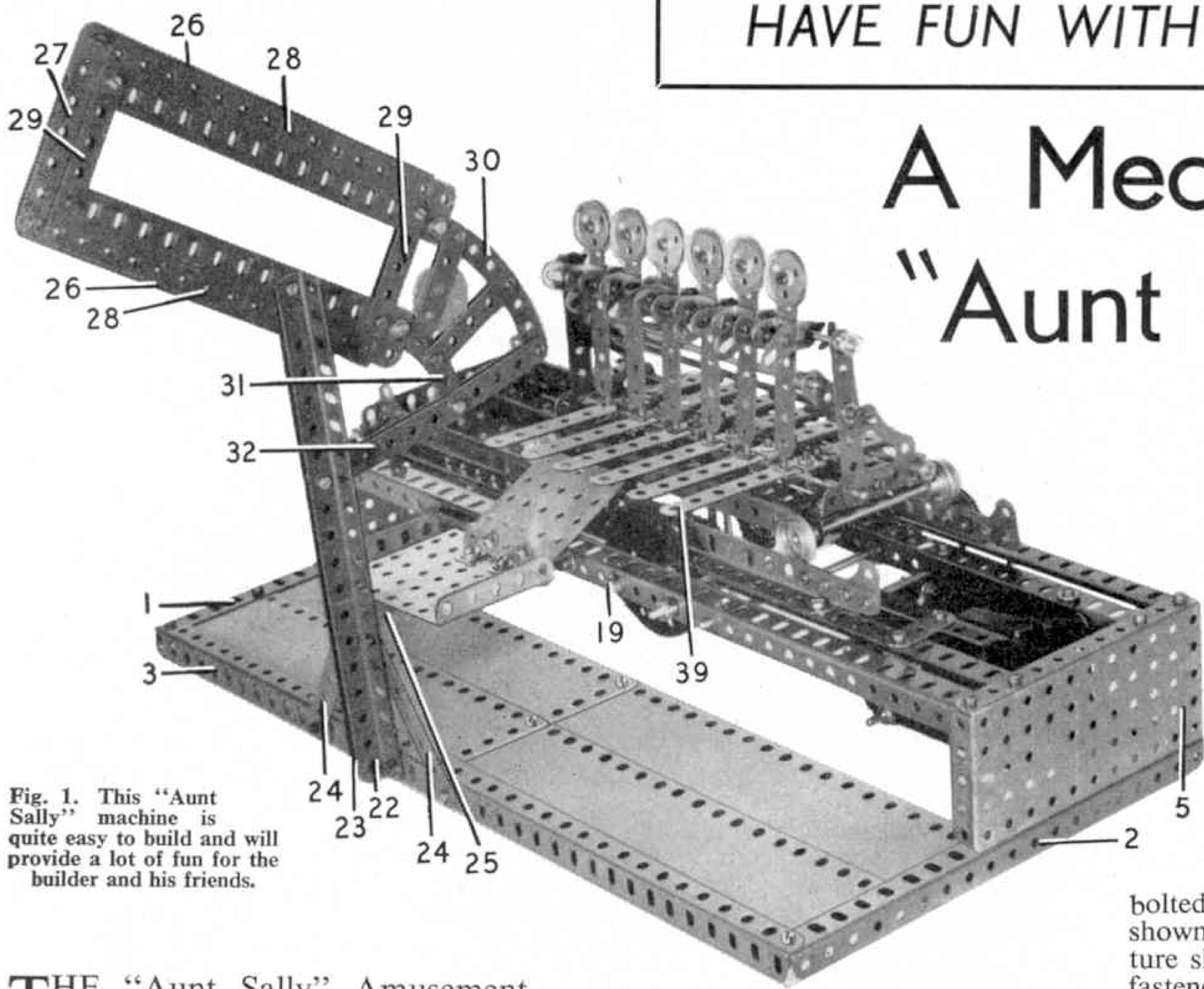


Fig. 1. This "Aunt Sally" machine is quite easy to build and will provide a lot of fun for the builder and his friends.

THE "Aunt Sally" Amusement Machine shown complete in Fig. 1 is not only an interesting and unusual model to build but, when completed, is capable of providing plenty of good fun for the builder and his friends.

The machine consists of six "Aunt Sallies" or dolls pivotally mounted on a carriage that can be driven to and fro along the bed of the machine, bringing each doll in turn in front of a slide mounted at the front side of the model.

The game consists in placing a Wheel Disc in the slide and so timing things that the Disc runs down the slide and strikes one of the dolls, knocking it over. Each competitor is given seven Wheel Discs and with these he tries to knock down all six dolls as they move along. To do this requires skill and good timing in releasing the Discs at the correct moment.

The operation of the mechanism is as follows: When the Wheel Disc emerges from the slide it falls, or rather should fall, depending on the player's timing, on to a Strip 39 pivotally mounted on the carriage, one such Strip being below each doll. The Strip is provided with a $\frac{3}{8}''$ Bolt in its centre hole, and this acts as a "stop" to keep the doll upright. When the Strip is depressed by the weight of the Disc falling on it, the $\frac{3}{8}''$ Bolt disengages the doll and allows it to tumble forward. When all the dolls have been knocked down they can be restored to the upright position again by operating a lever attached to Rod 43 (Fig. 1).

Constructional details of the model are as follows:

Framework

Two $9\frac{1}{2}''$ Angle Girders 1 and 2 are bolted to the ends of four $18\frac{1}{2}''$ Angle Girders, two of which, marked 3 and 4, are shown in the illustrations. The two $18\frac{1}{2}''$ Angle Girders not shown support the four $9\frac{1}{2}'' \times 2\frac{1}{2}''$ Strip Plates seen in Figs. 1 and 3. To each $9\frac{1}{2}''$ Angle Girder is bolted a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate 5 and 6, and to these are attached four $18\frac{1}{2}''$ Angle Girders 7, 8, 9 and 10.

Two $12\frac{1}{2}''$ Angle Girders 11 and 12, each end of which is extended by a 2" Slotted Strip and a 1" Corner Bracket, are fastened to the $18\frac{1}{2}''$ Angle Girders 8 and 10.

An E15R Electric Motor is bolted to the Angle Girders 8 and 9 as shown. A $\frac{1}{2}''$ Pulley Wheel on the armature shaft drives, by a belt, a $1\frac{1}{2}''$ Pulley fastened to a $4\frac{1}{2}''$ Rod 13, which also has a $\frac{1}{2}''$ Pulley 14 attached to it. A $6\frac{1}{2}''$ Rod 15 carries a $\frac{7}{16}''$ Pinion 16 and a 1" Pulley 17. The Pulleys 14 and 17 are connected with a Driving Band.

The Pinion 16 drives a 60-toothed Gear Wheel 18 on a $6\frac{1}{2}''$ Rod, which carries also two $\frac{1}{2}''$ Pinions driving $2\frac{1}{2}''$ Gear Wheels mounted on two 3" Rods 19 (Figs. 1 and 3).

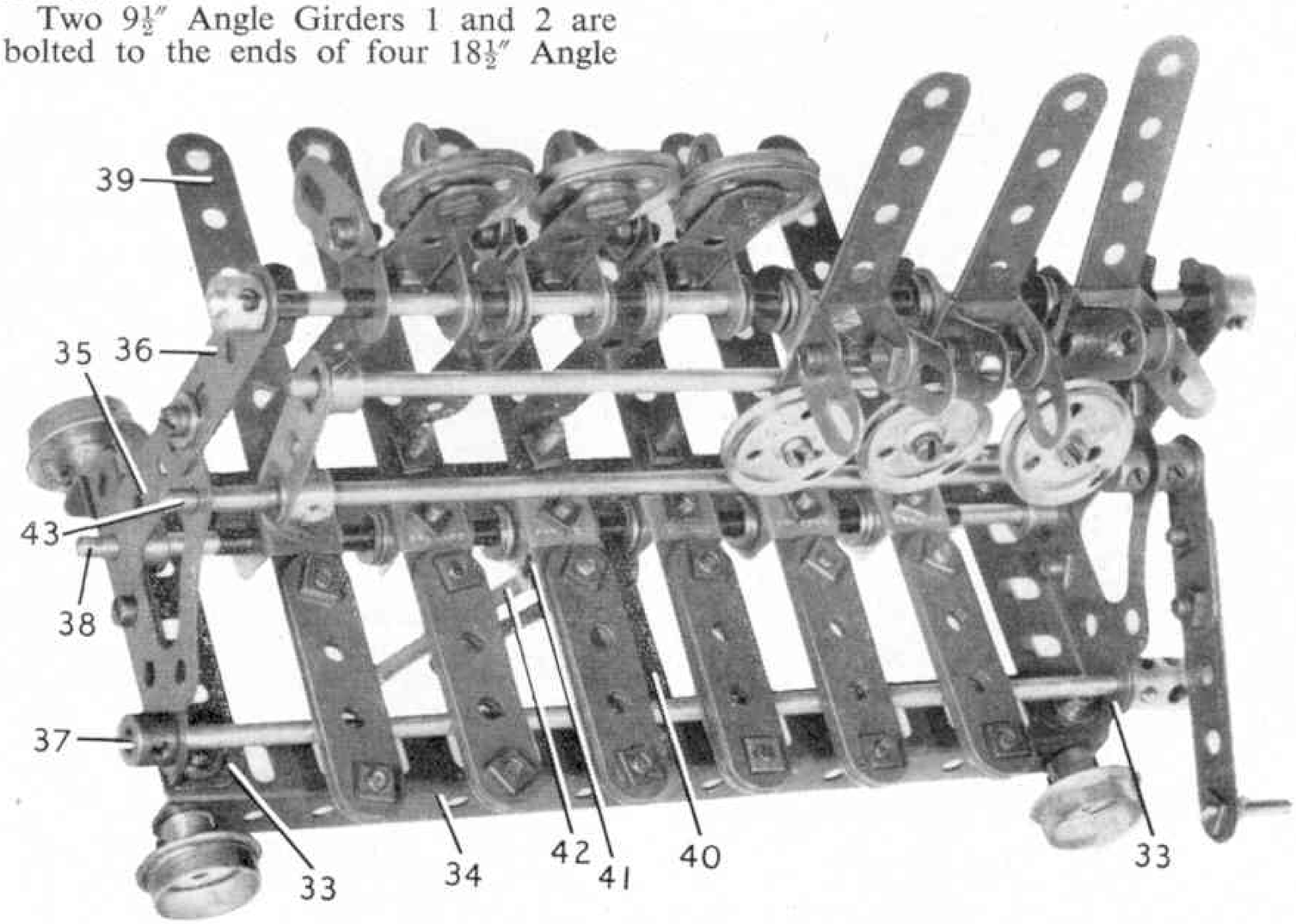


Fig. 2. Details of the six dolls and the travelling carriage.

