

24 ft. 6 in. ; Width (overall) 8 ft. 6 in. ; Height from rail 8 ft. 8 in. ; Wheelbase 12 ft. A very interesting feature is the provision of a tip door at each end, which saves turning the wagons at the docks. The wagons are also fitted with brakes on each side.

The economy in siding accommodation effected by the use of the 20-ton wagons is very great. For example, a train of fifty 10-ton wagons measures 1,009 ft. Its capacity is 500 tons, and two similar trains giving a capacity of 1,000 tons represent a length of 2,018 ft. With the 20-ton wagons, fifty vehicles giving 1,000 tons capacity would measure only 1,225 ft.

The confidence of the G.W.R. in the new wagons is shown by the fact that they

have ordered nearly 1,000 of them for the use of colliery owners.

Constructing the Model

Having learned something of ship-coalers in general, let us now turn to the splendid Meccano model illustrated on these pages. To construct this model we commence by building the main tower, which consists of four 24½" vertical Angle Girders (1) braced at the top by three 5½" Angle Girders (2).

The runways for the grab and truck are formed of 24½" Angle Girders (3) upon the upper edges of which run the travelling wheels. The outer ends of the grab runway Angle Girders (3) are braced to the tower by two 12½" Strips (4), overlapped

(Continued on page 419)

and that the introduction of the larger wagons would effect a considerable saving in the annual cost of wagon renewals. In addition to this, the necessity for the provision of more siding accommodation on the railway and at the collieries would be largely obviated. The first train of 20-ton wagons, 50 in number, reached South Wales in August last, and on the 27th of that month the first demonstration of their value was given at the Port Talbot docks, when several of the new wagons were tipped into an Italian steamship that was taking in a cargo of coal destined for Naples. Our illustration on page 419 is of special interest as it shows the first wagon being tipped on this occasion. All the loads were tipped without the slightest hitch and the demonstration was a complete success. During the next few weeks some 20 trains of the new wagons are expected to arrive in the South Wales coalfield.

Advantages of Larger Wagons

The dimensions of the 20-ton wagons are : — Length

OUR MAIL BAG



In this column the Editor replies to letters from his readers, from whom he is always pleased to hear. He receives hundreds of letters each day, but only those that deal with matters of general interest can be dealt with here. Correspondents will help the Editor if they will write neatly in ink and on one side of the paper only.

W. Sharp (North Shields).—We were very glad to hear of your examination successes, and that our Book Review column helped you to select your book prizes. This is one of the objects for which this column was started. Your suggestion regarding photo-cards of great engineering structures is quite good, and we shall give it serious consideration.

W. F. Kaler (Otago, New Zealand).—We enjoyed reading your interesting letter. Your life seems to be very strenuous at present—up at 5 o'clock every morning, three cows to milk and then a 20-mile train ride to school! To boys living in our great English cities this sounds quite an adventure. Write again soon and give us more details of your life.

S. W. Leem (Peckham, S.E.).—Don't wait another eight years before writing us again! We have had many requests for a reprint of the "Life Story of Meccano," and we shall probably publish it again for the benefit of the thousands of new Meccano boys who join up every year. We quickly deciphered your code messages and we thank you for the kind wishes they convey.

J. Barton (Wood Green, N.).—Thanks for photo of your trio of dogs. We hope Bobby is more friendly than he looks. Sorry about the weather during your holidays. We had similar weather here, and it still continues! We were interested in your doings at the seaside.

Peter Keighley (Leeds).—We are always very sorry to hear of Meccano boys being in pain, and we hope you are better now. Write us again soon. We will consider your suggestion regarding the railway articles.

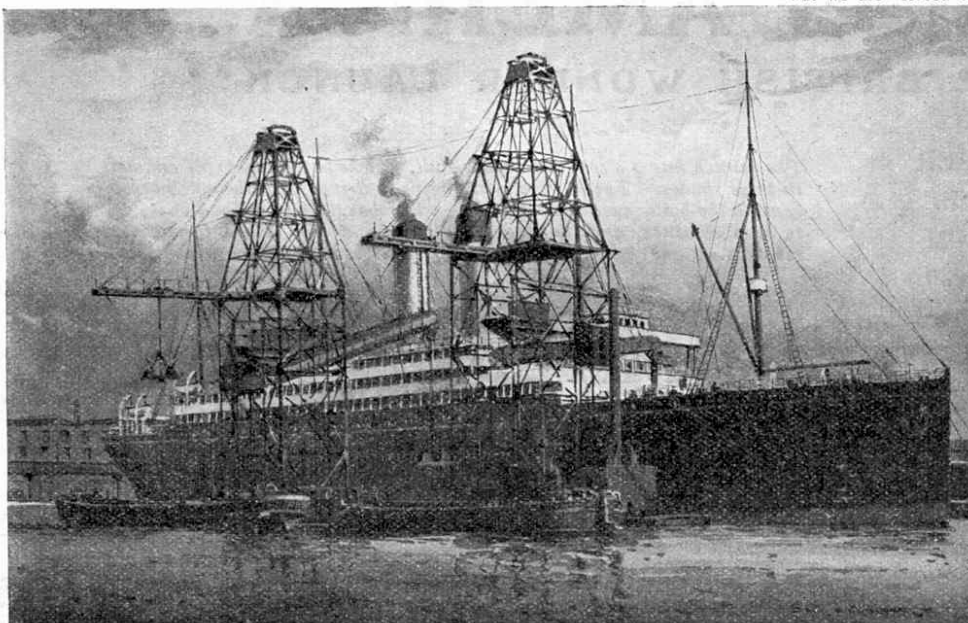
E. H. Medlicott (Bermondsey).—We believe there are very good reasons why every boy should know something of Astronomy, and we are very pleased to hear of your interest in the hobby. Your figures are remarkable, but every boy finds them in his school books, and they would be a little out of place in the "M.M."

A. E. Davis (Boston).—We note that you have "Wembled" and that you enjoyed it very much. Each of the hundreds of boys who have written us of their experiences have told us that they liked the Palace of Engineering best, and that they spent most of their time there—which is quite what we anticipated! We are glad you think the "M.M." has "gone from better, better, to better!"

I. Burstow (Redcar).—The little thing we did for you was scarcely worth a thousand thousand thanks, but we are pleased to have them just the same!

R. Duff (Worthing).—Your suggestion for a Meccano Diary has been put forward by a number of readers during the past few months. We are giving the matter consideration and it may materialise some day. Your proposal that the diary should include pages on which Meccano boys could keep records of models built and invented during the year is quite good. It might be possible also to illustrate the diary by small reproductions of models. We shall be glad to receive any further suggestions for the contents and arrangement of such a diary.

G. Burrell (London, S.W. 19).—Your grievance regarding the number of advertisements in the "M.M." is shared by many other readers, and we are in full sympathy with you. At the same time we want you to understand that without the revenue from our advertisements it would not be possible to publish the Magazine at all, on account of the extremely high cost of paper, printing, etc.



Courtesy of]

Grab Elevators coaling White Star Liner

[Messrs. Rea Ltd., Liverpool

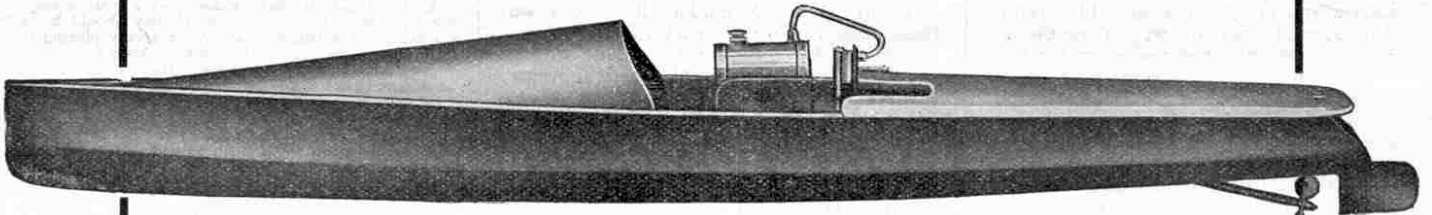


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*Selling in
Thousands.*

*You must
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3½ ins. Beam.

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12/6

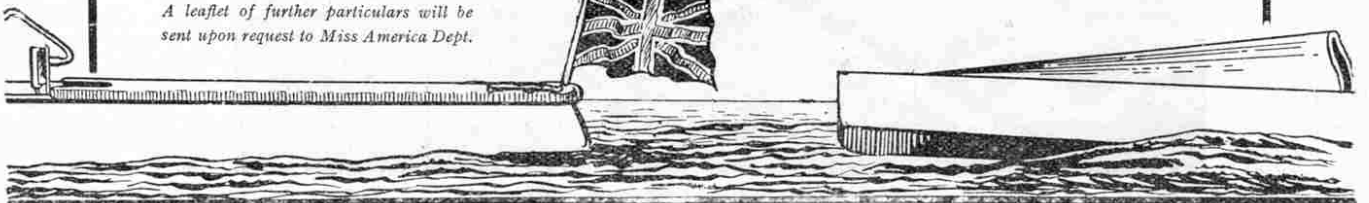
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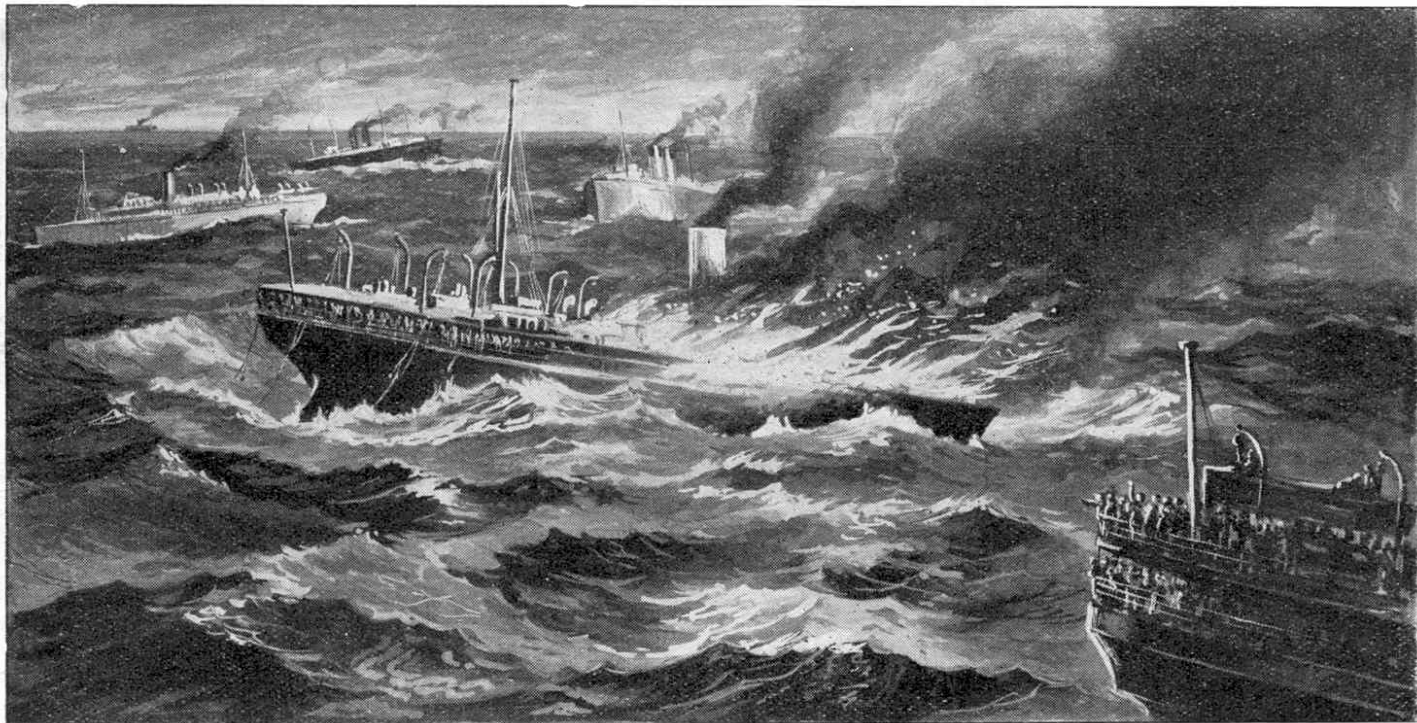
London : 65, New Oxford St., W.C.—147, Bishopsgate, E.C.—79, Walworth Rd., S.E.—326, Argyle St., Glasgow—15, County Arcade, Leeds—10a, Piccadilly, Manchester—9a, High Street, Birmingham—11, Bridge St., Southampton—68, London Rd., Brighton—214, West St., Sheffield.

