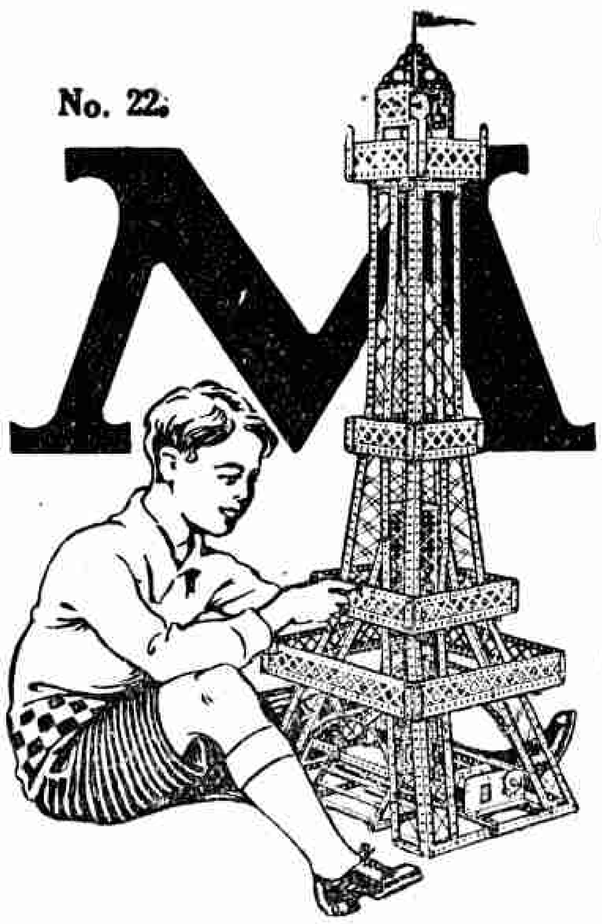
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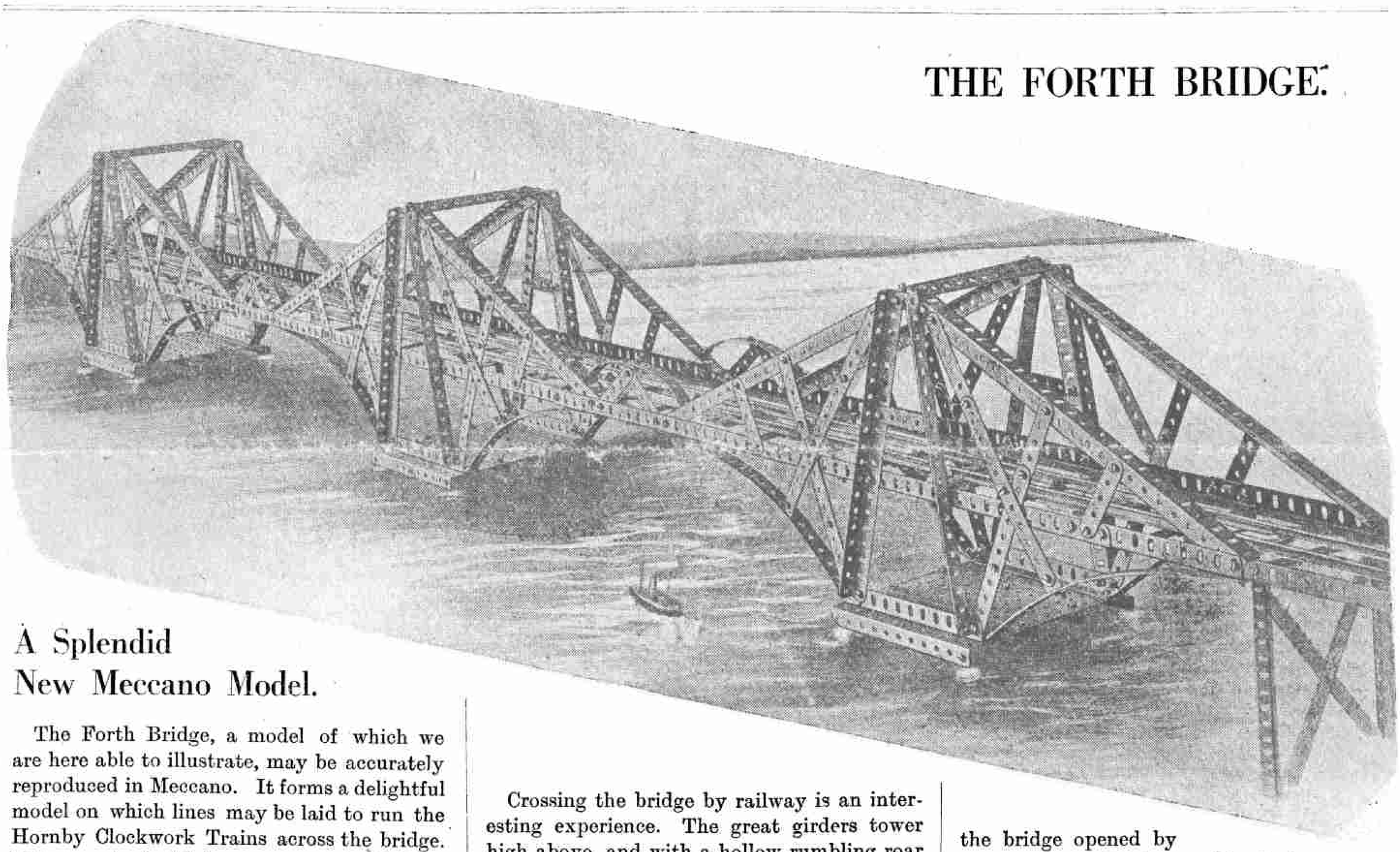


