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MECCANO

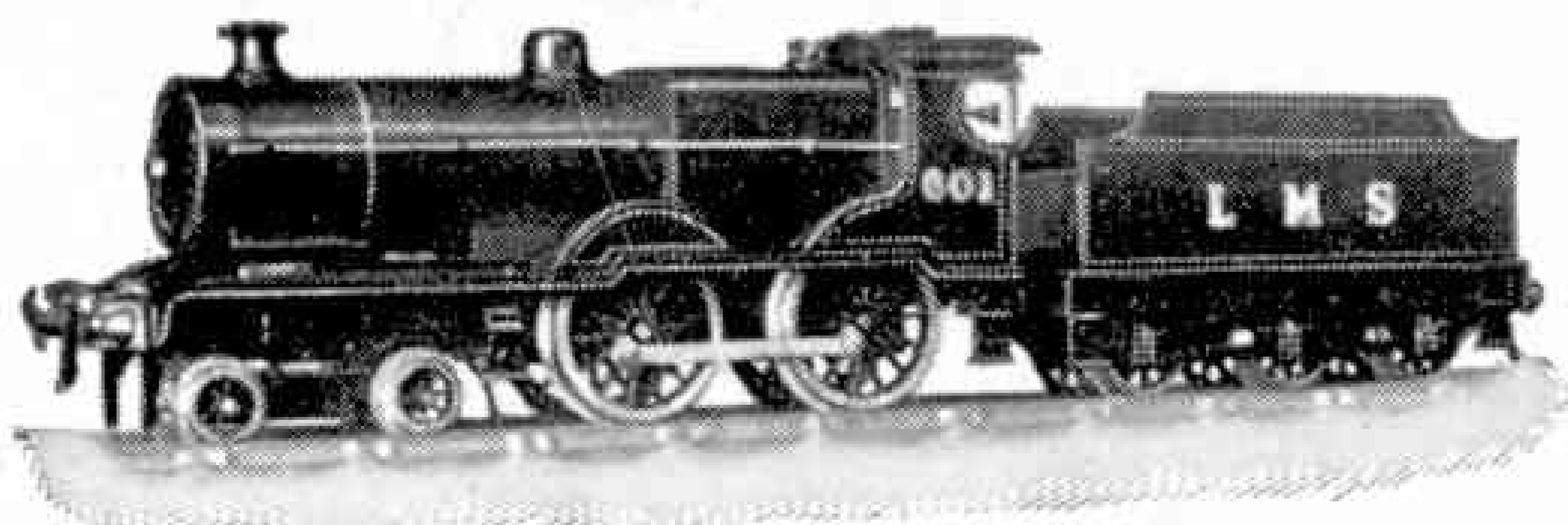
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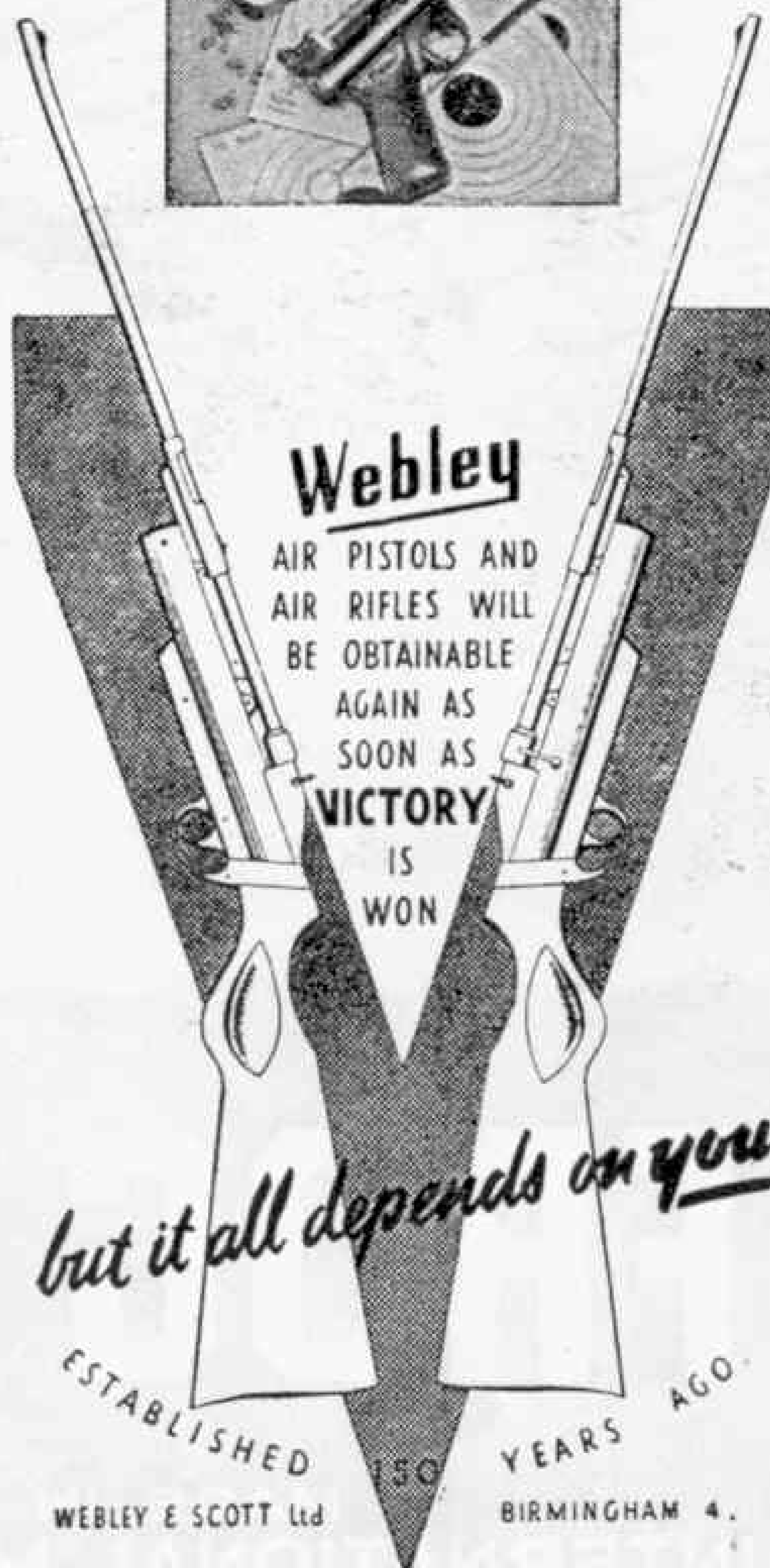
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MECCANO

MAGAZINE

Editorial Office:
Binns Road
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Vol. XXVII
No. 7
July 1942

With the Editor

Puzzle Pictures Contest

Here are the last two Puzzle Pictures of the series. To compete for the prizes offered all that is necessary is to write on a post-card what you think each of the pictures I to VI, which began in the May issue, represents. Then add your name and address, and address your card to "*Puzzle Pictures, Meccano Magazine, Binns Road, Liverpool 13.*" Closing date for entries, 31st July. Four prizes are offered—21/-, 17/6, 15/- and 10/6. In the event of a tie for a prize the award will be made to the neatest or most attractive entry.

Our Harmonicas Fund

I reproduce below the letter of thanks I have received from the R.A.F. Comforts Committee in acknowledgment of our cheque to provide Harmonicas for the R.A.F.

"I have much pleasure in acknowledging receipt of the sum of £16 2s. 6d. as a donation from the readers of the Meccano Magazine for the provision of harmonicas for the members of the Royal Air Force.

"In thanking them sincerely for this generous gift I would like to assure them that these instruments are most welcome to the Royal Air Force and in particular to those men who are serving in out of the way locations.

"I am therefore asked by my Committee to express their sincere thanks for this donation."
(Signed) Officer i/c R.A.F. Comforts.

A full list of subscriptions appears on page 268.

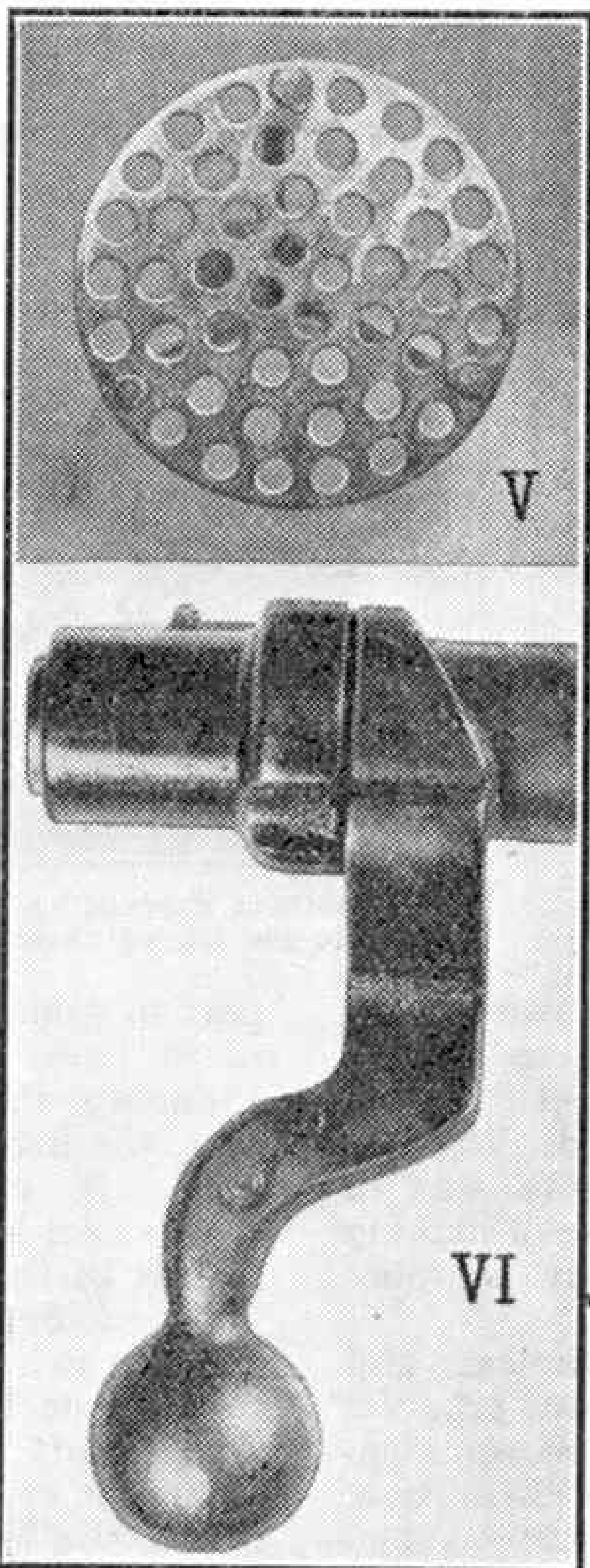
Aircraft Memory Test

Among the lists of aircraft compiled from memory, in one hour, that I have received from readers, the following, from J. W. Parker, 363, Billing Road East, Northampton, is the most complete. Some otherwise good lists have been spoiled by including names of individual machines, instead of makes.

Aero, Avia, Armstrong Whitworth, A.N.T., Avro, Airspeed, Air, Aeronca, Amiot, Ark, British Aircraft Co., Barkley-Grow, Bristol, Bell, Boeing, Bellanca, Blackburn, Benes-Mráz, Beechcraft, Brewster, Bloch, Breguet, Boulton Paul, Cunliffe-Owen, Caudron, Cessna, Chilton, Chrislea, Cierva, Consolidated, Curtiss, Cunningham-Hall, Culver, Clark, Comper, Douglas, De Havilland, D.B. (Russian), Farman, Fokker, Grumman, Handley Page, Hawker, Hanriot, I (Russian), Lockheed, Miles, Martin, Martin-Baker, Morane-Saulnier, Dewoitine, North American, Northrop, Percival, Pitcairn, PZL, Potez, Stinson, Supermarine, Saro, Short, Republic, General Aircraft, Vultee, Vickers, Vought-Sikorsky, Waco, Westland, Fairchild, Fairey, Stearman, Parnall, Hendy, Gloster, Topsy, Mosscraft, Commonwealth, Koolhoven, Luton, Heston, Stampe-et-Vertongen.

* * * *

Owing to difficulty with illustrations the article "The Story of the Royal Engineers" has had to be postponed until August.



July Puzzle Pictures Nos. V and VI.

Whalers of To-day and Yesterday

War-time Importance of an Old Industry

By Sydney Moorhouse, F.R.G.S.

WHALING, which was first carried out by the Basques of a thousand years ago, has its place in modern warfare, for whale oil is used in the making of explosives as well as margarine, soap and lubricants of various kinds. Last year a successful British raid on the Norwegian coast was made with the object of destroying a large whale oil factory now in German hands, and thus severely reducing the already meagre stocks of whale oil possessed by the Nazis.

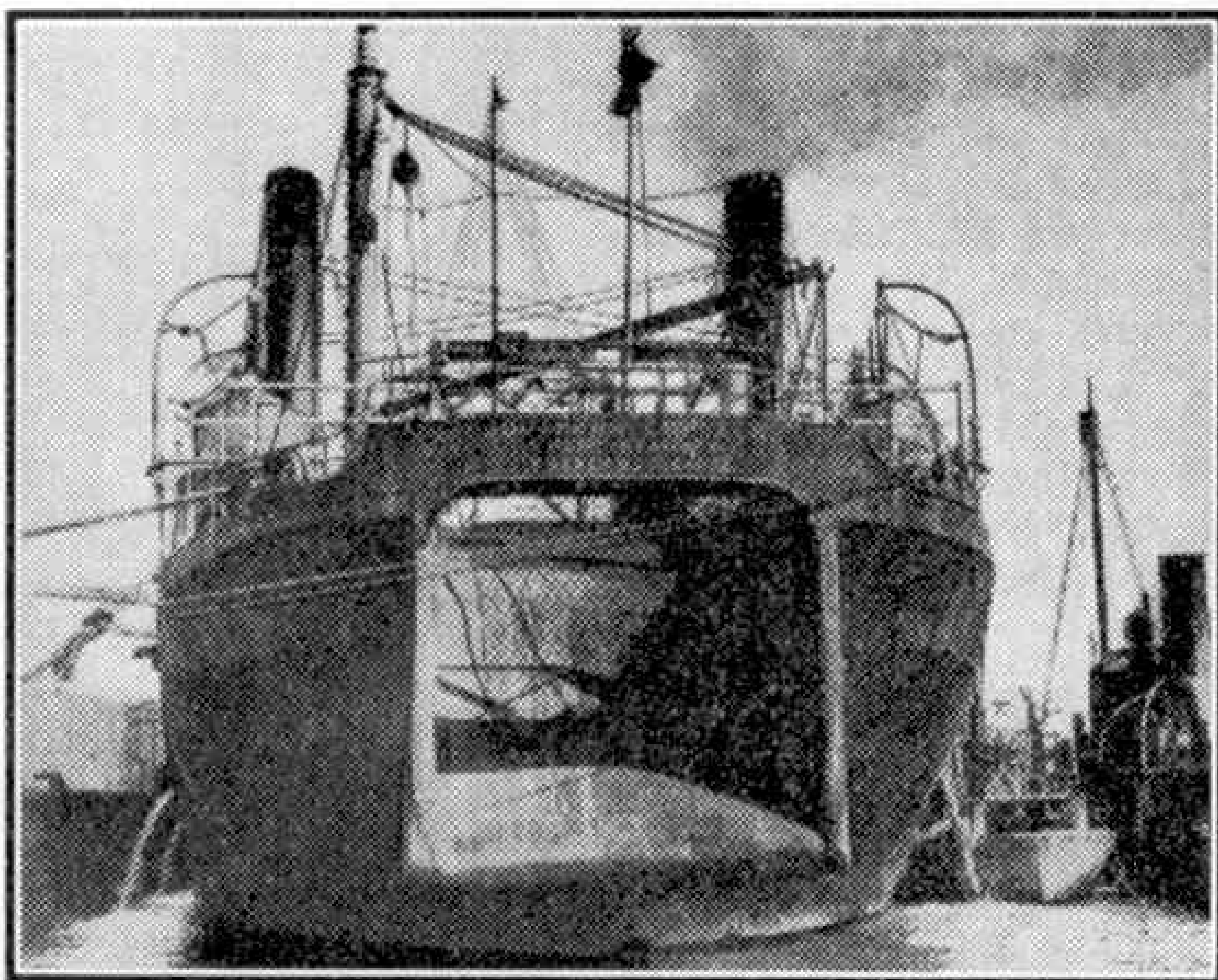
For some time past the Norwegian whaling fleet has been regarded as the finest in the world, and as the result of the German occupation of Norway the members of this fleet have not only left their old headquarters at Vestfold, on the Oslo Fjord, but have offered their services to the Allied cause. Temporary war-time headquarters have been provided at Halifax, in Nova Scotia, and from there these intrepid seamen make their attacks on the whales of the waters round the Falkland Islands, the South Shetlands, South Georgia and other haunts.

Fitting out a whaling expedition is a costly business involving an expenditure somewhere in the region of £300,000. An expedition usually consists of one factory or mother ship of from 15,000 to 20,000 tons, and several chasers of 150 tons each. As the whalers are away from their home base for some five or six months, food and supplies to last 300 men for that time have to be carried. Whaling takes place in the most remote seas of the world, and there is no chance of making for port and replenishing if supplies should run out.

Each ship is fitted with wireless, and when the "hunt" proper is in progress the chasers keep in constant communication with the manager of the expedition, who is on board the factory ship. When a whale has been killed it is either towed back to this factory ship or its position

is marked by means of a flag fixed in the carcase, while the chaser goes in quest of another victim. If the whale is flagged the factory ship steams to the spot and hauls it on board, where it is cut up and the blubber boiled down into whale oil. Thus while the chasers are actually capturing the whales, the men on board the mother ship are busy turning the catches into the valuable commodity with which the whole expedition is concerned.

Whaling is always an exciting occupation and, despite the fact that many of the men engaged on the ships have taken



The "Southern Express," a typical modern whaler, in which the whales are hauled aboard through an opening in the stern.

part in some hundreds of chases, the work never loses its excitement and thrill. Plunging through the icy, mountainous seas, the little vessels go in search of their prey. In each, while one man in the crow's nest keeps a sharp look-out, another stands in the bows, with his 100 lb. steel harpoon, 5 ft. in length, already fixed in the gun in readiness for firing.

A whale is seen, and immediately the chaser sets its course in that direction. Nearer it comes, and then, at 50 or 60 ft. range, the harpooner fires his gun and the long missile speeds on its way, taking with it a manila rope nearly half a mile

long. The modern harpoon is fitted with a high explosive that is detonated six seconds after it enters the whale. In the majority of cases this is sufficient to kill the animal, but a real monster may struggle for one or two hours and need

The methods of the Basques, the pioneers of the industry, were of the most primitive character, and the real birth of whaling as we know it to-day occurred during the 16th and 17th centuries, when Dutch and British seamen were in keen competition.

Just as the blue whale is now specially prized by those engaged in whaling in the Antarctic, so was the Greenland, or bow-head, whale greatly sought after by the old Arctic whalers. It was a veritable mountain of flesh between 50 and 60 ft. in length, and yielded abundant supplies of both oil and whale-bone. Individuals have been taken that have yielded 28 to 30 tons of oil and 30 cwt. of whalebone.

The ports of the Yorkshire coast were important centres of the British whaling industry, and in the year 1821 61 whalers left Hull, 32 making for the area between Greenland and Spitzbergen, and the remainder for Davis Strait, on the west coast of Greenland. Whitby, too, had its whalers, and in 1814 eight ships took 172 whales, producing 1,390 tons of oil and 42 tons of whale-bone. Whitby's whaling trade died out in 1837. At King's Lynn, Norfolk, a reminder of the whaling industry formerly



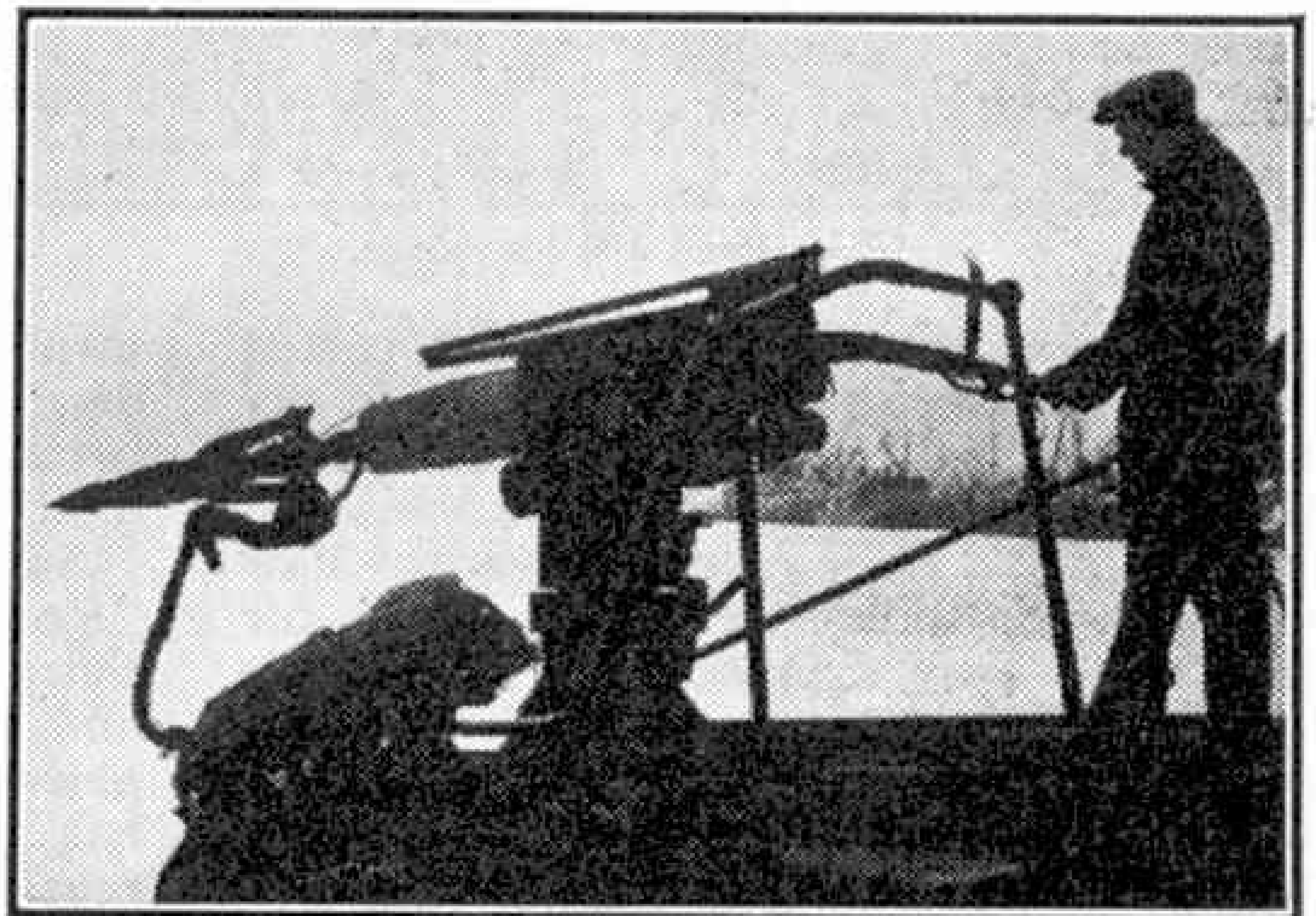
On the whale way at Durban.

some half dozen harpoons to be fired before it finally succumbs.

The greatest prize of the whaler undoubtedly is the blue whale, the largest mammal in the world. This often grows to a length of 100 ft. and is capable of yielding 30 tons of oil. In addition the flesh of this whale is suitable for human consumption, being non-oily and tender; and in Japan in particular there is a demand among the poorer classes for frozen and tinned whale meat. The fin whales are next in order of importance, after which come the humpback and sperm whales, both of which are among the most often caught.

Although the Antarctic is now the most prolific whaling ground in the world, and contributes a greater amount of oil and other products than all the other parts of the world put together, it is only during the past century that whaling has been developed in the southern seas. Prior to that all interest was centred in the Arctic, and it was there that the earliest exploits of the whalers took place.

Hunting with nothing more than hand-thrown harpoons and lances, and often in open boats, the early whalers faced incredible dangers when attacking their relentless foes. The story of the pioneer days of the whale industry is indeed one of intense hardships and perils endured with bravery and steadfastness.



Waiting for his quarry. A harpoon gunner in the bows of a chaser.

existing there is provided by the Greenland Fishery Museum.

On the opposite side of the country, Liverpool had its whalers actively engaged between the years 1750 and 1823, the peak year being 1788, when 23 whalers left Liverpool docks. Scotland too had

its whaling ports, at Aberdeen, Leith, Dundee and Peterhead, as well as various smaller places; and these continued to bring back their supplies of oil and bone during the first part of the last century.

The fierce hunting carried out by whalers of Holland and Norway, as well as those of Britain, during the first part of the 19th century, had a result that could only have been expected. So great was the slaughter among the creatures that the shortage of whales in the seas round Greenland and off Spitzbergen was inevitable.

A more startling cause brought about the final collapse of the British whaling industry, however. In 1830, when it was already obvious that whales in the Arctic

British hands or financed by British capital. Furthermore, the British Government maintain a whaling research station at Grytviken, South Georgia, and in normal times have two research vessels, the "*Discovery II*" and the "*William Scoresby*," constantly operating with the scientists.

Some time ago it became obvious that unless drastic steps were taken the extending whaling industry in the Antarctic would inevitably have the same end as that of the Arctic. The principal aim of those working at Grytviken and on the two research ships therefore is to supply the knowledge necessary to allow whaling to be continued on the maximum scale, while avoiding over fishing. This would

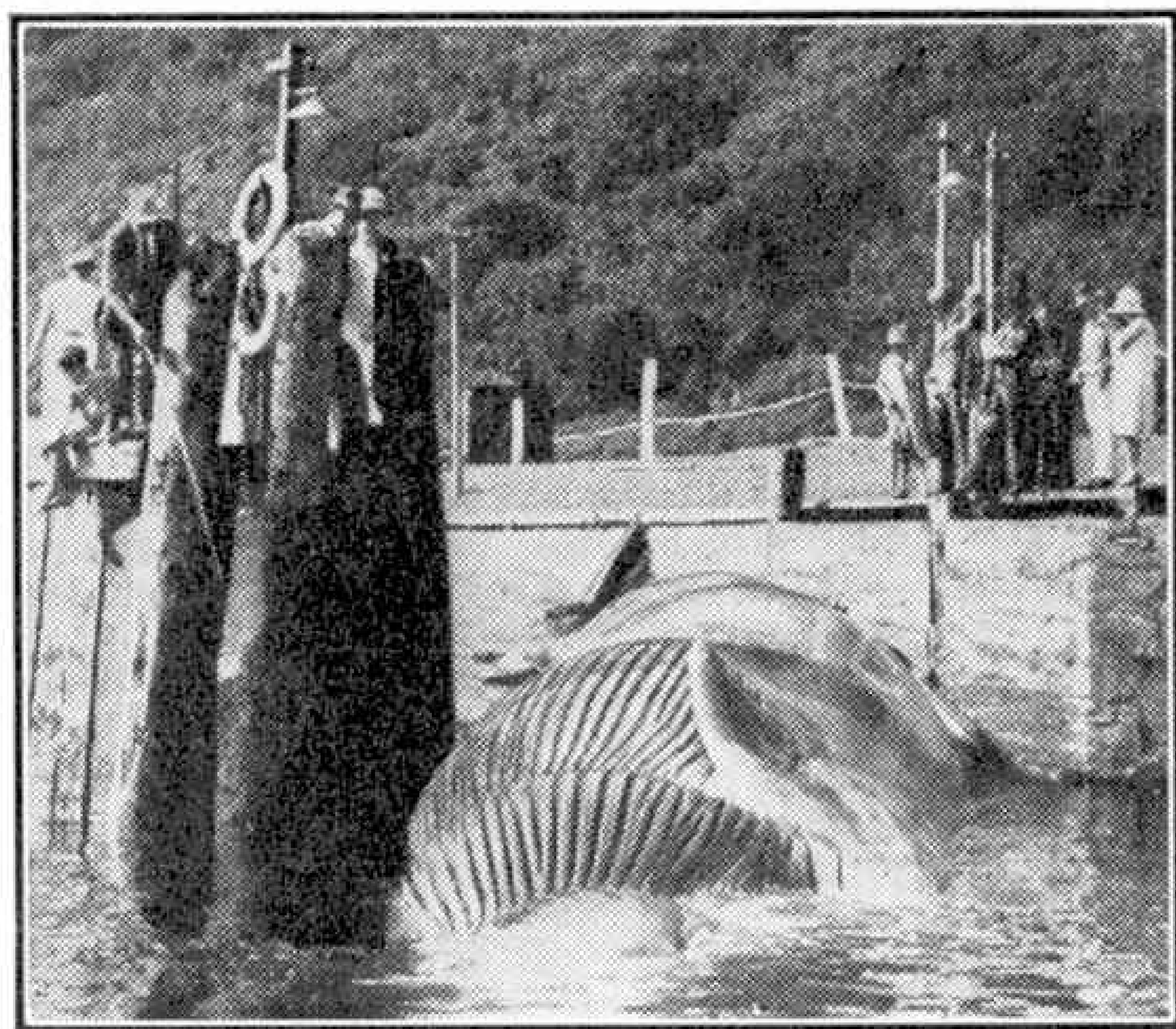
enable the industry to yield a high consistent revenue for many years, or even centuries.

The two ships employed on the work are painted battleship grey and are equipped with scientific gear of the latest type for deep-sea exploration, special bridges for survey work, and laboratories. "*Discovery II*" is mainly concerned with the conditions that affect the distribution of whales; "*William Scoresby*" is used largely in connection with the whale-marking schemes. The latter are of exceptional importance and interest. For many years the movements of whales were a source of wonder, for areas that at one time were prolific in whales suddenly appeared deserted and devoid of the creatures. It has now been discovered that these move-

ments are influenced not only by the distribution of food, but also by the temperature of the water itself and the distribution of the pack-ice.

Small stainless steel tubes engraved "*Reward paid on returning to Colonial Office*" are shot into the blubbers of whales, and records are kept of the times and places where the shots are fired. This plan has yielded valuable information with regard to the great journeys undertaken by these creatures. In all some 5,000 shots have been fired, and about one-twentieth of the marked whales have been recovered.

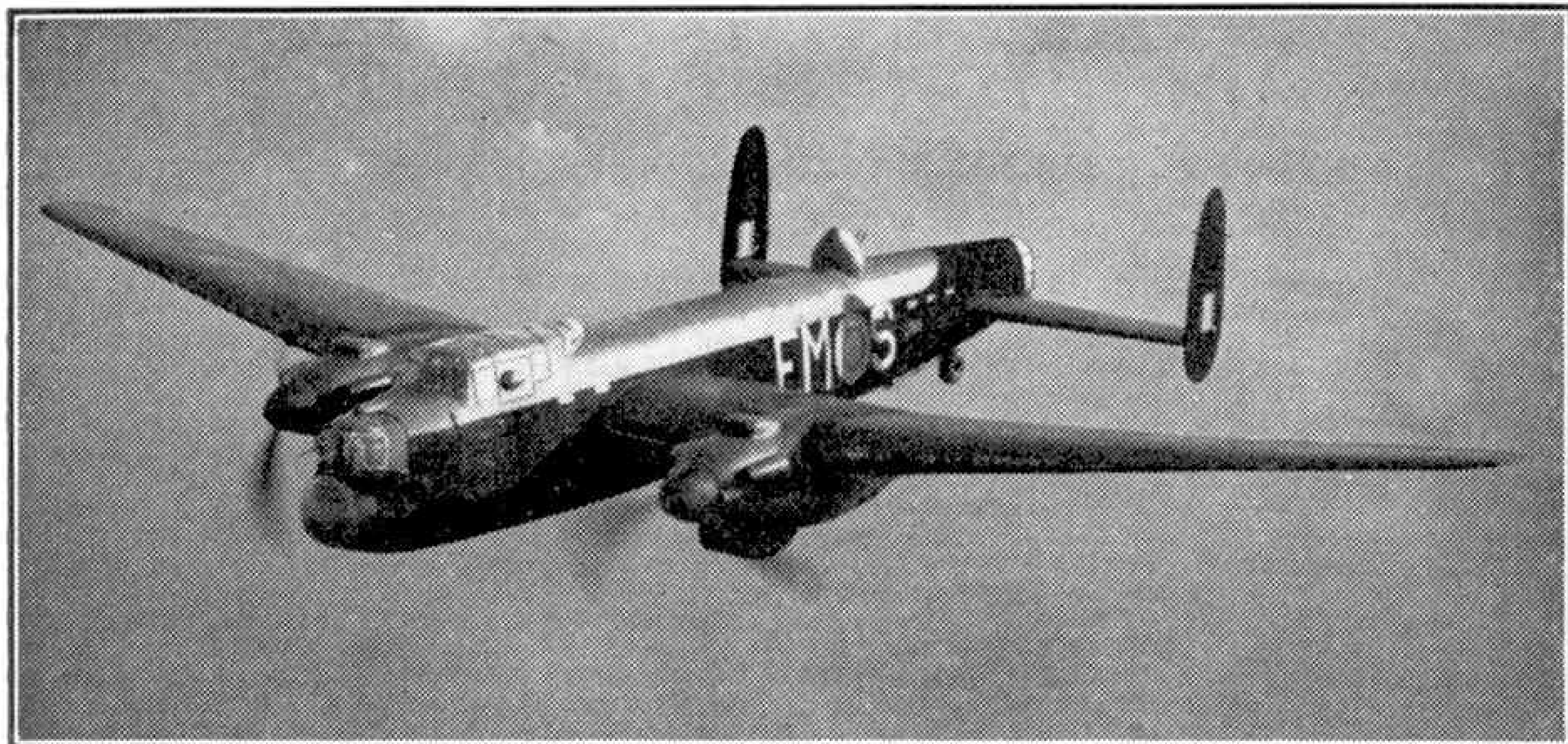
Some of the journeys undertaken by whales have been stupendous. One blue whale marked near Bouvet Island, was captured a year later at South Georgia, 1,180 miles to the west of the place where the shot had been fired.