A leaflet of further particulars will be sent upon request to Miss America Dept.



Saving Life by Wireless

How this Great Discovery Helps at Sea



The Burning of the "Vollurno"

ONE of the first instances of wireless being used for life-saving at sea was when the ill-fated "Titanic" went down. This magnificent White Star liner, on her maiden voyage, sank at 2.20 a.m. on 15th April, 1912, and of the 2,224 people on board, 1,513 were drowned.

The "Titanic" was built on magnificent lines and represented the highest standard of British marine engineering. She was provided with a particularly elaborate system of water-tight compartments, and was regarded as being perfectly safe.

Steaming along unsuspectingly, the great vessel struck an iceberg, which tore a great hole in her bows. The fore-part of the ship quickly began to fill with water, and Captain E. J. Smith, who went down with his ship, at once ordered wireless signals of distress to be sent out. Unfortunately the operator on board the "Californian," another liner only eight or ten miles away at the time, had retired for the night, so that the signals were not received by this vessel. The captain of this ship actually saw the rockets that were sent up by the "Titanic," but he failed to realise the position. Had he done so, or had the "Californian" received the "Titanic's" "S.O.S.," many, if not all, of the lives that were lost could have been saved. Although the appeals for help were thus not responded to by the "Californian," the "Carpathia," 70 miles away, received the wireless call and

hurried to the position given. When she arrived, however, she found that the "Titanic" had already gone down, but she was able to pick up some of those who had been fortunate enough to get into the boats.

The effect of the "Titanic" disaster was to hasten the compulsory installation of wireless on all liners, with an operator in attendance day and night, so that never again could distress signals fall upon deaf ears. A year later wireless efficiency and organisation had improved greatly, as was illustrated when fire broke out on the

out by the "Vollurno's" wireless operator. These were received by the Cunard liner "Carmania," which was 78 miles distant, and she steamed full speed to the rescue. At the same time she repeated the distress signal to all ships within range.

Twenty-four Hours on a Burning Ship

In the meantime those on board the doomed ship were fighting the fire and vainly attempting to launch boats. A furious gale was blowing, and as each boat was lowered it was smashed to pieces or sunk by the raging waves.

The "Carmania" reached the blazing vessel about noon, and shortly afterwards nine other liners arrived. A heart-rending position now arose, for although wireless had brought help, it appeared as though the liners would be powerless to effect a rescue, on account of the fury of the

gale. After great difficulty the "Carmania" succeeded in launching a boat and an attempt was made to reach the "Vollurno." No headway could be made against the gale, however, and three hours later, after breaking or losing all but three oars, the boat had to return to the "Carmania," the crew being utterly exhausted by their efforts.

All this time the fire was slowly spreading and driving the 600 persons on board to one end of the ship. Night came, but the gale continued with unabated fury. The ten great trans-Atlantic liners stood by,

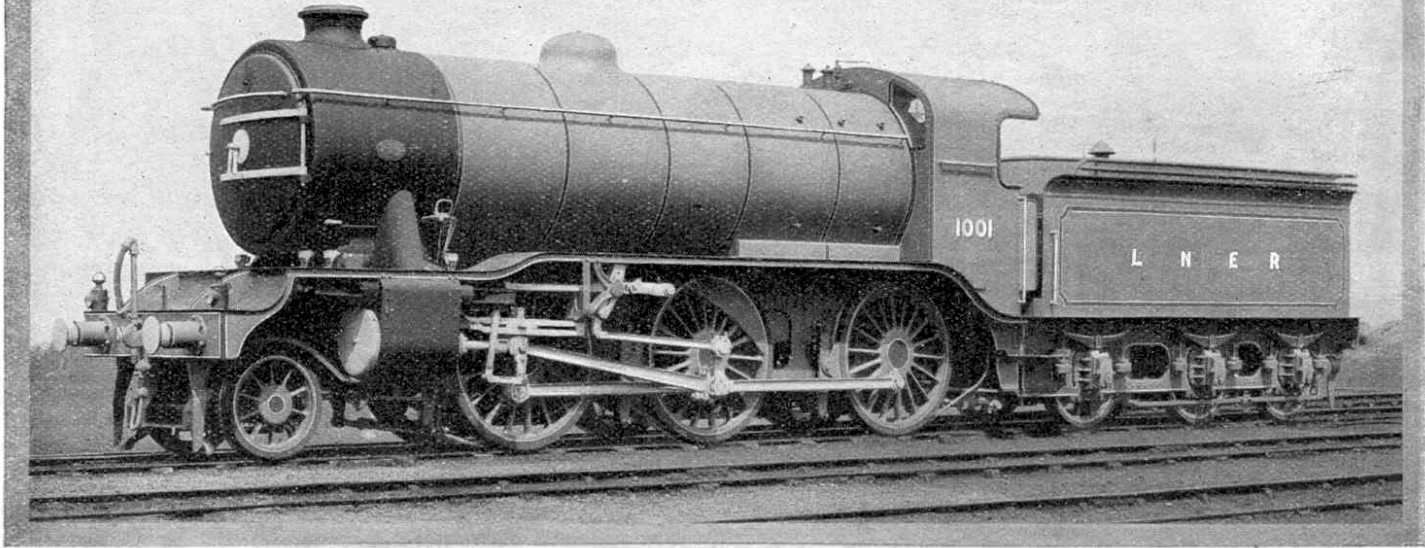
(Continued on page 419)

"S.O.S."—three simple letters, yet what pictures crowd into the mind on hearing them! A ship at sea, storm-tossed, sending out urgent messages for help. The terrified passengers crowding on deck; the sharp orders quickly obeyed; the lowering of boats, and last of all the sinking of the vessel, perhaps with some hapless souls still on board. All this and much more instantly flashes across the minds of those who hear those fateful signals—"S.O.S."

British steamship "Vollurno" on 9th October, 1913. "S.O.S." signals were sent out and there was a remarkable response to the wireless calls for help.

On 2nd October the "Vollurno" left Rotterdam for New York, carrying passengers—mostly emigrants—and crew to the number of 657, and the story of the rescue of 521 of those on board is most dramatic. The fire, which was the result of an explosion in the forward hold, started at seven o'clock on the morning of Thursday, 9th October, when the vessel was in mid-Atlantic. Soon afterwards frantic calls for help were sent

Driving an Express Train



OUR train is standing at the platform of the terminus, waiting for the passengers to take their seats. During this time the engine-driver and his assistant, the fireman, are not idle. They move about the loco with an oil-can and a piece of waste, attending to the lubrication of the many bearings. If it is a night run they also see that the headlights are burning brightly. At the same time the fireman keeps the fire well trimmed, so that a steady pressure of steam is always maintained. When their preparations are finished and all is well with the engine, the driver and fireman climb back on to the footplate and await the signal to start.

Very soon the signal in front of the engine drops, indicating that the line is clear, but the driver does not start until the guard has given the "Right-away." At last the guard blows his whistle and waves his green flag. In reply, the driver gives a short blast on the steam whistle, to show that he is about to start, and then grips a lever that is in a position marked "Brake-on." Pulling this lever over he places it in the "Brake-off" position, a movement that causes a jet of steam to force the air out of the brake cylinders and pipes, thus releasing the vacuum brakes. The lever is now put over to "Running" position, which connects the brake pipes with an air-pump. This pump is worked from the engine and maintains a vacuum while the train is in motion. If this vacuum should be broken, air would at once be admitted to the brake pipes and the

train would automatically come to a standstill.

A Smooth Start

Beside the brake lever is the gear lever, mounted in a quadrant. This lever is now pushed right forward, while the handle controlling the regulator valve is very gradually moved over. The valve opens and allows steam from the boiler to enter the steam-chest of the cylinders,

Probably every boy at some period of his life has longed to be the driver of an express train. It is very fascinating to think of standing on the footplate of a giant locomotive hauling a long train across the country at 50 or 60 miles an hour, knowing that one is in complete control of that mighty force. We cannot all be engine-drivers, however, but every Meccano boy can know how these giant locos are driven.

from whence it is distributed by other smaller valves to either end of the cylinders. Here the energy of the steam is used to impart motion to the pistons, and this motion, transmitted through the connecting rod and cranks, forces round the driving wheels.

The driver must be careful to open the regulator valve very gradually in order to avoid a sudden jerky start. Apart from the discomfort that a sudden start causes to the passengers, it may also cause damage to the train. Sudden strains on the couplings will cause them to give way after a time, and the engine itself may easily be strained by the sudden in-rush of steam to the steam-chest.

The train now begins to move and gathers speed every moment, for although it has taken some time to explain the starting movements, in actual practice they take only a few seconds to perform.

The driver now makes certain that all the signals along the line are in his favour, and then, as he has a long run before him, he opens out the regulator a little more. In the meantime the fireman has been stoking up the roaring fire beneath the boiler. It is his duty to see that a certain head of steam is always maintained, otherwise the speed will decrease.

Stopped by the Signal

A glance at the speed-indicator tells the driver that the train is doing, say, 45 miles per hour. As this is the average speed he has to maintain so as to reach his destination on time, he pulls back the gear lever and reduces the opening of the valve very slowly. The train continues to travel at 45 miles per hour but now the admission of steam to the cylinders has been reduced to, perhaps, 17 per cent. of the piston stroke.

The train is now tearing along and is well up to time, but a few miles ahead there is to be passed a certain section of the track in which, according to all drivers' instructions, no train may exceed 30 miles per hour. Closing down the steam-regulator yet further, the driver watches the speed-indicator until it registers 30 miles per hour. The train then maintains this speed throughout the restricted section, but once it is passed the speed is increased to over 45 miles per hour in order to make up for the time lost and to keep the fixed average speed and get in to time.

Half-way to his destination the driver sees that a "distant" signal ahead is against him, indicating that the "home"

signal, perhaps half-a-mile further on, is also against him. Immediately slowing down, he allows his train to crawl along the line. If he were to stop altogether it would mean that valuable time would be wasted in starting the heavy train again, so he moves slowly along past the distant signal, hoping that the home signal will be down by the time he arrives at it. Just as he reaches out for the brake lever to bring his train to a complete standstill, the home signal drops and the line is clear once more. Now the lost time has to be made up, and opening the regulator, the driver lets the train gather headway.

Taking-up Water at Speed

The fireman bends to his task of obtaining the utmost possible heat from the coal he shovels in, and by means of dampers and the fire-hole door he regulates the supply of air to the furnace. Having stoked up, he turns to the gauge-glass, which shows the amount of water in the boiler. He sees that the water is running low and by means of a steam injector

he fills up the boiler.

The train is now approaching a point where there is a long trough filled with water between the rails, and the graduated indicator shows that the water tanks require re-filling. A long iron

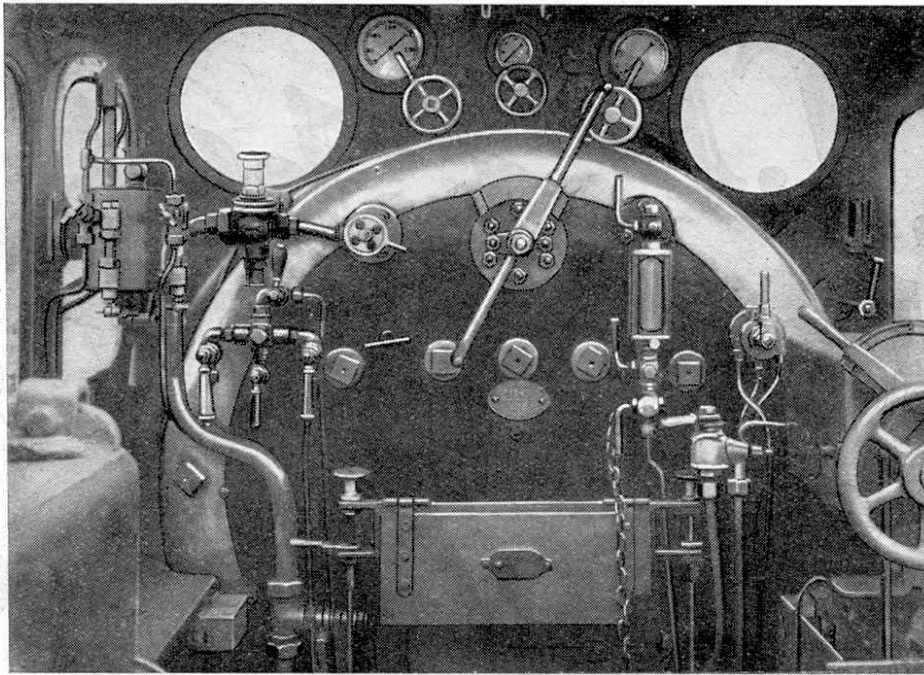
tanks, which are quickly filled without stopping the train.