MECCANO MAGAZINE

PRICE 1d

TO HELP MECCANO BOYS TO HAVE MORE FUN THAN OTHER BOYS.

THE FORTH BRIDGE.



A Splendid New Meccano Model.

The Forth Bridge, a model of which we are here able to illustrate, may be accurately reproduced in Meccano. It forms a delightful model on which lines may be laid to run the Hornby Clockwork Trains across the bridge. It is easy to build by means of the full instructions contained in the new No. 3 Manual. We feel sure that all Meccano boys will be interested in the following details of this famous bridge.

The Forth Bridge has been described as being one of the greatest achievements in the history of engineering. The bridge spans the Firth of Forth and carries the main line from Edinburgh to the North of Scotland.

It is constructed on the cantilever principle and rests upon three groups of supports or columns of masonry, standing firmly on the river bed. The engineers had to bear in mind that they must allow for the free passage of shipping on the waters of the Forth, which carries a vast amount of traffic, and so the railway track is 150ft. above the river, thus allowing sufficient space for even the largest ships to pass freely beneath.

Crossing the bridge by railway is an interesting experience. The great girders tower high above, and with a hollow rumbling roar and a continual clanking, the train runs across the bridge. Far beneath one sees the waters of the Forth, perhaps with a line of warships putting to sea from Rosyth. The river is here over a mile in width, necessitating three cantilevers, each with two arms 680ft. in length. The two suspended girders are 350ft. long.

In this bridge all the members that have to stand compression are tubular; those in tension are lattice-work girders. The tubes are built of plates riveted together, the largest being 12ft. in diameter, in the manufacture of which over 40,000,000 steel plates, requiring 6½ million rivets, were used. The bridge contains over 50,000 tons of steel. The work of building the bridge was commenced in 1883 and continued uninterrupted for seven years, some 4,000 workmen being employed. It was finally completed, and the bridge opened by the Prince of Wales, on March 8, 1890, to the accompaniment of the music of a gale which whistled through the steelwork.

Sir Benjamin Baker, the engineer, stated that the bridge is so strong that a battle ship could be hung on the end of each cantilever arm without causing the ties at the top of the piers to part. The bridge is painted once every three years, and as there are 145 acres of surface to cover, this is no light task.

We know that when heated, metal expands, and due allowance is made for this expansion in railway lines as well as in other metal structures. In the case of the Forth Bridge the total contraction and expansion allowed for, due to changes in the atmosphere, is between 6ft. and 7ft.

Editorial.

Xmas and New Year.

My office is decorated with Christmas and New Year cards received from Meccano boys in all parts of the world. I wish to take this opportunity of thanking my young friends for these remembrances and to send to all my readers my sincere good wishes for the year we are now commencing. It is a great pleasure to me to hear from my readers at any time, but more particularly do I value their expressions of good will at Christmas and the New Year.