A captured 100-ton whale.

were scarce, the creatures were reported in great shoals in the Davis Straits, in the hazardous seas between Canada and Greenland, and a large British expedition set out in the hope of rich rewards. Few of those who took part ever returned, for the boats were crushed in the ice-floes and men met with terrible deaths through starvation and frost-bite. Fortunes had been staked on the venture and its failure brought ruin to many. Few were inclined to finance future whaling expeditions, and before long what had been a prosperous industry dwindled into a state of utter despondency.

Although no whalers set out from British ports these days, this country has always maintained a great interest in the industry and, prior to the outbreak of the war, nearly half the world's whaling was in



Avro "Manchester," the largest twin-engined bomber in the world. Photograph by courtesy of "Flight."

The Avro "Manchester"

World's Largest Twin-Engined Bomber

THE third of the new types of heavy bombers being used by the Royal Air Force is the Avro "Manchester," shown in the photograph on this page. It is the largest twin-engined bomber in the world, and is not much smaller than the great "Halifax" and "Stirling" four-engined bombers, the other new types. It went into service for the first time on 3rd November, 1940, and since then, in company with "Halifaxes," "Stirlings," and other R.A.F. bomber aircraft, it has taken part in big raids upon targets in Germany and enemy occupied territory, with excellent results.

The new "Manchester" is the second Avro design to bear this name. The previous one was produced in 1918, and also was a twin-engined machine. The earliest machines of this 1918 design had two 320 h.p. A.B.C. "Dragonfly" radial engines, and a later version, the Mark II, was fitted with two 300 h.p. Siddeley "Puma" in-line water cooled engines. Both the Mark I and II versions were of 60 ft. wing span. The latest "Manchester" has two 1,760 h.p. Rolls-Royce "Vultures." A comparison of the power of these engines and those of the earlier machines gives some indication of how greatly aero engine performance has increased since 1918. The "Vulture" is a 24-cylinder, liquid cooled X-type engine and a very fine job. It develops a much

higher output than the well-known Rolls-Royce "Merlin" engine, used extensively in R.A.F. aircraft.

The "Manchester" can carry a heavy load of the biggest bombs. It is heavily armed, and has a 2-gun turret high up in the nose of the fuselage, a 4-gun turret in the stern, and a 2-gun one well aft on the top of the fuselage. In addition it has armour, but details of this are secret.

This fine bomber is a middle wing monoplane. The wing span is 90 ft. 1 in., only 9 ft. less than that of the Short "Stirling," and the outer sections of the wing sweep back sharply to the tips. The wide tail unit has twin fins and rudders at the ends of the tapered tailplane. When the "Manchester" was first introduced the fins and rudders were smaller than those of the latest machines of the type, and there was a large fin mounted on top of the fuselage stern. Some of the bombers with this triple-fin are still in service.

The 70 ft. long fuselage is of oval section. In the cabin the first and second pilots sit side by side, the navigator sits behind, and with his back to the first pilot, and farther aft on the same side is the wireless operator. The bomb aimer's position is on a lower level and right in the fuselage nose, where there is a sloping optical-flat glass panel through which to obtain an undistorted view of the target.

The "Yorkshire Pullman"

A Famous L.N.E.R. Luxury Express

By R. A. H. Weight

LIMITED expresses composed exclusively of first and third class Pullman cars were introduced on the L.N.E.R. in 1923, which was the year in which the grouping of the British railways became operative. Two magnificent six-car trains, built to the order of the Pullman Car Company Ltd. at a cost of over £60,000, were placed in service between London (King's Cross), Leeds (Central), Harrogate, Darlington and Newcastle, under the title "*Harrogate Pullman*," providing a mid-day service in each direction. These expresses provided, for the first time, daily non-stop runs over the 185½ miles between King's Cross and Leeds on a schedule requiring an overall average of 54.3 m.p.h., which was considerably faster than any timing then current over the route. The venture was the first example of the L.N.E.R. policy of running

"Third Class Car No." on the sides. Tables for four are provided on one side of the centre gangway, and for two on the other. Upholstery is of athol-leather, dark red or dark green, and a high standard of decoration and equipment is provided. Some of the cars have kitchens and pantries at one end, meals being served to order at all seats; others have guard's brake and luggage compartments at one end provided with the usual main line gear. All are finished externally in normal times in the standard Pullman colours of cream and umber, with gold or yellow lining-out and scrollwork.

By stages the itinerary was extended to include Edinburgh and Glasgow. For nearly three years there were non-stop Pullman runs between Harrogate and King's Cross, almost 200 miles, using the hilly Church

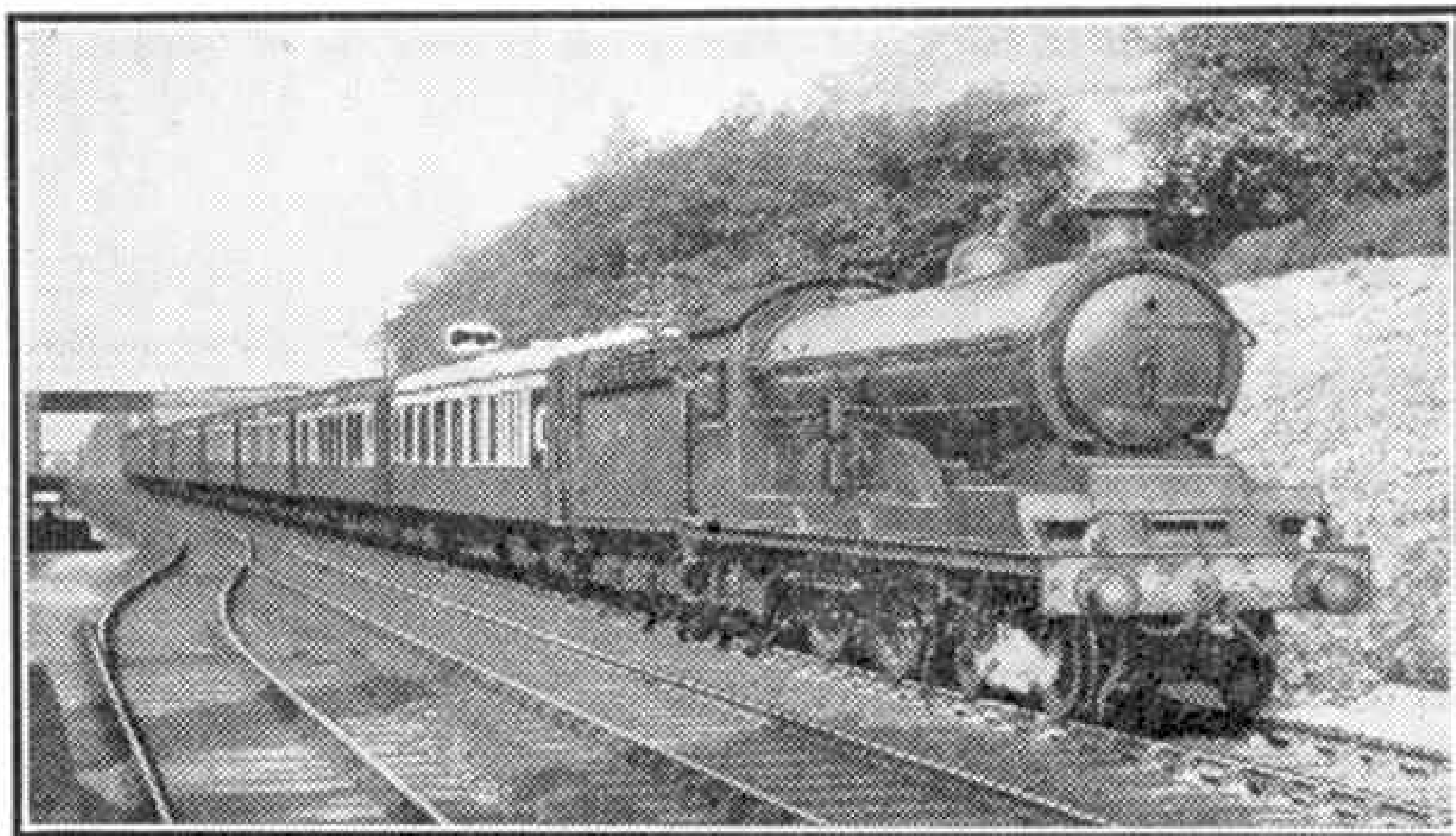
Fenton route, including a short section of L.M.S. Central Division metals, from Doncaster, avoiding Leeds. From 1928 the Anglo-Scottish Pullman service, appropriately renamed "*Queen of Scots*" and described in the June 1928 issue of the "*M.M.*" returned to the Leeds route, again running without stop each way between that city and King's Cross, the northern terminal being Glasgow. Harrogate, Darlington, Newcastle, Drem (for North Berwick) and Edinburgh were served *en route*. Two handsome new seven-car trains were allocated to this working—the longest continuous all-Pullman run in Britain.

Meanwhile the "*Harrogate Pullman*" cars, after a period of running from London to Leeds and Bradford, returning from Harrogate at midday, formed the popular "*West Riding Pullman*," which was a reconstituted service based on Newcastle and running to

King's Cross and back every weekday, calling at Darlington, Ripon, Harrogate, Leeds and Wakefield. The new stop at Wakefield permitted two through cars from Halifax and Bradford to be worked by the shortest route to join the main train there, thus tapping fresh fields. The southbound express was for a long period the fastest on the former Great Northern system, covering the 175½ miles Wakefield-King's Cross in 183 min. at 57.7 m.p.h.

Frequently lost time was made up, and many remarkable runs were made with these trains prior to 1936 by the Ivatt "Atlantic" locomotives and their keen crews. On one amazing occasion after the considerable accelerations of 1932, the southbound "*Queen of Scots*" left Leeds 18 min. late, yet the whole of this time was recovered by No. 3284, hauling 295 tons, by dint of an overall average speed of 63.7, all slacks and gradients notwithstanding. Over 107 miles of the 186-mile run a mean rate of 70 m.p.h. was sustained by that 30 year-old 4-4-2, modernised by the fitment of high degree superheater, piston valves and larger cylinders. Indeed, the Pullman expresses created an enviable reputation for speed, comfort and punctuality, just as the streamlined trains also did in more recent years, when far greater strides had been effected in locomotive power as well as regards accelerated timings.

The "*Yorkshire Pullman*" made its bow at a time of further speeding-up in 1935. It was a direct and continuous descendent of the "*West Riding Pullman*,"

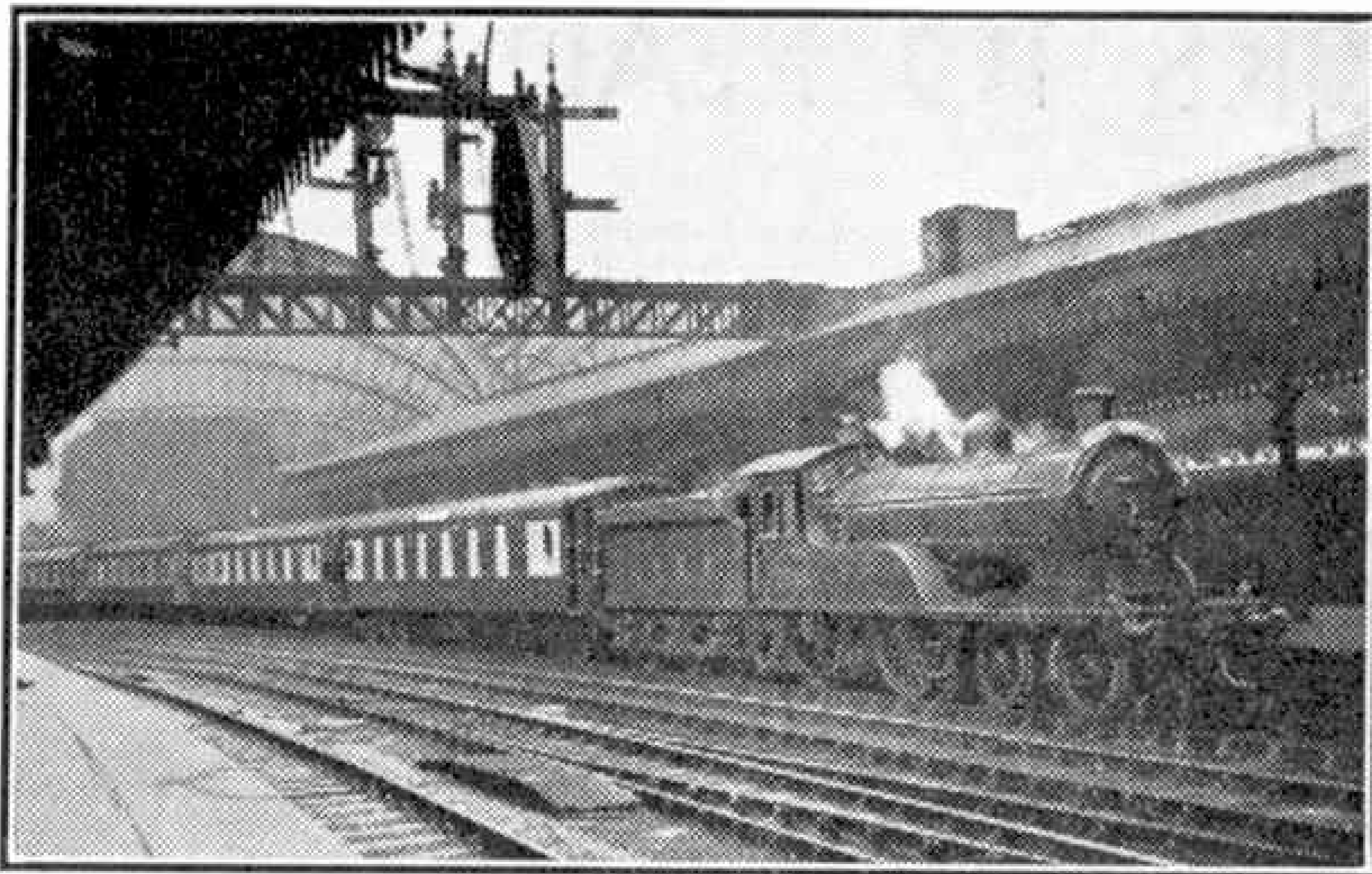


Up "*Queen of Scots*" passing Croft Spa. L.N.E. 4-4-2 No. 2212, formerly N.E. Class "Z." This photograph and the lower one on the next page are by courtesy of the L.N.E.R.

fast, luxurious limited-load services between London and principal centres, which culminated in the famous high-speed streamlined trains (formed of the company's own stock) which took the railway world by storm during 1935 and following years. It proved an immediate success.

The Pullman Car Company in such cases contracts with the railway to supply a given number of its cars completely equipped and staffed, for a period of so many years; and in return receives all profits from the sale of food, refreshments and sundries in the cars as well as the supplementary fares that are charged for Pullman travel based on mileage. The railway takes the passenger ticket revenue in the ordinary way and provides locomotive power, engine-men and guards as for other trains, but no rolling stock, except a brake van sometimes.

Some of the earlier Pullmans were twelve-wheeled, though the majority seen on the East Coast route were eight-wheelers having new pattern steel bogie frames with a long, 10 ft. wheelbase. The cars are about 64 ft. in length, and in view of their exceptional appointments are very heavy, weighing 40-41 tons on the average. First-class Pullmans carry names in bold yellow lettering on the lower side panels. Travellers therein are accommodated two at a table in arm chairs upholstered in velour or velvet of various shades to tone with the interior scheme of decoration and panelling. Velvet pile carpets are also provided to match. Third-class cars bear the legend



Up "Yorkshire Pullman" (Harrogate portion) in York station. The engine is "D20" 4-4-0 No. 2014, ex N.E.R. "R" Class. Photograph by W. B. Greenfield.

which it replaced. The important East Riding City of Kingston-upon-Hull, usually known as Hull for short, the central city of York, and the famous S. Yorks. town of Doncaster were however added to the train's scope, so that the new comprehensive title was now more appropriate.

Newcastle and Darlington no longer enjoyed a double daily Pullman service with London (they were then catered for by the "*Silver Jubilee*"), as Harrogate became the northern terminal of the main section; the departure from that Spa being at the original hour of 11.15 a.m., but now following a new route via York, not Leeds, to Doncaster. After slowing through picturesque Knaresborough, a fast run was made through open country to the East Coastal main line at Poppleton Junction, and so into the great station at York where a 5-min. halt was made. Leaving again at 11.45, very smart travelling was required on the level to cover the 32½ miles to Doncaster in 36 min. including the very slow running necessitated past Selby. Meanwhile other portions had been making their way to Doncaster. The new service from Hull, usually consisting of two cars, was timed very speedily; the route to the main line is flat but there are service slacks, so that 45 min. for 40½ miles meant mile-a-minute running in suitable places. Two further cars had travelled through the busy "Woollen Towns" area of the West Riding from Halifax, Bradford and Wakefield, but after 1937 these were attached to an ordinary train on the forward journey.

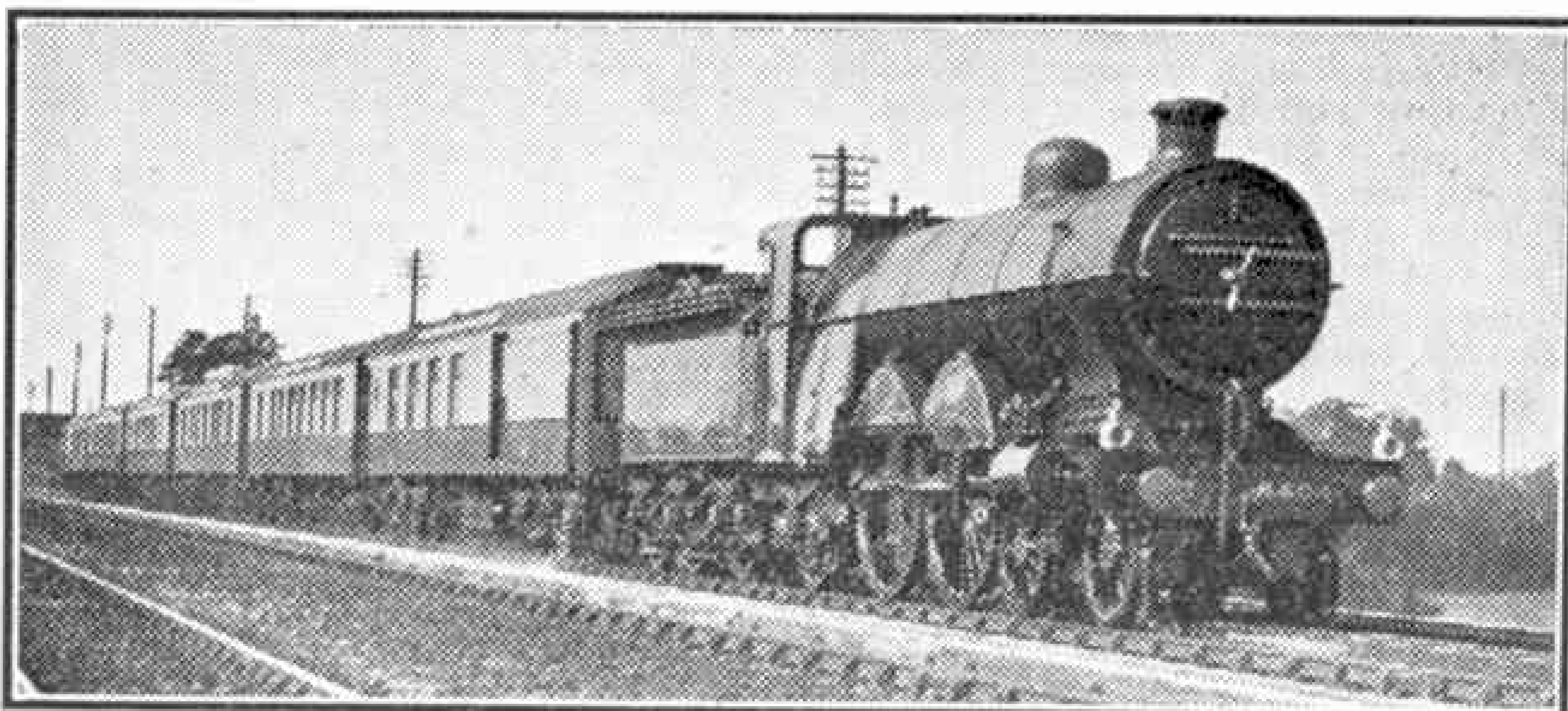
The complete "Yorkshire Pullman," consisting of nine cars and weighing about 385 tons including passengers, luggage, staff and stores, was timed to set out from Doncaster at 12.25 and reach King's Cross at 3.0 p.m., covering the 156 miles along the undulating Great Northern main line in 155 min., but as the margin for marshalling and coupling up was rather tight, the start was sometimes a few minutes late. This gave the "Pacific" or "Green Arrow" an opportunity to display that time-recovering enterprise which characterised the G.N. section in the piping times of peace. All three classes of Gresley 4-6-2, "A1," "A3," "A4," took

turns on this duty. The same engine and men worked the Pullman from Doncaster to London and back, thus covering 312 miles in a day at an average speed of 60 m.p.h. or over, and making no intermediate stops.

When it was learned that "Green Arrow" engines of the now well-known and numerous "V2" 2-6-2 class were sometimes appearing on this long and fast express turn, a good deal of interest was aroused among locomotive enthusiasts, some of whom even doubted whether they could keep time. They need have had no such fears! The "V2s" are large, powerful, modern engines capable of tackling almost anything. That their smaller driving wheels (6 ft. 2 in. compared with the "Pacific" 6 ft. 8 in.) proved no deterrent to high speed was astonishingly demonstrated one Saturday in 1939, when No. 4817, working the southbound "Yorkshire Pullman," covered the 17½ miles down Stoke bank at an average of 86 m.p.h., and almost

certainly touched a maximum of 93! Although 4 min. were lost by signal checks, over 3 min. were knocked off this 60.4 m.p.h. booking by the 2-6-2 in the able hands of Driver Sherriff.

In this direction of running, which is slightly the harder, streamlined "Pacifics" sometimes made the schedule look absurdly easy, though their vast power was by no means fully exerted. No 4494 "*Osprey*" one afternoon, in recovery of a late start, completed the 156-mile run from Doncaster to King's Cross in 143 min. or 142½ min. net, making up 12½ min. and maintaining a start to stop average of 65.7. Maxima of 86 were twice touched, while it was fine work to ascend long 1 in 200 banks hauling 380 tons with no lower rate than 61 m.p.h. past Abbots Ripton or 58 at Stevenage. Soon after creating the world steam speed record by attaining 126 m.p.h., No. 4468 "*Mallard*," when on the same run, achieved a similar net time of 142½ min. when allowance was made for delays, actually regaining over 6 min. on overall time. These fine journeys were logged by Mr. J. C. Thorne.



Up "Scotch Pullman" passing over Langley Troughs (Herts.) L.N.E.R., in 1927. Modernised G.N. "Atlantic" No. 4404.

During a stay of 1½ hours in London, the "Yorkshire Pullman" was cleaned and replenished with gas and water as well as stores. At 4.45 p.m., with a fresh load of passengers, and engine, footplate and train crews "refreshed," the run back to the north commenced and afternoon tea was served. The cover of this issue shows "A1" 4481 "*St. Simon*" making the northbound trip on which the route was exactly that hitherto followed by the "*West Riding Pullman*," via Leeds and not York; (Continued on page 266)

BOOKS TO READ

Here we review books of interest and of use to readers of the "M.M." With the exception of those issued by the Scientific and Children's Book Clubs, which are available only to members, we can supply copies of these books to readers who cannot obtain them through the usual channels. Order from Book Dept., Meccano Limited, Binns Road, Liverpool 13, adding 6d. for postage.

"CHURCHILL"

By R. H. KIERNAN (Harrap. 5/- net)

Nothing could be of greater interest to "M.M." readers than the story of the man who has led the British people through the darkest days of the present war to the time when we can begin to see daylight. It is an entrancing story, for Mr. Churchill's life has been astonishingly varied and adventurous. Mr. Kiernan has written his account especially for younger people.

As a boy Churchill was straightforward and unaffected, and loved fun. Even then he showed self-reliance, courage, and ability to think and act quickly, and these qualities afterwards were of the greatest service to him in many dangers and difficulties. As an Army officer or war correspondent he saw service in Cuba, the North West frontier of India, and South Africa. Everywhere he was himself in the thick of the fighting, often in the greatest danger, and in South Africa he made a sensational escape from captivity.

In the meantime Churchill had shown another side of his character by his entry into politics; in election campaigns that he carried on with the same zest and vigour as he showed in the field, and in the House of Commons, where his immense capacity gained him high office in successive governments. He will always be remembered as the man who prepared the British Navy for its great share in the war of 1914-18, and saw to it that it was concentrated ready for action when the war storm burst. His foresight indeed has always been almost uncanny.

He was one of the few who during the 30s saw war on a more terrible scale than ever looming ahead, and he persisted in his warnings of this to the country in spite of ridicule and opposition. When the blow fell it was to Churchill that we had to turn to provide us with the leadership required to meet it, and Mr. Kiernan presents a fine picture of him as the man who inspired Britain and the Empire to struggle forward through "blood, toil, tears and sweat," to save the world from Nazi domination.

The book has seven full page illustrations.

"GRIM AND GAY"

By GUNBY HADATH
(Lutterworth Press. 6/- net)

An exciting story finely told can always be expected from Mr. Hadath, and this is one of his best. It has the advantage of being thoroughly up-to-date, for it is a yarn of a public school that had already been severely damaged by German bombs when the story opens. We have thrills of further air raids, with fire spotting, spy hunting and Home Guard exercises to add to the excitement. In the centre of all this, and of the ordinary school life that in spite of all disturbances continues throughout, we have young Cranmer, a highly strung new boy, who first gets into trouble because of his nervousness, but in the end shows unexpected courage during a raid by fighting a fire that threatened further destruction. The spy mystery too is solved in a very unexpected manner, and the story ends on a note of satisfaction.

Owing to wartime difficulties, it is impossible to guarantee prompt delivery of books ordered as described at the head of this page, but every effort will be made to ensure speedy despatch.

"STAMP COLLECTING"

By STANLEY PHILLIPS
(Sampson Low. Price 7/6)

Mr. Phillips is the editor of "Gibbons Stamp Monthly" and author of several books on stamp collecting topics. His knowledge of stamps is unrivalled, and as in addition he knows how to write interestingly, this book, now published in its third edition, is a splendid guide and wonderful value.

It is impossible in a short review to do more than suggest the range of the book. The first section deals with posts and postage stamps, giving us the story of the post from almost pre-historic days, explaining how stamps came into being, and then describing the making and use of stamps, and dealing with overprints, surcharges, designs, inscriptions, colours, postmarks and reprints, forgeries and fakes. Then the author turns to the actual collection, telling his readers what to collect and how to gather it, how to identify his stamps and how to arrange them. After this he reviews the world's stamps in four specially attractive chapters. Finally we have a section dealing with the hobby, suggesting how stamp clubs can arrange interesting meetings, describing great collections and famous collectors, and giving interesting revelations of the

activities of dealers. Two supplementary chapters are included in this edition, giving in tabular form the meaning of overprints and of the most interesting foreign inscriptions found on stamps.

The book is illustrated by 64 whole page plates.

"RADIO HANDBOOK SUPPLEMENT"

(Incorporated Radio Society. 2/6)

In our January issue we reviewed the latest edition of "The Amateur Radio Handbook," published by the Radio Society. It is impossible to prepare a third edition at present, and this supplement has been issued in order to satisfy the demand for further up-to-date technical information.

The editor of the supplement and his colleagues have performed a very useful service indeed. Their chapters cover a wide range of topics, from fundamental radio principles to radio direction finding and plotting, radio mathematics and the cathode ray oscillograph. There is a special chapter on the requirements of service operators on active field operations, and hints on the emergency working of radio equipment. Finally come additional useful tables and formulae. Many useful diagrams are included.

"TRICKS OF THE MASTERS"

By WILL GOLDSTON (Routledge. 10/6)

Mr. Goldston's book is meant as much for the amateur as for the professional, and gives interesting details of many of the latest tricks. These include card manipulation, stage illusions, handkerchief tricks and so on, and every move of each is clearly shown in photographs or well drawn diagrams. The book indeed is a mine of valuable information, but it is emphasized that continued hard work and practice is necessary for complete success in performance. An interesting section deals with some experiences of the author with spirit mediumship, and there are good stories of famous conjurors and illusionists.

The Life-boat Service and the War

EVEN in peacetime the long coast of the British Isles is stormy and treacherous. In wartime the dangers of the sea are increased enormously by mines, bombs and torpedoes, but the story of the Royal National Life-boat Institution during the last 30 months shows that life-boatmen continue to keep ceaseless watch and to answer every distress signal, whatever the hazard to themselves. Since the outbreak of the war they have rescued 4,630 lives, a number that is twice as many as in the last war and represents five lives for every one rescued in the 20 years between the two conflicts. These and other thrilling details of the great work of Britain's life-boatmen are given in *"The Life-boat Service and the War,"** recently published by the Royal National Life-boat Institution.

The variety, difficulties and perils of the daily work of our life-boatmen have been immensely increased by the coming of the aeroplane, for nearly a quarter of the wartime launches have been to aeroplanes, and many of the others to ships concerned in attack from the air. Many examples are given in the book of this new aspect of the service. When bombing raids on this country were at their height life-boats often went out, with no lights to guide them, when all other shipping was forbidden to move. One was struck by splinters from a bomb when engaged in rescue work, while another bomb struck a pier close by as her crew came ashore; yet she went out twice again that night. During the Battle of Britain the Weymouth life-boat was launched to the rescue of an armed yacht and was later informed by wireless that an aeroplane had crashed. In the rough sea she could not find either, but the search was continued, although overhead were swooping aeroplanes and bursting shells, with the rattle of machine guns, while bullets and fragments of shell were falling all around. Then came a more terrible missile, for a German aeroplane crashed into the sea only a few yards away. The life-boat immediately turned towards the wreck, but only one man could be saved.

The R.A.F. has its own launches all round the coast, ready to go to the rescue of airmen forced down in the sea. These launches have a speed of 40 knots, but when the seas are high it is the life-boats that are called upon to rescue the crews of bombers returning from raids on German ports and factories, and of other aircraft that have been forced down. On one occasion what seemed to be a raft was seen in a rough sea off the Norfolk coast. The life-boat put out and found, not a raft, but a rubber dinghy with five Polish airmen on board. Their

bomber had come down in the gale and they had been drifting and tossing in their tiny dinghy for 17 hours without food.

Life-boats themselves have been machine gunned by German aeroplanes. Two life-boat stations have been destroyed by bombs, but both again are open. Life-boats have often penetrated minefields on their errands of rescue, and have seen vessels blown up by mines in positions that they themselves had occupied but a few moments earlier. Whatever the risk they

have always carried on, however. The call for them may come at any hour, and there may be little time between successive demands. This does not deter them, as Coxswain Patrick Murphy and the crew of the Newcastle, Co. Down, boat showed. A little more than a year ago they went out in a gale, with blinding snow, to the help of a stranded ship, and only a few days later they were called upon to rescue men from another ship also helpless in a gale. For this splendid work, Coxswain Murphy was awarded two bronze medals, won within the short period of 12 days. Our illustration, reproduced from the book, shows H.R.H. The Duke of Kent, President of the Institution, pinning a bronze medal on this heroic life-boat coxswain.

Scarcely a year later Coxswain Murphy was awarded the gold medal, the V.C. of the life-boat service, for superb seamanship and daring. In a gale last January a steamer struck a reef of rocks, on which her stern remained fast, tremendous seas breaking right over the bridge.

Coxswain Murphy took the Newcastle life-boat to the rescue, and discovered that he could only get alongside by passing between the rocks and the steamer's bow, through an opening little wider than the boat herself. There were more men on the steamer than the life-boat could safely hold, but as it would be impossible to return he took them all off, the boat then being so loaded that her deck was awash.

There was no room to turn, and the coxswain did not dare to drive the life-boat stern first through the narrow opening by which she had come. There was only one way out, and to attempt it seemed an act of almost reckless daring. This was to take the life-boat right across the reef on which the steamer's stern was fixed. Waves were crashing on it, and it was a surge of broken water that might swirl away at any moment and leave the life-boat to smash herself on the rocks. The coxswain chose his moment well, however, and brought the life-boat safely across the reef and out of the extreme danger.

**"The Life-boat Service and the War: The First Thirty Months."* Royal National Life-boat Institution, Life-boat Depot, Boreham Wood, Herts. Price 1/- post free.



The Duke of Kent, President of the National Life-boat Institution, pinning on the bronze medal awarded to Coxswain Patrick Murphy, who created a record by winning two bronze medals and a gold medal within a year.

Railway News

The New S.R. General Manager

Mr. E. J. Missenden has been confirmed in the appointment of General Manager of the S.R. that he has held since July 1940, when Mr. G. S. Szlumper, who then held the position, was appointed Railway Control Officer at the Ministry of Transport. A portrait of the new General Manager is reproduced on this page.

Mr. Missenden entered the service of the former South Eastern Railway in 1899 and has occupied successively various important posts on that railway and on the S.R., chiefly in the traffic and operation departments. In 1933 he was made Docks and Marine Manager at Southampton, and three years later he became Traffic Manager, in charge not only of the operation but also of the commercial side of the S.R.

The new manager's experience of railway working has been extremely wide, and his knowledge of the intricate task of bringing workers into and out of London, the most intensive service in the world, is second to none. As Traffic Manager of the S.R. in the early days of the war he was responsible for the despatch of the British Expeditionary Force with all its men and stores to France, and not many months after he took up the position of General Manager he was faced with the task of arranging the transport of the men evacuated from Dunkirk, for whom the coast line served by the S.R. was the reception area. This necessitated a railway movement unequalled by anything previously experienced, and for which no detailed plan could be prepared, and its spectacular success was due to Mr. Missenden's leadership and organising capacity. Owing to its position the S.R. bore the brunt of the raids in the Battle of Britain that followed, and the General Manager's great operating experience enabled him to give expert guidance to those who worked wonders in getting trains through when bomb damage occurred.

L.N.E.R. "04" Class Engines

We illustrate this month one of the L.N.E.R. "04" class superheated 2-8-0 mineral locomotives of the type originally introduced by Mr. J. G. Robinson for the former Great Central Railway. During the war of 1914-18 this design was chosen as a standard for service with R.O.D., that is the Railway Operating Division of the Royal Engineers, and several hundreds were built on Government account by various British firms. After the armistice, the bulk of those which were returned to this country, or were under construction at the time, were ultimately taken over by the L.N.E.R., which possessed 416 examples in 1938. The Great Western purchased 100, some were temporarily employed on constituent sections of the L.M.S., and others went to China and South Australia. Last year, as we reported at the time, it was officially

announced that 92 "04" engines had again been requisitioned for overseas military service, in the Middle East, and that certain modifications were being made in fittings to suit local conditions.