The driver in the meantime has been watching the track ahead to see that all signals passed are in his favour and that the correct speed is being maintained.

At length the destination comes into sight round a long bend, and with the signals down, the train has a clear run into the station. The driver closes the regulator and gradually moves the ejector handle away from "Running" position to "Brake-on" position. This opens the air valve leading to the vacuum in the brake pipes. Air enters the brake cylinders and forces up pistons connected directly to the brake gear, and the brake blocks are thus forced against the tyres of the wheels.

Carefully judging the distance at his disposal for pulling up, the driver lets his train run gently into the station, and then, with an

almost unnoticeable check, brings it to a standstill. The guard glances at his watch as he alights from his van at the rear of the train and remarks "On time to the minute!"



The Interior of the Cab, showing Gauges, Levers, Brake and Fire-box

scoop lies beneath the tender and this the fireman lowers by means of a hand-screw. As the engine flies along, the water in the trough rushes up the scoop into the water

Ten Minutes Slow—(cont. from page 377)

he crawl back over the engine. He gave a frightened shout, but the hiss of escaping steam smothered his voice. In the narrow space there was no place to stand except on the moving connecting rod.

The maximum speed at which the wheel ran never exceeded four revolutions a second, but that was fast enough to shake a man off the polished surface of the connector. Bert's brain worked quickly and in less time than it takes to write he realised that in three or four revolutions the shaft would be moving at full speed, and he pictured himself thrown off and crushed against the wall, or caught in the flying spokes of the big wheel.

He looked up despairingly. He could not climb back past the flying spokes. When the crank passed centre and swung downwards he felt as if the earth were dropping from beneath his feet. He gasped and threw out his hand to steady himself. The next instant he felt himself being lifted as the crank came upward to complete its first revolution.

Fearful that he might be thrown off when it again descended, he quickly shifted his position along the connecting rod and away from the crank. He moved three or four feet, keeping his balance by leaning backward and pressing his hands against the wall. In his new position the vertical motion was not so great. If he could hold on for only a few

seconds, the engineer might hear his calls and shut off the steam before the engine reached full speed.

Again and again he shouted, but the noise of escaping steam, augmented now by the rumble of the slowly-moving machinery, completely drowned his voice. Meantime, the wheels gathered speed with every revolution.

A second seems a long period to a man face to face with what appears to be certain destruction. Bert tried to devise some way out of his awful predicament, but all that he could think of was the big spokes of the flywheel as they raced upward scarcely a foot in front of his face. At first he could count them, but soon they came too fast for that. He felt the current of air that the wide rim set in motion. Everything round him seemed to be dropping, indeed, the wheel was the only thing that moved upward, the way he wanted to go. Then suddenly a thought struck him—why should he not go up with the wheel?

The crank was again on the upturn; the wheel had almost completed its second revolution. The spokes were chasing one another upward faster and faster, in another second they would be only a blur.

Bert did not lose time in thinking over the plan that had come so suddenly into his head. It would be certain destruction to remain where he was; at worst he could only hasten the end by trying to get out now before it was too late.

He swung his arms round in front of him, and leaning forward caught the moving rim of the big wheel, and at once he was pulled off his feet. Although he felt as if his arms were being torn from their sockets he managed to keep his hold on the wheel.

He felt himself being hurled upward at unbelievable speed, for a wheel sixteen feet in diameter moves rapidly at the rim even when going at so slow a rate as one revolution a second.

He had not planned how he should get off the wheel when he reached the top. He realised that he must get off somehow, for if he held on he would either strike the edge of the floor or be crushed at the bottom of the pit.

Almost instantly he was at the top of the big wheel; he had just a fleeting glimpse of the floor as he rose above it. Lying with his chest across the wide rim, he let go and spread out his arms. Thrown off at a tangent, he sailed through the air like a flying squirrel and fell in a heap on the floor ten feet away.

Bruised and dazed, he sat up and got slowly to his feet. He could hear someone running toward him from the far end of the building. He staggered against a post and stood for a moment until his brain cleared. Then he drew his watch from the pocket of his overalls and set the hands forward ten minutes.

It was exactly one minute past one!

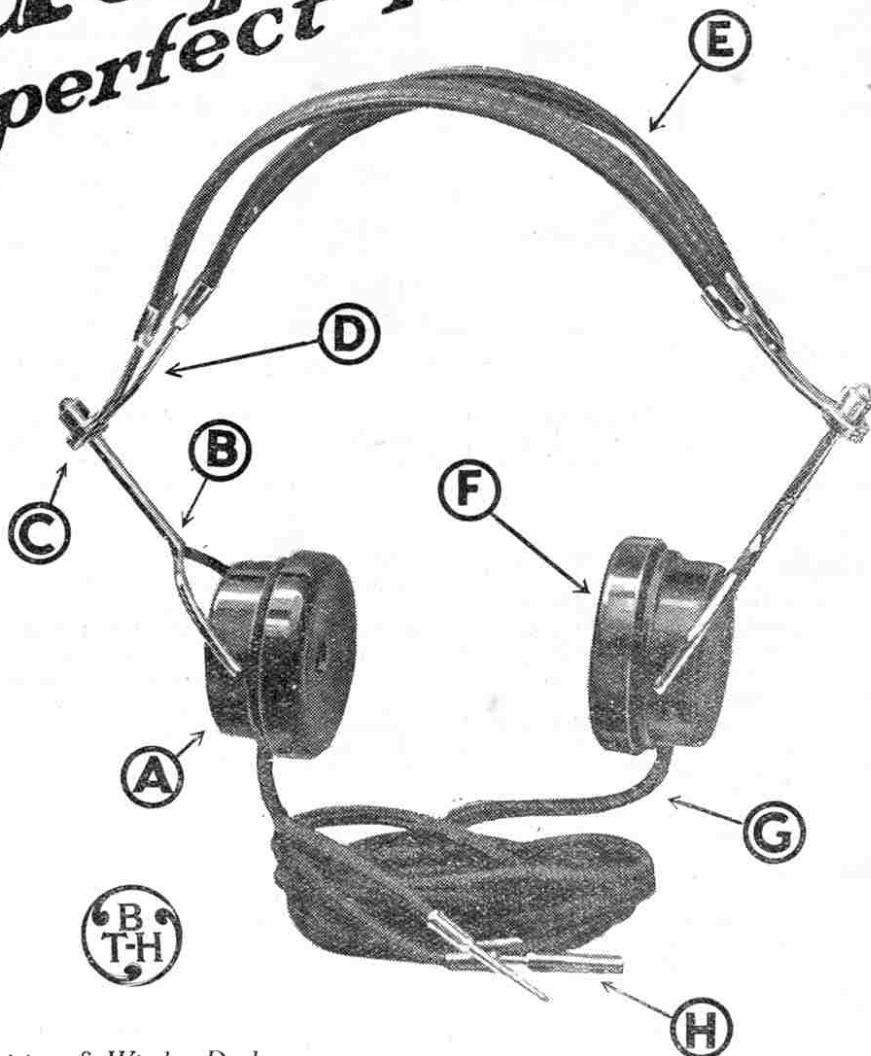
(THE END).

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- D Spring steel headbands give the "just right" pressure to the ears in order to exclude extraneous noises. The two portions of the headband are held rigidly apart and cannot catch in the hair.
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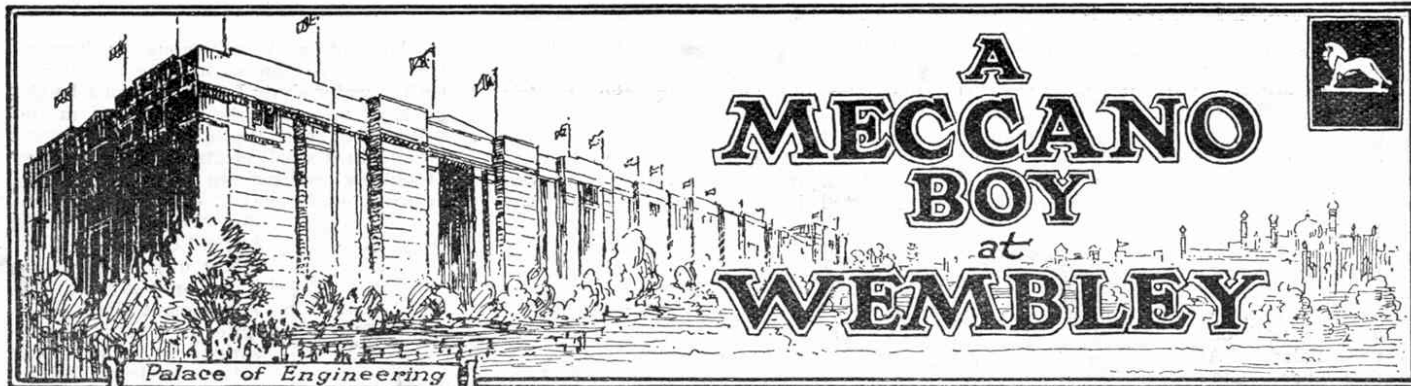
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Palace of Engineering

(Concluded)

LEAVING many other interesting things—the C.P.R. and the Canadian National Railway Exhibits, with their ingenious illuminated maps and the huge circular revolving table with its varied tableaux of Canadian life—I entered the Australian Pavilion. Here there are splendid displays of fruit and grain, and some wonderful models in butter of such objects as baskets of flowers, houses, cattle in the fields, etc. In the dairy section is the largest cheese ever made in Australia. It weighs 1½ tons and required over 3,000 gallons of milk to make it! Close to this section are specimens of different kinds of Australian fish, frozen in blocks of ice in huge glass refrigerators, and refrigerators containing frozen sheep and lambs.

Here, too, demonstrations are given every day showing the shearing of live sheep by electricity, and it is wonderful to watch the experts divest the sheep of their woolly coats in two or three minutes. A splendid model shows a panorama of a typical farm with cattle, horses, and men moving about on their appointed tasks in a most realistic manner. The men come down from the fields and disappear into the stables, while the horses bring carts laden with grain to the barns for threshing.

Fortune in Pearls

The trees in Australia must be very wonderful indeed, judging by some of the sections displayed here, and I think that even the largest of our trees in this country would be a dwarf beside the Australian giants.

I did not know before that precious stones and pearls came from Australia. Opals, for instance, are mined there, and one of the exhibits is a model of an opal-mine, every part of which is composed of tiny Australian opals of different colours. In a huge glass water-tank a diver was searching for pearls, and as I watched him I could not help thinking of the lines that someone (I forget whom!) wrote:—“A pearl-diver goes down a beggar but comes up a prince!”

In this connection there is on view a famous pearl—the “Southern Cross,” composed of what seem to be about a

dozen large pearls. These are welded together, as it were, in the shape of a perfect cross about two inches in length. They were found like this, and this “freak of Nature” is valued at £10,000!

Australian artists had painted wonderful pictures on some mother-of-pearl shells. The designs were suggested by the shape and the irregularities of the shell. One, for instance, was a group of flowers—with each petal raised and curled—another was a lady's head, with golden hair flowing

trees. Here, for instance, are New Zealand tree-ferns 10 ft. in height and a section cut from one huge tree that shows the rings of growth very clearly marked, so that you could easily tell the age of the tree from which it was cut. Not far away is a collection of splendid red-deer heads, and many beautiful varieties of New Zealand fish are shown in a refrigerating cabinet. Cauri-gum, agricultural seeds, minerals, and other products are also exhibited in a room that is decorated with large photographs of New Zealand scenery, life in New Zealand, and portraits of Maori chieftains.