On each of these Rods, a 1″ Sprocket Wheel is secured, spaced with a Collar. Two 2½″ Rods 20 also carry 1″ Sprocket Wheels and Collars. The two sets of Sprocket Wheels are connected together by endless Chains, each having the same number of links.

On each Chain a Double Bracket is fixed with a bifurcated paper clip. A Collar, placed between the lugs of each Double Bracket, holds the 2″ Rod 21 in position.

The Disc Slide

To make the disc slide bolt two 9½″ Angle Girders 22 and 23 to the Angle Girder 3. These are braced by two 3½″ Strips 24 and two 4½″ Double Angle Strips 25 (Fig. 1). A 3½″×2½″ Flanged Plate is extended by a 2½″×2½″ Flat Plate attached to it by Obtuse Angle Brackets. Two pairs of 7½″ Flat Girders 26 are connected together by two 3½″ Strips 27. A 7½″ Flat Girder 28 is placed on both sides of the Flat Girders 26, forming a slot and runway which is adjusted so that it will take a Wheel Disc freely. These Flat Girders are bolted in place with two pairs of 2½″ Strips 29. In between the outer Flat Girders are bolted two 4″ Curved Strips 30 and two 2½″ Curved Strips 31. Three pairs of 2½″ Strips join the Curved Strips together. A Wheel Disc should now travel down and out of the slide without obstruction. The slide is bolted to the Angle Girders 22 and 23, and held at the correct angle by means of the two 3½″ Strips 32 (Fig. 1).

The Doll Carriage

Two 2½″ Angle Girders 33 (Fig. 2) are bolted on top of two 7½″ Angle Girders 34. The Angle Girders 33 are extended with a Corner Gusset 35 and a 2″ Slotted Strip 36. An 8″ Rod 37 is placed in the Angle Girders 33 as shown, and is held in position by a Collar and a Coupling. Another 8″ Rod 38 supports six lever units, each built as follows:

To a 5½″ Strip 39 a Double Bracket is bolted, and three 2″ Strips are added to one end to form a weight to keep the Strip 39 resting on the Rod 37. Each Strip has a ⅜″ Bolt and nut in its centre hole, and this forms a stop to hold the doll vertical. The lever units are spaced away from each other on the Rod 38 by four Washers and a Spring Clip. A 2½″ Strip 40 (Fig. 2) bolted across the Angle Girders 34 carries a Coupling 41 that supports two 3½″ Rods 42. The Coupling is held with a ⅜″ Bolt secured in its centre threaded hole.

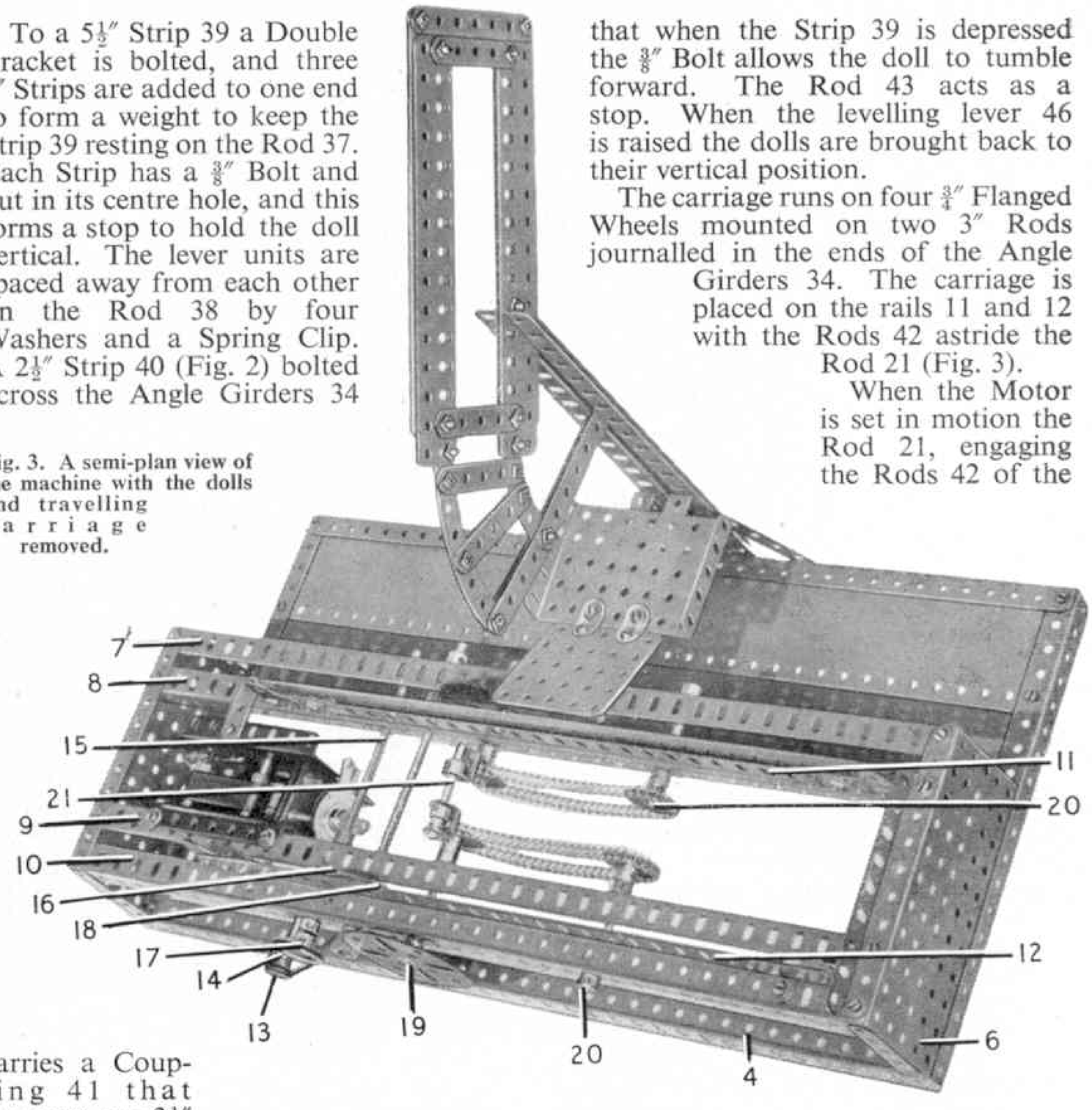


Fig. 3. A semi-plan view of the machine with the dolls and travelling carriage removed.

The Doll Levelling Lever

Two Cranks 44, supporting a 6½″ Rod 45, are fastened to the ends of an 8″ Rod 43. Another Crank 46, extended by a 2½″ Strip and a Threaded Pin, is secured to the Rod 43 so that the Cranks 44 are in a vertical position when the 2½″ Strip is resting on the Coupling as shown.

The Dolls

Each doll is built by bolting two Double Brackets to a 3½″ Strip 47 (Fig. 4). Fishplates are attached to the lugs of the front Double Brackets to represent arms. The head is represented by a 1″ loose Pulley.

The six dolls are placed on an 8″ Rod 48, with four Washers and a Spring Clip between each one. The height of the Rod 48 is so adjusted that when the Strip 39 is depressed the ⅜″ Bolt allows the doll to tumble forward. The Rod 43 acts as a stop. When the levelling lever 46 is raised the dolls are brought back to their vertical position.

The carriage runs on four ¾″ Flanged Wheels mounted on two 3″ Rods journalled in the ends of the Angle Girders 34. The carriage is placed on the rails 11 and 12 with the Rods 42 astride the Rod 21 (Fig. 3).

When the Motor is set in motion the Rod 21, engaging the Rods 42 of the carriage, hauls the carriage along. The Motor must be reversed at the end of each traverse of the carriage.

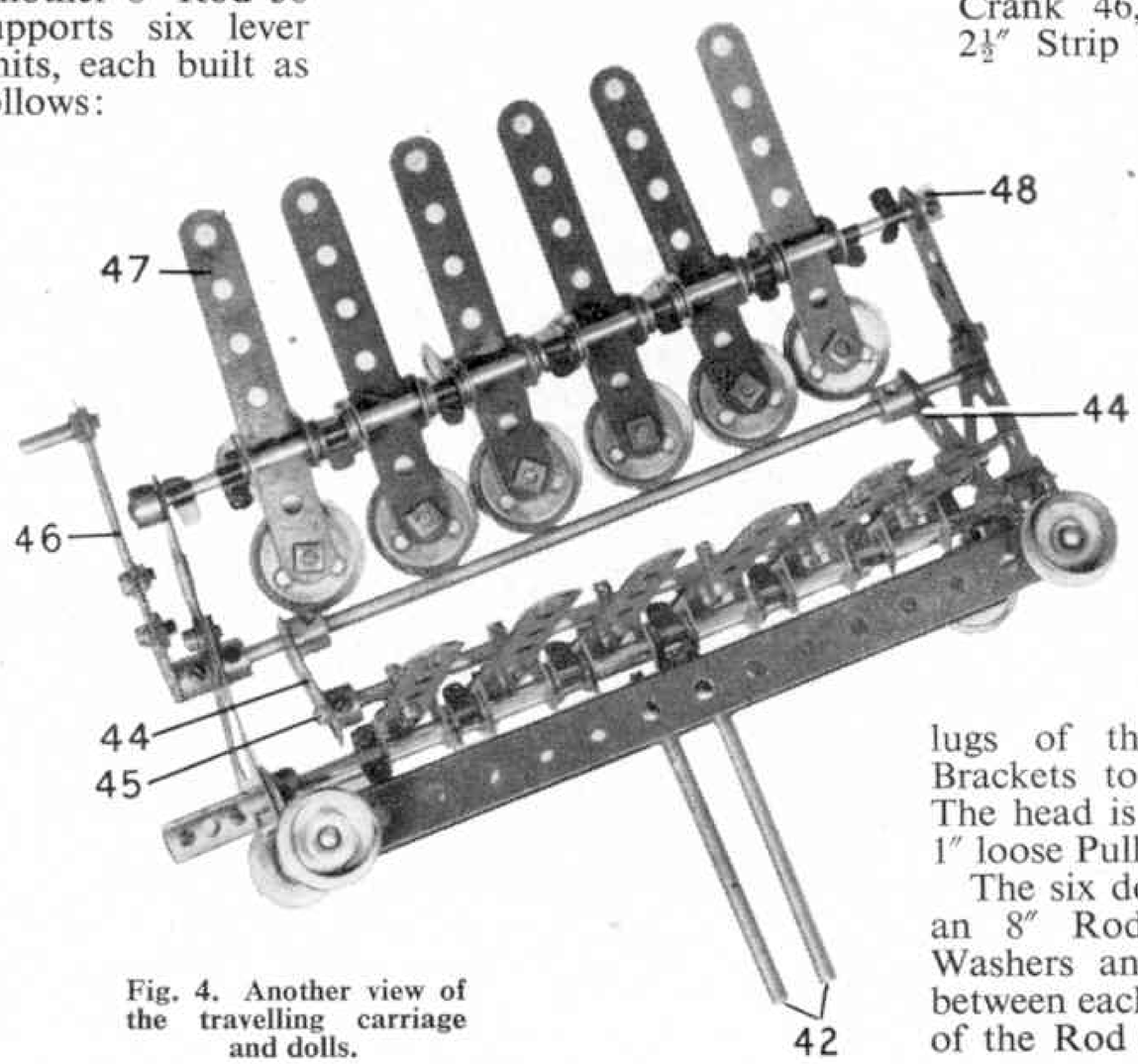


Fig. 4. Another view of the travelling carriage and dolls.

