VOL. XLVIII. No. 8 AUGUST 1963

MECCANO MAGAZINE

1/3

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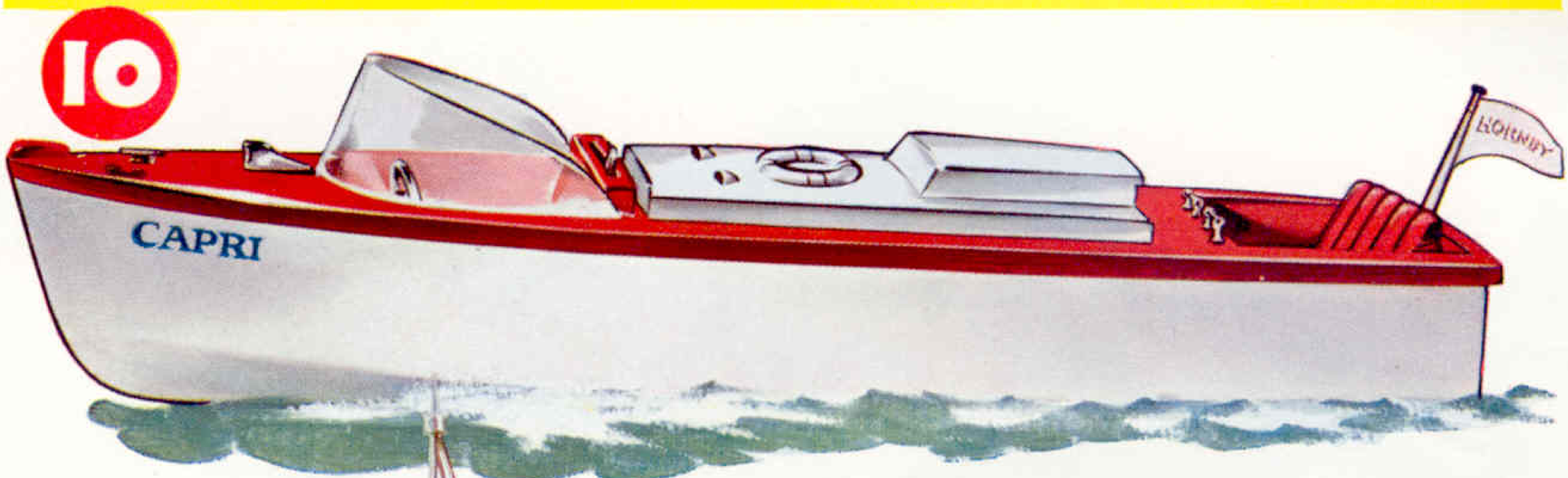

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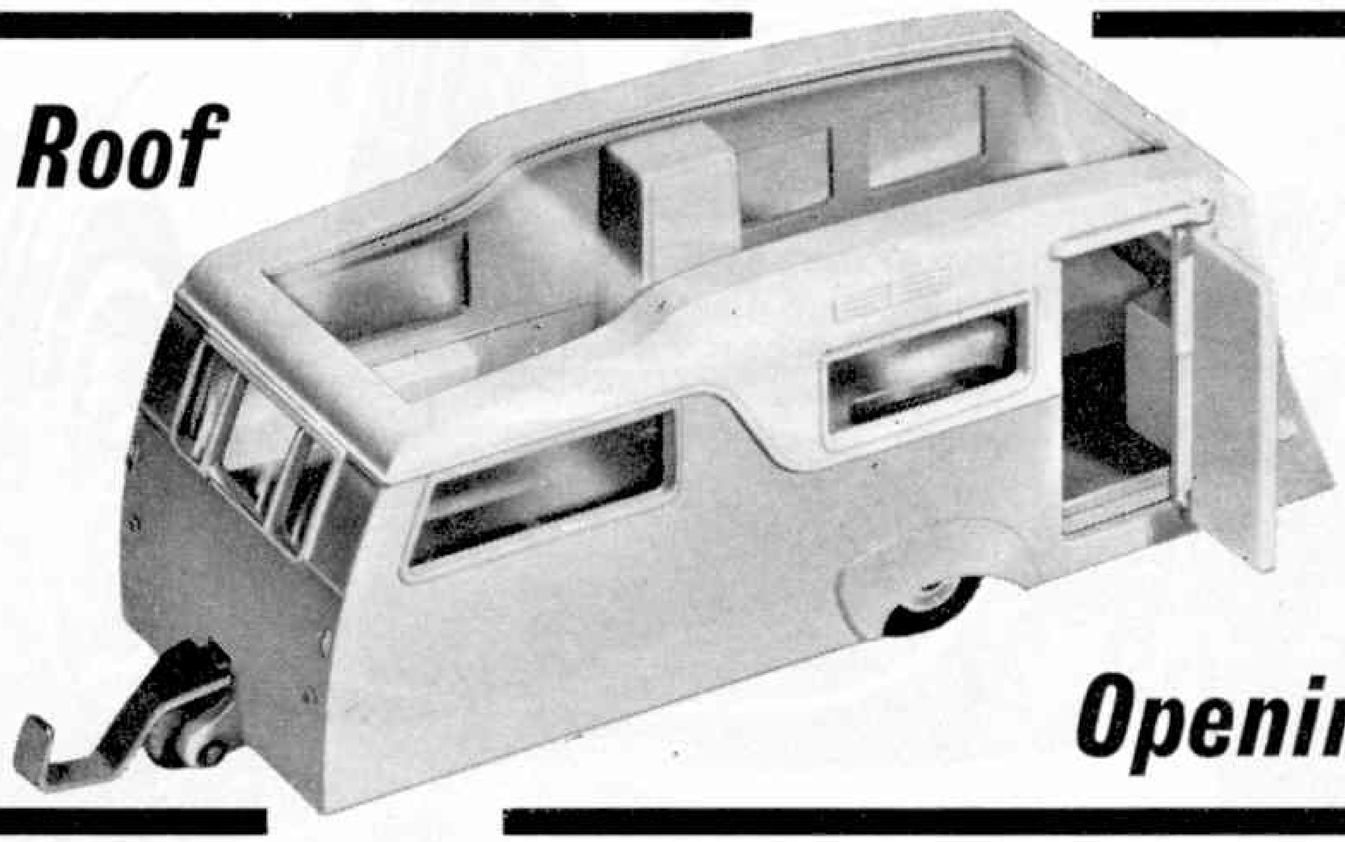
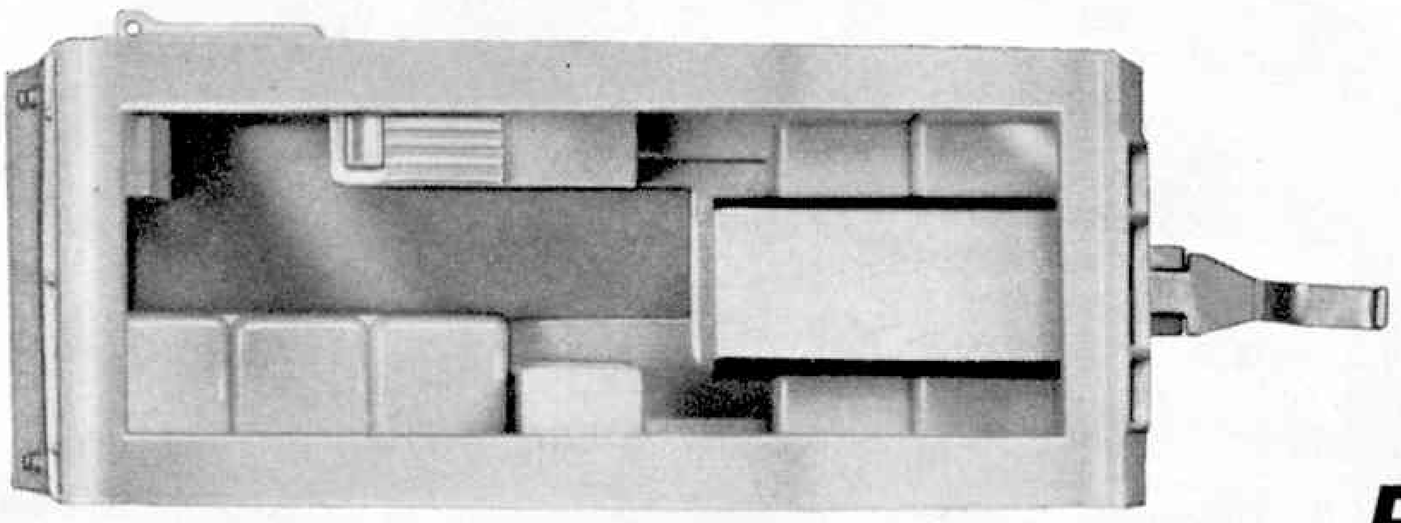


Opening Door



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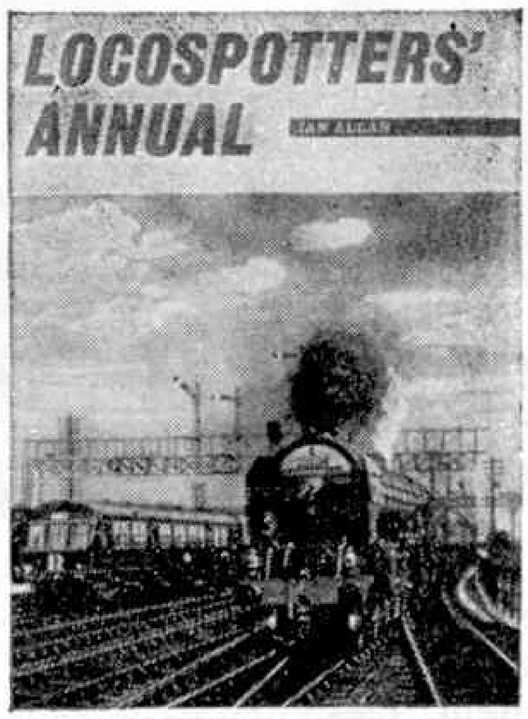

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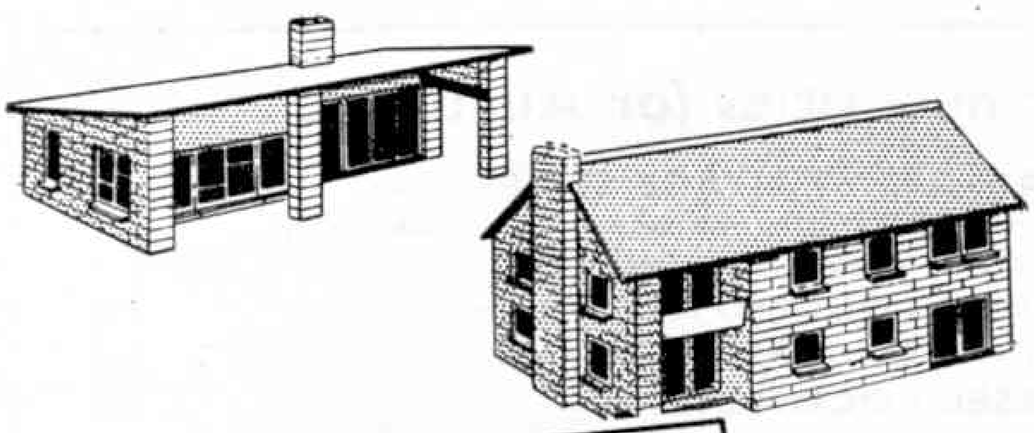

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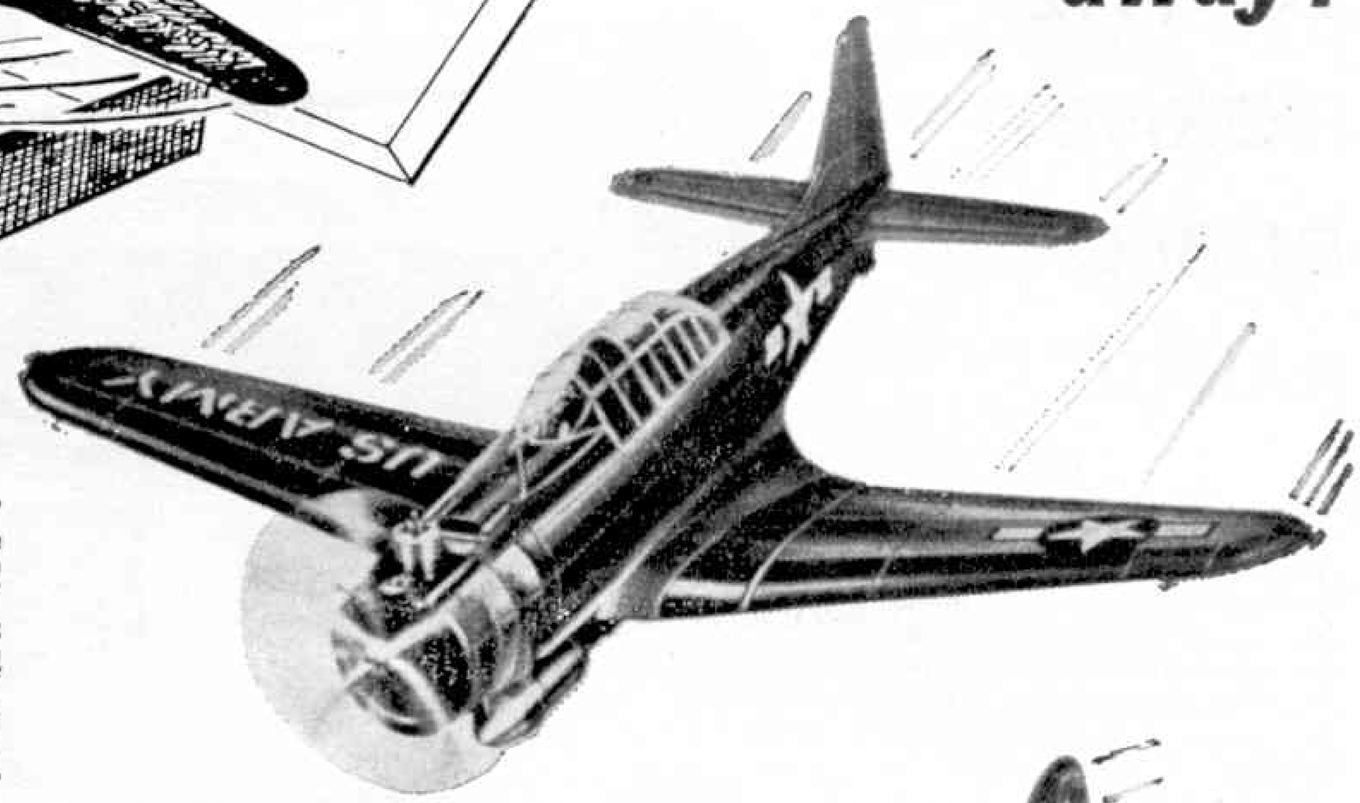

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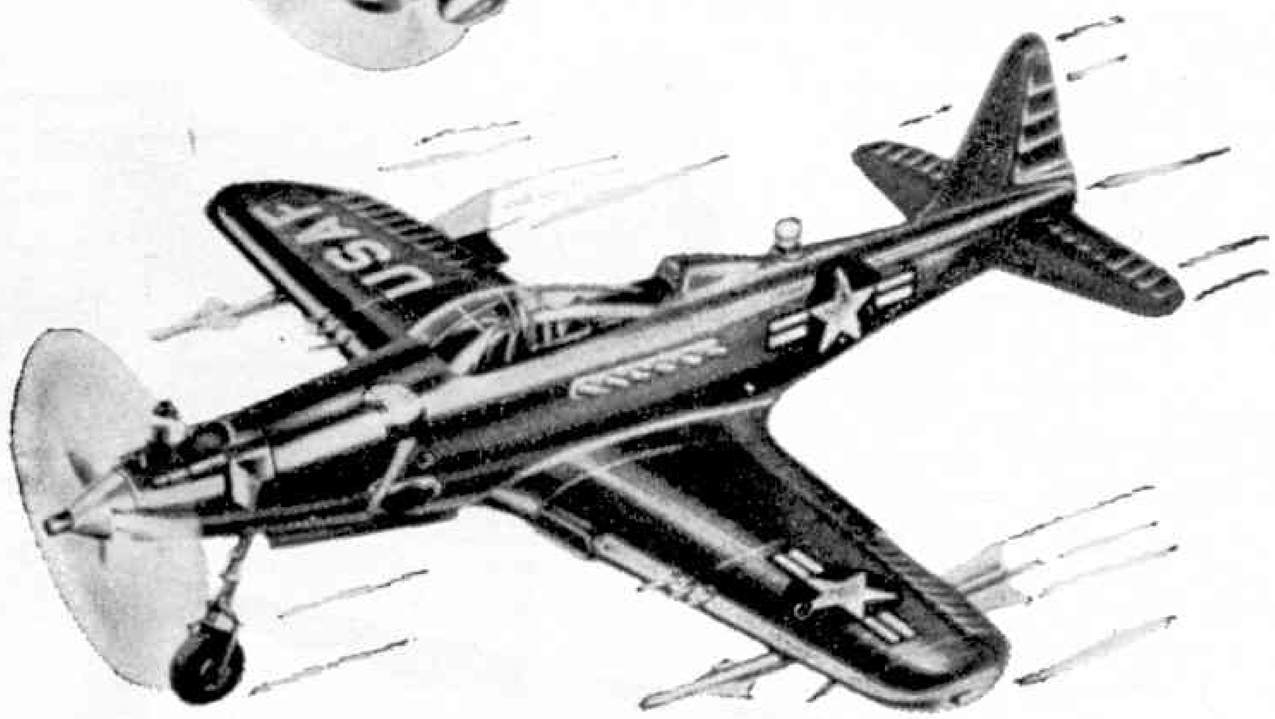

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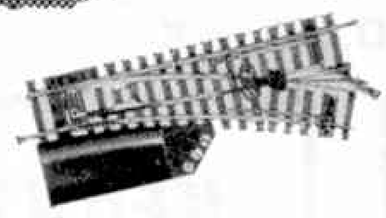

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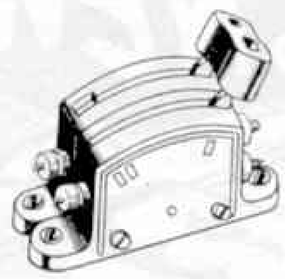

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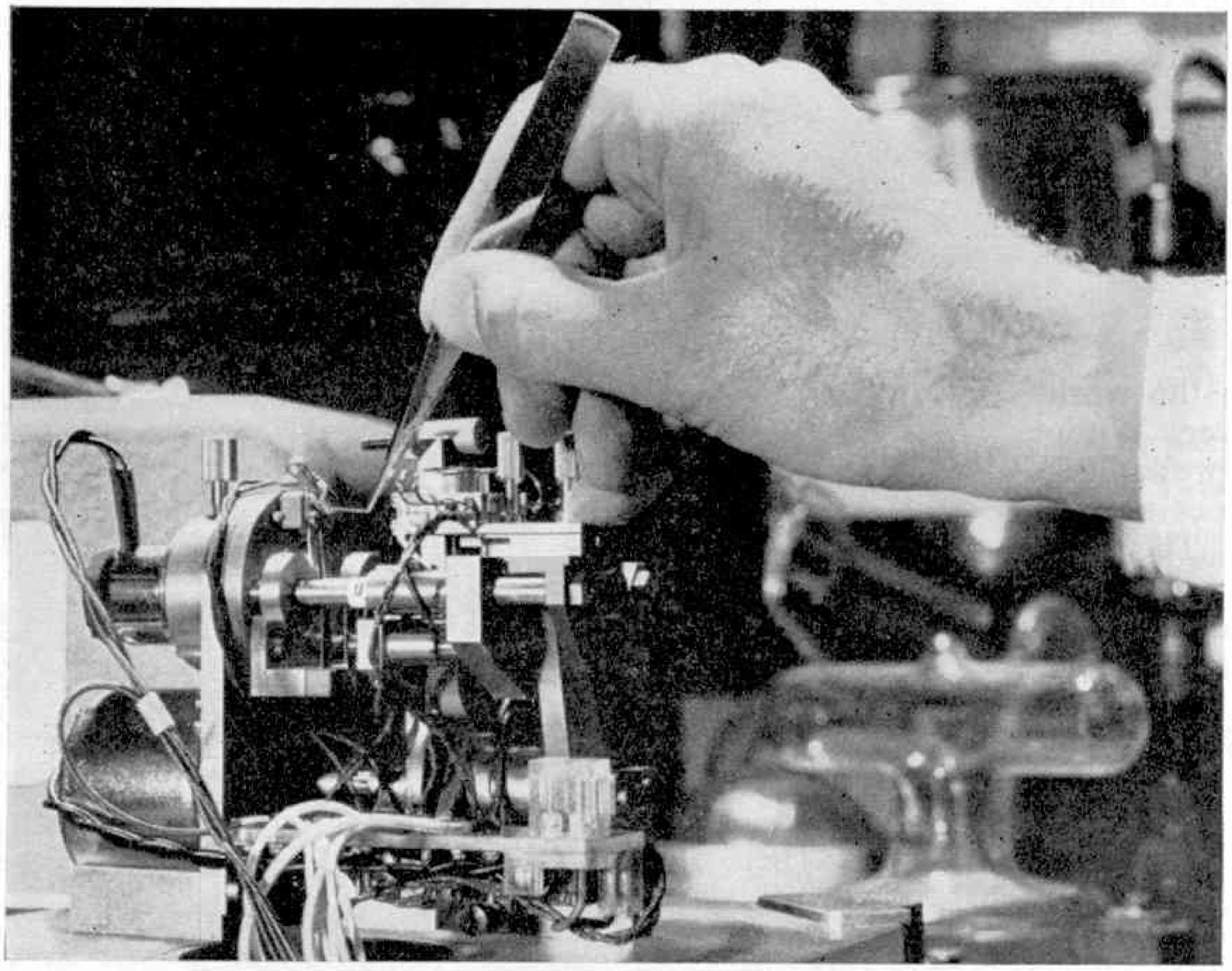
Volume XLVIII **No. 8** **August 1963**



"MEASURING the strength of a whisker" is an appropriate title for the picture you see above, the whisker being one of those crystalline filaments of metals, often thinner than a human hair, which offer metallurgists the hope of producing materials which are hundreds of times stronger than ordinary metals. This is because the filaments are virtually free from flaws in their structure, while ordinary metals have a large number of inherent defects which reduce their strength. Indeed, it is estimated that a composite material incorporating whiskers would have to be only one-fifth to one-tenth as heavy as ordinary metals to possess the same strength. Measuring the tensile strength of these whiskers is a very delicate operation. The usual equipment for this cannot detect the erratic changes that take place in the strength of the whisker when it is stretched beyond the elastic limit. However, the Amsterdam Laboratories of the Royal Dutch/Shell Group of Companies have recently developed the micro-tensile tester, pictured here, which readily detects these fluctuations.

The specimen is gripped at both ends and then stretched as one end of the whisker is pulled. To measure the load, one has inevitably to allow a deflection. The more sensitively this can be measured, the more rigid the mounting of the whisker can be, and the more rigid the mounting, the greater the precision achieved. In the Shell tester, a differential transformer is used as a detecting element. This I am informed, far surpasses in sensitivity other devices previously employed. Whiskers, as such, do not lend themselves to fabrication, but one way to take advantage of their strength is to use them to reinforce metals in much the same way as glass fibres are used to reinforce plastics.

Among my letters this month is one from 14-years-old Dinky Toys enthusiast in Wolvey. I would like to reply to it, but cannot do so, since he omits his name and address. Perhaps, if he reads this, he will be kind enough to send me the missing information.

THE EDITOR.

Next Month: Highlights In The Aluminium Story

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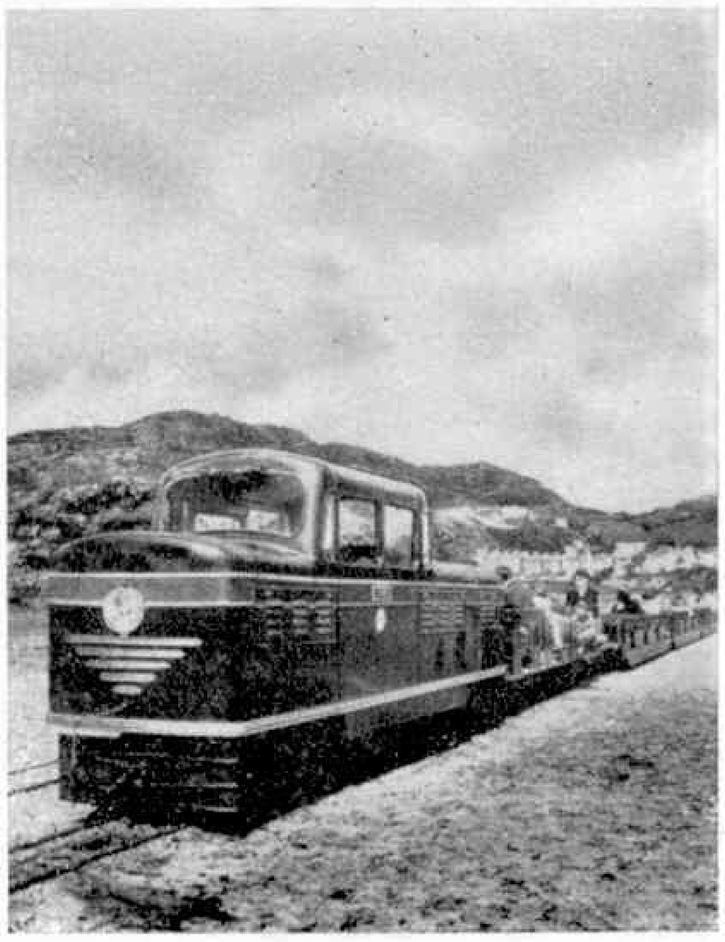
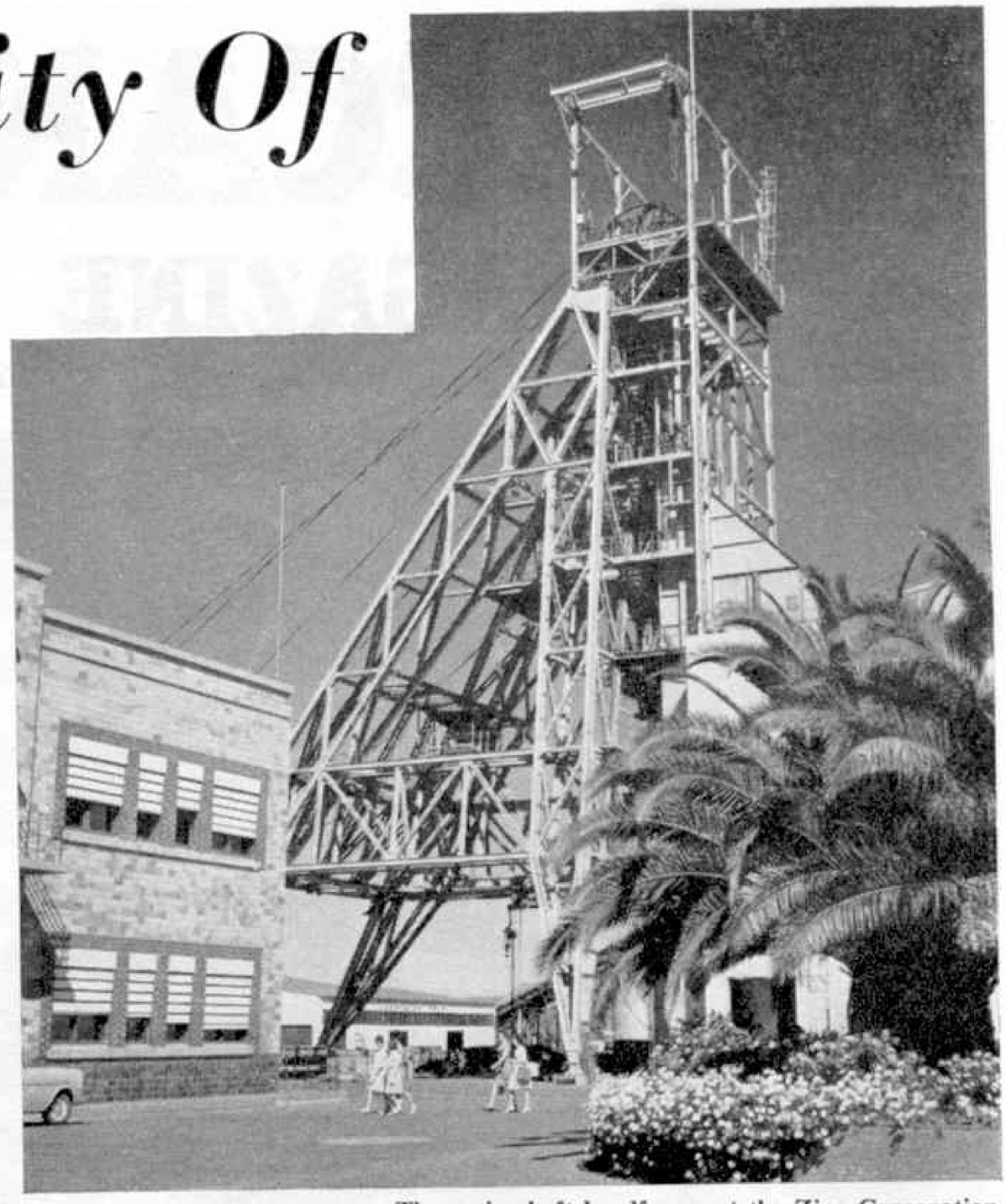
OUR FRONT COVER

Dingo, a 2½-litre Daimler petrol-engined loco., which hauls holidaymakers on the Fairbourne Railway, in Merioneth, forms the subject of this month's cover. The 15 inch gauge railway runs for approximately two miles between Fairbourne and Penrhyn Point, which is situated across the Mawddach Estuary from Barmouth, against the majestic background of the Cader Idris range. Dingo is one of three petrol-engined locomotives employed, the others being Sylvia and Rachel. Motive power also includes two steam locomotives. The cover is based on a colour transparency by Mr. Ivan J. Belcher.



The Mining City Of Broken Hill



The main shaft headframe at the Zinc Corporation mine. The illustrations to this article appear by courtesy of the Zinc Corporation, Broken Hill.

THE mining city of Broken Hill is easy to find on the map. It sits alone in the remoteness of western New South Wales, halfway along the border with South Australia.

Less than one hundred years ago there was nothing; today, there is a busy, modern, yet unique,

By ALAN FINCH

city whose 33,000 people depend on the world's greatest deposits of lead, zinc and silver. Without the minerals there would be no city, probably not even a small town. The tall headframes stick out from the criss-cross straight streets. The streets themselves are named after chemicals and elements. The main street is Argent Street, and nearby are Crystal, Blende, Koalin, Cobalt, Iodide, Chloride and Sulphide Streets, among many others.

Although Broken Hill is in the State of New South Wales, most of its links are with South Australia. The city keeps South Australian time, which is half-an-hour earlier than the rest of the state, and it also has a further odd distinction—it is the only Australian town to have another town named after it. There is a Broken Hill in Northern Rhodesia, which has a bigger population than the original. Many fossils were found at the Rhodesian site, one of which (*Homo Rhodesiensis*) contributed new knowledge to the evolution of man.

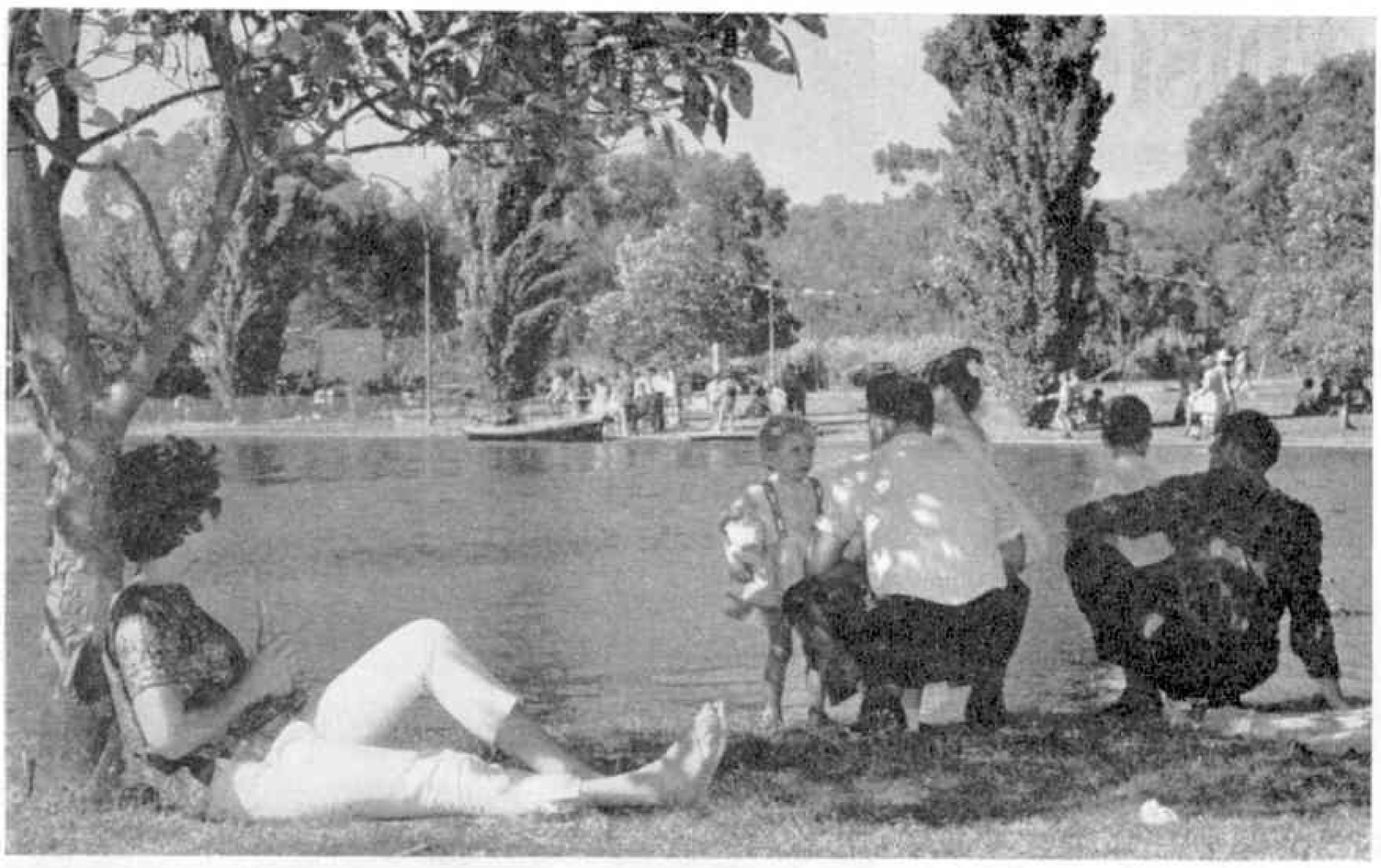
Overlooking some of Broken Hill's mines. The planting of trees in an imaginative manner has made the area cool and pleasant, as well as stopping drifting sand and soil.

Dust and sand storms used to make a spectacular, if dirty and unhealthy, display in Broken Hill. In the 1930's the town was saved from millions of tons of creeping sands by the planting of native grasses, that could withstand the drought, to hold the sand.

A favourite story told by Broken Hill people is of the card game of "euchre" played by some of the early shareholders on the Hill. A share was lost to an Englishman that was worth about £120 at the time. Today, that share would be worth many millions of pounds.

Broken Hill Pty. Ltd. is a leading Australian company, but now it has nothing to do with the city at all. The company moved out of the city into steel making and heavy engineering, including shipbuilding. It is known everywhere simply as "B.H.P." and many Australians make the mistake of thinking it is the company which works the city's mines.

As the city has grown, so has its importance as a centre for the surrounding country. There is a Flying Doctor Service base that watches over an area more than five times the size of Britain. The radio



In the midst of the desert: The Twin Lakes at Broken Hill (pictured above) consist entirely of waste water from the mines.

Left: The Broken Hill Flying Doctor base. It covers an area more than five times the size of Britain.

links all the outback sheep and cattle stations and is important to the people for their social life, their business and their news.

Everybody has a standard medical kit near their radio receiver and many illnesses can be dealt with over the radio, but in an emergency the doctor flies out, and will often reach a patient as quickly as a call would be answered in a traffic-ridden city.

The Flying Doctor network is the base for one of the world's largest schools. Children attend their classes, answer their questions, and talk to teachers at their own radio sets—yet children in the same "class" may be as far as 800 miles apart.

Not as well known as the Flying Doctor is the Flying Stock Inspector, who also works out of Broken Hill. Aviation has enabled him to bring a qualified veterinary service to every grazier within 300 miles of the city.

Railways and airways are the lifelines of Broken Hill. Businessmen fly in and out on frequent flights, the railways snake 700 miles east to Sydney and 336 to Adelaide. Over these tracks the great ore trains roll to Port Pirie, 250 miles off on the South Australian coast, to be smelted. Other ore is turned into zinc slab, sulphuric acid and superphosphate fertiliser in Sydney. Broken Hill is linked, by means of the Silverton Tramway, with the South Australian line and the seventeen-mile length of track is one of the few privately-owned railways in Australia today.

Wages are high in Broken Hill and trade unions are strong. The miners are paid a lead bonus which is an extra payment above the basic wage. It is based on the price of lead and is often high enough to double the basic wage. But only the mine workers get it, and they cannot just come into Broken Hill and qualify straight away; they either have to be born in the city or have years of residence to qualify.

The city may not be as beautiful as the cleaner, greener, cities of the coast but the people are proud of their gardens, and most homes are owned by the people who live in them.

There is a theatre, a library and all the cultural aspects of other cities. It is difficult to stand in the city and realise that it is an island in hundreds of miles of sheep-dotted grazing country. It has a reputation for toughness that cannot apply to the family-minded city which Broken Hill is today.

Water is a great need; it must be plentiful to meet the wants of the mines and for the city's domestic requirements. Broken Hill averages only nine inches of rain yearly, and it has often been less than five. There are reservoirs and dams around the city, but the dramatic part of the water supply is the 24-inch pipeline that winds 80 miles from the Darling River and can carry more than 4,500,000 gallons daily. Before the pipe was built the city had to rely on water brought by rail from the River. In view of this last statement, it is a matter of some interest that the last water supply train to leave the Darling River was washed off the line by floods!

Not a drop of water is wasted. A favourite picnic spot is the "Twin Lakes"—all waste water, and after it has all been used it goes back into a treatment plant.

The great lode in the Barrier Range is the richest silver–lead–zinc deposit in the world. Modern mining methods are used and many new ideas and methods have been developed at Broken Hill. It has been said that the mining engineering methods used lead the rest of the world. As well as treatment in Australia, some ore is shipped across the Bass Straight to Tasmania. Zinc concentrates are sent to Avonmouth on the River Severn, in England, for final treatment.

Near Broken Hill is the world's longest engineering wonder. This is the Vermin Fence, 3,500 miles of mesh that keeps the dingoes (wild dogs) out of the sheep country. The fence wanders crazily across three Australian states and is kept in repair by patrols. The dogs are a big menace to graziers and, in Western Queensland, managed to halve the sheep population in ten years. The fence is only useful if it is kept in good condition and every hole is mended quickly.

Broken Hill folk can go to the "seaside" for the day. Although the ocean is hundreds of miles away, there is a big new inland water storage scheme at Menindee Lakes, only 70 miles from town. This is not far for Broken Hill families for the city has one of the highest proportions of motor vehicles in the world, and almost every family has a car.

At the Menindee Lakes the water from the Darling River is stored before it is turned back into the river. Eventually it joins the Murray. The Murray–Darling combination is the fourth longest in the world, and their waters are the lifeblood of many thousands in the south-east of Australia.

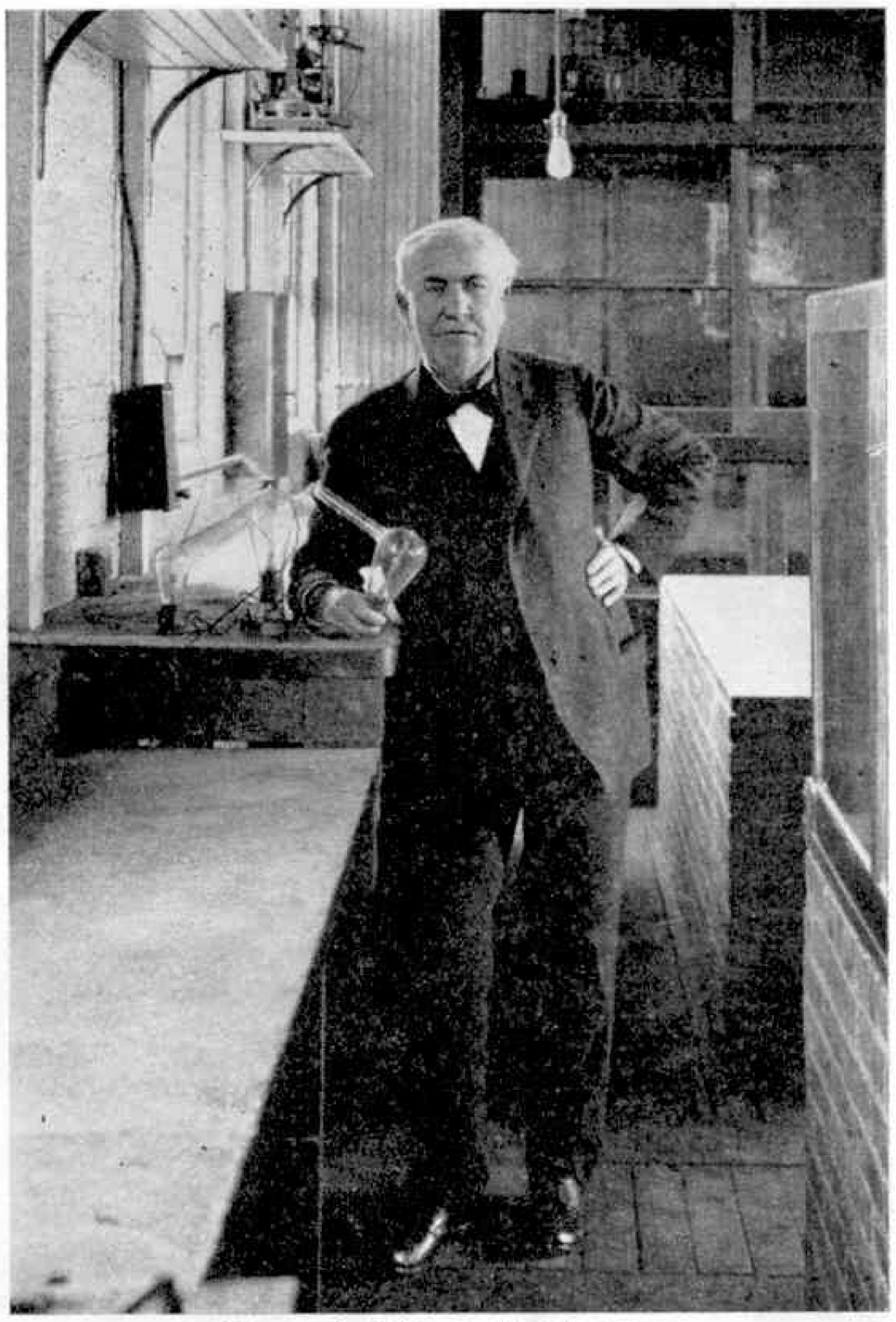
(*Continued on page 359*)

THE STORY OF EDISON'S ELECTRIC LAMP

Told by Charles A. Rigby

EVERYONE has heard of Thomas Alva Edison, the American inventor, who began studying electricity at a time when very little was known about it. This was when he was 29 and began working as an inventor in a laboratory in the New Jersey village of Menlo Park. Out of this building in due time came many fascinating inventions such as the carbon telephone transmitter, the phonograph, and Edison's wonderful incandescent lamp about which we are chiefly concerned in this article.