The Great £250 Competition.

These are busy times for the inhabitants of Meccanoland, and their attention is chiefly centred on the grand model-building competition, in which £250 worth of prizes are awarded. Every boy interested in Meccano has ideas for new models and movements, and it is to encourage them to send us these ideas that we hold this competition. We wish to make these ideas known to hundreds of thousands of other Meccano boys and thus increase their already absorbing interest in Meccano. Full particulars of the Competition are given on page 7.

"Dick's Visit to Meccanoland."

The demand for this little book has been very great, but there are still thousands of readers of the *Meccano Magazine* who have not yet had an opportunity of reading this fascinating little story. It has recently been reprinted with an increased number of illustrations and will interest all Meccano boys who are unable to visit the Meccano works. It is the story of Dick's interview with Mr. Hornby, and will be sent post free on application.

The Hornby Trains.

Many thousands of homes in Meccanoland have been brightened this Christmas time by the new Hornby trains, and many miles are covered every day by these charming trains, as they fly round their tracks at express speed. Neither thought nor expense have been spared in their design and manufacture. In action, they are delightful to watch, while by means of the Hornby points shunting operations may be carried out in a most realistic manner.

Articles Wanted.

I am always pleased to consider paragraphs or short articles from readers of the *Meccano Magazine* and when of sufficient general interest to pay for them and to print them in these columns. Such contributions should be neatly written on one side of the paper only and need not necessarily be confined to Meccano or even engineering subjects.

Clear Photographs Wanted.

From time to time photographs are submitted from my readers, featuring models or local engineering structures of interest. Unfortunately many of the photographs sent in, though interesting enough, are of very poor quality and indistinct. Because photographs lose a great deal of sharpness by reproduction, it is necessary for the originals to be clear and sharp, otherwise they cannot be reproduced satisfactorily. As previously mentioned, I shall be pleased to pay 2s. 6d. for any photographs which I may use. It would add to the interest if a short paragraph of descriptive matter accompanied these photographs.

Life Story of Meccano.

By Frank Hornby.

(Continued.)

Encouraged by the example of the American Model Builder, other manufacturers commenced to place imitations of Meccano on the market, and soon these came along in a regular flood under all manner of names and disguises. The competition was fierce and keen, each manufacturer straining every nerve to capture a business which he knew would grow enormously. The national Magazines and all the boys' periodicals were flooded with advertisements, and propaganda literature of all kinds was issued in great quantities. Prices were cut both to the trade and to the public, but throughout the whole period I maintained my original prices and conditions, knowing that the methods adopted by my competitors would lead to disaster.

Although I pursued the case against the American Model Builder in the American Courts, in co-operation with our Attorneys, as strongly as possible, and endeavoured to secure an immediate injunction restraining our competitors from selling imitation goods, the flood of imitations continued, most of them of a cheap and unsatisfactory character. My case became so complicated and entailed so much research work that a few years elapsed before we could get to close grips. Even when we did commence to give our evidence, and to lay the facts before the Court, much time was wasted on details and there were long and protracted delays. The case commenced in 1912 and the final Writ of Injunction is dated 31 March, 1921.

Since the conclusion of the case against the American Model Builder, which was tried before the United States Circuit Court of Appeals, I have had the Briefs, and Transcripts of Record of the evidence and all documents connected with the proceedings, collected together and bound. They are too voluminous to be included in one book, and they are, therefore, made up into four large volumes looking like so many family Bibles! The case was considered of the utmost importance in America, and was closely followed by the entire legal profession. The final judgment was both sweeping and emphatic, and in my opinion it stands as the finest possible tribute to the originality and sterling qualities of the Meccano system. It states that the makers of the American Model Builder had been knowingly guilty of unfair competition, and it restrained them from copying and imitating any Meccano advertisements or other printed matter; from imitating Meccano boxes or copying and counterfeiting any of the Meccano Company's products. It decrees that all American Model Builder Outfits, all Accessory Parts and Manuals of Instructions be delivered up, and that costs and damages are to be paid to the Meccano Company.