Parts required to build the Aunt Sally Machine: 6 of No. 2; 12 of No. 3; 13 of No. 5; 22 of No. 6; 1 of No. 6a; 8 of No. 7a; 2 of No. 8; 4 of No. 8a; 2 of No. 8b; 1 of No. 9a; 2 of No. 9d; 12 of No. 10; 22 of No. 11; 2 of No. 12c; 4 of No. 13a; 3 of No. 14; 1 of No. 15a; 2 of No. 16; 4 of No. 16a; 2 of No. 16b; 1 of No. 17; 4 of No. 20b; 1 of No. 21; 1 of No. 22; 6 of No. 22a; 2 of No. 23a; 2 of No. 26a; 1 of No. 26c; 2 of No. 27c; 1 of No. 27d; 16 of No. 35; 136 of No. 37a; 121 of No. 37b; 57 of No. 38; 2 of No. 48b; 2 of No. 52; 1 of No. 53; 2 of No. 55a; 21 of No. 59; 3 of No. 62; 2 of No. 63; 1 of No. 72; 2 of No. 89b; 2 of No. 90; 4 of No. 96; 8 of No. 103k; 2 of No. 108; 15 of No. 111c; 1 of No. 115; 5 of No. 133a; 2 of No. 186; 4 of No. 196; 2 Bifurcated Paper Clips; 1 E15R Electric Motor.

There is always something fascinating about card tricks. **How to Do Card Tricks and Entertain People,** written by Harry Baron, a member of the International Brotherhood of Magicians, lets the reader in on secrets that many young would-be magicians would love to know. Priced at 15/–, and published by Nicholas Kaye Ltd., it contains more than 90 pictures and drawings.

A Reader's Model In Meccano

N.S.U.-Wankel Engine

By T. C. Nuttall

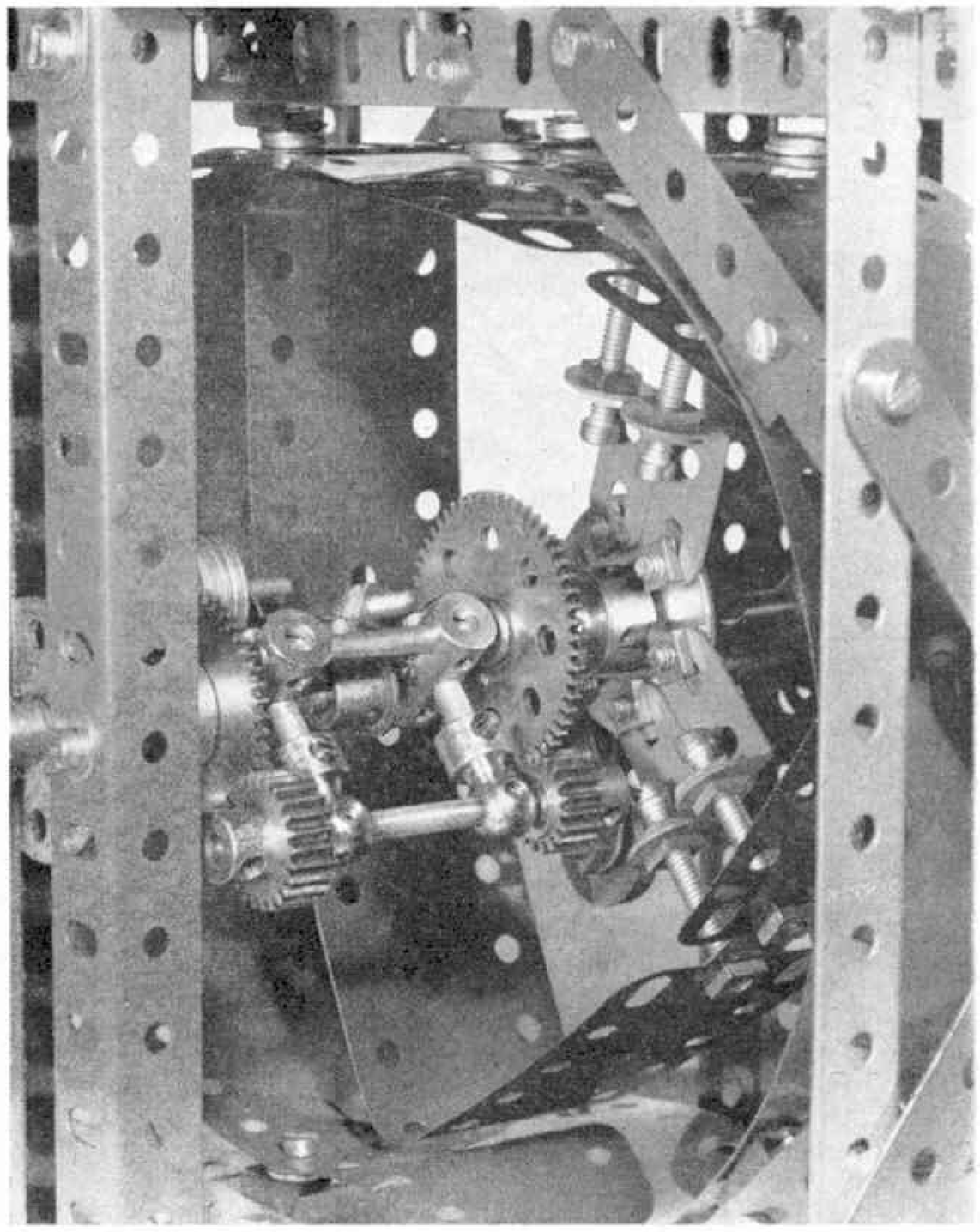


Fig. 1. The gear arrangement of the Meccano model N.S.U. - Wankel Engine described in the accompanying article.

ENCOURAGING progress reports have recently provided interesting news of the N.S.U.-Wankel Engine, which is being developed by the N.S.U. Company in Germany and the Curtiss Wright Corporation in America. This engine works on the normal four-stroke principle, but it uses *only two moving parts* in place of the multiplicity of cranks, connecting rods, pistons and valve gear of the conventional four-stroke engine.

One of the moving parts is a sturdy crank, of short throw, formed on the output shaft of the engine. The crank carries the other moving part, which is a rotor whose section is in the form of an equilateral triangle with slightly convex sides. The dimension of the rotor from its centre to any apex is some six to eight times the throw of the crank. Mounted on the rotor is an internally toothed gear ring, which rolls round a gear wheel fixed to the engine casing. By this means the rotor is made to rotate in the same direction as the crank, but at exactly one third of the speed. Thus, as the crank rotates, each point of the triangle in turn traces out the same path in space. The shape of this path (a form of trochoid) shows a maximum diameter at the two points where the crank throw is added on to the rotor dimension, and a minimum diameter, or waist, at the two points where the crank throw is subtracted from the rotor dimension.

Three Compartments

The engine casing is made with an internal surface whose shape matches the path traced out by the corner edges of the rotor. The rotor edges are provided with gas-tight seals to the casing (similar in principle to piston rings), so that the rotor divides the available space into three separate gas-tight compartments whose volumes change as the rotor turns. In making one complete circuit of the periphery each compartment expands and contracts twice. This is exactly what is required to carry out the standard four-stroke Otto cycle. Inlet and exhaust ports are provided through the casing but no additional valve gear is required since the ports can be so positioned that they are uncovered and covered at the right times by the movement of the rotor. On the opposite side of the casing a recessed sparking plug ignites the mixture when at maximum compression (one spark per revolution of the crank).

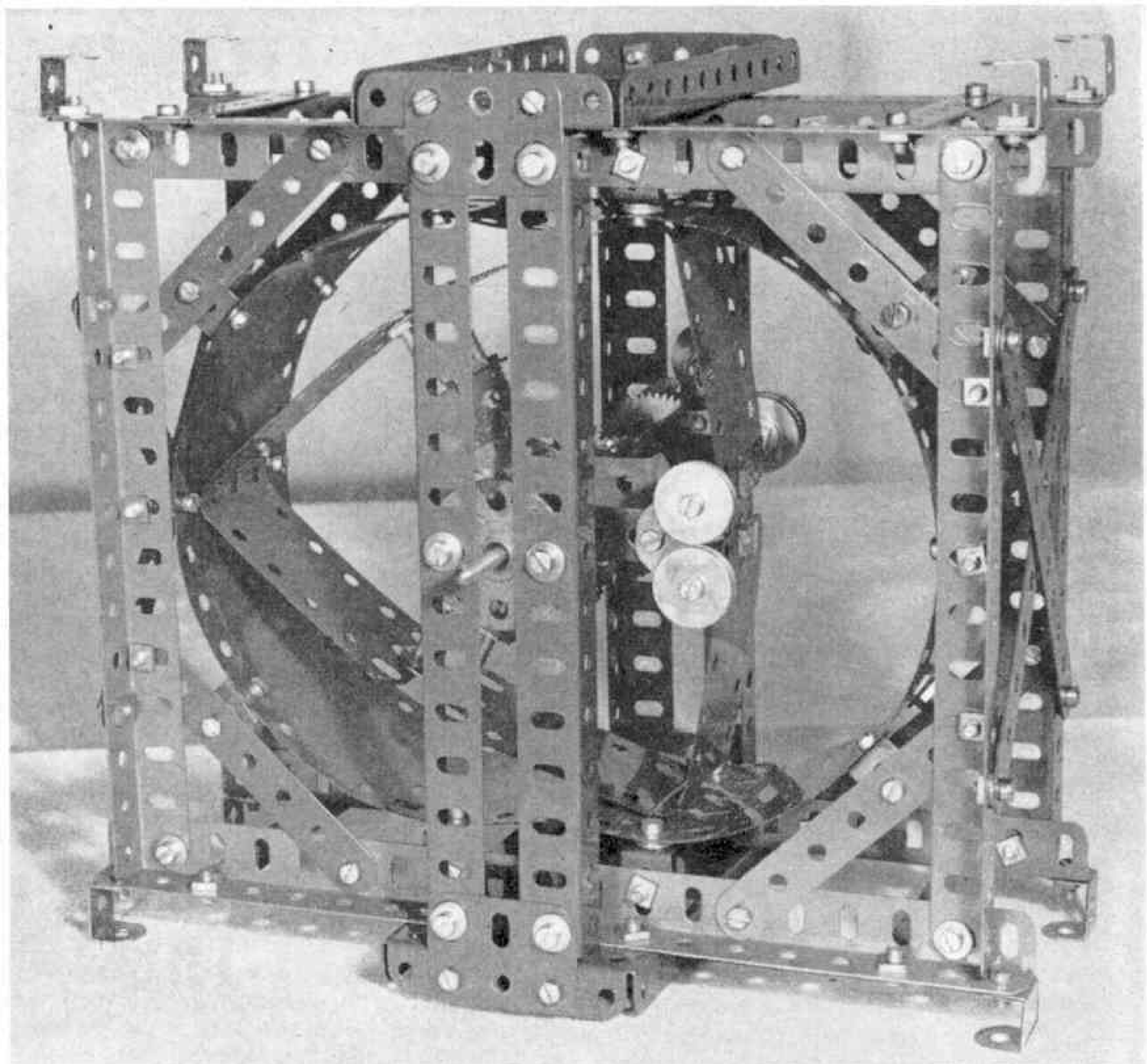
Since the moving parts have only uniform circular motions their masses can be completely balanced and the engine is quite free from mechanical vibration. It can therefore be run quite safely at much higher speeds than a similar capacity engine of conventional design whose reciprocating parts cannot be completely balanced. Higher speed implies that for a required power output the new engine is smaller, lighter and in the long run probably cheaper to produce than the conventional engine. Descriptions of the engine, and of the problems which have had to be overcome, appeared in *The Motor Cycle* of February 18 and 25 and *The Autocar* of February 19 and 26, 1960.