Before his discovery of the incandescent lamp, Edison had studied everything he could find on gas lighting, then almost universally used for lighting shops, homes, and streets. He had also pondered the applications of the arc lamp, which was also being perfected. Gradually, step by step, he evolved the principles which were incorporated in the successful lamp—the all-glass, hermetically-sealed bulb, the high vacuum inside the bulb and the carbonised filament.



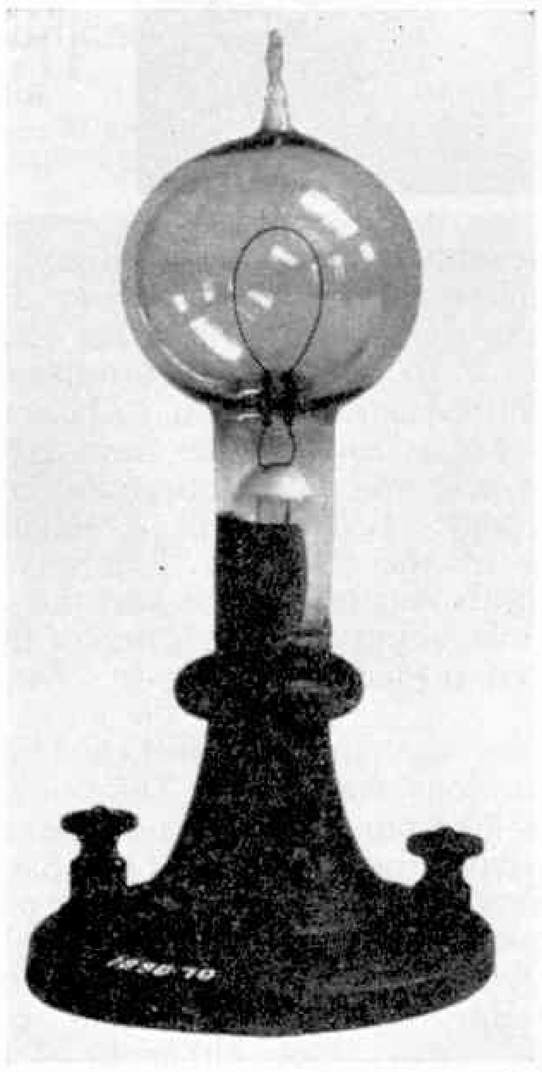
Thomas A. Edison in his laboratory.

He searched high and low for a durable material from which to produce the filament and more than 1,600 tests of various types of earth, minerals, and plants were made. Finally, his quest ended, at home, in Mrs. Edison's sewing basket—the answer to the search being a piece of thread.

Later, during October 1879, he placed a bit of carbonised cotton thread, bent in horse-shoe form, inside one of his sealed glass bulbs. All was ready for a wonderful experiment and on the evening of October 19 his crude experimental lamp, standing upright on a table, was connected to an electric circuit. Looking on were Francis R. Upton, his mathematician, Charles Batchelor, his model-maker, John Kruesi, his machine shop expert, Luwig Boehm, his glass blower and Francis Jehl and Martin Force of the laboratory staff. But the central figure was the inventor himself.

Current was switched on and to their amazement the lamp responded instantly, glowing with a soft light. Quickly the resistance was measured. It was 275 ohms, sufficient for their purpose and overwhelmingly greater than the four or five ohms of previous incandescent lamps. Then all sat down to watch the slender horse-shoe of light, half expecting it to vanish, but hour after hour it continued to glow, long through the night.

No one had eaten; no one had thought of sleep. The grey of a second dawn found them still at their vigil. Upton alone left for a while, feeling he should not desert his home altogether, but he hurried back soon after daylight. About one o'clock on the second afternoon, October 21, more than 40 hours after it had first received the current, the filament burned out.



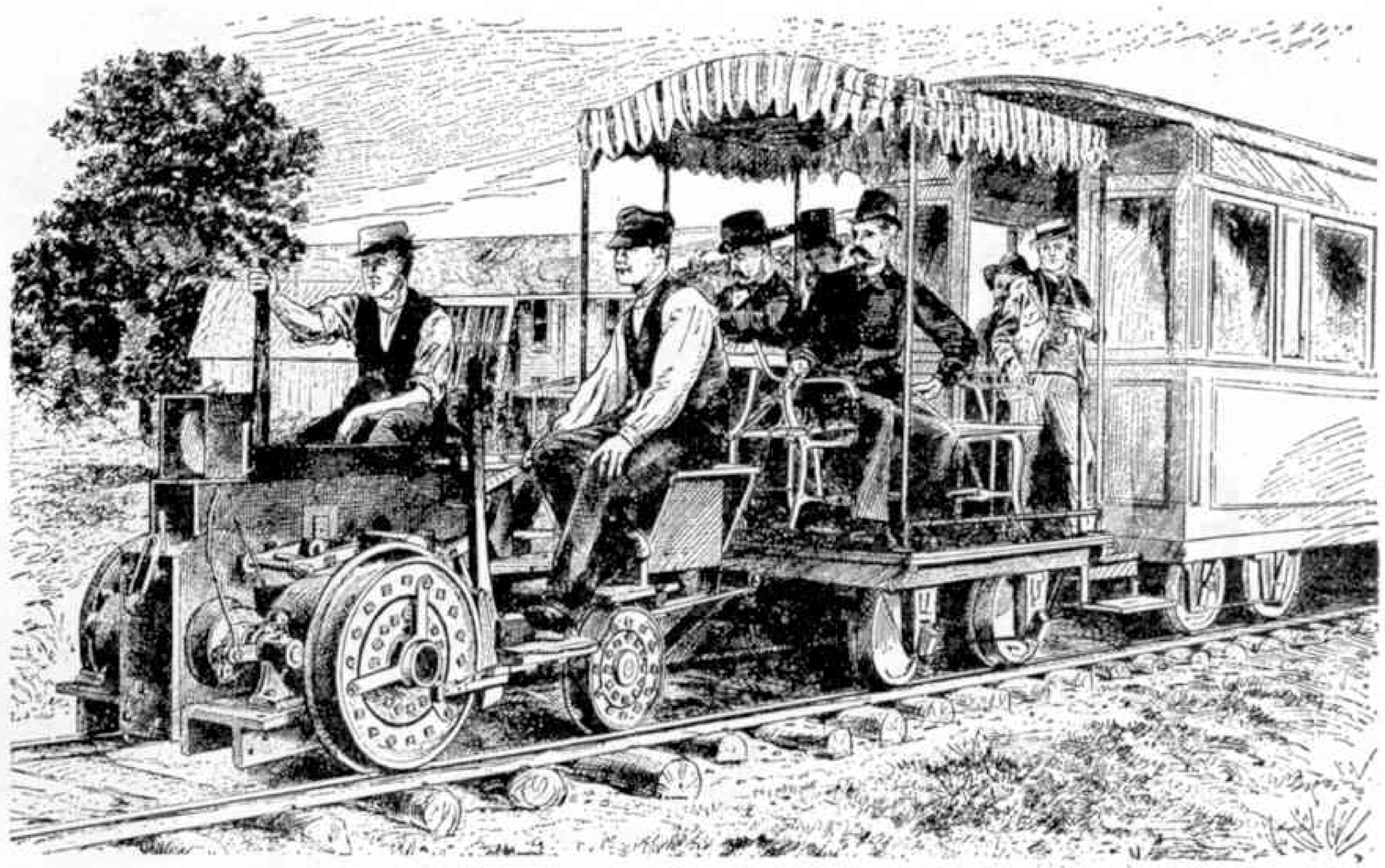
One of Edison's early experimental electric lamps, showing crude form of carbon filament and bulb. Photograph Crown Copyright, Science Museum, London.

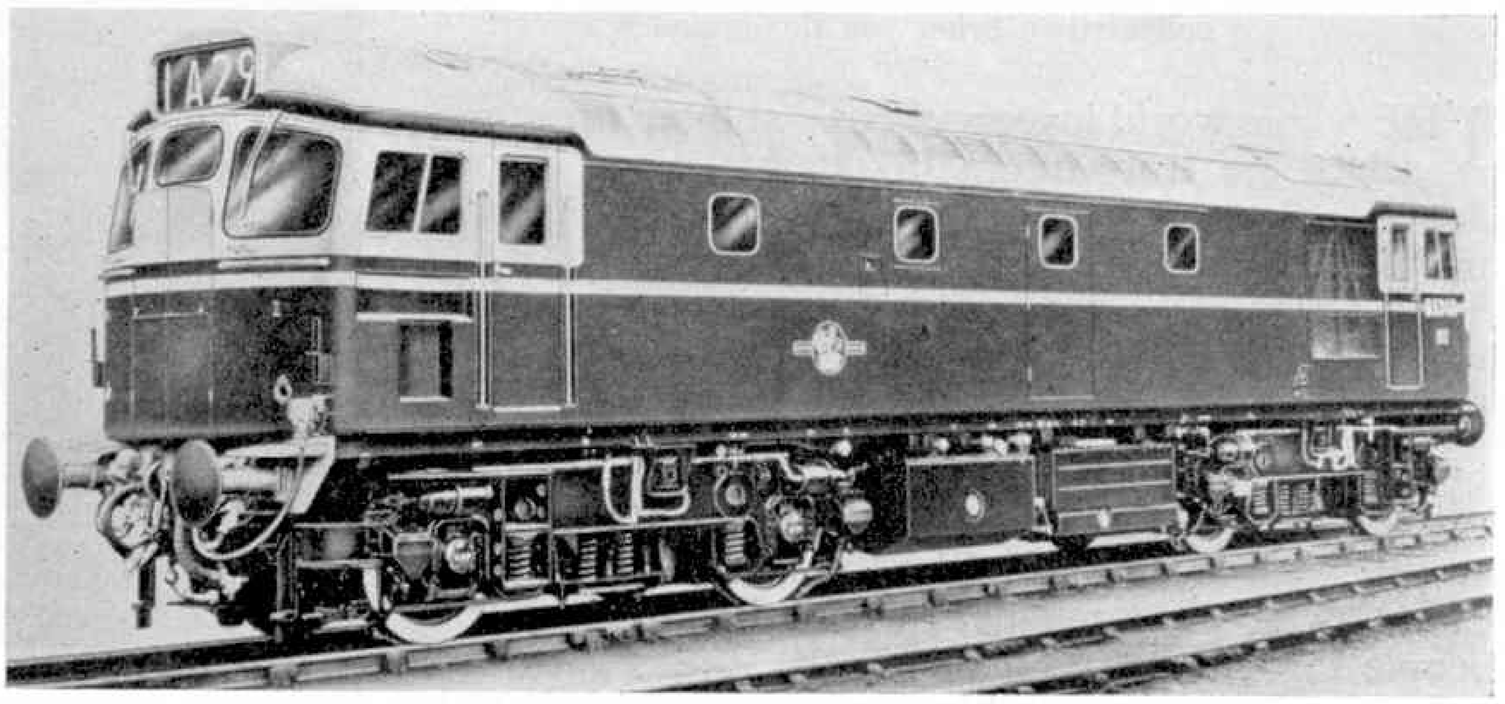
The spell was broken and the men leapt up with cries of jubilation. But Edison was quiet in the hour of his tremendous success. As the little lamp glowed he had envisaged "Great cities lighted from central stations," and his mind was alive with plans. But all he said when the glow finally vanished was, "That's fine, that's fine. I think we've got it. If it can burn 40 hours, I can make it last a hundred."

Air of Expectancy

Stranger still was the air of expectancy and excitement that gripped the village of Menlo Park on New Year's Eve, 1879. A crowd of nearly 3,000 restlessly milled about the streets, and crowded close to the main part of Edison's laboratory. Some had driven as far as twenty miles in carriages and wagons, but most had come by special trains run by the Pennsylvania Railroad for the occasion. They were there to witness the first public demonstration of Edison's wonderful new light.

Inside the laboratory, a deft stroke of a finger made 60 lamps, placed on poles up and down the snow-covered street, spring to light among the bare branches of the trees. A ripple of applause came from the crowd, and in the days that followed, Menlo Park became a kind of Mecca for the intelligently interested and





The old and the new. Top right, an artist's impression of Edison's Electric Locomotive (Photograph General Electric Company, U.S.A.). Below: British Railways Type 2 Diesel Electric Locomotive with G.E.C. Traction and auxiliary equipment. (Photograph G.E.C., United Kingdom.)

the merely curious. Both farm folk and city dwellers, scientists and businessmen, came nightly in ever-increasing numbers to see the "Edison lights."

Strangely enough, widespread public acceptance of incandescent illumination was rather slow for various reasons, since Menlo Park was the only place in the world where a complete incandescent system was on display. Then, too, there was much opposition from gas and arc-light companies. On at least two occasions attempts were made to discredit the new system while it was being demonstrated before municipal officials. A member of one such visiting party managed to short-circuit a part of the system at Menlo by means of a piece of wire running up one sleeve, over his shoulder, and down the other sleeve. Watchers specially chosen by Edison caught the erstwhile saboteur in the act. When the fact leaked out that the man had an interest in a gas company, public sentiment in favour of electric light was greatly enhanced.

Among the city officials who made the pilgrimage to Menlo Park was a delegation representing New York's Board of Aldermen. The outcome of their visit was to install a trial lighting system in an area on Lower Manhattan—soon to become famous as Edison's "First District." The Edison Illuminating Company of New York was formed to do the job, and Edison was now committed to taking an historic step. His dream of "Great cities alight from central stations" was now even closer to reality.

Costs Cut Down

Although the first lamps made by the Illuminating Company cost about 1.25 dollars to make, Edison offered to supply all the lamps required at 40 cents each. He was sure he could produce them at a profit by effecting economies not only in production methods, but by adopting the system of mass production. The lamp factory was moved to larger quarters in Harrison, New Jersey in 1880, when about 30,000 lamps were produced at a cost of nearly 1.10 dollars each. As production rose in the next few years, costs went gradually down, so the lamps were sold at 40 cents each, and they were made by the million.

One of the greatest triumphs of the inventor in dealing with electrification of the First District was his development of a suitable generator. The project required electric current in undreamed of quantities. Existing generators were far too small and inefficient. The "Wizard" began by studying the design of dynamos then in use; then he proceeded to fashion one unlike any of the others. It had two huge parallel magnets which made it resemble the Roman numeral II. Although the design violated accepted principles, it worked; what is more, it was nearly 90 per cent efficient.

The famous Jumbo dynamo was developed and exhibited at the Paris Electrical Exposition in 1881. The bi-polar Mary Ann design, with two huge parallel magnets, was coupled with a huge 150-horsepower steam engine. Where previous generators had been driven by complicated belting and shafting, the Jumbo's engine was linked directly to the dynamo. Weighing 27 tons and capable of lighting 1,200 incandescent lamps, its size caused much wonderment.

No one knew what to expect when Jumbo was first tested one winter's night at Menlo Park. Previously, the speed of stationary engines was rarely more than 60 revolutions per minute, but the machine was designed to run at up to 700 r.p.m. and at a much higher steam pressure than most engines. The shop in which the machine was set up stood on top of a shale hill. Edison amusingly recalled that at 300 revolutions "the whole hill shook under her," and at 700 r.p.m. "you should have seen her run! Why, every time the connecting rod went up, she tried to lift the whole hill with her!"

After this harrowing experience, these generators were not run at more than 350 r.p.m., which was really all that Edison had wanted.

The First District became a profitable success, and by the end of 1882 several Jumbos were serving 240 customers with current, lighting more than 5,000 lamps. Edison had achieved his goal. He had subdivided electric current when others said it could not be done; he had invented a practical incandescent lamp where hundreds had failed; he had made an efficient dynamo that violated established principles; he had planned and built a complete electrical system powered from a central station. Perhaps even more remarkable was his establishment, so early in the electrical age, of many of the fundamental principles that underlie our modern power systems.

What is more, his electric locomotive of 1880 was the forerunner of our present-day locomotives. No wonder he was known as the "Man of Light", for many other developments and applications common to our life today are the result of his research into the mysteries of electricity.

WORLD-WIDE FLAVOUR OF THE CIRCUS

● When the band strikes up and the ringmaster makes his bow, when your excitement grows as the performers stand ready in the wings, do you ever wonder how a circus is put together? This article tells you how the glittering cavalcade is collected to bring you thrills and laughter.

THE whole world loves a circus—and circuses themselves are truly international in flavour, for the elements that go to make up these fascinating shows are to be found in many different countries. An out-

By THE EDITOR

standing example of this global quality is to be found in this year's show at Blackpool's famous Tower Circus, which is a magnet to countless thousands of people throughout the summer.

It is said no comradeship excels that which is to be found in the circus ring, and I realised the significance of this when I had the pleasure of meeting all the artists in this year's circus at the conclusion of the season's opening night. Amid a babel of many languages, the atmosphere was warm and friendly, and one became immediately aware of the bond which unites these richly talented people, brought together from far-away places to present a truly dazzling display.

My guide and interpreter as I chatted to the various artists was Rudi Zemen, a Hungarian by birth but now a naturalised British subject, who is a member of The Great Pusztai Troupe of springboard acrobats. Rudi, who speaks English quite fluently, told me how he began life in the ring at the age of 13, in Hungary. Others in this talented troupe include Jancsi Hadnagy, a circus performer since he was eight, Jancsi's uncle Vilmos Hadnagy, who has spent all his life under the lights of the "Big Top", and Jancsi's brother Dode, who is the strong man of the act and carries a pinnacle of human brawn and muscle on his own shoulders at the culmination of the scene. Smallest member of the troupe is Lali Szente, whose infectious grin never leaves him even when he flies, somersaulting, through the air to form the top of a human pyramid.

From France come The Baranton Sisters, Elaine and Regina, whom T.V. enthusiasts will remember from their appearance on the Palladium Show. These two nimble sisters have been acrobats since they were five years old, and they have been practising nearly every hour of every day for many years. Reclining on velvet-covered pedestals, they revolve barrels on their toes at lightning speed and wind up by balancing ordinary kitchen tables on the point of the foot with incredible dexterity.

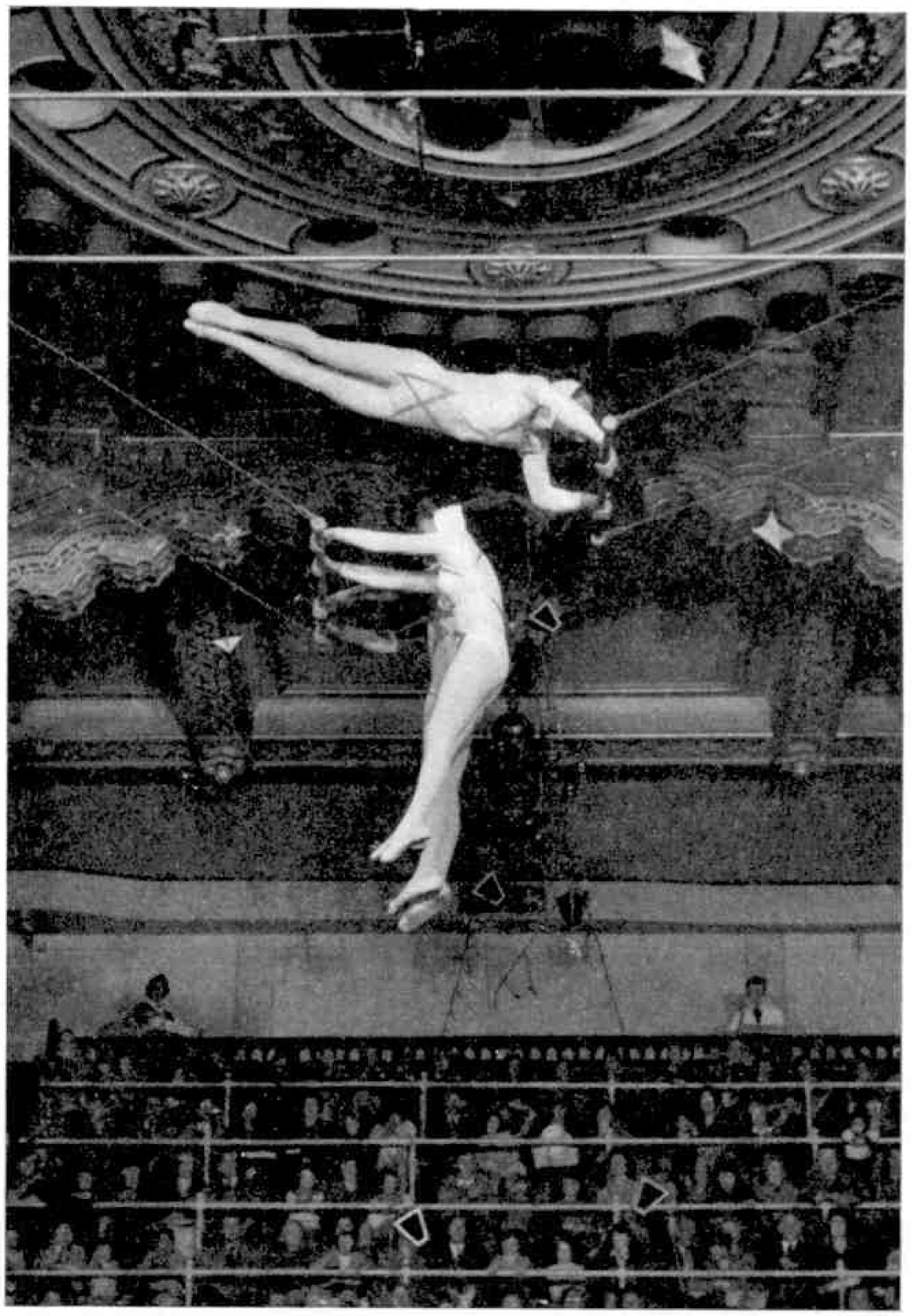
Then there is Paul Ruppert whose act, Ruppert's Bears, is the most impressive of its kind I have ever seen, with every animal performing merely at a gesture or a word. Paul has six bears in all, three of them 10-years old, two of them seven, and a baby Himalayan bear who is only one and a half. At the completion of each trick they give their trainer an affectionate kiss and they conclude a quite incredible performance, which includes riding small motor-driven scooters, by climbing into a car and circling the arena.

"Bears are like children," Paul told me, "and you must teach them as you would a little child—from the heart and with great affection."

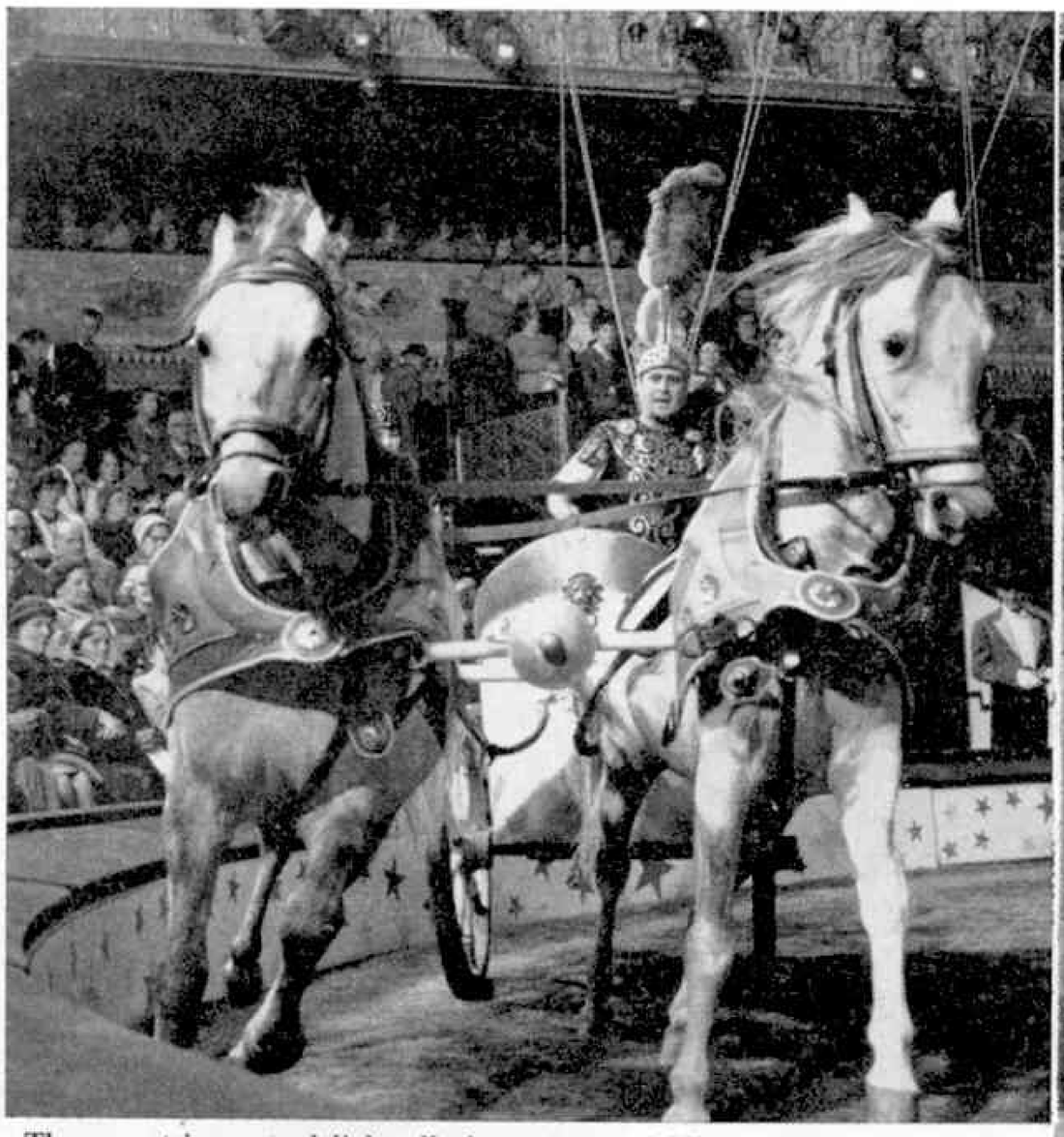
Paul, who was born in the circus went on, "My father was a German, born in France, who spent his days in circus life in Sweden. My mother was born in Sweden, but my wife Danuska is a German, although she was, in fact, born in Czechoslovakia, and our three-year-old daughter was born in Italy".

If anything were needed to prove the international flavour of circus life surely this statement is sufficient!

And what of the other thrills of this huge circus? Let us start with The Flying Zemgannos, superb in their skill, who swing from the trapeze at the very apex of the building in dazzling light and then, as the lights are dowsed, streak through the air, in head-to-toe suits of luminous



There is no real circus without a trapeze act. Our photograph shows the Flying Zemgannos well above the level of the people in the Tower Circus gallery as they swing gracefully through the air. This picture and those at the top of the next page are by Barnet Saidman, F.I.B.P., F.R.P.S.



The equestrian acts delight all circus-goers. Adding colour to this year's circus thrills at Blackpool is the chariot race (above): Perhaps the most captivating act in the whole circus is that of Paul Ruppert and his Syrian bears. In the picture on the right Paul, who is assisted by his wife Danuska, gets a very friendly greeting from one of his favourite performing bears.

material, like huge firebirds winging their way through a tropical forest. Los Ona also offer breathtaking acrobatics, Sacha Houcke, with his magnificently trained Arab and Friesian horses, introduces a chariot race which takes one back to the days of Ben Hur, and Eugen Weidmann, with nerves of steel, assembles lions, tigers, leopards, panthers, a polar bear and a black bear in a fantastic animal act which ends with Eugen waltzing round the ring with a panther draped across his shoulders.

Five baby elephants presented by Bobby Robert, an amusing display of skill with diabalos by the Hermanis and, of course, lots of fun from the ubiquitous clowns add to the attractions. Charlie Cairoli, well beloved by all the youngsters, has been the supreme fun-provider at Blackpool Tower Circus for many years, his bright red nose, (a false one, of course!) gleaming with all the warmth of a friendly beacon. Charlie's very life is the circus and in winter he carries on his inimitable clowning in pantomime.

Nor can one forget the incredible contortions of the Rudi Llata family of clowns who, although Spanish, made a special point of learning English so that they could appear at the Blackpool Tower Circus. Their "boxing Jack-in-the-Box" act keeps the audience in high glee.

But so far I have dealt with only one aspect of circus life. What I really wanted to learn from my visit was how such a collection of stars is assembled for a show which has been a favourite now with holidaymakers through the greater part of this country. To find this out, I talked with Mr. Bernard Crabtree, the Entertainments Manager of the Blackpool Tower Company Limited, and was astonished to find that in his search for the world's outstanding acts, he travelled no fewer than 75,000 miles in the course of last year.

He began his journey in New York, and from there flew to Miami, (Florida), New Orleans, Los Angeles and the Hawaiian Islands. On again he travelled to Sydney, Melbourne, Adelaide, Perth, Singapore, Hong Kong and Tokio. His world trip occupied three months, and in that time he saw hundreds of acts and many features of interest for Blackpool's show business generally, apart from the specific requirements of the Tower Circus.

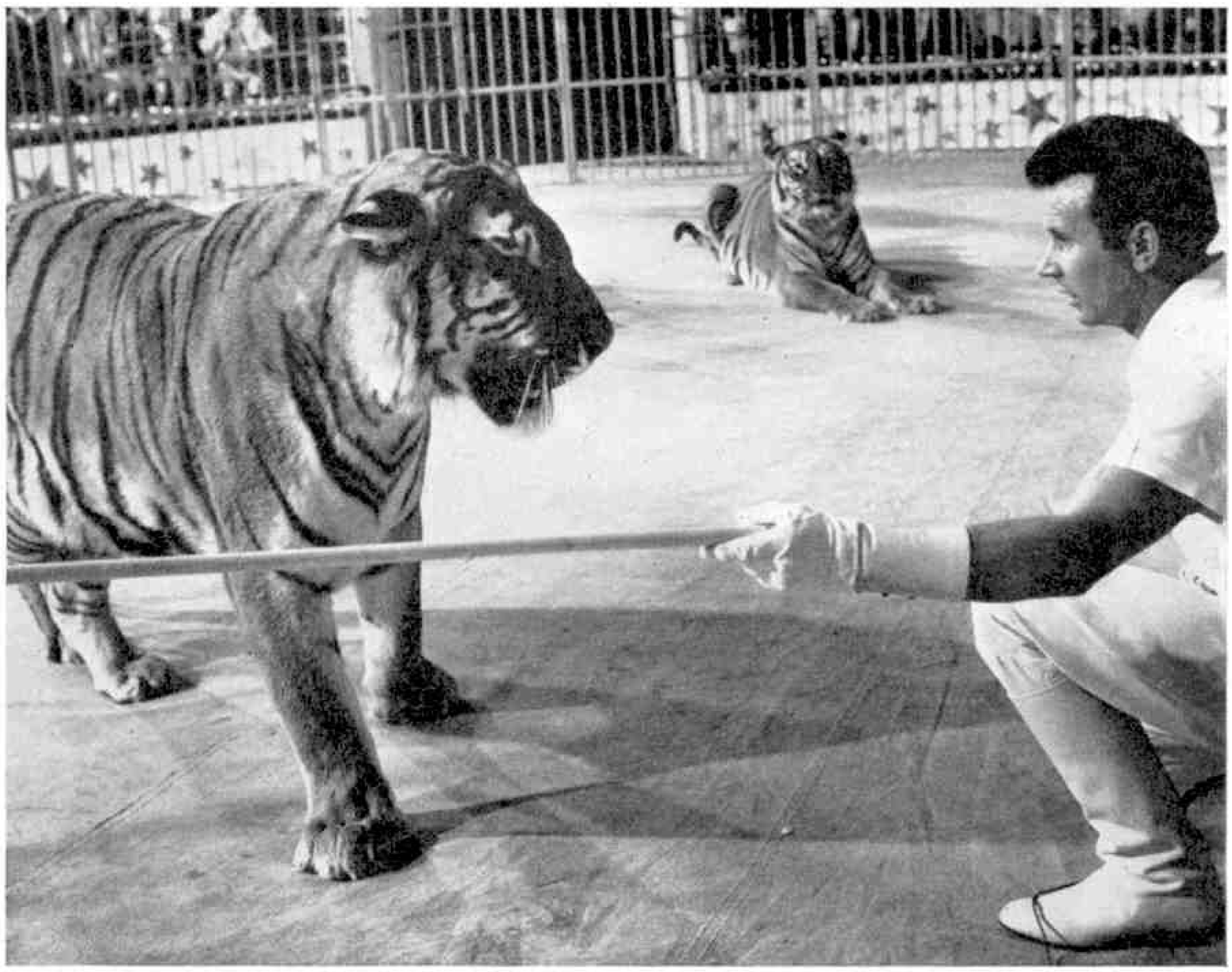
Everybody loves Charlie Cairoli—especially the children.

This round-the-world journey was later followed by a complete tour of Europe, taking in Scandinavia, Germany, Switzerland, Holland, France, Belgium and Austria, for it has always been recognised that many of the greatest acts in circuses come from the continental countries, where whole families have followed the circus life for generations.

The search is a keen one, and its aim is always the same—to find something the other circuses haven't got, always seeking the act which offers a new facet or a greater thrill.

The discovery of Paul Ruppert's act is a case in point. Mr. Crabtree came across it in a small touring circus in Italy, and was greatly impressed by the high level and the intense interest which the act sustains. Quite by coincidence it was found that Paul's wife is the daughter of the principal performer in a high wire act which was part of the circus bill at Blackpool in 1960.

The Blackpool Tower Circus has always had the friendliest relationships with all the big European circuses and is particularly strong on the equestrian side.



Animal acts are a strong point of this year's circus at Blackpool Tower. Eugen Weidmann, who handles a ring full of assorted animals, is seen (right) during his thrilling act.

Elephants acts, too, have been among the features throughout the years and many of the outstanding animal acts have come through close liaison with the Circus Knie, the national circus of Switzerland which makes a complete tour of that country, taking in all the cities and the smaller villages of the cantons, from March until November each year.

I have often stressed in *Meccano Magazine* editorials that a great deal of hard work is needed to get to the top of the tree and keep there, and in circuses this applies more stringently than in many other walks of life. The secret is practice, every day, to reach the acme of perfection which the best circus acts require. Such people as trapeze artists, wire walkers, balancers, jugglers, have to rehearse with religious enthusiasm to maintain their knife edge ability and, if possible, improve on it. Every morning, each act is rehearsed; even when the show is twice daily.

Every show, of course, builds up to a finale, and at Blackpool Tower Circus it is always a grand water spectacle in the 42 foot diameter arena. The preamble is a busy one: the thick carpets which cover the circus floor are removed on enormous trolleys so that only the bare boards of the arena remain. Then, under the eyes of the audience, the floor begins to sink, operated by hydraulic power, and water rushes in from tanks placed at strategic points outside the perimeter of the ring itself. In this year's show a special solvent is used to change the normal colour of the water to a brilliant sapphire blue, so that it looks like some placid South Sea lagoon. This year's finale is based on a Venetian carnival, but although the main characters are dressed in colourful Venetian costumes of the olden days, a modern touch is introduced—the sort of inspiration that has always kept the Blackpool Tower Circus at the top of its particular tree. Instead of a gondola gliding across the arena a speedboat is hitched by steel trappings to a movable centrepiece so that, as the boat circles the pool at speeds of over 20 knots, the whole centre construction revolves, carrying with it four acrobats who perform daring feats as the apparatus on which they swing from their toes travels swiftly round and round.

It is the sort of setting which for years has stamped the seal of greatness on Blackpool's version of "The greatest show on earth."

Our Inland Waterways

Britain's inland waterways provided one of the country's earliest forms of commercial transport. Some of the major canals have continued to be used in this way, but others less important have been neglected and eventually forgotten. Now an organisation called the British Inland Waterways Society has been formed with the object of encouraging interest in all aspects of the operations of our canals. There are already in existence some societies interested in these inland waterways, but tending to concentrate on the historical, or the fight for the future of waterways. The new society will take a more general view, and will be concerned equally with the past, present and future of canals.

One of the ways in which the B.I.W.S. aims to increase first-hand knowledge of our inland waterways, and at the same time foster a social aspect, is by arranging visits to places and installations of inland waterway interest, and whenever practical arranging meetings, lectures, etc., at venues convenient to members. It will also publish a high-class journal.

The annual subscription is 15/–, but there is a special rate of 10/– a year for bona fide students or those under the age of 18. In all cases there is an entrance fee of 2/6d. Applications for membership should be addressed to the Hon. Treasurer: Mr. P. L. Smith, 33 Walnut Crescent, Peacock Estate, Wakefield, Yorkshire, and cheques and postal orders should be made payable to the British Inland Waterways Society.

Road Book Of Ireland

The *A.A. Illustrated Road Book of Ireland* is the latest volume to be added to the Automobile Association's touring library. This new 522-page volume, authoritative and comprehensive, is virtually indispensable as a book of reference both for residents and for visiting motorists alike. It contains nearly 1,200 line drawings of places of historic and archæological interest in every county. Most of the drawings are based on photographs specially taken by A.A. staff. Dublin and Belfast are covered particularly fully, with close on 80 illustrations.

The 280-page gazetteer section lists more than 3,000 places in the Republic and Northern Ireland. Most entries are accompanied by a brief history of the town or village and surrounding area with details of local beauty spots, population, and information about special events. Chapters are devoted to descriptions of the provinces and counties, to the many places in Ireland which have interesting associations with famous or lesser-known men and women of letters, to Irish archæology and architecture—with a glossary of terms—and to the many sporting facilities for which the country is famous.

More than 250 easy-to-follow route itineraries help to simplify the planning of journeys throughout Ireland. These are supplemented by 32 pages of detailed maps; special "through route" maps; over 60 town plans, and a map and table showing approved roads, customs stations and frontier posts for traffic between Northern Ireland and the Republic.

The *Illustrated Road Book of Ireland* costs 25/– and is available to members from any A.A. office. A version without illustrations is obtainable at 17/6d.

Adventuring With The Y. H. A.

ONE of the happiest aspects of the "do it yourself" idea so fashionable nowadays is youth hostelling. It must be one of the earliest, too, for it was as long ago as 1930 that a few enthusiasts got together and started the youth hostel organisation now familiarly known as the Y.H.A., and which today has about 200,000 members and nearly 300 youth hostels. These hostels are not an end in themselves, but a means to an end, for the aim of the association is "to help all, especially young people of limited means, to a greater knowledge, love and care of the countryside".

At week-ends and in the summer you will see them striding along the footpaths, tramping across the moors or following mountain tracks. Last year, for instance, nearly 200,000 hostellers spent a total of 1,178,704 nights in hostels in England and Wales—an all-time record; and this year the Youth Hostels Association report an increase in the number of members that clearly indicates more records are on the way.

* * * *

Not all these youth hostellers were walking—about one in five was a cyclist, and a minority were pony-trekkers or canoeists. But the majority were using their own two feet to hike from hostel to hostel. Among the activities that they pursued whilst hostelling were nature study, bird-watching, photography, archæology, climbing, pot-holing and sailing, while many just walked for the sheer enjoyment of it. Last year, too, one group walked from hostel to hostel performing a play they had written and rehearsed the previous week, in true strolling player tradition.

* * * *

The network of hostels—270 of them—now virtually covers the country. The most popular area is the Lake District, which last year recorded nearly 200,000 overnights. London Region, covering a large section of South-East England, had 118,697 nights spent in hostels outside London itself, and a further 101,309 in the London hostels. Foreign visitors accounted for a large proportion of the London usage, but most hostels in the country have some foreign visitors, although the historic towns tend to attract them more than the remote country areas. Most foreign visitors came from Europe, but there were also tourists from every other continent.

In all, foreign visitors spent 221,580 nights in hostels in England and Wales. Impressive as this total is, it is less than half the number of nights spent by English hostellers in other countries, for we are a nation of globe-trotters as far as hostelling is concerned.

In the Y.H.A. you not only walk-it-yourself, but at the hostels it is largely "do-it-yourself". Every member lends a hand with the chores, and many cook their own food, although at most hostels meals are provided for those who prefer not to trust to their own culinary skill. Some members carry do-it-yourself even further, and spend some of their weekends on voluntary working-parties, repairing and decorating hostels and even carrying out structural alterations.

It is not surprising that many hostel buildings need such alterations, for most of them were first erected to serve a very different purpose. Farm buildings and rectories, water mills and manors—even a Norman castle complete with dungeon—now give simple accommodation for young people on their travels. In spite of differences in architecture, all provide the same basic facilities that people require after a day in the open air—dormitories, and washing facilities, a kitchen where members can cook their food, and a common-room where they can relax or play games. Larger hostels may have a separate dining room; at smaller hostels, the common-room may serve a dual purpose. There are a few basic rules that

(*Continued on page 358*)

A party of youth hostellers near Middleton, Derbyshire. Photograph by R. J. Alcock, Nottingham.

Left: Enjoying the thrills of sailing. Below: Pony trekking is becoming more popular every year. No special riding kit is required. Illustrations by courtesy of the Youth Hostels Association.

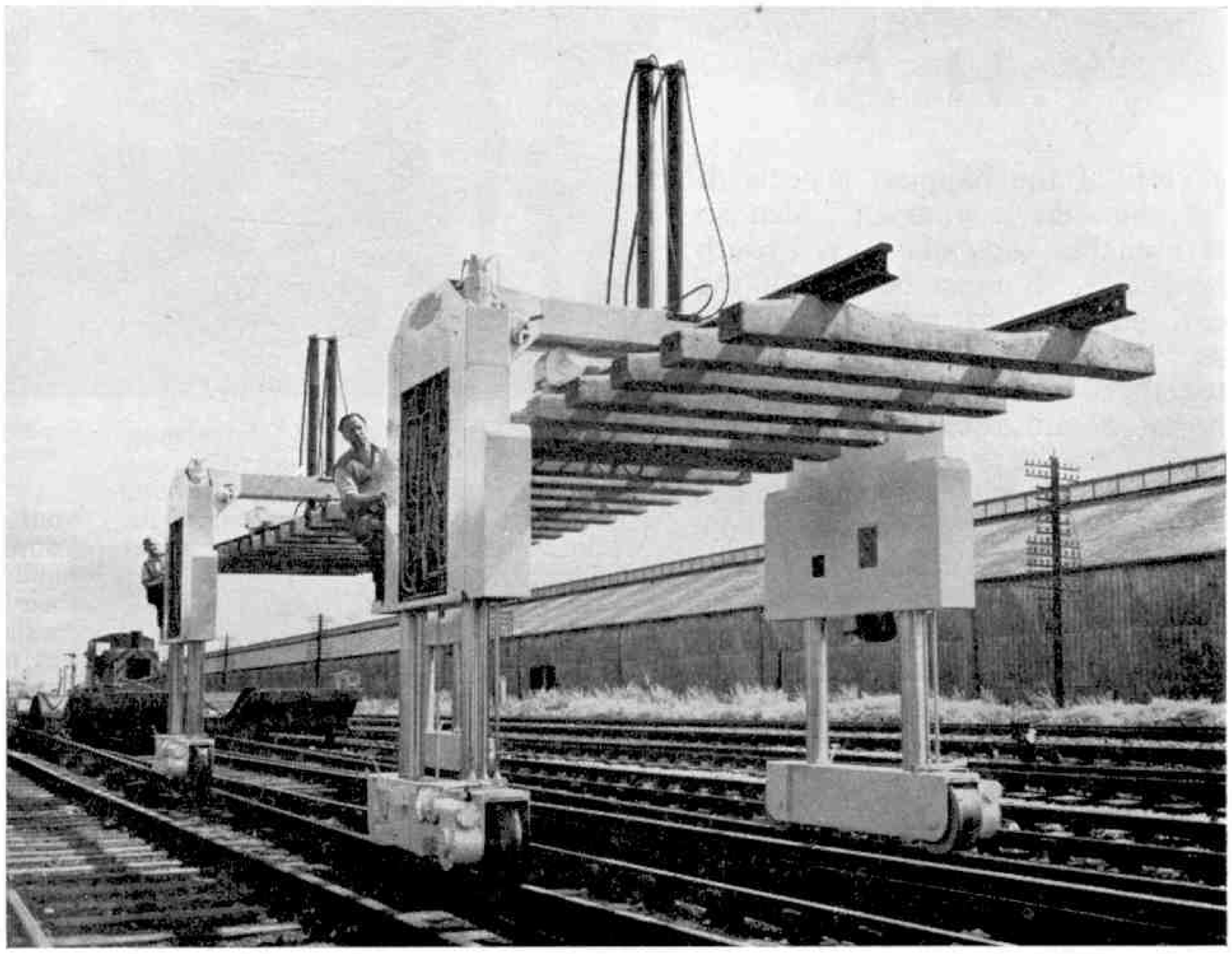
TRACKSIDE NEWS

By "PLATELAYER"

THE Yorkshire Engine Company, Limited, of Sheffield, a subsidiary of the United Steel Companies Limited, have secured an order worth £500,000 for the supply of fifteen diesel-electric locomotives to the Durgapur steelworks of Hindustan Steel Limited. This is the largest single export order placed with the company since the war.