The locomotives have two outside cylinders 21 in. in diameter with a 26 in. stroke, boiler pressure 180 lb. per sq. in., combined heating surface of 1,745 sq. ft. and driving wheels 4 ft. 8 in. in diameter. The maximum weight on an axle is only just over 17 tons, but with a tractive effort of 31,326 lb. considerable power is available for general freight service. Some of those engines of this class still at work on the L.N.E.R. have been provided with round-topped 5 ft. 6 in. boilers of standard Gresley pattern in place of the G.C. 5 ft. boiler with Belpaire fire-box, providing increased heating surface and much greater superheater area, which should make for greater economy and efficiency.



Mr. E. J. Missenden, O.B.E., General Manager of the Southern Railway. Photograph by courtesy of the S.R.

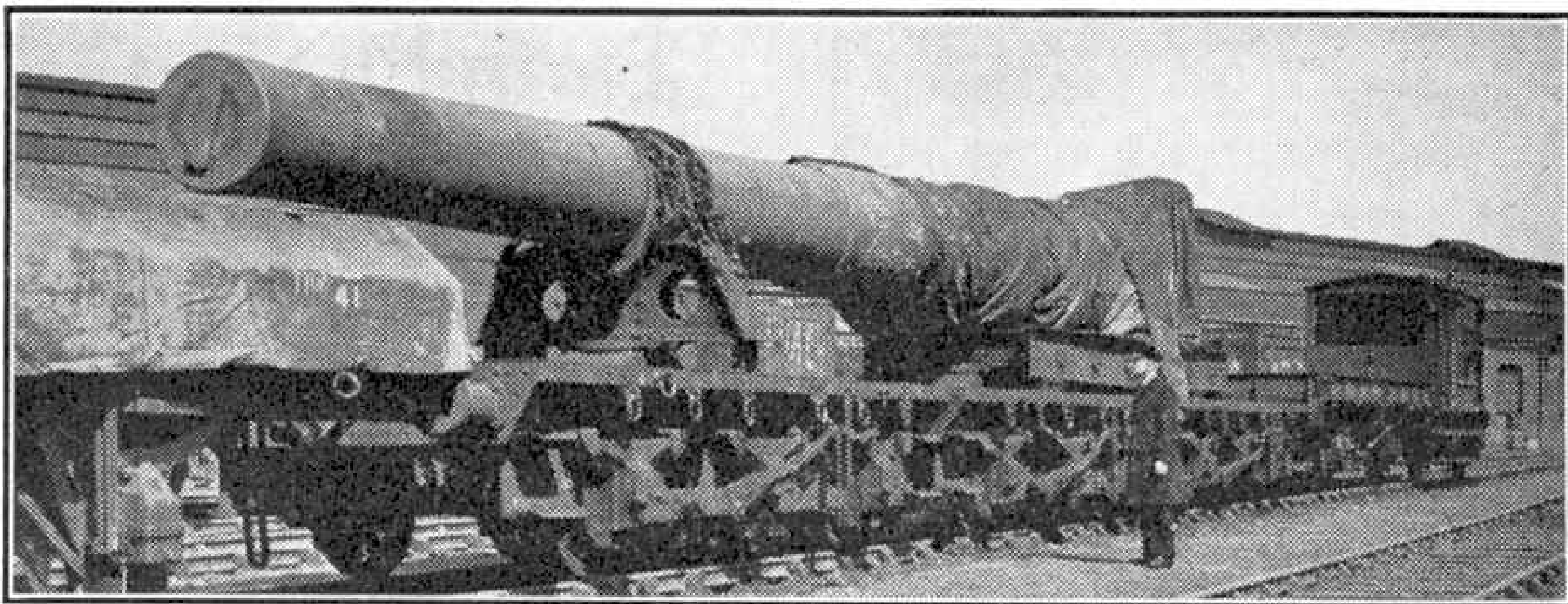
Fast Running on Glasgow-Ayrshire Lines

The route of the former Glasgow and South Western Ayrshire coast lines between Glasgow and Ayr or Ardrossan is beautifully graded, and carries a considerable residential, coastal and freight traffic. Fast timings and high speeds have been the rule for a number of years, while interest has been enhanced by the introduction of modern 4-6-0 and 2-6-4T express engines. The Glasgow and South Western 4-6-0 and 4-4-0 types, once painted bright green, have entirely disappeared.

During 1938-9 there were 45 min. timings over the 41½ miles between Glasgow, St. Enoch, and Ayr, including service slacks through Paisley (Gilmour St.) and outside Glasgow. In the north-bound direction the morning peacetime express from Ayr hauled by a "5XP" 4-6-0 "Jubilee" 3-cyl. engine with nine corridors, 315 tons full, on several

occasions attained even time within 25 miles of the start, passing Paisley, 33½ miles, in round about 33 min. after attaining maximum speeds of 75 to 80 m.p.h. between Lochside and Milliken Park, where there is a slightly falling gradient. The evening return train with one coach less frequently improved on the 45 min. schedule. The 41½ miles have been covered start to stop in just over 42 min., a steady 63 m.p.h. having been maintained up the 1 in 449 rise.

Present timings over the route are smart for wartime, although stops are usually more frequent. In actual fact some decidedly fast travelling has been recorded recently by Ayr as well as Ardrossan business expresses. The route to Ardrossan diverges from the main Glasgow-Ayr-Stranraer tracks at a junction near Kilwinning that is laid out for high speed running. A 2-6-4T with eight bogies covered the 23½ miles from Paisley to Ardrossan (South Beach) in 26 min. 53 sec. start to stop, compared with the best Class "2" 4-4-0 run with a lighter load in 28½ min., timed by the same reader. "5XP" 4-6-0 No. 5578 "United



One reason why the public are asked not to travel. Photograph by courtesy of the G.W.R.

Provinces" with a packed 7-corridor train weighing 250 tons lately covered the 19 miles from Kilwinning to Paisley in 19 min. start to stop, after a late start, in the course of a Girvan-Glasgow journey. Good work also has been done along the route in recent years by 2-6-0 and Compound 4-4-0 engines.

G.W.R. Locomotive News

Several different classes of 4-6-0 locomotives have recently been noted on through passenger trains from the Didcot-Newbury-Winchester single line to Southampton and Portsmouth, which run over S.R. metals from Shawford Junction and so on via Eastleigh. These had previously been almost exclusively in the hands of "Bulldog" and other older 4-4-0 types. Nos. 7802 "*Bradley Manor*" and 7915 "*Fritwell Manor*," of the smaller-boilered 5 ft. 8 in. mixed traffic class introduced in the last few years, were among the 4-6-0s at Southampton on such duties, while "Saint" No. 2980 "*Cœur de Lion*" had worked a similar turn from Newbury to Portsmouth. An S.R. Drummond 0-4-4T has been working a passenger duty on to the G.W. Newbury line.

Some interesting examples follow of wartime intensive use of locomotives, whereby those of varying types and hailing from far-flung sheds may be pressed into service while on hand at a given depot, and may be operated in a totally different direction from that of their home location.

The 11.15 a.m. Paddington-Bristol-Taunton express was hauled during one week by a London "King," two different London "Castles," a Weymouth "Star" and a Bristol "Star." The 2.20 p.m. slow to Swindon featured "Halls" shedded at Penzance, Paddington and Reading: "Castles" belonging to Reading and Taunton, and a London "King." On the 4.30 to Reading were seen Reading and Cardiff "Halls," a Newport "Saint" and a Swindon "Star," as well as variations from the 4-6-0 wheel arrangement in the shape of a Reading 2-6-0 and 2-6-2T.

The 10.58 a.m. arrival in London from Reading, which is part of a freight working, had 2-6-0s from Reading, Pontypool, Banbury and Birkenhead sheds! Among other locomotives from unexpectedly far-flung quarters that came in at the head of the 9.46 a.m. from Henley were a Chester "Hall" and a Plymouth "Castle." These observations were all made within the course of one week.

New 2-6-4 Tank Engines on the L.M.S.

More new Stanier 2-6-4Ts are appearing bearing numbers 2663-72. Engines of this type have been working more in the Nottingham area recently together with the smaller 2-6-2s.

"Royal Scot" 4-6-0s have been running over the steeply graded Leeds-Carlisle main line, which for so many years saw nothing larger than the simple or compound 4-4-0 classes standardised by the former Midland Railway. In those days there was much double-heading.

Further class "8F" 2-8-0 locomotives noted bear numbers 8142-4 and 8176-82. Surviving engines of the once famous and numerous "Prince of Wales" London and North Western inside cylinder 4-6-0 class are still seen on slow main line passenger work between Stafford and Northampton, and also from Northampton to Euston and back on Sundays.

"Locomotives for Russia" Week

An unusual target selected by the war savings group at a locomotive depot in the Midlands recently was one of the heavy L.M.S. type 2-8-0 locomotives as dispatched for service in the Middle East. In the course of one "Locomotives for Russia" week £544 was contributed. Members of the group watch their engine being "built" by means of a large photograph covered



L.N.E.R. 2-8-0 No. 6214, one of the Class "04" engines of former G.C. design. Photograph by courtesy of the L.N.E.R.

by a squared transparent sheet, each square being shaded out as the sum it represents is subscribed.

New Track Recording Car for India

A standard bogie coach has recently been converted by the Great Indian Peninsula Railway to a track recording car for the purpose of detecting and recording defects in the track, in much the same way as is done by the "Hallade" apparatus in this country and elsewhere. The coach has staff accommodation, a verandah at one end, and an instrument room in which are the detectors, recorders, etc.

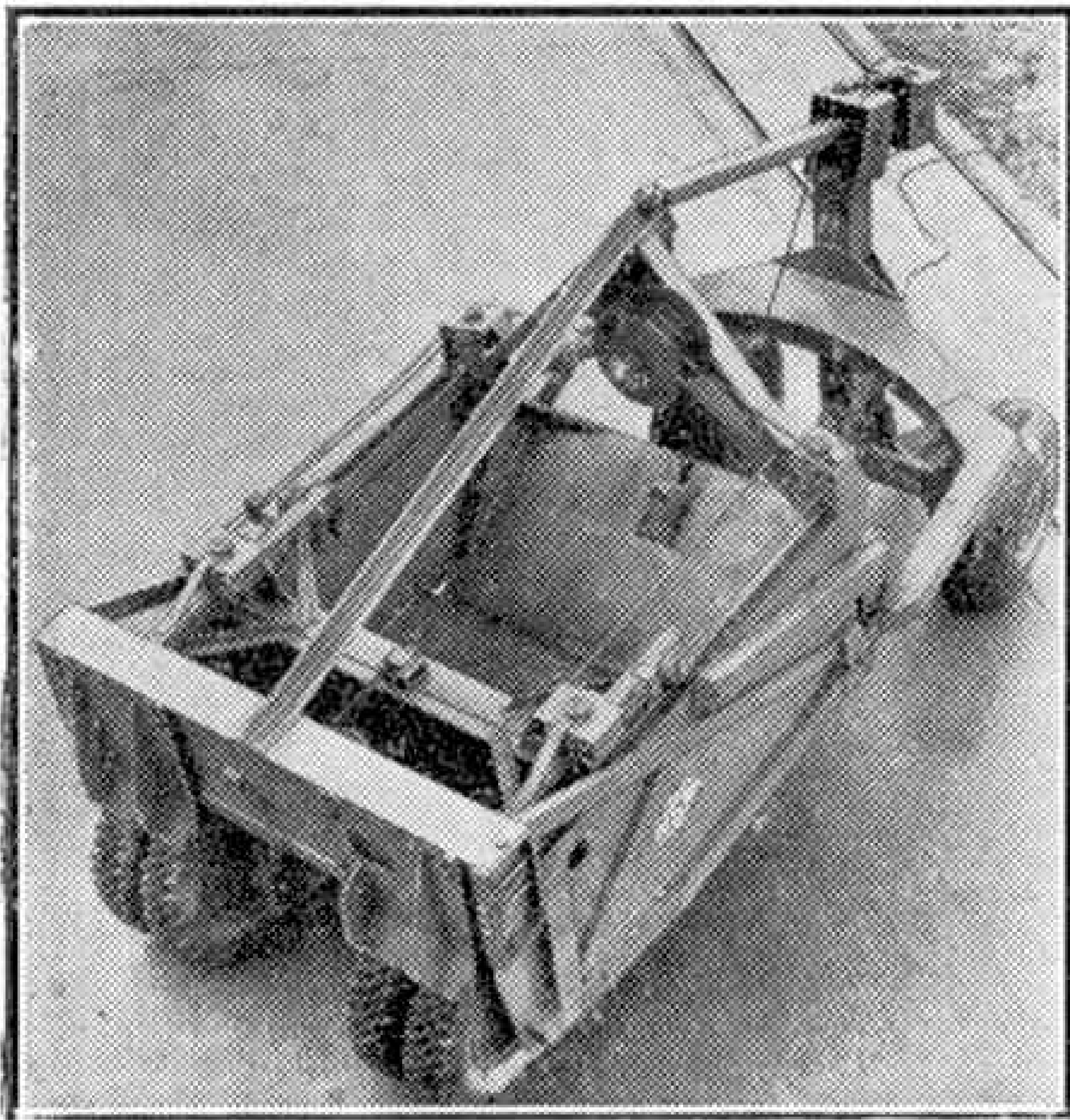


Fig. 1. Blaw-Knox Scraper, showing the cable operation. The photographs to this article are by courtesy of Blaw-Knox Limited, London.

IN previous articles we have described the important part played in large-scale excavation work by mechanical shovels and draglines. In this article we deal with machines of a different type that are used in general excavation work and in particular in such jobs as cutting roads and levelling and preparing sites for aerodromes.

First of all there is the mechanical scraper (Figs. 1, 2 and 3). This machine is hauled by a tractor, and its movements are controlled by cables operated from a winch attached to the rear of the tractor. The body of the scraper is

Earth-Moving by Machinery

fitted with a cutting blade which, with the body of the machine, is raised and lowered through a cantilever system pivoted on the front wheels and operated by a push beam through a series of sheave wheels worked by a cable from the tractor winch. The body is lowered until the cutting blade enters the ground while the tractor is moving forward, and the incoming earth gradually fills the scraper bowl. The cutting blade extends beyond the width of the wheels of the machine, and excavation can be carried out close to walls or fences.

When the bowl is full the body is raised to the carrying height, and the scraper is taken to the place where the earth is to be emptied. There the body is lowered to

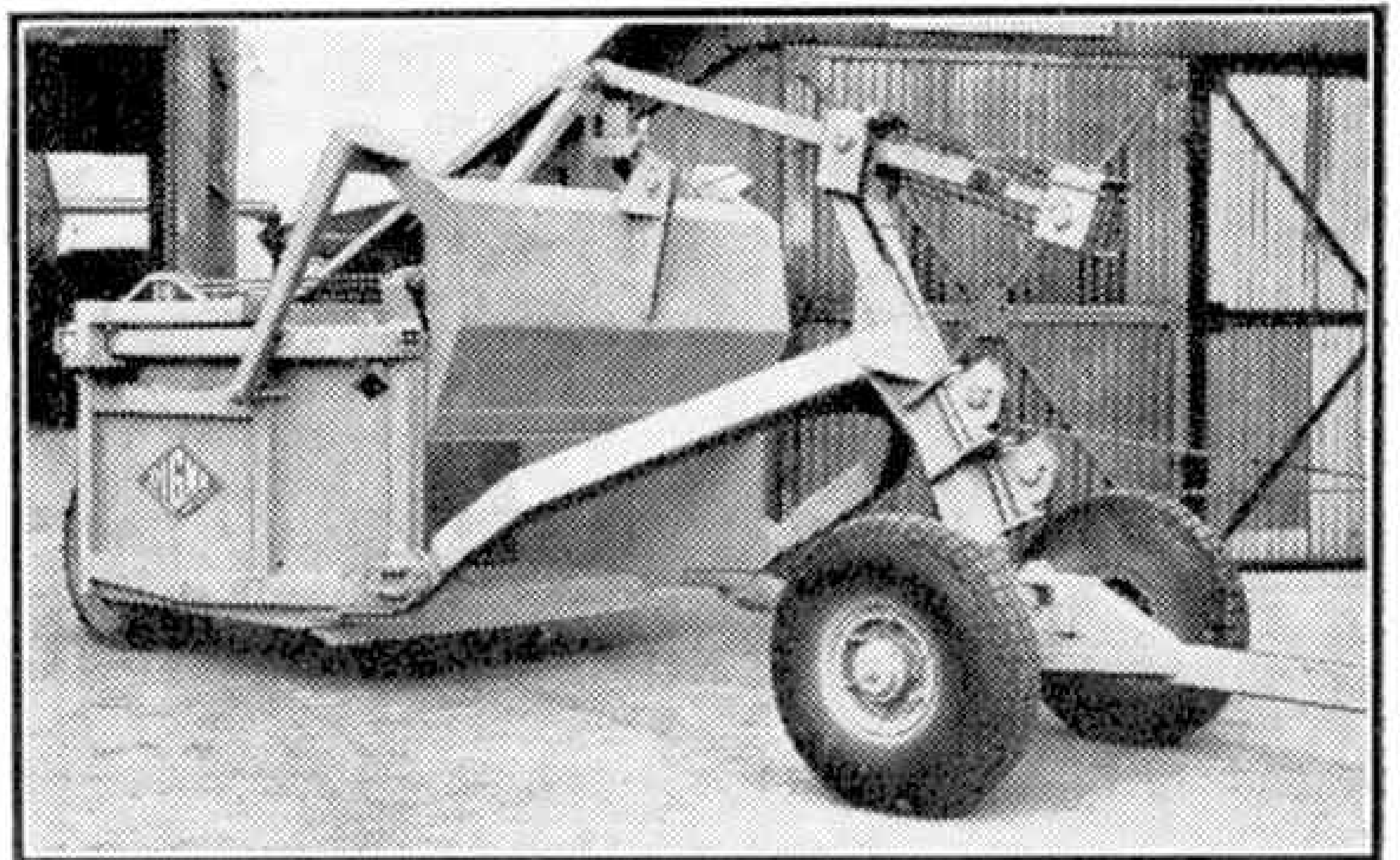


Fig. 2. View of Scraper showing apron and cutting blade.

within a few inches from the ground, according to the depth of spread required. The retaining apron at the front of the body is then raised and the gate at the tail is drawn forward, thus pushing the earth out at the front. The earth passes below the cutting blade so that it is spread evenly to the desired depth. The tailgate and the apron work in unison from one cable, and the former is pulled back, after pushing out the earth, by another cable operated from springs

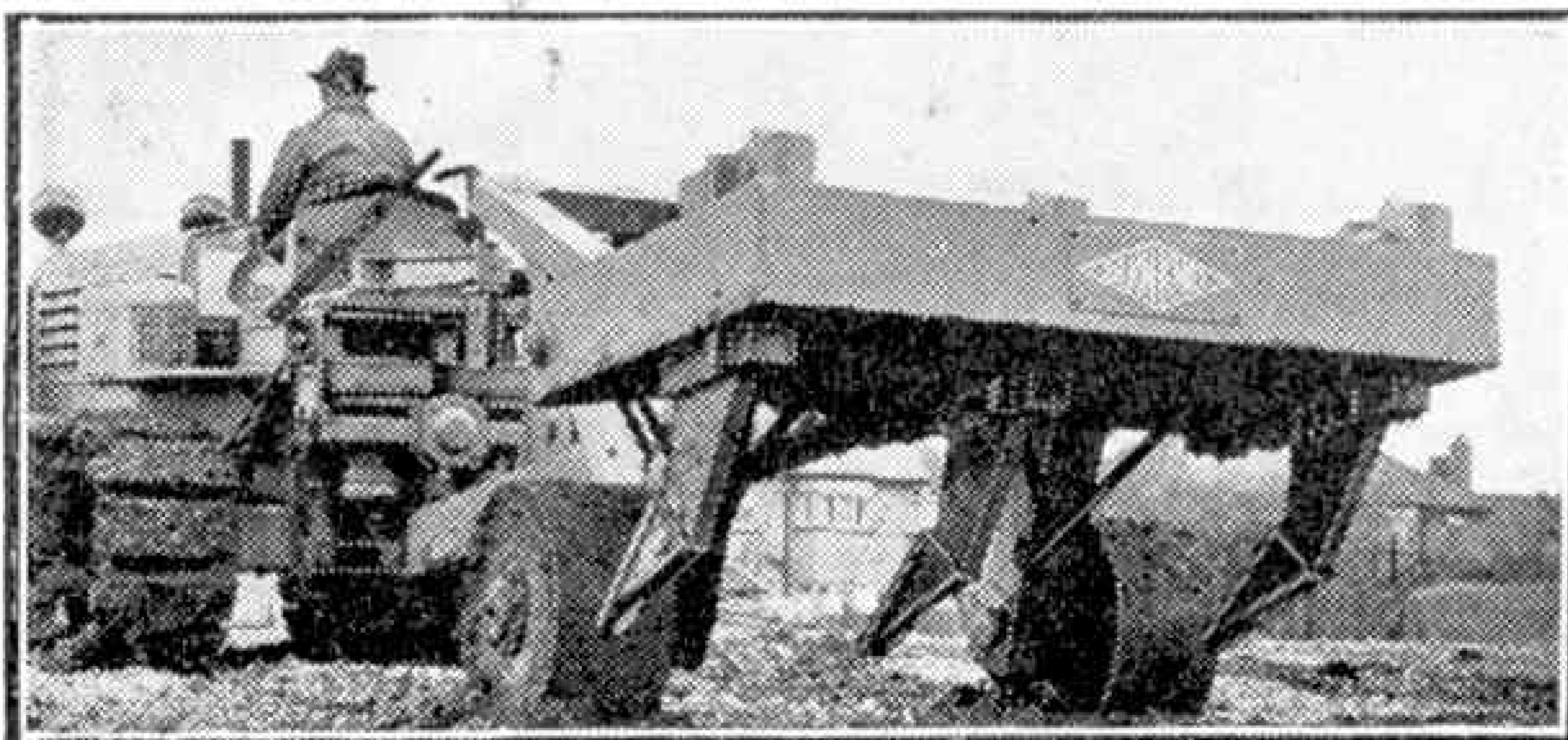


Fig. 4. Ripper, with tines raised.



Fig. 3. Scraper with full load ready to be hauled to the discharge point.

it allows more rapid filling of the scrapers. The ripping teeth, or tines as they are called, are detachable. The number used depends largely on the nature of the material that is to be dealt with. In average conditions three tines are generally used, but with difficult material two or even one may give better results. The tines are raised and lowered by means of a winch and any depth of ripping can be maintained.

The bulldozer—fascinating name!—is essentially a machine for pushing earth where it is required (Fig. 5). It is mounted on a tractor and is used for spreading

at the rear of the scraper. The Blaw-Knox scraper is made in different sizes, the largest of which requires a crawler tractor of 95 to 100 drawbar horse-power. It has a nominal heaped carrying capacity of 13 to 14 cubic yards.

The ripper (Fig. 4) is a heavily constructed machine designed to break up difficult material preparatory to dealing with it with a scraper. It will rip through cemented gravel, sandstone and tarmac, and by tearing up these formations it permits mechanical handling with tractor-drawn earth-moving equipment. Even where the material is not particularly hard the preliminary use of a ripper is often economical because

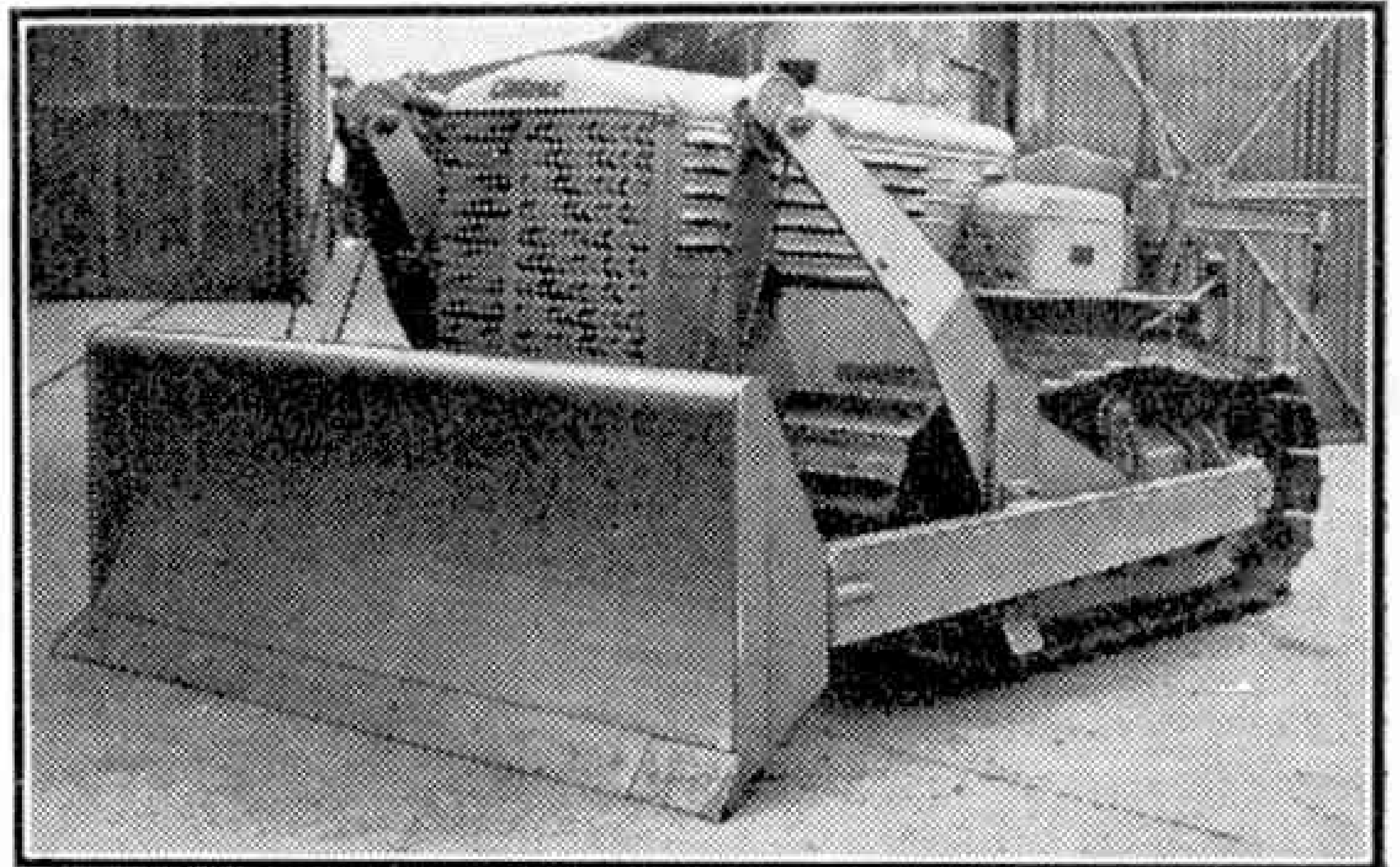


Fig. 5. Cable-controlled Bulldozer.

earth for fills or pushing it into holes or trenches. It is fitted for either hydraulic or cable control for lifting and lowering the blade.

The angledozer (Fig. 6) is similar to the bulldozer, but its blade has three adjustable positions—for side casting either to the right or to the left, or for forward operation as a bulldozer. The blade can also be tilted upward to assist penetrating action or to conform to the contour of the ground. The angledozer is particularly useful on finishing road excavation, sloping and trimming banks, clearing and levelling. It is very effective in moving rocks and boulders.

For the information in this article we are indebted to Blaw-Knox Ltd., London.

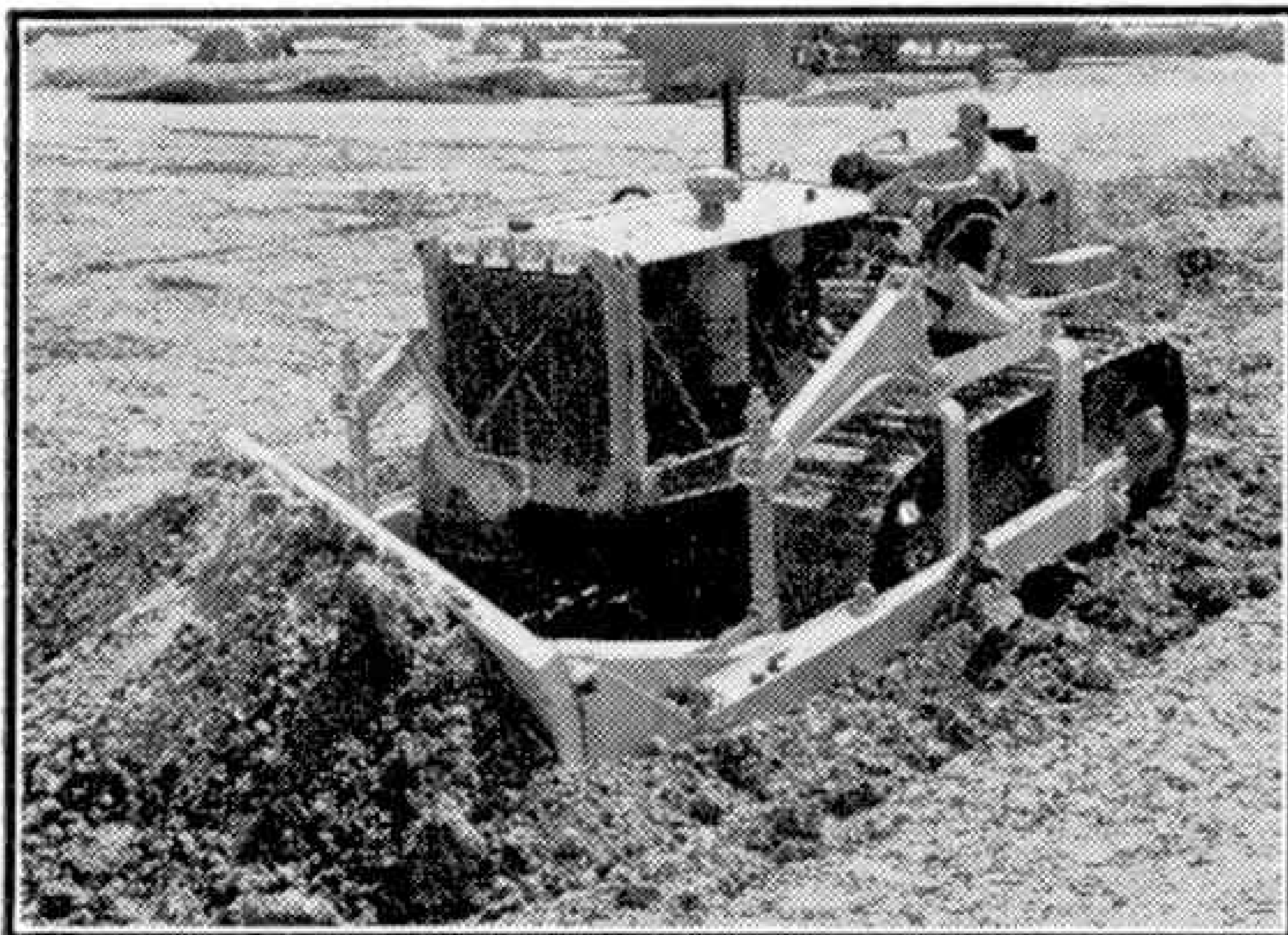


Fig. 6. Hydraulically-controlled Angledozer in operation.

Air News

An Open Air Engine Test Laboratory

One of the most valuable items in the extensive research equipment of the Boeing Aircraft Company, Seattle, U.S.A., is the interesting open air engine test laboratory illustrated on this page. It is designed to put aero engines through rigid performance tests without taking them off the ground, and under conditions that take into consideration the direction the wind is blowing. The engineers cannot control the wind, nor have they time to wait for it to change to a desired direction; and therefore the laboratory has been mounted on a turntable. If the engine is to be tested heading into the wind, as on a normal take-off, the laboratory is moved around to face the proper compass point. An important reason for carrying out the tests under ground conditions is that an aero engine is put to its greatest strain, normally, during the warm-up and the take-off. The way it operates and cools can be judged to a large extent, therefore, before it is put into an aeroplane.

The Boeing engine test laboratory consists of a "control cabin" where engineers carefully check all data, and the dummy aeroplane wing section in which the engine is mounted as illustrated here. The cabin is sound-proof and equipped with instruments just like the cabin of a real aeroplane. In addition there are manometer boards to measure pressure at many points, cameras for recording the whole board readings at the same instant, and other devices for obtaining the desired information about what is going on inside the running engine. The men at the instrument panel differ from a regular test flight crew only in never leaving the ground.

More Aircraft for British Airways

A dozen Armstrong Whitworth "Whitley" aircraft have been acquired by British Overseas Airways Corporation, and several of them have been delivered. The machines are being modified and registered as civil aircraft, and may be used as freight carriers. It is not yet known on which services they will be employed, but it is possible some of them will operate on the company's trans-African air route between the Gold Coast and Khartoum, now a very important Allied air line. The nine services run weekly over this route include both British Airways and Pan American Airways, and three of the British ones continue farther East.