Oxo, Toffee and Boot Polish

Passing New Zealand I entered the Samoan house, called a “Fale,” made of bamboo and leaves by natives. Not a single nail is used in its construction, the only fastenings being the “ties” of leaves and grasses. These are of such strength that, in their own country, these native houses endure for years.

Scattered about the Exhibition grounds are kiosks and smaller buildings, cleverly designed to resemble some article they are advertising and which is on sale within. For instance, what at first sight appears to be an ‘out-size’ in Oxo tins is really a little shop where you can have a

cup of Oxo, while somebody tells you all about what you are drinking! Elsewhere a huge mischievous-looking parrot presides over a kiosk built to resemble a huge ‘tin’ of Sharp's Kreemy Toffee.

I had no idea of the work behind a tin of boot-polish until I saw the building that tells the story of Cherry Blossom. Apart from the manufacture of the polish itself, the mere packing of it is quite a big business. First the tins are cut and stamped from large sheets of metal by a machine. Then they are passed to another machine, where the little ‘bevel’ is placed around the side of each tin. Meantime, another machine is making the lids, and after the ‘lip’ has been pressed into the lids, the tins are filled—twenty at a time—and the finished product is ready for sale.

An Ancient Printing Press

In the “Times” building there was a printing-press 120 years old, printing the



Photo by]

The Beautiful Indian Pavilion

around. There were many other subjects too varied to mention, but a large green frog particularly took my attention. What a wonderful imagination the artist must have had to have seen the design of a frog in the shell, just because it had two tiny humps on it—which humps he had ingeniously used to depict the frog's bulging eyes!

With the Maoris

Before exploring the New Zealand pavilion I went through the wonderful Maori carved house, called “Mata Atua.” This is guarded at the entrance by two weird figures, and the walls and beams are all wonderfully carved with fierce faces and figures, which have big blue shells for eyes!

Everything in New Zealand seems to be very fresh and restful, and—as in the case of Australia—one of the strong points of the country seems to be the

[Master M. Green

"Times" as it was in 1805, word for word! Having bought a copy for 2d. I was able to read the reports of the Battle of Trafalgar and death of Lord Nelson! The man in charge told me that a good printer could turn out about 250 copies per hour on this machine—how very different from the modern press with its five-miles-long rolls of paper pouring out tens of thousands of newspapers every hour—each folded, counted, and with every page in its correct position!

In the Palace of Arts, another huge building, I found the Queen's Doll's House, and I learned for the first time that most of the details of this wonderful little model of a present-day mansion have been made by some of the most famous artists and craftsmen in Great Britain. It is complete to such items as central-heating, electric lights, telephone, wireless, and even umbrellas! Tiny oil-paintings hang on the walls of the various apartments and in the library are rows of tiny books actually written by their authors. In the garage I recognised a number of well-known cars, including a really topping model of a Rolls-Royce, as well as a motor-cycle and a bicycle. Furniture, carpets, ornaments, crockery, table-silver and everything that is found in a modern mansion was there—everything correct down to the minutest detail.

How an Englishman Became a Rajah

The Malaya Pavilion (which, incidentally, I heard someone call "Malaria!") is a splendid red, yellow, and black building, with a big dome and two tall towers. Here is represented a very different part of our Empire. I discovered that under British Malaya are grouped several territories of the Empire, some of the names of which I easily recognised as being "favourites" in my stamp album.

What a thrilling real-life adventure story centres around Sarawak! An Englishman, Sir James Brooke, set out in 1838 on a voyage of exploration and adventure in a small yacht of 140 tons. He took with him his nephew and a friend, with a boat-crew of nineteen. Reaching the East Indies he sailed up the Sarawak river and found the natives in the midst of a fierce rebellion against the Rajah Muda Hassim. In order to prevent more bloodshed and to restore law and order, Sir James helped the Rajah to quell the rebellion, and his efforts were so successful that to show his gratitude the Rajah offered Sir James the Government of Siniawan and Sarawak. Later, when the Rajah was deposed Sir James was offered the throne, and soon was proclaimed Rajah over 7,000 square miles. He lived for many years, developing the country, ruling the natives kindly but firmly, and suppressing piracy and riots.

Down a Coal Mine

I next determined to visit the Amusement Park, but just before reaching it came upon the model Coal Mine, where

I joined a party of visitors at the pit-head. A guide first showed us the machinery above ground, including the electric winding-drum, controlled by an operator sitting high up in a little seat above the machinery. We were shown how the coal, when brought to the surface, is washed and sorted by machinery, and we saw



This is not a view of some great historic castle but a photograph taken (by a reader of the "M.M.") in the Amusements Park, at Wembley. It shows some of the realistic scenery through which the Giant Switchback runs.

the working of the pumps, air compressors, and other important mining appliances.

Then we all crowded into the cages and were lowered to the bottom of the shaft, where we gained some idea of the immense amount of labour necessary to bring a piece of coal to the fireside. The underground pit-workings were complete with pumps, winches, first-aid appliances, telephone and signalling apparatus. Here, too, were the pit-ponies, seemingly quite content in their roomy stables so far below the green fields. I could not help feeling glad to learn, however, that machinery is slowly making them more and more unnecessary.

An Hour of Thrills

Coming up from the Coal Mine I found myself in the midst of a marvellous array of weird figures representing giants and animals, while all round were imitation mountains and caves containing all manner of attractions. It was the Amusement Park, the amazing thrills of which cannot be described—they can only be sampled! Here, for instance, I had my first experience of flying—in a captive monoplane. It was almost as exciting as a trip on the Giant Racer—an immense switchback that has a "run" of over a mile, with constant "ups-and-downs." On it the ground seemed to give way under our carriage every now and then and we were hurled downhill at such terrific speeds that we were only able to get our breath after we had reached the bottom and were slowly climbing the next hill! From the heights I had some fine "bird's-eye" views of the Exhibition. Half way up the "Gigantic," a monster scenic railway, is the notice "Mind Your Hats," and underneath is a row of what once were hats! Their torn and battered condition presented such a forcible argument that I hurriedly took off my own hat and held it until once more safely on earth!

I had not had nearly enough excitement yet so carried on with more sensations. On the water-shute I dashed from a height of 80 ft. into the lake below, and in the "Whirl of the World" I was carried around in a small electric motor car that absolutely refused to move like any ordinary well-behaved car, jerking in all directions and quite beyond control! Of my many other adventures I can only say that the Amusement Park is a series of wonderful sensations, following on each other's heels as fast as they can, and it's tremendous fun!

Wembley is Better than School

It was now very late and I was thoroughly tired out, so decided to go home. I did so very reluctantly, however, being loath to leave this wonderful city—and it really is a city, for it has its hospitals and first-aid stations; its fire-stations, with engines and firemen ever ready for any emergency; its own gas, electric light and water supplies; and indeed everything that is found in a real city.

There were many buildings that I did not even enter, and many splendid sights I had missed, despite the twelve happy hours spent in the Exhibition. To me it was more than an Exhibition, however, it was a fairy city crammed full of all the most wonderful and most beautiful things on earth.

As I took a final look at India from one of the bridges spanning the lake, and watched the lights flashing throughout the grounds and in the buildings, I could not help wondering if it were not all a splendid dream, for it seemed impossible that such a wonderful place should exist only a few miles out of London! I had learnt more geography and history, and gained more knowledge in one day at Wembley, than I had done in a whole twelve months at school.

My only regret was that I could not share my pleasures with every other reader of the "M.M.," for I am sure that they would have thought, as I did, that they had seen the most wonderful sight that had ever been presented to the eye of any British boy.

Useful Stamp Album

Messrs. Stanley Gibbons Ltd. (391, Strand, London, W.C.2), whose name is familiar to stamp collectors the world over, have recently introduced an entirely new type of stamp album. Comprising 788 large pages and with spaces for nearly 12,000 stamps, the "Imperial" album is, without doubt, the ideal album for collectors specialising in the stamps of Great Britain and the Empire.

A great attraction of this new album is the fact that spaces for stamps are on one side of the page only, the opposite page being devoted to a clearly-detailed and fully-illustrated catalogue, corresponding with the numbered squares provided. The collector is thus able to quickly and accurately identify any stamp and to mount it in its correct position.

"Imperial" albums are strongly and artistically bound, and may be obtained in maroon or green bindings of either cloth or morocco. A postcard to the publishers will bring a specimen page and an illustrated leaflet to any interested stamp collector mentioning the "M.M."

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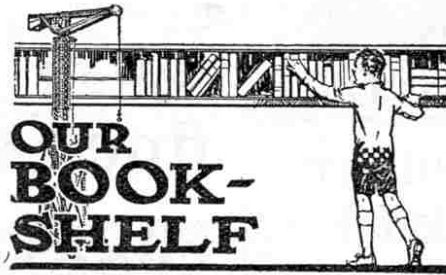
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For the Wireless Enthusiast

The astonishingly rapid rise of wireless telephony into popular favour has been accompanied by an equally astonishing output of literature dealing with the subject. The earlier wireless publications were in many cases far too involved for the amateur, and there has grown up a steadily-increasing demand for instruction books which, while being absolutely accurate, are clearly and simply written.

The latest publications issued by the Wireless Press Ltd. (12, Henrietta Street, London, W.C.2), certainly approach closely to this ideal. The first three numbers of the "Ezi-Wiring" Series (2/- each net), deal respectively with a 3-valve portable receiver, an ordinary 3-valve receiver and a 2-valve-and-crystal receiver. All these books may be strongly recommended to any amateur, whatever the state of his mechanical or electrical knowledge. The instructions are clear and the numerous working diagrams easy to follow. A distinctive feature of the wiring diagram is that the grid, plate, and filament circuits are printed in different colours, thus making confusion impossible.

From the same firm come also a revised and enlarged edition of Mr. F. H. Haynes's "Amateur's Book of Wireless Circuits" (3/6 net), a veritable encyclopaedia of wireless information, and "Uncle Jack Frost's Wireless Yarns on Good Reception" (2/- net), in which Captain C. C. J. Frost discourses in a highly interesting manner on many wireless matters.

"The Empire Annual for Boys."

(B.O.P. Office. Price 5/- net, or cloth 6/- net).

This annual has lost none of the characteristics that have made it such a popular favourite, and indeed this year it appears to be more attractive than ever. It includes some thirty stories ranging from school life to adventures in the wilds of far-off countries, up-to-date articles on sport and travel and a number of interesting "how to make" articles that will appeal strongly to the practical boy.

"The Boy's Own Annual."

(B.O.P. Office. Price 12/6 net).

The "Boy's Own Annual" turns up year by year as though it intended to go on for ever, and indeed in the interests of boys throughout the Empire we hope it will go on for very many years. This year's volume is packed full of good things. The serial stories are particularly good and the practical articles dealing with various mechanical and scientific matters are well written and illustrated. For the stamp collector and the naturalist the Annual is a gold mine, and indeed one cannot imagine any boy who would not enthusiastically welcome it as a Christmas present.

"In the Land of Shame."

By Major Charles Gilson.

(B.O.P. Office. Price 5/- net).

One always welcomes books by Major Gilson, for he has the gift of writing a rattling good story, and nobody can deal with exciting situations in a more thrilling manner. "In the Land of Shame" is a story of central Africa, and the terrible conditions resulting from the slave traffic, and the almost perpetual native warfare, are well described. The author is at his best in the fighting in which the heroes of the book are concerned. The story ranges round the discovery on the shores of a lake in the African wilds of a plant from which a drug having remarkable medicinal qualities can be prepared, and the desperate efforts of a clever scoundrel to rob a doctor of the fruits of his discovery.

"Steamships. Their History, and their Deeds."

By G. Gibbard Jackson.

(B.O.P. Office. 5/- net).

It is not very long since Mr. Gibbard Jackson produced an excellent book on "The Railways of Great Britain," and he now repeats the success of that volume with a companion book on Steamships. Starting from the days before the coming of the steamship the author shows us the beginning of the White Star Line and the Cunard Line, and from that point traces the remarkable growth in the size and speed of steamships, culminating in such monsters as the "Majestic" and such greyhounds as the "Mauretania." A notable feature of this book is the high quality of its numerous illustrations, which have been chosen with discrimination.

"Conquest."

The November number of "Conquest" strikes an interesting note at the outset by an article on the relative merits of white bread or brown, from which we learn that, after all the heated arguments that

have been brought forward on each side, "the bread is best that suits us best." Dr. W. Rosenhain discusses the baffling problems of how and why metals suffer from fatigue and break down, and other notable articles deal respectively with the Manchester Cotton Exchange, unloading a petrol ship, and some vanishing insects.