The locomotives, which are required for the Durgapur expansion project, will consist of ten 600 h.p. Bo–Bo and five 300 h.p. 0–4–0 locomotives. All will be equipped with Rolls-Royce engines and Associated Electrical Industries' power equipment. Deliveries are to begin around the end of the year.

Planned and built by the British consortium, Iscon, the Durgapur steelworks already has in service ten 230 h.p. A.E.I. diesel-electric locomotives, built by the Yorkshire Engine Company. The current expansion project will raise the capacity of the Durgapur works to 1.6 million metric tons.



Self-propelled and individually-operated, the gantries of this tracklaying equipment used by Western Region of British Railways can move to any required point on the track at 5 m.p.h. (with load). Each machine weighs 7½ tons.

* * * *

In mid-May, Mr. Billy Butlin, of holiday camp fame, acquired the locomotive *Princess Margaret Rose* for the purpose of putting it on display at Pwllheli Holiday Camp, North Wales. A Pacific-class engine built at Crewe in 1935 for the London Midland and Scottish Railway Company, the locomotive hauled one of the Liverpool to Euston expresses for many years. In all, the locomotive covered 1,494,484 miles.

Part of the attraction of the locomotive in its new setting is that visitors will be able to inspect the cab. Its driver Mr. Charles Keighley, who was on the footplate of the *Princess Margaret Rose* for many years, will also be there to demonstrate the controls.

* * * *

The prototype 3,300 h.p. Deltic diesel-electric locomotive, forerunner of the most powerful locomotives now in service with British Railways, has been presented to the Science Museum, South Kensington, by the manufacturers, the English Electric Co. Ltd.

British Railways ordered 22 of these locomotives in 1958 as part of their modernisation programme, and the Deltics are currently operating the high-speed express services on the East Coast routes, replacing 55 steam locomotives. Introduced into service in 1961, they have covered more than 5,000,000 miles in passenger service.

The prototype locomotive was designed and built within the English Electric Group, with their subsidiary company, D. Napier & Sons Ltd., supplying the twin lightweight diesel engines. In its six years of operating, the blue and yellow locomotive covered more than 450,000 revenue-earning miles. In its later development it was finished in British Railways standard green and, as most of our readers will know, figures in the present Hornby-Dublo range of locomotives. The prototype Deltic will take its place in the museum alongside such famous creations of bygone days as *Puffing Billy*, built in 1813, *Sans Pareil.*, made by Timothy Hackworth for the famous Rainhill competition held in October 1829, a replica of Stephenson's *Rocket*—the original, you will remember, also competed in the Rainhill Trials and won the £500 prize for the best locomotive—and the *Caerphilly Castle*. The last-named was the first of the famous Castle class which, when introduced in 1923, was the most powerful express passenger locomotive class in the country. The Deltics have now taken over this proud claim.

The Deltics have high-speed two-stroke Napier diesel engines which give high power combined with low weight. They have a maximum speed of 100 miles an hour, with an all up weight of only 99 tons. Delivery of the 22 production Deltics began in 1961. They are the most powerful single unit diesel-electric locomotives in the world, with the two 18-cylinder triangular opposed piston engines each producing 1,650 h.p. If necessary, the locomotives can operate on one engine.

The fastest train in Britain, the *Tyne–Tees Pullman*, is Deltic hauled, and the 22 locomotives each cover the equivalent of 200,000 miles a year on the exacting summer schedules of the Eastern Region. The famous *Flying Scotsman* is hauled by Deltics, which are named after Scottish regiments—and racehorses that have won the Derby.

The presentation ceremony was on May 17, when Lord Nelson of Stafford, Chairman and Chief Executive of the English Electric Group of Companies,

A panoramic view of the engine shed at Newton Heath—a picture taken before the advent of British Railways.

formally handed over the Deltic to Dr. D. H. Follett, Director of the Science Museum.

* * * *

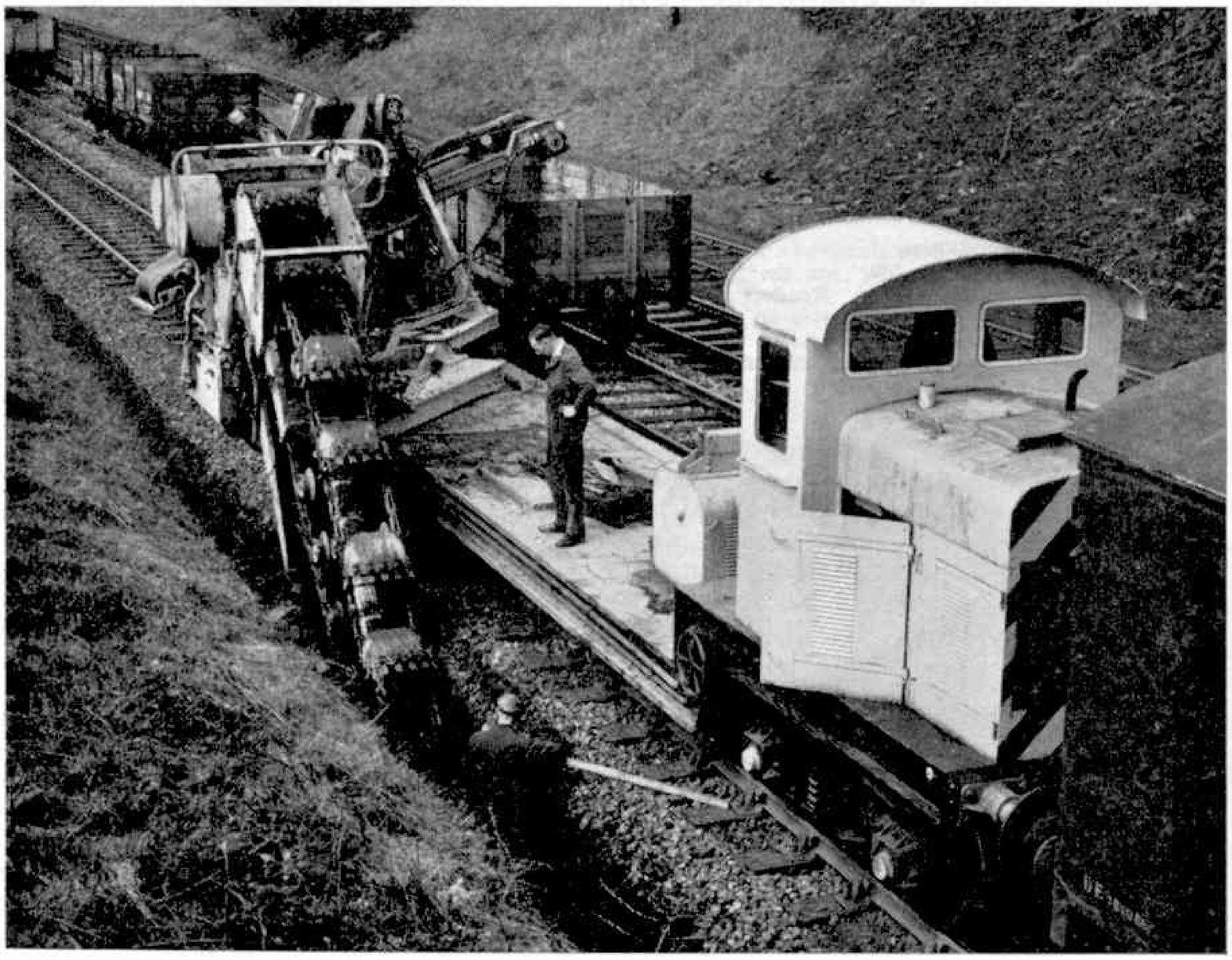
In the June issue of the *M.M.* I described a new tracklaying apparatus known as the "Arki-Enden". This month I thought readers might like to read details of a tracklaying system introduced in September 1962 by the Western Region of British Railways. The equipment was bought from Secmafer of Paris, and consisted of four M.G. Boyer Schwarz track-relaying gantries. These were designed to the region's specification.

Each gantry weighs seven and a half tons and is of box section structure, having two side frames joined by a transverse member across the top, through which twin hydraulic lifting rams operate vertically. It runs on four rail wheels, one pair double-flanged to give lateral stability, the other single-flanged with a tread width of seven and three-quarter inches to allow for rail-setting inaccuracies. Two wheels are drivers and two are idlers.

On the site, the gantries operate in pairs, but as they are self-propelled and individually controlled, the rate at which the relaying process is carried out depends on the standard of co-ordination between the two operators who travel seated on the machines.

The machines run on continuous welded rails at 10 ft. centres on blocks placed at 12 ft. 6 in. intervals, and these carrier rails can be set from two to seven inches below and in the same plane as the running lines. The welded rails are only temporary and, at a later stage in the programme, are included in the track which the gantries are laying. The overall width of the gantry is 11 ft. 4 in. with 9 ft. 6 in. inside clearance for lifting the load. With the twin rams and screw jacks, mounted in the side frames, both fully extended (6 ft. 8 in. and 3 ft. 4 in. respectively, giving a total of ten feet) a pair, or one unit, of gantries is capable of loading or unloading up to four concrete sleepered sections high, on a standard Salmon wagon with two inches of timber packing on the wagon deck.

The Hunslet Rail-Mounted Trencher used by North-Eastern Region of British Railways.



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A sight that has not been seen in this country for many years is presented by the picture at the top of this page in which a long line of steam locomotives stand merrily steaming away at Newton Heath Engine Shed, Manchester.

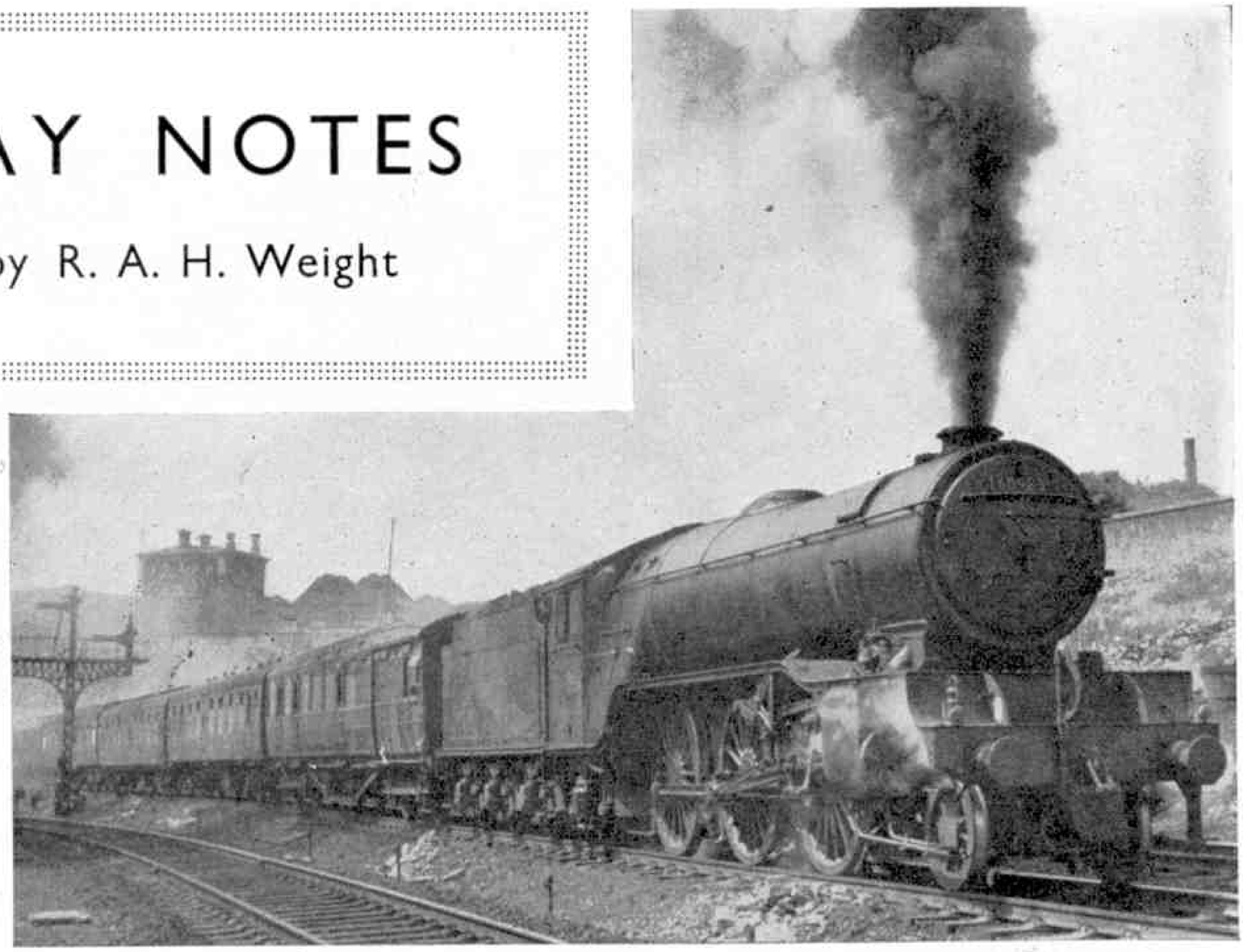
The photograph was taken in 1939 before British Railways came into existence as such. For the benefit of younger readers I should explain that in those days the railways were owned by the Big Four, which was the name given to the four companies then in control—the London Midland and Scottish, Great Western, Southern, and London and North-Eastern Railway Companies. As you can see from the photograph the Newton Heath Engine Shed was owned by the L.M.S. The

(*Continued on page 358*)

RAILWAY NOTES

Contributed by R. A. H. Weight

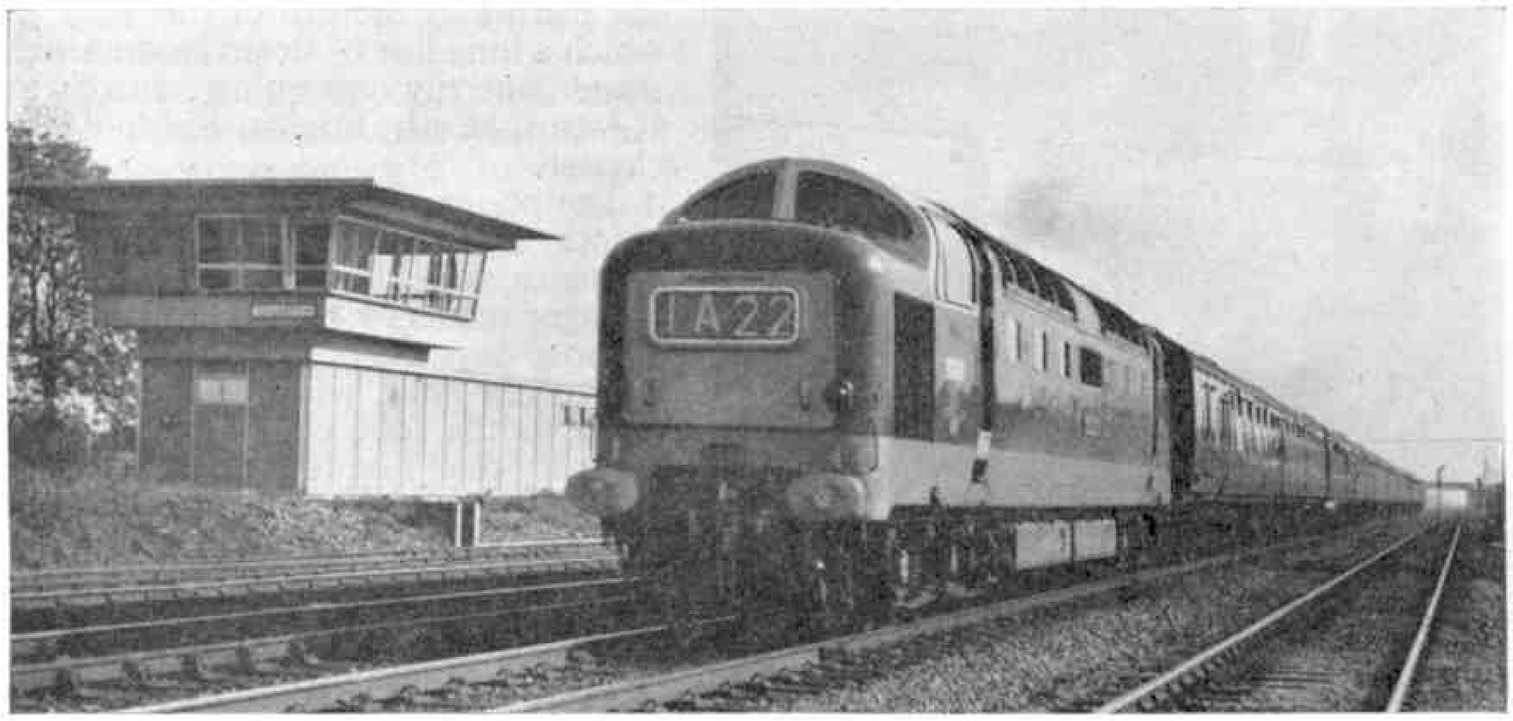
Aboard "The Flying Scotsman"



This fine study of Class V2 No. 60983 climbing Holloway Bank, North London, is by J. Wyndham, of Islington.

ALTHOUGH I am by now a veteran railway traveller, and a recorder of widespread experience, including record runs and great occasions, I still feel a thrill of anticipation when joining one of the "top" British long-distance trains. So it was on a sunny day last June, when I climbed aboard the northbound *Flying Scotsman* express, which celebrated its centenary last year with London-Edinburgh timing in each direction cut from seven to six hours including a call at Newcastle. Years ago I saw the steam Atlantic engines of the old G.N.R. and N.E.R. companies give place to L.N.E.R. Pacifics, which made longer continuous runs. Now, one of the extremely powerful Deltic 3,300 h.p. diesel-electric locomotives is usually in charge south of Edinburgh. For my run it was No. D9017, manned as far as Newcastle by my friends Driver Arthur Davis (making his last run on this duty before retirement) assisted by Brian Graves.

Flashing past the modern signal box at Tollerton is Type 5 Deltic "St. Paddy", on the Scottish run (Picture by C. Ord, of York). Readers of the June "M.M." will remember the close-up view of the Tollerton box in the construction of which 2,500 square feet of sprayed Limpet asbestos was used.



It was a handsome 11-coach train with most seats reserved; the running was most comfortable over new-type Commonwealth or B4 type bogies on track largely refettled and including considerable stretches of long-welded rails.

After leaving King's Cross at 10 a.m. travel was, as required and customary, very fast. After three extra slowings en route we passed Peterborough at the usual sedate pace, 76½ miles in 68 minutes having touched a maximum of 98 m.p.h. before Sandy. Peterborough–Grantham, 29 miles in 22¼ minutes, was my quickest ever; so, overall on the way, was the ascent of the long rise to Stoke Box entirely at 85–83 m.p.h. The *Scotsman* was through Grantham in just over one and a half hours; Retford (severe signal slacks) in two hours, and was punctual at Doncaster, 156 miles in 137 minutes.

A sudden and prolonged stop just beyond the double main line junctions north of Doncaster destroyed expectations of a 268-mile, 4-hour non-stop run to Newcastle. An observant signalman a little way back had thought he saw smoke coming from one of the coaches, possibly indicating a fire or an overheated axle box, and had sent the emergency bell signal "Stop and examine train" to Doncaster signal boxes. As a result the first available colour light signal beyond was reversed to show red. Examination by the guard, however, proved it to have been a false alarm—perhaps smoke coming from the kitchen window—and all was well. The

first service of lunch was just being completed at the time, and most passengers had no idea why the train had stopped.

The delay was considerable and, in consequence, we were out of our path and encountered some adverse signals. On a 67½ m.p.h. overall schedule with about 420 tons to haul, and facing a number of speed restrictions, there was not much margin, even with a Deltic. After a cautious passage of York, however, beyond Tollerton (featured in one of the illustrations) we regained a little time along the very fast, nearly level, stretch towards Darlington, 93-95 m.p.h. being sustained for a considerable distance. I alighted at Newcastle over 20 minutes late, but it might well have been more!

Perhaps the Gateshead crew who took over the driving cab of No. D9017 were able to snatch a few minutes from the tight timing on past Berwick, the Border, cliffs and coast, towards Edinburgh. The entire journey of 393 miles in six hours requires a mean speed of 65 m.p.h., necessitating a good deal of over-80 m.p.h. travel, with fast uphill work and rapid accelerations.

Another illustration by J. Wyndham—the experimental Brush "Falcon" D.0280, hauling the "Master Cutler", draws into King's Cross.

THE "GREEN ARROWS"

I understand that *Green Arrow*, the pioneer Gresley V2 2-6-2, one of the biggest and most powerful British "mixed traffic locomotive" type, after withdrawal from service (rendered mainly from King's Cross Depot) on passenger and long-distance freight trains, has been repainted green with L.N.E.R. lettering and its original number 4771, for preservation with other steam engines. It was B.R. No. 60800. Some locomotives of this class are still running, or standing by, but a good many have now been scrapped on account of dieselisation. No. 60983, impressively depicted in an accompanying illustration, happened to be the last of the 184 that were built, and was also a King's Cross engine.

The name *Green Arrow* was connected with a quick freight transit and delivery service operated by the L.N.E.R. and associated systems during the 1930s. A few other V2s carried the names of regiments or schools. These fine engines, first introduced in 1936, ran where allowable throughout the former L.N.E.R. lines in England and Scotland, and they have often penetrated into L.M.R. territory and elsewhere. Possessing boilers like the A3 Pacifics, though shortened, carrying 220 lbs. per sq. in. steam pressure, having cylinders each 18½ in. diameter with 26 in. stroke (as on the A4s), with driving wheels 6 ft. 2 in. diameter, the *Green Arrows*, which were credited with an approximate tractive effort of 33,730 lbs., were able to tackle all but the fastest passenger train workings. In addition, they handled all sorts of parcels, perishable and through freight services. They were "maids of all work" in a big way, rendering an enormous amount of special train service, far and wide, during the second world war.

The 2–6–2 wheel arrangement is an unusual one for tender engines.

VARIETY AT KING'S CROSS

In the last year or so my own observations, and those of friends, have shown that during a period of transition the variety of locomotive types hauling express and other main line trains on ordinary days to and from King's Cross has been considerable. Taking the remaining steam duties (now discontinued) were A1-4 Pacifics; also, sometimes, Britannias, V2 2–6–2s and B1 4–6–0s, Diesel-electric Type 5 Deltics; Type 4, English-Electric 2,000 h.p. locos; B.R./Sulzer Peak class 2,500 h.p. and Brush Hawker-Siddeley 2,750 h.p. locos, and, for a time, the prototype Brush *Falcon*, No. D0280, heading the *Master Cutler* and other Sheffield Pullman expresses. With that comparatively light train, *Falcon* was credited with some exceedingly fast running, as also are Type 3 English-Electric Co–Co 1,750 h.p. locomotives, usually employed on those Sheffield "flyers".

As a very fine summer service was introduced in mid-June intended to be operated exclusively by diesel locomotives, it was to me a sad thought that "Top Shed" (King's Cross Locomotive Depot) familiar to me for 50 years, and in existence for more than a century, was closing —Grantham, too!

On June 12 I watched streamlined *Silver Fox* go majestically out with the 5.5 semi-fast to Grantham; perhaps my last such vista? I hope to report, before long, several express runs behind veteran steam locomotives which I logged recently, while there was still a chance to do so.

SOUTHERN NEWS

Steam still reigns supreme at the time of writing as the tractive power for all trains to and from Waterloo–Salisbury–Exeter and beyond, and to a large extent for the much more numerous services between London and Farnborough–Basingstoke–Southampton–Bournemouth, etc. There is, though, a batch of Type 3 diesel locomotives at Eastleigh Depot, and multiple unit sets maintain local and semi-fast services intermediately. Diesel locomotives and sets are also taking over more of the passenger or mixed traffic working along unelectrified Central Division routes to and from Oxted, East Grinstead, Brighton, Eastbourne and Redhill, for instance.

Not long ago, in the Tunbridge Wells (West), Eridge, Edenbridge area, when there were a number of steam secondary line duties, I saw or travelled behind engines of the following classes: veteran ex-S.E.C.R. and ex-L.S.W.R. M.7, 0–4–4T; L.M. 2–6–2T; B.R. 2–6–4T; S.R. "Battle of Britain" 4–6–2 and N. 2–6–0; B.R. class 4 4–6–0. On the Brighton and Eastbourne main electrified lines I noted shunting or hauling freight and parcels trains; U1 and N class Moguls; Q & Q1 0–6–0s, all S.R., as well as N 2–6–0s and B.R. 2–6–4Ts with passenger trains on the Tonbridge or Reading routes at Redhill; thus there was still quite a variety.

EXPLORING IN COMFORT

North of 54! What visions these words conjure up of intrepid explorers—Henry Hudson, who discovered the great inland sea of Hudson Bay; Kelsey, Cabot, and others. And the day of exploration is not over—each year men are venturing farther into this northern land. Along the 510-mile route from The Pas to Churchill, small towns and settlements are being opened up, as men roam far and wide seeking the mineral wealth in the earth.

This month, Canadian National Railways will run two six-day all-inclusive tours to Churchill, Canada's seaport on Hudson Bay. Starting at Winnipeg, passengers will travel in a modern air-conditioned train. Stops will include Dauplin, centre of a rich farming area; Flin Flon, on the shore of Ross Lake, and The Pas, in the land of the trapper, the prospector, the Indian and the "Mountie".

Preserving A Nation's Heritage

A WONDERFUL OPEN-AIR MUSEUM

The picturesque Zaan village at the Netherlands Open-Air Museum. All the illustrations are by the author.

CAN you imagine what it would be like to be a farmer and share your living space with your cattle? Or can you picture yourself standing on the platform of a windmill, its great sails sweeping in majestic circles under blue Dutch skies? And can you imagine an eighteenth-century craftsman making the famous Dutch hand-made paper in a picturesque paddle-wheel paper mill by the side of a fast-running stream?

These are just some of the exhibits at the Netherlands Open-Air Museum which carry the visitor back to more romantic days. This wonderful museum is a few miles north of Arnhem, a city which gained fame during World War II as the scene of the gallant and bitter struggle of the 1st Airborne Division. Here, in the now peaceful countryside, is collected together a unique range of farmhouses and windmills.

Founded in 1912 by Mr. F. A. Hoefer, the Netherlands Open-Air Museum is modelled on the lines of the Scandinavian Folk Museums of

By STUART MARTIN

Norway and Sweden, and the collection has grown steadily since the day of its inception. In an 82-acre park which has been carefully landscaped to show the buildings in as natural a setting as possible, about 60 farmhouses, windmills and fisherman's huts are displayed, forming a fascinating panorama of the past.

The buildings, which have come from all parts of Holland, were carefully taken down on the sites where they had stood throughout the years and transported to Arnhem. There, they were rebuilt in all their original glory, and in addition, the interiors were furnished just as they were when the buildings were occupied. Tables are laid for a meal, chairs are drawn up round a hearth and beds have the sheets turned back, so that the visitor almost has a feeling of intruding, expecting the rightful occupants to return at any moment.

A "loshoes" farmhouse from the Achterhoek region in which the threshing floor, the stalls for livestock and the living accommodation all form a single unit.

As soon as you enter the museum you are transported to the past, for at the entrance is a toll-house and toll-gate which used to be a thorn in the flesh of travellers in the Dutch province of Drenthe. No toll is exacted now, and this charming little building simply serves to set the scene for what you are about to see.

Nearby is a "loshoes" farmhouse which dates back to the seventeenth century. Here, in the Twente district of the country, the farmer and his family shared their living space with their cattle, while the harvest was stored under the steeply-pitched thatched roof.

The walls of this farmhouse were made from a framework of oak beams fastened together by wooden pegs. The spaces

Left: One of the windmills, of the type used for draining the polders, which forms part of the open-air museum near Arnhem. Above: The fisherman's cottage in the foreground, and the shipyard behind it, originally came from Marken Island.

were then filled with wicker, and a thick coating of clay, or daub, was applied to both sides. On the roof, which was covered in rye straw, the thatcher's art is much in evidence and ingenious patterns have been woven into the high gable at the rear of the building.

Inside, there is a large threshing floor bordered on either side by cattle stalls, and in the rear an open hearth fire and the living space for the farmer and his family.

All the farmhouses and similar buildings are furnished in true period style, so that one sees at first-hand, as it were, a way of life that is with us no longer. The authenticity of the settings says much for the painstaking research of the museum staff.

* * * *

Another highlight of the museum is the Zaan village. This was brought to Arnhem in 1939 and the buildings were erected on either side of a narrow street, giving the whole assembly the romantic look of eighteenth-century Holland.

One intriguing house in this collection is the Good Year house. This name was derived from the fact that whenever the owner had a successful year he added an extra wing to the building. The result, though pleasing, was irregular to say the least!

Inside the Good Year house is a spotless interior which is typical of the cleanliness of Dutch houses everywhere. The kitchen, with its blue-tiled fireplace is full of gleaming, polished brassware, and the best room at the front of the house and the summer parlour at the rear are equally charming.

It is, however, probably the windmills which mainly appeal to the museum's visitors, and here in this picturesque setting are several examples of these familiar Dutch landmarks.

There are several windmills near the Zaan village. As most folk know, not all Dutch windmills were used for grinding corn—one of their important functions was to drain the polders, or land reclaimed from the sea. One of the mills in the museum comes from Noordlaren, and with its thatched upper structure is typical of the windmills still to be seen around Holland. In this type of mill the sails are used to drive an Archimedean screw instead of mill-stones, and the water in the polder is drained away—a simple but effective method. So that the best use could be made of the prevailing wind (and there is always a strong wind blowing in Holland) the head of the windmill on which the sails are mounted could be winched round by means of an out-rigger structure which extended downwards nearly to ground level.

* * * *

Nearby stands a "Paltrok" sawmill, one of the four still remaining in the country. On this mill huge trees could be sawn into thin boards and the whole structure was mounted on rollers so that the mill could be turned to suit the direction of the wind. The windmill was first adapted for this purpose by an ingenious Dutchman named Cornelis Cornelisz in 1592. His idea revolutionised the timber trade in Holland, as, before that date, all timber had been sawn by hand.

Another fine example of a Dutch windmill is the stone cornmill from Delft, a town world-famous for its pottery. Built at the beginning of the seventeenth century the mill in the open-air museum stands 87 feet high. Visitors are able to climb four floors and stand on the balcony which goes completely around the tower of the mill. From this vantage point a wonderful panoramic view of the museum, including two small windmills nearby, can be obtained. The two windmills concerned are the "Tjasker" and the "Spinnekop", or spider's head, windmill. Both of these, although small, were used for drainage work.

The rural industries of Holland have not been forgotten either, and the museum possesses several examples of the crafts of ancient times. One of the most fascinating exhibits of this nature is the Marten Orges Paper Mill, where the visitor can watch the famous "Old Dutch" paper being made as it was in the days when the first Dutch paper mill stood on the banks of the River Niers in the province of Limburg.

In the museum at Arnhem the paper mill nestles on the bank of a stream which drives the paddle-wheel. This gives the mill its power and the water needed for making the paper. Old Dutch paper is made from rags which are converted into a pulp and then scooped up on a fine mesh of copper wires. The paper is ready for use after it has been pressed, dried, glued and sized.

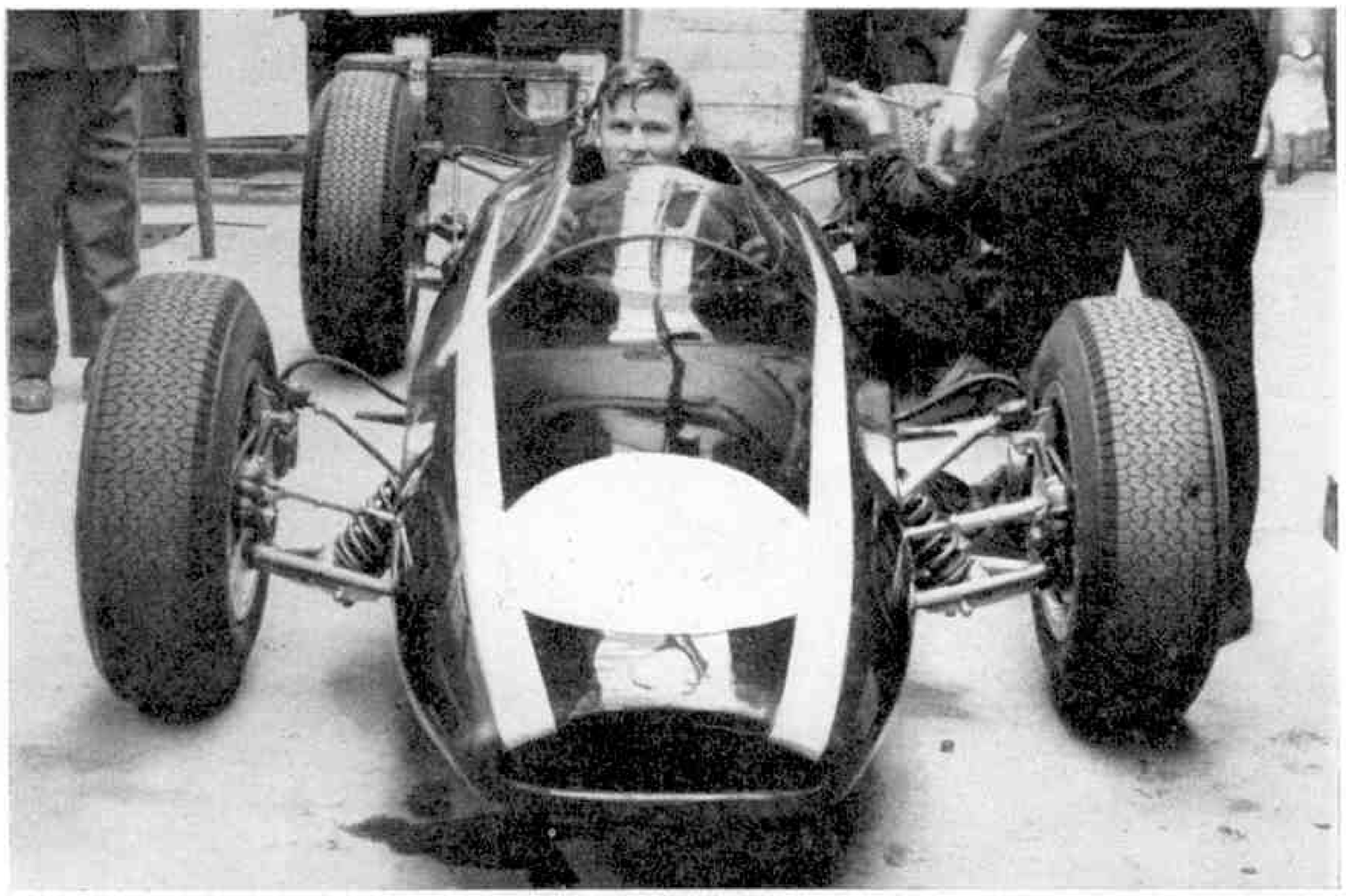
Many other crafts are represented too. There is, for instance, a brewery from Brabant, and other exhibits include charcoal kilns, a wheelwright's workshop, a weaver's cottage and a workshop similar to those where the famous Dutch clogs were made.

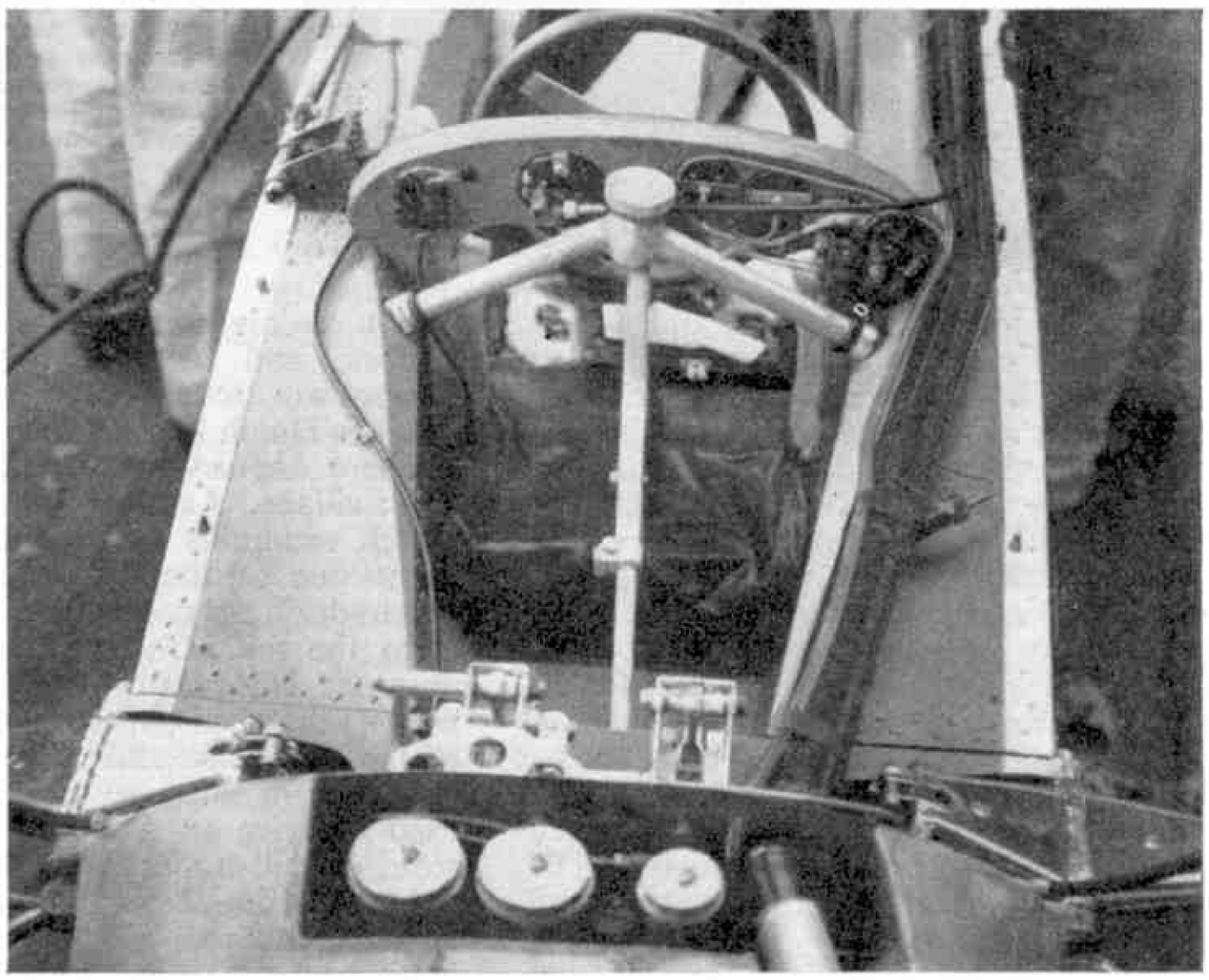
Now, all over the world, time-honoured crafts and ancient buildings are fast disappearing, and it is a great pity that so much of this is being lost to us for ever. It is, therefore, encouraging that at least one country has taken active steps to preserve the enthralling record of its ancient heritage.

ROAD AND TRACK

By Jerry Ames

The Achilles Heel Of Modern Cars?





(Top)Racing Driver Bruce McLaren seen in the new Cooper, which has a different front end and extremely small cockpit.

(Right) The driving position of the new B.R.P., driven by Innes Ireland. The monocoque stressed-skin type chassis cuts weight considerably. Both these illustrations appear by courtesy of "Motor Sport."

HEATED arguments continue over the proposed changes in Formula One Grands Prix regulations. If changes *are* to be made, then they will come into force on January 1, 1966. This may seem a long way off, but not for technicians and engineers who may have to produce completely new designs, build and test prototypes and then construct a team of new cars ready to be raced by May, 1966. So designers rightly expect at least twelve months notice of any agreed changes, hence the wisdom of early talks to get matters sorted out in good time.

The present Formula allows a maximum engine size of 1½ litres unsupercharged and a minimum car weight of 450 kilograms without fuel. So far, only one firm, Lotus, has got within nodding distance of the minimum weight regulation, but it looks as though the new Brabham and the 1963 B.R.M. have pared off enough weight to rival the Lotus.

Some continentals are advocating a 1-litre Formula, but most people consider this would produce rather feeble racing for Formula One, with single-seaters little if any faster than the present-day Formula Junior machines. Many British interests would like the engine size to remain at 1½ litres and there is certainly a lot to be said for this argument, although even with 1½ litres, racing costs are bound to increase, as more complicated multi-cylinder engines are introduced.

Already it is known that both Ferrari and Honda have V–12 engines in existence, while Coventry Climax have been flirting with the idea of a V–12. B.R.M. have a new 4 valve cylinder head coming soon for their V–8, but the firm is believed to have a V–12 design under consideration.

What do the drivers think? As usual the top, experienced men consider the present engines underpowered, but since the beginning of racing, drivers have always been crying out for more power, which engineers have done their best to provide. But sheer power in itself is not enough, especially if it is all at the top end. That was one of the faults of the old V–16 supercharged B.R.M. which developed little power below 9,000 r.p.m. and meant drivers were constantly changing gear to keep in the power band. This constant gear changing soon blistered their hands and exhausted the drivers.

Present day 1½ litre Formula One engines are now pushing out between 195 and 210 b.h.p., and British engineers have been logical enough to provide units with good power low down, thus providing satisfactory acceleration, which is partly why they outshine foreign competitors on the circuits. But the Grand Prix drivers, through their Association, have been getting together and deciding they would like engines of 2 litres from 1966 onwards.

It would seem that a modern 2-litre engine should be able to give 250 b.h.p., which is a figure most drivers consider desirable, in that it provides enough power to control the car more easily and safely on the throttle, the way a modern car is usually driven. So they have hopefully put their views before the wiseacres of the C.S.I., but it is likely to take many months and meetings before a unanimous decision is reached.

In my opinion, a weak point of the modern car is its gear box. This applies to

Formula One Grand Prix, sports cars, Gran Turismo, or ordinary production cars, such as you and I drive. Since the arrival of the Hillman Imp, I now reckon there are three big manufacturers who can make a good manual gear box, the other two being Ford and Standard Triumph. Do I hear cynical readers saying, who wants a manual gear box anyway; they are on the way out? Possibly, but I think they will be with us for a while yet and if we have to use them we might as well have one that functions easily and smoothly.