Eire Air Line Company Progress

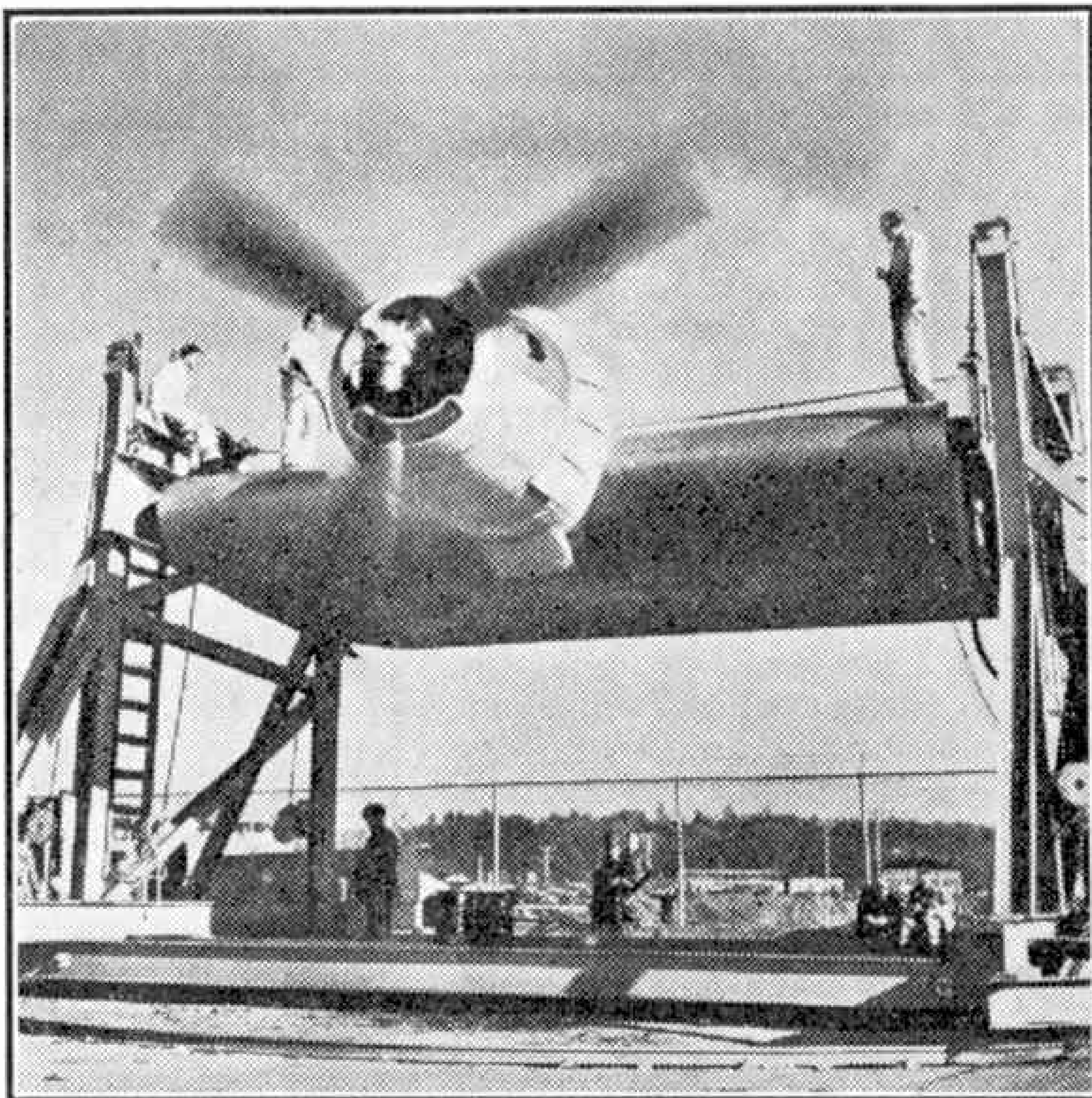
Aer Lingus Teoranta, the Eire air transport company, carried a total of 10,270 passengers in their aircraft during the year ended 31st March last, an increase of 2,742 on the previous year. The amount of freight carried was 39,555 lb., as compared with 34,855 lb. in 1940-41. The total mileage flown by the machines was 209,372 miles, which was 35,476 more than in the year ended 31st March 1941.

Air Training Corps News

Sunday 5th July will be known as "A.T.C. Sunday," and a special Thanksgiving Service for the Air Training Corps will be held throughout the country to mark the occasion of the Corps becoming 18 months old. Church parades will be held in all towns and villages

where there are units of the Corps, and in some of the cathedral cities, where a centralised service will be arranged, the service may be conducted by the Bishop. R.A.F. Commands and Groups will be represented at the church parades.

Sir Archibald Sinclair, Secretary for Air, stated recently that arrangements are being made for summer camps for members of the A.T.C., and it is expected that about 75 per cent. of the cadets will be able to attend. As the strength of the Corps is now nearing 200,000 it is therefore likely that about 150,000 cadets will be spending a week in camp with the R.A.F. Cadets will be given flying experience where they can be taken up in aircraft that are making non-operational flights in the ordinary course of duty.

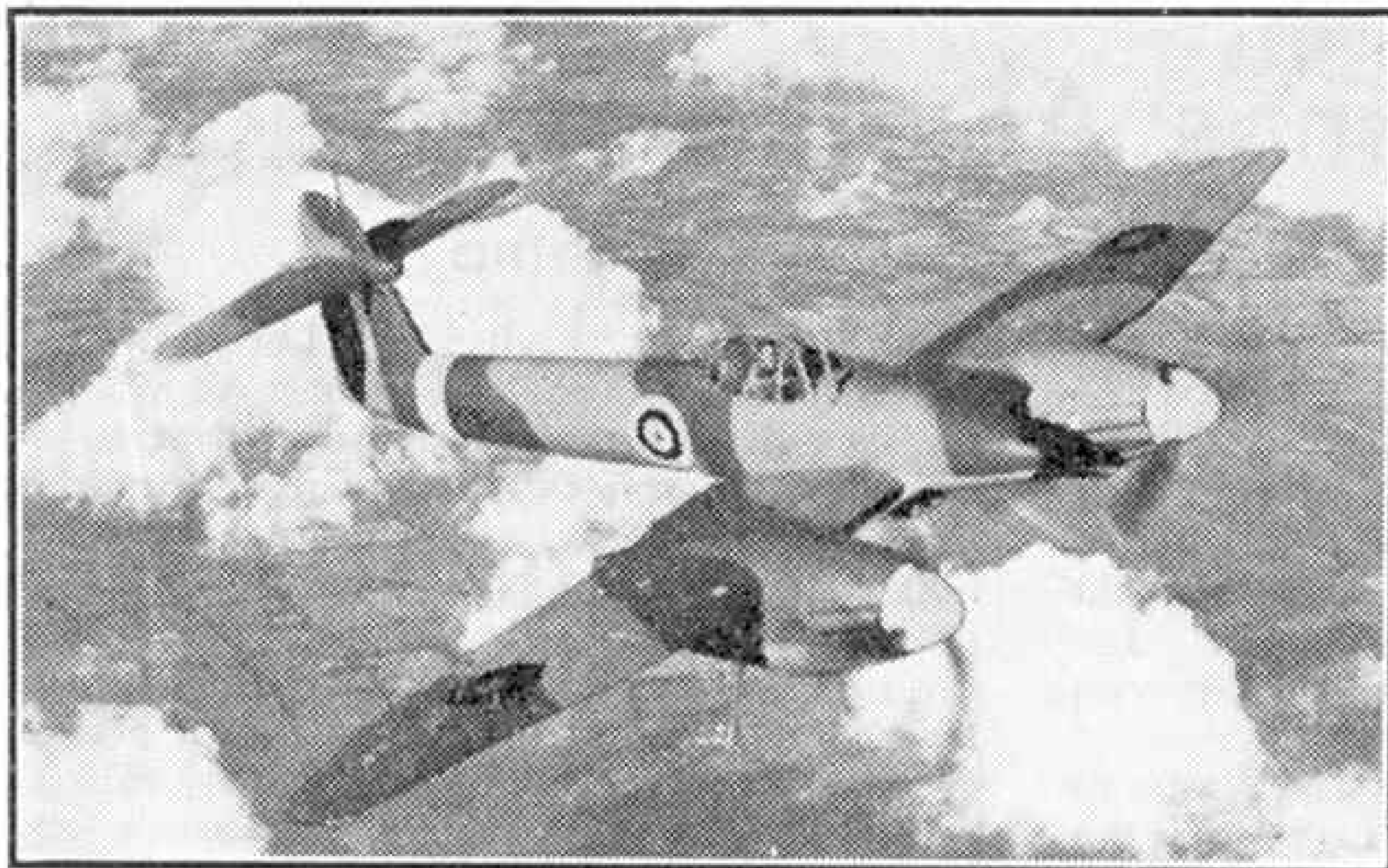


An aero engine mounted in the dummy wing section of the Boeing open air engine test laboratory described on this page. Photograph by courtesy of the Boeing Aircraft Company, U.S.A.

At certain Flying Training Schools it has been arranged that special flights may be made with light two-seater aircraft.

There have been many instances of the keenness of A.T.C. cadets. A recent example is reported from the Samford, Suffolk, squadron, two cadets of which cycle from Harwich, a distance of 14 miles, three times a week to their instructional classes, and they have never missed a parade. The Samford squadron covers an area of 25 small and scattered "front line" villages, where local buses, cycles, and even walking, are essential links in the cadets' communications.

The first Lockheed Vega "Ventura" bombers for the R.A.F. have been flown to this country by R.A.F. Ferry Command, and will be used by Coastal Command as successors to the now famous "Hudsons." The "Ventura" is the military version of the well-known Lockheed "Lodestar" transport, and according to the producers the British Government ordered 675 of these bombers in 1940.



A striking view of a Westland "Whirlwind" day and night fighter, showing the four Hispano cannon projecting from the sharply tapered nose. Photograph by courtesy of Westland Aircraft Ltd.

Westland "Whirlwind" Fighter

The photograph above shows the Westland "Whirlwind" day and night fighter, details and illustrations of which only recently became available for publication, although the type was flown at least a year before the war began. The "Whirlwind" is the first fighter aircraft in any country to carry four cannon as its standard armament, and until the American Lockheed "Lightnings" come into service with the R.A.F. it is the only twin-engined single-seater fighter being used by that Force. The twin Rolls-Royce "Peregrine" engines give it a top speed of 353 m.p.h. at 16,350 ft., and it is the only machine in service with this type of engine. It is armed with four Hispano cannon, which can be seen projecting from the fuselage nose.

Salvage by Pony

Menaced by frostbite, supplied with food from a base camp, and using pony transport, a party of Royal Air Force engineers have just spent five weeks in the desolate lava valleys of Western Iceland. They went to attempt the salvage of a "Whitley" and a "Hudson" aircraft in an area accessible only by pony track. In spite of almost insurmountable difficulties they loaded parts of the machines and equipment upon the backs of sturdy Icelandic ponies, led these pack trains over rocky passes and half frozen lava beds to R.A.F. lorries, and then brought the vehicles back to civilisation. In places the road was obliterated by snow and ice, and the lorries had to be driven along the beds of running rivers. The lower photograph on this page shows the "Whitley" salvage party returning.

The success of the expedition was due mainly to the tenacity of the pilot officer who acted as leader, and who is an experienced mountaineer. In addition to extricating his R.A.F. party from many difficulties, he gave assistance to a party of Army officers and soldiers who were carrying out a reconnaissance of the area. His diary described how a corporal was trapped in a quicksand and sank to his waist before he was rescued; how a sergeant was caught in sea-ice, and how the officer spent a night

in a snow house which he dug for himself near the summit of a 5,000 ft. mountain.

At last the salvage was completed, and only the frames of the aircraft remained. Before the expedition left the desolate spot the local Icelanders sent a deputation to the pilot officer and asked him if they could buy the "Whitley" for a hen house. He promised to pass their request "through the appropriate channels."

The Rolls-Royce "Vulture" Aero Engine

Since the article on the Avro "Manchester" Bomber, published on page 237 of this issue, was written, further details have been released concerning the Rolls-Royce "Vulture" engines fitted in this fine machine. The 24 cylinders of this liquid-cooled engine are in four banks of six each, and the banks are arranged in the form of the letter X. Bore and stroke are 5 in. and 5.5 in.

respectively, and each cylinder has four valves operated by overhead camshafts. The supercharger delivers the fuel mixture through two main pipes, each of which feeds two banks of cylinders. The engine is started electrically. Each "Vulture" engine of the "Manchester" drives a 3-bladed 16-ft. diam. airscrew.

Awards to Soviet Aircraft Designers

Stalin Awards of 200,000 roubles each have been given to S. Ilyushin and A. Yakovlev, in recognition of their work in designing very successful military aircraft for the U.S.S.R.

Ilyushin designed the well-known "Stormovik" dive-bomber introduced a year ago, which has done so well in the war against the Nazi invader. It is a single-engined machine, and is armed with two 32 mm. cannon and two machine guns. Armour plate around the cockpit and engine give valuable protection.



Salvaging crashed R.A.F. aircraft in the desolate lava valleys of Western Iceland. A "Whitley" salvage party returning from a 5-weeks' journey.

Yakovlev designed the Yak-1 fighter and the Yak-4 light bomber, and did valuable work in the development of light aircraft before concentrating upon fighter machines.

Seven new flying training schools, equipped with German trainer aircraft, have been opened in Spain.

Famous Inventors

Thomas Alva Edison

III—The Electric Incandescent Lamp

IN 1801 Sir Humphry Davy, one of the greatest of English scientists, while experimenting with a great battery of 2,000 cells, discovered that if two rods of carbon, one connected to each terminal of the battery, were brought into contact and then gradually separated, a brilliant arch or arc of light was produced between them. Here was an obvious source of illumination, and as soon as the dynamo became a reliable source of current at an economical rate various inventors began to develop the arc lamp.

This was soon brought to a high pitch of perfection and became very widely used for the illumination of streets and open squares, the exteriors of theatres and large shops, and the interiors of big halls, stations, etc. But the arc lamp remained unsuitable for domestic purposes, and inventors began to turn their attention to the production of a lamp for household use.

The result was the development of the incandescent lamp, which in essentials consisted of a length of conducting material enclosed in a glass bulb exhausted of air, and heated to incandescence by an electric current. In the forefront of these investigators were Joseph, afterwards Sir Joseph Swan, in England, and Edison in America. Much ink has been used in debating the relative claims of these two men in regard to priority. We are not concerned here, however, with the general development of the incandescent lamp, but only with Edison's activities in this direction.

The beginning of the story may be told by Edison himself. "In 1878," he says, "I went down to see Professor Barker at Philadelphia, and he showed me an arc lamp—the first I had seen This electric light idea took possession of me. It was easy to see what the thing needed;

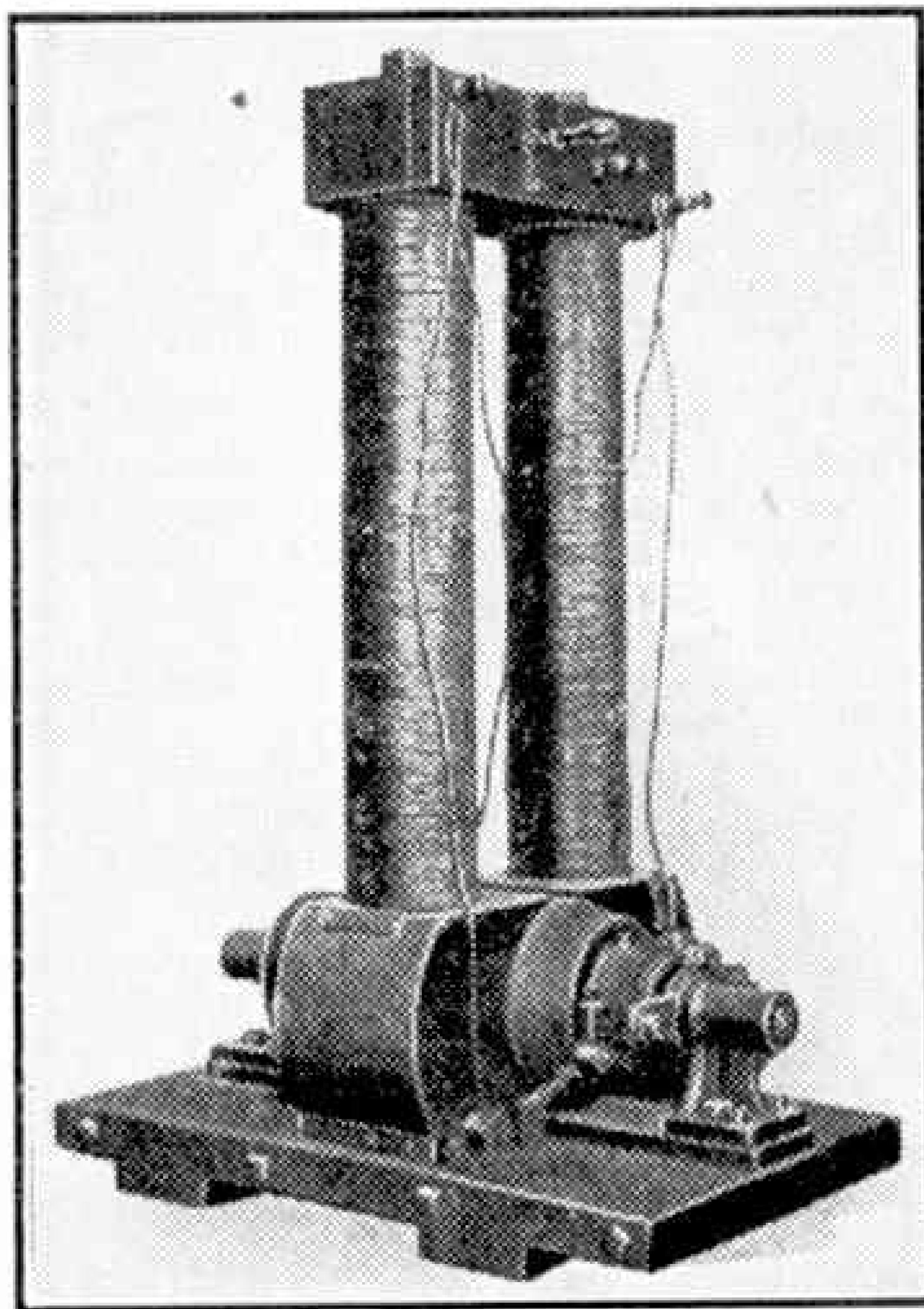
it wanted to be subdivided. The light was too bright and too big. What we wished for was little lights, and a distribution of them to people's houses in a manner similar to gas I was fired with the idea of the incandescent lamp as opposed to the arc lamp."

The Edison Electric Light Company was formed to provide funds, and work began. It was carried on with typical Edison intensity. Some 40 to 50 men were employed in the experimental operations.

"They worked all the time," says Edison. "Each man was allowed from four to six hours sleep. We had a man who kept tally, and when the time came for one to sleep he was notified." We are told that often when Edison had been working up to the small hours of the morning he would lie down on a table in the laboratory, with a couple of books for a pillow, and fall sound asleep.

The first task was that of finding a suitable material for the filament of the lamp, and almost every conceivable substance was tried. The first lamp that was partially successful had a filament of carbonised

cotton thread mounted in a glass bulb exhausted of air and sealed in with platinum wire leads. Edison has described how the lamp lit up when the current was switched on, and how he and his assistants watched it, at first with anxiety and then with growing elation, for over 40 hours, when the filament gave out. It was clear that carbon was wanted, but what kind of carbon? Then followed perhaps the most remarkable episode in the whole history of invention. Edison sent experts all over the world in search of a suitable fibre. They went to Sumatra, Japan, China, India, Burma, Ceylon, Brazil, Cuba, and to all the wilds of South America. Bales of bamboos, strange leaves, and all



An Edison Dynamo of 1880.

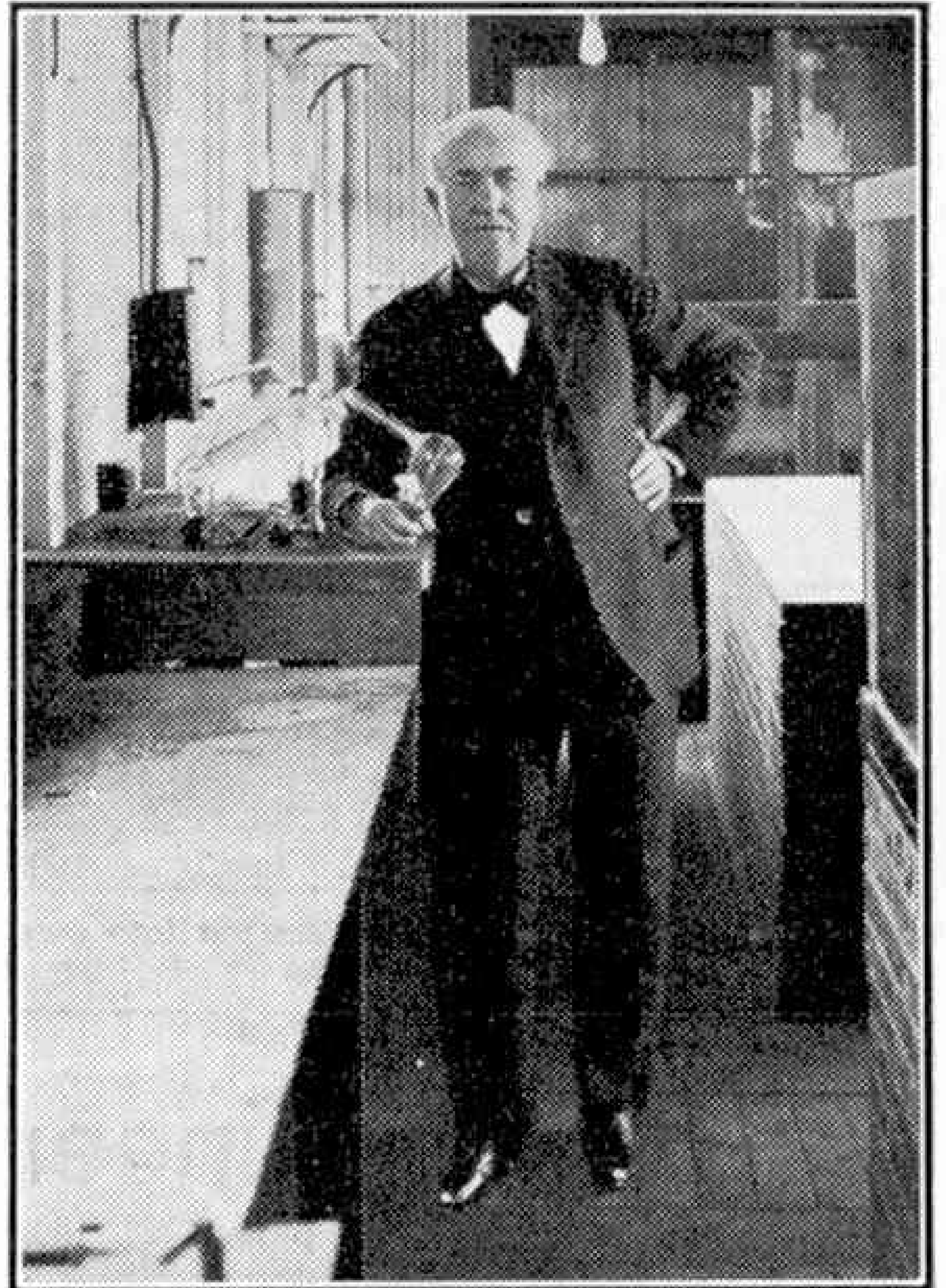
kinds of possible materials arrived continuously at Menlo Park. It is said that during this period no less than 80 varieties of bamboos and 3,000 different vegetable fibres were tested. Finally a certain Japanese bamboo was chosen as the best and a regular supply was arranged.

When Edison had perfected his incandescent lamp sufficiently for commercial purposes he organised, in December 1880, the Edison Electric Illuminating Company, and prepared to establish a central station in New York City. According to an account given by the General Electric Company of New York, the station was to serve a district about a square mile in all. Edison ordered a thorough canvass, and before the station opened he knew the exact number of gas jets in every building, how many hours they burned, and the cost. He knew every consumer of power, and just how much was used. He would consider nothing but an underground cable system. He was building for permanency, and he did not propose to add his electric light system to the existing confusion of overhead wire. As the underground system was planned many intricate problems arose, and many were the devices Edison invented to solve them. He was not only obliged to design his equipment, but also to manufacture it. At the same time the business of wiring customers' premises for lamps and meters went on. In those days Edison worked day and night with the energy for which he has become famous.

Monday, 4th September 1882, was the eventful day of the official opening. At 3 p.m. steam was admitted to the engine of one generator, current was generated, and turned into the 13 miles of underground conductors. The electric light system was started and a new art introduced to the world. At the end of the first month the station had 59 customers; by the first year the number had reached 445. Light was supplied free for three months while the meter system was thoroughly tested.

It is interesting to note that a central station for incandescent lighting was put into operation in London on 12th January 1882 by the English Edison Electric Light Company.

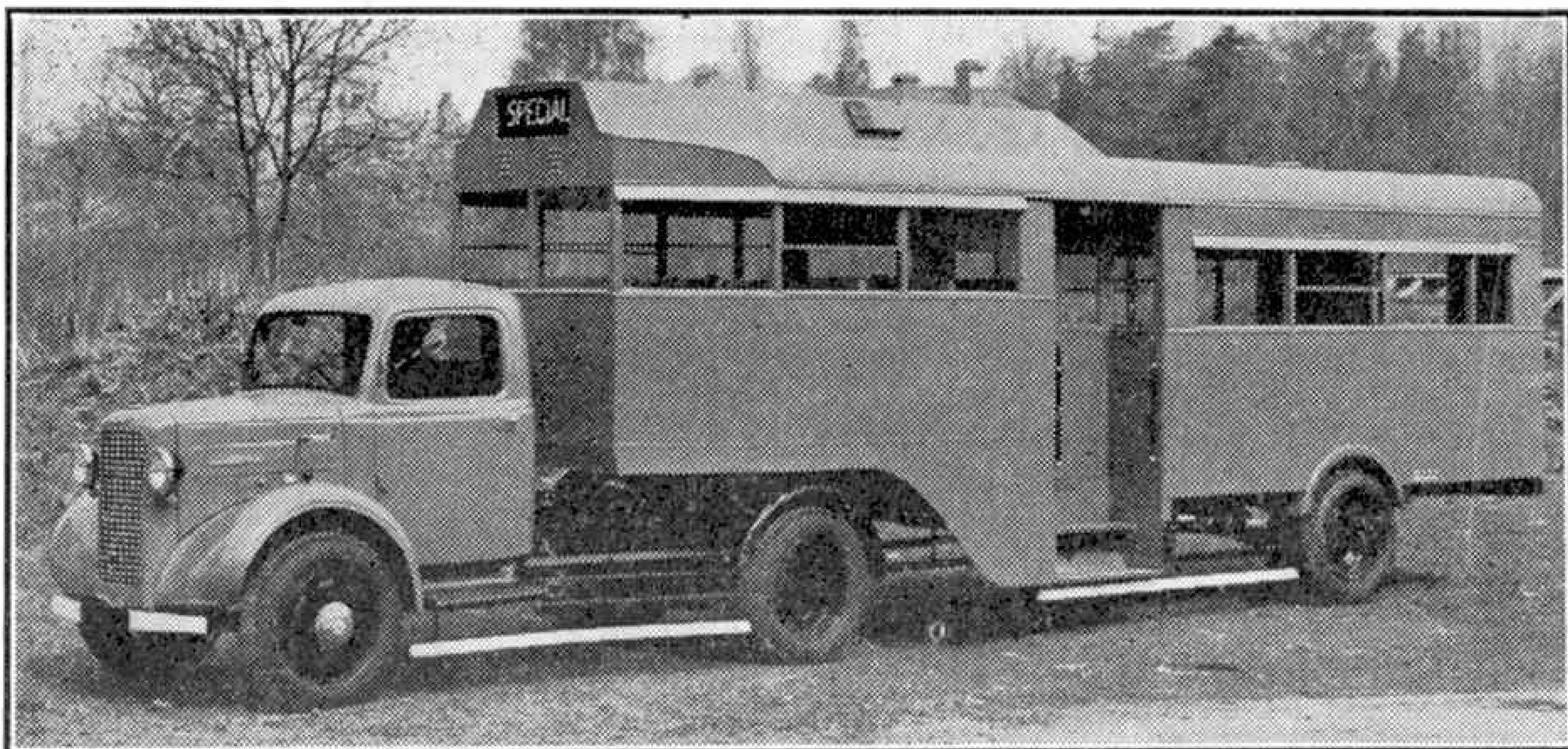
By 1887 Edison's inventions, particularly the electric lamp and the phonograph, had secured for him a world-wide reputation. In that year the limitations of his accommodation at Menlo Park caused him to transfer his headquarters to larger premises at West Orange, New Jersey, where he equipped one of the finest research laboratories in America.



Edison in his Laboratory.

Soon after moving to Orange, Edison became interested in the idea of a machine that "would do for the eye what the phonograph had for the ear." It was not a new idea, and apparently he got it from an instrument that was then popular, the zoetrope or "wheel of life." This consisted of a hollow cylinder with vertical slots at equal intervals, mounted so as to revolve on a vertical axis. A paper strip, carrying a series of pictures showing successive stages of some action, was placed inside the cylinder so that the pictures were seen by the observer through the slots. The image of each picture persisted on the retina of the eye during the brief period that elapsed between the passing of one slot and the arrival of the next, so that the break was not noticed and the spectator received the impression of continuous movement. By degrees Edison developed the kinetoscope, a machine that enabled an observer to view directly pictures taken on a strip of film at the rate of some 50 per second. Here was the germ of the modern cinematograph.

About this time Edison developed another invention, the magnetic ore separator, by which the iron in low-grade ores could be concentrated by separating it from the non-magnetic rock. (Continued on page 266)



One of the two first articulated buses put into service in this country. They are operated by the Mansfield District Traction Co., to whom we are indebted for our illustration.

Engineering News

First British Articulated Buses

The illustration on this page shows one of the two first articulated buses introduced into service in this country. These are run by the Mansfield District Traction Company, and are built to wartime standards. The tractors are by Commer Cars Ltd., and are fitted with Perkins Diesel engines. The trailers are by the British Trailer Co. Ltd., and the bodies by Metropolitan-Cammell-Weymann Motor Bodies Ltd.

Each vehicle has a total weight of 5 tons 15 cwt., and a turning circle of 45 ft. They are easily manoeuvrable in traffic, and are comfortable to travel in, providing seats for 40 passengers. The front part is higher than the rear, because of the necessity for mounting the trailer chassis on the tractor unit; and two steps give access to this section, with a clerestory roof to give head room. The whole of the framing of the body is of wood, strengthened with flitches and gussets of steel, and there are no interior side casing panels. Unnecessary refinements have been omitted throughout. The seats are simply mounted on light metal legs at the gangway end and on a timber rail at the window end, and have cushions upholstered in brown leather, with fittings of sponge rubber.

A Giant Graving Dock for Capetown

Capetown is to have a graving dock that may be large enough to accommodate the "*Queen Mary*" or the "*Queen Elizabeth*." Its length is not yet settled, but will not be less than 1,000 ft., while its width, originally planned for 137 ft., may be 150 ft. The cost of the dock is estimated at over £2,000,000, and the British Government is to provide all the machinery and caissons.

The site of the dock is already being reclaimed, and this work will be speeded up. A rubble wall enclosing the area is to be completed and raised to a height of 8 ft. above high water, after which a cofferdam will be driven through it, so that the area can be excavated ready for constructional work to be started. The dock will be built in a basin cut out of solid rock, and in places 15 to 20 ft. of rock will have to be blasted out in order that the required depth of 45 ft. can be attained. The rock foundation has the ad-

vantage that a layer of concrete only 2 ft. in thickness will be sufficient for the floor; in most cases the floors of graving docks have had to be made from 15 ft. to 20 ft. thick.

Three rows of keel blocks will be laid down, and side shores will not be used when dry-docking vessels. It has been provisionally decided to make the sides of the dock straight, so that they can be used as wharves for loading and unloading when desired. It is hoped that a repair yard will eventually be established, and that a berth will be provided where ships can be repaired afloat.

At present there is no large dry dock at Capetown. The existing one is only 500 ft. long, and has been recognised as inadequate for many years. The only existing large graving dock in South Africa is that at Durban. This is 1,150 ft. long and has an entrance width of 110 ft.

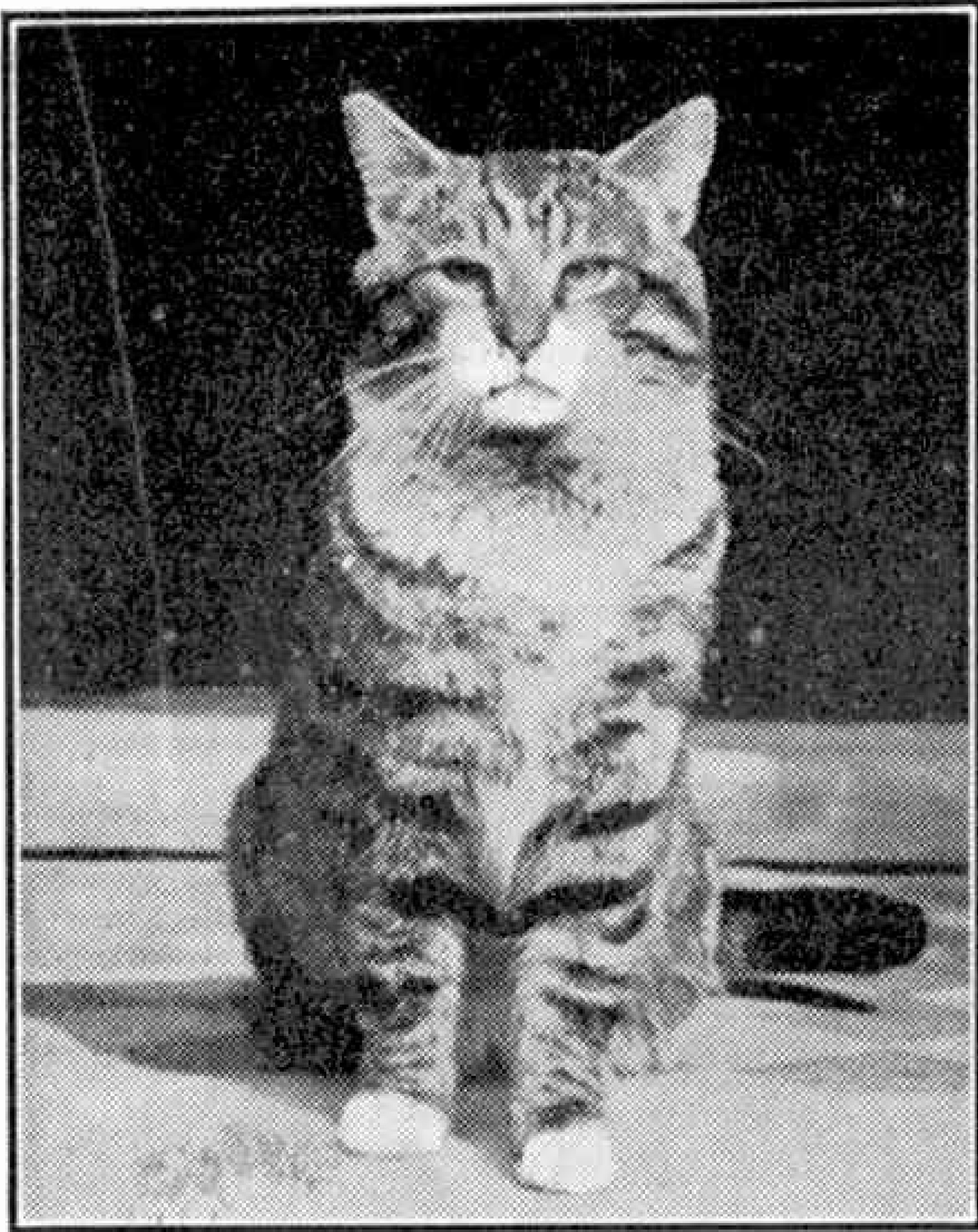
A Pneumatic Tyre Substitute

Now that rubber is becoming difficult to obtain, efforts are being made to find substitutes for it in making tyres. A large United States firm employing a fleet of 1,200 vehicles is making experiments with tyres of hard wood provided with a surface of brake friction material. The tyres are made up in four sections, so that they can easily be removed and repaired, and the friction material is riveted to the wood.