In delivering his opinion, the late Hon. H. C. Hollister, U.S. District Judge, spoke of Meccano as a "Toy of great utility and educational value, stimulating the imagination, appealing to a boy's creative faculties, that not only gives enjoyment, but is highly instructive." He goes on to say that the American Model Builder is in his opinion not only a fraud on the public, but also a fraud on Meccano Ltd. He further said that "The Meccano Manual is not unlike a key by which the really wonderful treasures contained in the various parts of the outfits may be unlocked." I do not think that a clearer or more equitable judgment was ever delivered in any court. The case was gone into minutely and exhaustively, and throughout the whole proceedings, often wearisome and tedious, the most painstaking efforts were made by the judges to arrive at the truth in what proved to be a protracted and complicated case. Although I was a stranger and a foreigner in the country, and the proceedings were against a firm of American nationality, a spirit of utmost fairness characterised the entire proceedings, and left me with a high opinion of many sides of American law procedure.

The decision in this case naturally had its effect upon the many other imitators that had sprung up in America, following the example of the American Model Builder, and one by one they dropped out and disappeared from the market. Meccano is now recognised in America as the only constructional toy which is true to engineering principles, and it is making steady and gratifying progress in the affections of boys in that country. We have gone through a very strenuous time, but we are now reaping the reward of our perseverance and determination to uphold the rights of Meccano.

(To be continued.)

Suggestions by Meccano Boys.

These columns are reserved for dealing with suggestions sent in by Meccano users for new parts, new models, and new ways of making Meccano model-building attractive. We are always glad to hear from any Meccano boy who has an idea which he considers will be useful to the Meccano system.

Jean Pelletier (Autun).—We shall give consideration to your suggestion for a circular strip. We cannot quite see what advantage would be gained by fitting a collar to our existing eye piece; perhaps you will write us again on this matter.

E. O. Thomas (Birmingham).—There would be little advantage in issuing bevel gears in the ratio of 2 to 1. We list 4½" perforated strips.

Ralph E. Brown (West Bromwich).—We now perforate the large gear wheel with two holes so that it may be secured to the base of the jib of a crane for swinging it or rotating a bridge, etc. We cannot at the moment see what advantage there would be in perforating it with holes all round. Perhaps you will be able to furnish us with further suggestions.

W. R. McLaughlin (Valparaiso).—Your suggestion for a simple form of clutch has several elements to commend it, and we shall give it our consideration.

E. H. Wise (Grantham).—We have not yet contemplated the manufacture of a steam locomotive, but when we do we shall consider your suggestion for a loose driving wheel to be used for driving other models.

J. Cook.—Your suggestion to vaseline the bearings and gear wheels for smoother running is worth mentioning for the benefit of all other Meccano users. No harm will result to the parts.

E. Cyril Clements (Dudley).—The stanchion you suggest to be used as railings would be somewhat expensive if any large number were required, but we may be able to devise a simpler arrangement.

Rev. Harold Fryer (Bassett).—We think your description of mechanism for operating a crane possesses merit, and we would suggest your entering it in our Grand Competition. A good photograph and description would be sufficient for us to judge of its merits.

We appreciate your remarks *re* our Hornby trains. These trains are manufactured in vast quantities and are adapted to be run on the lines, points and crossings we provide, each one being tested before leaving our works. It would not be possible for us to take into consideration the suitability of other manufacturers' lines, over which we have no control.

S. H. Wilson (Barnsbury).—We shall give consideration to your suggestion for the number of teeth to be marked on each gear wheel; also the issue of Hornby train couplings separately. We shall also go into the matter of introducing 2"×1" double angle strips.

Edward McPhee (Brideton).—If we were to make our crank handles 7½" in length they would be too long for most of our models. If a longer handle is required than that we issue, it may be lengthened by connecting a piece of rod with a coupling.

Edward W. Sawyer (Folkestone).—The pieces you suggest would be very expensive to manufacture, and you do not mention to what purposes they could be applied.

Marcel Grunstein (Paris).—It would not be practical to flatten our rod for the purpose you mention. We are, however, experimenting on a contrivance for effecting the purpose you suggest, and we will announce the result later. Your other suggestions will receive our consideration.

H. J. WILSON (Streatham Hill).—We doubt whether there would be much, if any, advantage in supplying square or hexagon headed bolts in place of slotted. The cost of manufacture would be very considerably increased.