The manner in which the moving rotor changes the shapes and volumes of the compartments is not at all easy to visualise without the aid of a model, and so the Meccano model shown in the accompanying photographs was constructed.

The crank is built up of Rods connected by being passed through the transverse holes of Couplings. Extra strength is provided by using two Couplings for each web of the crank. This construction fixed one important dimension, the crank throw, at ½″. To duplicate the gear arrangement of the real engine in the model with a crank throw of ½″ would require a gear ring and a gear wheel of pitch circle diameters of 3″ and 2″. In terms of Meccano pitch gears this would imply a gear ring with 114 internal teeth rolling round a gear wheel with 76 teeth and since these are not available, an alternative method was used. The solution adopted is shown in Fig. 1. A 50-tooth Gear Wheel is fixed by a Socket Coupling to a Bush Wheel forming one of the main bearings, the Bush Wheel being bolted to the framework. The centre of the rotor comprises a 6-hole Bush Wheel fixed by a Socket Coupling to a 57-tooth Gear Wheel, the combination being free to turn on the crank. The two Gear Wheels are linked by a layshaft carrying a 25-tooth Pinion, engaging with the stationary 50-tooth Gear, and a 19-tooth Pinion engaging with the 57-tooth Gear. The layshaft is journalled in two Handrail Couplings mounted on the ends of 1″ Rods fixed through the centre transverse holes of the Couplings forming one web of the crank.

Readers who enjoy gearing problems will find it an interesting exercise to prove that this arrangement does, in fact, produce the required result, which is three revolutions of the crank to one revolution of the rotor.

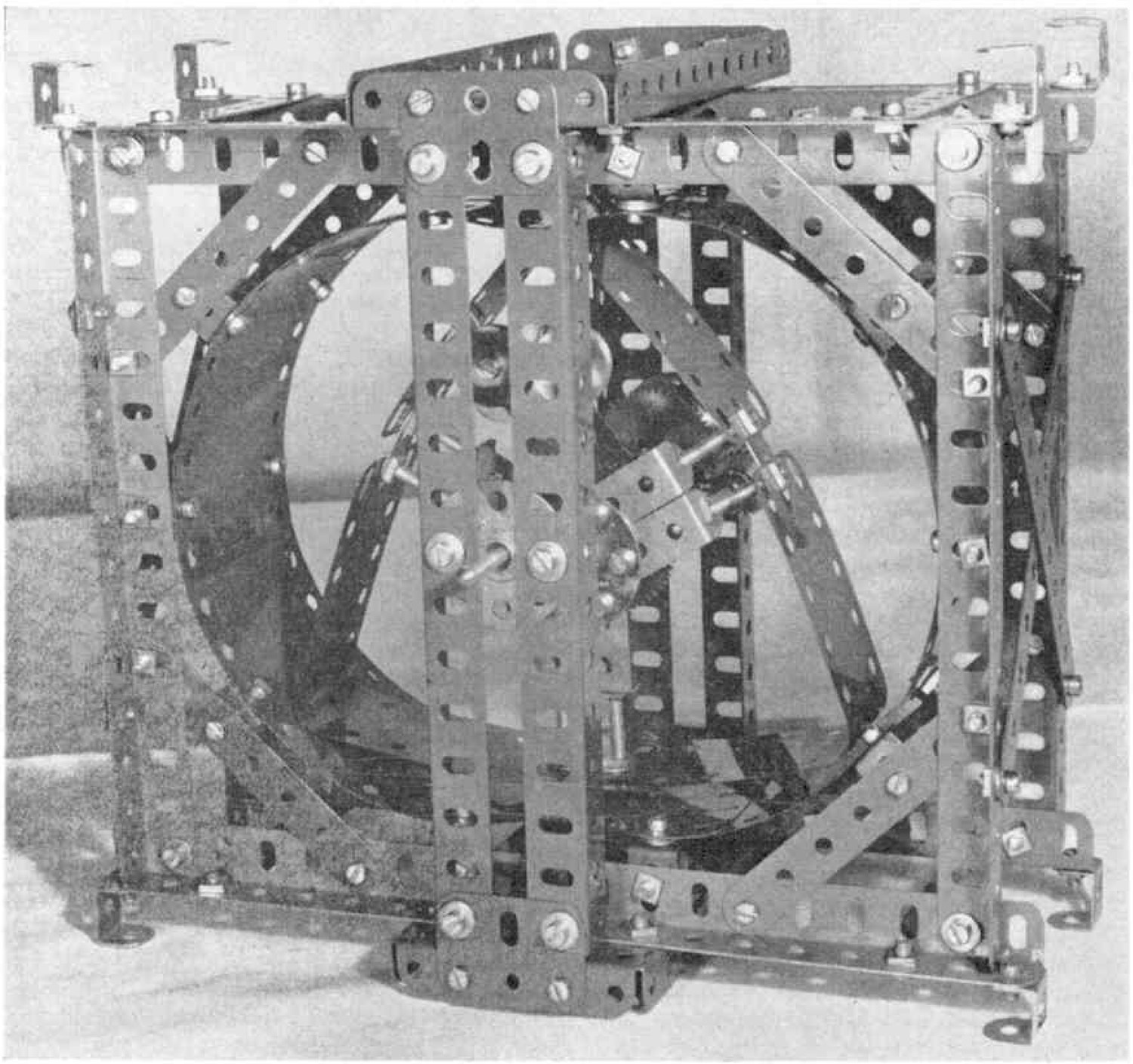
Fig. 2.
The Meccano model N.S.U.–Wankel Engine. In this view the right compartment is seen at its maximum volume.



Choice of Ratio

In a true scale model the ½″ crank throw would serve to determine all the other dimensions of the model. It is reported that the N.S.U. engines so far built have all had an axial length four times the crank throw. It is interesting to note that the resulting 2″ scale length is mid-way between the widths of the Flexible Plates (1½″ and 2½″) used to form the rotor and casing although, of course, the model is primarily intended to represent the section of an engine rather than the complete engine. Attention to scale is desirable in choosing the rotor dimension (centre to apex) as the ratio of this dimension to the crank throw determines the shape of the trochoidal curve. Too small a ratio (say less than 6) produces a pronounced waist with sharp curves. In the real engine this gives trouble with the oscillation of the angle of pressure on the apex seals and the reversal of the centrifugal force on the seals as they negotiate the reversed curvature at the waist (the reversed centrifugal force increases the amount of spring loading necessary to hold the sealing blades in contact with the casing). With a large ratio (9 or more) the waist disappears, but a large ratio increases the overall size of the engine out of proportion to the useful swept volume. For the purposes of the model any ratio between 6 and 8 would be satisfactory, and the exact choice can be made to suit the method of construction.

Fig. 3.
Compare this view with Fig. 2. Here the bottom compartment of the engine is at its minimum volume.



The Flexible Plates forming the casing require several points of support to fix and maintain the required shape, and the most symmetrical mounting arrangement will be obtained if the perimeter is a multiple of 4 holes. It is found that 44 holes (22″) gives a suitable size, the maximum and minimum diameters of the trochoid being 7½″ and 5½″, corresponding to a rotor/crank ratio of 6½.

The required 22″ length of Flexible Plate is made up of four 5½″ lengths and two 3½″ lengths. This provides generous overlaps, and more important, permits a convenient allocation of the Plates to different parts of the curve. The 5½″ lengths are used for the gently curved, almost circular, lobes of the trochoid, while the 3½″ lengths cover the trickier re-entrant curves at the waist. The Flexible Plates are fixed to the supporting framework by ten Angle Brackets along each edge. A few spacing Washers and the use of the slots in the Angle Brackets and Girders provide the necessary adjustments which, with a little careful bending of the Plates, allow the required shape to be set up. There is no

(*Continued on page 68*)

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FOR OTHER STAMP ADVERTISEMENTS SEE ALSO PAGE 68

For Stamp Enthusiasts

Sunny West Indies

By F. E. Metcalfe

IN these cold drab winter days it is, perhaps, a little unkind to refer to the Colony I wish to write about here as being part of the sunny West Indies, but that is what Trinidad—my subject—is, as I well remember from a holiday I once spent there. But, such is our erratic British climate, as likely as not it will be a lovely sunny day here as you read this. So let us forget the weather angle and concentrate on a wonderful set of postage stamps issued by the islands of Trinidad and Tobago on September 24 last year, a set which is still proving a real best seller.

It is more than twenty years since Trinidad, an important component of the British West Indian Federation, last changed the designs of its definitive postage stamps, so I am sure no one will grumble that undue raids are being made on collectors' pockets. So long as our Colonial Office (with the Crown Agents acting on its behalf) is allowed to give advice on the subject, and the Colony heeds that advice, we can go on collecting Trinidad stamps assured that set after set of stamps will not be issued just to tempt collectors, as is happening with Ghana.