I always thank my lucky stars I learned to drive on cars with the old-fashioned crash box; they needed a good ear and timing to make clean changes, but once you acquired the knack it was something you did not easily forget. Even today a knowledge of correct gear changing is an asset, because I am convinced one might just as well throw away the synchromesh on some modern gear boxes, for all the good it is. A contributory factor to some of the unsatisfactory gear changing today is badly-designed linkage and flimsy selector mechanism; curiously enough there was a little gear box trouble with family cars until we went over to that anachronism, the steering column gear lever, with its long linkage, which made engineers hold up their hands in horror.

Thank goodness this sales gimmick, imported from U.S.A., is on the way out, but even if the lever has gone back to the floor we are often still left with the same gear box designed for steering column linkage, and adapted in the interests of economy for present day use, instead of a new gear box being designed for the job it has to do.

Only after driving a car like the Hillman Imp, with such a nicely-designed gear box, do we realise how positive gear changing used to be.

While on the subject of gear boxes, it would never surprise me if the World Championship should this year go to the car with the best gear box. Even the hitherto reliable Cooper ran into gear selector trouble in the Dutch Grand Prix causing its retirement after only two laps.

The gear box is certainly the Achilles heel of the modern Grand Prix car.

Le Mans told a similar story—many cars were retired under that delightfully vague heading "transmission trouble". In numerous cases the gear box was the offending unit. The race was a great triumph for Ferrari, who took the first six places, but, in the eyes of technicians, the fabulous performance of the Rover–B.R.M. made the gas turbine vehicle the car of the year. It was going as strongly at the end of 24 hours of high speed motoring as it was at the beginning, in marked contrast to the twelve weary-looking piston-engined vehicles still running at the finish.

Some interesting facts came to light in this year's Grand Prix d'Endurance, as it is called. There were 49 starters, but including the gas turbine car only thirteen were running 24 hours later, when the race ended. Twelve of the original starters were eliminated due to accidents, which leaves 24 retirements through mechanical failure, or exactly half the piston-engined cars that started—a very high proportion which may be partly accounted for by the fast pace set by the big Maserati and Ferrari from the outset.

Ferrari did better than most teams. Six of their eleven starters finished and occupied the first six places, but Britain's Rover–B.R.M. was only 16½ miles behind the sixth 3-litre Ferrari and covered 2,592 miles, exactly the same distance as the 4½ litre Anglo-American AC Cobra, placed seventh. Yet, the British gas turbine car could not be officially placed, because it was running in a special class by itself and was not eligible for one of the top prizes.

The victorious 3-litre V–12 Ferrari developed around 350 b.h.p.; in the hands of Scarfiotti and Bandini it covered 2,834 miles at a record average of 118.1 m.p.h. to win the fastest Le Mans ever. It exceeded last year's winning average by just under 3 m.p.h. for the 24 hours.

Compare these figures with those of the Rover–B.R.M. equal to a 2-litre car and developing only 150 b.h.p. To win its special class the gas turbine car was given a target speed of 93.5 m.p.h., but it exceeded it by 14.5 m.p.h. to average 108 m.p.h., which was only 10.1 m.p.h. slower than the winning Ferrari after 24 hours of high speed motoring—a tremendous achievement, accomplished quietly, without fuss or drama.

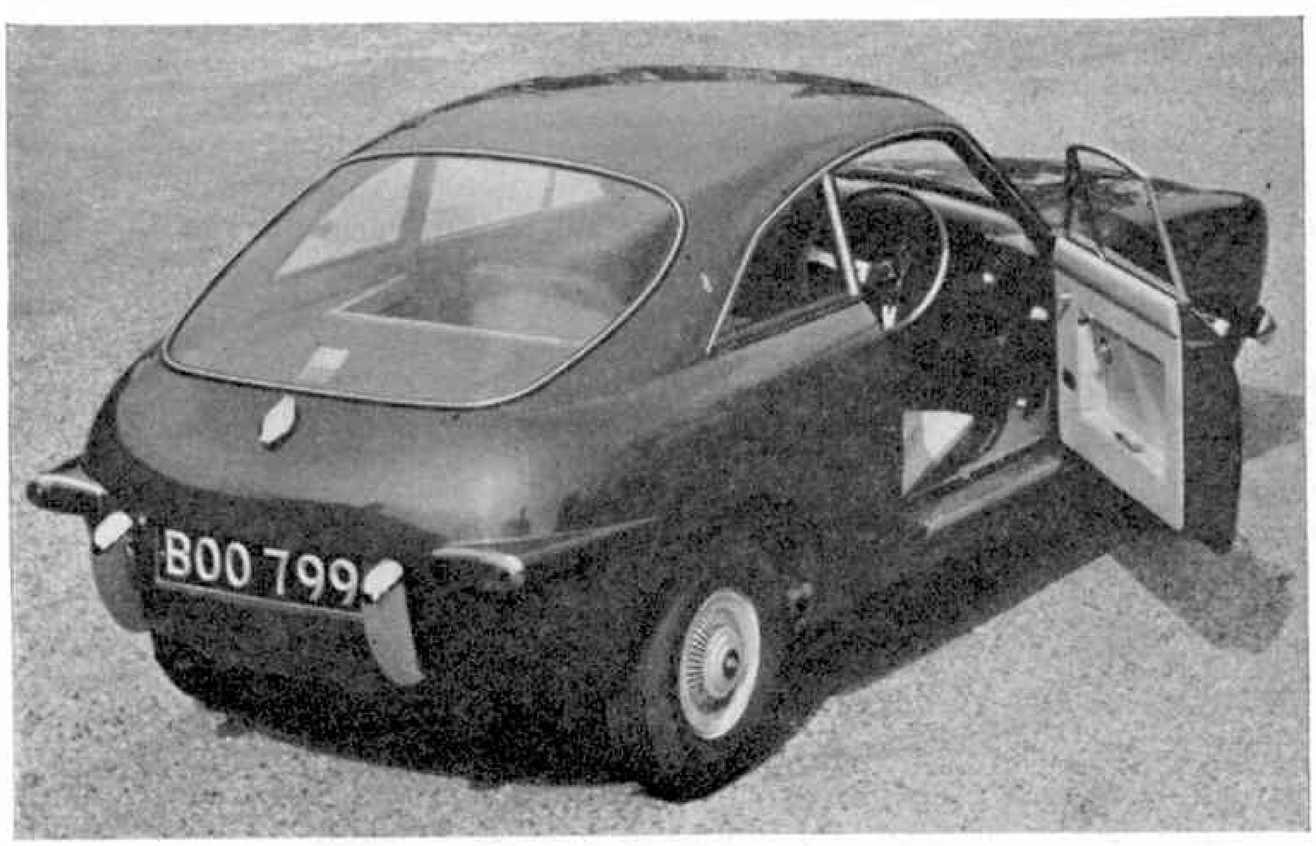
Up to six years ago this speed of 108 m.p.h. would have been fast enough to win, but so efficient are modern gas turbines that to beat them present day cars appear to need engines developing more than double the power and equivalent to a 50 per cent. increase in capacity, as was shown at Le Mans.

There is nothing surprising about the reliability of gas turbines, because it stands to reason that an engine with fewer moving parts, all of which rotate instead of being pushed up and down and sometimes hammered against springs, as in the case of conventional valve gear, must be more reliable, because there is virtually nothing to be banged out of adjustment. So, as is proved every day in aircraft practice, turbines have a longer life and require less servicing.

A gas turbine car starts easily on the coldest morning by just turning a switch. It burns air heated by a torch operating on paraffin. The expanding air turns a tur-

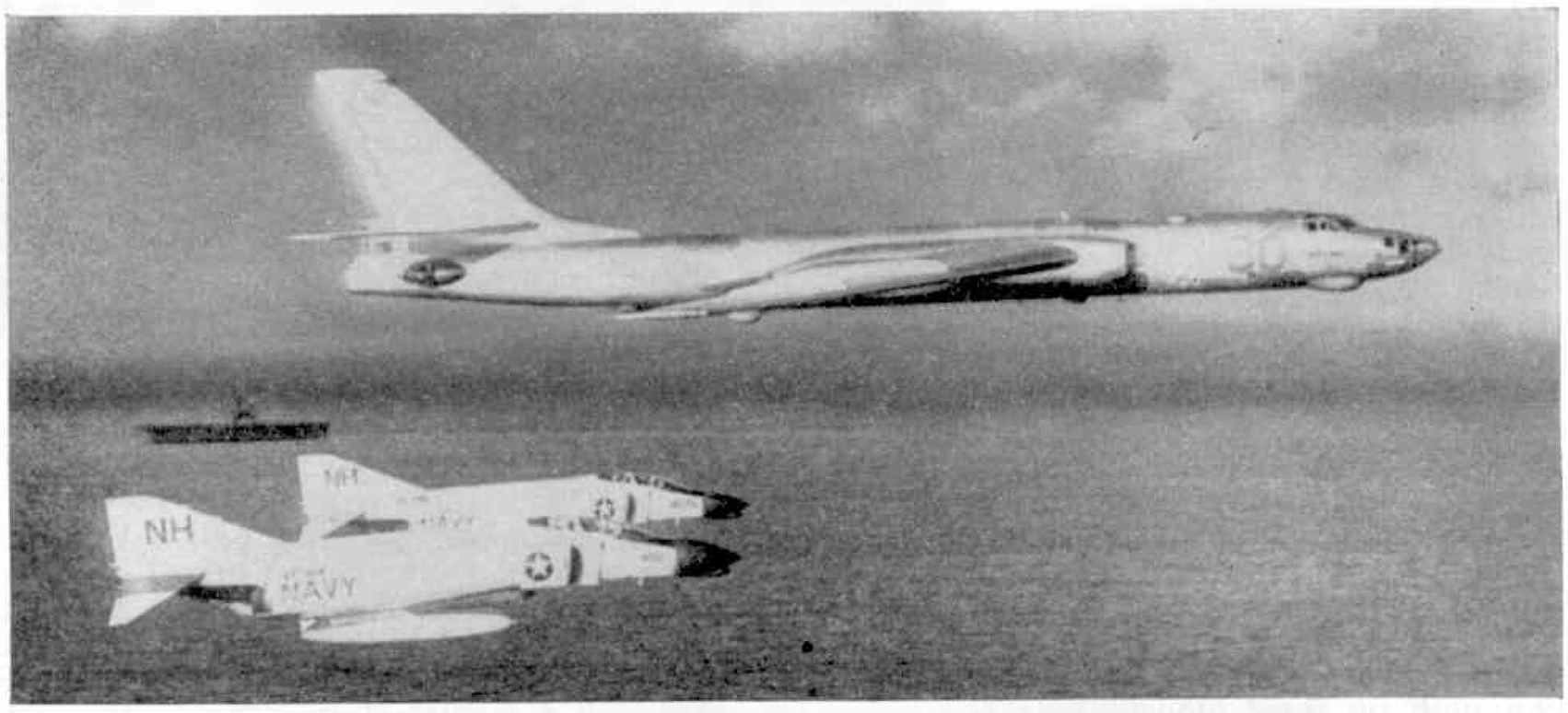
(*Continued on page 358*)

The Aston Martin Project 215 which made a good impression in the early laps at Le Mans but suffered later from transmission trouble. The flat, cut off tail makes an enormous difference to stability at speed and was suggested by B.R.M. driver Ritchie Ginther.



The Ogle Super SX 1000 based on the Mini-Cooper, has a top speed of 93 m.p.h. and very lively acceleration. It has twin beam headlamps and a 10½ gallon fuel tank.

AMERICAN FIGHTERS ESCORTED RUSSIAN JET-BOMBERS



WHEN I first saw the photograph which is reproduced at the top of this page I could hardly believe my eyes. It is not every day that Russian bombers and American fighters fly together in formation, quite peacefully.

The bomber is a Tupolev Tu–16, known in the west by the code-name

AIR NEWS

By John W. R. Taylor

"Badger". It was first detected by radar on the U.S. aircraft carrier *Kitty Hawk* while it was still some 200 miles from the ship in the North Pacific. Realising that it was one of the Russian jet and turboprop bombers which fly regularly over U.S. naval forces, to spy out their movements, the captain of the *Kitty Hawk* decided to send up a "reception committee" of jet-fighters to meet the Tu–16.

As soon as the Russian bomber began flying over the carrier, two McDonnell F–4B Phantom II fighters of U.S. Navy Squadron VF–114 closed in on it and escorted it all the time its crew were photographing the ship. Simultaneously, a Chance Vought RF–8A Crusader reconnaissance fighter flew alongside the Tu–16 and photographed it at work, giving us our first good air-to-air pictures of this formidable long-range bomber.

Since then, Russian aircraft have made many similar reconnaissance flights over U.S. naval forces in the Pacific and Atlantic, and each time RF–8A's have been sent up to photograph them.

The Soviet Tupolev Tu-16 bomber which flew over the U.S.S. "Kitty Hawk" is seen here with its escort of U.S. Navy F–4B Phantom fighters (U.S. Navy Official photograph). Below: This Vickers Viking airliner, fixed into position on top of a garage, is being converted into a restaurant.

The object of the Russian spy flights appears hardly friendly; but, unlike reconnaissance flights over land, no international law is broken and the aircrews even show a sense of humour at times. On one occasion, a Russian photographer in a Tu–16 waved the pilot of a Phantom II out of the way when the U.S. fighter blocked his view of an American carrier. The rear gunners in the bombers always seem to point their guns straight upwards to show that they have no aggressive intentions towards their unfamiliar escorts.

OFF COURSE

When an aeroplane ends up on top of a building, it usually spells trouble for somebody, but garage owner Vic de Villiers of South Africa hopes that the Vickers Viking airliner shown atop his premises in our photograph will increase his profits.

Mr. de Villiers bought the Viking from a local charter company and is converting the interior into a restaurant. Motorists travelling along the Golden Highway between Johannesburg and Potchefstroom are unlikely to pass the garage without noticing the aircraft, and the temptation to stop for a meal in such unusual surroundings will be hard to resist, especially for young passengers. Nor is the Viking just an empty shell, for it was flying only a few hours before being bolted into its present position.

NO HELP NEEDED

Airlines always take special care to ensure the comfort and wellbeing of very young, very old or infirm passengers. So, when a woman called at Trans-Australia Airlines' Sydney office to arrange a flight to Tasmania for her 87-years-old father, the traffic officer asked if the elderly gentleman would need any special assistance during the trip.

"Oh no," replied the woman, "unless he's too stiff to walk after his water-skiing".

UNDERWATER HELICOPTER

Hiller's annual award for the helicopter "Pilot of the Year" has gone to Jim Klotz of Evergreen Helicopters Inc. for a rescue operation which made him the first underwater chopper pilot in history.

Klotz was flying his little Hiller 12E on a job that involved laying 800 lb. sections of pipe across the tidal flats of Coos Bay, Oregon, when he heard that the cargo ship *Alaska Cedar* had been swept on to the rocks nearby. In spite of gale force winds, he flew straight to the crippled vessel and hovered over it. He could see the 24-man crew huddled in the shelter of the bridge, but could not land on deck to rescue them as the only clear spaces were being lashed by raging surf and loose timbers from the ship's cargo.

With a line tied to the Hiller's under-fuselage cargo-hook, Klotz hovered perilously near the deck, while members of the crew tried vainly to tie on a 3-inch hawser for a breeches buoy to carry them to safety on the jetty. Suddenly the helicopter was engulfed by a huge breaker that swirled through the cockpit and splashed over the instrument panel. Eye-witnesses flying overhead in an aeroplane said that it disappeared completely under the surf, and Klotz pulled away trailing a stream of water.

Shaken, Klotz flew to shore for a longer line and completed the hook-up. He then landed on the jetty and, single-handed, pulled the 3-inch hawser above the water and secured it to a boulder. As injured crew-members reached land in the breeches buoy, he flew them from the jetty to a nearby Coast Guard station, guided after dark by the lights of vehicles on the roads. In all, the flying rescue took one hour and twenty minutes. Later, the *Alaska Cedar* split in two, rolled seaward and sank.

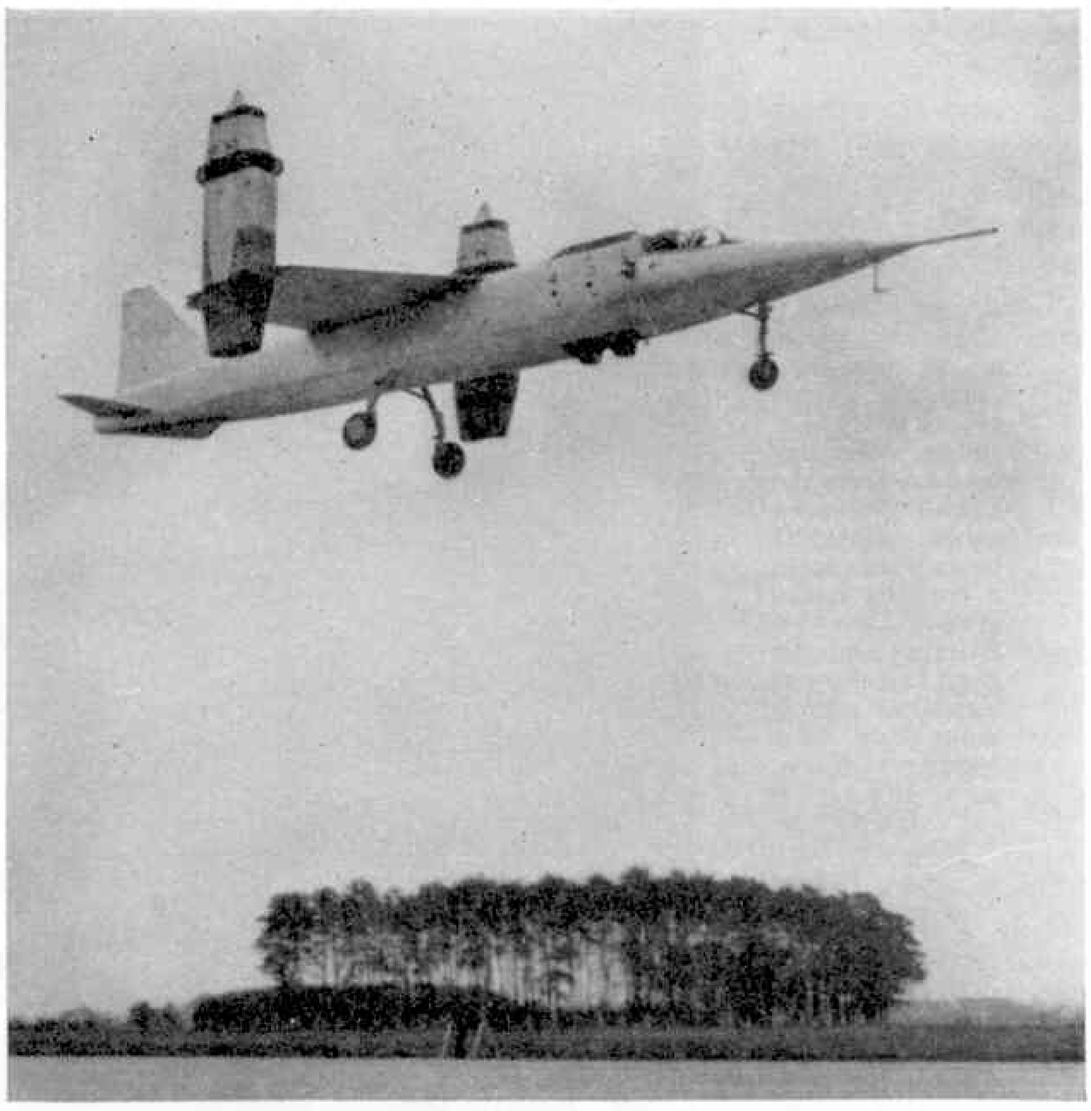
A Sikorsky S–61L in the livery of Los Angeles Airways. B.E.A.'s S–61N's will be similar but will have a sealed hull and outrigger floats to make them fully amphibious.

NEW VTOL FIGHTER

For the first time since the war, Germany's aviation industry has designed, built and flown the prototype of a jet combat aircraft. In its present form the VJ–101C, illustrated on this page, is equipped for research; but it is probably the fastest VTOL aircraft yet flown and, in its eventual production form, may be ordered for the West German Air Force in preference to the British Hawker P.1154 or the French Dassault Mirage III–V fighters.

Like its competitors, it is powered by British engines. They consist of six Rolls-Royce RB.145 turbojets, each giving 2,750 lb. of thrust. Two of the engines are mounted vertically in the fuselage, immediately aft of the cockpit; the others are carried in pairs in wingtip pods which swivel to provide vertical lift for take-off and horizontal thrust in cruising flight. Because the engines form a triangulated group, the VJ–101C can be kept straight and level in hovering and low-speed flight solely by varying the thrust of the wingtip engines, and the usual "puffer-pipe" stabilisation system is not required.

The VJ–101C was designed by the Entwicklungsring Sud group, made up of the Heinkel, Messerschmitt and Bolkow companies, with the assistance of Rolls-Royce who designed, developed and tested the wingtip pods. It made its first free flights on April 9, and within a month had been flown to heights of more than 100 feet and had travelled forward several hundred yards. Tests as a normal aeroplane, with the wingtip pods horizontal, should have started by the time this issue of the *M.M.* appears. Later will come transition tests from vertical to horizontal flight and vice versa.



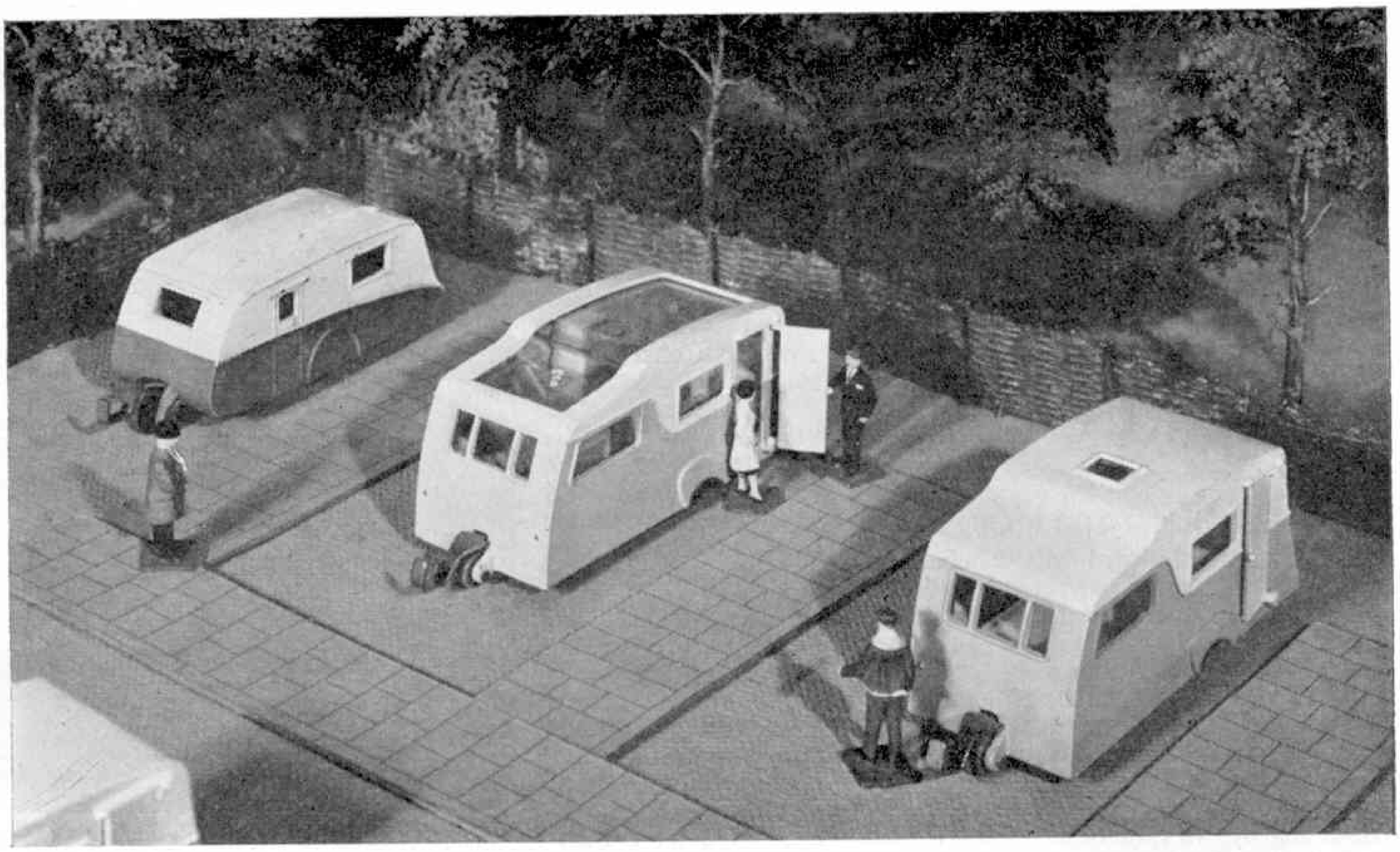
This new German vertical take-off aircraft is powered by six Rolls-Royce RB 145 jet engines. Two of these are mounted vertically in the fuselage, the four others are mounted at the wing tips in swivelling pods each containing two engines. In the picture the aircraft is hovering with the wing tip engine pods in the vertical position. The pods swivel to a horizontal position for propulsion during cruising flight.

NOT SO SCILLY

When B.E.A. decided not to support further work on Britain's revolutionary Rotodyne convertiplane airliner, it looked as if the Corporation intended to ignore the attractions of helicopter travel. It is, therefore, welcome news that B.E.A. has ordered two 25-passenger Sikorsky S–61N's and will start operating them on regular services between Lands End and the Isles of Scilly next year.

The S–61N has a hull like a flying-boat and is fully amphibious, which makes it particularly suitable for use on over-water routes. Its two 1,250 s.h.p. General Electric T58 shaft-turbines give it a cruising speed of 140 m.p.h., and it can maintain height on either engine in an emergency. The B.E.A. machines will have full instrumentation and equipment for operation by day and night, including

(*Continued on page 359*)

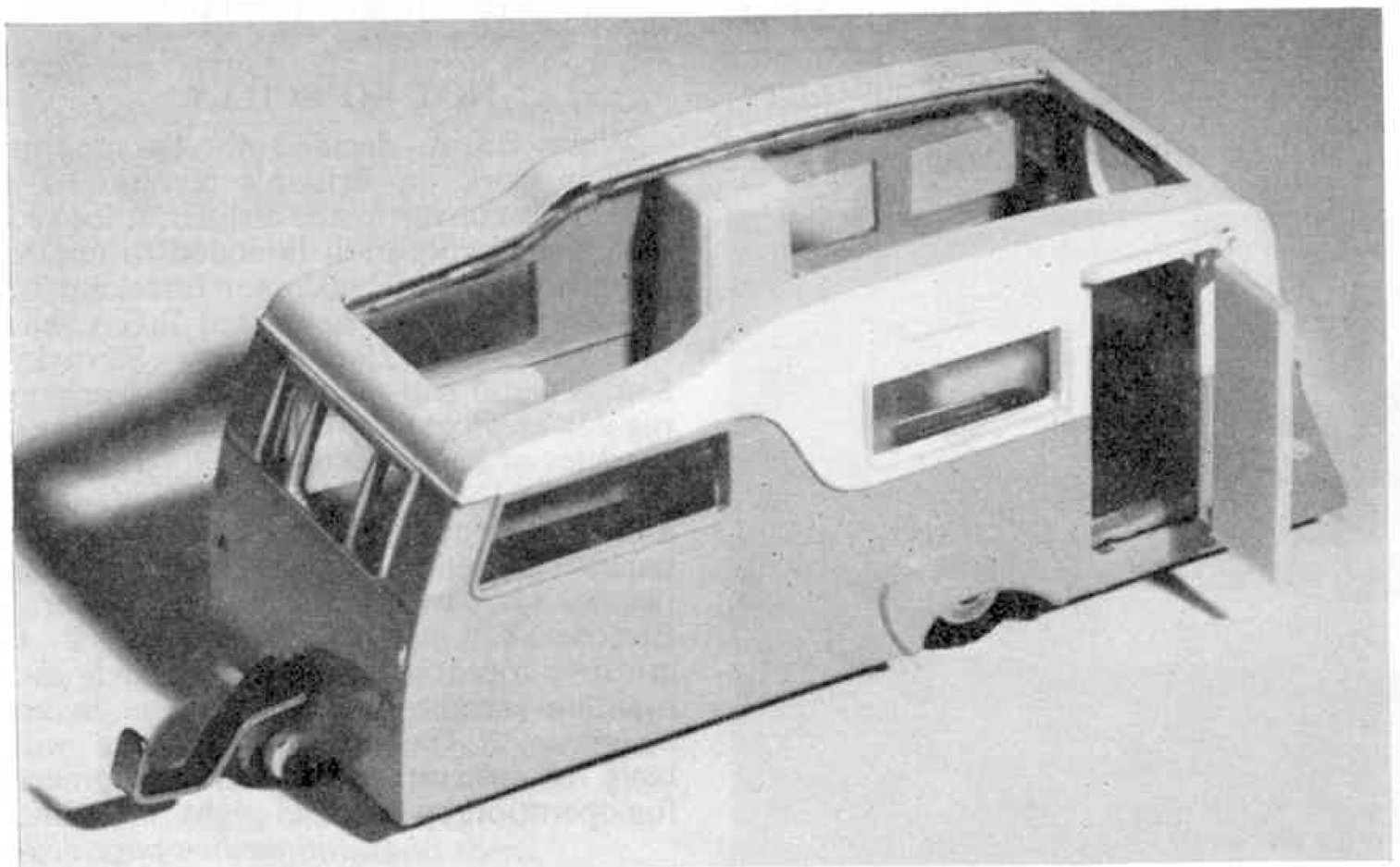


A trio of Dinky Caravans make up an attractive camp site, as this illustration shows. The figures are from the Dinky Toys series, too; the trees which form a realistic background are by Britains and the wattle farm hurdles, which make up the boundary fence, are Herald Models.

Three Caravans, Now, For Summer Time Plans

REMEMBERING how I concluded last month's notes in glowing anticipation of a sunny summer—if the phrase can be excused—and recalling some of the far from sunny days through which we in this country have passed since then, I hesitate to bring up again the subject of holidays spent on tour.

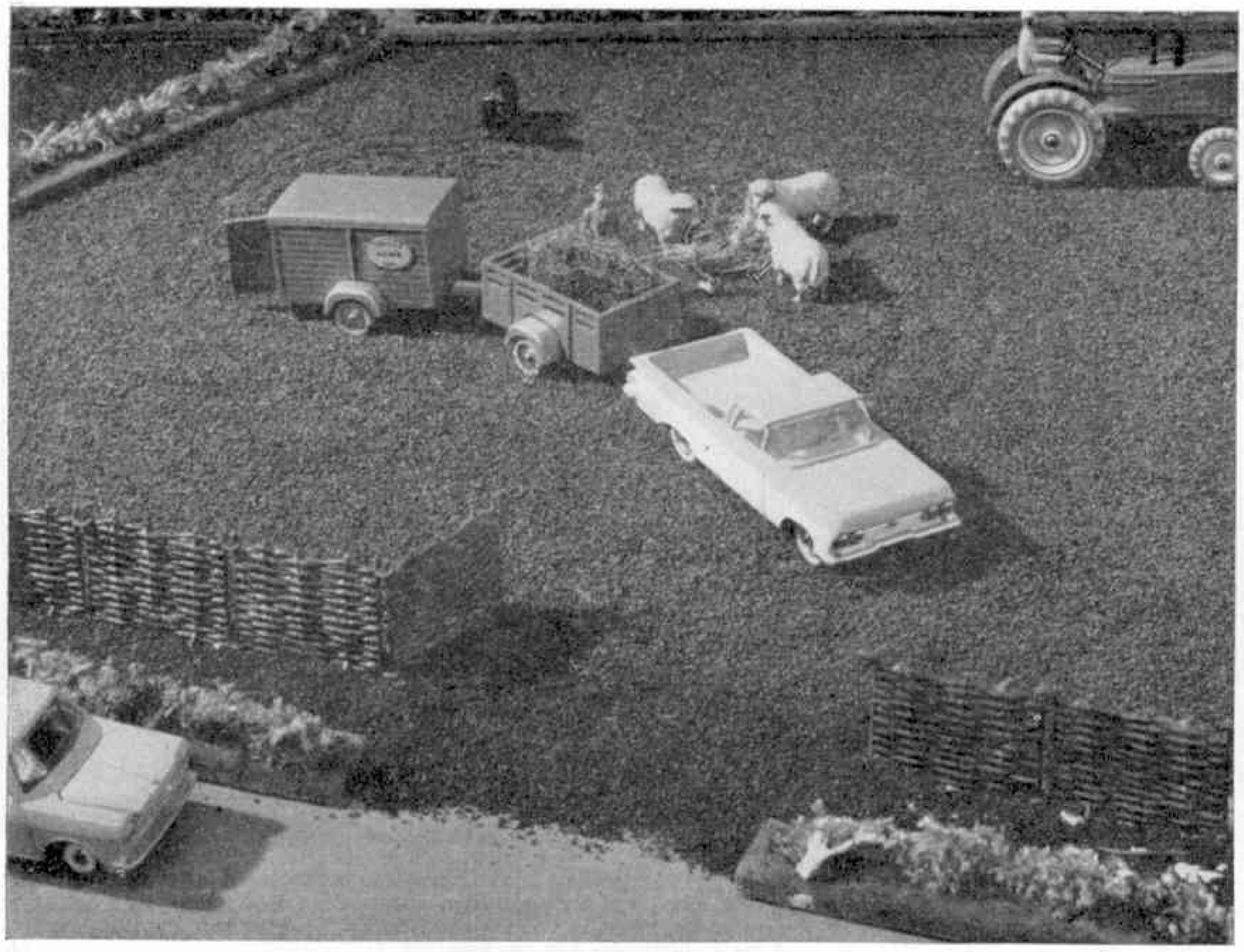
Yet, the fact remains that we are always optimists about holiday prospects and there is a good chance that many of you are reading this as you travel swiftly towards the sea, blissfully carrying in your luggage all the accoutrements, such as tennis rackets, cricket bats or bathing trunks, which most lads regard as a necessary adjunct to a successful holiday. And all you are hoping for is the weather to go with them! Or it may be that you are sitting in your father's car as he whisks you deep into the countryside. And it is almost certain that others of you will be relaxing at this very moment in a comfortable "home on wheels," which can have you at the seaside one day and in the heart of the countryside the next. I, for one, wish that I were with you, and I am quite sure most of my readers who have to remain at home will wish that they, too, were about to enjoy a holiday in one of these vehicles, the popularity of which is enormous.



This close-up of the Dinky Toys Caravan with Transparent Roof shows how the whole of the interior of this immaculately-fitted out "home on wheels" is now visible.

Dinky Toys News

By The Toyman



Down on the farm. Used in the composition of this study of agricultural life are No. 448 Dinky Toys Chevrolet Pick-Up and Trailers and a Dinky Toys Massey-Harris Tractor. The car in the foreground is the Morris 1100 Saloon, with opening bonnet, introduced into the Dinky Toys series, as No. 140, earlier this year.

You need not despair, however, for if you cannot go caravaning in real life, you can at least enjoy it in miniature, thanks to the range of Dinky Toys Caravans. For some

A keen Dinky Toys collector overseas is Chris Mumford, seen here, whose home is in Griffin, Indiana.

time now, this has consisted of two models only, Caravan No. 190, and the Four-Berth Caravan (No. 188). But this month's new release increases this total to three, all of which can be seen in the picture at the top of page 338. The new model is also shown in close-up.

As you can see, it is based on Dinky Caravan No. 188 and is officially termed "Caravan with Transparent Roof". Its number is 117. The name fully explains the model and the main reason why a tough, transparent plastic roof has been fitted is to show the extremely detailed interior fittings which include a table, chairs, cupboards, a sink with draining-board, and even a "carpet" on the floor.

In a full-size caravan, the chairs—they are more like sofas or couches, rather than chairs—are converted into beds or "bunks." Those represented in the Dinky Toys Caravan would make one double bed and two singles but, of course, they are not "convertible". The model is finished in bright blue and cream gloss, a two-tone scheme which is very popular with real caravans. Length of the model is 5 $\frac{3}{16}$ in., and suspension is fitted to the main wheels.

* * * *

You will remember how I mentioned in last month's notes that the Chevrolet Pick-Up and Trailer, which recently came on to the market, would fit into a wide range of layouts. To give you some indication of the way in which it can be used to very great effect I have included the picture which you see at the top of the page. The new set brings quite an air of reality to the farming scene depicted, and the use of the farm animals (which can be obtained in most model shops or toyshops) makes the picture all the more interesting.

One of the very popular Dinky Toy items is No. 292 Atlantean Bus which up to now has only appeared in red and cream either as a "Corporation" bus or carrying the Ribble emblem. Keen collectors should keep their eyes open for another alternative which they may see in the shops. This is No. 293 Leyland Atlantean, finished in bright green and cream. Again it carries a "Corporation Transport" emblem, but it also has a B.P. petrol advertisement beneath the top windows in place of the Regent advertisement on the red and cream version.

* * * *

I felt I would like to say something in this month's notes about the many collectors of Dinky Toys who write to me week by week from many parts of the world. It may interest you to know that Dinky Toys are sold in at least 40 countries, so you have a good idea how wide an area my correspondence covers. I might add, too, that price lists for Dinky Toys are printed in at least ten different languages, so you will see that these models which we make at Binns Road have a truly international reputation.

I am always glad to hear from collectors, and among my latest correspondents are Timothy Carman of Hillsborough, in California, U.S.A., A. Meredith of Sale, in Cheshire, and David Penson, whose home is at Eaglescliffe, Co. Durham. David writes to tell me how pleased he is with his Super Criterion Ambulance (patient and stretcher model), and his Jaguar Mark X, with open boot and luggage.

"They are both excellent models" he writes.

Finally my recent mail also included a letter from Chris Mumford of Indiana, U.S.A., whose picture you see on this page.

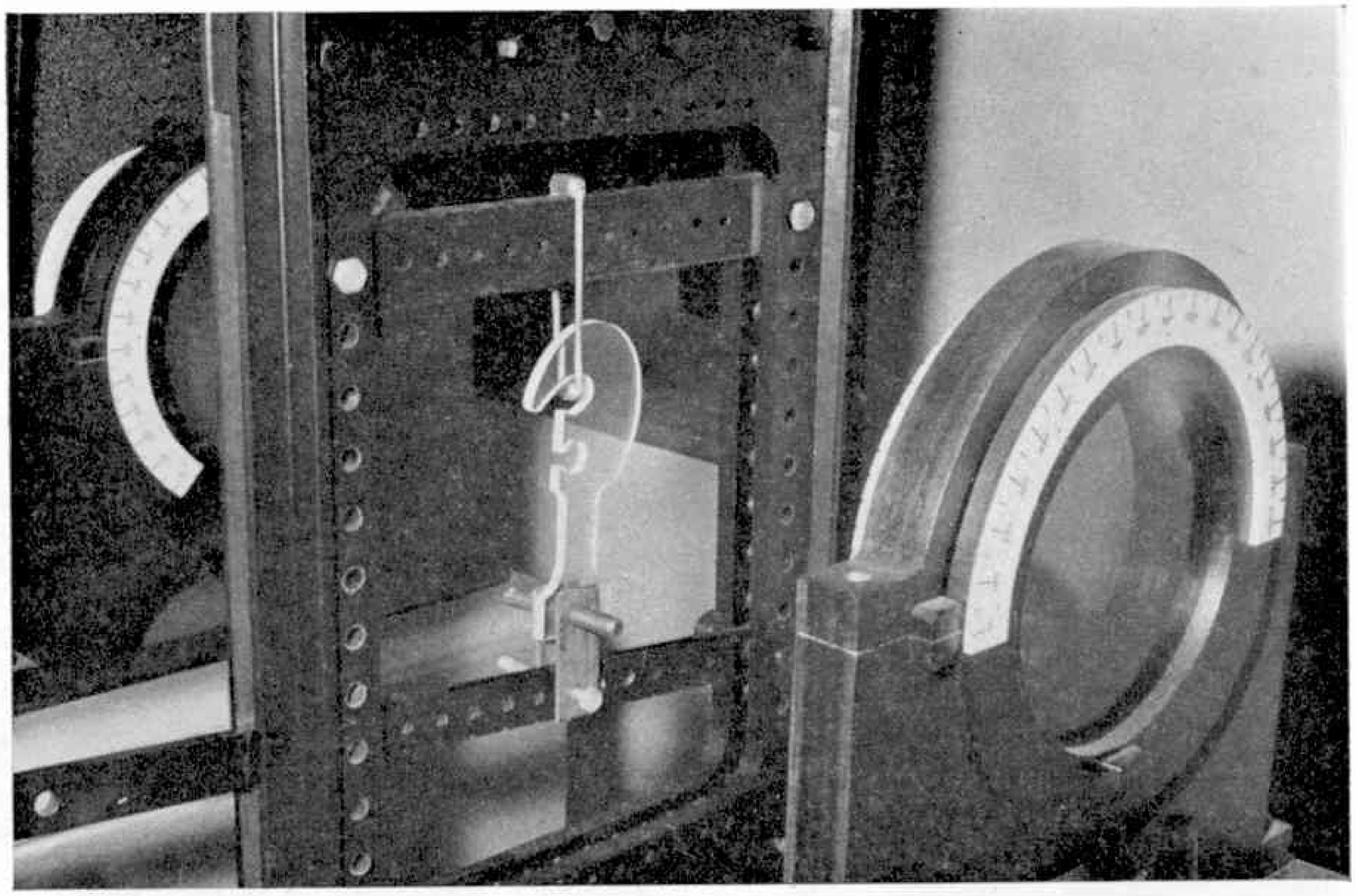
BOOK REVIEWS

The Grey-Green Story by T. McLachlan, A.M.Inst.T., is published by the Omnibus Society, price 3/9 post free, and is available from 103A Streatham Hill, London S.W.2. This booklet tells the story of the George Ewer organisation of express and excursion coaches based on Stamford Hill, in North London. The author shows how one small operator after another was taken over with the gain of more and more picking up points in the Metropolitan area. A fleet list from 1921–63, at the back of the book, shows how standardised this coach fleet has become through the years, whilst the nine photographs trace how this stage has been reached. We also obtain occasional glimpses behind the scenes of the other forms of transport run by George Ewer from 1885 onwards.–**D.K.**

* * * *

The latest edition of **The Observer's Book of Automobiles** (Warne, 5/–) includes for the first time cars of Brazil and Israel. There is a description and illustration of nearly every make of car from many nations, an index of international and U.K. registration letters, together with notes about the plates of several countries, and a glossary of technical terms.

THE PHENOMENON OF PHOTOELASTICITY



A close-up view of a Polariscope showing a railway coupling hook in position between two circular polarizing filters. Weights are applied to the lever at the bottom of the hook to stress it. All the photographs illustrating this article appear by courtesy of the Sharples Engineering Co. Ltd. of Bamber Bridge, near Preston, makers of the Polariscope you see here.