This experiment points to a possible solution to the threatened tyre shortage. The vehicles ride quite smoothly on good roads at 25 to 30 m.p.h.

A Simple Holding Nut

A simple and ingenious new form of nut has been designed, originally for use on bolts holding parts together for drilling purposes. The invention is called the tilt-nut, and it consists of an oblong strip of thin sheet steel with a hole for the bolt at one end, the other end being bent downward to make an angle of 60 deg. with the part through which the bolt passes. The hole is larger in diameter than the bolt, and the nut is tilted as the parts bolted together approach each other when the bolt is tightened, with the result that the edges of the hole fit into the threads of the bolt, ensuring a firm hold.



A very superior person! Photograph by W. T. Preston, Alva.

IN these days of restrictions on so many branches of photography the possibilities of home subjects should be carefully examined.

Most of us have made pictures at odd times of our domestic pets, but probably we have not taken this work very seriously. This month while the light is good I suggest that readers should tackle the subject in earnest, and make, not casual snapshots, but actual portraits of their pets, showing them in characteristic attitudes. Every dog, cat or other pet has a real personality, and it should be our object to bring this out in our pictures.

A suitable place in the garden or yard should be chosen, free from shadow, and providing a background that is simple and

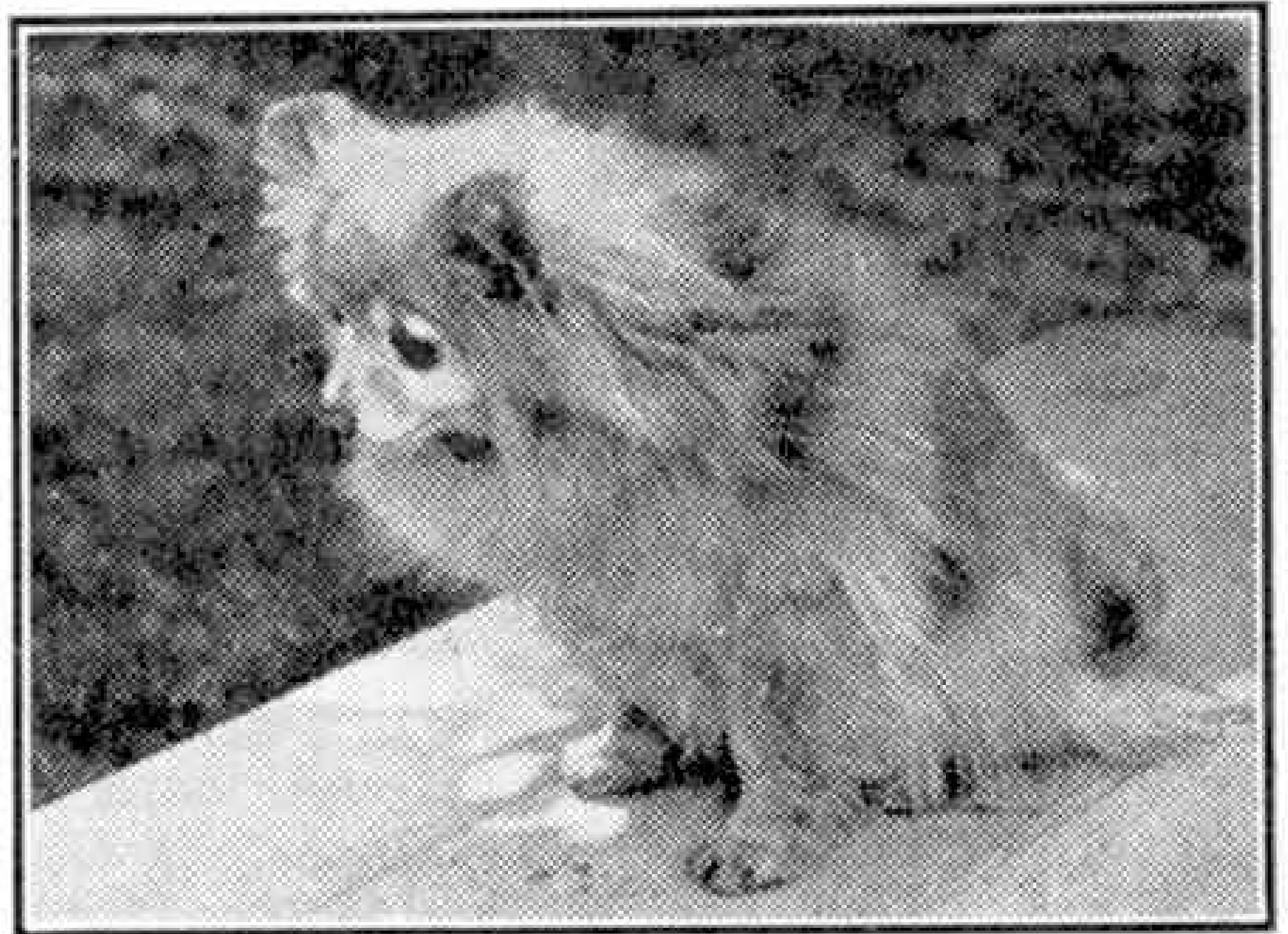


"Home Guard." Photograph by A. Rose, Ulverston.

Photography

Portraits of Home Pets

without unwanted details that will stand out prominently in the picture. Cats and small dogs are best taken on a table or stand of some kind, provided they will "stay put!" If they have to be photographed on the ground the camera should be held low down, otherwise they appear dwarfed. As a rule a cat can be persuaded by its owner to keep still in a suitable pose. Big dogs also are generally reasonable, but little ones are apt to take too much personal interest in the proceedings, and get so excited that they cannot keep still. Patience, and above all deliberate movements and a quiet voice, will usually bring about the desired result in time. Well-meaning friends who try to help are often a great nuisance and should be chased away. Their efforts only result in irritating the animal or making it nervous and restless. If this should occur it is generally of little use to continue operations.



"Is that my bone?" Photograph by M. W. Taylor, Southall.

Try again next day.

Many pets have been trained to do some simple trick or take up an amusing pose; if they can be persuaded to oblige at the right moment, pictures can be made that will be of great interest to all who know the animals.

A rapid panchromatic film should be used for this kind of work, and in bright light an exposure of $1/25$ sec. at $f/8$ will usually give good results if the animal keeps still. Any movement such as the trembling of an excited little dog will require a faster shutter, and $1/50$ or $1/100$ sec. may be necessary.

Suggestions Section

By "Spanner"

(555) Variable Pitch Propeller

The introduction of an aircraft propeller designed so that its pitch can be varied while the machine is in flight has led to greatly increased efficiency, owing to the fact that when such a propeller is used the engine may be run at its maximum permissible speed, to produce its maximum power irrespective of flying conditions.

Figs. 555 and 555a show a model variable pitch propeller that may be controlled either by the pilot through a suitable lever in the cabin, or automatically by means of a governor driven from the engine. It consists essentially of two Propeller Blades bolted to End Bearings, in the bosses of which $1\frac{1}{2}$ " Rods are fixed. These Rods are journaled in opposite holes of a Boiler End, and also in a Threaded Coupling 1, Fig. 555a, which together with a Wheel Disc is attached centrally to the Boiler End. The $1\frac{1}{2}$ " Rods carry a Collar and a Contrate Wheel 2 that mesh with a $\frac{3}{4}$ " Pinion 3, lock-nutted by a $\frac{3}{4}$ " Bolt to the Coupling 1. To alter the pitch of the propeller the Pinion is rotated by means of a short length of Spring Cord 4, which is attached to its boss and passed through corresponding holes in a Wheel Flange that fits over the Boiler End, and a Face Plate bolted to it. In Fig. 555a the Wheel Flange

is shown drawn back a little to allow the pitch-changing mechanism to be seen.

The Face Plate is secured on the propeller shaft 5, which is 3 in. long and is fixed at its forward end in the Coupling 1.

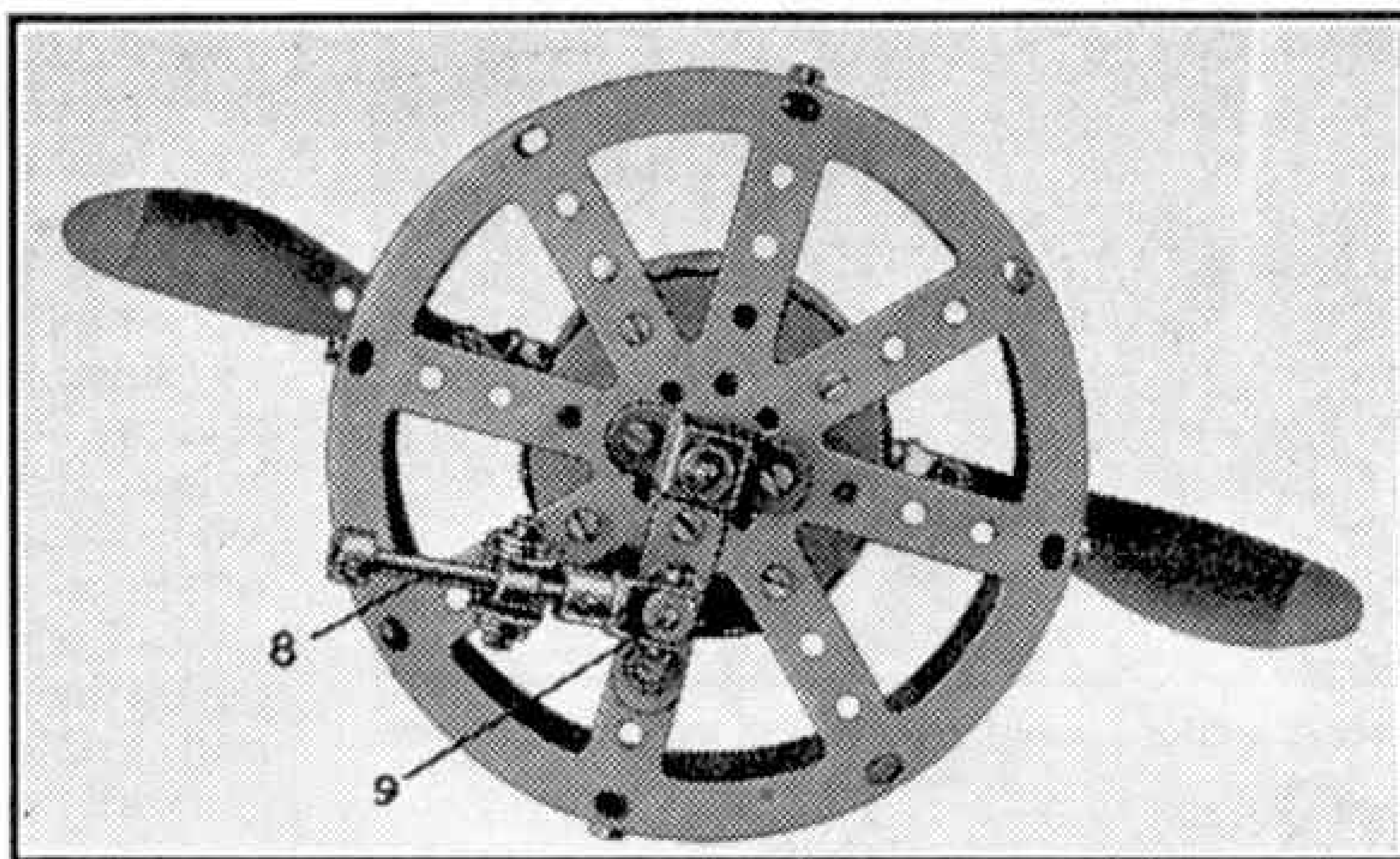


Fig. 555.

The Spring Cord 4 is then attached to a Socket Coupling 6, which is free to slide on the Rod 5 but cannot rotate independently, as its slots engage with the Grub Screws in the boss of the Face Plate and a Collar 7 also mounted on the shaft.

Sliding movement is transmitted to the Socket Coupling by a lever 8, Fig. 555, through a Coupling mounted on the forward end of a 2" Rod 9. The Coupling carries two $1\frac{1}{2}$ " Rods that engage the groove in the Socket Coupling 6. The Rod 9 is journaled in one of the outer holes of a Face Plate and a Double Arm Crank bolted to the cowling, which consists of a Hub Disc attached by means of Flat Brackets to a Circular Girder. The Face Plate also provides a journal for the propeller shaft, which is inserted in its boss and also in a Double Bent Strip bolted to the cowling.

A dummy crankcase consisting of four $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plates edged with four 3" Formed Slotted Strips is built around the unit and is attached to the cowling by $\frac{1}{2}$ " \times $\frac{1}{2}$ " Angle Brackets.

(556) Using the Meccano Boiler

The Meccano Boiler (Part No. 162) has many uses in its ordinary form, but there are occasions when it can be used for other

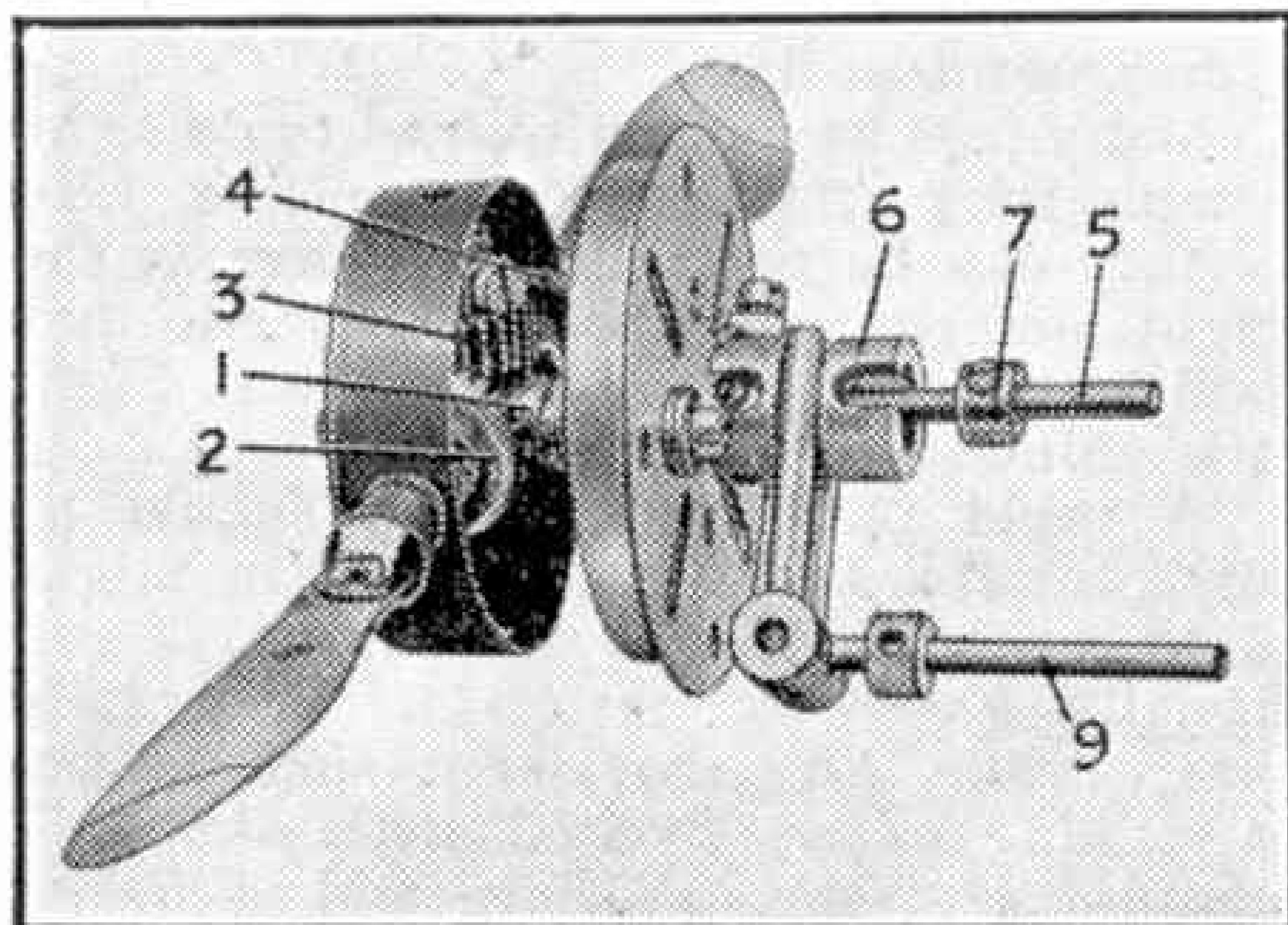


Fig. 555a.

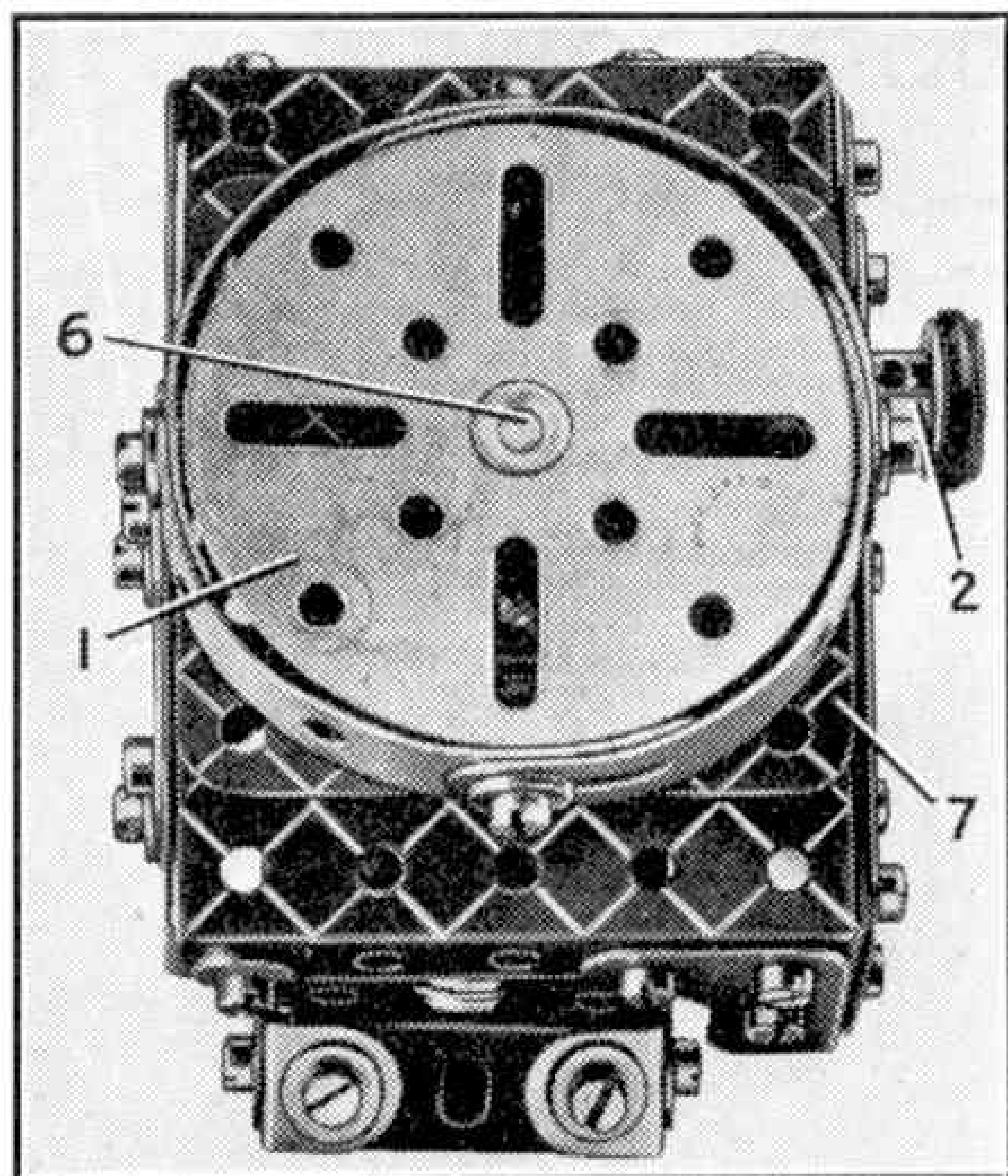


Fig. 557.

purposes than those for which it is primarily designed simply by modifying it slightly. For example, it can be opened out without damage to form a large radius curved plate, or it may be contracted to form a cylinder of smaller diameter.

(557) Work-Table for Model Drilling Machine

Most modern drilling machines are fitted with a work-table arranged so that it can be tilted from the horizontal to allow holes to be drilled at angles to the surface of the work. A device of this kind incorporated in a model drill will greatly increase the realism and interest of building the model. A suitable arrangement is shown in Figs. 557 and 557a on this page. It consists of a special table unit mounted independently on the base of the drilling machine.

The Face Plate 1 is rotated about its centre by turning a handwheel 2, consisting of a $\frac{1}{2}$ " fixed Pulley shod with a Dinky Toys Motor Tyre. The Pulley is mounted on a 3" Rod 3, Fig. 557a, the bearings for which are provided by a $3\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strip and a $3"$ \times $1\frac{1}{2}"$ Flat Plate 4 attached to a $3\frac{1}{2}"$ \times $2\frac{1}{2}"$ Flanged Plate 5. The Flat Plate 4 is lengthened $\frac{1}{2}"$ at one end by a $1\frac{1}{2}"$ Flat Girder bolted to it, and it is fixed to $1\frac{1}{2}"$ Angle Girders attached to the Flanged Plate 5 by 1" Corner Brackets. The Rod 3 carries a Worm that meshes with a $\frac{1}{2}"$ Pinion mounted on a 1" Rod 6, Fig. 557. This Rod is journalled in the Flanged Plate 5 and in a $2\frac{1}{2}"$ \times $2\frac{1}{2}"$

Flat Plate 7 that is fixed to the former Plate by $\frac{3}{8}"$ Bolts, but is spaced from it by Nuts placed on the shanks of the Bolts. Four 3" Formed Slotted Strips are bolted together to form a circle and this is attached to the Flat Plate 7 by $\frac{1}{2}"$ \times $\frac{1}{2}"$ Angle Brackets. The superstructure of the work-table is completed by fixing the Face Plate 1 to the upper end of the Rod 6, Washers being used for spacing purposes.

The superstructure is pivotally attached to a base consisting of a $2\frac{1}{2}"$ \times $1\frac{1}{2}"$ Flanged Plate, to which two $2\frac{1}{2}"$ Triangular Plates are fixed by means of $\frac{1}{2}"$ \times $\frac{1}{2}"$ Angle Brackets. These Triangular Plates are braced at their upper ends by a 2" Screwed Rod, and they provide bearings for a $2\frac{1}{2}"$ Rod 8, Fig. 557a, which is fixed to the Plate 4 by a Double Arm Crank and a Double Bent Strip. Rod 8 is secured in a second Double Arm Crank bolted to a $1\frac{1}{2}"$ Flat Girder, which is fixed to the $3\frac{1}{2}"$ \times $\frac{1}{2}"$ Double Angle Strip that is attached to the Flanged Plate 5. A Bolt inserted in the boss of the latter Double Arm Crank engages with a Bolt fixed in the right-hand Triangular Plate and limits the tilting movement. The degree of tilt is controlled by turning a handle 9, formed from a Bush Wheel, in one of the outer holes of which is inserted a Threaded Pin. The Bush Wheel is fixed on a $3\frac{1}{2}"$ Rod journalled in a Trunnion and a $\frac{1}{2}"$ \times $\frac{1}{2}"$ Angle Bracket bolted to the base, and a Worm mounted on the $3\frac{1}{2}"$ Rod engages with a $\frac{3}{4}"$ Pinion fixed to the Rod 8.

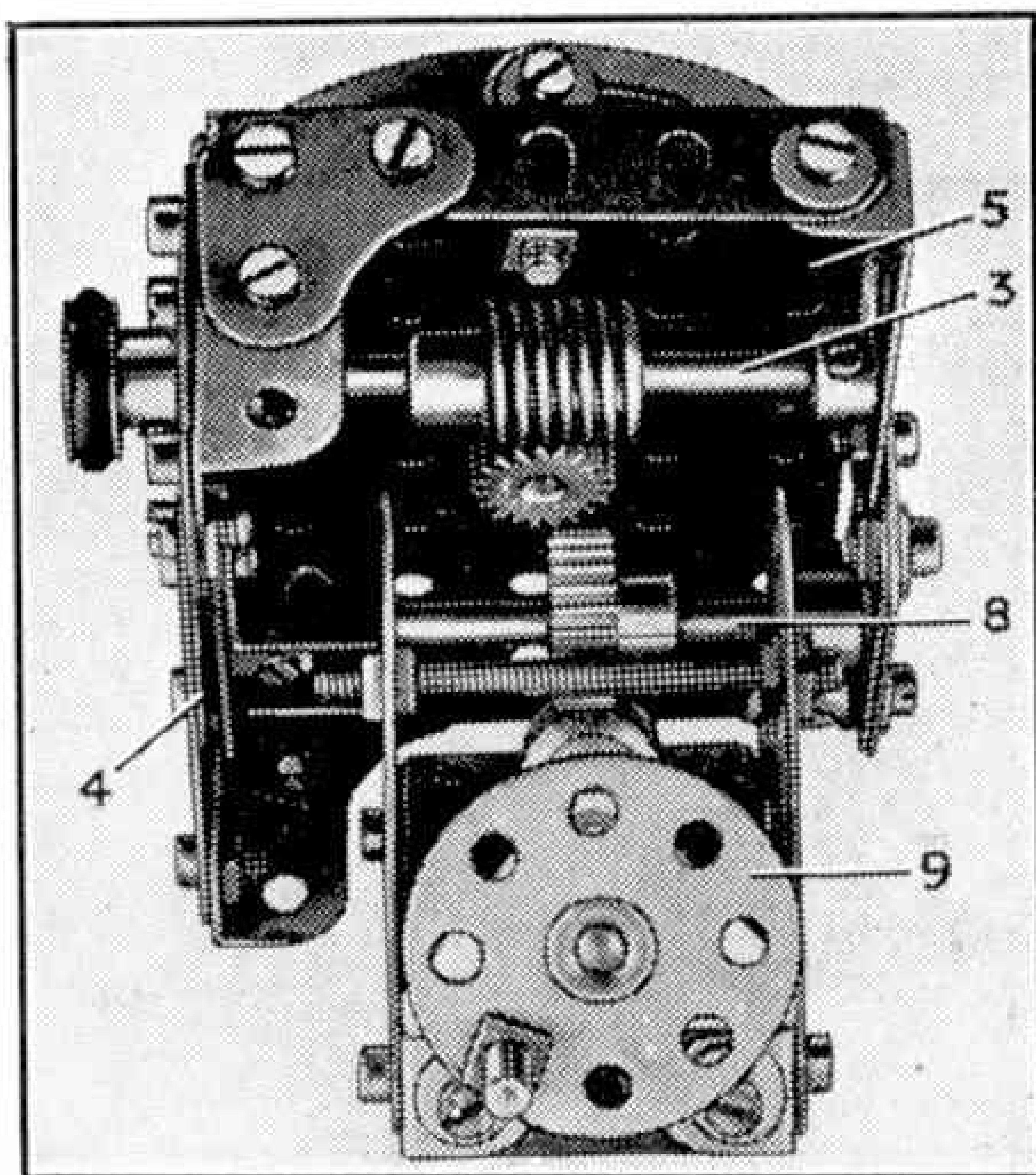


Fig. 557a.

New Meccano Models

Twin-Cylinder Beam Engine—Tandem Bicycle and Sidecar

THE construction of the fine model beam engine shown in the lower illustration on this page is begun with the framework, which consists of two "A" frames 1 built up from $18\frac{1}{2}$ " Angle Girders. These are attached to similar Angle Girders and are bolted to a $7\frac{1}{2}$ " Angle Girder and a $7\frac{1}{2}$ " Strip. A compound Angle Girder 2 is attached to the side of each "A" frame, and provides bearings for the crankshaft. The cylinders are secured to the other ends of these Girders.

The beams 3 are operated by the piston rods 4, which are 8" long and are mounted in the upper ends of the cylinders. These piston rods are pivotally attached to two $4\frac{1}{2}$ " Strips that also are pivoted at their upper ends to their respective beams. The beams are constructed as shown in the illustration. They are attached centrally to Bush Wheels mounted loosely on an 8" Rod 5 secured in the Bush Wheels fixed to the Circular Plates of the "A" frames. The connecting rods 6 are formed from $5\frac{1}{2}$ " and $9\frac{1}{2}$ " Strips pivoted at their upper ends to the beam, and at their lower ends to the cranks.

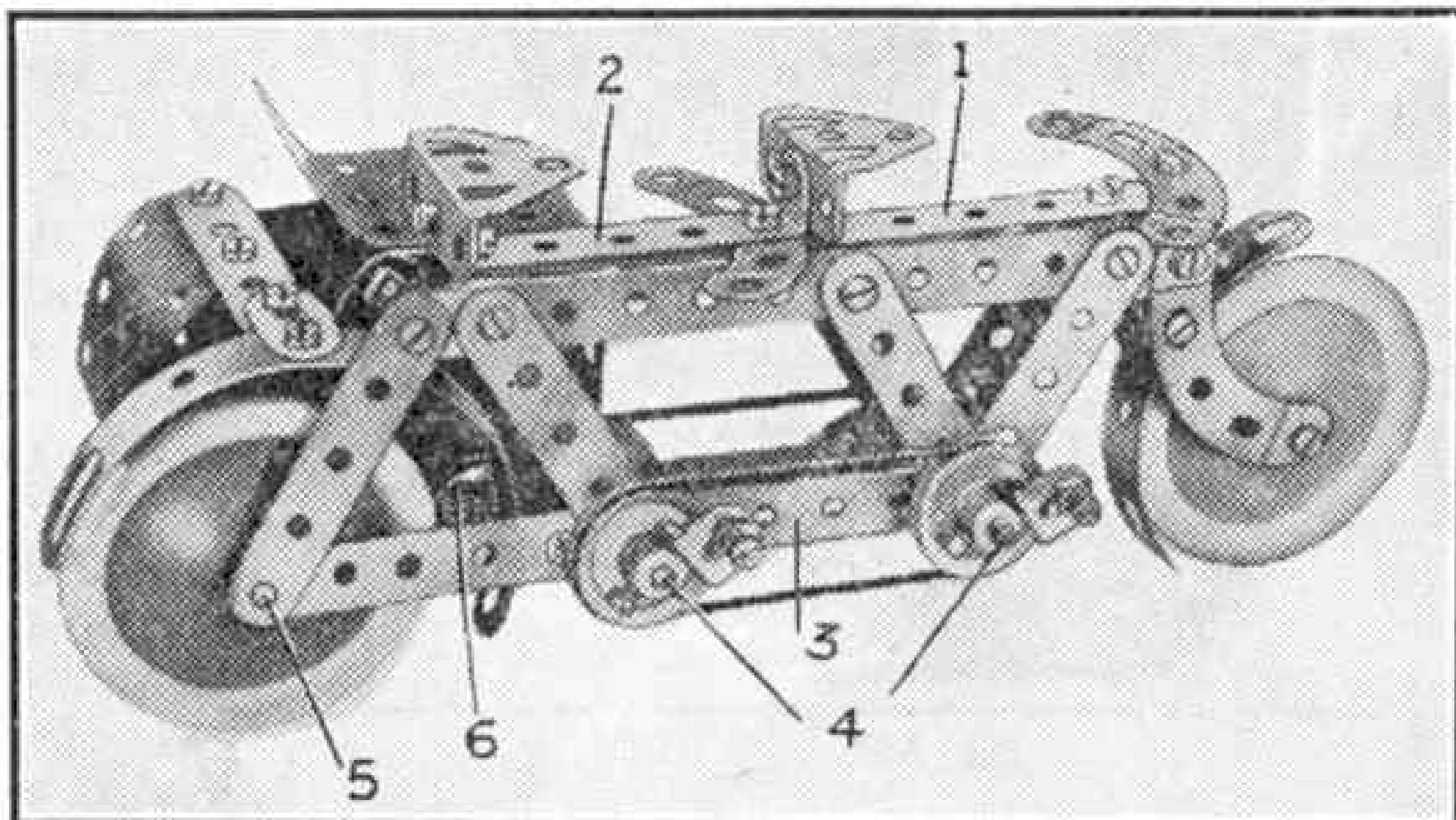
Each crank is constructed from two $2\frac{1}{2}$ " Triangular Plates 7, to which are bolted a $3\frac{1}{2}$ " Strip and a counterweight consisting of five $2\frac{1}{2}$ " Strips remote from this Strip. The crank pins are 1" Rods held in two Cranks bolted to the outer ends of the $3\frac{1}{2}$ " Strips.

The front crank is mounted on a $2\frac{1}{2}$ " Rod journaled in the framework, and its inner component is attached by a 2" Rod to the second crank arranged in the position shown. The latter Rod is mounted in $1\frac{1}{2}$ " Strips bolted to $5\frac{1}{2}$ " Angle Girders attached to the base. The outer component of the rear crank is fixed to a $6\frac{1}{2}$ " Rod on which is mounted the flywheel. The bearings for the Rod are provided by the framework and the flywheel casing, constructed from $5\frac{1}{2}$ " \times $3\frac{1}{2}$ " Flat Plates bolted to Angle Girders attached to the frame.

The construction of the governor and mounting are

clear from the illustration, and the drive is transmitted to it through a $1\frac{1}{2}$ " Pulley fixed on a Rod driven from an E1 or E120 Electric Motor 8. The Rod in turn drives the crankshaft, as shown.