Trinidad first issued stamps as long ago as 1847. Its first stamp was the work of a David Bryce, who owned the s.s. *Lady McLeod*. No value appeared on the stamps, but they were sold at 5c. each and one stuck on a letter was enough to prepay the postage from the Port of Spain (still, as then, the capital) to San Fernando. Had such stamps been issued today I do not suppose they would be included in the catalogues, but these *Lady McLeod* stamps are so much sought after that the catalogue value for unused specimens is £650, and used £550. I would much prefer a nice cover with one on, rather than a mint copy.

In 1851 Trinidad really got to work issuing stamps officially, and continued the good work until 1913, when the then current design was adopted to embrace the sister island, and thus for the first time we got stamps for Trinidad and Tobago. This adoption of existing designs was again carried out as late as 1953 for, when new stamps were required for the present reign, all that was done was to change the portrait from that of the late King George VI to that of Queen Elizabeth, which is why I said that the recent new set was the first real change for more than twenty years.

Actually the stamps of Trinidad and Tobago are among the most popular of all British Commonwealth stamps, specialists being very keen on the various "WAR TAX" varieties issued during the first world war.

It is the new "QE" issue about which I chiefly want to write, however, for—as already stated—this latest set, by reason of the attractive designs, is resulting in many collectors taking up Trinidad and Tobago.

There are fourteen values in the set, which runs from 1c. to $4.80, that is from ½d. to £1 in our currency. Now don't let that top value frighten you. Perhaps most of us cannot go as high as that. "*No importa*", as the Spaniards say, as every value bears an interesting design, even the halfpenny stamp. So just go as high as you can well afford. There is no point in straining pocket money for your hobby, but don't overlook that any stamps you buy, of a set like this one, means something saved, so long as you take care to keep the stamps in impeccable condition.

Well, let us suppose you are going to buy the set to 25c. You will get nine stamps, and the cost will be a copper or so under 5/–. Fortunately these nine include the 25c., which depicts the Scarlet Ibis—a beautiful stamp showing a beautiful bird. You will get a picture of the fabulous Pitch Lake if you can go up to 35c. This lake really is a wonderful place. It is many many years since I saw it, and during all that time they have been getting tons and tons of pitch from it, but it only goes down six inches a year. From the stamp, it does not seem to have gone down at all.

Other values show the various buildings which grace Port of Spain, etc., and one

stamp—the $1.20 (5/–) costing you around 6/–, if you can afford to buy it—will really make a splash in your album. It is illustrated on this page and you can see that it is a "smasher"—and in colour it looks much better still. The bird shown on the stamp is the humming bird. No doubt some of my readers have seen these fantastic little creatures; those who have not can be well satisfied with the beautiful stamp. The top value is supposed to represent a map of Trinidad and Tobago, but I am afraid the design is a bit of a flop, although that will not prevent collectors buying the stamp to complete their set, if they can afford to do so. Well, that's all right. Those of us who cannot go so high can buy the values we can afford and, nicely mounted, they will add a most interesting page to our collection.

I have gone into details over this new Trinidad issue, but just now a number of countries in the British Commonwealth are releasing new sets, all of which, in their way, are full of interest. Any of these new sets you may buy will be well worth having. But I must mention one point again—I am sorry to have to do so, but I see so many stamps which have been spoiled by bad mounting, etc.—and that is, *do* take care to mount your stamps with care, and see that your fingers have been well scrubbed before setting to work. You know ours is a grubby country (particularly in winter, when all the coal fires are on at full blast) and "gremlins" take a great delight in transferring the grime by way of our fingers on to our stamps—or so it would seem, so much *does* get transferred, unless we take the greatest care. And what looks worse than a grubby stamp?

Stamp Gossip

OBLITERATIONS

Recently a book was published on Stamp Collecting (so popular is the hobby that we seem to get something of the kind every month or so) in which it was mentioned that an obliteration was any mark which cancels a stamp. Well, I am not going to quarrel with that designation, but I would advise collectors who want to collect used stamps, which look attractive, to set their sights a lot higher than that when selecting copies for their collections. A stamp with a mere blob of ink, or a smudge, simply will not do in these days, when condition counts more and more if you come to sell your collection. I won't go into details here on the latter point, as I will be touching on it later, but, so far as stamp cancellations are concerned *do* pick your stamps with one eye, at least, firmly fixed on the kind of obliteration they have, as in the case of the Lebanon stamp illustrated.

(*Continued on page 69*)

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FOR OTHER STAMP ADVERTISEMENTS SEE ALSO PAGE 66

Stamp Gossip—(*Continued from page 69*)

than ten years ago. It works out at 196 per capita, to use an expression beloved by our American neighbours. We made 4,189,000,000 telephone calls during the same period. This number included 840,000 to ships, and we asked the G.P.O. for Indian Test Match scores 1,750,000 times. How many calls will we put in this summer, when we are beating the Australians? As for stamps, I am told the printers issue 30,000,000 a day to keep up with our demands, and in doing £5,850,000,000 worth of business with us the P.O. took a neat little £20,900,000 profit for itself, which I think is very naughty, seeing that we are dealing with a government monopoly which, in my view, should not make a profit.

THE TIP OF THE MONTH

Now that special efforts are being made officially to push the sales of British Commonwealth stamps of the present reign there is already an increasing demand. This means that obsolete "QE" stamps should be picked up with as little delay as our pockets will allow, as some of these stamps which today only cost coppers will make as many shillings by and by. Verb sap!

N.S.U.–Wankel Engine

(*Continued from page 65*)

difficulty in finding the right shape, for as soon as the rotor is mounted up and turned each apex traces out the required curve and shows directly where any adjustment is required.

The photographs show how the rotor shape is built up of $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates and Fishplates, and mounted with $1\frac{1}{8}''$ Bolts and nuts from $1\frac{1}{2}'' \times \frac{1}{2}''$ Angle Brackets fixed to the 6-hole Bush Wheel. The slots in the Fishplates and the ends of the Flexible Plates allow the perimeter to be extended to the required value and the nuts on the $1\frac{1}{8}''$ Bolts allow the convexity of the flanks to be adjusted.

Theoretically, to fit the trochoid, the dimension from the centre of the rotor to each apex would be $3\frac{1}{4}''$ and to the centre of each flank a maximum of $2\frac{1}{4}''$. It should be clear, however, that in a Meccano model there can be no question of achieving a gastight fit! The object in the model is to show each apex travelling close to the trochoid but without actual contact. A working clearance of approximately $\frac{1}{16}''$ can be achieved, the limit being finally determined by small wobbles of the rotor permitted by backlash in the gearing.

The object in using convex rather than straight rotor flanks is to reduce the clearance volume at full compression, and so to achieve a satisfactory compression ratio, but since the compressed gas must be able to pass from one side to the other, a gastight fit of the rotor flank to the trochoid waist would not be suitable. In the real engine, channels are cut in the rotor flanks to permit passage of the gas. The rush of the compressed gas through the channel creates turbulent conditions which promote efficient combustion without "pinking", even when using low octane rated fuels, which would certainly "pink" in a conventional engine of similar compression ratio.

The stacks of $\frac{3}{4}''$ Washers, prominent in Fig. 2, are used as balance weights. If the model had been symmetrical the balancing would have been shared equally between balance weights on each end of the main shaft, but because of the unsymmetrical gear arrangement the balance weight on the gearing end of the model has to be increased in weight (2×9 washers instead of 2×5) and shifted in angular position so that it can take care of the balancing of the layshaft in addition to its half share in the balancing of the rotor. Since the remarkable performance of the real engine is largely dependent on its perfect mechanical balance, it is interesting to note that this feature is clearly shown by the model. In spite of the apparently complicated motion of the rotor the model spins quite freely, showing that substantially perfect balance has been achieved.

Figs. 2 and 3 show the model in two characteristic positions. In Fig. 2 the right hand compartment is at its maximum volume, while in Fig. 3 the compartment at the bottom is at minimum volume. The change in volume (corresponding to the "swept volume" in a conventional engine) can be calculated from the quoted dimensions as approximately 275 c.c. Thus, the model is somewhat larger than "life size" if compared with the N.S.U. prototypes (reported as 125 c.c.) but probably about the same size as some of the prototypes of Curtiss Wright who are working on larger engines than N.S.U.

Stamp Gossip—(*Continued from page 67*)

DUTCH NEW GUINEA

Although this far-off country is often in the news (for Netherland's claim to it is disputed), it is not often that I have referred here to its stamps, with so many other countries claiming philatelic attention. But many collectors go in for thematic displays and among the popular subjects is that of butterflies, so a word about the New Guinea charity issue. There are four stamps, and for those interested in writing up the set it can be explained that the 5c.+5c. shows the *Papilio paradisea stgr.*, known in Australia as "Birdwings", for they not only fly high and fast but glide like birds, with wings half folded. Next, the 25c.+10c. depicts the *Cethosia Cydippe L.*, a most beautiful butterfly found from Australia to India. The 10c.+5c. shows the *Thysonotis Danis Cr.*, which belongs to the largest family of diurnal butterflies from Australia and these can be found anywhere in the sun. Finally, there is the 30c.+10c., with the *Taenaris Catops Westw.*, a butterfly which shuns the sun, and flies in and out of bushes, etc., near the earth. Altogether a delightfully printed set, as the stamps of Holland and its overseas territories always are.

SALT AD LIB

While some collectors prefer their stamps merely to bear a portrait, as did the "Penny Black"—the first postage stamp ever—many others like their stamps to tell a story, hence the popularity of thematic collecting. These latter enthusiasts will, in consequence, be interested in the £1 stamp issued on November 1 last year by the Turks and Caicos Islands, even if the high face value puts it a bit above one's pocket. Most of my readers will know that the issuing country lies in the West Indies, about 450 miles north-east of Jamaica. Not so many of them will know that the name Turks Islands is derived from a local species of cactus (*Echinocactus Nyriostygma*). This plant has a scarlet flower resembling the fez, which used to be worn, but it is now forbidden in Turkey—a great pity, as the felt hats the men now use are not half as attractive. But to get back to this £1 stamp and its very interesting design: the foreground is

taken by a pelican (*Pelecanus*), a large waterfowl very familiar at dawn when the salt workers commence their daily task, and the background shows the salinas, or salt ponds, and a heap of salt. The salt is obtained from these ponds by solar evaporation. Incidentally, these ponds date back to the seventeenth century, and they still provide the islands' major industry. A most interesting stamp, as all will agree.

PLAY UP, SUDAN!

If there is one game which Britain has taught the world it is football, and now, alas, our one-time pupils can teach us something. Unfortunately we are slow to learn, slower than was the rest of the world. There must be a number of *M.M.* collectors who went in for the many sets issued ostensibly to commemorate last year's Olympic Games but really as a bit of extra pocket money for the postal administrations concerned. One of these sets I like very much, as I think the footballer depicted is one whom even I could have played rings round. This set was issued by Sudan, and consists of three values. I really do love the footballer shown in the design for, as I have already indicated, he looks as I must have looked long ago, and the fact that he has appeared on a stamp is a tribute to all of us who used to try to play this game.