MAX HAMILTON (Warkworth, New Zealand).—We shall consider your suggestion to offer a frame for the Guild Certificate as one of the prizes in our Competition. We have a depot in Auckland through which Meccano is distributed in New Zealand so that all interested Meccano boys are looked after.

N. F. ASTBURY (Longton).—We can only see one use at present for your suggested shorter crank, and we make it our general practice to introduce only those parts which have an interchangeable purpose. We would like you to give us some further uses of this part.

RAYMOND JOHNSON (Eccles).—Any garage or electrician would recharge your accummulator. We cannot quite see the application of your suggested strip twisted at right angles. Perhaps you will explain more fully its uses.

A. B. GROVENOR (Norwich).—We propose later on to issue a larger gear wheel than our No. 27a. It would not be practicable to make a pinion of only 12 teeth as a Meccano part, for the bush would be too small to accommodate our rod. We are experimenting with a more simple form of handle than the one you suggest.

Your suggestion for an eye bolt will have our consideration, also the suggested improvement to the existing crank. We cannot see what advantage would be gained by having the end holes of the bell crank elongated. Your suggested sleeve has merit and we shall consider it.

T. C. WHITELAW (Wolverley).—We would like to know what uses a shorter cranked rod would serve. With regard to the curved section, we think a sleeve might serve your purpose better.

DANIEL J. MURPHY (Walthamstow).—It is interesting to know that you obtained a strong clockwork out of a clock and that it drove your Meccano models successfully. We are afraid your idea may fire the ambitions of other boys to the detriment of their clocks at home!

EUGENE M. DUTTON (Ealing).—We are pleased to have your suggestion for an improved gear box to the Meccano Chassis. Why not take a photograph and enter it in our Competition?

FRED PRICE (Ashton-on-Mersey).—We think our present rack strip would serve all the purposes of the flat rack, and would be much cheaper to manufacture. We do not think any advantage would be gained by introducing a twisted gear.

ERIC R. SMITH (Edinburgh).—We think your suggestion to index the models in our Manuals a good one, and we shall consider it.

R. RANM (London).—We think you would find our regular lines more suitable for your purpose.

DONOVAN WAKEFIELD (Gosport).—We are considering the introduction of a turntable for Hornby Trains and this will be announced in the *Meccano Magazine*, when ready. The wheel you suggest could be made by fastening a threaded pin to a bush wheel.

W. H. LLOYD (Birmingham).—A base plate may be made any size by connecting flat perforated plates with girders. An improvement in any of our existing models would merit a prize.

W. A. CLUTSON (Bristol).—We can understand the use of a ball to be used at the end of a crane chain or cord, but we cannot see the purpose of putting a slot to take a strip or a threaded hole in it. This would be an expensive part to manufacture, and we doubt whether the use to which it could be put would justify it.

We have not thought it desirable to introduce a twisted gear up to the present. For a right angle drive we use bevel gears giving an equal ratio. We shall give consideration to the 2½" strip with the three centre holes slotted. We think that a 7½" strip would be so rarely used that two strips overlapped would serve the purpose for which it might be required.

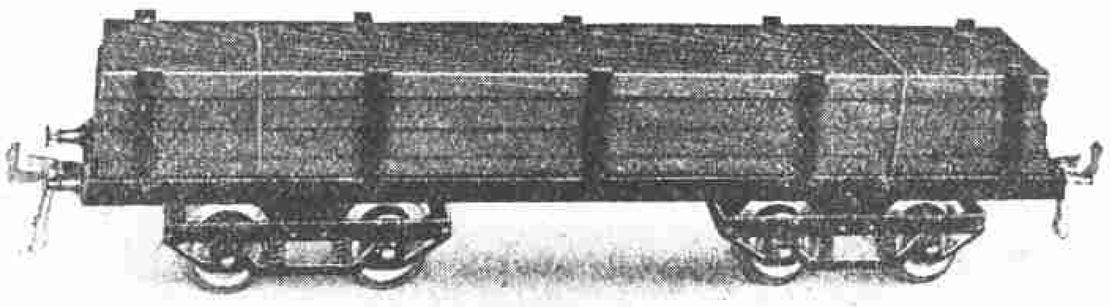
RONALD CROSLAND (Streatham).—We would like you to send us one or two examples of the purposes to which you would apply your suggested twisted angle bracket.