"The New Photographer."

(41, North John Street, Liverpool. 2d. Weekly).

Judging by the contents of the latest number, the interest and value of this paper increases steadily. This number (15th November) includes an interesting article on photography in the Sea-Water Hall in the Aquarium at the London Zoo, from which we learn that successful photographs can be taken there even with a comparatively cheap camera. Other practical articles deal with lantern-slide making, winter photography, flashlight photography, and buying second-hand apparatus. A valuable feature is the section devoted to criticism of beginners' prints, from which much useful advice may be gained. There are also the usual competitions, graded in such a manner that every photographer, whether beginner or expert, has an equal chance of winning a prize. The illustrations throughout the Magazine are excellently reproduced.

"Diaries for Schoolboys and Boy Scouts."

(Messrs. Charles Letts & Co., London).

The "Schoolboy's Diary" issued by Messrs. Charles Letts & Co. (price 1/6 cloth, 3/- leather) is quite a remarkable little production in regard to the ground it covers. Information of all kinds, varying from Latin verbs and mathematical tables to the latest sporting records fill the opening pages, and the diary for the year follows, each page having a foot-note portrait of some famous man and a few lines about his life. Last of all come a number of ingeniously arranged tables for marks gained in school, records of sports results, etc.

The "Boy Scout's Diary" (cloth 9d., leather 1/-, in refillable leather case with pockets and notebook, 3/-) contains information that is necessary to every Scout who takes his work seriously. There are hints on tracking, on recognising the different constellations, what to do in case of accidents, and a description and illustration of all the commoner British trees. The conventional signs and lettering used in field sketching are given, together with the most useful knots and details of signalling by semaphore or Morse code. Each page of the diary has a useful foot-note illustrating and describing something of special interest to scouts.

A Stamp Album Free

Messrs. Amber & Wright (33, Waveney Avenue, Peckham Rye, London, S.E.15) have sent us a specimen of the Postage Stamp Album which, as announced in our advertisement columns, they are offering free to our readers. The album contains 100 pages with a capacity of over 2,500 stamps, and is bound in a good stiff cover. Those of our readers who wish to obtain this handy little album should write at once enclosing 6d. to cover cost of postage and packing. They will not be under any obligation to buy stamps, but will be entitled to stamps from the firm's approval sheets to the value of 6d. as a refund of the postage paid for the album.

Faircycles and Toy Motor Cars

The "Faircycle" made by Messrs. Lines Bros. Ltd. (9, Fore Street, London, E.C.) is familiar to readers of the "M.M.," having frequently appeared in our advertisement pages. The latest designs surpass all previous models in strength, and are easy running and of smart appearance. Owing to their very low centre of gravity they are perfectly safe. The firm also make a luxurious toy motor car for the youngsters and it would be difficult to imagine a more realistic model. For the juvenile "speed merchant" of from 2 to 7 years there is a distinctly "sporty" model that will make a strong appeal to embryo motorists.

Miniature Lighting Dynamos

Those of our readers who are interested in electricity—and very few are not!—will appreciate the Miniature Lighting Dynamos supplied by Messrs. Greens (85, New Oxford Street, London, W.C.1). Despite their small size these dynamos are very efficient and little power is required to drive them. Every machine is tested before despatch and is fully guaranteed.

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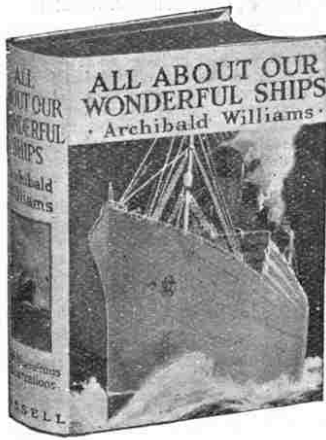
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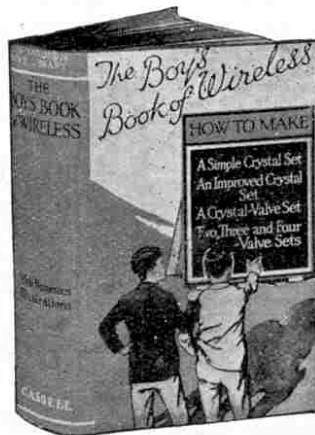
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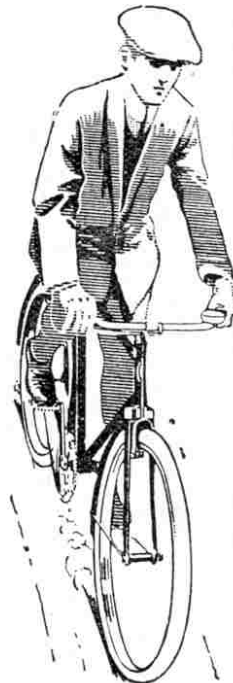
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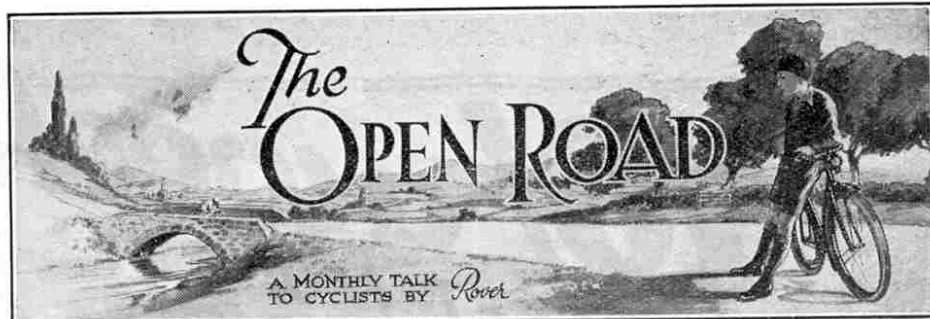
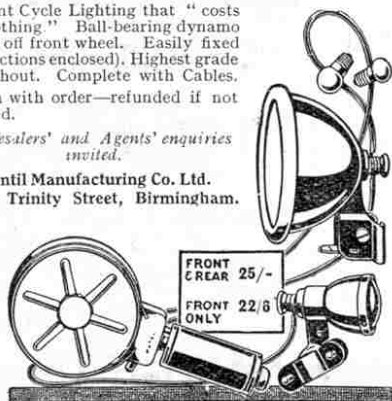
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X. CHOOSING A BICYCLE

WHEN Christmas Day has come and gone, no doubt many Meccano boys will have realised one of their greatest ambitions—to possess a bicycle! They will become recruits to the ever-growing army of road-users, and as they set out on their first ride, they will be initiated into the joys of one of the finest and most popular outdoor sports in the world. As many of these prospective cyclists will select their own machines, a few words this month on the choice of a mount will perhaps prove helpful.

Far too many boys, in their enthusiasm and excitement, are content to purchase any sort of bicycle, as long as it boasts two wheels and a driving mechanism—quite regardless as to whether it is suited to their requirements or not! Once inside a cycle-store, and surrounded by machines of every kind and description, the making of a final choice becomes a very difficult matter indeed, unless you have already made up your mind as to the particular type you require.

The "Roadster"

First of all it should be remembered that bicycles are divided into two main groups, the racing machine and the roadster. The difference between the two is well defined, for one is built for speed alone, while, in the other, attention is given to the comfort of the rider. The roadster is, of course, the more popular model of the two and is specially suited to long-distance touring and all-weather riding and is fitted with a comfortable saddle. Some machines are also fitted with oil-bath gear-cases and variable hub—or bracket-gears, which help to ensure easier riding. Cycles of this type are termed "super" or full-roadsters.

Racing Mounts

Then, still in the roadster class, comes the "light-roadster" which, in reality, is a combination of the two groups. Both the comfort of the roadster and the

speed of the racer are found in this machine, and consequently it is an ideal mount for the rider who desires a speedy machine, yet does not wish to sacrifice comfort to obtain it.

The racing-cycle, or "road-racer" as it is usually called, is a very much lighter and speedier machine than any roadster, and should only be purchased by a rider who intends to join a cycling club in which

fast runs are regular events. The racer may also be converted into a very useful mount for competition work by using lighter and livelier wheels. There are several other types of racing mounts which are of interest only to the experienced enthusiast or track-rider.

"Ready-Made" Cycles

Presuming that the type of

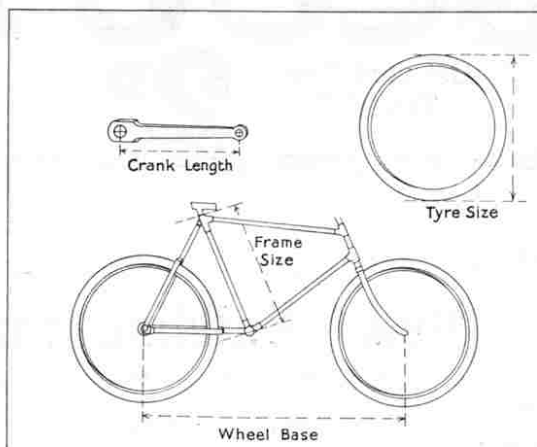
machine required, roadster or racer, has been decided upon; the next point to be considered is the frame specification. Few people realise that a cycle, if it is to give satisfaction, must "fit" the rider, and although it is too expensive an undertaking to have cycles "made to measure," the chosen machine should be as good a "ready-made" as possible. To ensure this you should measure the height of the frame, that is to say the distance from the top of the seat lug to the centre of the bracket spindle (see illustration). Then subtract nine inches from the length of your own leg, measured from the fork to the heel of your shoe, and the result should correspond with the frame height. If the frame proves slightly on the small side it is not of any great importance, but on no account should it be even an inch too long.

Wheelbase and Handlebars

The shape of the frame itself is not of great importance, for it usually follows an accepted design that ensures comfort and the necessary strength to withstand shocks and strains. Comfort and steady running depend a great deal on the wheelbase, which is the distance between the

(Continued on page 399)

CYCLING MEASUREMENTS



This diagram shows how to make the cycle measurements referred to in this article

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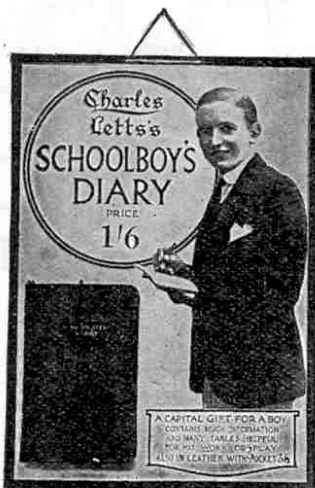
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The Open Road—(continued from p. 397)

centres of the spindles of the front and rear wheels, and in a roadster this measurement, which is illustrated in the diagram on page 397, should not be less than about 43 inches. A long wheelbase is a standard feature of nearly all present-day roadster models, and this measurement is not of great importance unless a racing machine is being purchased.

Handlebar design is another point that sometimes presents difficulties to the new rider, and as the handlebars affect the riding position, they should be chosen before the saddle. Upright or flat handlebars are nearly always fitted to roadster machines, as they allow of an upright riding position. There is little difference in the advantages to be obtained from either type, as it is always possible to raise a flat bar to a comfortable height. Handlebars with an upward bend, however, are generally popular, as they present a more graceful appearance.

On racing machines dropped handlebars are indispensable, as the stooping position they give reduces wind resistance and allows greater power in pedalling, particularly when hill-climbing. In roadsters the grips themselves should be behind the handlebar stem so that they may be reached without undue stretching from the normal upright riding position. Their width, which is measured in a straight line between the centre of the grips, should be between 18 to 20 inches, and care should be taken that they are sufficiently wide to guard against contraction of the rider's chest. Their correct position in relation to the saddle will be found to be anywhere between an inch below and above the saddle level, the most suitable position being found by practical tests.

Crank Length and Accessories

Crank length is another important consideration, and the most popular is 6½–7 inches, though short riders would be well advised to have cranks nearer 6 inches in length. The advantages of a variable gear were fully explained in the September "M.M." and there is no doubt that an accessory of this type adds considerably to the pleasures of cycling and also ensures easier riding.

In regard to other necessary accessories, such as tyres, saddles, lamps, etc., no set rules can be laid down for their selection, but they may safely be chosen without specialised knowledge, provided a reputable name is insisted upon.