ONE way of testing a boiler is to blow it up. Increase the pressure until it bursts! It is the same with a crane hook. It can be loaded with weights until it breaks, but testing this way is rather wasteful of both boilers and crane hooks. The only really practical way of testing such things are indirect ones, non-destructive methods, in fact. One of the best of these is by making

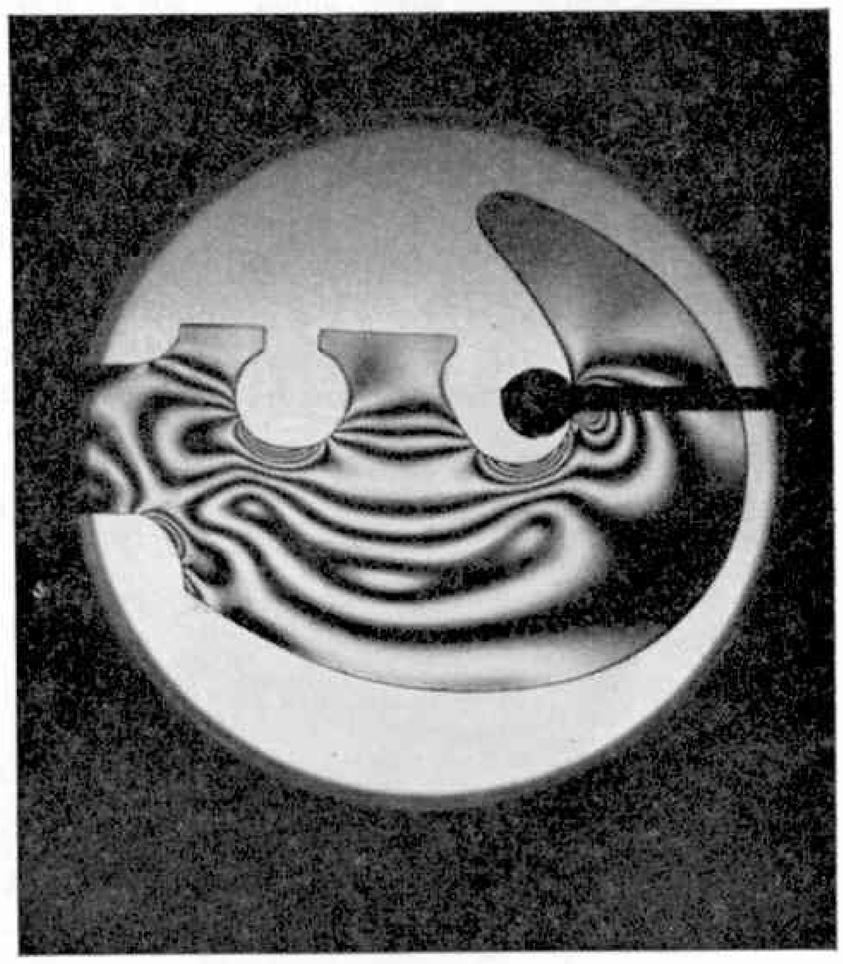
By J. A. FROST

use of the phenomenon of photo-elasticity. (*Photo=light, elasticity=springiness.*)

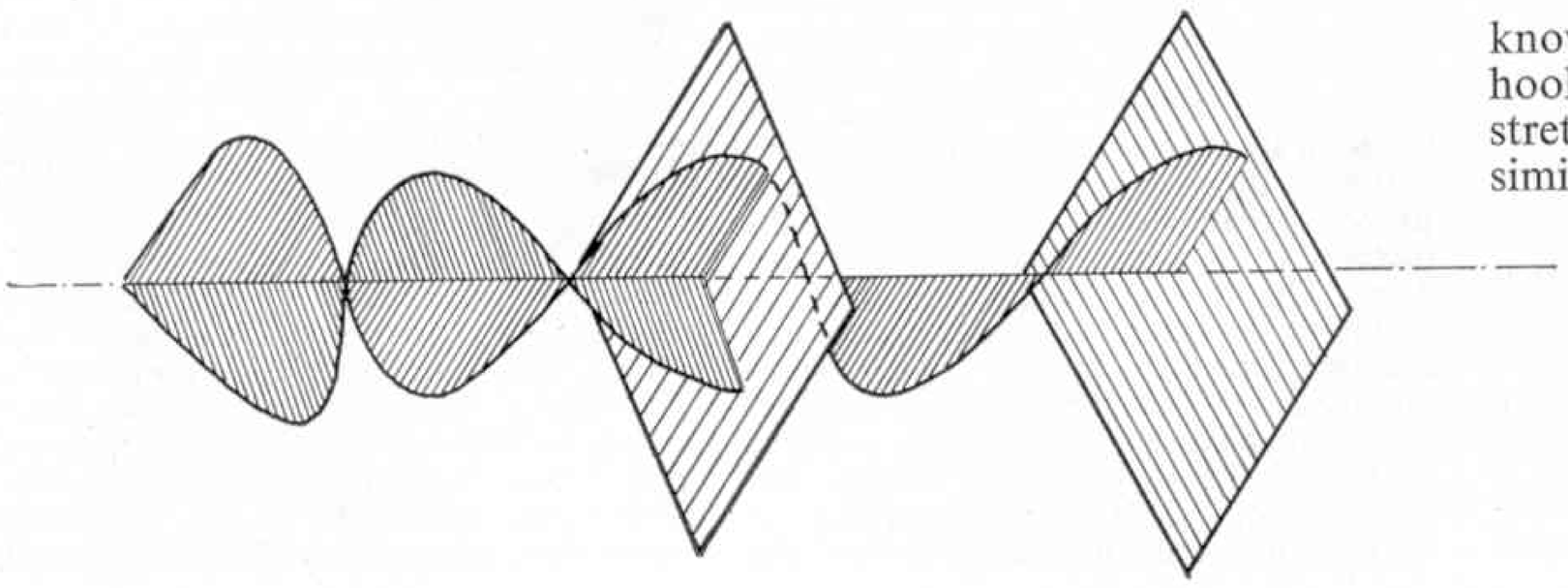
Scientifically speaking, something is elastic if it can be stretched and, when released, returns to its original size and shape. When a rubber or "elastic" band is pulled it stretches; it is apparent it stretches for this can be seen happening. Many things stretch, even a steel bar if it is pulled hard enough, but it needs an enormous pull compared with an elastic band, and it cannot be seen happening. If an elastic band is stretched hard and pulled out far enough it breaks; so will a steel bar, a crane hook, or a railway coupling if they are overloaded.

Of course, it is necessary to know what sort of load a steel crane hook will safely carry without stretching and finally breaking, and, similarly, that the driving wheels of a locomotive will sustain their load over thousands of miles without failure.

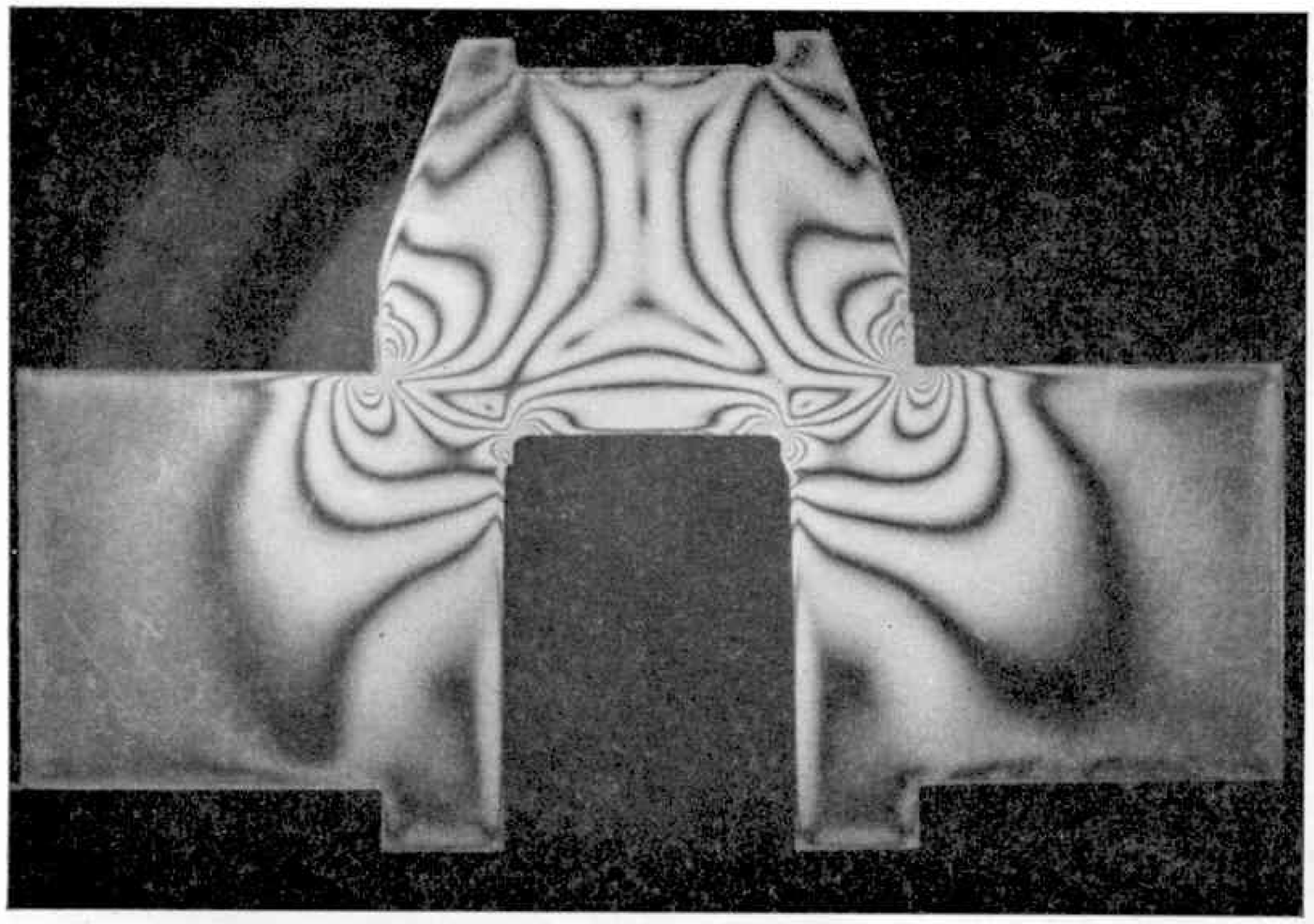
How can light be used to give this information? The first step is to make small flat scale models of the objects to be tested. Then, by examining the models in an instrument that produces plane-

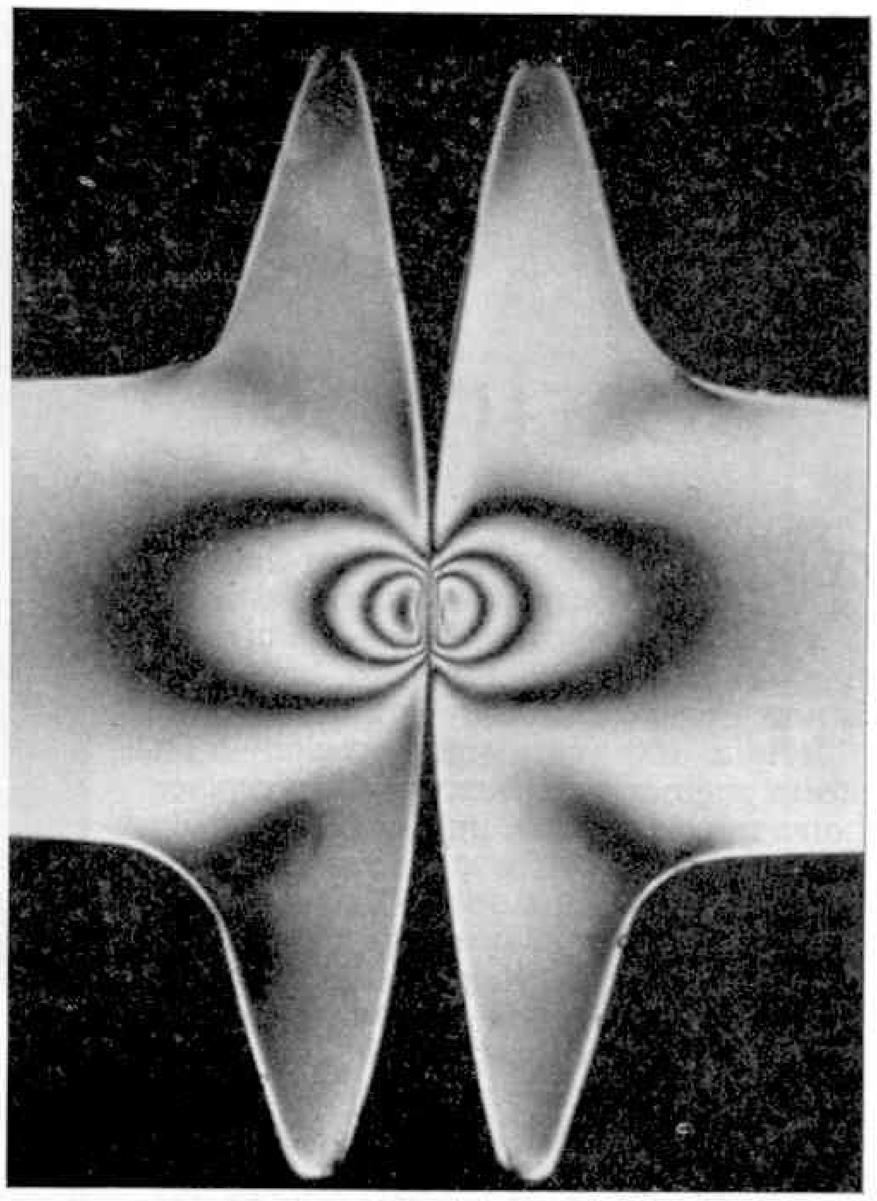


Right: A railway coupling hook under load. The points of greatest stress are where the contour lines are closest together. At any of these points there is danger of breakage when the strain is too great.



How polarizing filters work: A beam of light waves travelling in the direction of the arrow meets the first polarizing filter. This filter acts like a grating and lets waves through which are vibrating in one plane only. If the second filter or "grating" is at right angles to the first all light is stopped as shown.





polarised light, the strains set up can actually be seen, when the model is stressed by hanging weights on it, squeezing it, or applying some similar force.

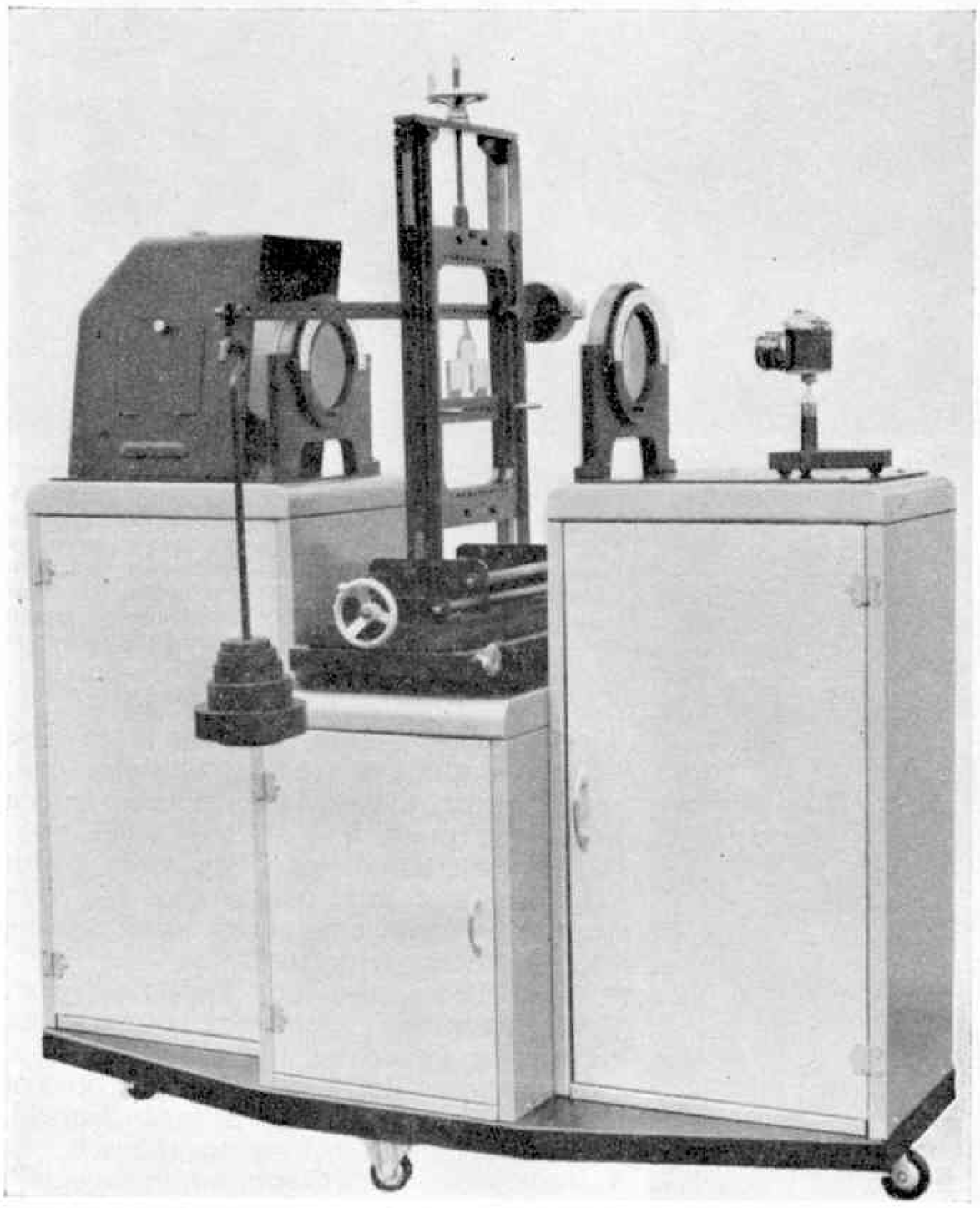
Plane-polarised light is produced by putting a special kind of filter in front of the light source, and such filters are called polarising filters.

Light is made up of waves. The light waves from an electric bulb, for example, radiate out in all directions. These waves of light are also vibrating in all planes. By putting a polarising filter in front of the bulb the light that comes through is then vibrating in one plane only, in other words it is plane-polarised. If another piece of filter is now put in front of the first, and turned round until the light coming through it is plane-polarised at right angles to the light coming through the first filter, then no light will come through at all.

How the light is completely cut off in this manner is shown in the diagram. When a transparent plastic model—a crane hook, for example—is placed between the crossed filters the light will still be completely cut off. If a load is now applied to the hook, no visible movement occurs in the hook, but the plane-polarised light passing through the strained hook is "rotated". Some light will now pass through the second filter and a pattern of light and dark lines can be seen in the hook. These lines look like contour lines on a map and in fact, they are contours—contours of the strain set up in the hook by the load. The amount of the strain in the hook can be measured by using an instrument called a polariscope, which consists basically of the two polarising filters together with other measuring instruments. From measurements made with this instrument the stressess in a full sized steel hook can be calculated.

Photoelasticity has been used as an aid in designing many machines, all kinds of engineering products (some of which have included scale models of bridges, which have been made loaded and examined in a polariscope and the stresses calculated), boilers, locomotive wheels, coupling hooks, aeroplane parts and very recently the design of a high pressure vessel for an atomic reactor.

Meccano can be used to construct a polariscope by means of which you can examine stresses in your own models. In a subsequent issue, I will show you how this interesting piece of equipment is built.



Top left: Stresses in the crankshaft of an internal combustion engine. Note how the contour lines are closer together at the sharper corners, denoting a concentration of strain there. (Top right) Railway carriage buffers undergoing an impact test under the eye of Polariscope. These well-designed buffers show stress properly distributed in their strongest parts. (Bottom picture) General view of the Sharples Polariscope. This kind of instrument is used by engineers and scientists to study stress patterns in engineering structures. Here, a model is being stressed by weights attached to a lever.

Special Year For The Festiniog

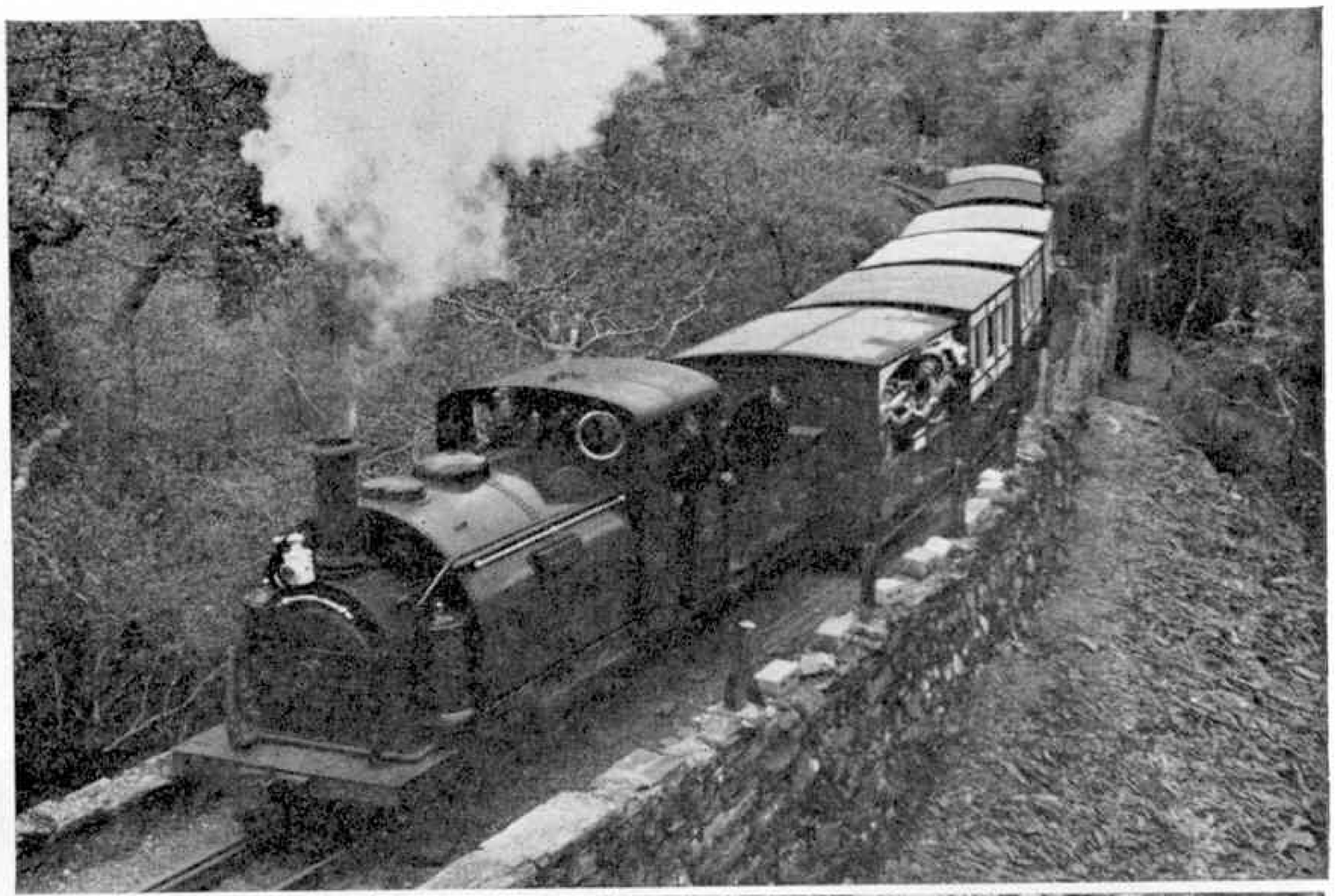
THIS year is rather special for the 127-year-old narrow gauge Festiniog Railway in North Wales—the historic line which fell derelict in 1946, but which is now being restored by enthusiasts.

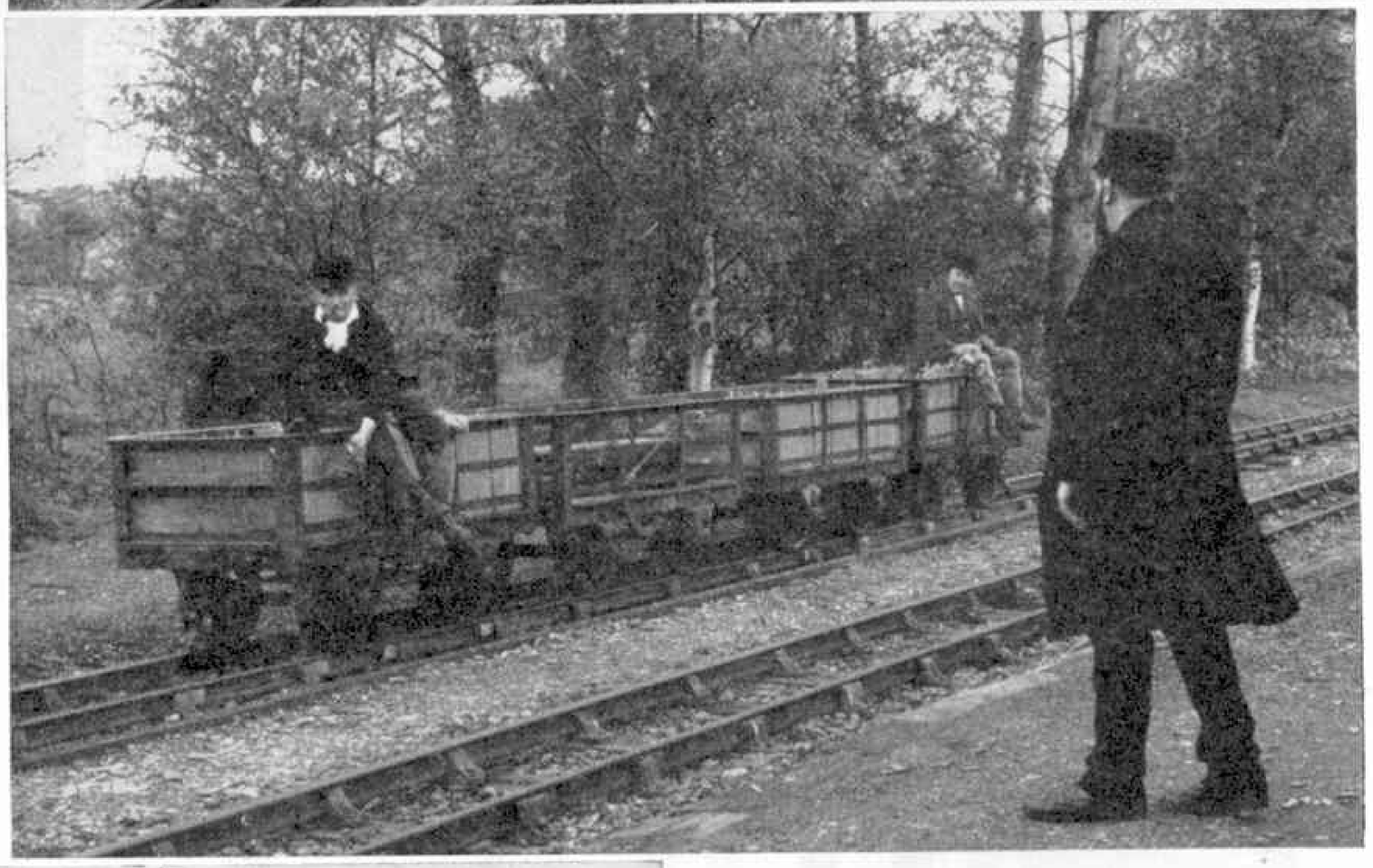
It is a 100 years since specially-built steam engines were introduced to replace horse traction on the line, built originally to carry slate from the quarries of Blaenau Festiniog to Portmadoc, which is on the coast. The debut of steam traction on this two-foot gauge line began a new chapter of railway history by demonstrating the possibilities of narrow gauge lines.

This year also sees the centenary of *Prince*, one of the Festiniog's original engines. This tiny, four-wheeled locomotive is still steaming strongly to the delight of thousands of tourists who now visit the line each summer.

To celebrate these two centenaries, the Festiniog Railway Company turned the clock back 100 years for the visit, in May, of a specially-invited Press party. From Portmadoc, *Prince* pulled a Centenary Train of the company's nineteenth-century carriages up the seven miles of track so far restored for passenger working to Tanybwlch in the Snowdonia National Park. Riding in the tiny, four-wheeled coaches were local folk, dressed in Victorian costume.

There were other echoes, too, from the past. A horse-drawn slate train trundled through Portmadoc Harbour Station, and later the visitors saw a gravity train of





Top picture: The 100-years-old locomotive "Prince" hauls the Centenary Train near Tanybwlch. Centre: A gravity train, once a common sight on the Festiniog Railway, was reintroduced for the steam centenary and is pictured here, with two brakemen on board, passing Minffordd. Left: At Portmadoc Harbour Station the locomotive "Prince", with driver, fireman and guard in Victorian costume, waits while a horse-drawn slate train passes.

loaded slate wagons coasting down the line's continuous gradient to show how, in the early days, slate reached the sea from the quarries.

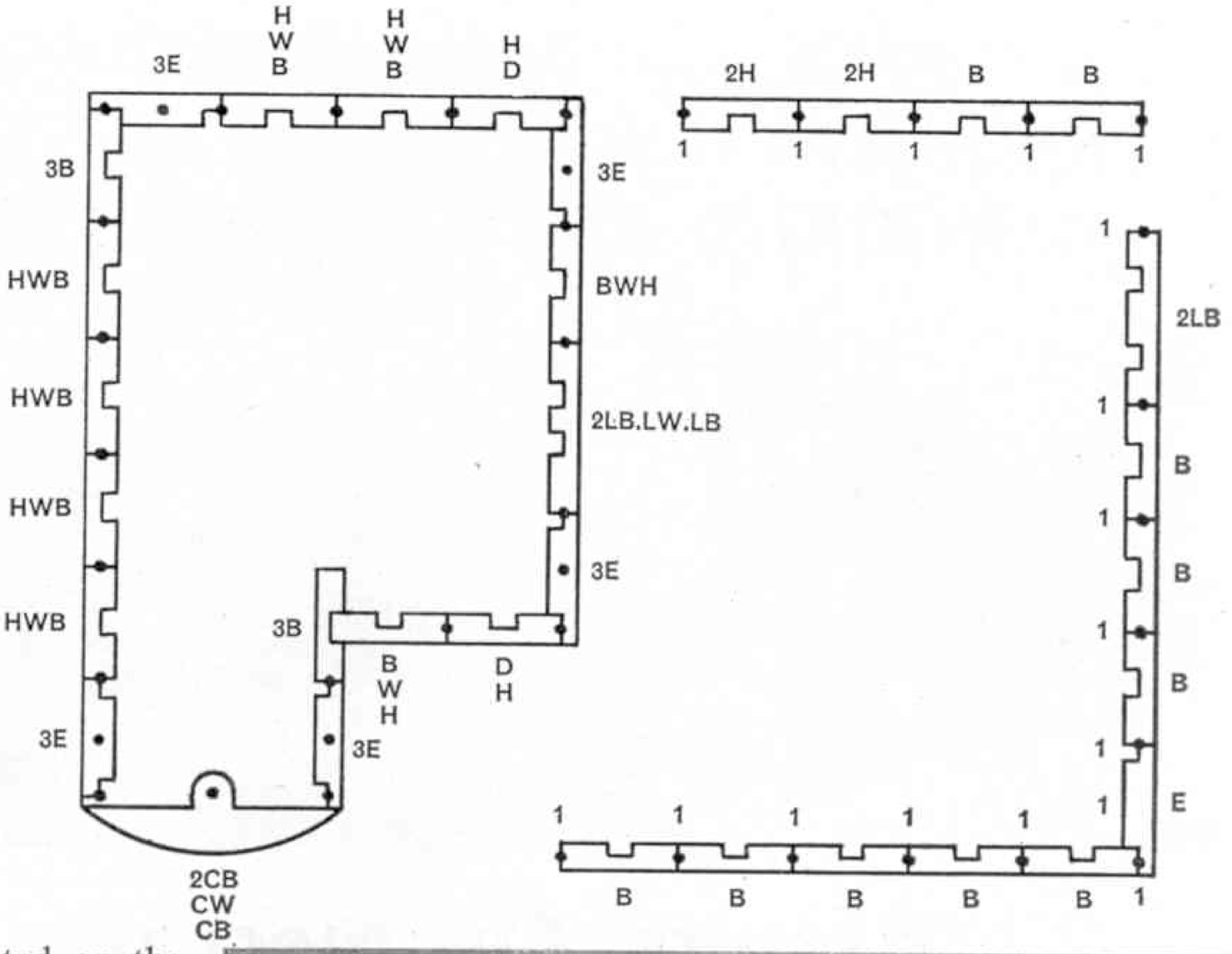
It was a colourful occasion, with thousands of local people and sightseers crowding vantage points all along the line to see history re-created.

But 1963 is also the "Tadpoles" year. The "Tadpoles", as they are known to the Festiniog Company and to members of the Festiniog Railway Society, are boys of the Chace Secondary School, Enfield, Middlesex, who belong to the school's

(*Continued on page 347*)

New Series For The Bayko Builder

BUNGALOW WITH GARDEN

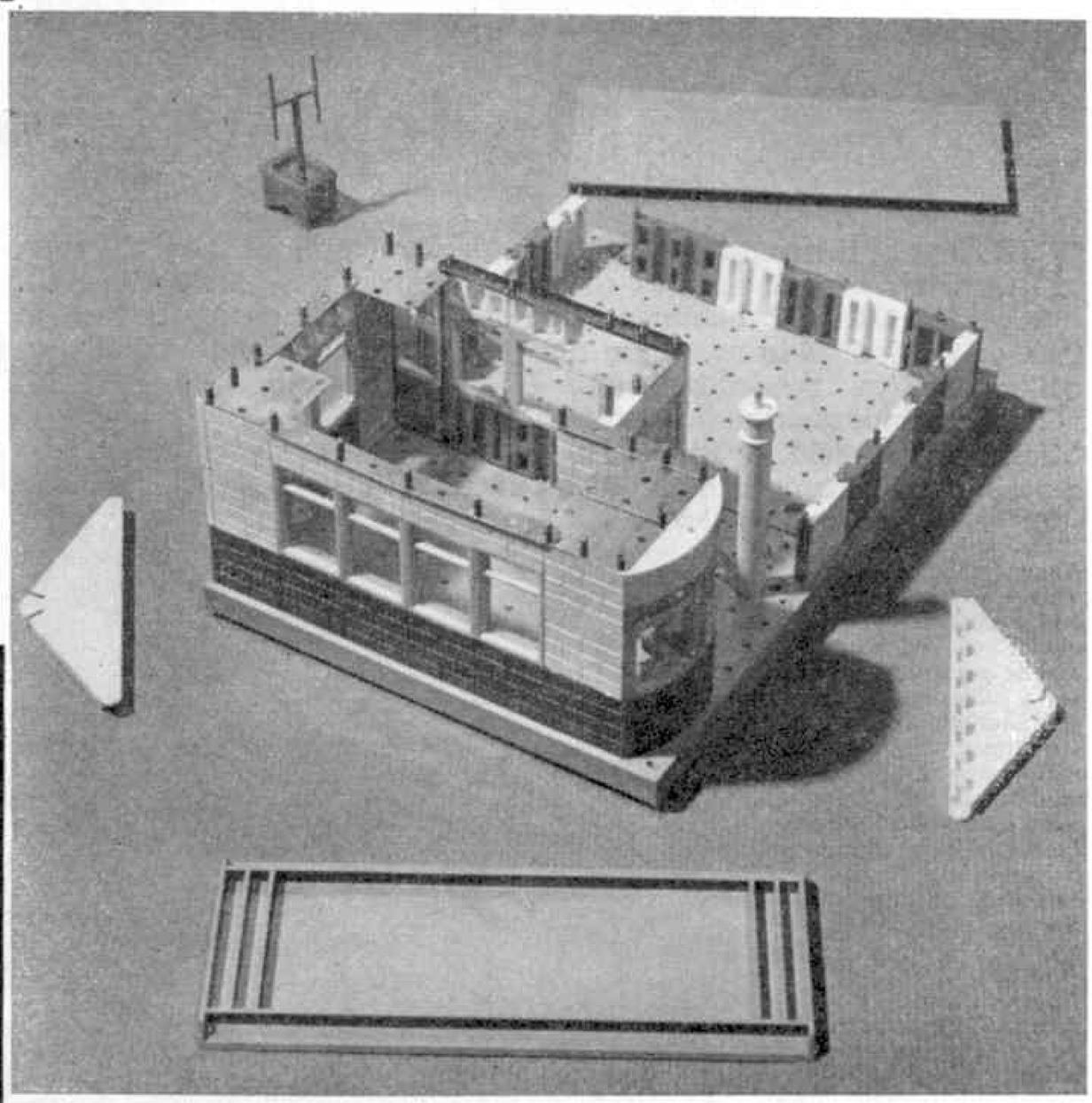


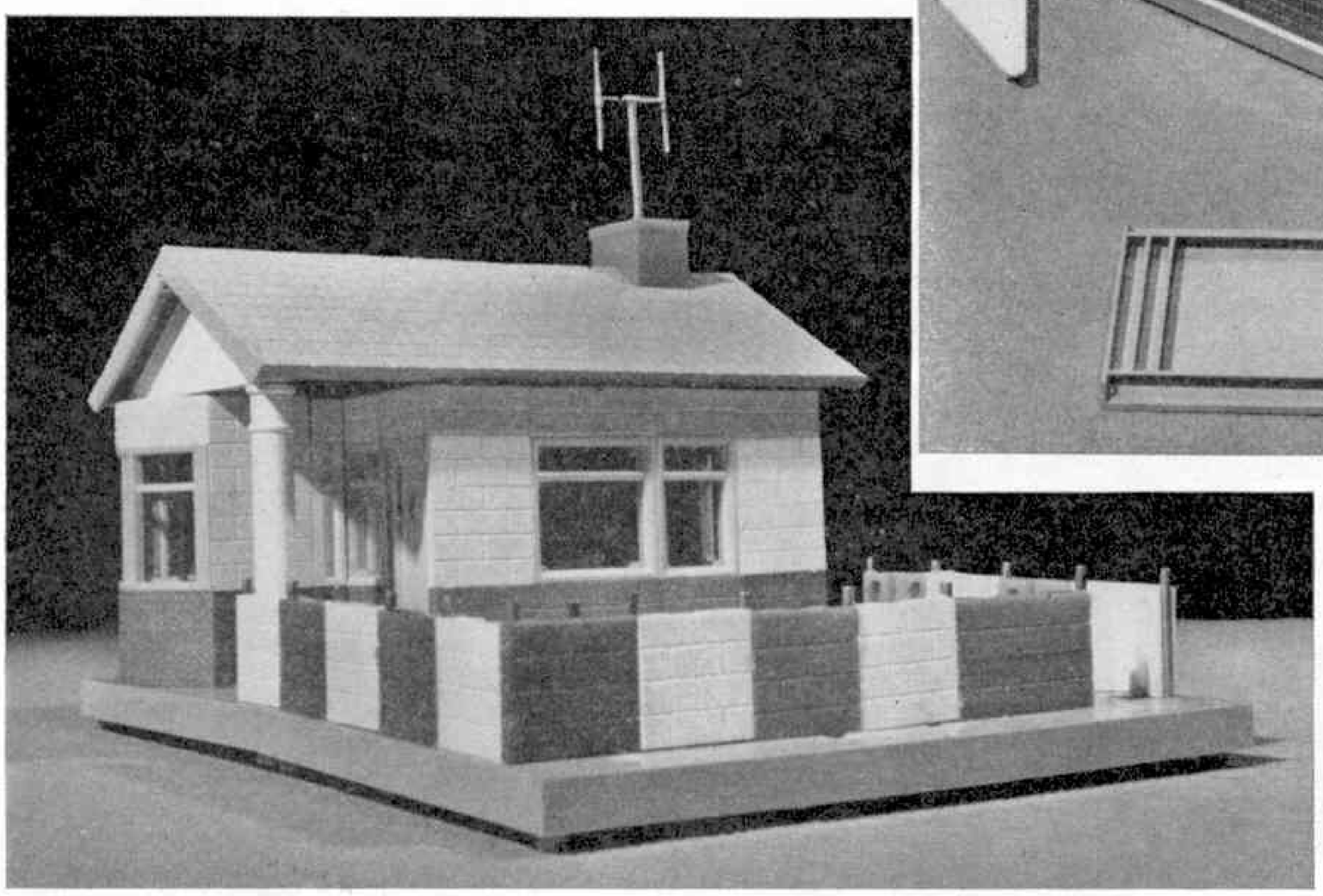
THE model I have chosen as second in the new Bayko building series is a small bungalow with an enclosed garden, which you see illustrated in the picture at the foot of the page. Outfit No. 12 contains all the parts needed for its construction, which is quite straightforward. No. 3 Brick Rods are used throughout, except where indicated on the plan, and the roof is built-up with Roofs and Roof Ends, Type B. Note particularly that one corner

By "ARCHITECT"

of the roof is supported by a Pillar, in line with the front door of the house.

The centre illustration shows the model with the roof removed, and I have included this view to show the system of using Tie Bars and Corner Ties. It is most important that these parts be used as they give rigidity to a model, binding the Rods





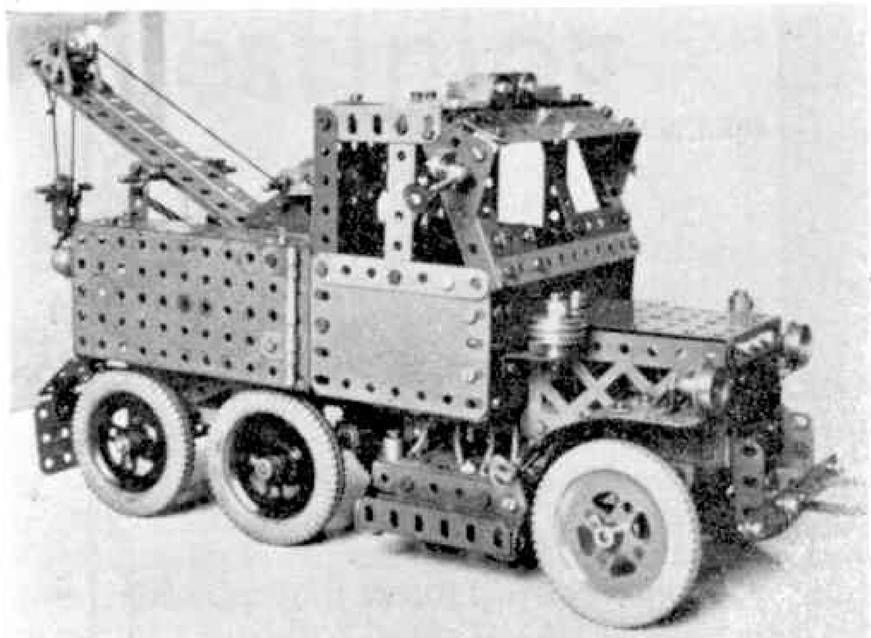
together with exactly the correct space between them so that the Bricks, Windows, etc. do not become dislodged.