H. WELLS (Clapham).—We can see from your descriptive drawings the advantages of a clamp for fastening cranes and other models to a table and shall give it consideration. We are of the opinion that our strip coupling would serve all the purposes you suggest with the exception of joining two rods at variable angles for which we cannot see the purpose. Perhaps you will give us a few examples of its application. Your suggested "double rod" or rod with a sleeve would be expensive to make and the application limited. Not only this, but special wheels would have to be made if your idea were adopted. Wide Pulley Wheels have merit and we shall give them consideration. Curved angle girders. There are many ways of performing the functions you suggest with our existing parts. Definite curves would have limited scope. Metal Cog Cover. We do not think there would be any justification for this as the danger of accident is practically nil.

We shall give consideration to your suggested rack strip.

ROY DAVIES (Tongwynlais).—We cannot see any advantage in issuing a sleeve bearing combined with two trunnions. You might give us some examples of its use. Our present coupling is capable of connecting rods at right angles. The necessary size of the boss prevents our making sprocket wheels less than ¾".

The Hornby Timber Wagon.



The Hornby Timber Wagon is a new addition to the No. 2 Hornby Train System. It measures 13 inches long and is beautifully enamelled in colours. It resembles the Hornby Train in that it is built of standardised parts. It may be taken to pieces and re-built, and any damaged part may be renewed at any time.

One or two of these timber wagons, added to the No. 2 Goods Set form a very realistic picture as they travel along.

Gauge 0 suitable only for No. 2 set, complete with load of timber. Price each .. 7/6

SUGGESTIONS—*continued*.

T. A. GATLEY (Peel Green).—We do not recommend dry batteries for driving our 4-volt motor. At least three would be required to give the necessary amperage, and they discharge so quickly that they are more expensive in the end than an accumulator.

A. C. RANDLE (Ilford).—In overlapping strips, fewer nuts and bolts are required than if butted together and connected by a smaller strip. A 1" angle bracket could be used to connect two angle girders at right angles.

C. I. SALT (Lincoln).—Thicker bearing strips may be made by bolting several together. A square shaft would not be a good proposition for use with Meccano parts. It would practically mean a new standardization, as a great many other parts would necessarily have to be made to go with it, and for the purpose you require it we think other arrangements may be more practicable. We shall consider your other suggestions.

B. K. BILLIMORIA (Kandy, Ceylon).—We sympathise with you in your difficulty in obtaining Meccano parts in Kandy. If you cannot obtain them locally the only alternative is to write us direct.

PHILIP GREGORY (Birmingham).—We are considering the introduction of an improved crank connection, and when this is ready it will be announced in the *Meccano Magazine*.

JOHN J. SKINNER (Blackheath)—We illustrate a number of special models in our new No. 3 Manual.

W. G. SYMONS (Streatham).—We include in our list reversed angle brackets. Your other suggestions will have our consideration.

MORTON RODGER (Invercargill N.Z.).—Two strips at right angles may be fastened together by using a simple bell crank, or by bracing them crosswise with a 3" strip. We would like you to give us some further particulars as to the uses to which a 1" or 1½" pulley wheel having a threaded boss would be put.

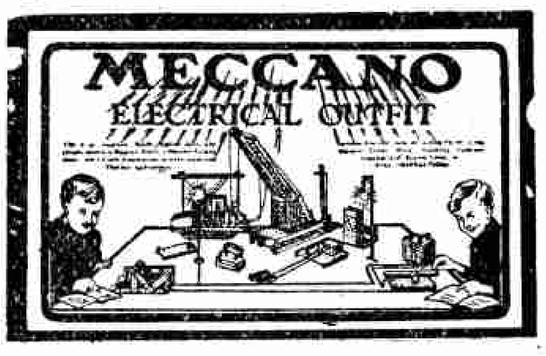
ERIC WHITEHEAD (Stoke-on-Trent).—Your little idea, Eric, "to manufacture bicycles of all sizes" would necessitate the erection of a special factory!

JOHN SACKETT (Hove)—Your suggestion for a flanged plate 2½" × 2½" will have our consideration. We list a 3½" rack strip and have under consideration the use of a flange to our clockwork motor.