Parts required to build model Beam Engine: 4 of No. 1; 24 of No. 1a; 9 of No. 1b; 13 of No. 2; 57 of



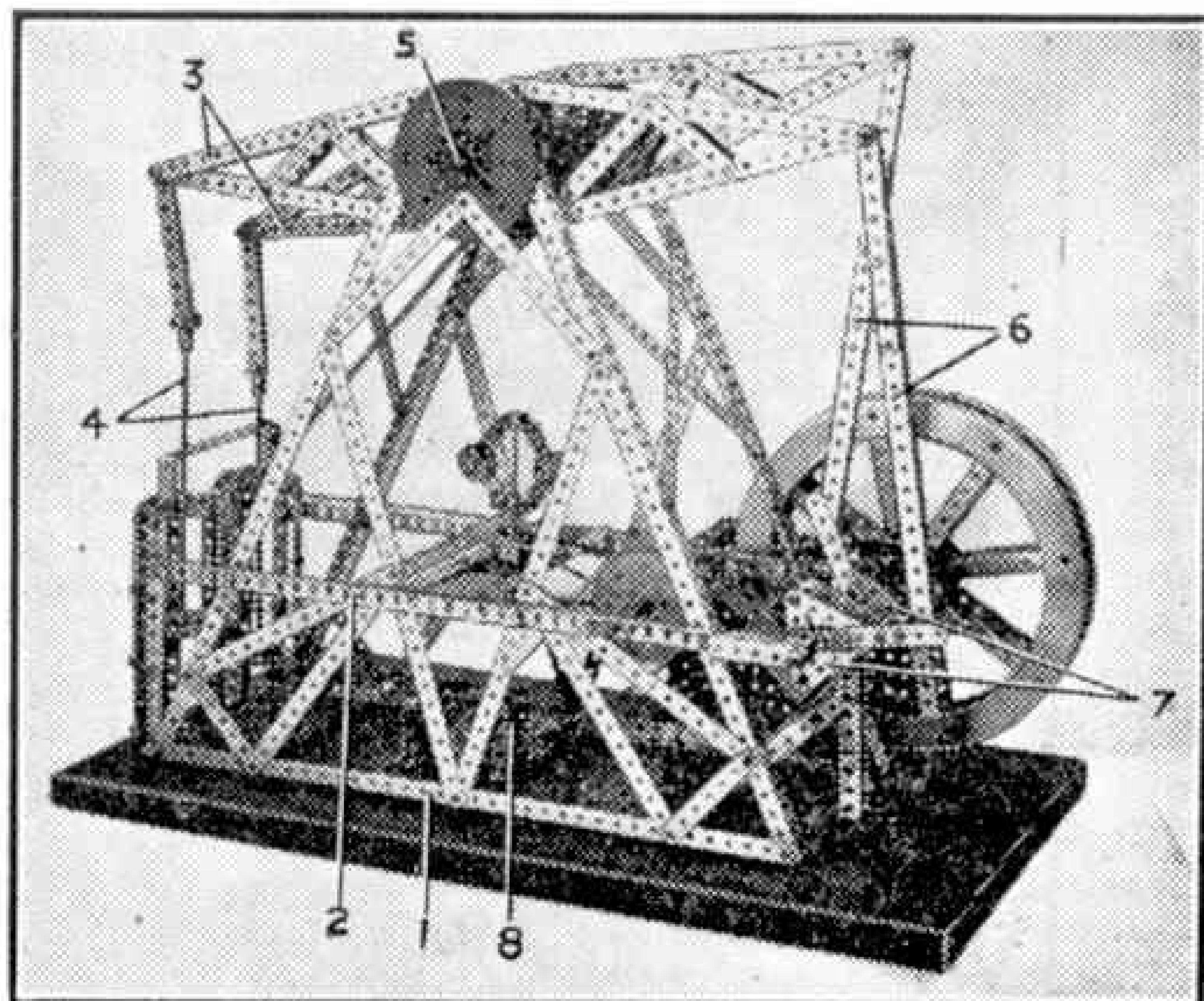
This fine tandem bicycle and sidecar is built from the contents of Outfit No. 3.

No. 2a; 8 of No. 3; 8 of No. 4; 29 of No. 5; 16 of No. 6; 10 of No. 6a; 6 of No. 7a; 4 of No. 8; 1 of No. 8b; 4 of No. 9; 6 of No. 9b; 1 of No. 9d; 16 of No. 11; 30 of No. 12; 1 of No. 12b; 4 of No. 13a; 1 of No. 14; 1 of No. 15b; 1 of No. 16a; 1 of No. 17; 10 of No. 18b; 2 of No. 20a; 1 of No. 21; 5 of No. 22; 1 of No. 23; 8 of No. 24; 378 of No. 37a; 354 of No. 37b; 78 of No. 38; 2 of No. 45; 11 of No. 48; 9 of No. 52a; 31 of No. 59; 4 of No. 62; 4 of No. 62b; 2 of No. 70; 4 of No. 76; 1 of No. 94; 2 of No. 95b; 1 of No. 96; 1 of No. 96a; 6 of No. 109; 1 of No. 111a; 20 of No. 111c; 2 of No. 116a; 2 of No. 125; 1 of No. 133; 1 of No. 133a; 2 of No. 146a; 2 of No. 167b; 1 of No. 186c; 1 E1 or E120 Electric Motor.

The model shown in our upper illustration is constructed from Outfit No. 3 and is driven by a *Magic Motor* housed in the sidecar. The bicycle is assembled by bolting two $\frac{1}{2}$ " \times $\frac{1}{2}$ " Angle Brackets and a Double Bracket respectively $\frac{1}{2}$ " from each end of a $5\frac{1}{2}$ " Strip 1. Two similar Strips stepped backward one hole are attached at each side to the Angle Brackets and Double Bracket. The front wheel unit is constructed as shown, and is fixed to a $\frac{1}{2}$ " Bolt passed through the front end hole of the Strip 1.

A $2\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strip 2 is bolted to the rear end of the Strip 1, and a Trunnion is attached to each of its turned-up ends. Four $2\frac{1}{2}$ " Strips are bolted on each side of the frame, and these are linked to $5\frac{1}{2}$ " Strips 3 by two 2" Rods 4 and a $3\frac{1}{2}$ " Rod 5. The two Rods 4 carry at their ends 1" Pulleys, to which the pedals are attached by Angle Brackets. The Pulleys mounted on the off side are connected by a 6" Driving Band, and those on the near side by a 10" Driving Band, that passes round the Rod 5 and over a $\frac{1}{2}$ " loose Pulley lock-nutted to a Flat Bracket 6 bolted to the frame.

The sidecar consists of a *Magic Motor* to which are bolted a $5\frac{1}{2}$ " \times $1\frac{1}{2}$ " and two $2\frac{1}{2}$ " \times $\frac{1}{2}$ " Flexible Plates that are attached also to a $2\frac{1}{2}$ " \times $\frac{1}{2}$ " Double (Continued on page 268)



A model of a beam engine, of the type once used for pumping water out of mines as well as for driving machinery.

Meccano Model-Building Competitions

By "Spanner"

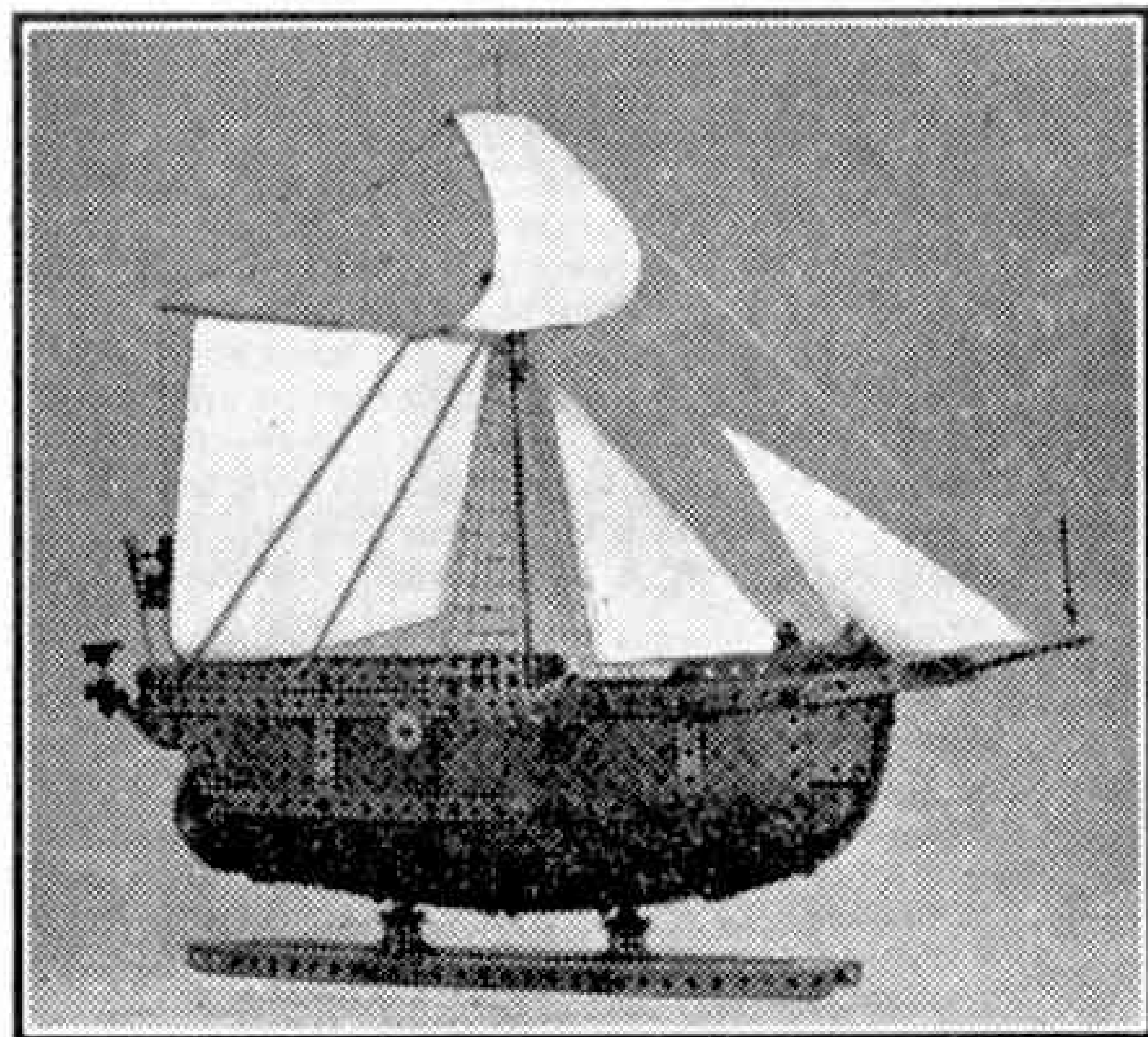
Special Parts Contest

The Special Parts Contest announced in the June "M.M." is still open, and there is yet time for model-builders to think out a model that can be built with the parts chosen. They were illustrated on page 221 of the June issue, and as a further aid to enthusiasts we give a list of the parts. They are: 2 of No. 2; 2 of No. 5; 2 of No. 6a; 2 of No. 10; 1 of No. 11; 4 of No. 12; 1 of No. 12c; 1 of No. 16a; 1 of No. 18a; 1 of No. 18b; 2 of No. 22a; 1 of No. 23; 4 of No. 35; 2 of No. 59; 1 of No. 63; 1 of No. 73; 1 of No. 77; 1 of No. 89a; 2 of No. 111a; 1 of No. 111d; 1 of No. 125; 2 of No. 126a; 1 of No. 136; 1 of No. 164; 1 of No. 166; 2 of No. 217b.

Entries in this contest must be models built from these parts only. It is not necessary to use them all, but where in other respects two models are equal in merit preference will be given to the one that leaves unused the fewer number of the selected parts. Bolts and Nuts can be used in any number.

There will be two sections in this contest, for Home and Overseas readers respectively, and in each prizes of £2/2/-, £1/1/- and 10/6 will be awarded, with five consolation prizes of 5/- each. The ages of competitors will be taken into account by the judges.

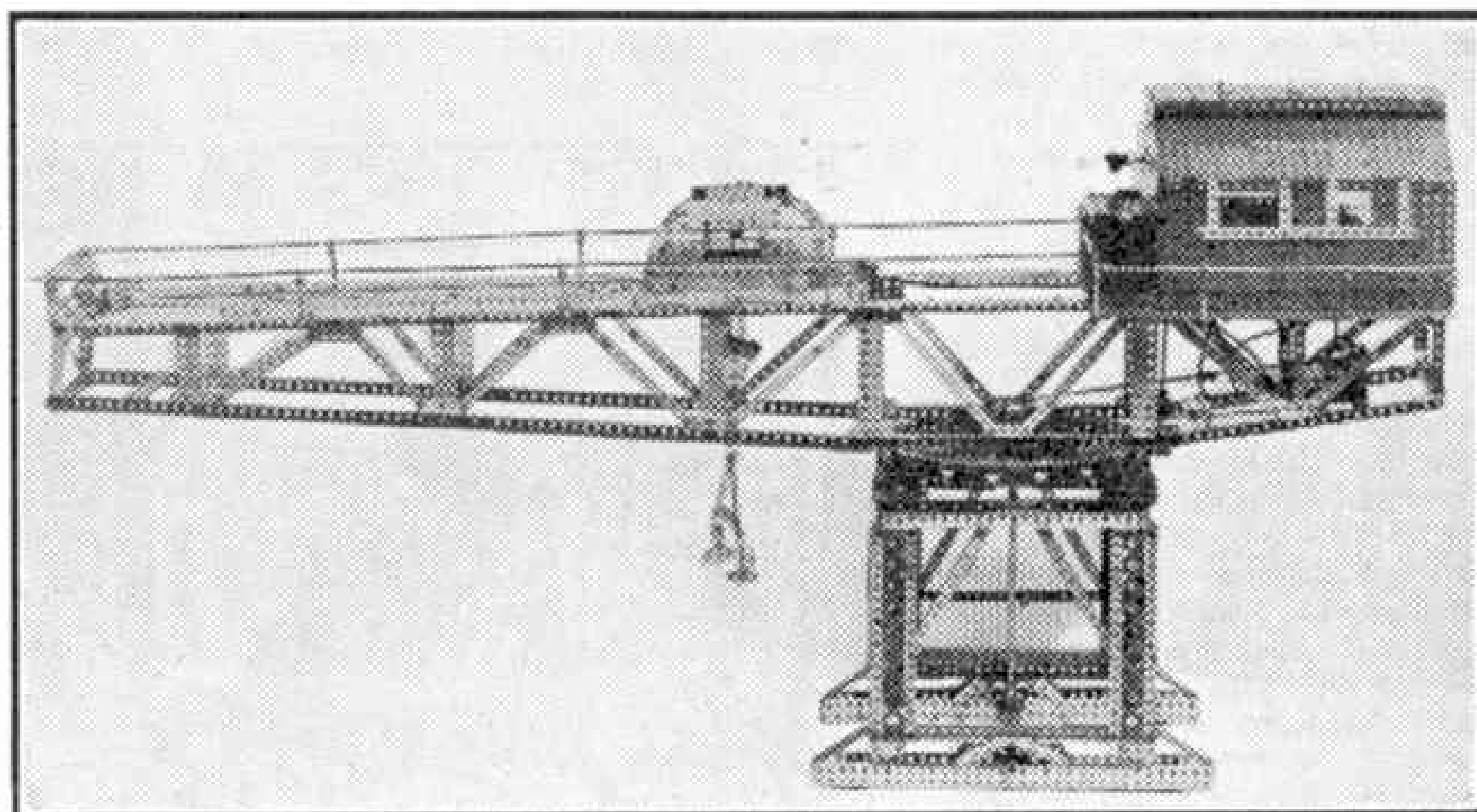
Competitors should send in either photographs or good drawings of their models, together with brief descriptions of any interesting features that may be present. Envelopes should be addressed "Special Parts Contest, Meccano Ltd., Binns Road, Liverpool 13." Closing dates: Home Section, 31st July; Overseas Section, 31st October.



A fine model of an old-time ship that won 1st Prize in Section B of the New Year Contest for D. Eccles, Southport.

Prize-winning Models in our New Year Contest

The upper illustration on this page shows the sturdy model block-setting crane that won First Prize for



R. W. Hearn, Annesley, was awarded 1st Prize in Section A of the New Year Model-building Contest for this sturdy model block-setting crane.

R. W. Hearn, Annesley, in Section A of the "New Year" Model-building Contest, the results of which were announced in last month's "M.M." The model closely reproduces all the movements of its prototype. It is electrically operated, control being effected through solenoids and switch levers in the rear of the cab. A warning lamp in the cab is illuminated when the trolley reaches the limits of its travel to and fro along the boom, spring buffers insulated from the frame of the model then switching on current from a battery clipped in position on one side of the cab.

Among the many interesting details incorporated in the model are an auxiliary drive to a fan used for cooling the driving Motor, which may be an E6 or E20b, and a Flywheel that smooths out the drive to the gear-box. The fan is fitted in a guard formed from a Boiler End secured to the sideplates of the Motor.

The First Prize in Section B of the Contest was awarded to D. Eccles, Southport, for the fine model sailing ship shown at the foot of the page. The model is a splendid illustration of the effective use that can be made of Flexible Plates, in conjunction with Strips and Curved Strips, for reproducing such features as the decks and hulls of ships of all kinds. The clever fitting of these parts gives the model a very realistic appearance, which is enhanced by a stern lantern neatly represented by a 1" Pulley. Other interesting details are the rudder, which is represented by a Semi-Circular Plate, and the neat arrangement of the rigging, formed from inter-woven lengths of cord.

An interesting mobile crane was the subject chosen by J. Kentfield, Bridgend, who was awarded a consolation prize. His model is sturdily constructed from built-up channel girders and is powered by a No. 2 Clockwork Motor, the drive from which is led in the usual manner to the rear axle. The forward-control steering gear is of the Ackermann type. The crane is mounted on the chassis directly above the rear axle unit, and a No. 1 Clockwork Motor operates the hoisting drum through reduction and reversing gears. The luffing barrel, worked by hand, incorporates a locking device to maintain the jib at any angle.



Club and Branch News



WITH THE SECRETARY

CLUB PHOTOGRAPHS

I should very much like to receive more Club and Branch group photographs, and portraits of officials, for publication on this page. This is a distinction to which every established Club or Branch is entitled, and the appearance of such a photograph always give a feeling of great satisfaction to the members of the organisation represented. For this reason Leaders and Chairmen should keep the request firmly in mind. It is not always possible to arrange for studio photographs, but now is an excellent time for Club photographers to do what is wanted during rambles and excursions, which provide splendid opportunities both for group photographs and for outdoor portraits of Leaders, secretaries and other officials. I hope to receive many fine pictures taken in these circumstances during the summer and to reproduce them month by month.

QUICK COMPETITIONS

Competitions in which judgment comes quickly are always exciting and attractive, and are ideal for summer meetings, say on rainy days when an outdoor programme has had to be abandoned. A good example is provided by the programme of the Leas School M.C., to which reference is made in "Club Notes" on this page. This Club has the use of an epidiascope, and with its aid drawings of Meccano Parts, pictures of mechanisms and illustrated advertisements from the "M.M." are projected on a screen, and members are asked to identify them. This game can be extended to aeroplane identification from photographs, drawings or silhouettes, which can be shown for say half a minute each. If no epidiascope is available, the actual photographs can be inspected or large drawings made. The Leader or official in charge reads out a list of correct answers, as soon as the contest closes, and members' results are then checked up. Small prizes should be awarded in brisk contests of this kind. In the case of the Leas School these took the form of good things to eat, to the intense satisfaction of the winners! Points in a general sessional competition also can be awarded.

Club Notes

THE LEAS SCHOOL M.C.—Two members gave an instructive Talk on the camera and the making of prints and enlargements. In a competition drawings

of Meccano Parts, pictures of mechanisms and advertisement illustrations from the "M.M." were projected on a screen for identification. Other Talks have been given on "Moths and Butterflies" and on "Tanks." A reserve of Nuts and Bolts and other Meccano Parts is available for borrowing by members in need of these essential parts. Club roll: 52. Secretary: M. P. Warburton, The Leas, Ullswater.



Mr. L. S. Pascall has been President of the Totnes M.C. since it was affiliated in February 1940, and Leader since October of last year. The Club has had a very successful career. Its programme has been well varied, with Model-building, Hornby Train operation and cycling, and fine Exhibitions have been organised. There are two sections of the Club, the "Nuts" and the "Bolts," and Model-building Contests and Games and other Competitions are held regularly.

PLYMOUTH M.C.—The Aeroplane and Shipping Section have made good progress. The Club now boasts a Choir and Sketch Party. Excellent Meccano Models are being made at meetings. The Club's steel track has been laid down and well ballasted, and scenery has been added to make an attractive and practical layout. Club roll: 18. Secretary: M. Allen, 11, Rosedale Avenue, Peverell, Plymouth.

OAKFIELD (NEWQUAY) M.C.—Aeroplane Construction and Rambling are favourite pursuits of members. Attendances at Aeroplane Meetings are excellent and the younger members are rapidly learning the parts of various types of machine, and grasping constructional ideas. Club roll: 19. Secretary: C. D. Foster, 2, Glamis Road, Newquay, Cornwall.

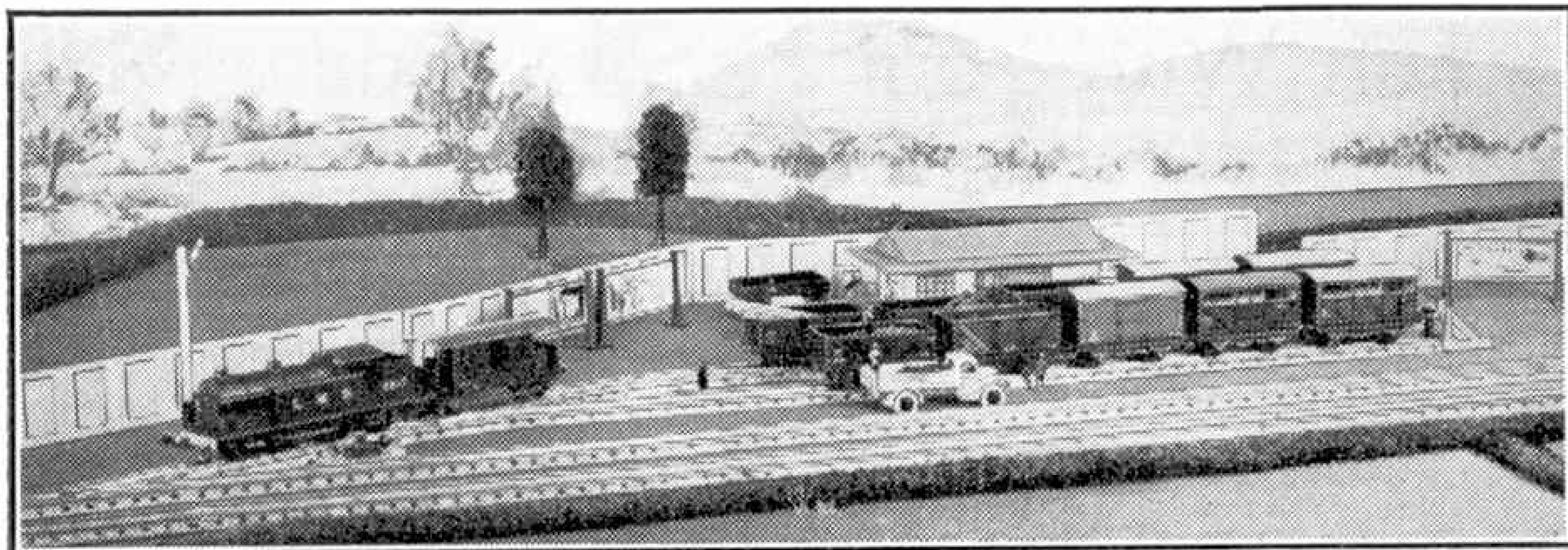
SOUTH AFRICA

MALVERN (JOHANNESBURG) M.C.—Mr. E. W. Sykes, Leader, has taken up war work with the Y.M.C.A., and has been succeeded by Mr. C. Courtis, assisted by Mr. H. Farrell. Meetings have included a birthday party and an enjoyable picnic. A furniture building competition has been held and Games have been played. Part of games time is now being devoted to First Aid and similar work. Parcels have been sent to members in the Forces. Three of these, E. Brown, D. Heene and A. Bolitho, have given their lives for the Allied cause. Secretary:

H. A. Trent, P.O. Box 8, Cleveland, Johannesburg.

Branch News

HORNSEA.—The various sections have conducted operations on the Branch track, which is equipped with solid steel rails. The services have included troop trains and the conveyance of cattle, lumber and general freight in addition to passenger trains. Cattle trains are run in conjunction with market day in a country town, after which accommodation is provided for the cattle sold on their way to the farms. A Lantern Lecture on "Locomotives and Railway Working" has been given, a cinematograph film also being used for illustrations. Secretary: J. Jackson, Le Chalet, Hornsea Burton Road, Hornsea.



The yard portion of the layout showing shunting operations about to commence. The engine of an "up" goods train is moving the Brake Van before distributing the wagons in different sidings.

A Hornby-Dublo Station Layout

THE layout shown in the diagram on this page is based on typical practice at through stations on a double track main line where there is a goods yard or sidings on one side only of the main tracks. In this case the yard, consisting of two dead-end sidings, is led off what we will call the "up" track by means of standard Hornby Dublo Points. The up track is connected to the down by two crossovers, each constructed in the usual way of two left-hand Points. The reason for the provision of two crossovers will be made clear later in this article.

The arrangement of the various buildings can be varied according to the material available and the space allotted to the layout. The Goods Depot, for instance, could be placed between the yard tracks instead of on the far side of them as shown. Each arrangement has its own particular advantages. With the passenger station two standard Main Line Stations could be used, or alternatively one of these could be replaced by an Island Platform. This combination is a popular one with Hornby-Dublo train owners, the Island Platform usually being placed on the side nearest the operator, where it does not take up so much width as the Main Line Station, and allows a better view of the trains and of the far platform. The Signal Cabin is shown in the best position for the "signalman" to keep his eye on the operations we are going to describe. No signals are shown in the diagram, but readers should find no difficulty in fixing up sufficient for the track layout.

We will suppose first that we have a down goods train approaching the station and requiring to do a little shunting in the yard. The train is travelling from right to left along the lower of the two main tracks in the diagram. It stops just short of the first set of crossover Points that it encounters. The engine can then be uncoupled and run forward until clear of the crossover, then reversed across the up main line, and so into the yard. If it has wagons to put off at this stop, these can be shunted in at the same time; and then any vehicles to be picked up can be brought

out from the yard and finally backed on to the train, which can then resume its journey.

With the layout as shown in the diagram any marshalling operations in and out of the yard will require the up main line to be used as a shunting "spur."

If desired the layout can be modified to include a shunting spur between the Signal Cabin and the up line; then the distance between the passenger platforms and the yard suggested in the diagram will have to be increased to allow for this. The diagram shows just the bare idea of the layout and is not meant to represent the actual lengths of track or distances between Points, and so on. These details can be modified as required.

An up goods train requiring to leave wagons in the yard has to come to a stand between the two sets of crossover points; these therefore should be spaced sufficiently far apart to allow for the longest train that is likely to be run. The engine draws ahead, clear of the crossover by the Signal Cabin; the crossover points are operated, and the engine then crosses to the down track, which it uses as a "run round" loop in order to get to the other end of the train. The train can then be pushed into the yard, the wagons to be left being in the lead; then when these have

been uncoupled the train can be drawn out again, the engine run round and the journey resumed.

With an up train that is to attach some wagons from the yard the proceedings are a little more complex and therefore more fun. The train must then halt just short of the crossover on the extreme left of the

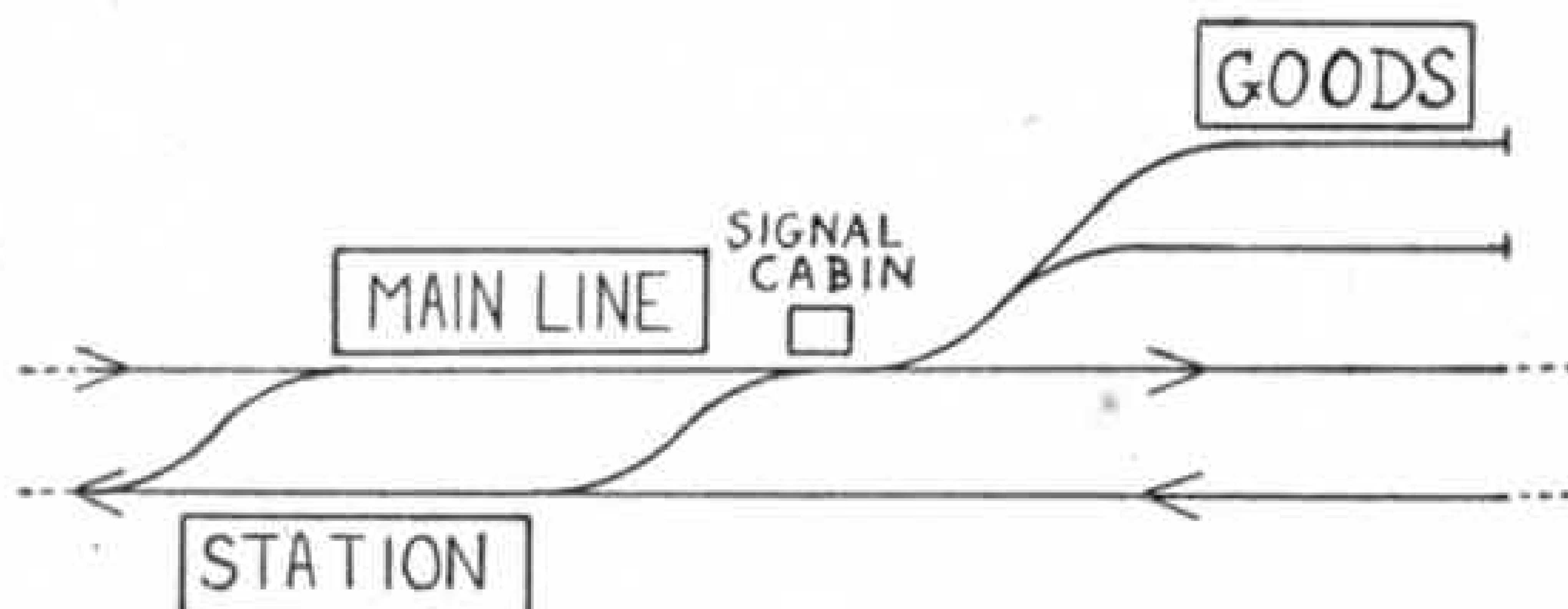


Diagram of the layout dealt with on this page.

diagram. The engine then goes ahead into the yard, and having coupled up to the wagons, perhaps after a certain amount of preliminary shunting, draws them out to the main line and leaves them on the up track between the two crossovers. More running round follows, so that the engine is at last in a position to back the wagons on to the waiting train, which can then move off.

The parts of the line that are shown dotted, or rather broken, at either end of (Continued on page 268)

Fun With Your Hornby Railway

Making the Lineside "Grow"

IN our Gauge 0 Hornby Railway article last month we dealt with the lineside, indicating briefly what might be done with standard accessories such as the Paled Fencing, Trees, and so on. Now we have more to say on the same subject, and as before we will begin with the uses of standard railway buildings and structures included in the Hornby range.

One of the most necessary buildings on a miniature railway is the station. Without it the railway has no purpose, and our model expresses will have nowhere to begin or end their journeys. This is almost equally true of goods services, but although it is possible to do without a goods depot, providing that the freights carried are all of kinds that can be handled "in the open," a passenger station can scarcely be done without.

Hornby Stations follow the standard main line way-side station practice, and they have a realistic and attractive appearance. A special feature of the more elaborate models, the No. 4 and 4E patterns, is that the end sloping ramps are detachable from the main or centre section of the platform; this makes it possible to extend the latter in either direction by means of the standard Passenger Platform lengths. These lengths have fastenings at each end similar to those provided on the station platforms and ramps so that the complete assembly can be coupled together rigidly, a ramp being added at each end to finish off the station in the regulation manner.

Then there is the Island Platform, which is designed for use between two tracks. This is extensible in length in a similar manner to the Station just referred to. The Island Platform can be used alone, or in conjunction with the other Stations where there are several tracks to be provided with facilities for passenger traffic.

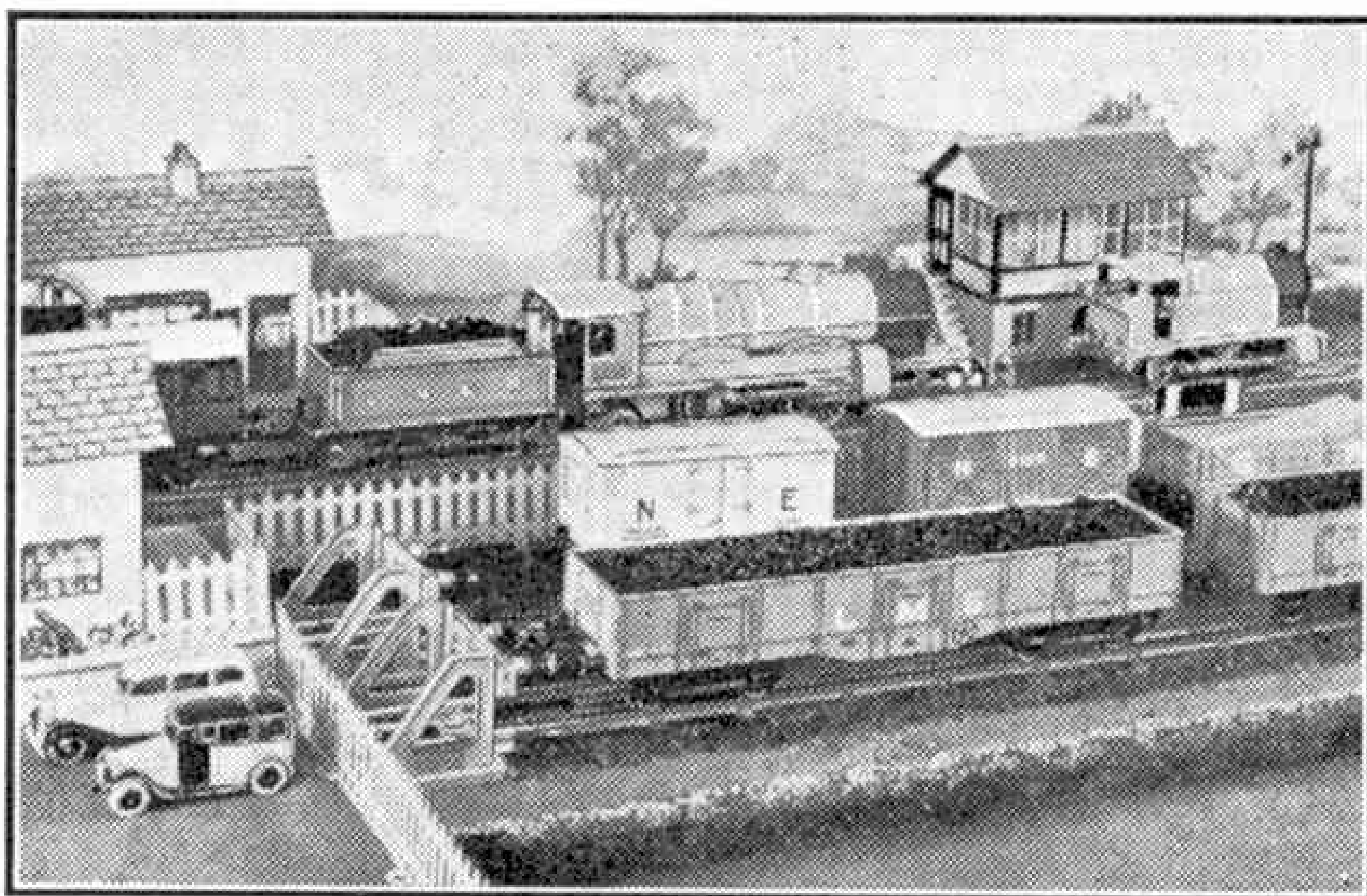
Close to a station in real practice is invariably the signal cabin, and sometimes level crossing gates. There is therefore plenty of scope for the Hornby reproductions of these things. In the illustration on this page the Signal Cabin is prominent and is well placed just beyond the platform end where the miniature "signalman" has a good view of the operations in progress, in this instance the attachment of an assistant engine for the next stage of the journey to the train that is standing alongside the platform.