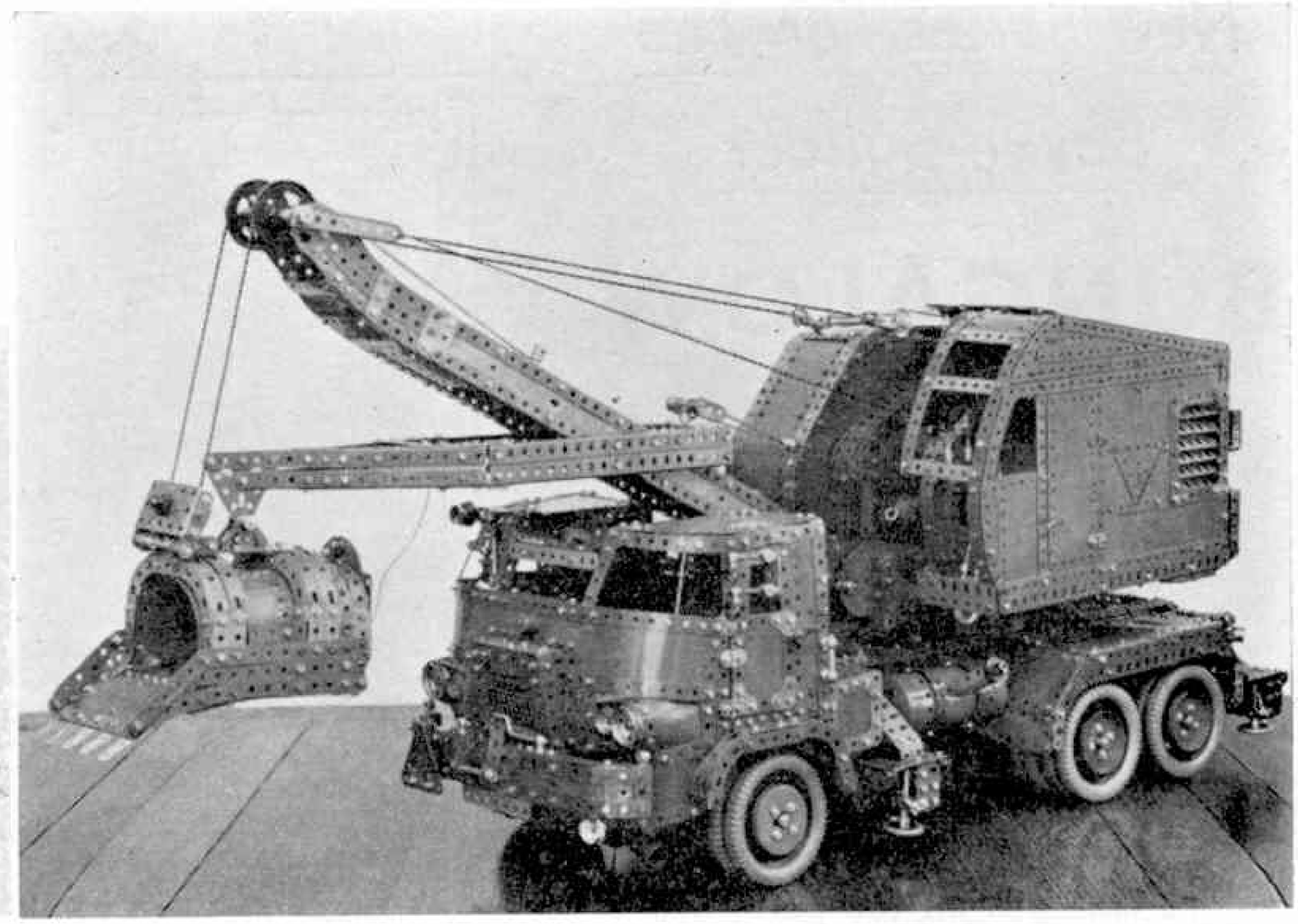
Now, here are the descriptions, and quantities, of the parts required to build the bungalow:

1 TV Aerial; 2 Bases; 2 Base Links with Screws; 14 Bricks, Red; 10 Bricks, White; 2 Curved Bricks, Red; 1 Curved Brick,

(*Continued on page 347*)

FINE PRIZE-WINNING MODELS





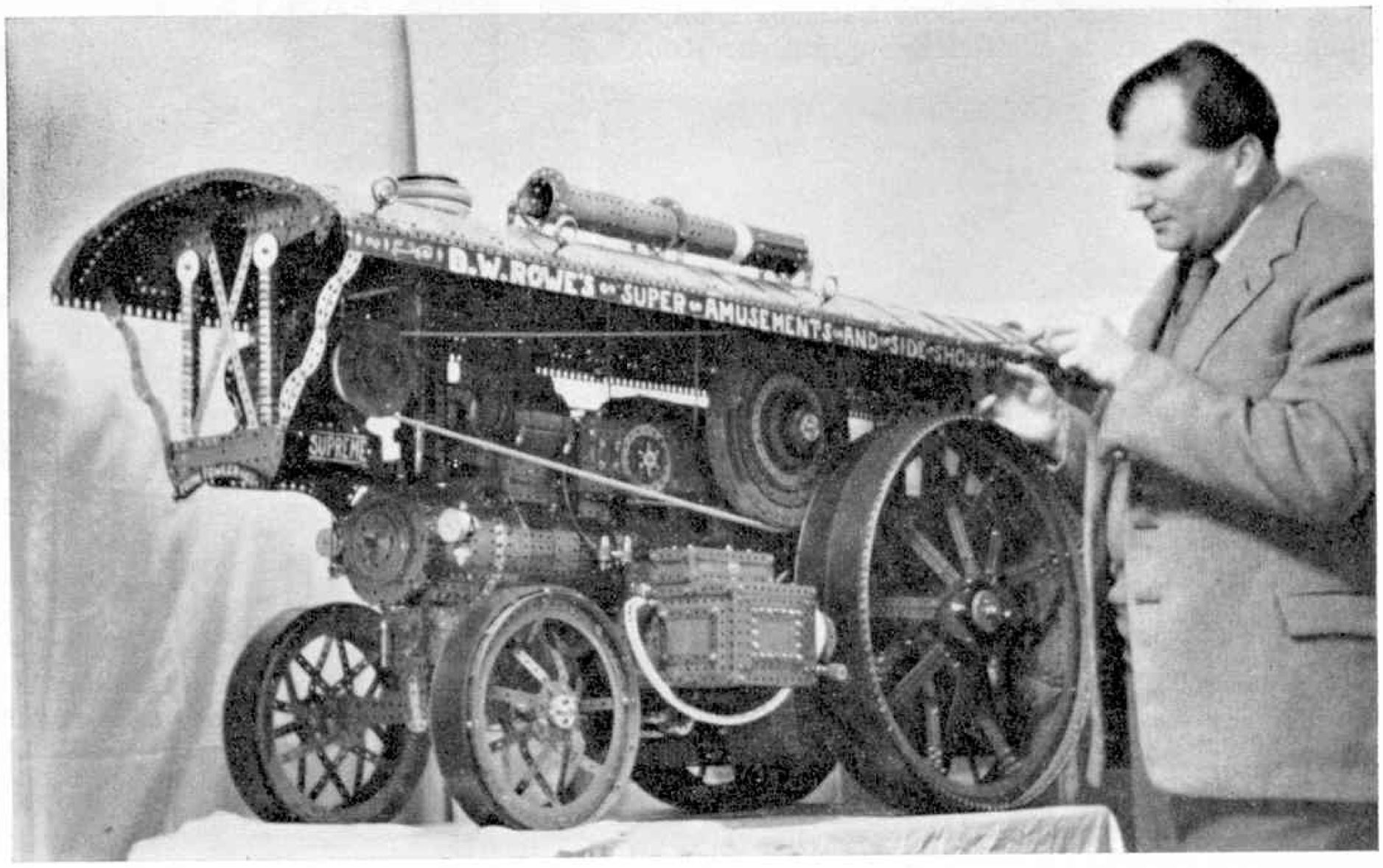
Results Of Meccano Winter Model-Building Contest

By "SPANNER"

THE first of this year's Model-Building Competitions, held during the winter season, attracted a great number of entries from model-builders living in all parts of the world. Many of the models reached a very high standard; so high, indeed, that the task of the judges in awarding the prizes was more than usually difficult, and much deliberation was needed before the final choices were made.

In the Senior Section first prize went to Michael Brookfield, of Blythe Bridge, for a mobile excavator which is illustrated at the head of the page. A study of the illustration will reveal many interesting constructional features which will appeal to advanced model-builders who have ample stocks of Meccano Parts.

A Wirral competitor, and a newcomer



Above (right):
This remarkably sturdy and splendidly finished model of a powerful mobile excavator possesses a fully-detailed chassis and numerous constructional features that will interest advanced model-builders. It was built by Michael Brookfield, Blythe Bridge, near Stoke-on-Trent, who was awarded first prize in Section B of the Competition.

Above (left):
A good example of the work of young model-builders entering in Section A. This breakdown crane is the work of 11-year-old John Lucas, Cantley, Doncaster, and won the first prize in its section.

B. W. Rowe, Newton Abbot, is an expert in the construction of Showmens' Traction Engines and Giant Locomotives, some of which have been illustrated in past issues of the "M.M." The model shown alongside was his prize-winning entry for the Winter Contest.

to Meccano competitions, Michael Knowles, of Bebington, gained second place in the senior division with a remarkably fine model of a Scammell oilfields articulated vehicle. The prototype on which Michael's model was based weighs 60 tons, and its features include a cork-to-metal friction clutch operated by foot pedal and a 6-speed gear box of the sliding engagement type.

J. A. Caesar of Cambridge gained the third prize, with a very neatly-built articulated petrol tanker.

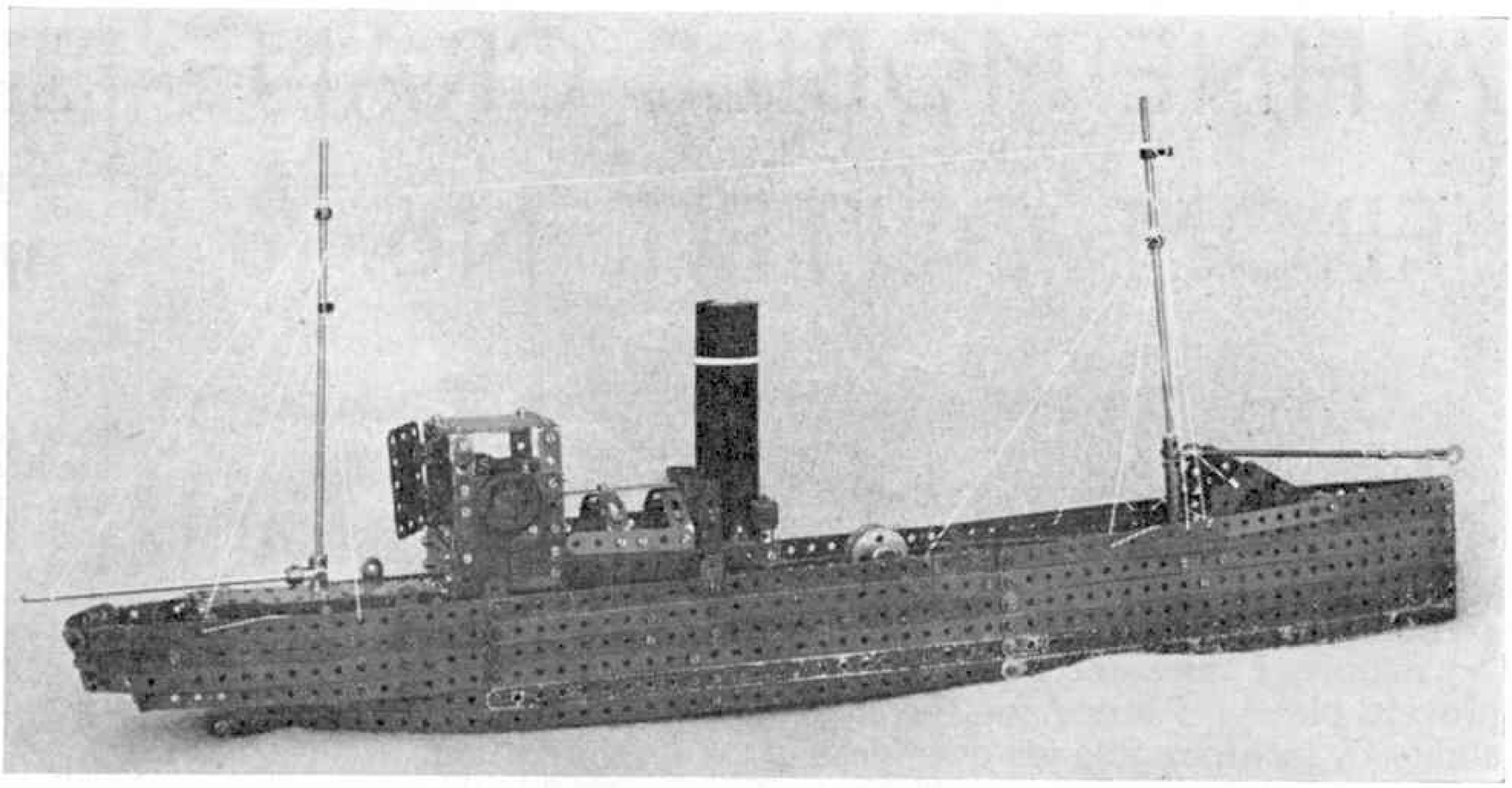
Some excellent work was done in the Junior Section, in which the first prize went to John Lucas, of Doncaster, for the breakdown crane which is illustrated on the opposite page. Ships are often a popular subject in these competitions, and a model of a steam trawler secured the second prize for D. Hollick, a competitor from Surrey. A motor truck with platform was the entry of A. Day of Cardiff, winner of the third prize in the junior contest.

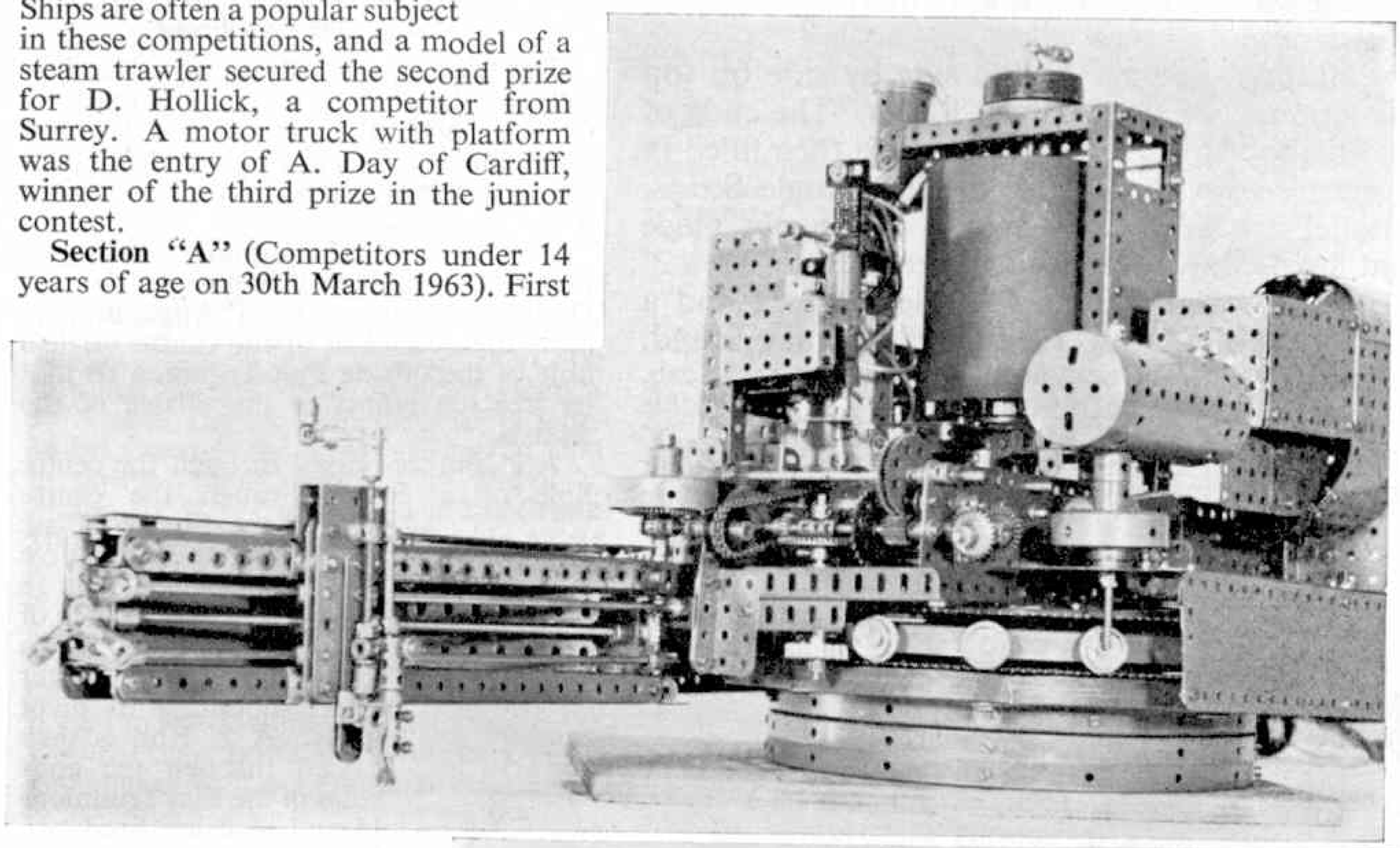
Section "A" (Competitors under 14 years of age on 30th March 1963). First Prize, Cheque for £5.5.0; J. Lucas, Cantley, Doncaster. Second Prize, Cheque for £3.3.0; D. Hollick, Carshalton Beeches, Surrey. Third Prize, Cheque for £2.2.0; A. Day, Whitchurch, Cardiff.

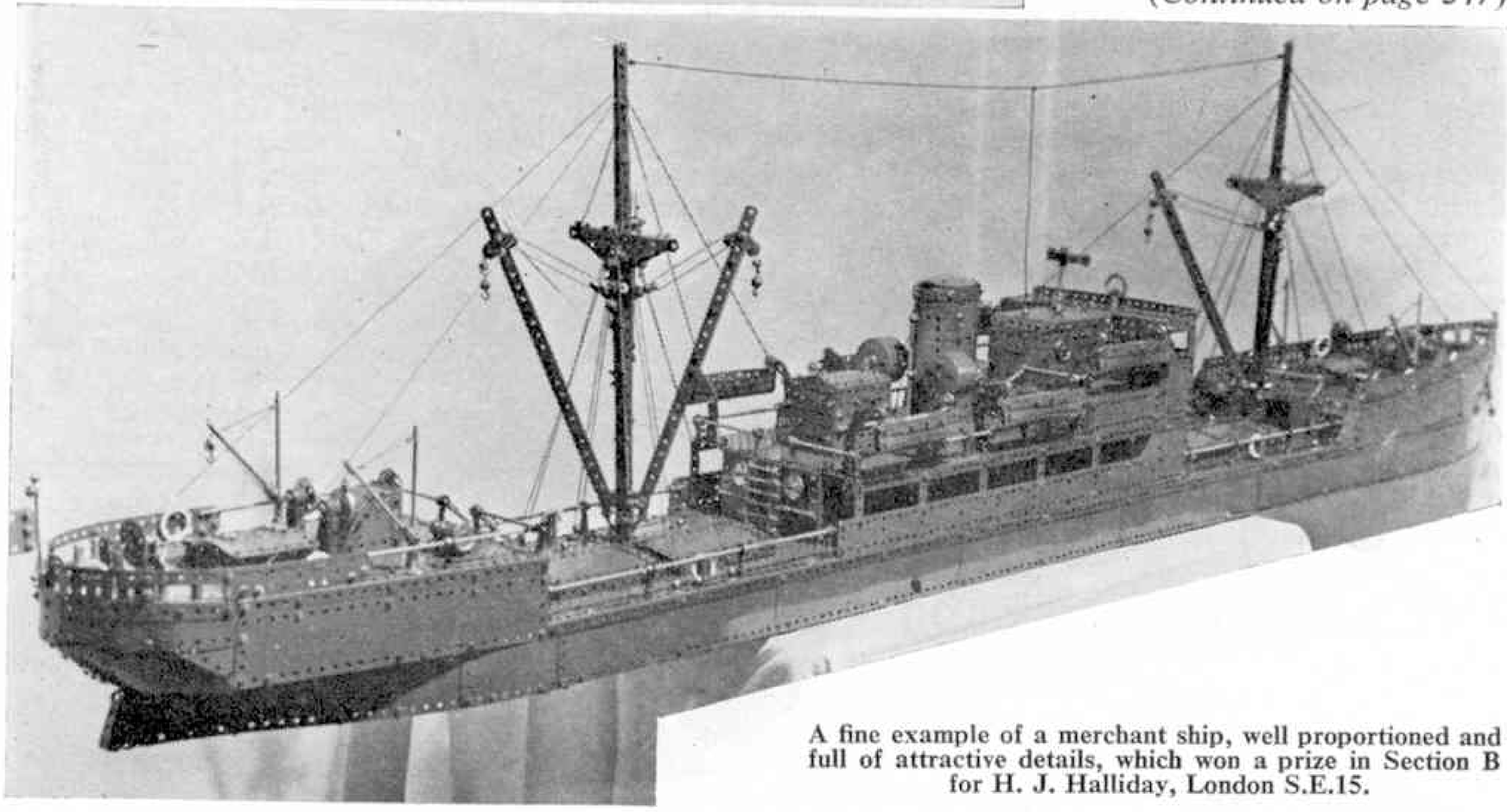
Ten Prizes of 10/6d: C. Campion-Smith, Beechwood, Leeds; M. Williams, Wareham, Dorset; S. Driver, Hunters Bar, Sheffield 11; A. Shanks, Christchurch, New Zealand; H. Culverhouse, Penn, Bucks; P. Townsend, Hunstanton, Norfolk; C. Seftel, Lusaka, N. Rhodesia; M. A. Topsakal, Heliopolis, Egypt; R. C. A. Whale, Fleetwood; R. T. Greaves, Surbiton.

Section "B" (Competitors aged 14 and over on 30th March 1963). First Prize, Cheque for £7.7.0;

(*Continued on page 347*)







Models of ships of all types were prominent among the entries for the Winter Contest, and this realistic trawler shown at the top of the page won a prize for 11-years-old R. C. A. Whale, of Rossall School, Fleetwood. (Centre) H. W. Henry, Rochester, is a regular competitor in "M.M." contests and has built many fine models in the past. His latest is the intricate portable Radial Planning Machine shown here, which brought him success in Section B of the Winter Competition.

A fine example of a merchant ship, well proportioned and full of attractive details, which won a prize in Section B for H. J. Halliday, London S.E.15.

A FINE MOBILE CRANE FROM OUTFIT No. 6

Can Be Modified To Take Emebo Motor

Spanner's Notes For Meccano Model Builders

CRANES are always popular as subjects for the Meccano model-builder, mainly, I think, because they offer so much variety in types, and provide plenty of scope for the individual model-builder to prove his ability by incorporating his own ideas in their construction.

The model Mobile Crane shown in Fig. 1 should, therefore, appeal strongly to those who own an Outfit No. 6, as this contains all the parts necessary for its construction, while those who have an Emebo Motor available also can exercise their skill in modifying the model so that it can be driven by that small but purposeful unit.

The chassis of the model is formed from two $3\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plates 1 joined together by four $5\frac{1}{2}''$ Strips 2, two of the Strips being bolted to the flanges while the other two are bolted side by side on top of the Flanged Plates. The ends of the Flanged Plates are then filled in with two $3\frac{1}{2}''$ Double Angle Strips, at the same time bolting in place two Angle Brackets 3, two $2\frac{1}{2}'' \times 2''$ Triangular Flexible Plates 4 and a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate 5 at one end.

The next portion to be built is the cab, one side of which is formed by the Flexible Plate 5, while the other is a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate 6 and a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Triangular Flexible Plate 7. These Flexible Plates are joined together with a $3\frac{1}{2}''$ Strip 8 and are then fixed to the $5\frac{1}{2}''$ Strip 2 (Fig. 2) at the same time bolting in a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 9, which is then bolted to Flexible Plate 5 (Fig. 1). Plates 5 and 6 are then joined by two $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips 10, and to these is bolted a $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate 11, which forms the back of the cab. The cab roof is a $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Curved Plate 12, bolted to the Plate 11 by Obtuse Angle Brackets.

Making the Cab Front

The front of the cab is constructed as follows: Two 3″ Strips 13 are fixed by Obtuse Angle Brackets to the Flanged Plate and a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate 14 is bolted to them. The Strips are then bolted to the Plate 12.

The caster wheel mounting consists of two Flat Trunnions 15 connected by two Double Brackets. A $1'' \times 1''$ Angle Bracket 32 is then attached in the centre vertical hole of the offside Flat Trunnion so that its free lug points to the offside of the chassis.

A $\frac{3}{8}''$ Bolt is passed through the centre hole of a Strip, through the centre hole in the Flanged Plate and through the centre hole of a Double Angle Strip 16 bolted to the upper side of the Flanged Plate. This should allow the caster wheel mounting to pivot freely. A 1″ Rod is then passed through the apex holes of the Flat Trunnions 15 and to it are fixed two 1″ Pulleys fitted with tyres.

The steering wheel is a 1″ Pulley 17 fixed to a 2″ Rod, that is passed through the $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips 9 and 18. An eight-hole Bush Wheel is then fixed to the upper-end of this Rod. Next a $2\frac{1}{2}''$ Strip is bolted across the Bush Wheel as shown and to one end of this is lock-nutted one end of a $3\frac{1}{2}''$ Strip. The other end of the $3\frac{1}{2}''$ Strip is lock-nutted to the free lug of the $1'' \times 1''$ Angle Bracket. This completes the steering arrangement.

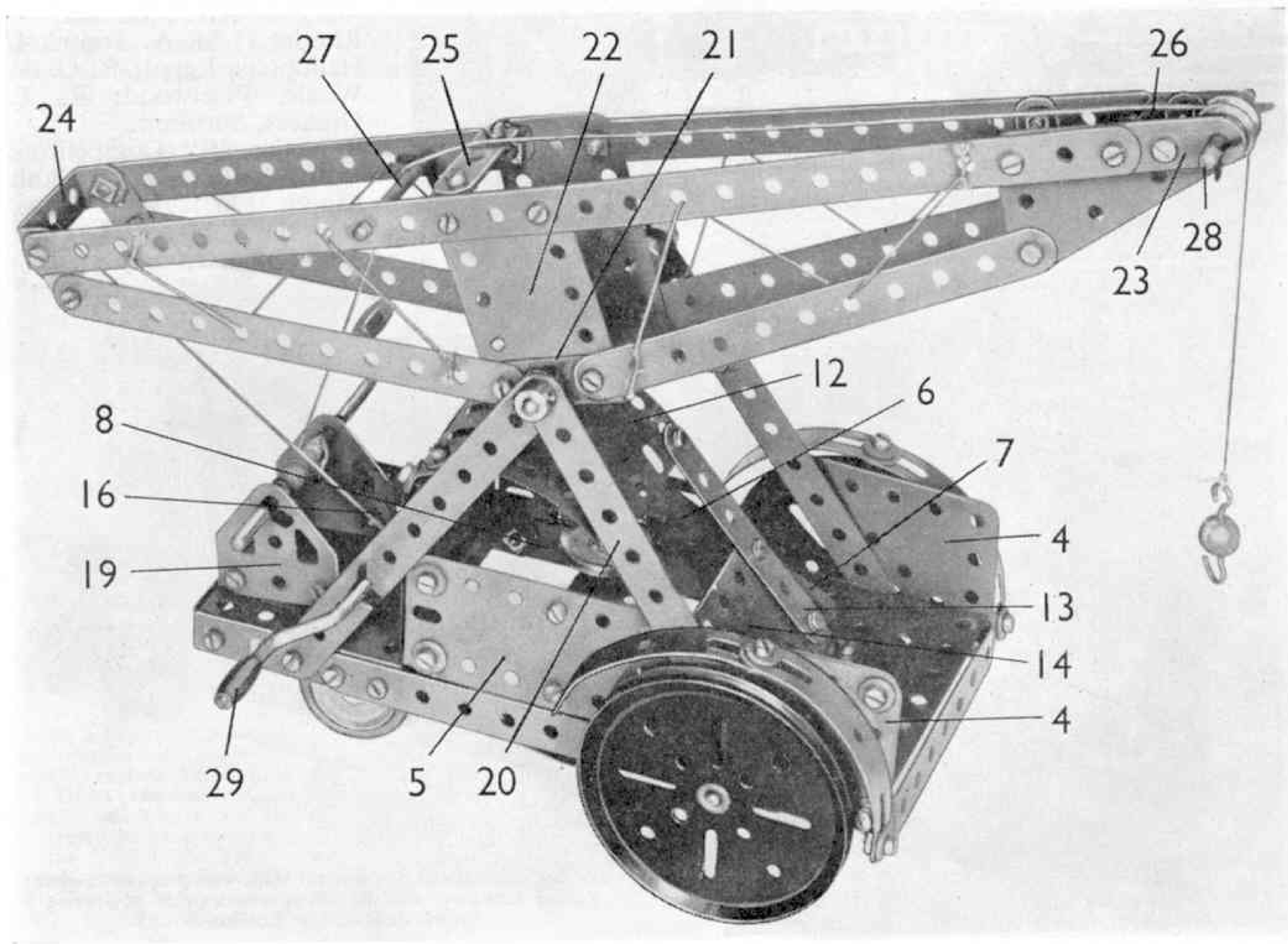


Fig. 1. A mobile crane built from parts in Outfit No. 6. It can if desired be modified for operation by an Emebo Electric Motor.

Next two Flat Trunnions 19 are bolted to the Double Angle Strip 16 and they are also fixed to the Flanged Plate by Angle Brackets. Four 5½″ Strips 20 are bolted to the Flanged Plate, two on each side, to support the jib.

The jib is built in the following manner: Two Trunnions 21 are bolted together and to each of these is fixed two 5½″ Strips and a 2½″ × 1½″ Flexible Plate 22. A 12½″ Strip is bolted to the top of each Flexible Plate and is joined at the rear end to the 5½″ Strip by a Fishplate. Each 12½″ Strip is extended at the front by a 2½″ Strip 23, and a 2½″ × 1½″ Triangular Flexible Plate is then bolted to them and to the 5½″ Strip. Both sides of the jib are joined together by the Trunnions 21, a 1½″ × ½″ Double Angle Strip 24, a 1½″ Strip 25 bolted to two Angle Brackets, and a Double Angle Bracket 26. A 2″ Rod 27 is placed in the jib and is held in position by Spring Clips, and a 1½″ Rod 28 holding a ½″ Pulley is also held in the jib by Spring Clips.

A 4″ Rod is passed through the Trunnions 21 and is held in position by a Collar and Spring Clip. The Rod is then fixed in the end holes of Strips 20, the jib being positioned to one side above the cab. The Rod is then held by a Collar at one side and two Collars at the other. Next a 5½″ Crank Handle with Grip 29 is journalled through the Strips 20 and is held in position by a Spring Clip and a ½″ Pinion 30. The Cord is tied to the Crank Handle and is taken to the Double Angle Strip 24, where it is secured. A 2½″ Strip 31 is bolted between the Strips 20 on one side and to this is lock-nutted a Double Angle Bracket. A 2½″ Strip which has an Obtuse Angle Bracket attached to it, is bolted to this Double Angle Bracket. The Obtuse Angle Bracket should pivot freely and engage with the Pinion 30 thus acting as a brake. A 3½″ Crank Handle with Grip is passed through the Trunnions 19 and is held by two Spring Clips. Cord is tied to it and is passed over Rod 27 and then over the Pulley on Rod 28, a Hook being tied to the end.

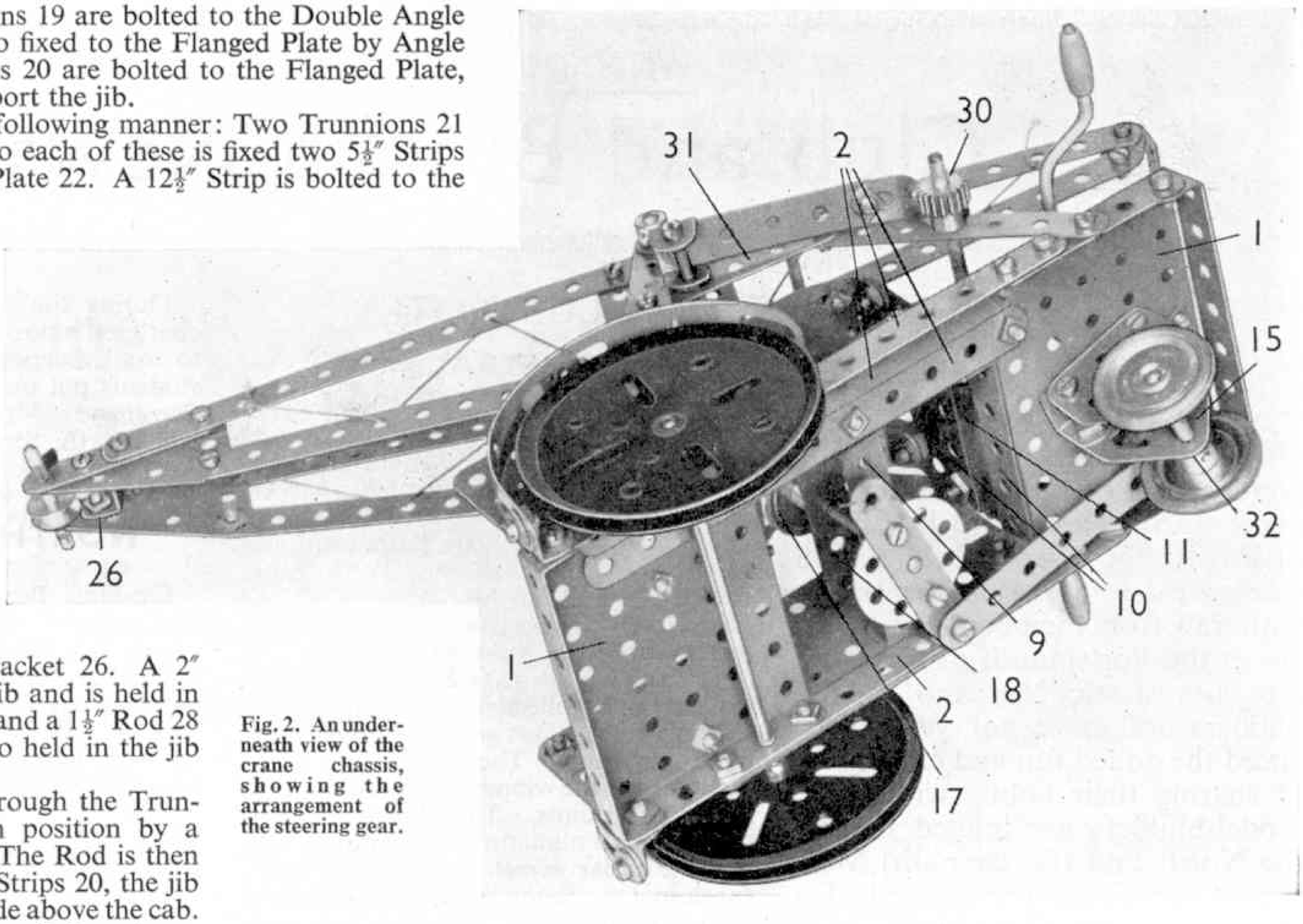


Fig. 2. An underneath view of the crane chassis, showing the arrangement of the steering gear.

The front wheels are two 3″ Pulleys mounted on a 4½″ Rod, and the mudguards consist of two Formed Slotted Strips bolted together and fixed to the Angle Brackets 3.

Parts required to build the Mobile Crane: 2 of No. 1; 2 of No. 2; 2 of No. 3; 2 of No. 4; 5 of No. 5; 2 of No. 6a; 2 of No. 10; 4 of No. 11; 7 of No. 12; 1 of No. 12a; 5 of No. 12c; 1 of No. 15a; 1 of No. 15b; 2 of No. 17; 2 of No. 18a; 1 of No. 19b; 1 of No. 19g; 1 of No. 19h; 3 of No. 22; 1 of No. 23; 1 of No. 24; 1 of No. 26; 8 of No. 35; 94 of No. 37a; 88 of No. 37b; 14 of No. 38; 1 of No. 40; 2 of No. 48; 4 of No. 48a; 2 of No. 48b; 2 of No. 53; 1 of No. 57c; 4 of No. 59; 1 of No. 111; 1 of No. 111c; 2 of No. 126; 4 of No. 126a; 2 of No. 155; 4 of No. 188; 1 of No. 189; 1 of No. 190; 1 of No. 200; 4 of No. 215; 3 of No. 221; 2 of No. 222.

Bungalow with Garden—

(*Continued from page 343*)

White; 6 End Bricks, Red; 10 End Bricks, White; 2 Half Bricks, Red; 12 Half Bricks, White; 4 Long Bricks, Red; 1 Long Brick, White; 17 No. 1 Brick Rods; 26 No. 3 Brick Rods; 1 Chimney; 2 Doors; 8 Glazing Material, Windows; 1 Glazing Material, Curved Window; 1 Glazing Material, Long Window; 1 Pillar; 2 Roofs, Type B; 2 Roof Ends, Type B; 5 Corner Ties; 6 Tie Bars, Straight.

Result of Meccano Winter Model-Building Contest—(*Continued from page 345*)

M. Brookfield, Blythe Bridge, Staffs. Second Prize, Cheque for £5.5.0; M. Knowles, Bebington, Cheshire. Third Prize, Cheque for £3.3.0; J. A. Caesar, Cambridge.

Ten Prizes each of £1.1.0; H. W. Henry, Strood, Rochester; B. W. Rowe, Newton Abbot; R. C. Allsop, Warmley, Bristol; C. D. Rorke, St, Catharines. Ontario; G. Servetti, Piacenza, Italy; P. W. Jesse, Apeldoorn, Holland; R. C. Stutter, Kingston, Surrey; N. Manduca, St. Julians, Malta; H. J. Halliday, London S.E.15; C. J. Woodhouse, Peterborough, Northants.

Special Year For The Festiniog—

(*Continued from page 342*)

Locomotive Society founded by science master Mr. Keith Catchpole. Ever since the restoration of the Festiniog line began, Mr. Catchpole has taken parties of his society's members to Portmadoc to spend part of their holidays helping with the work. It is not light work either—the boys fell trees, clear track, do concreting and unload coal; yet, in spite of the fact they have to pay for themselves, the visits are so popular that there are always more volunteers than can be accommodated, and names have to be drawn from a hat.

This month—the actual steam centenary month—yet another party will go to Portmadoc and with it will be the 500th "Tadpole" volunteer, 15-years-old Philip Maslin. To mark the occasion, and to show appreciation of the young volunteers' work, the Festiniog Company plan to run a special train for the "Tadpoles" and guests who will include the boys' headmaster, Mr. R. W. Taylor, the Director of Education for Enfield (Mr. E. Pascal), members of the Portmadoc Council and Mr. Alan Pegler, chairman of the Festiniog Company—the man who bought the *Flying Scotsman* from British Railways.

When the "Tadpole Special" makes its journey this month, Mr. Catchpole will be driving the engine. He was an engine driver in the transport section of the Royal Engineer's during the last war. Acting as fireman will be Birkenhead schoolmaster Mr. Fred Boughey.

WITH THE SECRETARY

Club and Branch News

A PORTSMOUTH INVITATION

EVERY Meccano Club and Hornby Railway Branch needs a steady recruitment of new members to make up for those who by reason of leaving the district, beginning a career or developing other interests withdraw from membership. Readers in the Portsmouth district who are enthusiastic Meccano model-builders and have not yet experienced the added fun and enjoyment of sharing their hobby with other model-builders are invited to join the North End (Portsmouth) Meccano Club. They are assured of a cordial welcome.

Readers interested should get in touch with the Club Leader, Mr. R. G. Enfield, 12 Grasmere House, Allaway Avenue, Paulsgrove, Portsmouth, Hants.

The activities of this long-established and very successful Meccano Club have often been reported in *Club and Branch News*.

CLUB NOTES

AUSTRALIA

MAYLANDS M.C.—The combined Presentation and Exhibition Night was a great occasion. The Clubroom was comfortably filled with members' parents and friends, and included members from both Houses of the State Parliament and Councillor Stone, of the Perth Shire Council. As usual, Mr. Winnett, an old friend and member, very ably presented members with their awards for 1962.

The models displays by the respective groups and collectively known as the Faction Exhibitions were, of course, the main attraction. The Green and Gold faction were the winners, with a total of 50 exhibition points. The theme of their display was a miniature rocket range, with realistic radar screen and rockets ready for despatch. Second were Red and Gold with a motor show, in which cars with papier mache bodies were used. Two neatly-built Meccano cars were also featured, one of them powered by an Emebo motor. Blue and Gold gained third place with a set-up depicting, in miniature, a civil airport under attack during a war. Finally, Black and Gold featured an aluminium treatment plant under construction.

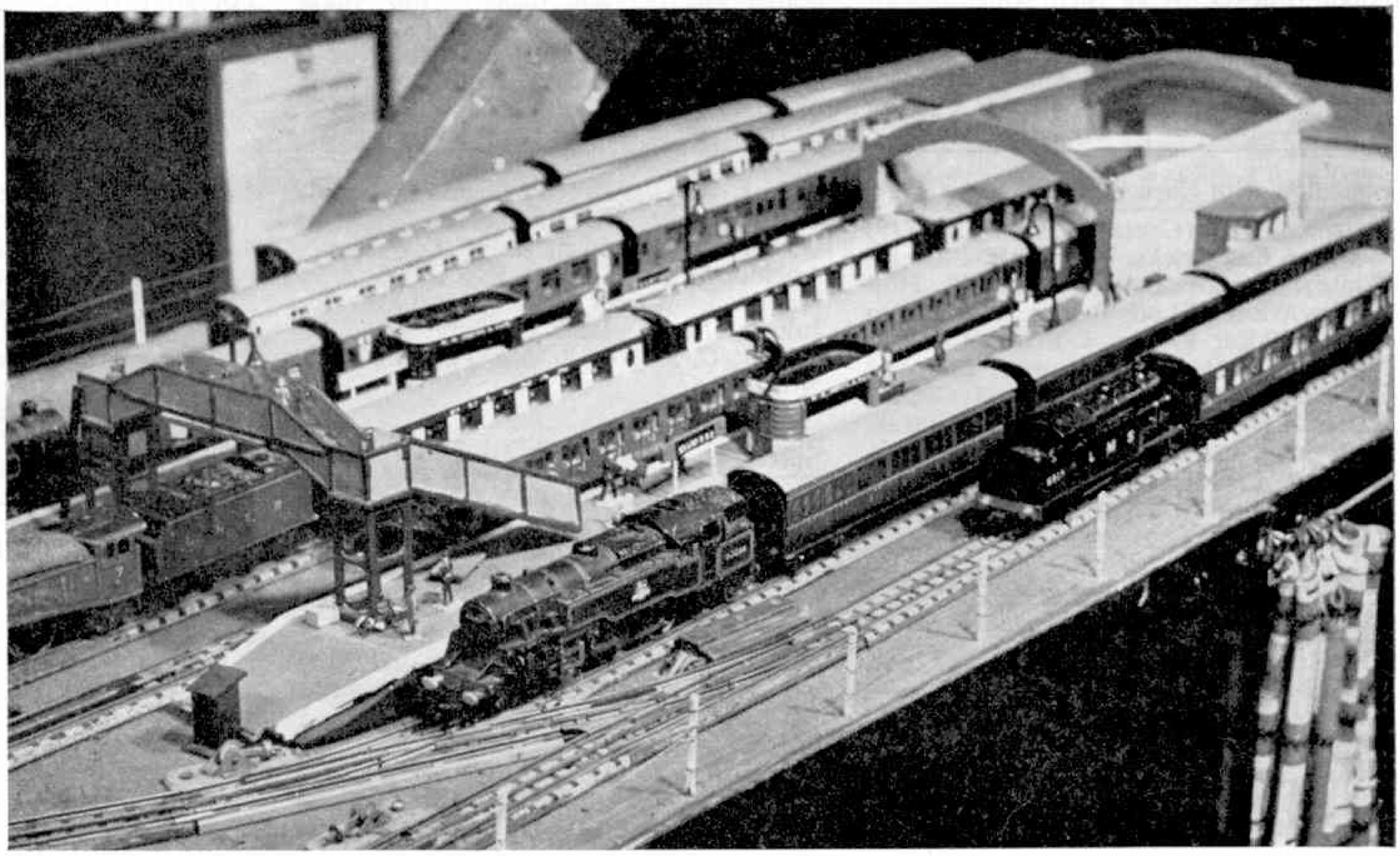
During the same week-end, the Club chartered a bus to take about 30 members to the University, where the Engineering students put on their biennial exhibition. *Secretary:* Mr. Trevor Criddle, 17 Kenilworth Street, Maylands, Western Australia.