LESLIE GREENBANK (Skinningrove).—We shall consider your suggestion for the introduction of timber dogs.

Electrical Accessory Outfits.

The application of electricity to the Meccano system adds a further and wonderful charm and enables fascinating electrical experiments to be carried out. Used in conjunction with any of the regular Outfits from No. 0 to No. 6 the Meccano Electrical Outfits enable the user to construct such models as Electric Railway, Morse and Tapper Keys, Buzzer, Electric Lamps, Motor Starter, etc.



X1. ELECTRICAL ACCESSORY OUTFIT (containing electrical parts, but without motor or accumulator) Price .. 12/6

X2. ELECTRICAL ACCESSORY OUTFIT (containing electric motor, 4-volt accumulator and electrical parts) Price .. 50/-

Interesting Paragraphs.

John Bright, the celebrated politician, in the House of Commons, said: "Who are the greatest men of the present age? They are not your warriors—nor your statesmen—they are your engineers."

* * * *

Recently, while the British steamer *Madame Beatley* was lying at her discharging berth at Rouen docks, a floating crane moored alongside fell over. The jib of the crane dropped on to the steamer, damaging her bulwark, stanchions and rails. An enquiry will be held as to why the crane collapsed.

* * * *

The flag which floats at the top of the tower of the House of Lords is large enough to provide standing room for 1,500 people. The flagstaff itself is so thick that two men can only just meet their hands round it. The crowns at the corner of the tower weigh one ton each.

* * * *

The first direct press messages have been sent between England and Australia. Such messages were considered impossible by the Imperial Conference, but the impossible has been done.

* * * *

Germany is surrendering to Britain the world's largest dry dock as punishment for the sinking of the German Fleet at Scapa Flow It will probably be located at Southampton.

* * * *

The world's largest and most powerful searchlight is situated in the U.S.A. It is a high-intensity anti-aircraft 60in. fortress-type searchlight, for use in coast defence. Its arc throws a light beam of 1,200,000,000 candle power with a brightness 500 per cent. greater than any previously available light.

* * * *

A twin double-leaf trunnion bascule bridge is to be built over the south channel of the Mystic River at Boston, U.S.A. Its span will be 118ft. between the trunnions and the bridge when complete will carry an electric railway, a 25ft. roadway and a 5½ft. path for pedestrians. The bascule form of bridge is one of the oldest types known, and the Tower bridge at London is built on this principle

* * * *

A 15 year old cabin boy recently invented a novel fly trap for use in his Captain's cabin. It is formed of a series of slats on an endless belt. These are smeared with honey and syrup to attract the flies. The belt slowly revolves by clockwork and disappears into a box, the flies being automatically scraped off into a cage.

* * * *

The largest sailing vessel afloat, is the French barque, *La France*. It has recently reached London from New Zealand, after a voyage of just over three months.

Meccano Guild Notes

By the SECRETARY.

New Year's Greetings. To all those Guild members who have sent me Christmas and New Year Greetings I offer my sincere thanks. I hope that every member of the Guild will accept my sincere wishes for the coming year, that they may have a happy time and that success may attend all their efforts.

New Clubs. Elsewhere in these columns I mention that four new Clubs have recently affiliated, and it is a pleasure for me to welcome these Clubs to the Guild. It is a significant fact that three of these clubs are situated outside the United Kingdom. Guild Members in the Dominions are not so fortunate as members in this country, for very often Club meetings can only be held under adverse conditions. They have one feature in common with English boys, however, and that is their tremendous enthusiasm for the Meccano Guild and its objects. I hope that before long we shall be able to announce the affiliation of many other Clubs in the Dominions.

Our New Session. By the time this Magazine is in the hands of Guild members the new session will have commenced. Reports which are now coming to hand of the last session show that it has been unprecedented in its success. May the coming session even surpass it in this respect. Judging from the programmes already received the Clubs have arranged many interesting evenings that will provide a considerable amount of happiness for their members.

The Inter-Club Competition. I wish to bring to the notice of all Club Leaders and Secretaries the Inter-Club Model-building Competition which is to be held again this year. The competition was very successful last year, and is held with a view of encouraging a spirit of friendly rivalry between the various Clubs. The cash prizes make a valuable addition to Club funds. The closing date is 31st March next and full particulars of the competition will be sent on application.