A little distance away from the passenger station, as a rule, is the goods station. It may be served by a more or less extensive series of sidings. In miniature where the space available is sufficient for a Hornby Goods Platform there will almost always be enough room also for a siding or two. Generally the Goods Platform is placed so that railway wagons can stand at one side of the platform while road vehicles can be brought along the opposite side. Where the Platform has to be put in close up to a wall owing to space restrictions the road vehicles and other features can be included in the background scenery, if this is provided. Sometimes, but not always, there is in the sidings attached to a station a water tank, so that shunting engines or engines of pick-up goods

trains that call at the yard can take in water when required. The Hornby Water Tank can therefore be placed in the station sidings, and it is a necessary part of the equipment of the locomotive yard.

The main feature of the locomotive yard is the engine shed, and the Hornby Sheds are effective buildings well suited to the storage of miniature locomotives in a realistic manner. The No. 2 variety of Engine Shed is a fairly bulky Accessory, for it is a two-road structure, and thus it is useful for "filling up" one of the inevitable corners on an oval continuous layout which it is difficult to disguise in the ordinary way. Mostly the Sheds used in such situations will be of the "dead-end" type, and for this the No. 1A and 2A patterns are specially suitable. The other Sheds are of the "through" pattern with doors at each end, and they are ideal where there is plenty of space lengthways for a locomotive yard.

At stations or along the line in suitable spots we need one or other of the various Footbridges. These models look particularly well if spanning a curved

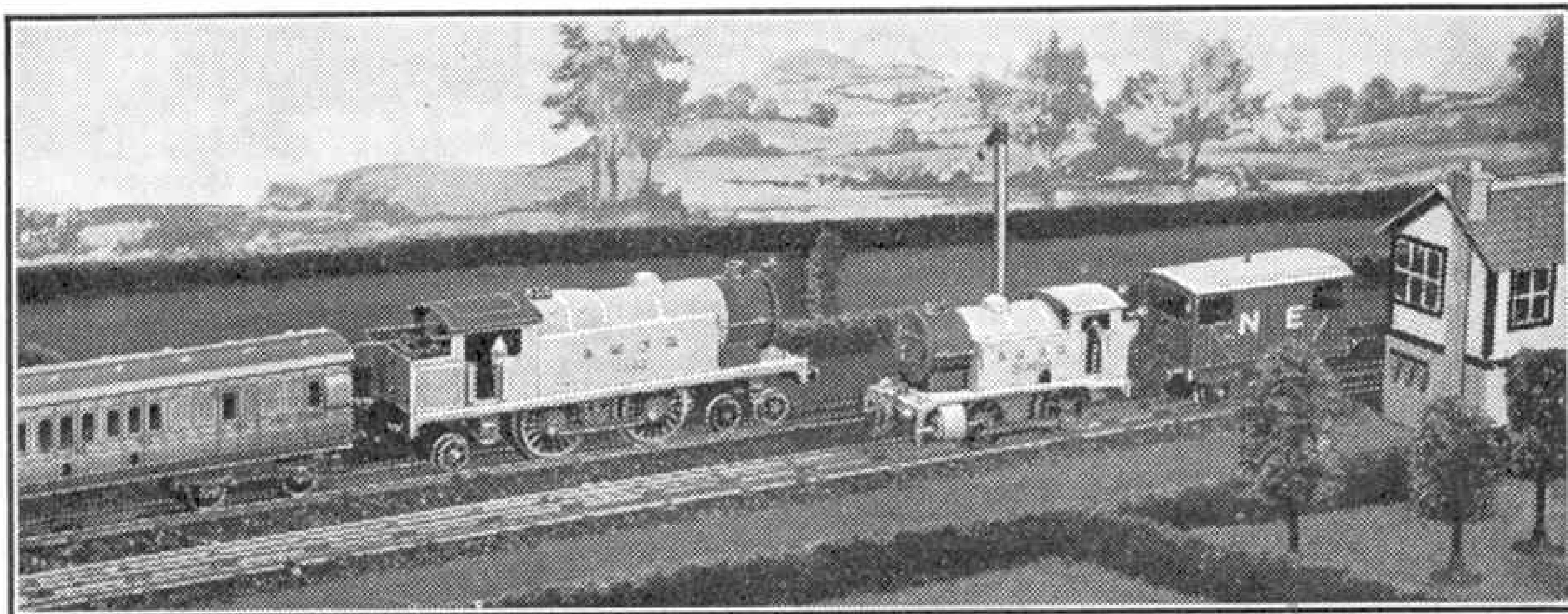


A Station and yard in attractive surroundings. Standard Fencing and Hedging enclose the railway and the background is specially effective.

length of track; they have the effect of "breaking up" the necessarily abrupt curving that is the rule in miniature. If footpaths or walks are arranged to lead up to the steps of the Footbridge a considerable gain in realism results.

The Viaduct is an underline structure that can be made to carry the track across an imaginary depression on a portable or temporary railway, and it is then led up to by the sloping approaches that belong to it. On a permanent line situated on a raised baseboard these approaches are unnecessary, as it will be possible to arrange an actual gap in the baseboard to provide a reason for the use of the Viaduct. A sub-base below the level of the baseboard proper will not only keep the structure continuous, but also will provide support for the Viaduct piers and form a base for the miniature "waterway" over which the railway is carried by the Viaduct.

Various scenes of this type have been shown in these pages from time to time, and to reproduce the waterway a piece of rippled glass is excellent. Failing this a sheet of clean cellophane, first crumpled up and then straightened out just enough to leave an uneven surface, can be used. The sub-base under



"Somewhere near the sea." An unusual note is struck in the surroundings of this stretch of miniature railway representing an L.N.E.R. "coastal" line.

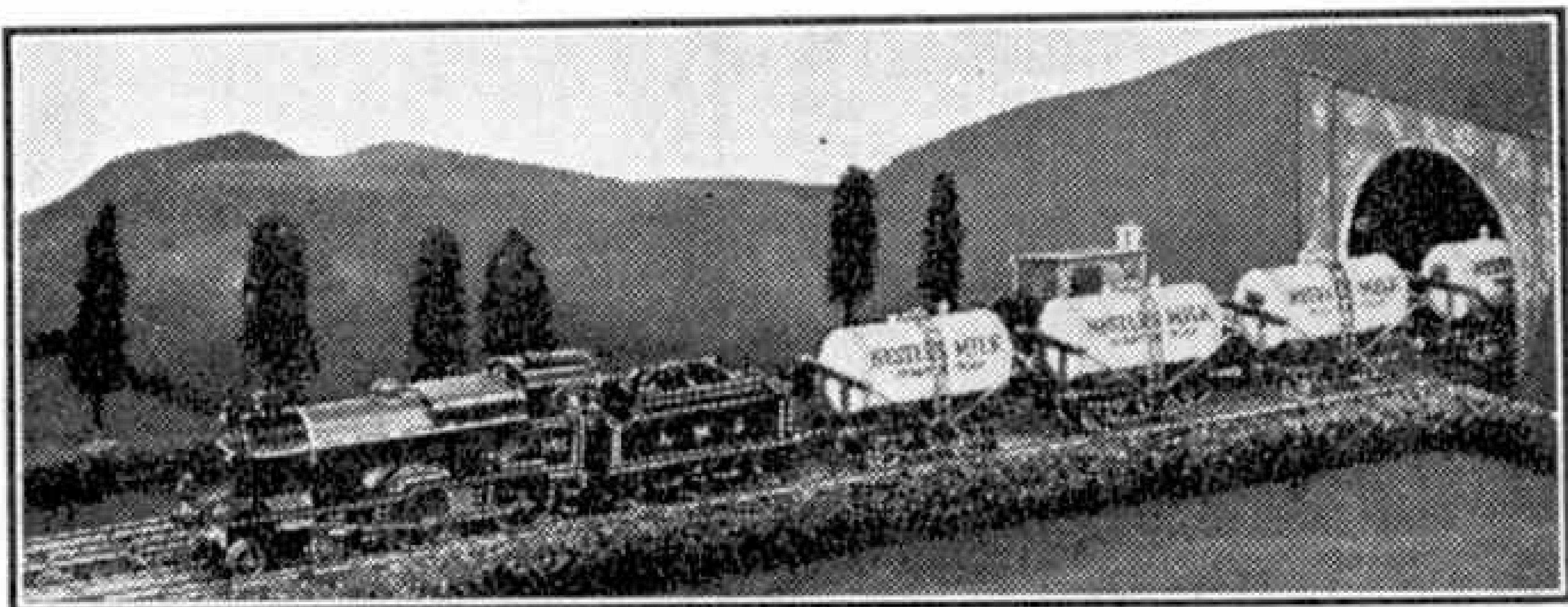
either of these materials should be painted with greens, blues and browns, the last especially at the edges of the "water." Here and there flecks of white to suggest the flow of the water are effective. The "banks" at the side of the stream can be modelled in Plasticine. This is easily worked, and can always be re-shaped if required either because the first attempts may not be very satisfactory, or because slight alterations may become necessary with the development of the layout. Small clean twigs and stones that are not too large can be employed as well, and these look best if they are left in their natural state. Hornby Hedging material detached from its usual wood base can often be worked into scenes of this kind.

Standard Hornby Tunnels can be included in the scenic effects of a layout, while for those who require something special in this way the reproduction of an actual tunnel end in cardboard provides a simple modelling task. Illustrations of tunnel mouths have appeared in the "M.M." and in the "Hornby Book of Trains" at different times; in addition most railway books and periodicals, and even the simplest railway books produced specially for children, invariably include a tunnel mouth of some kind. The lower illustration on this page shows something of the possibilities of tunnel end construction. Here the actual tunnel ends or faces have been made in cardboard and attached to a rough wooden framework of irregular shape that forms the foundation for the outer tunnel "covering."

On a permanent system laid on base-board, or even on the floor, it is easy to build up this sort of thing directly on the base of the line. On a railway that has to be put down and taken up again when finished with, matters are not so readily arranged. Still, it is possible to provide a base either of plywood or stout card on which the framework of the tunnel, or other scenic features such as a cutting "bank," can be mounted. In the case of a tunnel it is not at all a bad scheme to fix the track in place on this base so that it is always ready for use and requires no special adjustment to make sure that clearances are correct, particularly if the tunnel is situated on a curve. Many miniature tunnels are on curves because they help to fill up otherwise awkward "corners," for the tunnel "top" or covering can lead up from

the inside of the track and continue upward over the actual bore to such a height that no scenic background will be required.

Formerly stout brown paper was often used to provide the covering over the rough framework. Nowadays, however, this is difficult to obtain, and in any case we must not forget the paper salvage campaign. So we may use some such material as canvas or even sacking, if not too coarse, stretching this over the built-up framework to which it is attached by tacks or drawing pins. If the places where the covering is to rest are covered with glue or Seccotine it is an advantage. The surface of the covering should now be daubed with green and brown paint, and while this is still sticky a little sand and a few small stones can be strewn on in places. Twigs, Hornby Trees and pieces of Hedging material also can be planted on with advantage, but these probably will require to be attached separately, either by gluing, or by being "stitched" on with cotton if they are placed where they are likely to slide down if merely glued. The "trunks" of the Hornby Trees can be pushed through holes made in the covering fabric, and rest in holes in the framework underneath. A



A home-built tunnel mouth with made-up approach and covering as described in this article. Hornby Trees add to the realism of the scene.

drop of Seccotine in the holes will secure them nicely.

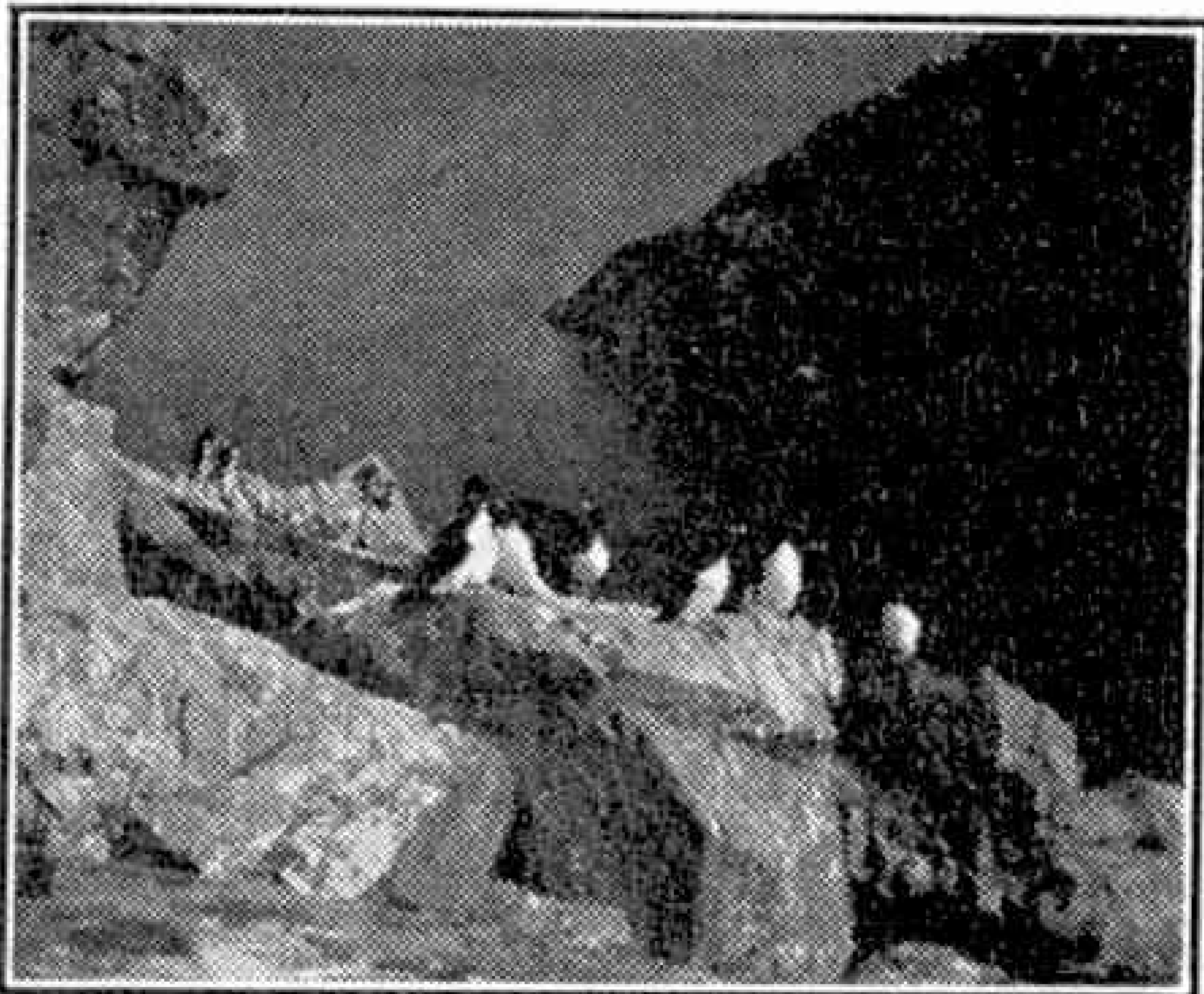
Similar methods can be applied to the cuttings approaching the tunnel or elsewhere along the line, but no amount of careful lineside modelling will give the complete effect of depth and distance to the miniature scene. Therefore whenever possible background scenery, even if a little rough, should be attempted. The finish given in this way to the scenes in the illustrations to this article will be noted. Detail is not necessary and indeed should be avoided; only the broad effects of the countryside depicted should be aimed at.

From Our Readers

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

ISLAND HOME OF THE SEA BIRDS

I have visited one of the islands off the coast of Pembrokeshire referred to in the article on page 162 of the May "M.M." The course set on sailing from the mainland to the island was by no means a direct



Razorbills on a Welsh island. Photograph by P. Mills, Compton Greenfield.

one, owing to the currents that abound on this part of the coast, and a smaller island was passed on the port side before the only accessible shingle beach was reached.

The cliffs on the south side of the island provide nesting quarters for kittiwakes at the lowest level, razorbills above them, guillemots a step higher and puffins in the light soil at the top. These tiers are quite regular, and no birds trespass on the breeding ledges of another species. At certain points on the island the buzzard nests on ledges half way down a sheer cliff. Among the bracken and heather the herring gull, and the lesser and greater black backed gulls nest in hundreds. These birds are increasing in numbers at a great rate, and the number of dead Manx shearwaters and puffin on the island testify to the slaughter they produce amongst the burrowing nesting birds.

The shearwater, although a magnificent flyer and swimmer, is almost helpless on the ground, as nature has set its legs very far back to enable it to fulfil its chief function as a swimmer. Thus the bird only visits or leaves the nesting burrow in darkness, and has to use a high rock to take-off when going out to sea just before the first streak of dawn. In spite of the cover provided by darkness the casualties amongst the shearwaters are very heavy.

That master of the air, the peregrine falcon, nests on the north side of the island, in company with the raven and the buzzard. The deep caves at various points provide breeding places for the grey seals, and the common seal is also seen around the island. A small pond in the centre, in springtime surrounded by acres of bluebells, provides some nesting sites for a pair or two of moorhen and wild duck. The wader

family is represented by the curlew and oyster catcher; three or four pairs of the former nest amidst the bluebells, and the latter bravely nests amongst the gulls.

P. MILLS (Compton Greenfield).

A RAILWAY SIGNAL FOR ROAD TRAFFIC

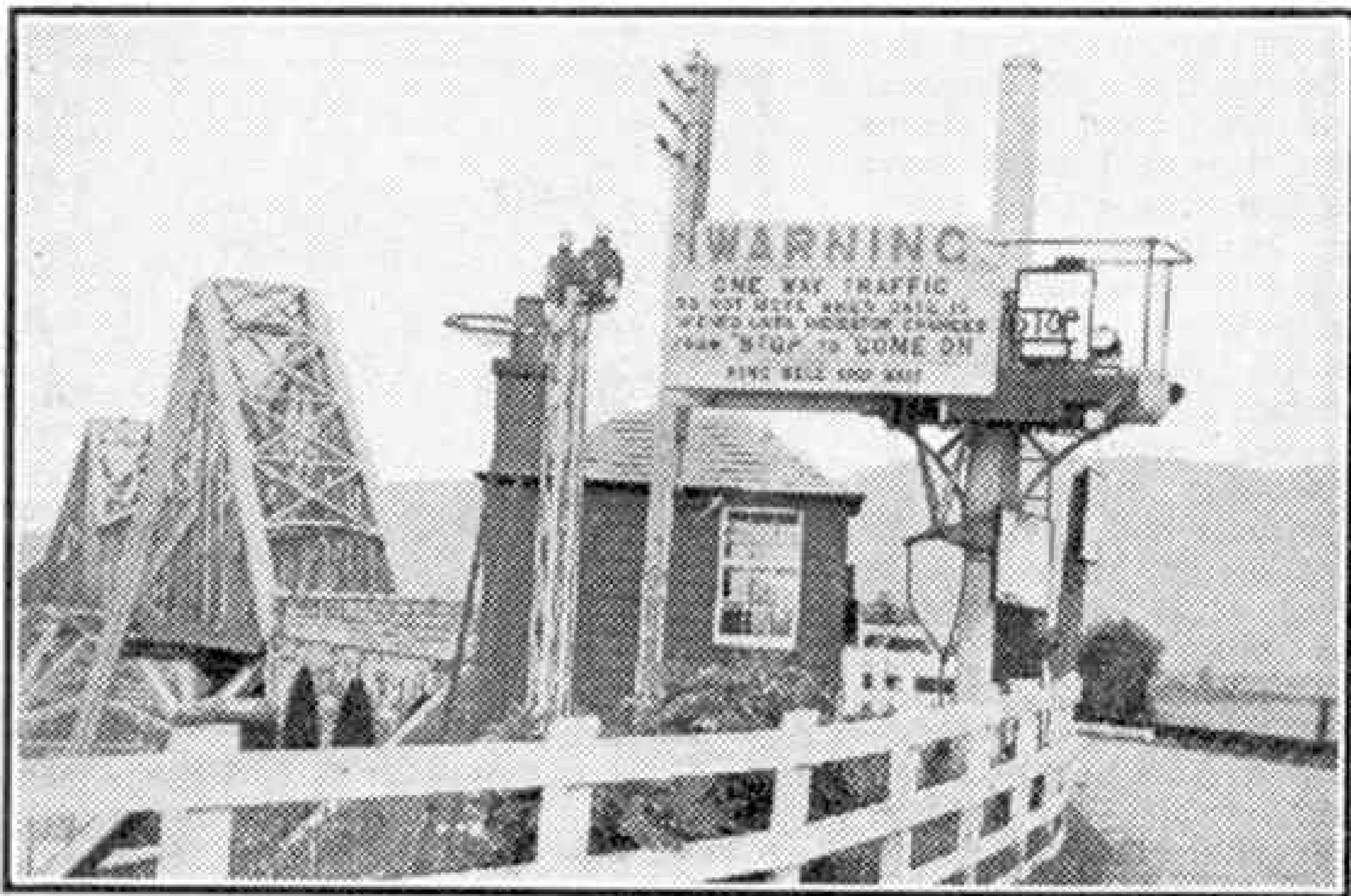
An unusual problem in traffic signalling for railway engineers was provided at Connel Ferry railway bridge, near Oban, which is used by traffic by road as well as by rail, since it saves a big detour on the way between Oban and Ballachulish. Motorists approaching the bridge from the Oban side signal to the control box at the opposite end by ringing a bell, and the gate is then opened for them. They must wait until they are notified by the changing of the "Stop" sign to "Come on" that the way is clear. This signal is seen in the lower illustration on this page.

G. CROWTHER (Keighley).

ENGLAND'S MYSTERY MOUND

Few people are aware that England possesses the largest artificial mound of earth in Europe. This is Silbury Hill, a grass-covered heap 130 ft. high covering over five acres of ground. It can be seen from the Bath Road between Marlborough and Calne in Wiltshire.

The origin of the mound is a mystery. In early times it was dismissed simply as the work of the Devil. The story goes that he had a grudge against Devizes because of its holiness, and was on his way thither with a sack of earth to dump on the place. On the road, just where the mound now rises, he met a tramp carrying 14 pairs of old shoes, and asked him how far away the town was. The tramp suspected his intentions, and as he was a holy man he replied that he had worn out all the 14 pairs of shoes since leaving there. Evidently the Devil did not think it



A railway signal used for the control of road traffic. Photograph by G. Crowther, Keighley.

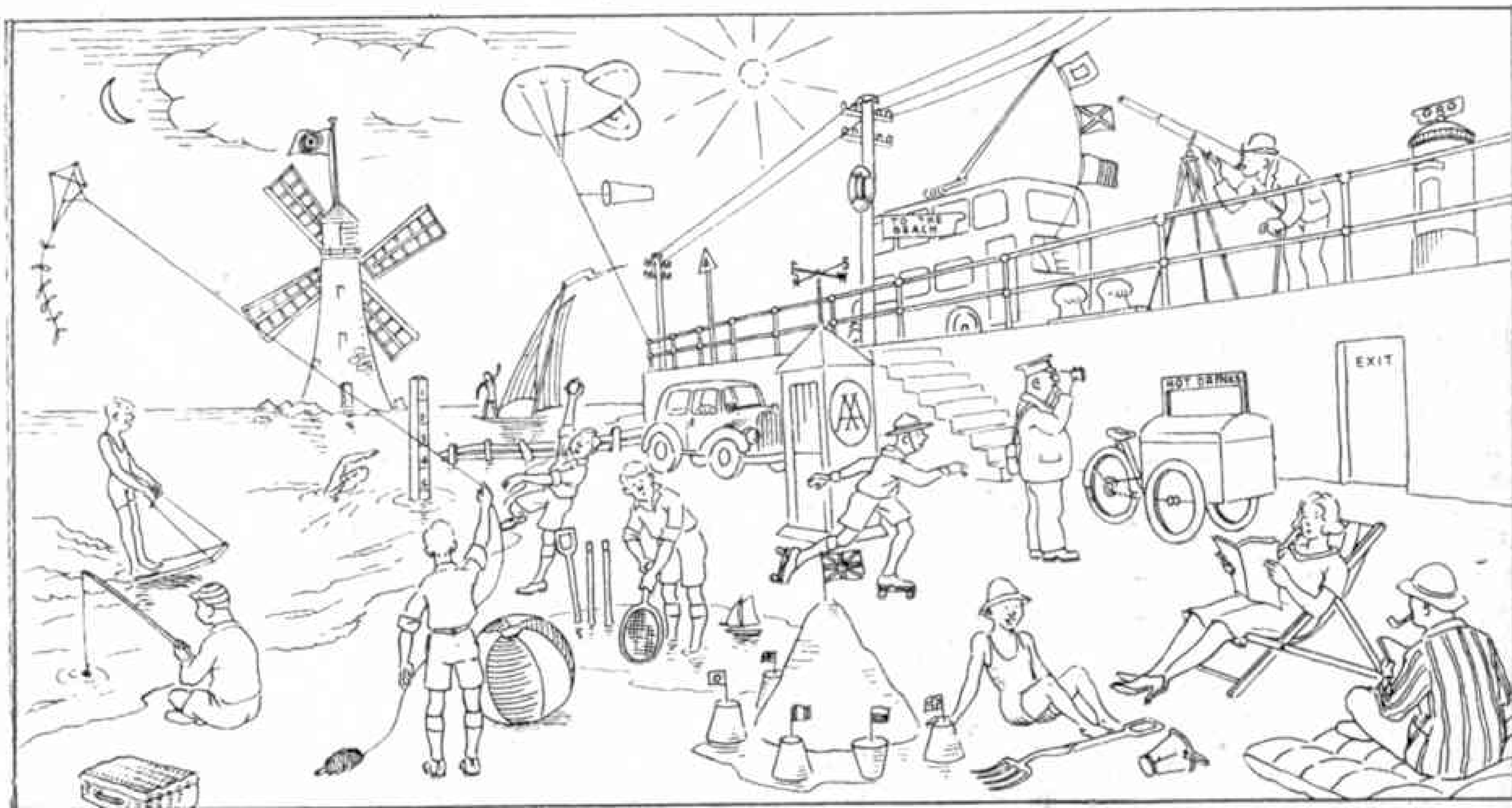
worth while trudging so far, for he gave up the project and dumped his load on the spot.

Shafts driven into the mound have failed to reveal any remains, but it is certainly prehistoric in origin, for the otherwise straight Roman road from Winchester to Bath makes a definite bend at this point to avoid it, proving that it was built before the road.

F. UNDY (Wakefield).

Competitions! Open To All Readers

Spot the Errors!



Above is a real summer picture, suggesting holidays by the seaside in the sunny days that we look for in July. When it is looked at a little more closely, however, it becomes clear that something is wrong. In fact there are many things wrong, for the artist has deliberately introduced a large number of mistakes, some of them easily seen, and others not so obvious, and we want our readers to find and make a list of the errors. Their descriptions of these should be kept as short as possible, and at the foot of each list the number of mistakes found should be given.

Three prizes of £1/1/-, 10/6 and 5/- will be awarded for the longest list of errors in each of the two sections, for Home and Overseas readers respectively, into which the contest is divided. In addition there will be consolation prizes for other meritorious efforts. Entries should be addressed: "July Errors Contest, Meccano Magazine, Binns Road, Liverpool 13," and they should be posted to reach this office not later than 31st July for the Home Section, and 30th November for the Overseas Section. Each competitor must write his name and address on his entry.

Do You Know These?

July is a holiday month, and for our railway contest we are therefore setting readers a simple task that they can carry out with pencil and paper. Below are 10 railway questions, all of which will be found very interesting, and will give readers an enjoyable time tracking down the solutions to those they cannot answer straightaway. One or two of them will provide opportunities for poring over railway maps, a favourite pastime of practically all railway enthusiasts. Every reader of the Magazine can enter this contest.

1. What was the first "Pacific" or 4-6-2 tender engine to run on a British railway? Give the owning company as well.
2. In normal times there is a named express called "The Devonian." Which railway operates this?
3. A through train runs from Torquay to Liverpool in peacetime. Name six of the principal junction stations on the route.
4. In a signal box what colour are the levers of distant signals usually painted?
5. In a tunnel on an English main line there are water troughs. Where is this tunnel?
6. Where is the only British 0-10-0 locomotive used?
7. Which British main line company does not use water troughs?
8. Name the longest railway tunnel in the British Isles. What company's lines run through it?
9. Where is Bo-Peep Junction?
10. Certain letters conveyed by train were post-

marked "Caledonian T.P.O. Night Down." To what train did this refer?

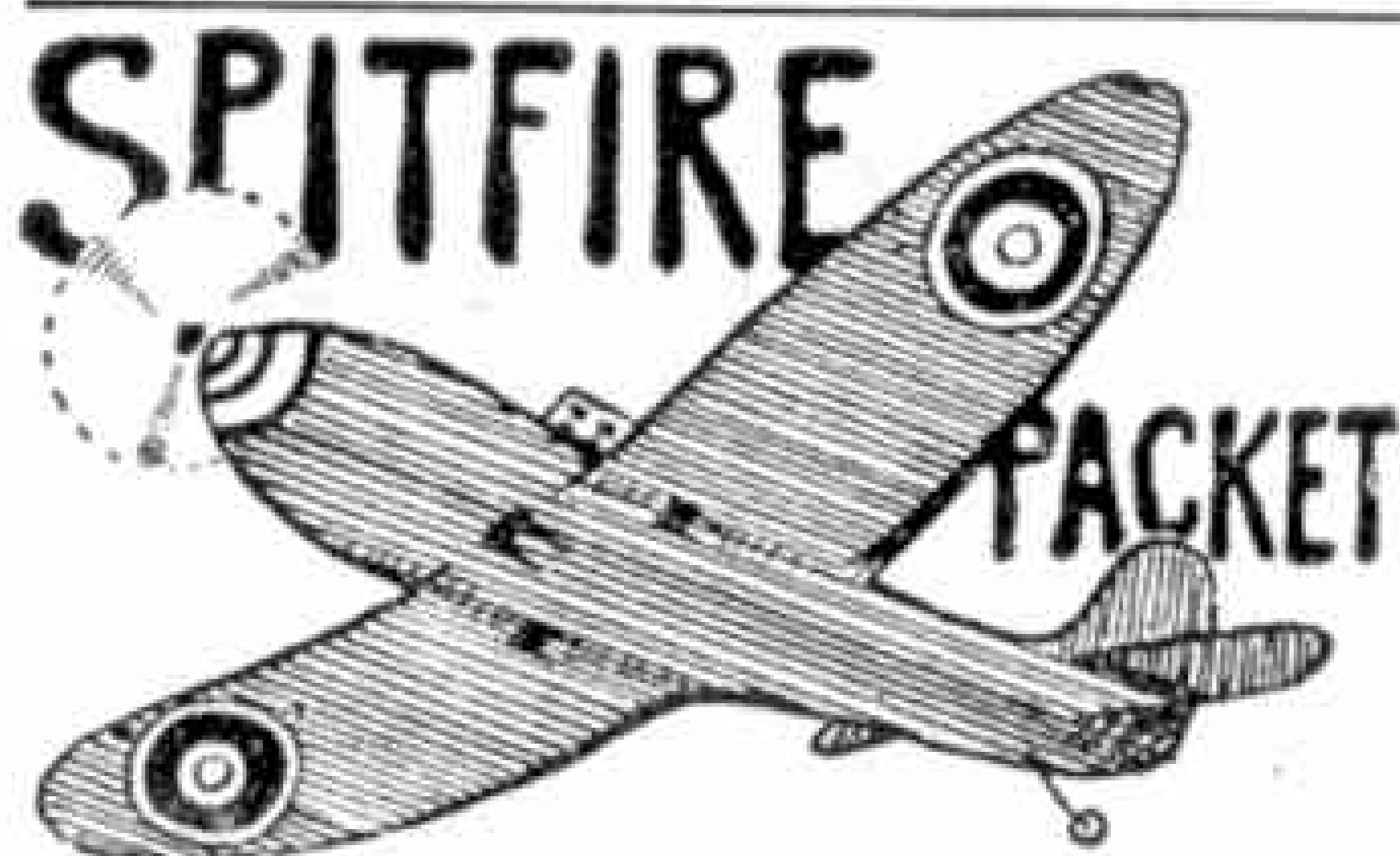
Answers should be brief, and competitors must remember to write their full names and addresses on their entries. There are the usual two sections in this contest, for Home and Overseas readers respectively, and in each prizes to the value of 21/-, 10/6 and 5/- will be awarded. Entries must be addressed "July Railway Quiz, Meccano Magazine, Binns Road, Liverpool 13." The closing dates are: Home Section, 31st July; Overseas Section, 30th November.