NORTHERN NIGERIA

GINDIRI BOYS' SECONDARY SCHOOL M.C.—Some members have exchanged places with others who are in the associated H.R.C. Branch, and both groups are enjoying the change of activity. *Leader:* Mr. P. F. Bradford, Sudan United Mission, Gindiri, P.O. Barakin Ladi, via Jos, Northern Nigeria.

BRANCH NEWS

ST. ANNES Y.M.C.A.—Members have been busy preparing for the Model Railway Exhibition, cleaning and oiling all the locomotives, making new scenery and generally overhauling the layout. Although the Exhibition will be free, the Branch is hoping to get over £50 in donations in a collecting box in the doorway. *Secretary:* Brian Pickett, 26 Walter Avenue, St. Annes-on-Sea, Lancs.



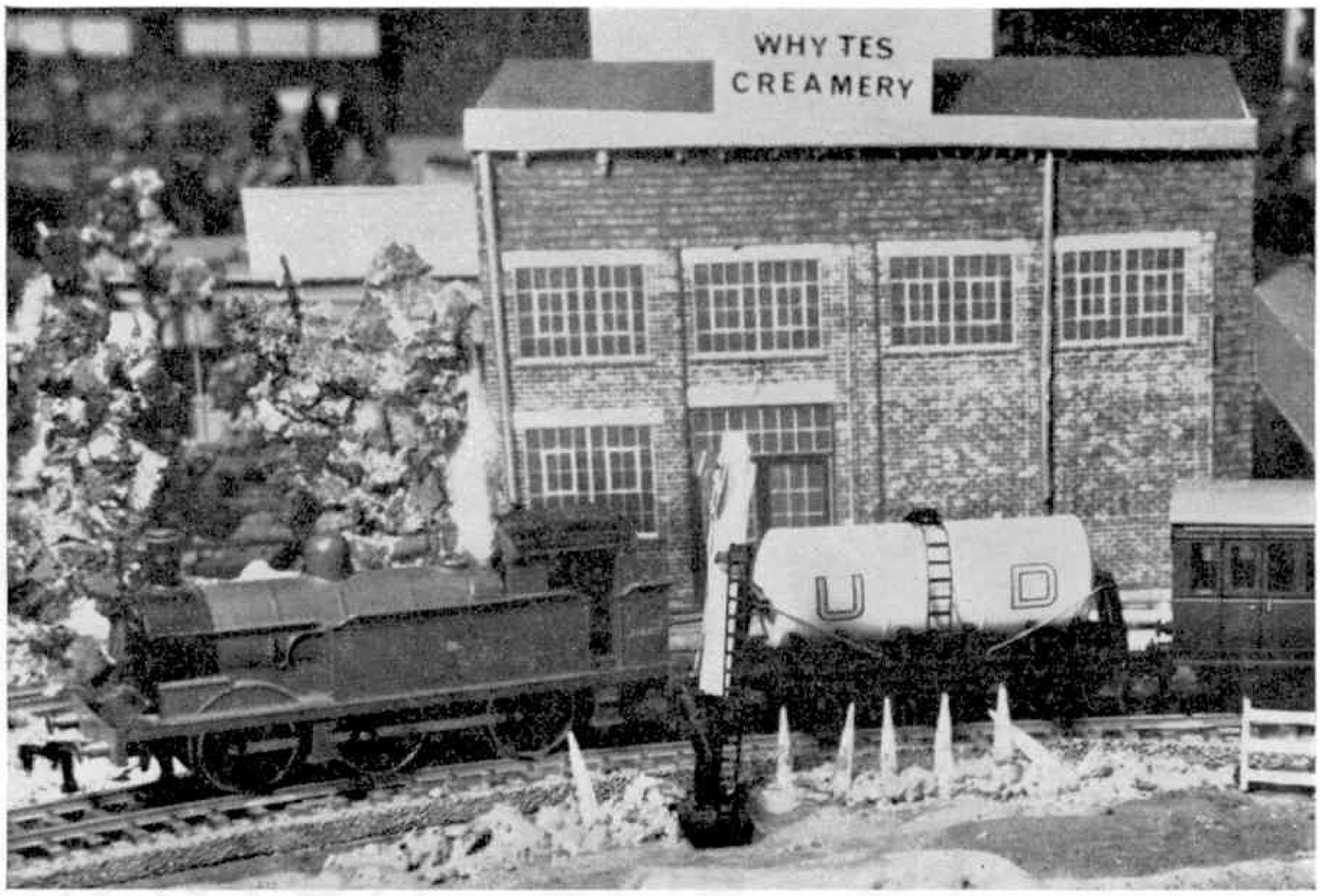
Formed less than two years ago, the Keswick (Wembley) H.R.C. Branch has made rapid progress and has already built up an extensive and well-equipped Hornby-Dublo layout. This illustration shows a typically busy terminal station scene.

Continuing Our Series

On Miniature

Train Formations

Single Line Working At A Country Station



A daily 6-wheeled bulk Milk Tank Wagon at the head of a branch line local train.

ONE of the objects of this series on miniature train formations is to show you how to obtain the best possible system of working, by using Hornby-Dublo rolling stock in the most realistic manner.

Take the case of a single line layout having a small country station at one point, with just a single siding. By the addition of a second point on the opposite side to the first, and track to make up this second siding, we have the main

By S. F. PAGE

requirements for, say, a dairy community, since this second siding will serve the transport needs of a creamery or large milk depot.

The original siding gives access to a cattle dock, and, of course, both sidings terminate with a buffer stop. Alongside the first you need a stock compound in which cattle are kept before being loaded into cattle wagons, an open shed for cattle feed, as well as a small office for the R.S.P.C.A. inspector, and huts for the stockmen who handle the cattle and sheep.

Such a simple track layout with free-lance buildings gives us correct working for several 8–Ton Cattle Wagons (No. 4630) with a Goods Brake Van (No. 4311), these being shunted into the dock siding with an 0–6–0 Tank Engine (No. 2206) or an 0–6–0 Diesel-Electric Shunting Locomotive (No. 2231).

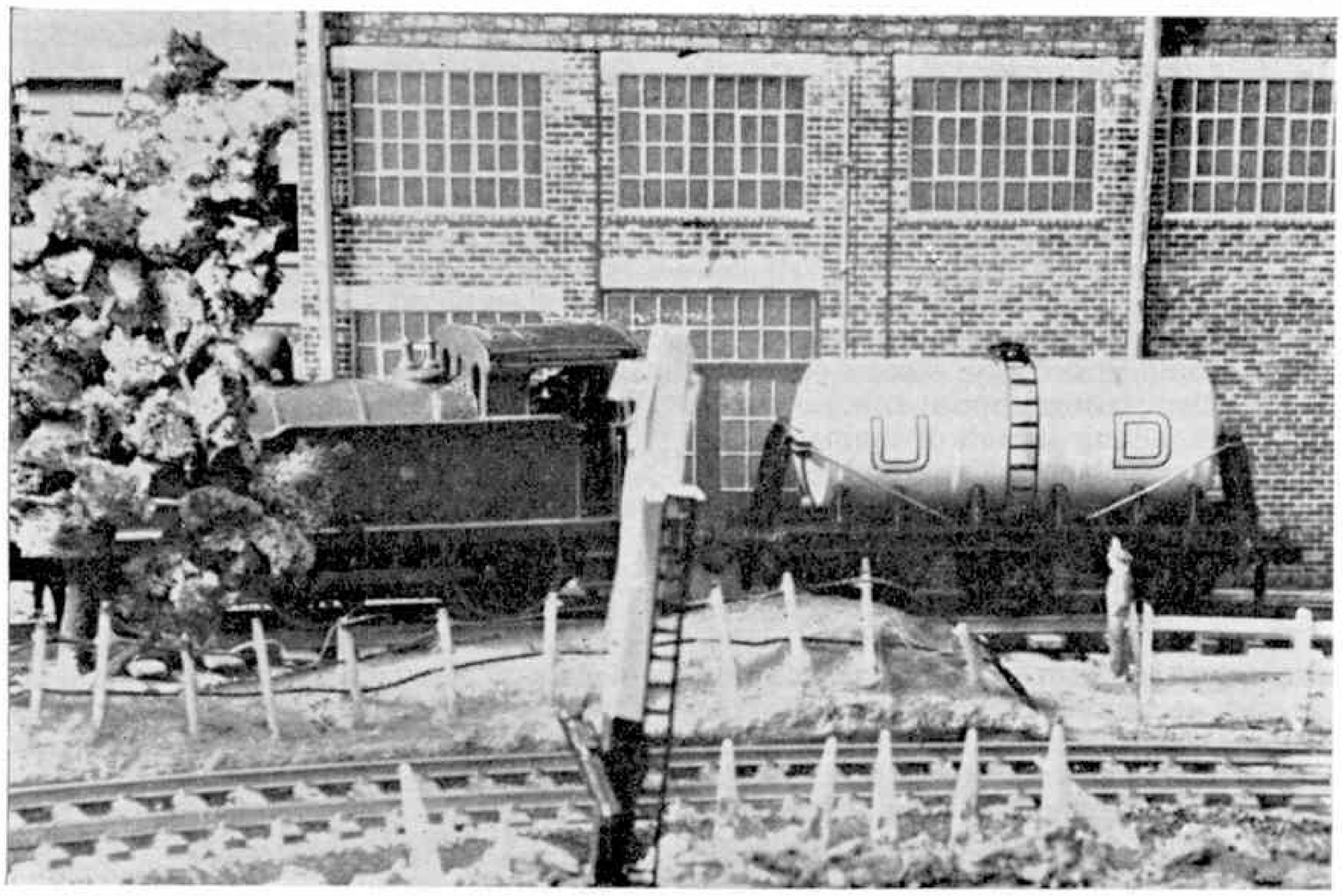
The new Hornby-Dublo 6-wheeled "United Dairies" Milk Tanker Wagon (No. 4657) comes into its own in the bulk delivery of milk to the creamery, and several of these together with a Brake Van form a second series of workings similar to the cattle train working.

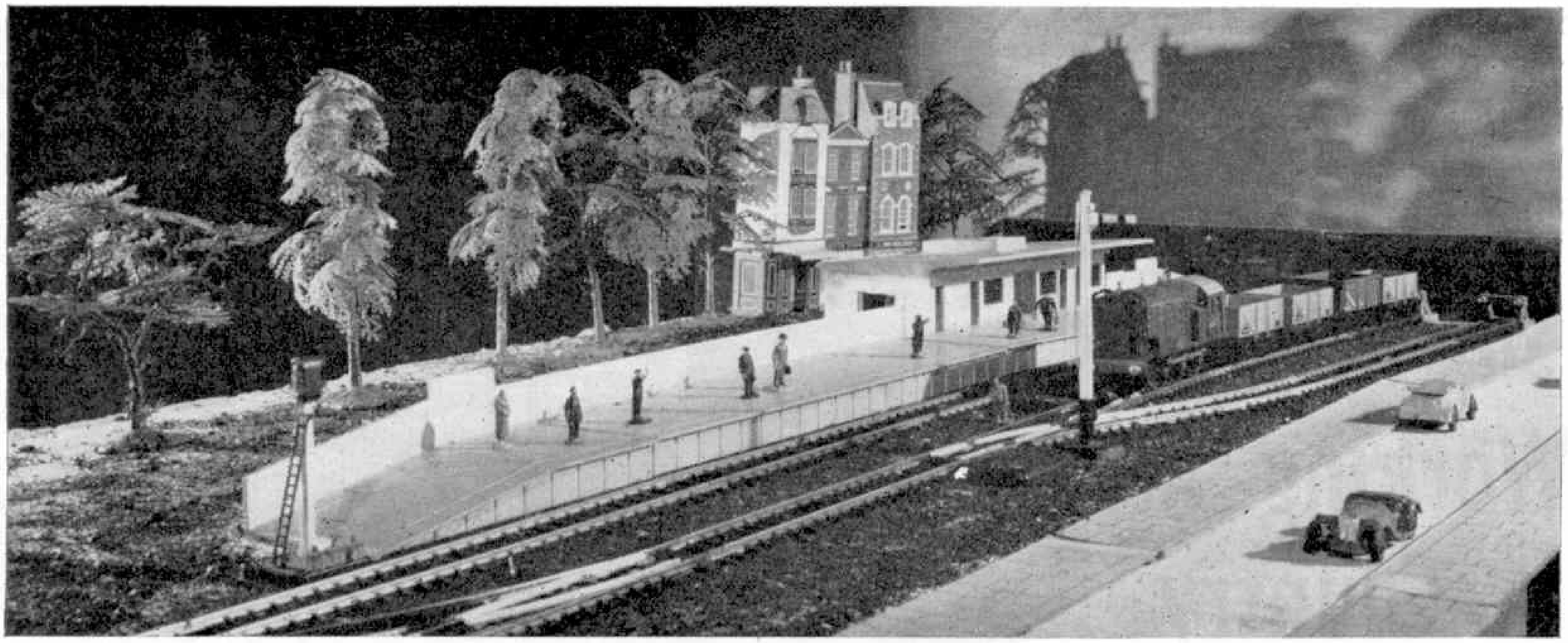
A change in the working pattern is provided by the hauling of either a single milk tank wagon or a single cattle van with the local passenger train, the locomotive used to haul the passenger train also being employed to shunt off the tanker or van into the correct siding.

Such a prosperous country area will have local gentlemen farmers, and probably stables for racehorses, and this means that when horses are to be transported by rail to distant parts they are brought to the cattle dock area in Dublo Dinky Toys Land Rover with Horse Trailer (No. 073). They are loaded into Horsebox Vans

(*Continued on page 358*)

While the local train coaches stand in the station platform, the milk Tank Wagon is shunted into the creamery siding. Once the wagon is uncoupled, the locomotive will pull forward and reconnect with the front of the coaches. Illustrations by the author.





END TO END RUNNING

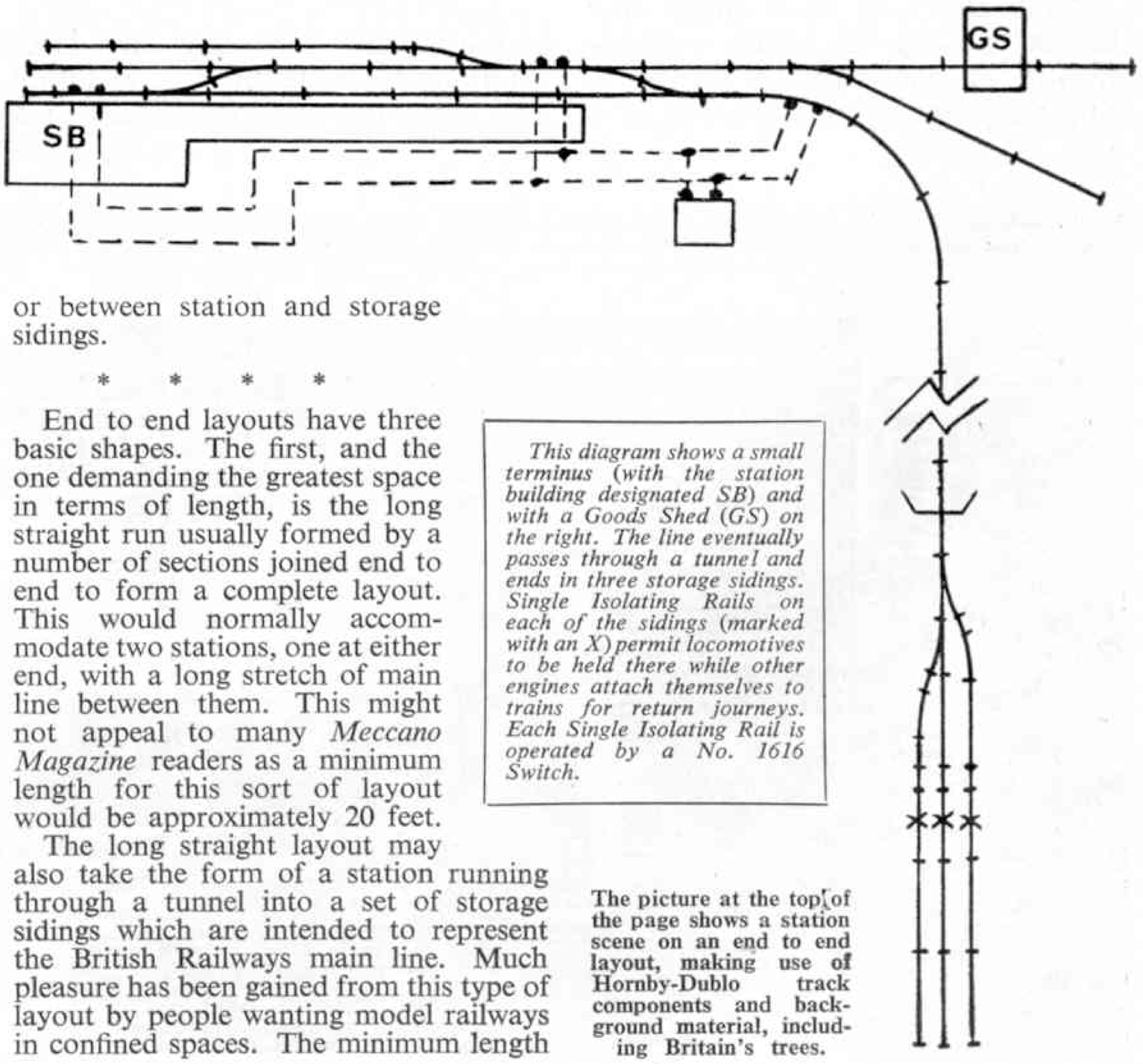
LINESMAN continues his series "FROM THE TRAIN SET ONWARDS"

THIS month, I intend talking about end to end railways, their advantages and construction. This type of layout is intended to please those enthusiasts who seek for something different from an oval or continuous layout, and wish to progress to something more in keeping with prototype railways.

In particular, it appeals to those who operate trains by timetables or sequences. This system is not particularly new in the model railway world; indeed, it has been in vogue since the growth in popularity of the flat and the small house. It is clearly gaining supporters among railway modellers who no longer have space for the vast railway empires that were in existence before the war.

The advantages of this type of layout are manifold, the most important being that it is capable of giving a more realistic railway in a relatively confined space. The normal oval or continuous layout is usually laid on a baseboard of a minimum of 4 ft. × 3 ft., which has to be moved on every occasion on which operating is desired. The end to end layout need not necessarily be moved, as it may be built round the walls of a room on shelves. These need not be more than six inches wide, except at stations, where a width of 1 ft. or 1 ft. 6 ins. is desirable. It is certainly not uncommon for a board width of six inches to be used for the stretch of line between stations, or between station and storage sidings.

DIAGRAM 1



This diagram shows a small terminus (with the station building designated SB) and with a Goods Shed (GS) on the right. The line eventually passes through a tunnel and ends in three storage sidings. Single Isolating Rails on each of the sidings (marked with an X) permit locomotives to be held there while other engines attach themselves to trains for return journeys. Each Single Isolating Rail is operated by a No. 1616 Switch.

* * * *

End to end layouts have three basic shapes. The first, and the one demanding the greatest space in terms of length, is the long straight run usually formed by a number of sections joined end to end to form a complete layout. This would normally accommodate two stations, one at either end, with a long stretch of main line between them. This might not appeal to many *Meccano Magazine* readers as a minimum length for this sort of layout would be approximately 20 feet.

The long straight layout may also take the form of a station running through a tunnel into a set of storage sidings which are intended to represent the British Railways main line. Much pleasure has been gained from this type of layout by people wanting model railways in confined spaces. The minimum length

The picture at the top of the page shows a station scene on an end to end layout, making use of Hornby-Dublo track components and background material, including Britain's trees.

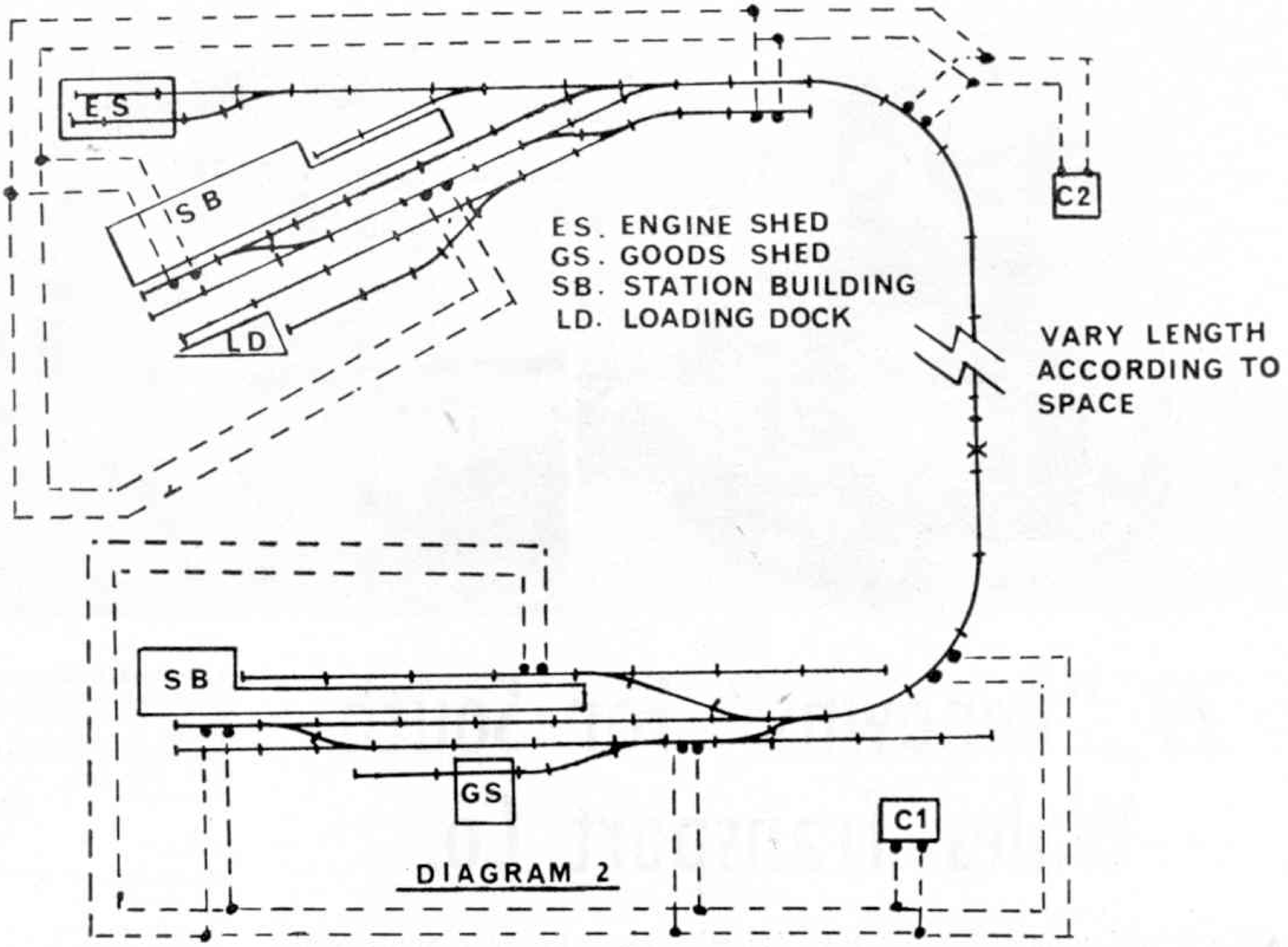


Diagram 1 (foot of previous page) shows an inverted "L" shaped layout which can provide much good entertainment for the operator who likes to work to a timetable. Diagram 2 (right) deals with a more comprehensive scheme which requires at least two operators.

for this layout would be 5 ft. for the station and 3 ft. for the storage sidings, a total of 8 ft. by a width of 1 ft. or 1 ft. 6 in. according to the station plan.

The two other shapes that may be employed are the "L" and "U". Of these two, the "L" shaped layout is undoubtedly the most popular, occupying two walls with possibly a station at each end of the scheme, or, if the run is long enough, a station also in the centre section of the "L," with a length of single-track line joining each station with the other. Using a minimum of space, a most comprehensive layout could be built by this method.

The "U" layout is possibly not so popular as the other two, for purely space reasons, due to the fact that it occupies approximately the same shape as a rectangular baseboard with an oval or continuous type of layout built on it. For the enthusiast who prefers the end to end run, however, the "U" layout offers a spacious main line, with an abundance of room for stations and other facilities, and unlimited scope for scenic and industrial works.

The scheme illustrated in Diagram 1 is one of the "L" shape variety with a station running to a set of hidden storage sidings. These sidings are to allow you to assemble or reassemble trains as they enter or leave your station. The storage sidings are usually left devoid of scenery and are open to view, thus giving accessibility to the stock and locomotives there. The tunnel mouth usually acts as the limit of scenery, and is, in fact, the end of visible railway.

The great advantage of the end to end layout is its great suitability to timetable or sequence working, exactly as is done in real practice.

This is how a typical sequence of operations on the layout shown in diagram 1 would be executed: A train from the storage siding pulls into the station platform; the locomotive is detached from the train and runs round the loop on to the main line, reverses and draws on to the other end of the train. The goods train, meanwhile, runs into the goods receiving road next to the main platform, thus allowing the passenger train to depart back to the storage siding. The goods train is now free to shunt and sort its wagons in the three uppermost sidings, and in the lower end loading bay. This, of course, covers only two trains; a fuller sequence may be compiled covering a complete day's activities on one station.

Diagram 2 shows a more ambitious layout involving two complete stations and requiring a minimum of two operators for full operations. The upper station is practically self-contained, with a locomotive shed, goods shed and full goods facilities, including storage sidings and goods reception road. Operation will be rather more interesting on this layout because of the fact that operators will have to assemble trains in their own respective stations without interfering with the normal timetable for incoming and outgoing trains.

The wiring shown in both diagrams is included for use with Simplec Points and, as you can see, is extremely simple.

Any reader who wishes to build layouts identical to those described here can obtain the appropriate list of items by writing to me at Meccano Limited, Binns Road, Liverpool 13.

BOOK REVIEW

Many of the enormous advances in aviation today have been brought about by the development of new and better materials and ideas which are now put to good use in aircraft throughout the world. The model aviation world also makes use of new materials and ideas in addition to the usual methods. All these are incorporated in **Modern Aeromodelling** by R. G. Moulton, who is one of the world's top authorities on the subject. It is published by Faber and Faber, price 18/–.

The book is packed with hints and instructions concerning the whole range of aeromodelling, yet can be understood easily by even the most inexperienced newcomer to the hobby. There is, in fact, a complete glossary at the back dealing with all expressions and abbreviations likely to be puzzling to the novice. Of particular interest to the really keen enthusiast is the list of aeromodelling magazines and the register of newsletters published by various clubs all over the world.

Left: South Wales 1241 (304 ECY) is the first production model of the A.E.C. "Renown", which made its debut at last year's Commercial Motor Show. Picture by courtesy of A.E.C. Above: Southdown 700, a Leyland PD2/12 with a Northern Counties FHC 5OR body, is seen here on a Southdown Enthusiasts' Club outing. Surfleet Transport photograph.

29 "Renowns" For South Wales Transport Co.

AT the beginning of May, A.E.C. officially handed over to South Wales Transport Co. Ltd. the very first production "Renown" double-decker (as seen at the top of this page). Its Park Royal body carries 39 passengers on the top deck and 32 on the lower. These saloons are lighted by fluorescent installations and there are illuminated advertisement panels on both sides of the bus.

This year, South Wales hope to take delivery of nineteen of these "Renowns", namely Nos. 1240–53 (303–16 ECY) with Park Royal bodies and 1254–8 (534–8 FCY) with Willowbrook bodies. A further ten have just been ordered. Meanwhile, the two Show models continue to demonstrate their capabilities. London Transport are using 8071 ML as their No. RX 1 on country routes such as Route 480 (Denton-Erith) in Kent. On the other hand 7552 MX has been touring the provinces.

A departure from their former policy has been made by Maidstone & District, who have on order some Daimler "Fleetline" double-deckers instead of their usual Leyland "Atlanteans". These will be of the lowbridge variety and be numbered DL 57–91 in the company's fleet. However, by the time you read this Portsmouth Corporation will have joined the operators of the "Atlantean", when they receive their first batch of the Mark II version, Nos. 201–225 (201–25 BTP), and a further ten "Atlanteans" have been placed on order by Pompey. Incidentally the old system of lettered motor bus routes and numbered trolleybus routes will be finally abandoned with the redesignation of routes A/B as 1/2, O/P as 13/4 and L as 26.

A sad blow to trolleybus fans is the news that Bournemouth Corporation are to buy no new trolleys and intend to convert all existing routes to diesel operation by 1972. Yet, that small trolley operator Maidstone Corporation are still extending their overhead wiring into new housing estates. Still along the South Coast, Southdown must now have the longest *open top* route in the country. As from July 14 route 102 was lengthened to run between Arundel and the Devil's Dyke via Littlehampton, Worthing and Brighton—a total distance of 34 miles, the journey taking 2 hrs. 28 mins. At the moment, three Worthing Depot and two Brighton Depot Guy "Arab" IIs with converted wartime bodies run the service, but in 1964 they are due to be replaced by some brand-new Leyland PD3s with removable roofs. Can anybody beat the 102 for length?

Inland at Basingstoke, Wilts and Dorset are beginning to feel the wind of change as this small industrial town begins to take on its role as a "satellite" town for London overspill population. The town routes have been completely reorganised and extended, principally into the growing South Ham Estate, which is now served by routes 123, 124, 125 and 126. To facilitate renumbering, the works services between Baughurst and Bramley Camp (105/15) have become routes 132/3 respectively. Along the Cliddesden Road route 106 has been replaced by extended routes 115/6. There are several other route alterations of a smaller nature. Wilts & Dorset have a second designated "New Town" in their area—Andover. At the moment there are only three town services here—routes 69, 70 and 72, but doubtless before long their number will be added to. There will be no shortage of numbers to choose from, for at present the company have vacancies at Nos. 74, 78, 81 and 84–100.

Nowadays, with many of Ribble's "Atlanteans" being transferred to the subsidiary Standerwick fleet as additional "Gay Hostess" express coaches, and London Transport's flourishing new RMC class on many of their former RF single-deck Green Line routes, it is interesting to note that Southdown's one and only double-decker coach 700 (KUF 700), having failed to prove a success in 1951 on the Eastbourne–Victoria express route has spent most of its subsequent existence as a private hire coach at Bognor Regis Depot. Instead of trying the experiment again the company have now introduced 49-seater 36-foot Leyland "Leopards" on to their non-stop London–South Coast routes.

CALLING ALL BUS SPOTTERS

By David Kaye

STRANGE TALES OF THE TAPE RECORDER

Gordon E. Gompers concludes this series of articles

IN spite of a great increase in the use of tape recorders in industry and in the fields of science and technology, I understand that their sales have dropped during the last two or three years from an average of 1,000 a day to about 2,000 a week. One reason for this drop is that some people, not appreciating their full uses, get bored with them and spread their despondency. Another, no doubt, is that these machines can become unpopular with landladies and neighbours, and, sometimes, even with the police.

Not so long ago there was a series of burglaries in a small Dutch town. For months the police were completely baffled, and they might still have been so to this day if it had not been that one of the more prominent townsmen made a complaint to the police about a young student, living in a nearby bed-sitter, who kept playing his trombone at odd hours of the night. The police approached the landlord who had given little thought to the young man's Bohemian habits since they were no odder than those of some of his other equally-Bohemian lodgers.

The eminent townsman brought to bear what pressure he could, but the student continued with his trombone practice. However, the attention of the police had now been attracted to the student, and it was not very long before they discovered an oddity about his trombone practice—every evening when he was playing there was a robbery somewhere in the locality. The coincidence was too great! A search warrant was issued, and while the student was at his classes the police ransacked his quarters and found a tape recorder with a number of tapes of recorded trombone solos. They also discovered a large haul of stolen valuables and money!

Perhaps the most eccentric use to which tape recorders have ever been put was that by a South American millionaire who had a mania for Wagner. He made a recording of each of the ten post-Rienzi operas (Lohengrin, Tannhauser, the Master Singers, Flying Dutchman, Tristan and Isolde, Parsifal, and the four operas of the Ring Cycle), and then, just out of curiosity, played them all at the same time just to see what they sounded like. He even had a soundproof room specially built for the purpose.

Of a vastly different type were the reprehensible activities of a scoundrel who managed to make himself the ruler of a small Pacific island, and persuaded his subjects to organise a profitable pearling industry by pretending to be the high priest of a certain tree god. He hid a portable tape recorder inside the hollow trunk of a tree, and the effect on the superstitious natives can well be imagined. Unluckily for him, one of the islanders who had had some experience of more sophisticated communities soon put the other islanders wise about the fraud and the adventurer just about escaped with his life.

But by no means all the many strange stories that come to my knowledge (invariably through tapespondent sources) are to do with deceit and crime. The nicest story that has come my way, and which was well authenticated, concerns a dear old lady—an old-age pensioner and invalid—and her pet budgie. A well-meaning neighbour drew the attention of the local tape recording club to the loneliness of this dear old soul, and they sent a tape recording unit to her room to entertain her. But she wanted none of their already-recorded tapes. Could they record her Reggie? To humour her, they recorded the budgie's chatter.

The next day the bird died, but thanks to the tape recording, the old lady could listen to Reggie regularly for the remaining years left to her.

That is one of the finest ways in which use can be made of the tape recorder, an instrument that can bring comfort to the sick and lonely, a vital link of communication with the blind and the illiterate, and an aid to both medicine and technology.

Greenwich—The Centre of Time

One of the most fascinating pieces of mechanism in London is the Red Time Ball. This instrument is to be found on the top of the Royal Observatory building in Greenwich Great Park, and is a device built many years ago for the benefit of mariners passing below on the River Thames.

It consists of a large red ball which travels halfway up its mast at 12.55 each afternoon and rises to the top at two and a half minutes to the hour. At one o'clock the ball thumps to the bottom again, thus establishing a visual time check. Two other methods of checking your watch against Greenwich Mean Time are available—the Galvo Magnetic clock, which is set into the wall outside the Observatory, and the famous "six pips" time signal which is transmitted by the British Broadcasting Corporation. These "pips" are still sent out from Greenwich to the main towns in Britain.

Although the building is still known as the Royal Observatory, the modern instruments are now housed at Herstmonceux Castle in Sussex, approximately 54 miles from London, where they were moved some years ago because of fog and atmospheric conditions in London. At an international conference in 1884 it was decided that Greenwich should be the Prime Meridian for the whole globe, so Longtitude 000 will always remain passing through Greenwich. In fact, you can stand with one foot in the Western Hemisphere and the other in the Eastern Hemisphere!—**JOHN A. LONG.**

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For Stamp Enthusiasts

Union of South Africa

By F. E. Metcalfe

WHEN South Africa left the Commonwealth, it was thought by some that the stamps of a country which had been very popular, with British collectors at least, would suffer. I have discussed this point with one or two stamp dealers, and all seem to agree that if there has been any falling away in that respect it has been very small indeed. In fact, recent happenings which I will detail later on have had a tendency to attract more collectors than ever.

When I refer to South African stamps, I only have in mind the issues which have appeared for the Union, which "kicked off" on November 4, 1910 with a single item, a quite handsome 2½d. stamp bearing arms in the four corners and the portrait of the then reigning King George V. Of course, in considering only the stamps issued by the Union I do not wish to deprecate the other stamps from the Cape, issued previously, particularly those wonderful classics, the Triangles. I am afraid, however, that the latter are for better-lined pockets than ours. There was a time when most collectors could afford these stamps, but bit by bit they are rising in price—that is the fine copies, with three margins (I would never recommend second graders, where the designs are cut into, although these are not dear).

Anyhow, starting with Union stamps we get a fine compact lot, brimful of philatelic interest for those who want to become serious collectors, and with plenty of cheap stamps for those who just want to get a single-country collection together. Nowadays the majority of collectors come into one or the other of these two categories, for with well over one hundred thousand "face different" already issued, and that impossible total (from a general collector's point of view) being added to at the rate of another four thousand a year, what else can one do but take an odd country or two; or, of course, a group like our "KGVI" or "QEII" issues.

Now let us consider South African Union stamps, beginning with the one already mentioned. It was not until 1913 that the first full definitive set appeared. This issue consisted of values from ½d. to £1, and all bore the head of King George V. The question of collecting these stamps in pairs did not arise, as it was not until later issues that one stamp of a value was printed with English lettering and the other in Afrikaans. It is true that even used high values of this early set are now scarce, but it is not very difficult to get quite a nice little set together of those up to 2/6d., and this is a set well worth concentrating on. However, many of the used stamps are heavily cancelled, for they were mostly commercially used and that means—well, you know what it means with our own stamps—postmarks which cover most of the design, and such copies do not look at all nice when mounted.

This definitive issue was in use for thirteen years (hence the abundance of used copies that are about). It was in 1926 that bi-lingual designs went out, to be replaced by stamps printed alternatively in English and Afrikaans, and it was here that the collecting of pairs commenced. Incidentally there was, a year previously, an air stamp issue of four values, but such sets are quite expensive and most of us will have to skip them, sticking instead to ordinary stamps. I have mentioned that Cape triangulars do not come into the picture, but that is only partly true, for also in 1926 a 4d. stamp was issued of the design of the original Capes. So their inclusion in your collection (you need two stamps, one in each language) will not be any strain.

After this, we got more stamps, of course, and as the catalogues show these resulted in shade varieties galore. During the second world war attempts were made to economise in paper, and the resulting stamps (dubbed "Bantams" by collectors) have provided lots of fun ever since. The ideal way to collect them is in units, that is, either two or three stamps (according to the value) with a perforated surround, and each stamp separated by roulette. Incidentally, if you are interested in the wonderful shade varieties of modern South African stamps you will find full lists in the Commonwealth KGVI Catalogue. They are certainly worth looking for, especially those which appeared between 1937 and 1954, the year in which another definitive set appeared.

It is the present set, the 1961 issue, to which I particularly wish to refer. The designs are very attractive. When this first "Republic" issue appeared the stamps bore the Union Coat of Arms watermark, and there did not seem to be any particular hurry about buying them, as they would probably be on sale for years. This complacency was soon shattered when stamps of the same designs appeared without the watermark. That meant a rush for the originals, but we would be safe with the unwatermarked stamps. Not so, for a rumour got round that a new watermark was to be brought into use—with the letters U.S.A. in a triangle. Replying to this rumour, the Post Office publicity department got very cross and assured everybody that there was nothing in the story. And the sequel? Shortly after that, tenders were requested for just such paper!

To sum up, South African stamps have a great deal to commend them to philatelists.

Stamp Gossip

Abu Dhabi

NO, that's not an exclamation, but the name of a sheikdom around the Persian Gulf—or Arabian Gulf as they prefer to call that part of the world—which at present uses British stamps overprinted in naya paise and rupees according to the value. This territory was the subject of a recent circular issued by our Post Office, explaining that while Abu Dhabi at present uses our stamps (overprinted as stated) it will, before the end of the year, have a set of its own. I don't suppose there is much need for this set, really, but all countries great and small are keen these days to make themselves known to the rest of the world, and what better way of doing so than by issuing postage stamps? Such stamps not only provide plenty of the desired publicity but make a handsome profit to boot—tiny "bits of paper" sold by the thousand, for real money! Not that Abu Dhabi needs to do that. It already does not know what to do with all the money it now makes from oil. The new issue for Abu Dhabi is expected to be with us before the end of this year; in fact, there might be a definite issue date by the time these lines appear in print.

WESTERN SAMOA

The average collector does not bother himself very much about it, but during the past few years new countries coming into being have allowed the external handling of their postage stamps to be done for them by private agencies. Even the older countries in the Commonwealth, such as Ghana and Nigeria, have done this, and in consequence some British collectors at any rate have ceased to take their stamps. However, there is one country which has made a move that is very popular—Western Samoa, which is now independent. Instead of New Zealand handling its stamps as hitherto, the Crown Agents in London have been appointed to do the job. Immediately, the demand for Western Samoa stamps has increased, as dealers are able to get just what they want from London, and all concerned have the assurance that there will not be any exploitation in the way of new sets every short while to mark not this, that, or the other event, but merely to get a hand into our pockets. Good for Western Samoa.

ANOTHER CENTENARY

In these days we seem to be commemorating centenaries for all kinds of things which make an excuse for yet another set of stamps. But there is one set which is of special interest to collectors, and that has to do with the centenary, in May last, of the First International Postal Conference, which later became the "U.P.U." (even Great Britain issued a set to mark the 75th anniversary of that institution in 1949, as did practically all member nations). Hitherto, Heinrich von Stephen has been considered the father of the "U.P.U.", but Uncle Sam has issued a stamp honouring the then Postmaster-General, Montgomery Blair, whom they claim—with some justice— was the real father although political circumstances prevented him playing the full part he probably would have played. Belgium has also issued a stamp to mark this centenary, which will be very popular, as there is a big thematic demand for stamps which incorporate another stamp in their design. In the case of the Belgium item,

which was issued on May 7, the stamp on the stamp is of the design current in Belgium 100 years ago, when the International Postal Conference first met in Paris, in 1863.

CONTRE LA FAIM

I can just imagine how busy many collectors will be mounting all those stamps (or as many as come their way)

which have been issued throughout the world to provide funds for the millions who lack even enough food to keep them in normal health. The cause is undoubtedly a good one but, of course, there are the usual postal administrations more concerned with what they can get out of the stamps, rather than what the starving millions get. But still collectors *do* get something for their outlay. However, apart from mint, do not overlook the used. These may never be rare, but some may prove a lot scarcer than mint in the long run.

REMOVING THE GUM

During recent weeks I have had letters from two collectors asking if it is wise to remove the gum from mint stamps for, as both said, over a long period gum will have a detrimental effect on the stamps themselves, etc. etc. Now it is perfectly true that gum *can* be harmful in the long run, but I suppose that, as the average collector sees it, there will not be any appreciable change during his lifetime, so he prefers to have his stamps just as they left the post office. That is why mint stamps (stamps with full gum) bring a bigger price than those where the gum has been removed, so if you have regard for what your stamps are actually worth today, keep the gum intact; if that point does not worry you, and you are thinking more of collectors, say, a century hence, then wash off the gum. But my advice would be to leave it on, because even if you do not want to sell your stamps now, you may wish to do so later. Who can tell?

THE TIP OF THE MONTH

I expect that the British Post Office was busier during May handling the three special issues than it has ever been before, and used copies will still be coming on parcels (pity the cancellations are so bad on these) and letters. And so my tip is, carefully preserve these if they are nicely-postmarked copies, for they will make wonderful swops later on.