NEXT MONTH:—

CARE OF BICYCLES IN WINTER

"Rover's" Replies

H. Dewhurst (Nelson).—We are glad to hear you are such a keen cyclist and the proud owner of a B.S.A. machine. We have sent you a list of articles required for a tool kit, which subject has been dealt with in a recent article on this page.

J. Banner (Mansfield).—The preparation we recommend for re-enamelling your bicycle is either Robbialac or Judge Brand enamel. Both give excellent results and we are asking the manufacturers to send working instructions to you.

E. Hall (Gainsborough).—A mechanic is not required to fit a cyclometer on your machine. This is quite a simple matter which you should be able to carry out in a few minutes from the directions given by the makers.

M. Morris (Hull).—Cycling maps for your district may be obtained locally, but for touring maps you should apply to Temple Press Ltd., 7–15, Roseberry Avenue, London, or Geographia Ltd., Fleet Street, London, either of whom would supply you.

A Cycling Correction

On the Cycling Page of the October "M.M." we printed an illustration showing the method of fixing a cyclometer on a bicycle-wheel. Through a slip of the pen it was stated that cyclometers are usually fitted on the left-hand side of the wheel-spindle, whereas of course, all cyclometers are invariably fitted on the right-hand side. Were an instrument to be fitted on the left-hand side the figures would not only be invisible to the rider, but the mechanism would also work backwards.

Electricity—(continued from page 385)

mercury expands and moves up the tube. At the critical temperature it touches the wire that comes down through the stopper, thus completing the circuit and sounding the alarm. This mechanism only indicates a rise in temperature, but by making the thermometer tube in the shape of a letter "U" an alarm may be given also when the temperature falls below a pre-arranged point.

Automatic Fire Alarms

In order that advantage may be taken of the alarm given by either of the preceding mechanisms, it is of course necessary that an attendant should be at hand to take steps to regulate the temperature and bring it once again within the limits of safety. In some cases such attention is not possible, however, and it then becomes necessary for the whole process to be entirely automatic. This can be accomplished without much difficulty by arranging matters so that the closing of the circuit, in addition to—or instead of—ringing the bell, turns on or off a lamp or adjusts a stove, and so automatically maintains the room at a constant temperature.

Either of the preceding arrangements may be used also as an automatic fire alarm. The only difficulty in this lies in making the apparatus sufficiently sensitive to give prompt warning of an outbreak of fire, and yet not so sensitive as to give a false alarm when the temperature of the room or workshop rises slightly above the average, as may be the case during a very hot summer.

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Use FIBERMETIC for your Cycle or Motor Cycle Tubes, and you will NEVER be let down on the road by PUNCTURES. Instantly stops all air leaks up to ¼th inch. Entirely non-injurious to rubber and does not choke up valves. Never goes bad—Never stops functioning.

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59/6



SPECIFICATION :

Adjustable plated handle-bar, cycle saddle (adjustable), ball-bearing rubber pedals, 12 in. wheels with $\frac{3}{8}$ in. wired-on tyres, frame of solid drawn weldless steel cycle tube, brake and free-wheel.

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The Secretary's Notes

By the time these notes are in the hands of my readers the close of the First Winter Session will be in sight, and

we shall be turning our thoughts to the prospects of the New Year. The halfway line between the two

Winter Sessions affords an excellent opportunity for "taking stock," as it were, of a club's progress, and it is a good idea to have a special meeting of all the members, presided over by the Leader, for this purpose. At this meeting the various items of the programme of the past session should be reviewed one by one and to each this test should be applied:—"Has this item proved a popular success with the majority of the members?" If the answer is "Yes," then the item should be continued. If on the other hand the meeting considers that the item has fallen flat and aroused no enthusiasm or interest, then one of two processes must be adopted—either the item must be dropped altogether, or it must be revised and modified so as to get rid of its unpopular features, and then be given another trial. It should be remembered that nothing is more likely to kill the enthusiasm of the members than the continuance in a club's programme of items which, while they may interest a few, are unpopular with the majority.

Having disposed of any undesirable features in the programme of the past session, the meeting should endeavour to

The Ideal Programme

devise one or more novel features for the coming session. The Leader should do his utmost to get every member present to put forward his ideas in this respect, and any proposals that appear to have a fair amount of support should be put into definite form, discussed, and afterwards voted upon. By this method of procedure a club's programme may be brought gradually nearer to the ideal that every item should be popular with every member.

The Guild Correspondence Club has made steady progress from the time it was instituted, and as a result of its activities many hundreds of enduring friendships have sprung up all over the world.

The Correspondence Club

Mr. Hornby, the Guild President, takes a specially keen interest in this Club, and he is anxious that next year should see a great increase in the number of its members. The Guild Correspondence Club is the recognised means of communication between all

Guild members who, through its agency, interchange thoughts and ideas upon all manner of interesting subjects and learn about each other's daily lives, hopes, and ambitions. There is no entrance fee, and all that a Guild member has to do in order to join the Club is to fill up an application form, a copy of which will be sent by return of post from Guild Headquarters. Correspondents are found in any country, and the letters may be written in English or in a foreign language as desired. Many members wish to have correspondents in far-off parts of the world. There is no difficulty in arranging this, but in such cases it is important that a member should realise the time that must elapse before he can receive a reply to his first letter. In the case of Australia or New Zealand, for instance, a reply cannot be expected under three months, and allowance should be made for this.

From the Argentine



I have recently received the above photograph of Master José Atencio, who lives in the Argentine and is a Meccano enthusiast. José has sent also photographs of some excellent Meccano models he has built, including two of the Chassis fitted with the Torque Converter. These models display a good knowledge of engineering principles, and a special form of gearing he has invented and fitted to the Chassis shows remarkable cleverness. I am pleased to publish this photograph, and I know our readers will join me in congratulating this reader, who will often be in our thoughts although so far away.

It frequently happens that several members ask within a few days of one another to be accommodated with correspondents in one particular country, and occasionally this results in a little delay in finding suitable correspondents. This is particularly the case with regard to Australia, New Zealand and Canada. In order to draw the attention of boys in these countries to the fact that there are many Guild members in the British Isles anxious to communicate with them, I give below the initials of a few of those members, together with the name of the town or county in which they live and the subjects in which they are chiefly interested. I hope that members who live in Australia, New Zealand and Canada who have not already joined the Correspondence Club will now do

Correspondence Club Register

so at once. To save time, boys in the three countries named may obtain correspondence club application forms from our local agents (whose addresses will be found on page 440) and can send these forms, filled in, to me along with their first letter to their correspondent, to whom I will send it. I intend to maintain this feature as a register of "correspondents wanted," and I hope that it will result in a great increase in the membership of the Guild Correspondence Club.

Boys requiring Canadian Correspondents

| Initials. | Town or County. | Hobby.* |
|-----------|-----------------|-----------|
| C.W. | Atherstone | S.C. |
| S.M. | Antrim, Ireland | W. |
| R.G. | Lancashire | S. & N.S. |
| G.S. | Middlesbrough | W. |
| A.H. | Lanarkshire | E. |
| A.H. | Sussex | S.C. |

Boys requiring New Zealand Correspondents

| | | |
|------|---------|--------------|
| J.S. | Sussex | N.S. |
| W.H. | Jersey | Football |
| C.B. | Bristol | E. & P. |
| E.Y. | Dorset | Model Yachts |
| S.K. | Hants. | Meccano |

Boys requiring Australian Correspondents

| | | |
|------|---------------|-----------|
| W.W. | South Shields | Meccano |
| H.E. | Manchester | S.C. |
| C.M. | Leeds | N.S. & W. |

* S.C.—Stamp Collecting. E.—Engineering.
W.—Wireless. P.—Photography.
N.S.—Nature Study.

In reading through the large numbers of application forms for membership of the Guild Correspondence Club, I often

An International Code

think what a pity it is that so few boys are able to correspond in any foreign language besides the French that they learn at school. This means that, in the ordinary way, an English boy who knows no Japanese and a Japanese boy who does not understand English are quite unable to communicate with one another, although both are able to build the same Meccano models. Fortunately, however, there is a way out of this difficulty to which I should like to call attention, and that is by the use of the international language, *Esperanto*. This language—first published in 1887—was compiled by Dr. Zamenhof, of Warsaw, Poland, and it is interesting to know that he had worked it all out when only 16 years of age. Since that time *Esperanto* has made very considerable progress and is in use by people of almost all nationalities as an auxiliary language by which they can communicate with one another. Several international congresses have been held year by year in different cities during each of which a full week's programme has been carried through entirely in *Esperanto*, without the slightest difficulty in understanding one another occurring among the many different nationalities represented. This international language is easy to learn

How to Run a Meccano Club

by the
Guild Secretary

(Concluded)

Recruiting for the Guild

Enthusiastic members may do a great deal to help forward the Guild movement by recruiting new members. As a rule this is not at all a difficult matter, for once Meccano boys realise for what the Meccano Guild stands, they will join its ranks enthusiastically and without hesitation. It is a very remarkable fact that there are still many thousands of Meccano boys in this country who have never yet heard of either the Meccano Guild or the *Meccano Magazine*! This scarcely seems possible, so widely do we endeavour to make both known, yet the numerous inquiries I receive every day prove this to be the case.

In order to encourage members to spread far and wide the knowledge of the Guild, a Recruiting Campaign is organised every year. In connection with this campaign a Special Medallion is presented to each member who obtains three new recruits. When a member, having already gained this medallion, recruits six more members—that is nine altogether—he is entitled to have his name engraved upon his medallion together with the words "Special Award." For this purpose the medallion is returned to Headquarters.

The Special Recruiting Medallion is one of which any boy may well be proud. I am always glad to send full particulars of the Recruiting Campaign, together with application forms for new members, on request.

The Guild Badge

The badge of membership of the Meccano Guild is triangular in form and beautifully enamelled in colours. It is one of the conditions of membership of the Guild that the badge shall be worn on all possible occasions in order that members all over the country may recognise each other when they meet. The cost of this badge to each boy is 7d. The badge is sent post free in the United Kingdom, but on and after 1st January next members abroad will be required to pay 5d. extra for registered postage.

Before a badge is issued the prospective member gives his word of honour to conform with the rules of the Meccano Guild, which include the promise to promote the Guild's objects by example; to be helpful to others; to be clean in thought and habit, and to be determined to learn and to make progress.

The Club Leader's badge is similar in design to the member's badge, but is enamelled in different colours. Club Leaders should make a point of wearing the badge at all meetings of the club and on any other suitable occasions.

Conclusion

In this series of articles I have endeavoured to put forward suggestions and hints for forming and running a Meccano Club on successful lines, and also to provide information regarding the Meccano Guild in general. I hope that Club Leaders and Secretaries will have read these articles carefully, and that they will make an earnest attempt to put into practice

as many as possible of my suggestions. At the same time I have had no desire to lay down hard-and-fast rules, because I know the important part that local conditions play in the running of a club, and that what may be excellent methods for one club may be utterly unsuitable for another. I do hope, however, that Club Leaders and Secretaries will at least consider seriously and, if possible,

Meccano Club Presidents

No. 2. Lt.-Gen. Sir John Keir, K.C.B.



Prominent men all over the country take an increasing interest in the good work accomplished by their local Meccano Clubs. The Leamington Club is particularly fortunate in this respect, for that distinguished soldier, Lt.-Gen. Sir John Keir, has for some years not only held the office of President but has taken a keen personal interest in the meetings of the club.

Sir John has seen active service in two wars, the South African War and the Great War, and a short account of his career must prove an inspiration to all British boys. Sir John was educated at Wimbledon College, and after passing through Woolwich he joined the Royal Artillery in 1876. His ability soon gained him rapid promotion, and by 1884 he had attained the rank of Captain, and in 1909 Major-General. During this period he served through the South African War and was mentioned in despatches and awarded the Queen's Medal with five clasps.

On the outbreak of war in 1914 he commanded the Sixth Division in Ireland, and in 1916 was appointed to the command of the Sixth Army Corps in France. After again being mentioned in despatches he was promoted to Lt.-Gen. in 1916 and was honoured by both France and Belgium, being awarded the *Medaille Militaire* and granted the *Insignia de Grand Officier de l'Ordre de la Couronne* (Belge). He also holds the much coveted R.A. gold medal for a prize essay. In addition to his high honour as Knight Commander of the Bath, Sir John also is a Justice of the Peace and Deputy-Lieutenant for Warwickshire.