July Photographic Contest

In this month's photographic contest prizes are offered for the best photograph of any kind submitted. There are two conditions—1, that the photograph must be taken by the competitor; and 2, that on the back of each print must be stated exactly what the photograph represents. A fancy title may be added if desired. We remind readers that they must not photograph any features of military importance.

Entries will be divided into two sections, A for readers aged 16 and over, and B for those under 16. They should be addressed "July Photo Contest, Meccano Magazine, Binns Road, Liverpool 13." There will be separate sections for Overseas readers.

In each section prizes of 15/- and 7/6 will be awarded, together with consolation prizes for other good efforts. Closing dates: Home Section, 31st July; Overseas Section, 30th November.



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Stamp Collecting

Stamps Illustrating the War

LAST month we suggested that making a collection of stamps to provide a pictorial map of places in the war news would be a fascinating summertime occupation, and we indicated how such a collection could be started.

The war has grown from a European conflict into one that is world wide, and as it spreads there are new places to be represented in our collection. Mexico is a good example of developments of this kind. This country now comes into our scheme as a result of her declaration of war against the Axis, an event that occurred after our previous article was written. There are several stamps that can be used to illustrate the part Mexico now plays. The most comprehensive of these is perhaps the 40c stamp of the issue of November 1915, for it features a map of Mexico on which are marked shipping routes across the Gulf of Mexico. It will be remembered that the immediate cause of the declaration of war was the sinking of Mexican ships in the Gulf by Axis submarines, so here is a stamp that not only indicates Mexico's position in the war, but also helps us to realise the reason for it. The stamp is illustrated at the foot of this page.

The sudden attack by the Japanese on the Aleutian Islands is another example of the way in which current events are continually extending the range of the collection. Alaska has been on the fringe of the war for some time, for it provides the United States with the naval base of Dutch Harbour; and one of the war measures initiated in conjunction with Canada is the construction of a great road through British Columbia to Alaska as a defensive measure. Now the string of islands across the Pacific from the mainland of Alaska has been the scene of actual fighting, and there may be more to report before these words appear in print. Alaska therefore must come into our collection. Its stamps are those of the United States, but fortunately for our purpose a special Territorial issue made in 1937 included one stamp, of value 3c, that gives a fine illustration of Mt. McKinley. Mt. McKinley is 20,300 ft. in height and is the highest peak in Alaska, and indeed in North America. The stamp is reproduced on this page.

No reference was made last month to Libyan stamps, of which there are several that should certainly be included if they can be obtained. These are Italian issues, and the great battle now proceeding in the desert makes them of special interest. Benghazi, the much bombed port on the Mediterranean coast, which has twice been in British hands, is illustrated



on two air stamps, of values 50c and 1.L., of the issue of 1938 that commemorated the 12th Tripoli Exhibition; and the lower values of the Cyrenaican issues of May 1932 show a fine desert scene, with a

camel and its rider in the foreground. Tripoli, another heavily bombed port often in the news, is featured on the 20c and 25c values of the issue of 1927 that celebrated the 1st Tripoli Exhibition.

Madagascar came into the picture when Diego Suarez was captured by a British Expeditionary Force to forestall possible Japanese occupation. Diego Suarez issued its own stamps from 1890-1894. These are now obsolete, stamps issued for use throughout Madagascar having displaced them, and few perhaps of our readers will be in a position to include any of them, especially as the earliest are beyond the reach of most junior collectors

in price. Stamps of Madagascar are available, however, and one or more of these should certainly be included. Perhaps the best and most easily obtainable is one issued in 1908 in 16 values. Each of the stamps is in two colours and these are varied from stamp to stamp. The design illustrates transport in Madagascar, and it is seldom that so much is shown in a single stamp. The background shows long hills rising above rice fields, and on this stands Tananarive, the capital, with

its modern buildings, and the old Royal Palace on the right. In the foreground is a representation of a European being carried in a "filanjana" or palanquin, and a train emerging from a tunnel is seen on the right. This stamp is illustrated at the top of the page.

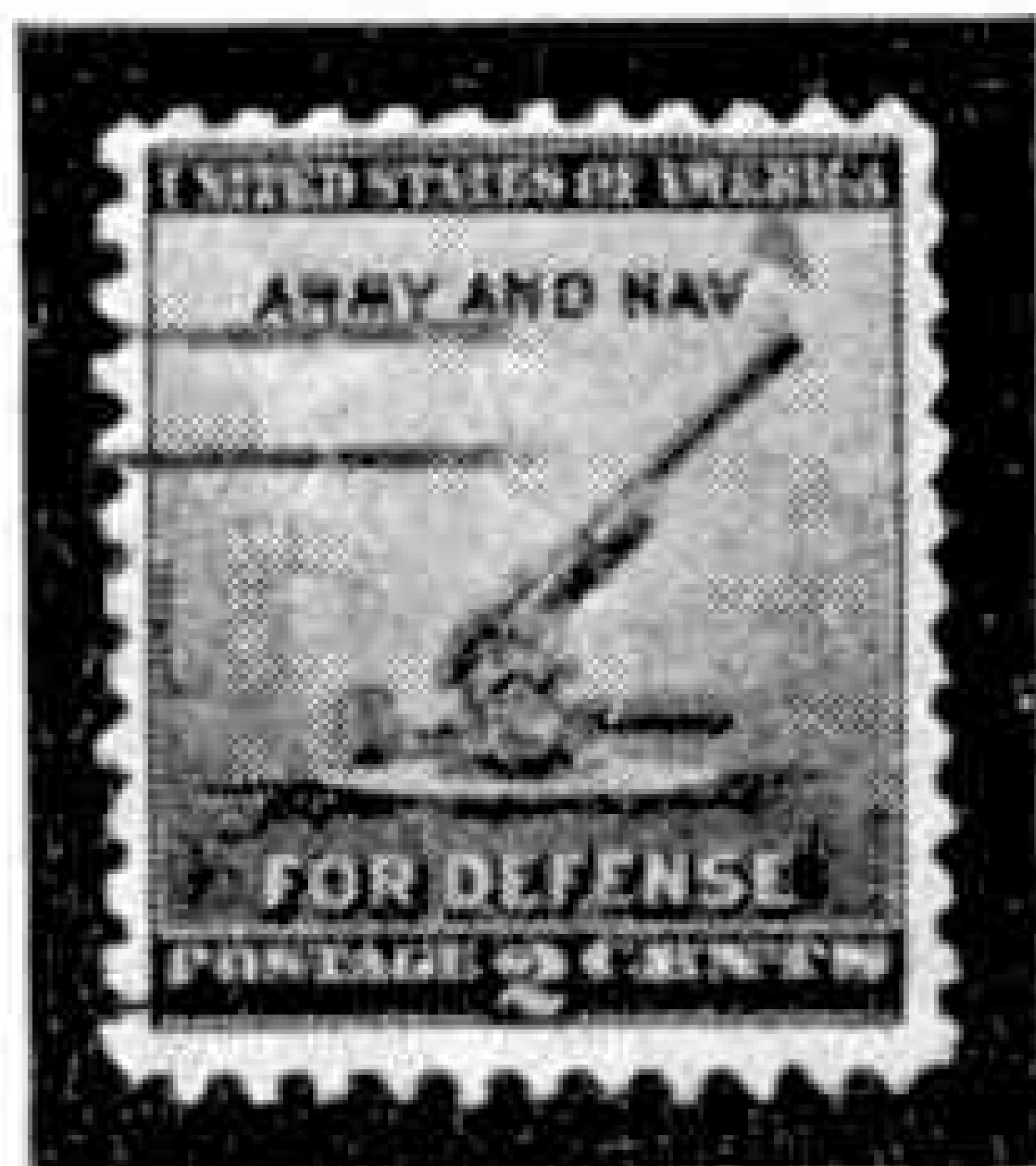
Other islands definitely in the war news, although they

have not been the scene of fighting, are Iceland and Martinique. Iceland is on the fringe of the Battle of the Atlantic, however, and it was occupied

by British forces as a precautionary measure following the fall of Denmark. The United States now share in this occupation. The Cathedral of Reykjavik, the capital, is shown on the 35 aur. value of the 1925 series, while the Parliament buildings are featured in the 1930 Parliamentary Millenary series. Martinique is the French West Indian island where French warships have taken refuge; these were the subject of recent negotiations by the United States. There are several stamps showing views on the island, and the best for our purposes are the 25c to 90c values of the issue of 1908, which show St. Pierre, the commercial centre of the island. The same design appeared on various stamps issued at intervals up to 1924-7.

The 25c value is illustrated here, and the Iceland stamp referred to is reproduced on page 265.



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DE GAULLE 1942

Cameroun is the first of the Free French Colonies to issue a new set of stamps, having the words 'France Libre' in the design. I offer three of this historic issue entirely free to all applicants for approvals enclosing 2½d. postage.

ROYDON — WARE

Stamp Gossip

and Notes on New Issues

Commemoratives from the New World

Cuba, Dominica, Ecuador, Mexico and Chile have all issued interesting commemorative series, most of them celebrating the 400th anniversaries of historical events.

Cuba has produced a topical series of stamps in celebration of the triumphs of American democracy. There are five values in the series, and their colours and designs are as follows: 1c, green, Western Hemisphere; 3c, sepia, the Arms of Cuba with portraits of Maceo, a celebrated Cuban leader of the liberation period; Juarez, the Mexican President who overcame the Emperor Maximilian; Abraham Lincoln and Simon Bolivar; 5c, blue, design symbolic of the labour and wealth of America; 10c, magenta, tree of fraternity, Havana; 13c, carmine-rose, Statue of Liberty.

The Dominican stamps include an air issue of two values, 10c and 75c, the design showing a winged envelope on a representation of the globe. A second series, also of two values, $\frac{1}{2}$ c and 1c, has appeared in connection with a popular education campaign. The design of these stamps shows the torch of knowledge and a rural school, a portrait of President Trujillo also being included.



the 5s value an expedition leaving Quito. Two of the stamps, a 1s and a 2s respectively, show views of Guayaquil and Quito, the latter the capital and the former the chief port of Ecuador.

New stamps from Mexico also commemorate events of 400 years ago, in this case the founding of the cities of Merida and Guadalajara. The various designs of each show views of the cities concerned and their arms. Chile has celebrated the fourth centenary of the foundation of Santiago, its capital, a city of about 860,000 inhabitants, in a similar manner.



Another South African Stamp for Kenya

The provisional stamps for Kenya, Uganda and Tanganyika, to which reference was made in these notes in our issue of October 1941, are now practically obsolete after serving the postal needs of the three countries for nearly eight months. They were 1d., 2d. and 3d. South African stamps overprinted with the new values 5c, 10c and 20c, and with the words "Kenya," "Tanganyika" and "Uganda." Another example of a South African stamp adapted to a similar purpose has now been added to the list, for the present 1s. value of the Union, has been issued for use in



Kenya with a surcharge of 70c.

A New Dutch West Indies Series

Holland has issued a new series for use in the Dutch West Indies. This includes both ordinary and air mail stamps and the printing has been carried out in Great Britain. The portrait of Queen Wilhelmina forms part of the design of each stamp, and the ordinary stamps show Curaçao and other Dutch West Indian islands.

The values and designs are as follows. Postage: 1c, St. Bonaire; 1½c, St. Eustatius; 2c, Saba; 2½c, St. Maarten; 5c, Aruba; and 6c, Curaçao. Air Mail: 10, 35 and 70c, aeroplanes over map of the Dutch West Indies; 25c, 50c and 5g, aeroplanes on landing ground. 30c, 60c and 10g, two-engined passenger aeroplane on landing ground. The places pictured on the ordinary stamps are all Dutch West Indian islands.



A new Swedish air mail stamp of 20kr. has been introduced to meet the needs of the present service from Sweden to the United States. The high value is necessary because the air mail rates to the States, the only service now available to that country, are themselves very high. At present rates 20 kr. are equivalent to nearly 24/- The stamp is blue and the design shows two flying swans.

Leaders in the War

General Sir C. J. E. Auchinleck

General Sir Claude John Eyre Auchinleck was born in 1884 and educated at Wellington College. He followed his father's example by taking up a military career, and he has spent almost all of this in India and the Middle East. During the war of 1914-18 he served first in Egypt, for a short time in 1915 at Aden, and from 1916-19 in Iraq. He was awarded the D.S.O. in 1917 and the O.B.E. two years later.

In India in 1929-30 he commanded the 1st Batt. 1st Punjab Regiment. He played an important part in operations against the wild Upper Mohmand tribesmen on the Afghan frontier in 1933, and again in 1935 when he commanded the expeditionary force nicknamed the "Mohforce." He was Deputy Chief of General Staff, Army Headquarters, India, 1936-38.

His first big job in the present war was that of commanding the British troops at Narvik in 1940. After that gallant exploit he returned to England and was appointed General Officer Commanding-in-Chief, Southern Command, in which capacity he had charge of the anti-invasion defences of the South Coast. A few months later he was again sent to India, where his great knowledge of the country and its Army was utilised in bringing the military defences up-to-date, and in speeding-up the training of Indian officers.

On 1st July 1941 he was appointed General Officer Commanding-in-Chief, Middle East, in succession to General Wavell.

This sturdily built, keen faced, blue eyed Scotsman, known to the troops as "The Auk," is an exceptionally clear thinker with a remarkable capacity for getting things done.



General Sir Claude John Eyre Auchinleck, G.C.I.E., C.B., C.S.I., D.S.O., O.B.E., A.D.C., General Officer Commanding-in-Chief, Middle East.

the positive pole of a battery, a current flows along the wire from the plate. This discovery, known as the "Edison effect," led to the two-electrode valve of Fleming and the first wireless amplifying valve of De Forest.

And now in conclusion let us look at the man himself. He was about 5 ft. 9½ in. in height, broad shouldered and deep chested. His somewhat heavy face was distinguished by keen grey eyes and a friendly cheerful smile. He was deaf, but he never allowed this affliction to affect his good humour; he used to say indeed that his deafness saved him

from wasting time by listening to a lot of nonsense. Throughout his life he scarcely knew a day's illness, and his powers of working for long stretches with only a small amount of sleep were phenomenal. He had a remarkable capacity for gathering round him a staff of expert assistants and filling them with his own enthusiasm. Much of his success undoubtedly was due to the use he made of organised research. He was very absent-minded, but had a keenly retentive memory for things that mattered. His genius was above all things practical, and he himself disclaimed any pretensions to being a pure scientist. Yet he was held in high respect by such distinguished men of science as Kelvin, Tyndall and Lodge.

He did not travel a great deal, but he made a notable visit to Europe in 1889 with the special object of attending the Paris Exhibition at which he was an extensive exhibitor. He had a great reception there, and was warmly welcomed also in the other countries he visited. His last European journey was made shortly before the war of 1914-18, and he

expressed his pleasure at re-visiting England, recalling his first trip there in connection with his automatic telegraph. In his later years all kinds of honours and distinctions flowed upon him, and in 1929 the celebration in the United States of the 50th anniversary of his invention of the incandescent lamp was made the occasion of a great national tribute to him.

Edison's life work is perhaps best summed up in the words of the world-famous electrician C. P. Steinmetz: "He has done more than any other man to promote the art and science of electrical engineering."

Edison died at his home at Llewellyn Park, West Orange, on 18th October 1931, in his 85th year. He was twice married and left several children.

Famous Inventors: Thomas Alva Edison—

(Continued from page 249)

He spent a vast sum of money in establishing a concentration plant to deal with a large ore deposit in northern New Jersey, but the discovery of enormous deposits of rich and easily worked ore in Minnesota brought the scheme to nothing, and he lost heavily on the venture. He next turned his attention to the manufacture of Portland cement and established a large and successful works.

Still another development of this period was the nickel-iron storage battery or accumulator. This has proved very successful, particularly for propelling vehicles; but owing to the rapid progress of the internal combustion motor it has not realised its inventor's hopes for the electrically-driven car.

A host of minor inventions came from Edison's laboratory from time to time, but it is impossible to deal with them here. Mention must be made however of his discovery in 1883 that when a metal plate is suspended in an electric lamp bulb, close to the filament but insulated from it, and connected to

The "Yorkshire Pullman"—

(Continued from page 239)

and although a 5 min. stop was now made at Doncaster, the arrival times at Wakefield and beyond were exactly as before, which was a striking proof of the main-line acceleration. The Bradford-Hallifax cars were worked as a separate local express from Wakefield. The Hull portion had, of course, been detached first, at Doncaster. It may be emphasised that when the 3½-hr. Pullman service was introduced, a cut of no less than 22 min. was effected in the best London-Hull time.

Fireside Fun

A man wearing a bathing suit in the Sahara desert was accosted by a traveller going in the opposite direction.

"What are you wearing that for?" he asked. "There's no water around here."

"I know, but it's a mighty fine beach," answered the other.

"If you want to see real poverty you ought to travel through some of the mountain sections of the country."

"Terrible conditions, eh?"

"Why, some of those mountaineers live in shacks so broken down and leaky that every time it rains they have to go out and sit in their saloon cars."

Explorer: "You don't know anything about religion, I suppose."

Cannibal: "Oh yes. We had a taste of it when a missionary came a few years ago."



"What's he doin', Bob?"

"He's painting two pictures at once, of course. I like the one he's got on his thumb better than the other."

"Are people ever lost in this part of the river?" timidly asked the old lady.

"Bless you, no mum," answered the ferryman. "We always find 'em downstream in a day or so."

Johnny told his father that he was second in his class, at the head of which was a girl.

"That's bad," said his father. "Fancy letting a mere girl beat you."

"Things are different from the days when you were a boy, father. Girls are not half so mere as they used to be."

Lawyer: "You would do better to plead guilty. This man recognises you as the burglar."

Burglar: "That's wrong. He had his head under the bed-clothes."

"You know how independent Smith is, don't you? Well, I saw a slip of a girl give him an order to-day."

"He wouldn't stand for that. What did he do?"

"He took it. He was in a Post Office and it was a postal order."

"As the aeroplane flew over a machine gun bullet struck my head and went whistling into empty space."

"Terrible! Did the doctors manage to get it out?"

Talkative Customer, to butcher: "I suppose the rush at the week-end makes things very awkward for you."

Butcher: "It certainly does. We are out of joint before we know where we are."

Film Director: "Now you look back, find that a man is chasing you, and dive off this 200 ft. cliff."

Stunt Artist: "But there is only a foot of water at the bottom."

Director: "Of course. We don't want you to be drowned."



"Why are you so late, Thomas?"

"Please, sir, it was the fog."

"But I got through it quite early this morning."

"Yes sir, but it was a ground fog."

A small boy had just been bathed and was being dried far too vigorously for his liking.

"Don't rub so hard mum," he protested. "Just blot me."

"Johnny says that his teacher was very good to him to-day."

"What did he do?"

"He heard Johnny talking in class about his model railway and told him that he would give him a lot of lines."

"You want a high wage for a man with no experience."

"Yes sir, but it makes the work so much harder when you don't know much about it."

It was the young barrister's first case and he was bubbling over with pride and enthusiasm as he stood in Court.

"Now," he said, addressing the defendant, "you say you came from Liverpool to London merely to look for work? I put it to you there was another, a stronger, motive that brought you all this distance?"

"Well," hesitated the defendant, "there was —."

"Ah!" cried the barrister, triumphantly. "And what was it?"

"A locomotive."



Conductor: "Why on earth did you leave off playing just as we got to the chorus?"

Cornet Player (a recruit): "On my music it said 'Refrain,' so I did."

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A Hornby-Dublo Station Layout—

(Continued from page 257)

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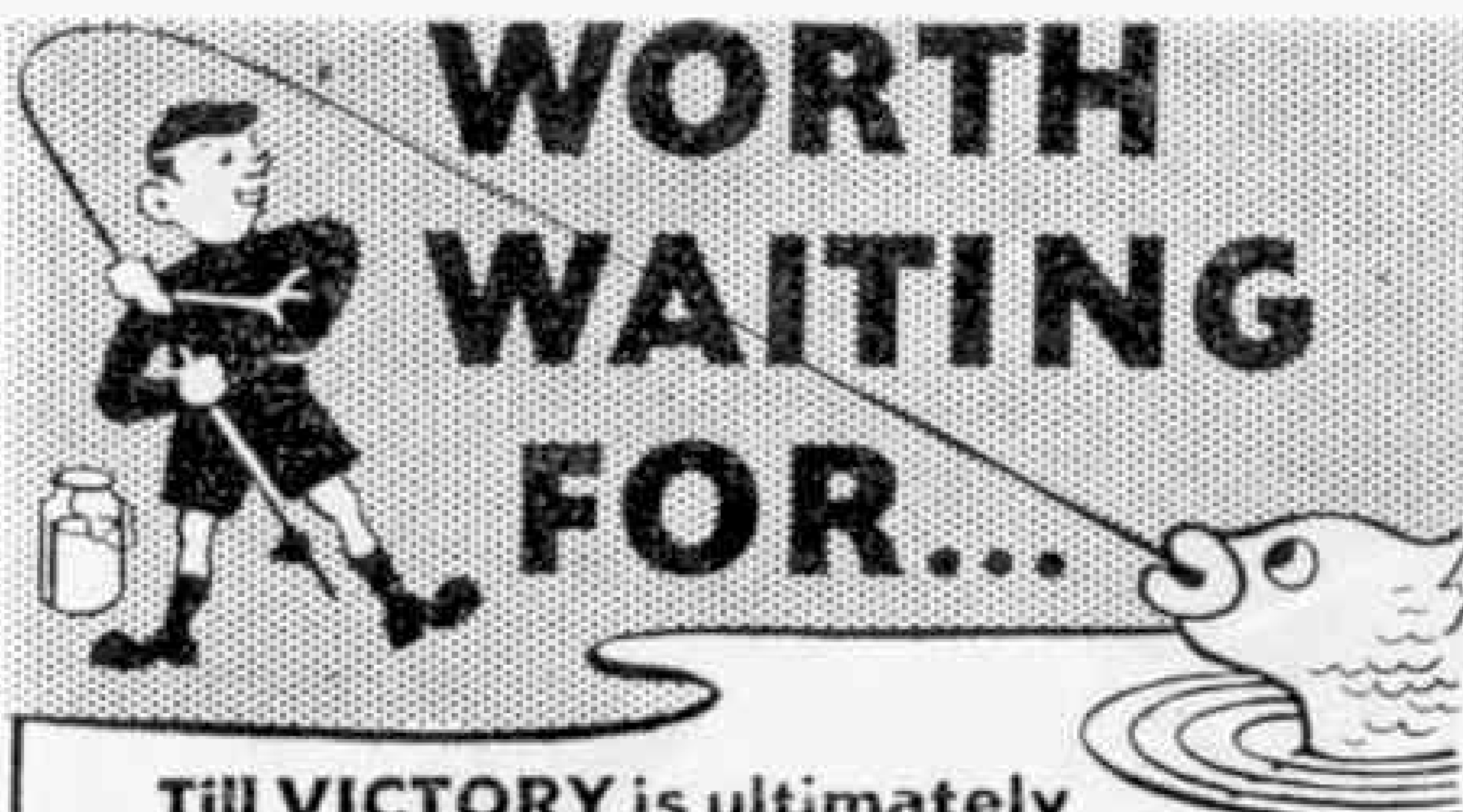


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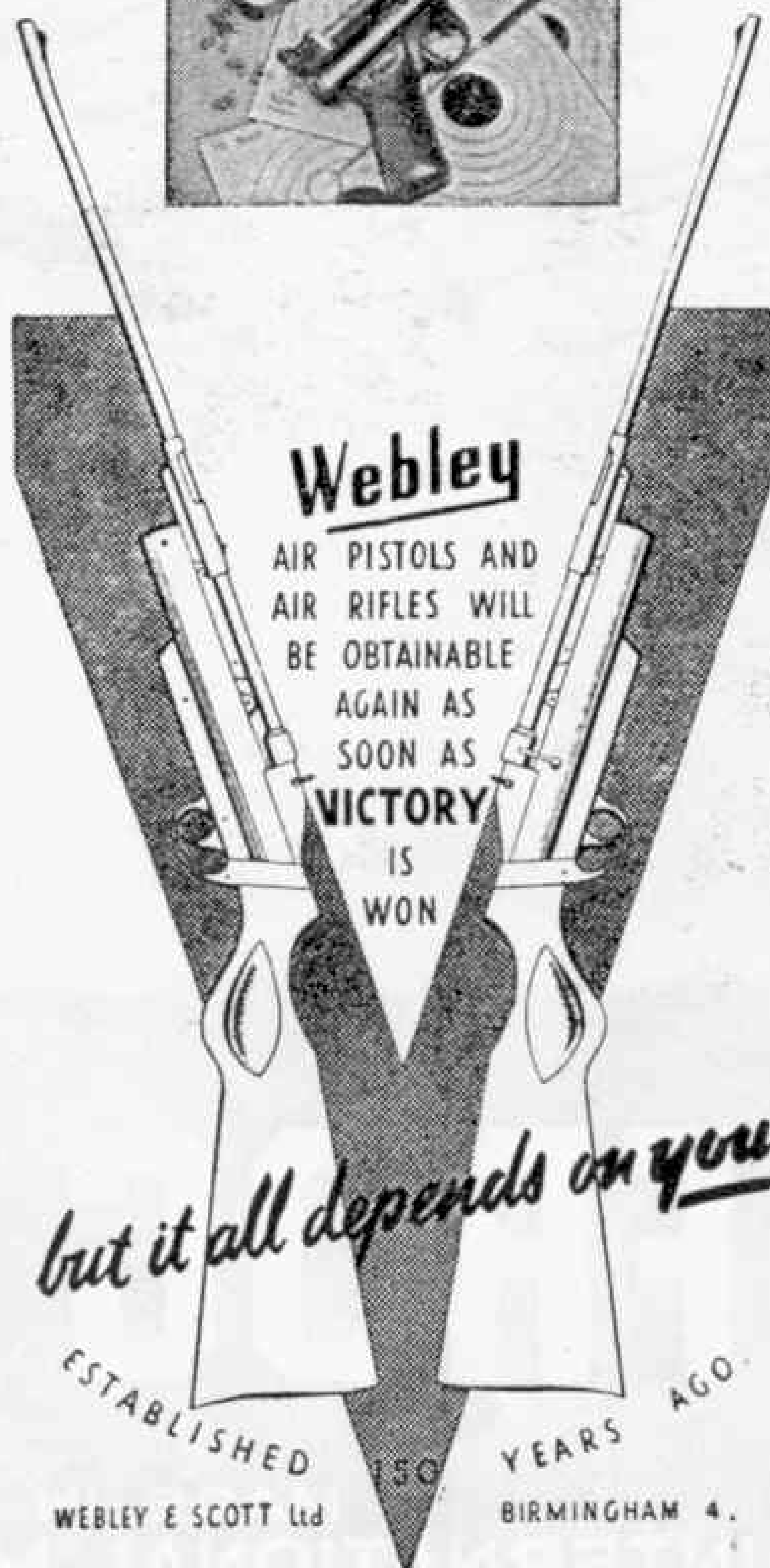
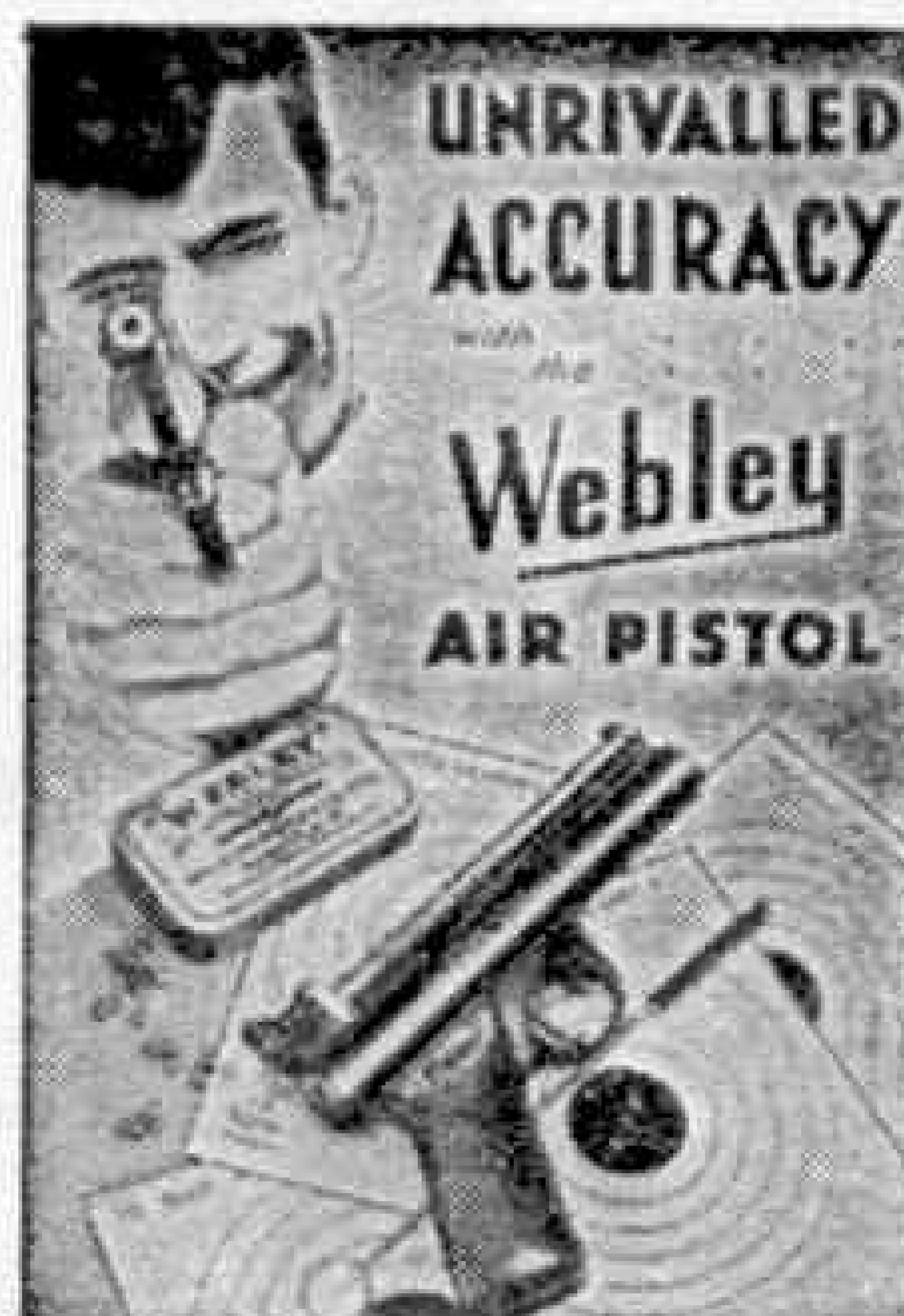
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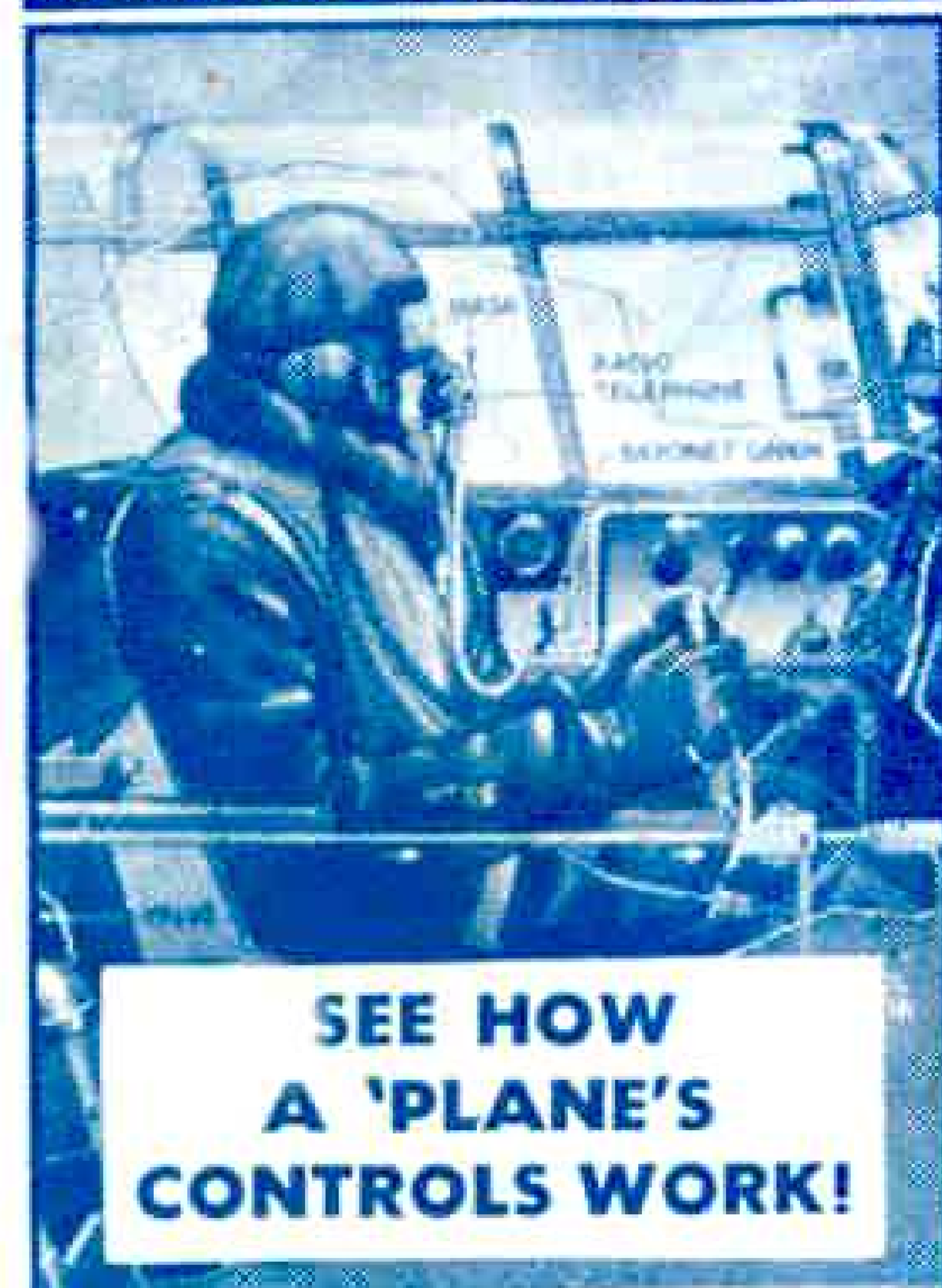
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