THE FABULOUS G.P.O.

Stamp Collecting is by far the most popular indoor hobby and its devotees are to be found all over the world; in most places clustered as thick as bees around a hive. Yet I wonder how many of these enthusiasts ever give a thought to the institutions which issue these fascinating bits of paper? Not many, I am afraid, and yet what a fabulous organisation our own Post Office is, as a case in point. Here, just to make you boggle, are a few figures appertaining to its activities. During the year ended March 31, 1960, we posted a total of 10,000,000,000 letters (yes, ten thousand million), that is 1,850,000,000 more. (*Cont. on previous page*)

By E. W. Argyle

Locomotives On Stamps

THE first Swiss railway engine was the "Limmat", a wood-fired pioneer of the Swiss Northern Railway, the first section of which, between Baden and Zurich, a distance of 14½ miles, was opened for the public service on August 9, 1847, after a ceremonial inauguration the previous day. It was speedily nicknamed the "Spanish Bun Railway" as it enabled Zurich citizens to obtain rapid delivery of a confectionery of that name which was a speciality of Baden confectioners. "Limmat", built at Karlsruhe in 1847 at the Emil Kessler Works, made a centenary journey over her old line on August 9, 1947.

Six beautiful stamps were issued by Spain to commemorate the Seventeenth International Railway Congress which took place in Madrid between September 28 and October 7, 1958. A "Talgo" train, on service between Madrid and Irun, is shown on the stamp above. The engine and carriages were built by the American Car and Foundry Company in the U.S.A.

PHOTOGRAPHY AND YOUTH

THE photograph on the right, entitled "The Visiting Team", won an honour for 11-years-old David Martin of the Abermad School, Aberystwyth in the 1960 National Challenge Trophies Competition for School Photography, which is sponsored by the Photographic Information Council. David won the Junior Trophy.

Winner of the Senior Trophy was Richard Coleman, aged 17, of Gresham's School, Holt, Norfolk, with two photographs which were considered to be of equal merit, "Bittern with Young" (illustrated below, right) and "Tree Sparrow, Drinking." The photograph at the bottom (left), "Trafalgar Square on a Wet Morning", secured a place on the prize list for 16-years-old P. F. Thompson of St. George's School, Harpenden, (Herts.), who was runner-up for the Senior Trophy.

Notes on photography will appear once again in the pages of the "Meccano Magazine" before long. Meanwhile, readers who require details of the National Challenge Trophies Competition, which is open to members of school camera clubs throughout the United Kingdom and Eire, should write to: The Press and Public Relations Officer, Photographic Information Council Ltd., Wardrobe House, Wardrobe Place, London, E.C.4., who will supply them with the necessary information.

Lakeland Steamers—

(*Continued from page 39*)

on the lake. During winter, the vessels are re-fitted at Lakeside, the ships' crews doing the necessary work. A Ministry of Transport inspector examines the vessels before they are put back into service.

Marine Engineer Foreman Richard P. Jones is in charge at Lakeside, but the District Marine Manager and Harbour Master at Heysham has overall control. Mr. Jimmy Jackson, skipper of *Teal II*, is the senior captain of the fleet. He has 40 years' service on the lake and was in command when, on a visit to the lake during their 1956 tour of the area, the Queen and the Duke of Edinburgh sailed on *Teal II* from Ambleside to Bowness. The motor launches of the Windermere Fast Motor Boat Club provided an escort and *Teal II* proudly displays a photograph of Her Majesty above a plaque which commemorates the event.

The Passing of the "Spirit"—

(*Continued from page 41*)

Every year *Spirit of Progress* has run some 140,000 miles, carrying more than 200,000 passengers. In 1954 the "S" Class steam locomotives were replaced by diesels and latterly the *Spirit* has been hauled by powerful 1,800 h.p. Clyde-General Motors diesel—electric locomotives. To commemorate the outstanding service of the famous Pacifics, the new diesels were also called "S" Class locomotives and the first four carried the same names as the original steam engines.

The vast £12,000,000 plan to build a standard gauge line from Albury to Melbourne alongside the existing 5 ft. 3 in. gauge track will eliminate the need to change trains. New air-conditioned luxury sleeping car expresses are planned to run all the way between Sydney and Melbourne. When they come into service, the *Spirit* will fade into history.

Fortresses of Lake Ontario—

(*Continued from page 49*)

blocks from the wall—which was four and a half feet thick—to allow a man to pass through. On the Sunday after the hole had been dug, the prisoners begged their gaoler, who had just been married, to take his wife to church, and "volunteered" to forego their daily exercise so that he could do so. Then, while the guard beat the evening tattoo, they crawled through the hole into the gun room, removed an iron grating which gave access to the outside, and lowered themselves to the ground by a rope made from knotted sheets. After many hardships they succeeded in crossing the river where they were welcomed by American sympathisers.

When the rebellion was ended and peace restored, John Montgomery returned to Canada and not only received Queen Victoria's pardon but also considerable financial compensation for his sufferings. With the money he set up a tavern and had lived to the patriarchal age of 96.

Railway Notes—(*Continued from page 47*)

six numbers, beginning its life as North London No. 76, becoming successively 116 in 1891, L.N.W.R. No. 2650 in 1909, L.M.S. No. 7505 in 1926, and then 27505 in 1934. This particular locomotive, together with three others, had been in recent use on the Cromford and High Peak Line in Derbyshire for shunting at Cromford, and hauling trains between Middleton Top and Parsley Hay. The type was first used on this line in 1931.

The 0–6–0 tanks were known by the North London drivers as "Moguls", possibly because the first one appeared in

"Have you one with more space?"

1879, when the Adams 2–6–0s or "Moguls" made their appearance on the Great Eastern. There was a definite similarity between the two classes in their low horizontal cylinders and the typical Adams single-bar crosshead.

Personal recollections of the class fall into two phases, the first when I used to see them approaching the High-Level station at Willesden Junction with freight trains, up the incline from the direction of Acton Wells. A galloping start to the climb, as far as permitted by the load and the 4 ft. 4 in. driving wheels, would be followed by progressive slowing of the exhaust beats as load and gradient began to tell. Then as the incline was surmounted the train would pass out of sight of my vantage point on the down main platform and rumble slowly through behind the screen of the High-Level station, its progress punctuated by the smoke and steam visible at intervals above the roof.

The second phase involved a more intimate connection for I once worked on them at a shed where several were quartered for dock shunting and similar work. And apart from their simple and robust character I found that they had about the most ponderous brake blocks I have come across. Changing a set of these could be trying, more particularly because of the small driving wheels, but one could be cheered by the most inappropriate wartime legend *Flying Fortress* chalked on the cab by one of the shed humorists.

(L. Norman)

Air News—(*Continued from page 51*)

Nor is this all, for the pilots of Strategic Air Command have discovered that their Hound Dogs can be used to improve the bombers' performance.

The Boeing B–52G Stratofortress carries a Hound Dog under each wing. By switching on the missiles' 7,500 lb. thrust J52 turbojets during take-off, their power is added to that of the bomber's own engines and the result is a much shorter run and quicker climb-away. Nor does it reduce the range of the missiles, for their fuel can be topped up from the bomber's tanks during flight.

A 60 ft. Two-Level Railway—

(*Continued from page 57*)

railway ran immediately above the living quarters of the bungalow in which it was situated.

The traffic was worked by sixteen Hornby-Dublo Locomotives, including a *Bristol Castle*, four Duchess 4–6–2s, one *Sir Nigel Gresley* 4–6–2 and on L.M.R. 8F 2–8–0, all these being concerned with long-distance main line traffic. For more intermediate and local working there were three 2–6–4 Tanks, four 0–6–2 Tanks and two Bo-Bo Diesel-Electric Locomotives.

TREVELYAN SCHOLARSHIPS: 1960 AWARDS

The Selection Committee of the Trevelyan Trust announce the third annual award of Trevelyan Scholarships as listed below. The scholarships are for £500 per annum, and are tenable at the Universities of Oxford and Cambridge.

Tenable at Oxford University

B. H. Cruickshank, Llandovery County High School; J. M. Griffith-Jones, Cheltenham College; J. M. W. Hogan, Winchester College; C. M. Low, Worcester College for the Blind; A. F. McPherson, Ripon Grammar School; J. A. G. Newton, Uppingham School; D. A. Parfit, Eton College; R. A. Ryall, Merchant Taylors' School, Sandy Lodge; C. H. Senior, Winchester College; W. S. Verity, Winchester College.

Tenable at Cambridge University

P. H. Grattan, Tonbridge School; K. N. Haarhoff, Abingdon School; M. C. Hodgson, Sedbergh School; C. G. Housden, Westminster School; R. A. C. Hughes, Marlborough College; R. T. Knights, Cheltenham College; N. Lafitte, Leighton Park School; M. Lushington, Westminster School; L. R. Sail, Sherborne School; C. T. Sandars, Oundle School; D. J. Skilton, Tollington School; H. B. Wenban-Smith, Bradfield College; A. R. Williams, Rossall School; J. A. T. Woodford, Cambridgeshire High School.

SOME NEW TITLES

CHANGE AT CREWE (British Railways, 5/–).

The Manchester–Crewe electrification was described in the *M.M.* in November 1960. *Change at Crewe* is the apt title of an official publication providing a full record in picture and word of the general planning and preparation of the scheme, the engineering works necessary, and the equipment provided. The page size is large, 12¼ inches by 9¾ inches, so that the well reproduced illustrations—and there are plenty of them, some in colour—can be easily studied.