Sir John has always been interested in boys and their work, and every one of the 40,000 members of the Guild will envy Leamington in having so distinguished a soldier as their Club President.

make a trial of any of my suggestions that are not already in practice in their own clubs.

However much space I had at my disposal it would be impossible for me to deal adequately with all the different local conditions that exist in the various towns and villages throughout the country. There are many difficulties in the way—some clubs have more than others—but

it is the overcoming of these difficulties that counts. For the younger members of Meccano Clubs such work provides good practice for dealing with the more serious difficulties that arise in later years, the overcoming of which makes life worth while.

I earnestly hope that every Leader who has read my articles will apply himself whole-heartedly to the splendid task of helping boys to become good men. No better work than this can be desired or accomplished by any man.

A New Booklet

I have received a very large number of requests from members of the Guild that I should reprint my articles on "How to Run a Meccano Club" in booklet form. I have decided to do this, and in preparing the booklet I am taking the opportunity of adding fresh matter that I believe will greatly increase the interest and value of the booklet. This new booklet, which will take the place of the two existing booklets, "Suggestions for Club Secretaries" and "Notes for Club Leaders," will be printed as soon as possible and will be forwarded on receipt of 2d. (postage) as soon as ready.

Secretary's Notes—(cont. from previous page)

and its grammar has one great advantage that will make a strong appeal to boys who are struggling with the complexities of Latin—it has no exceptions and no irregularities!

Yet another advantage about Esperanto is that matter written in it can be translated without previous study by means of a specially - published series of keys costing a penny each. These keys form a most fascinating sort of secret code by which an English boy can communicate with a boy speaking any other language in the world. All you have to do is to write your letter in Esperanto by the use of the English-Esperanto key and send your letter to your correspondent, enclosing a similar key printed in his own language. Your correspondent will then be able to decipher your letter and understand you without difficulty. I can strongly recommend this as an extremely interesting and amusing pastime. I give below a paragraph written in Esperanto and dealing with the Meccano Correspondence Club, and I am sure that very many of my readers will be interested in reading it through and perhaps getting some idea of what it is all about.

Keys to the Code

Mekana Koresponda Klubo

Ni deziras eltrovi kiom da Mekanaj Knaboj scias iom de la internacia lingvo:—Esperanto.

Mekanaj guildanoj apartenas al kunularo internaci kaj kelkaj el ili skribas leterojn inter si per la koresponda klubo; sed la lingva malfacilo malhelpas ke la plej multaj skribu al knaboj alilande, kaj ech tiu, kiu skribas ne ofte povas skribi pli ol unu fremdan lingvon.

Chu ne estus pli bone se chiu gildano posedanta la internacian spiriton lernus la internacian lingvon Esperanton, kaj tiel plivastigos sian kunularon.

Se vi konsentas kaj scias iom de la lingvo kaj shatus korespondi per ghi, mi petas ke vi skribu al la *Secretario de la gildo Mekana, Old Swan, Liverpool, Anglujo*. sendante vian nomon kaj poshtan adreson.



CLUB NOTES

Peterboro' M.C.—The first meeting of the session was held at the end of September, when the various club officers were elected by vote. A very interesting programme was drawn up, among the chief features of which were papers by members on "Wembley" and "Railways," and notes on "Experiences in France" by a member who has visited that country during the year. Other activities include Model-Building, Question Teams, Lectures and Tricks and Games. It is also proposed to hold a Social at Christmas. New members continue to join and it is hoped to make the club a greater success than ever this session. Club roll: 31. *Secretary:* Master A. Marsh, 88, Granville St., Peterboro'.

St. Mary's (Newington Butts) M.C.—Among the many activities of this club have been practical demonstrations of railway layouts constructed by members, which created marked enthusiasm. An enjoyable and instructive lantern lecture on "London Buses" was given, and further lectures have been arranged. Certain evenings have been set apart for Model-Building and Dock Construction. The Fretwork Section is run concurrently and it is always well supported. Club roll: 103. *Secretary:* Mr. C. Curle, 37, Pullen's Buildings, Peacock St., London, S.E.11.

The Meads (Eastbourne) M.C.—Members began their winter activities on 4th October and were able to put forward a most interesting programme for the winter, including a Concert to be given by the members, assisted by the local Girl Guides. Football matches have been arranged with local clubs and schools. Other items proposed were Lectures, Model-Making, Wireless Instruction and Woodwork. Club roll: 18. *Secretary:* Master F. Laycock, 10, Victoria Place, Eastbourne.

St. Mark's (London, S.E.) M.C.—An interesting visit was recently paid by all members to the British Broadcasting Company's premises in London. The first meeting of the session was held at the end of September, when a very attractive programme was drawn up. It was decided to hold an Exhibition at the local sale of work at the end of November, and a report of this will appear later. Club roll: 14. *Secretary:* Master G. C. Green, 21, Hafton Road, Catford, London, S.E.6.

King Edward (Birmingham) M.C.—Several new members were present at the re-opening meeting of the session on 14th October. The club have been fortunate in obtaining the services of local schoolmasters to give lectures on different subjects. It is intended to start a Club Magazine, and one of the members has undertaken to design all covers, posters, etc. Other activities include papers by members, debates and a Mock Trial, at which it is hoped relations and friends will be present. Club roll: 20. *Secretary:* Master N. J. Robertson, 30, Hinstock Road, Handsworth Wood, Birmingham.

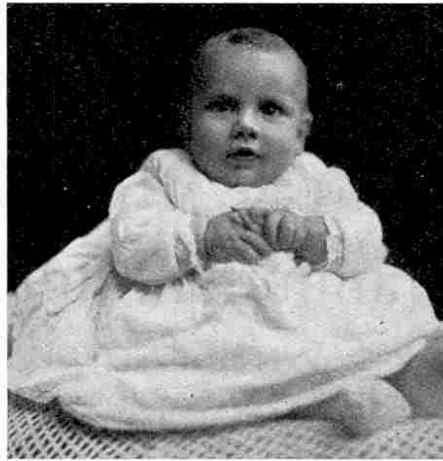
Sparkbrook (Birmingham) M.C.—A number of papers are to be read by club members, the subjects including Electrical Experiments, Chemistry and Printing. Other items in the programme are Model-Building, Games, Debates and Magic Lantern evenings. Meetings are held every Thursday. Club roll: 14. *Secretary:* Master F. Hubball, 71, Turner Street, Sparkbrook, Birmingham.

St. Mary (Bourne) M.C.—Has just recently become affiliated with the Guild and promises to be a very successful club. The first winter meeting was held in October, when it was arranged to run a football team. Meetings are held every fortnight. Club roll: 12. *Secretary:* Master Douglas L. White, Rosedale, Stoke, Andover.

Ruislip Common M.C.—Meetings are held every Tuesday under the Leadership of Pastor Grosvenor, who takes a keen interest in everything connected with Meccano. The club was affiliated in October last, and its motto is "Keen and Clean." A very interesting winter programme is being carried out, and every meeting is well attended. Club roll: 19. *Secretary:* Master L. Ives, Ruislip Common, Middlesex.

Bearwood M.C.—Commenced activities for the winter session in October. A very enjoyable programme was drawn up, one of the novel features being a Visitors' Night, when Meccano models made by members are to be exhibited. Other items include Lantern Lectures and Essays on various subjects, and it is also proposed to have an entertainment at Christmas. The club is now affiliated with the Guild. Club roll: 48. *Secretary:* Master C. White, 72, Katherine Road, Bearwood, Birmingham.

Our Youngest Guild Member!



Our photograph shows Master George Cardon, who is the youngest recruit to the Meccano Guild. When only four months old Baby George decided that Meccano was far better than rattlewoogs or rattles, and nearly swallowed a packet of his brother's nuts and bolts in trying to express his appreciation of the hobby!

Fortunately for George, his sister and brothers are all enthusiastic Guild members, and after a family consultation—during which George fell asleep—the following letter was sent to Headquarters:—

"Mother says that we can join up Baby George, so if you do not think him too young we are sending stamps for his badge. His photograph, taken when four months' old, is also enclosed, so that you can see what a fine boy he is."

We quite agree that our youngest Guild member is a very fine boy indeed, and he has certainly shown admirable taste in his choice of the Meccano hobby. We hope he won't swallow his badge for, with its three corners, it would be even more indigestible than a nut and bolt!



The Exhibit of the Herne Bay M.C. at the local Carnival

Rosyth M.C.—The club continues to make excellent progress and new recruits keep coming in. The club recently became affiliated with the Guild, at which all members were highly delighted. *Secretary:* Master Edward Hunter, 79, Admiralty Road, Rosyth, N.B.

South Park M.C.—Meetings are held every Tuesday from 4 to 5 p.m. at the Boys' School. The club was granted affiliation with the Guild in October, and has quite a good membership. Club roll: 42. *Secretary:* Master Norman Tweddell, 103, Breamore Road, Seven Kings, Ilford.

Cheltenham Grammar School M.C.—This club, which has recently been affiliated with the Guild, shows great promise. The Masters at this school are taking a great interest in the welfare of the club, the Headmaster being the President and other Masters filling the posts of Leader and Treasurer. Club roll: 12. *Secretary:* Master E. W. Griffiths, Cheltenham Grammar School, Cheltenham.

Loanhead (Edinburgh) M.C.—It is proposed to hold an Exhibition early in the New Year and members are very busy preparing for this, hoping that a record crowd will be present. Another feature in the winter syllabus is a Lecture on the "Names and Uses of Meccano Parts." The *Secretary* is a very keen worker and has recently recruited several new members. Club roll: 17. *Secretary:* Master B. Warnock, R. P. Manse, Loanhead, Edinburgh.

Australia

Glenelg (South Australia) M.C.—This club is still making excellent progress, the average attendance on club nights being 22 members. A local gentleman, Mr. Moody, takes a keen interest in the work of the members and offers prizes for the best working models made. In a recent competition a chaff-cutter won the first prize, a windmill the second and a saw-bench the third. Another event of interest was a visit to the Australian Glass Manufacturing Company's Works, Kilkenny, in October, which all the members thoroughly enjoyed. Club roll: 63. *Secretary:* Master K. Holmesby, 22, Partridge Street, Glenelg, South Australia.

South Africa

Simonstown Meccano and Wireless Club.—Since its inauguration in April 1923, this club has made rapid strides. Meetings are held at the residence of the President, Mr. W. J. Creasey. A five-valve wireless set has just been constructed specially for the club by two local gentlemen. The club roll consists of 22, including one girl, the first and only girl to become a member of a Meccano Club in South Africa. *Leader:* Mr. R. G. Randall, c/o Municipal Office, Simonstown, South Africa.

Clubs not yet Affiliated

St. Annes-on-Sea.—Will shortly be affiliated with the Guild, as good progress continues to be made. A suitable club-room has been kindly lent, free of all charge, by a local gentleman, Mr. Challinor, who it is hoped will become President. Meetings are now held regularly, and an excellent programme has been arranged for the session, including a lecture on "Elementary Wireless" by a local expert. The present membership is 8, which will be considerably increased very shortly. *Secretary:* Master E. King, 109, Church Road, St. Annes-on-Sea, Lancashire.

Droylesden (Manchester) M.C.—Has now succeeded in obtaining an adult Club Leader, Mr. T. Hemmings, Scoutmaster, and also a suitable club-room. Application for affiliation with the Guild will be made shortly and there is every indication of this club being highly successful. Club roll: 8. *Secretary:* Master Frank Shorroock, 23, West Drive, Droylesden, Manchester.

Harwich M.C.—Has been successful in finding a very keen and capable Leader in Mr. Hogg, and a club-room has been kindly lent by the Vicar, who is very interested in Meccano boys. Very enjoyable and interesting meetings have been held at which various models were shown and explained, one model being a vertical steam engine in motion. Lectures have also been given on various types of cranes and their working, transporters, submarine weapons, etc. Great preparations are now being made for an Exhibition which it is proposed to hold just before Christmas. Club roll: 12. *Secretary:* Mr. E. Ward, Osborne House, Pepys Street, Harwich.

Proposed Clubs

Mansfield M.C.—Master Frank Johnson, of 11, Shirburn Avenue, Mansfield, is endeavouring to form a club and would be pleased to hear from any Meccano boy who would like to join. An adult Leader and a club-room are also needed.