By E. W. Argyle

The Royal Navy On Stamps

H.M.S. EREBUS

BUILT at Pembroke Dockyard in 1826, the "bomb-ship" Erebus *was a wooden vessel of 370 tons, 105 feet long on the gun deck and of 26 ft. beam. In 1839 she was the ship in which Sir James Clark Ross led an expedition to the Antarctic. H.M.S.* Erebus *was lost in 1845 during the Sir John Franklin expedition to explore the North-West Passage.*

SOVEREIGN OF THE SEAS

THE levy of Ship Money, which helped to lose Charles I his throne, provided the funds for the building of the Sovereign of the Seas, *the finest warship of her day. She was built to the design of Phineas Pett and launched at Woolwich Dockyard in 1637. A three-decker mounting 102 brass guns, she never lost a fight, and her enemies nicknamed her the "Golden Devil". In her later days the ship was renamed* Royal Sovereign. *She came to an untimely end in 1696, when she was accidentally burned out at Chatham.*

AN OLD GHOST GETS A NEW LOOK

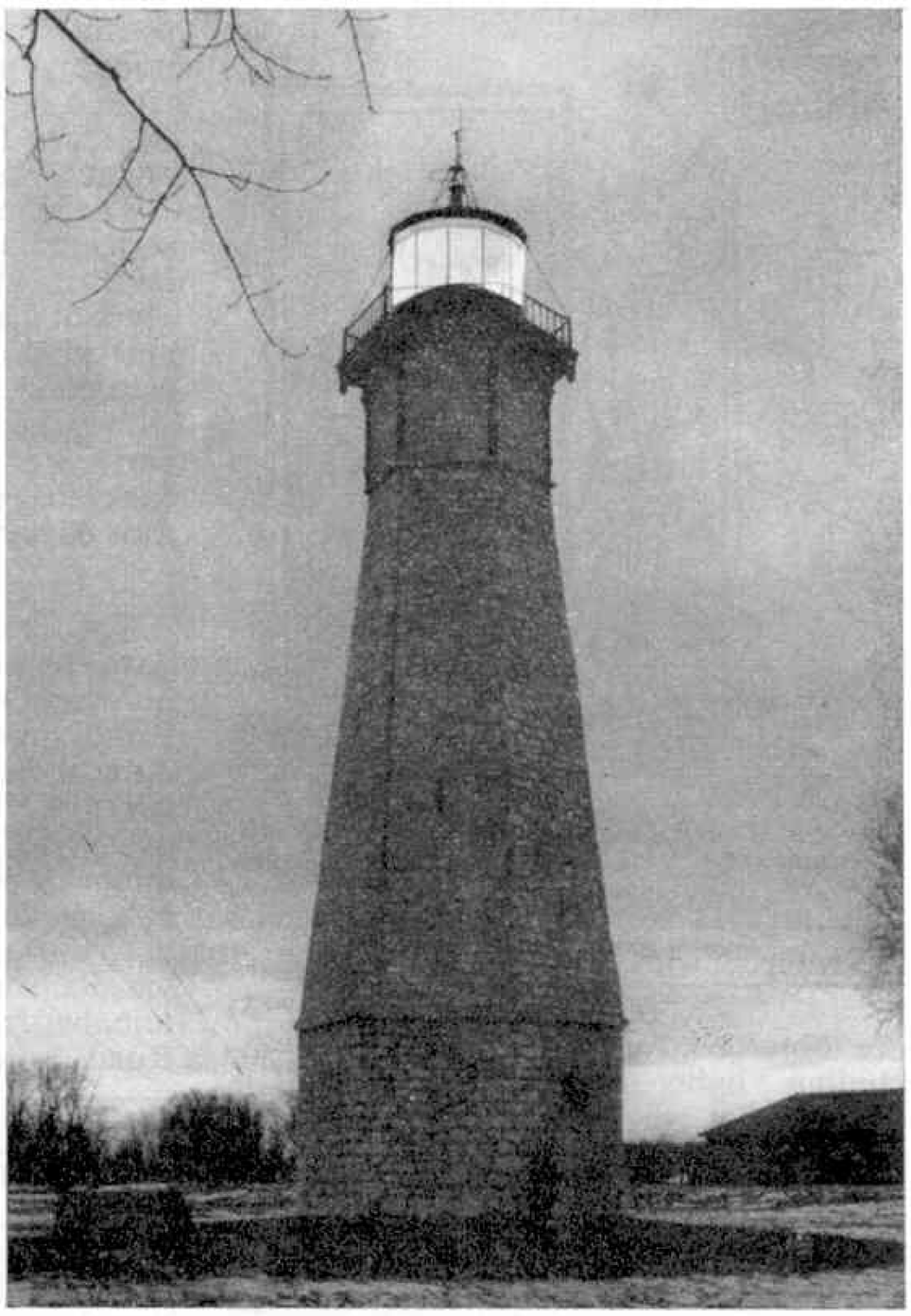
By JIM WITTS

SEEN any good ghosts lately? Workmen renovating one of Canada's earliest lighthouses, on Toronto's Centre Island, would not have been surprised to see ghostly vapours drifting from the 155-year-old stone walls. For this Gibraltar Point Lighthouse, on the Canadian side of the Great Lakes, is reputedly haunted by its very first Keeper, J. P. Rademuller, who was murdered in 1815. Lightkeeper from 1807 until his untimely death, a "sideline" was his undoing, for he sold liquor to the soldiers in a nearby blockhouse, three of whom were arrested after his murder.

The ghost lay quiet for 70 years, until the fourth Keeper's son dug up his bones near the stone tower. Although the disturbed skeleton was hastily re-buried, his ghostly self was thereafter heard nightly shuffling up the winding stone steps to open the trapdoor and climb to the lamp room 80 ft. above ground. Island cottagers sensed his presence, as did successive Keepers of the lighthouse. John Durnan, a descendant of two lightkeepers there, remembers Island schoolchildren telling the story and in 1925 racing yachtsman E. K. M. Wedd went at night to listen—and heard—the shuffling old man.

The tale was passed in time to artist Rowley Murphy, who visited the Island one dark forbidding night in 1948 to paint the Light. He felt the ghostly presence as he sat shivering in the lighthouse.

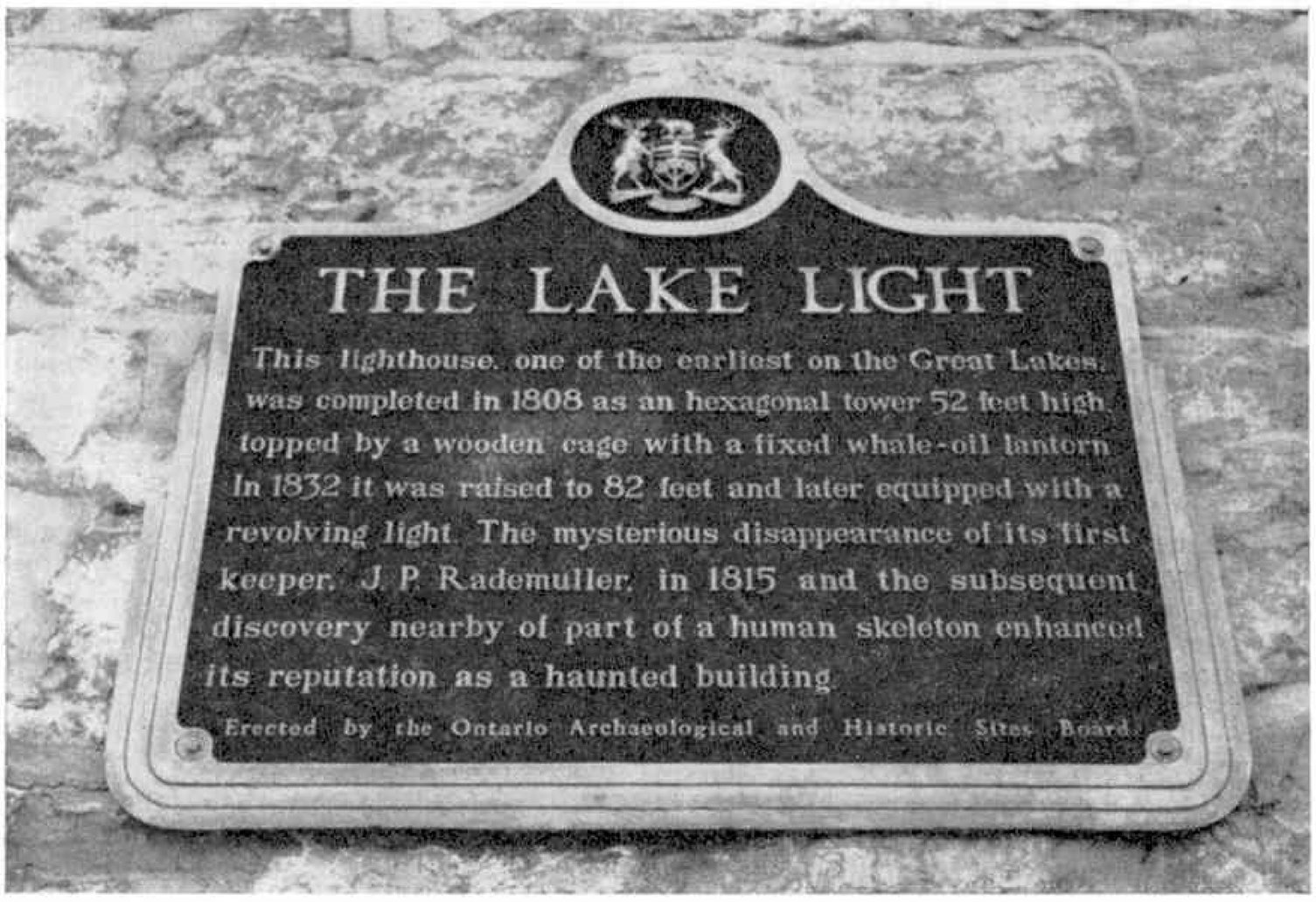
To bring my story up to date, I visited the Island with a camera on a misty December evening in 1962. With the temperature reading at sub-zero I was petrified with cold, if not fear, as I stepped off the Ferry and faced a two-mile walk from Wards Island to the Light.



The Lake Light, Canada's only reputed haunted lighthouse, at Gibraltar Point on Toronto's Centre Island. The illustrations are by the author.

Now 600 ft. inland, the Light no longer serves the Great Lakes, having been retired in 1959 and replaced by a modern tripod light. The lighthouse itself is now, in fact, regarded as a historic site, and has a plaque to prove it. The plaque records that this was one of the earliest lighthouses on the Great Lakes, and was completed in 1808 as an hexagonal tower 52 feet high. In 1832 it was raised to 82 feet, and later its fixed whale-oil lantern was replaced by a revolving light.

As I walked around the lighthouse and took my pictures, it certainly looked creepy enough, and inside the walls fairly "dripped" atmosphere. Noises I certainly heard, but whether or not they came from the ghostly occupant of this haunted lighthouse I would not care to state. Sufficient to say that it was no mean feat to run the two miles back to the waiting ferry!



This plaque on Gibraltar Point Lighthouse tells how the lighthouse came to be haunted.

How can Jimmy be playing with his Train Set, Meccano, and Circuit 24 Race Set, all at the same time Dad?

Adventuring with the Y.H.A.—

(*Continued from page 327*)

are observed for the general good, including "lights out" at 10.30 p.m. The dormitories are usually furnished with two-tier bunk beds. The hostels are for touring, but members may stay up to three nights at any one hostel before moving on.

The hostel names are frequently interesting in themselves, and members will proudly show their cards containing such names as Boggle Hole, Blackboys, Once Brewed, and Tanners Hatch. Wales, of course, contributes its quota of strange-sounding names, including Ystumtuen, Capel-y-ffin, Nant-y-Dernol and Plas Rhiwaedog.

Trackside News—(*Cont. from page 329*)

locomotives in the photograph include a Midland Railway Compound, a Lancashire and Yorkshire "Pug", an L.M.S. "Crab" and an L.M.S. class 4F. Test your powers of recognition by seeing if you can find them.

* * * *

The North-Eastern Region of British Railways recently began to make use of a unique development in equipment for excavating lineside track-drainage trenches. This machine, known as the "Hunslet" Rail-Mounted Trencher, has all operations hydraulically powered, giving a fine degree of control. It has been developed by the Hunslet Engine Co. Ltd., of Leeds, to the requirements of the Chief Civil Engineer of the N.E. Region.

The equipment, which is basically a power pack, control cab, an excavating unit, and a conveyor system—with traction for the forward-digging motion provided by a built-in winch—is mounted on a well-type wagon specially constructed as part of the entire unit. The wagon is carried on standard British Railways four-wheel bogies with Timken roller bearings, and is fitted with hydro-pneumatic buffers, screw couplings, and is piped through to permit transportation in fitted freight trains. A crew of two operate the machine from a comfortable cab in which all controls are located on a single desk type panel. (See bottom picture on page 329.)

The machine is capable of excavating to a maximum depth of six feet below rail level in the most arduous conditions. Since it has gone into service, old stone and pipe drains have been successfully excavated. The machine can also deal with large boulders, buried timbers and a variety of other obstructions, and has excavated through two feet of shale and a foot of hard-frozen ballast.

* * * *

The Home Counties Railway Society have arranged a special Railtour for Sunday, October 6. The train will depart Paddington, making a fast run to Bristol. After a visit to St. Phillip's Marsh depot, two 51XX tank engines will haul the train over the Cheddar–Wells branch to Westbury. A photographic stop will be made at Cheddar. Engines are changed again at Westbury, for a fast run to Waterloo via Salisbury. Further details are obtainable from Mr. P. Bonney, 119 Harvist Road, London N.W.6.

Road and Track— (*Cont. on page 335*)

bine which conveys power to the road wheels through a two-speed gear box. No clutch is needed, the driving technique being similar to that used on the conventional car with fully automatic transmission.

Chrysler have recently announced they are in limited production with 50 four-seater 115 m.p.h. gas turbine coupés, which are being made available to 200 motorists during the next twelve months. Two are already in use on the road. After their wonderful Le Mans performance, world attention is once again focused on Rover turbo cars and a statement concerning *production* gas turbine vehicles from the firm is awaited with special interest. Rover's faith in gas turbine cars has certainly been completely vindicated.

Aston Martin must be feeling extremely disappointed with their Le Mans showing, particularly after getting together such a fine team of drivers. The new 4-litre Project 215 made a good impression during the opening laps and went out after two hours hard driving with transmission trouble. Given more development, this model looks as if it could challenge the speed of the V–12 Ferrari. I hope it returns next year, but it could undoubtedly benefit from race testing in the meantime.

The British Racing Partnership sponsored by Alfred Moss and Ken Gregory were apparently unable to buy a Lotus 25, so they courageously built their own monocoque chassis, which has proved to have extremely good handling, and its driver Innes Ireland thinks very highly of it. The new model, the B.R.P., is powered by a V–8 B.R.M. engine and appeared for the first time in the Belgian Grand Prix, but succumbed to gear box trouble. The team, however, sorted things out in time for the Dutch Grand Prix, where it finished a creditable fifth. I expect to see this car do better still before the season ends.

The attractive looking Ogle Super SX 1000, illustrated on page 335, bears little evidence of its Mini-Cooper parentage, with 997 c.c. engine fitted across the chassis and front-wheel drive. Some month's ago I drove one of these cars a short distance and was impressed by its comfort and interior refinement, as well as its performance. With a top speed of a little more than 90 m.p.h. it is also claimed to reach 60 m.p.h. in fourteen seconds. It was not in my possession long enough to check these figures, but I was impressed by its acceleration and its performance.

Stirling Moss is associated with Ogle who intends putting his dream car into production around Motor Show time, in October. It should be an interesting exercise.

Miniature Train Formations—

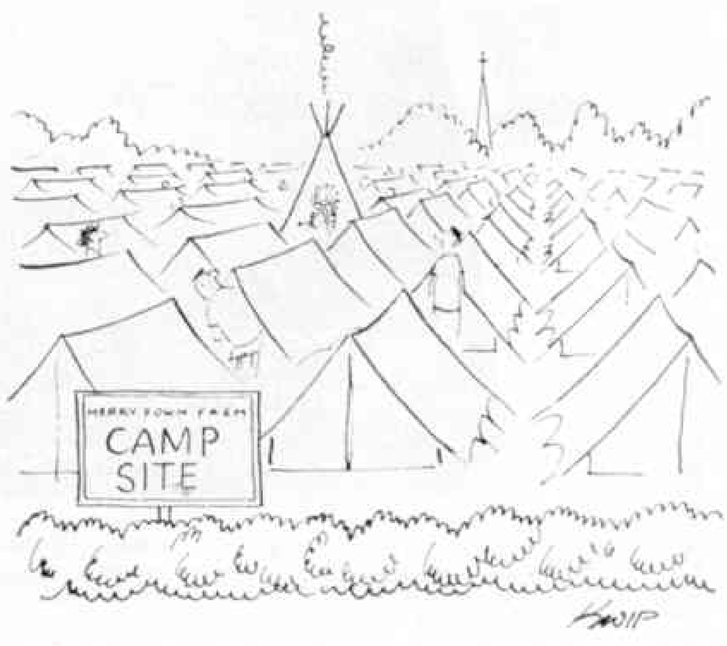
(*Continued from page 349*)

(No. 4315), which are brought in empty on an incoming passenger train, and taken out, complete with the horses, on an outgoing passenger train.

If you are working a daily timetable on your layout, then instead of simply allowing your passenger train to run around the single line oval, stopping occasionally at the station, you will now be able to make up the correct timetable. In this you can allow for the handling in and out of the cattle trucks and milk tanks once or twice daily, and the horse box vans will be moved as required. Naturally this will be a more frequent occurrence during the racing season, but it will be fairly regularly used during the hunting season.

As a supplement to the working to the creamery you will have to haul in Coal Wagons (No. 4635) say once a week, if the fuel used at the creamery is coal. If the boilers are oil fired, then fuel will have to be delivered in one of the Tank Wagons, Esso Fuel Oil Tank (No. 4680) or Mobil Tank Wagon (No. 4677).

In actual practice, such working of train formations goes on regularly right through the year, and its reproduction in miniature can form the starting point of any expanding model railway layout.



The Mining City of Broken Hill—

(*Continued from page 321*)

The Lakes give a better water supply to Broken Hill, and provide water for irrigation, as well as being a sporting and picnic spot. The city is growing as a centre, apart from its mining interests. If there is enough planning, the Broken Hill of the future may avoid the fate that threatens every town built on the riches of the ground beneath it. What will happen when the riches are worked out? Other mineral towns are temporary and can be dismantled or left when the mines are finished. Some, again, are too big. Even now there is a threat over the gold city of Kalgoorlie in Western Australia. There is a constant search for new veins, but if they cannot be found, the city of thousands could become a ghost town within a few years.

This is not likely to happen in Broken Hill for many years. Indeed, the building up of other industries, development of tourism, and its growth as a farming centre could ensure a greater future for Broken Hill—a city that exists because man has machines and the ability to use them.

Air News—(*Continued from page 337*)

the British Decca Navigator.

Cost of the two helicopters will be £500,000, but it will be money well spent. In replacing the seven-passenger D.H. Rapide biplanes used at present on the Isles of Scilly run, they will offer passengers really comfortable accommodation, with a cabin attendant, and a much higher cruising speed. Further time will be saved by eliminating the present seven-mile bus journey from Penzance to St. Just Airport, as the S–61N is planned to operate directly from the centre of the town.

SONIC BOOM LIFESAVER

There can be few more frightening situations for the pilot of a lightplane than to be forced down, out of fuel, in the desolate wastes of Alaska in a raging snowstorm. Fortunately, when this happened to bush pilot Don Sheldon he was able to call for help over the radio fitted to his little aircraft.

Before anyone could come to his aid, his position had to be pinpointed. So Lieutenant-Colonel Joe Rogers, commander of the U.S.A.F.'s 317th Fighter Interceptor Squadron, made a series of runs at supersonic speed in an F–102 Delta Dagger over the area where Sheldon was believed to be stranded. Sheldon timed the period it took him to hear the sonic boom produced by the fighter and passed the information by radio to search-planes which were quickly able to work out his exact location.

Twenty gallons of fuel were then air-dropped to Sheldon, who was able to get his aircraft off the ground on a 3,000-foot strip he had tramped out with snowshoes during the five days he spent on the ground.

Fireside Fun

Tourist: Is 'Ballpoint' really the name of your pig?

Farmer: No, that's just his pen name.

* * * *

A young man foolishly twitted a much older man on his age. The elder looked at him and said, "Young man, an ass is older at twenty than a man at sixty."

"Parachutist my foot—that's one of our lads going up with a tent!"

A Jew and a Gentile were having an argument about the ways of their respective peoples.

"You people," said the Jew, "have been taking things from us for thousands of years—the Ten Commandments, for instance."

"Well, yes," said the other, "we took them from you all right, but you can't say that we've kept them."

* * * *

Proud Father, "All people say that the baby resembles me closely."

Mother, "The only resemblance I can see is that both of you are bald."

* * * *

First lawyer, "As soon as I realised it was crooked business I got out of it . . ."

Second lawyer, "How much?"

"All I said to him was . . . we're going climbing, bring your gear along!"

Doctor, "That cheque you gave me on your last visit came back."

Private patient, "Sorry, Doc., but so did my arthritis."

* * * *

Warn and haggard the half-frozen trapper staggered into the blizzard-enveloped trading post and said to the proprietor, "Grub! Anything!"

"Pete!" exclaimed the other. "What happened out there in the wilds?"

"My sled dogs kept dyin' along the trail until only the leader was left," Pete explained weakly. "That big brute kept eyein' me hungry-like, and I kept eyein' him the same way."

"And?" prompted the proprietor.

"Well," Pete answered grimly, "he didn't have no gun."

". . . and how long do you work at a stretch?"

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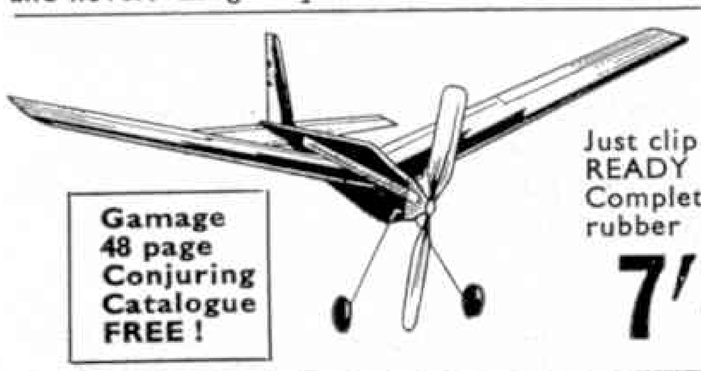

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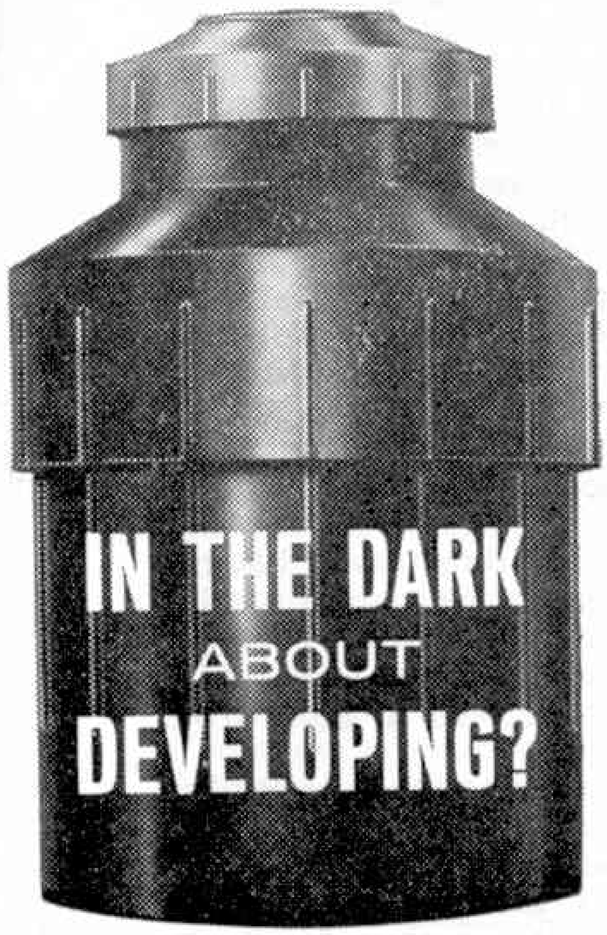

It is much easier than you think to develop your own films and this new UNIVERSAL tank from Johnsons makes it easier still. You only have to load the film in the dark, the rest of the job—developing, fixing and washing—is carried out in the light. Everything has been designed for ease of manipulation and the tank is adjustable for several widths of film—120/620, 127, 35 mm./828 or 16 mm. (5 feet.) With fully illustrated instruction book. At your dealers' now, 32/6.

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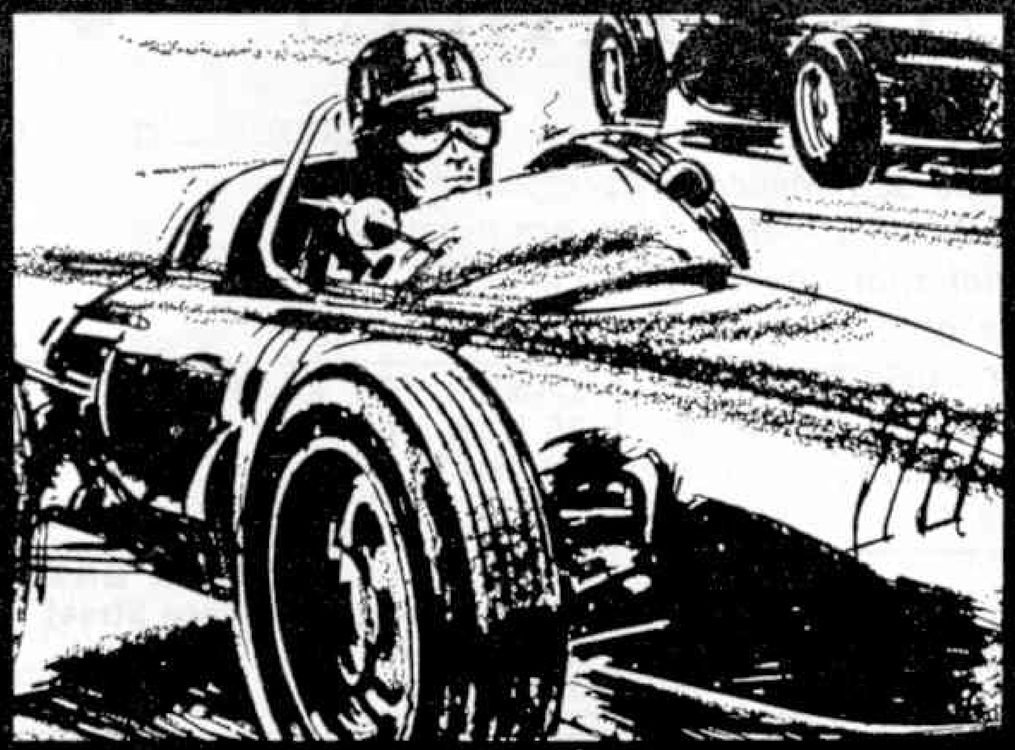

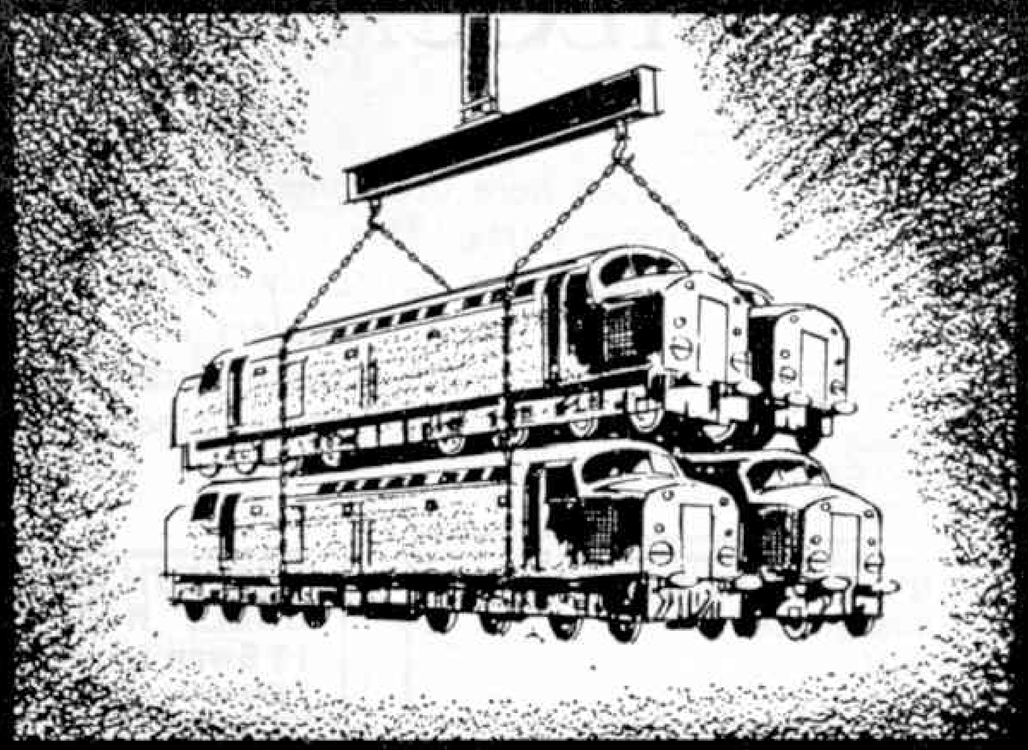

600,000 REVOLUTIONS TO VICTORY

In the famous Monaco Grand Prix, the tyres of a Formula I car make over 600,000 revolutions in covering the 195 miles! This circuit is so tortuous that about 25 gear changes are necessary each lap making a total of over 2,500 changes during the race. In the last three years every world championship Grand Prix race has been won on Dunlop Tyres.

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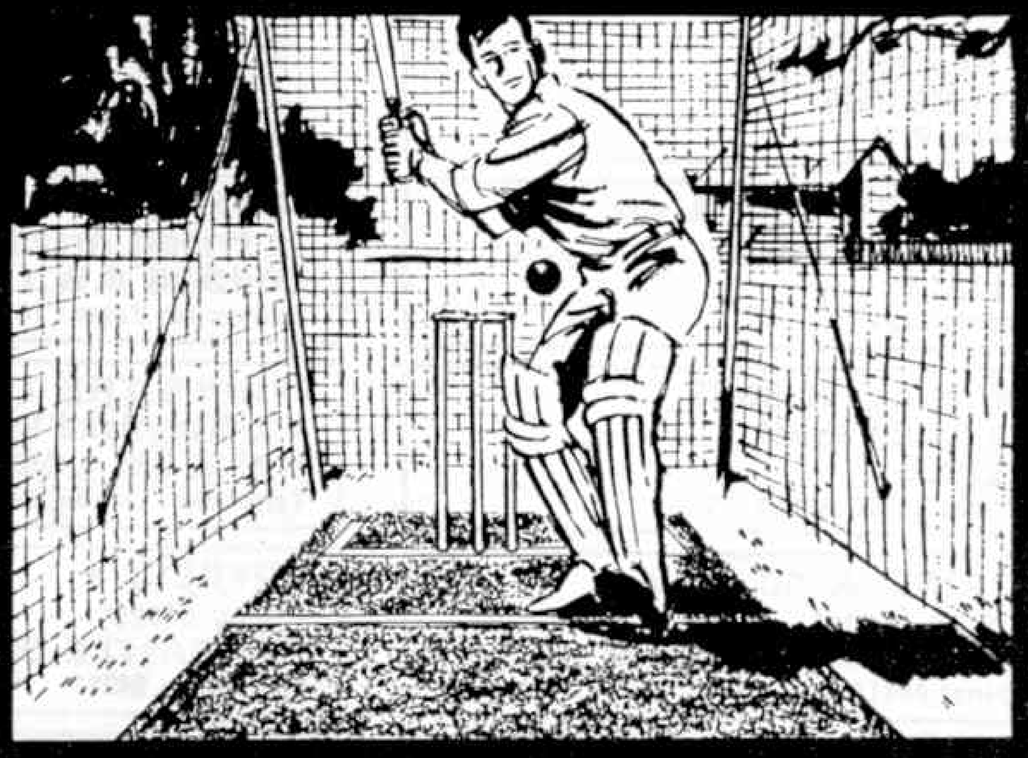

LATEX SPRAY PROTECTS MINERS

An ingenious new Dunlop safety aid is being used to prevent disasters in coal mines. Liquid latex is sprayed onto sandbag and stone wall "stoppings", and this dries into an impervious rubber skin which prevents the passage of air and the spread of fire.

RUBBER CRICKET PITCHES!

Who'd imagine that material used as flooring in buildings would make super cricket pitches? But many cricketers are now practising on "Fleximers"—rubber latex and Portland cement composition—developed by the Dunlop Company, Semtex Ltd. These last longer than coconut-matting pitches and don't have to be stored away in winter.

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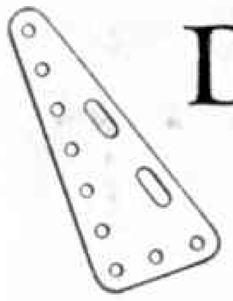

DEALERS WHO SPECIALISE IN MECCANO SPARE PARTS

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

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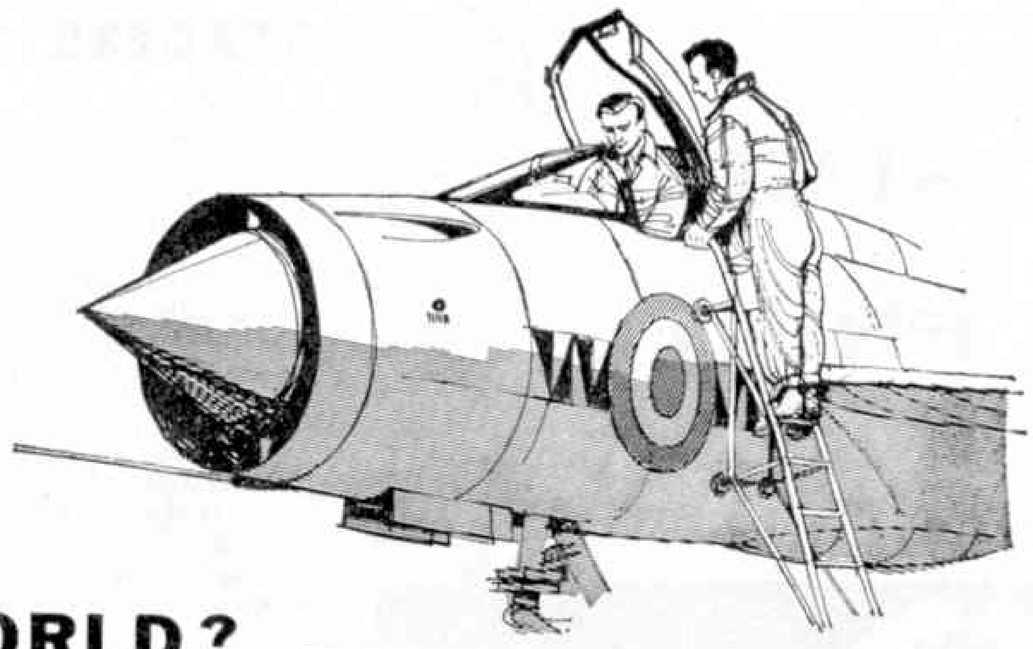

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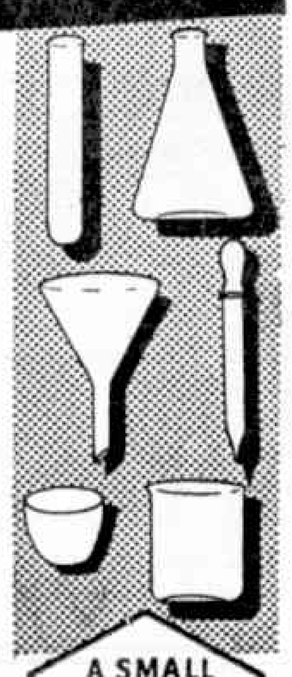

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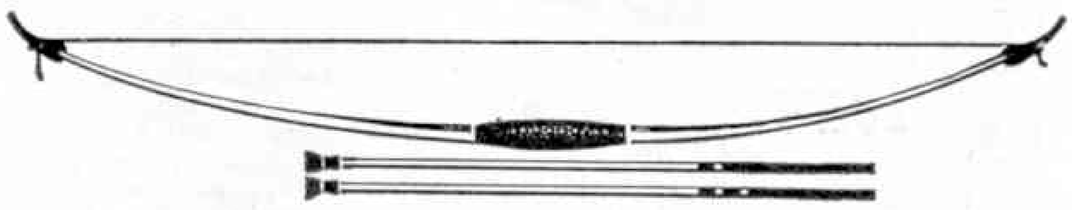

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The rates are 2d. per word, with a minimum of 2/– (cash with order). Readers' advertisements are published as soon as possible, inclusion in the first issue after receiving them, however, cannot be guaranteed.

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

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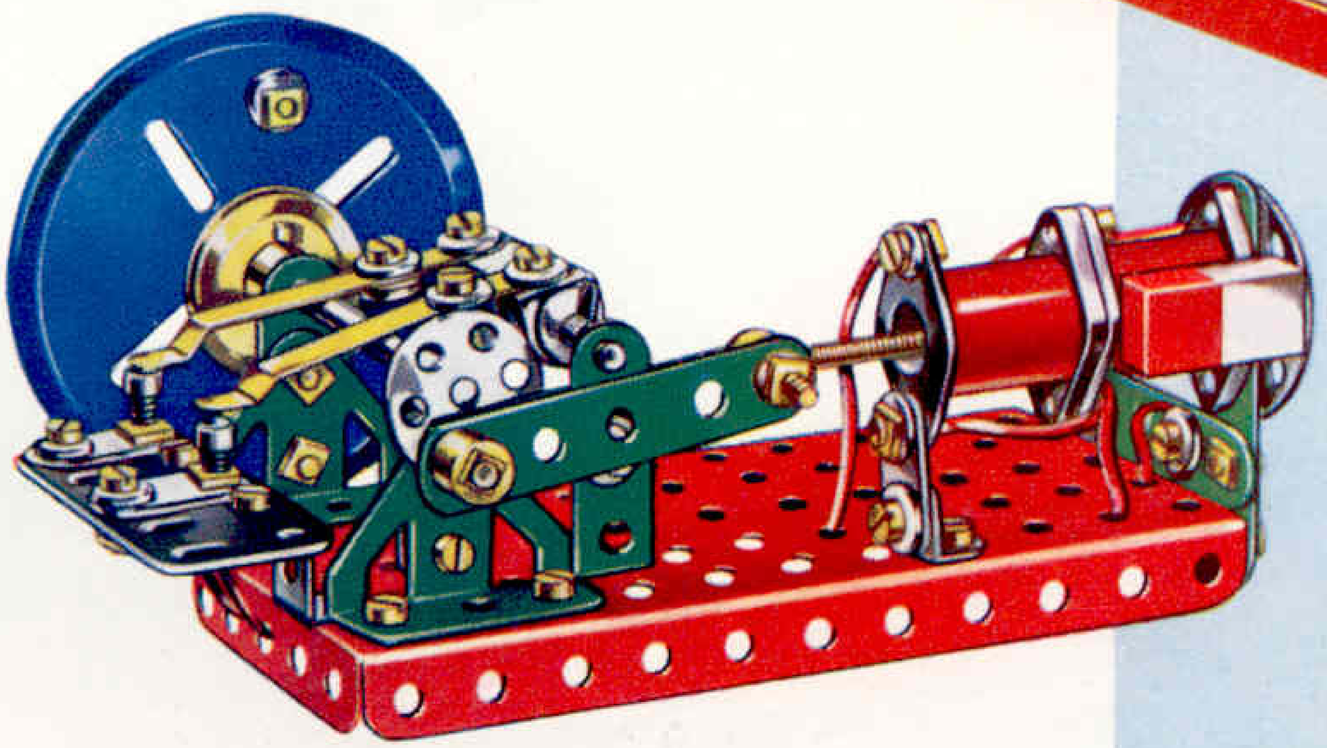

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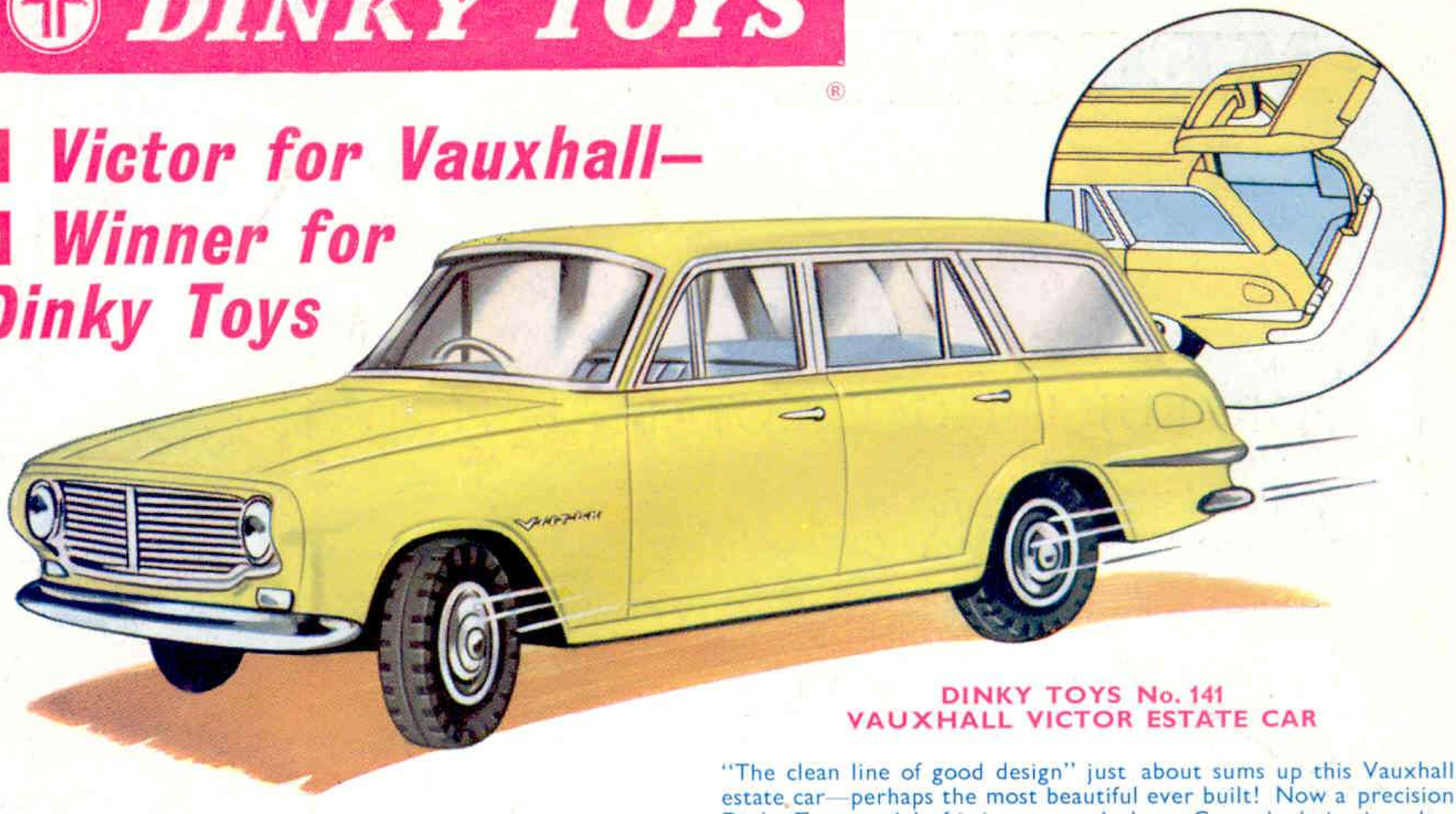

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