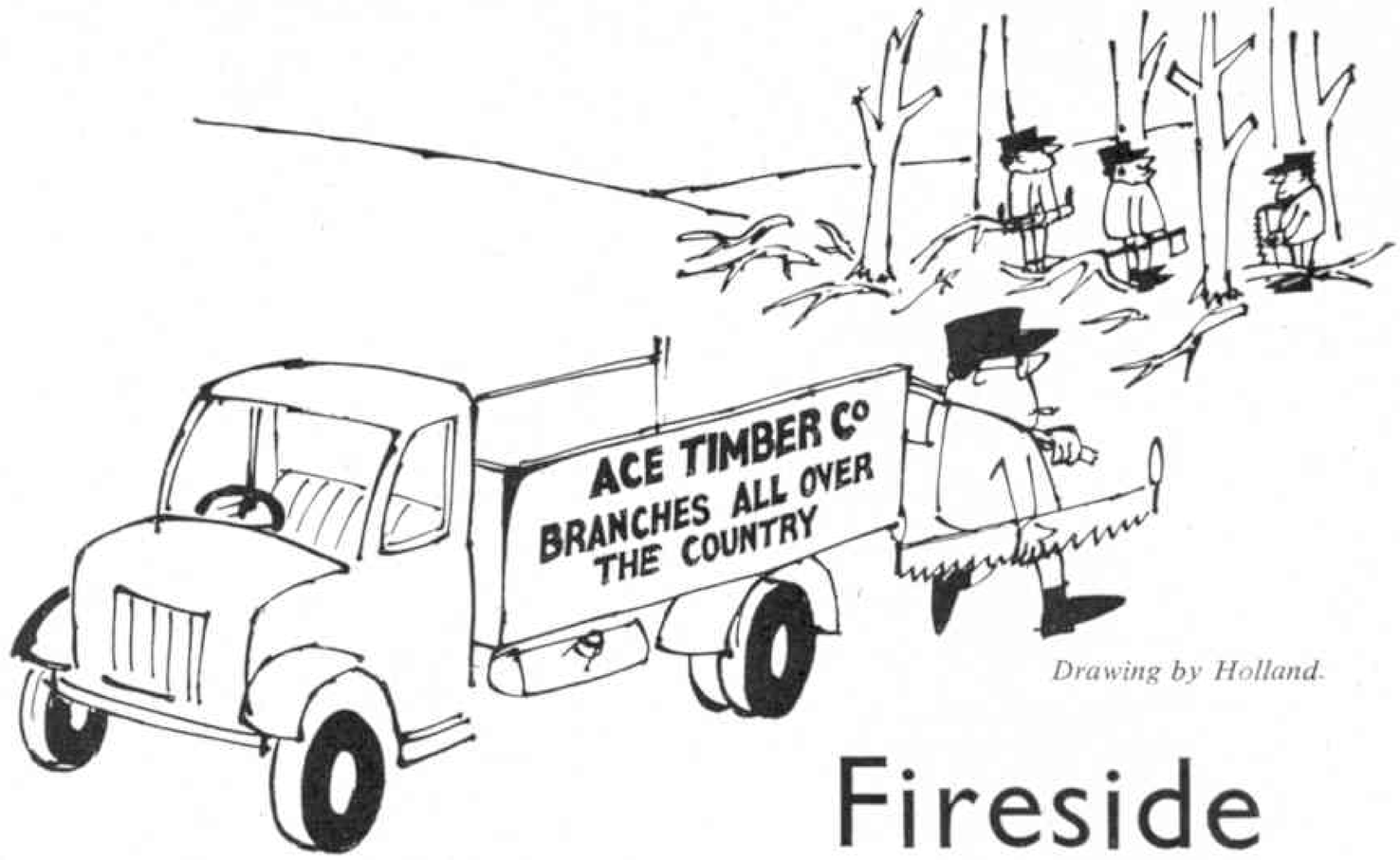
RAILWAY ENTHUSIAST'S GUIDE by P. M. E. Erwood (George Ronald, 10/–).

In this guide the aim has been to collate information not readily available in any other single publication for the benefit of the railway enthusiasts. It provides a directory of clubs and societies that cater for the many interests involved in the railway and miniature railway hobbies. Periodicals published by these organisations are listed, as also are museums where railway relics and so on are preserved, in this country and overseas. The book does not claim to be complete, but 50 countries are covered and it is hoped to increase the overseas section in subsequent editions.

KEILKRAFT HANDBOOK, 1961
(price 2/–)

Model aircraft and model boat enthusiasts will be delighted with this new edition of the well known *Keilkraft Handbook*. There are special articles on different aspects of the model aeroplane hobby, written by experts in their particular fields and beginning with an introductory article aptly entitled "Which Model to Choose". Ron Moulton, Editor of *Aeromodeller* writes on how to build your model, and Ernie Webster gives valuable advice on covering and finishing it. However perfectly a model is built, if it is not trimmed properly it may crash on its very first flight, and the sound advice Mike King gives in his article "Trimming Your Model" should avert many a disaster. Peter Chinn, who began aircraft modelling as long ago as 1936 and has a private collection of over 200 model engines dating from that time, writes on "Model Engines Today and their Operation". Aside from the aircraft hobby, model boat building is dealt with by Vic Smeed, Editor of *Model Maker*. All the articles are well illustrated, many of the pictures showing stages of work in progress. Finally there is a useful glossary of model aircraft and boat terms.

In addition, the Handbook contains illustrated details of all Keilkraft products —model aircraft, glider, motor boat and other kits, model engines and a vast array of accessories. These, like the Handbook, are obtainable from over 3,000 Keilkraft stockists everywhere.



Drawing by Holland.

Fireside Fun

Customer: There was no wishbone in that chicken you sold me.

Butcher: Madam, that chicken was reared on our own farms. It was so contented it had nothing left to wish for.

* * * *

Eddie: May I have threepence for the old man who is crying?

Mother: Yes, dear. What is he crying about?

Eddie: He's crying "Chestnuts, threepence a bag."

* * * *

Waiter: Pardon me, sir, but the money you've given me doesn't include anything for the waiter.

Diner: I'm so sorry, but really I wasn't aware that I had eaten one.

* * * *

"Ach, Sandy, the baby's swallowed a penny!"

"Weell, let him ha've it—tomorrow's his birthday."

'Yes, I think we can fit you in!"

A Western T.V. actor, noticing a small boy wandering around the set, said to him, "Well, son, would you like to have my autograph?"

"No, sir, I wouldn't," replied the lad, "but I would like to know what you do with the horses after the riders are shot."

* * * *

A college professor of logic was attempting to teach his young son the principles of clear thinking and the necessity for defining all terms. He pointed to a wall clock which had just struck the hour.

"Now if I were to take a hammer and smash the clock," he said, "could I be arrested for killing time?"

"No," said the lad without a moment's hesitation. "It would be self-defence."

The professor frowned. "How do you figure that out?"

"Because," answered the boy, "the clock struck first."

* * * *

"Can I go out and play with the boy next door, Mummy?"

"No. You know I don't like him."

"Then can I go out and fight him?"

* * * *

Brain Teaser

The Three Missionaries

Three missionaries with three cannibals wished to cross a stream. Their one boat held only 2 persons. If during the crossing the cannibals outnumbered the missionaries on either bank they would eat them. How did the missionaries arrange the journeys to enable them to get across safely?

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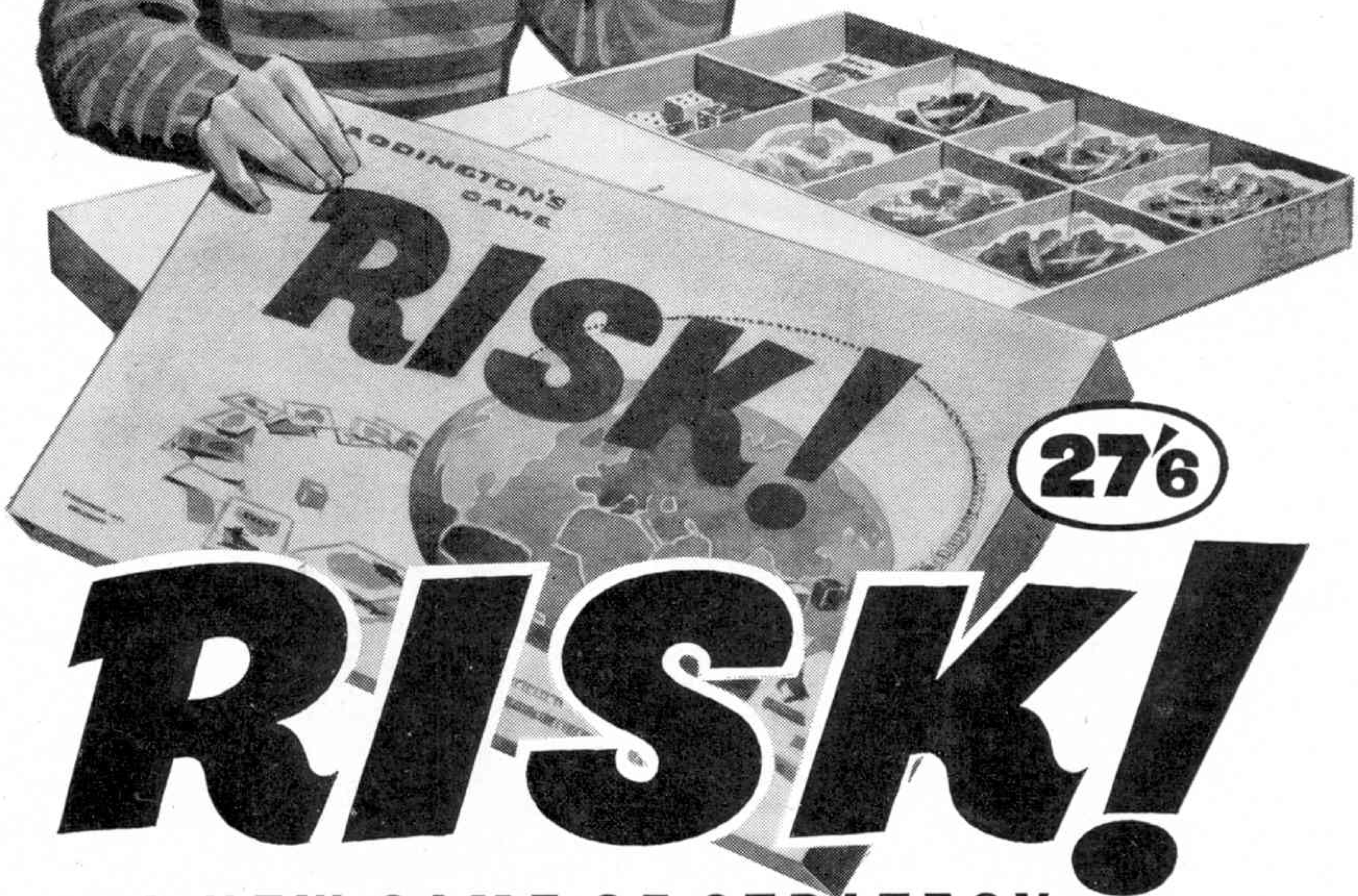

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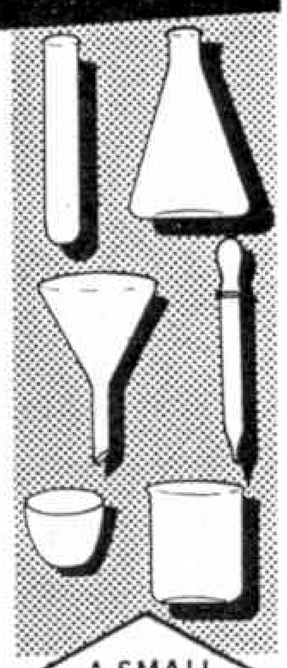