Bray (Ireland) M.C.—Great efforts are being made to establish a Meccano Club in Bray and several boys have come forward to join. All Meccano boys interested are asked to write to Master G. Galloper, Hope Villa, Novara Road, Bray.

The South Yardley (Birmingham) M.C.—All Meccano boys in South Yardley and district interested in forming a club are asked to communicate with Master Horace Young, 1238, Coventry Road, South Yardley, Birmingham. It is proposed to hold club meetings on Wednesdays.

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No. 2 PULLMAN SET

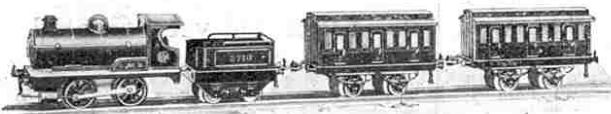
The No. 2 Loco with Tender measures 17 in. in length. The Loco is fitted with superior mechanism, reversing gear, brake and governor, and the accurately-cut gears ensure smooth running. Loco, Tender and Coaches are superb in appearance and finish, enamelled in colours to represent the L.M.S. or L.N.E.R. Companies' rolling stock, and stoved at a high temperature to ensure durability. Each set contains Loco, Tender and two Coaches, with set of rails to form a circle of 4 ft. diameter.



No. 2 PULLMAN TRAIN
Price 60/-

No. 1 PASSENGER SET

The Loco is fitted with reversing gear, brake and governor. Loco, Tender and Coaches are superb in appearance, beautifully finished in colour, and the doors of the coaches open. Each set contains Loco, Tender, two Passenger Coaches and set of rails.

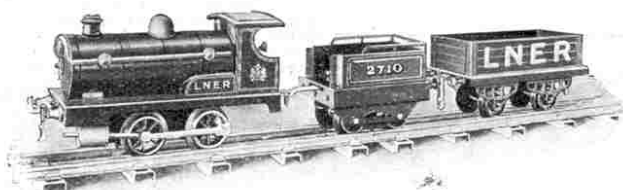


No. 1 PASSENGER TRAIN

Price 30/-

No. 1 GOODS SET

This set contains Loco (fitted with reversing gear, brake and governor), Tender, one Wagon, and set of rails consisting of curves to form a circle of 2 ft. diameter and two straights. Beautifully finished in colours to represent L.M.S. or L.N.E.R. rolling stock.



No. 1 GOODS TRAIN

Price 22/6

| | | | | | |
|-------------------------|-----|-----|-----|-----|------------|
| No. 1 Hornby Loco | ... | ... | ... | ... | Price 15/- |
| No. 2 " | ... | ... | ... | ... | " 22/6 |
| Hornby Passenger Coach | ... | ... | ... | ... | " 5/- |
| " Pullman or Dining Car | ... | ... | ... | ... | " 15/- |
| " Wagon No. 1 | ... | ... | ... | ... | " 2/6 |
| " " 2 | ... | ... | ... | ... | " 3/6 |

HORNBY TRAINS

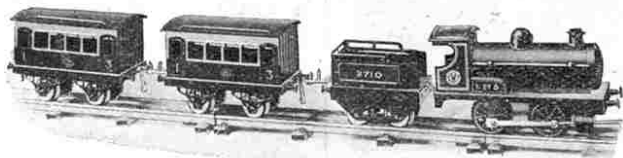
11-18th D

We have arranged for miniature Railway Systems, Trains and Rolling-Stock, Tunnels, Signals, etc., to the country during this event to make every endeavour to may give you many fresh opportunity to inspect the in the Hornby System.

ZULU CLOCK TRAINS

Fully Guaranteed.

Fine and durable mechanism, and strength of construction in all parts are the main characteristics of this new type of clockwork train. The Zulu Loco is well designed and efficient, and will give long and excellent service. Richly enamelled and highly finished; fitted with brake and governor; non-reversing.

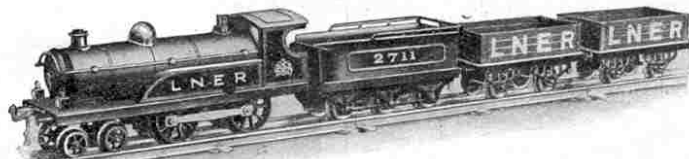


ZULU PASSENGER TRAIN

The Zulu Passenger Set contains Loco, Tender, two Passenger Coaches and set of rails, consisting of two straights and curves to form a circle of 2 ft. diameter. Well finished, in colours to represent the L.M.S. or L.N.E.R. Companies' rolling stock.

ZULU PRICES.

| | |
|--|------------|
| Zulu Passenger set, complete, packed in strong cardboard box | Price 22/6 |
| Zulu Goods set, complete, packed in strong cardboard box | Price 17/6 |
| Zulu Loco | 10/6 |
| Zulu Tender | 2/- |
| Zulu Passenger Coach | 4/- |
| Zulu Wagon | 2/6 |



No. 2 GOODS SET

Gauge 0 in colours to represent L.M.S. or L.N.E.R. Companies' rolling stock. This set contains Loco, Tender and rails as in the No. 2 Pullman Set, and two Wagons. Loco fitted with reversing gear, brake and governor.

Price 37/6

HORNBY TANK LOCOS



No. 1 TANK LOCO

A strong and durable Loco capable of any amount of hard work; highly finished in colours; fitted with reversing gear, brake and governor.

Price 12/6



No. 2 TANK LOCO

The Hornby No. 2 Tank Loco is a powerful model embodying all the characteristics of the Hornby Train. Beautifully finished in colours, and fitted with reversing gear, brake and governor.

Price 30/-

HORNBY CLOCKWORK TRAINS ARE OBTAINABLE FROM

RAIN WEEK

December

ROLLING STOCK AND TRAIN ACCESSORIES (Hornby Series. Gauge 0)

There are now 50 different train accessories—Stations, Signal-boxes, Lamps, Wagons, Level-Crossings, Foot-Bridges, Turntables, etc. Further accessories will be added to the system from time to time, and will be announced in the pages of the "M.M."

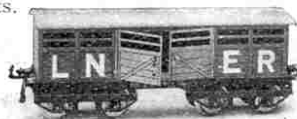
All Hornby Rolling Stock and Accessories are built in correct proportion to the size, gauge, method of coupling, etc., of the Hornby Trains and all have the uniformly beautiful finish that is the great feature of the Hornby series. With these accessories you can build up a most realistic railway system, and the splendid range of rails, points, and crossings makes possible endless variety in rail layout. Hornby Trains are British made, and your dealer will be able to show you specimens of the new products.



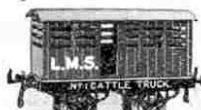
SECCOTINE VAN
Price 4/-



SNOW PLOUGH
Finished in grey, with revolving cutter driven from front axle.
Price 5/6



No. 2 CATTLE TRUCK
Splendid model fitted with double doors. Suitable for 2 ft. radius rails only.
Price 6/6



No. 1 CATTLE TRUCK
Fitted with sliding door. Very realistic design.
Price 4/-



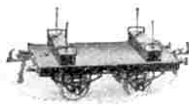
PETROL TANK WAGON
Finished in colour.
Price 3/-



MILK TRAFFIC VAN
Fitted with sliding door, complete with milk cans. Price 4/6



No. 2 LUMBER WAGON
Fitted with bolsters and stanchions for log transport. Suitable for 2 ft. radius rails only. Price 5/-



No. 1 LUMBER WAGON
Fitted with bolsters and stanchions for log transport. Price 2/-



REFRIGERATOR VAN
Enamelled in white, lettered black. Price 4/-



GUARD'S VAN
Price 5/-



ROTARY TIPPING WAGON
Finished in colour.
Price 4/-



CEMENT WAGON
Finished in colour.
Price 4/-



HOPPER WAGON
Mechanically unloaded. Finished in colour. Price 4/-



SIDE TIPPING WAGON
Excellent design and finish. Price 3/6



BRAKE VAN
Finished in grey, with opening doors. Price 4/-



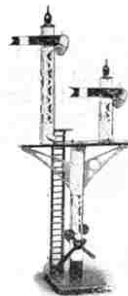
BREAKDOWN VAN AND CRANE
Excellent finish. Beautifully coloured. Suitable for 2 ft. radius rails only. Price 7/-



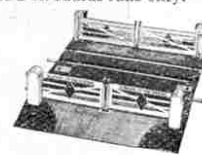
TROLLEY WAGON. Finished in colour. Suitable for 2 ft. radius rails only. Price 6/-



No. 1 TIMBER WAGON
Beautifully enamelled in green. Price 2/-



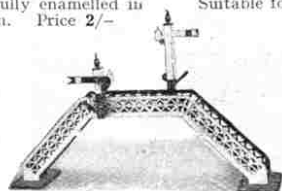
JUNCTION SIGNAL
Signal arms operated by levers at base. Very realistic model standing 14 in. in height. Price 5/6



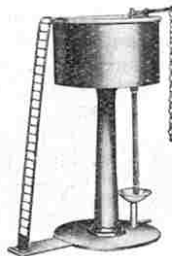
LEVEL CROSSING
Beautifully designed in colour. Measures 11 1/2 in. x 7 1/2 in., with Gauge 0 Rails in position. Price 6/6



SIGNAL CABIN
Dimensions: height 6 1/2 in., width 3 1/2 in., length 6 1/2 in. Finished in colour and lettered "Windsor." Roof and back open to allow signal-levers to be fitted inside cabin if desired. Price 6/6



FOOT-BRIDGE
No. 1. With detachable signals. Price 6/-
No. 2. Without signals. Price 3/6
Signals, per pair 2/9



WATER TANK
Brightly coloured in red, yellow and black, 8 1/2 in. in height, with flexible tube and pump lever. Price 6/6

RAIN WEEK

December

for displays of complete
ems, composed of Hornby
ock and Bridges, Stations,
to be made throughout
ventful week. You should
to see a display, as it
esh ideas, as well as the
ne many recent innovations



III. THE STORY OF SIGNALLING

Previous articles in this series have dealt with Laying-Out the Track, Points and Crossings, and Simple Layouts. In this article we give some interesting details of signalling in railway practice, on which the signalling of miniature systems is, of course, based. Next month our article will deal further with this side of the subject, with special reference to signalling arrangements on a miniature railway.

ONE of the most interesting features of modern railway working is the system of signalling, which ensures the safety of the millions of passengers who travel daily throughout the year.

The first train driven over the Stockton and Darlington line was preceded by a horseman carrying a flag. This arrangement worked quite well so long as the horse could travel faster than the train, but when the relative speeds became reversed the idea obviously would not work! Later, flagmen were stationed at various points on the line to regulate the traffic, and for some time the number of trains was so small that this method answered the purpose very well. Before long, however, the steady increase in the amount of traffic and in the speed of the trains made it vitally necessary to have a more efficient method of control, and on several lines a system of flag and lamp signalling was introduced. At certain points on the line a red flag by day or a red light at night was normally displayed, the red colour signifying danger and meaning "stop." A few minutes after a train had passed, the red flag or light was replaced by a green flag or light, the green signifying "go steadily," on some lines, and "right away" on others.

A Costly Joke

Red has always been recognised on railways as signifying danger. A story is told of a man who, while trespassing on the railway line, took it into his head that it was easier riding in a train than walking. He therefore tied his large red handkerchief to the end of his stick, waited until he saw a train approaching, and then vigorously waved his improvised flag. The driver

of the train, taking it for granted that the man was trying to warn him of some danger ahead, promptly applied his brakes and brought his train to a standstill. The guard immediately enquired what was the matter, and the man calmly replied that he wanted a ride! He certainly got a ride in the luggage van, but at the next station the guard handed him over to the police, and shortly afterwards the local magistrates gave him a smart sentence to convince him that stopping a train for fun was apt to turn out a costly form of amusement!

Early Semaphore Signals

Before long the flag and lamp were placed on a post about 5 ft. in height. Later, the height of the post was increased to 12 ft. and a disc was substituted for the flag. The first semaphore used in railway signalling was set up at New Cross in 1841, and from it have developed the signal posts and arms with which we are all so familiar.

The early semaphore signals had three positions. When the arm was horizontal, that is at right angles to the post, danger was indicated, as is the case with our present-day signals. "Caution" or "Proceed slowly" was signified by lowering the arm to an angle of



Photo courtesy]

Pullman Leaving King's Cross. First Stop Leeds

[L.N.E.R.]