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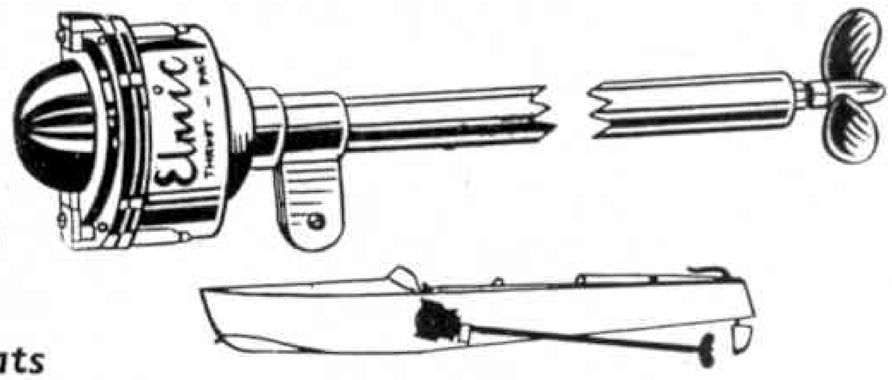

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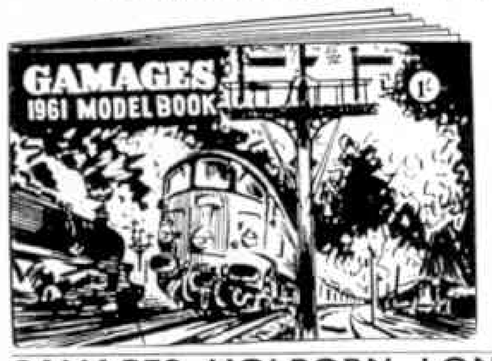

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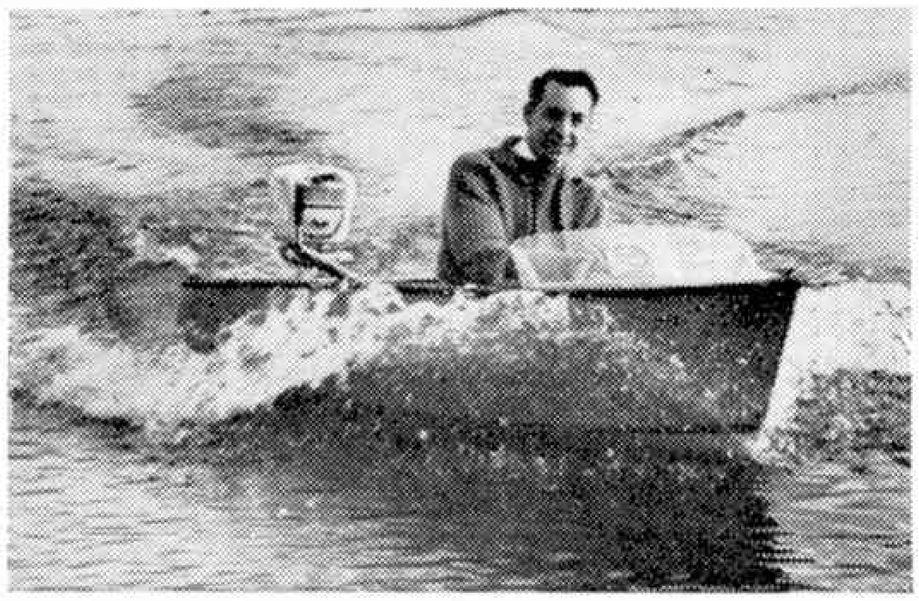

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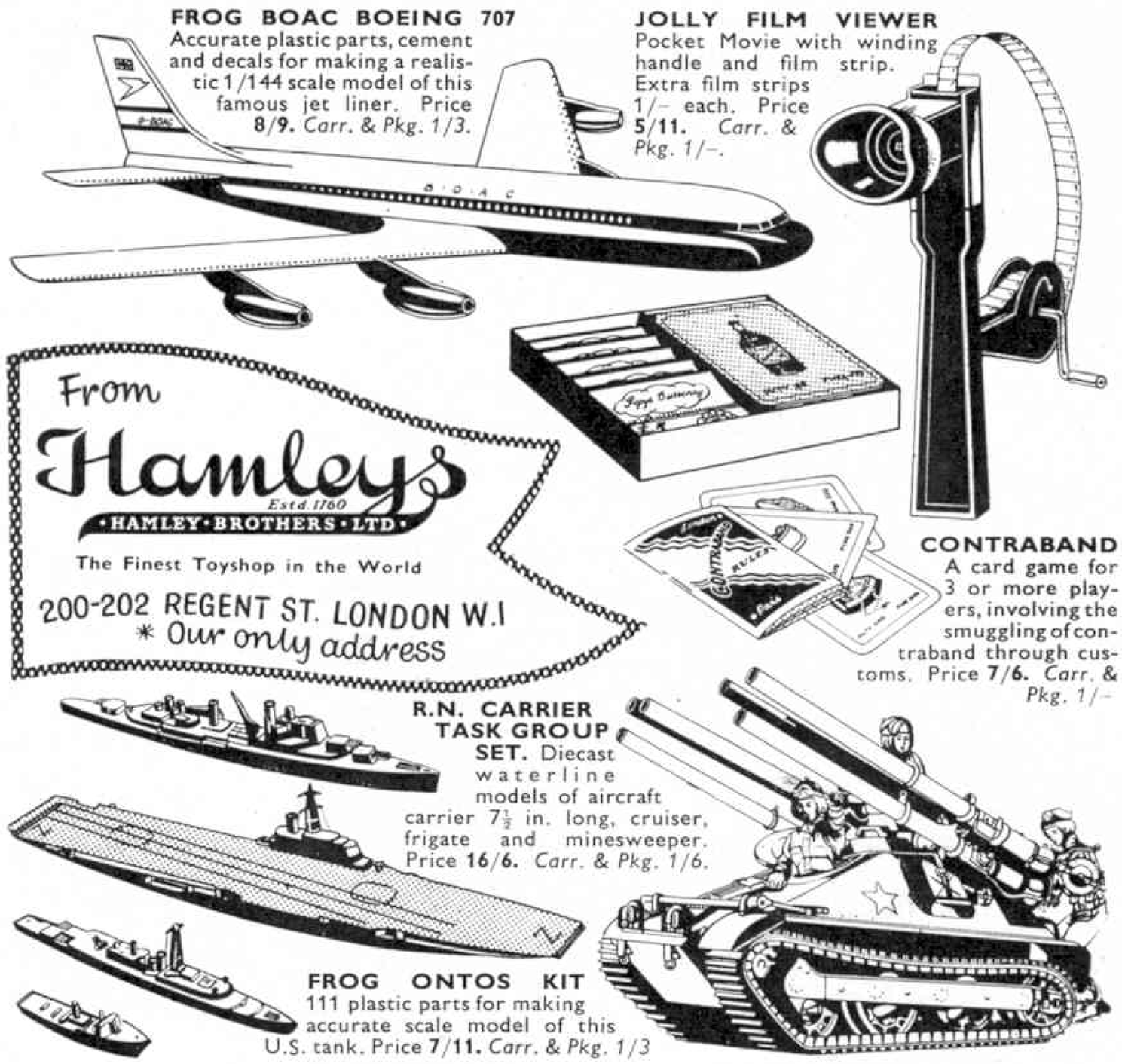

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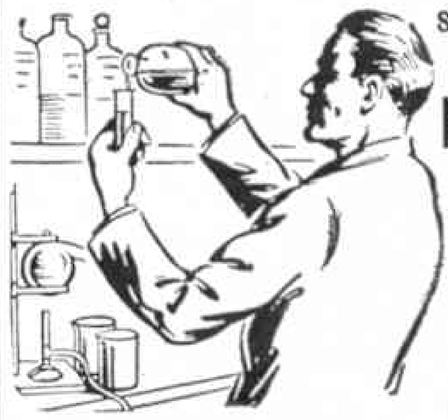

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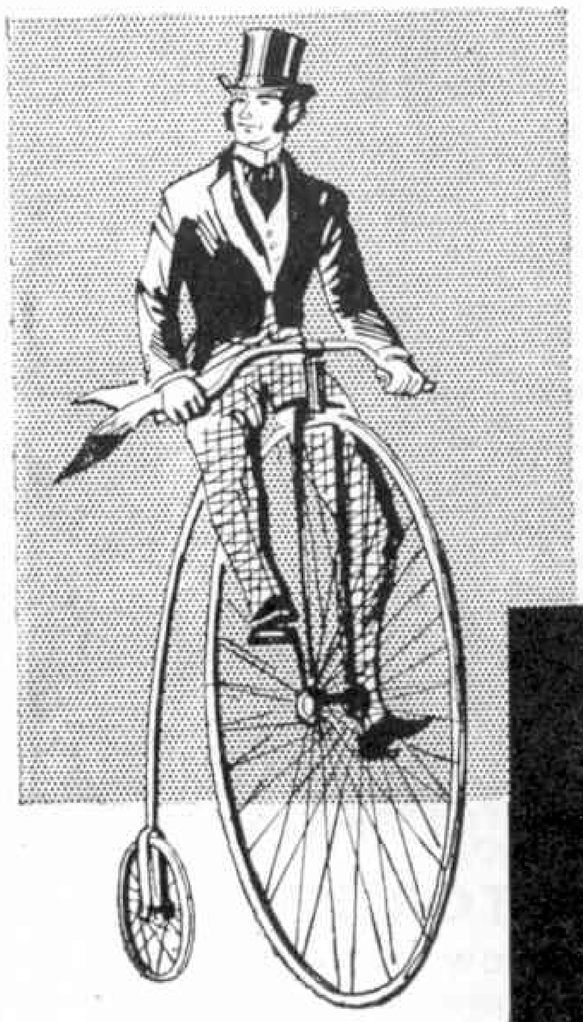

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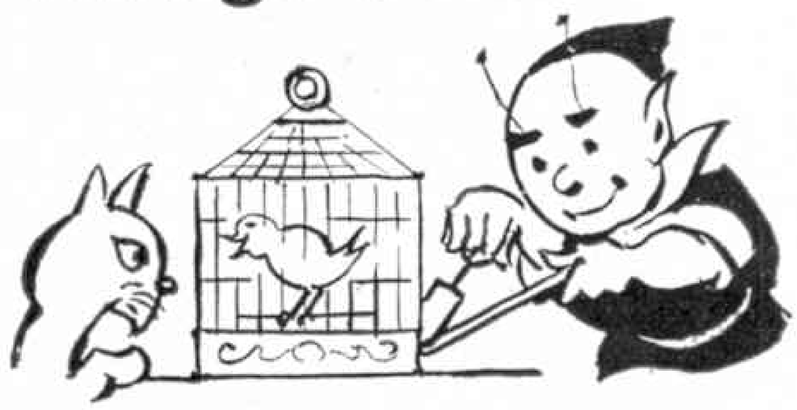

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