Recruiting Campaign. I specially wish to draw the attention of Club members to the Recruiting Campaign which is the subject of a separate announcement. As loyal Guild members know, the Guild gives a beautiful Recruiting Medallion to those members who obtain three new recruits.

Two Club Booklets. The two booklets "Notes for Club Leaders" and "Suggestions for Club Secretaries" have been revised, and supplies of the new edition will be available by the time this magazine is issued. Any member of the Guild who is contemplating forming a Meccano Club in his district is invited to apply to me for further information.

The Meccano Guild Rally.

SUCCESSFUL GATHERING AT HOLY TRINITY MECCANO CLUB.

On the 26th November a Guild Rally was held in the Parochial Hall of the Holy Trinity Church, Barnsbury, London, N.1. The occasion was a Rally of all the London Clubs, and to it had also been invited parents, friends and non-members. On the night in question London was enveloped in one of its notorious fogs, but in spite of this the gathering was large and very enthusiastic. The following Clubs were represented:—St. Mary with St. Gabriel, Newington Butts, Herne Hill, Stationers, Crouch End, Askean, New Cross Gate, St. Paul's, Hammersmith, Carshalton and District, and New Malden, Surrey.

The meeting commenced at 7 o'clock, the Vicar, Rev. S. C. Rees-Jones being in the chair. He opened the Rally by an address dealing with the objects of the Meccano Guild, and expressing his admiration of the work which the Guild was doing, urged those boys who were not already members to join without delay. He said that he was very justly proud of the Holy Trinity Meccano Club, which had had a very successful history, and mentioned that the Rally marked the close of a particularly enjoyable session. He pointed out that the great interest taken by Meccano Ltd. in the Guild and in Club life was evidenced by the fact that the Guild Secretary had travelled all the way from Liverpool to address the meeting.

The Leader, Mr. Stuart H. Wilson, then followed with a few words of welcome to the members of the London Clubs, who had come from such long distances despite the fog, and gave a short history of the work and progress of the Holy Trinity Meccano Club.

THE GUILD SECRETARY.

The Guild Secretary then gave a Lantern Lecture illustrated with over 100 slides, describing the work of the Guild. He showed how during the past two years this movement had grown to such an extent that its present membership reached over 25,000. Slides were shown of different Meccano Clubs, of which he stated over 100 exist in this country alone. Photographs of Clubs n the Dominions and in foreign countries drew loud applause. The awarding of Special Merit and Recruiting Medallions was explained, and slides shown in illustration.

After outlining the great scope and future of the Guild, the lecturer proceeded to give some account of the history of Meccano. He dealt first with Mr. Hornby's original invention and showed photographs of early models, mentioning that in its earlier days Meccano was known as "Mechanics Made Easy." The staff then comprised only Mr. Hornby himself and one girl, the premises being located in James Street and consisting of only one room, which served as office, warehouse and workshop. Later the business grew to such an extent that Mr. Hornby took an empty garage in West Derby Road, and this was turned into a workshop. Slides were shown of these early premises and of some of the machines contained in this first workshop, and it was demonstrated how Meccano models had improved as the scope of the system increased.

This early history of Meccano was followed by an account of the present factory at Liverpool, which it was mentioned covered an area of some five acres and employed over 1,500 hands. Photographs were shown illustrating many of the numerous departments necessary in the manufacture of Meccano parts, and included the Press Shop, Die Stamping and Gear Cutting Machines, the Automatic Machine Shop and the Tool Making Shop. Other process rooms included the Barrelling or Cleansing Department, the Electroplating Section, and finally the Stores and large Packing Rooms. The lecturer described how the business grew to its present gigantic proportions, with associated companies and branches established at Paris and New York, also depots in London, Sydney (Australia), Auckland (New Zealand), South Africa. Canada, Brussels, Genoa, Barcelona, Buenos Aires, and elsewhere. Specimens of the Manuals printed in different languages were then shown, it being mentioned that the Manual now existed in no less than 16 different languages.

An account was also given of the Hornby Clockwork Trains, which the lecturer claimed to be the finest trains upon the market. He mentioned that every Hornby Train could be taken to pieces and rebuilt, and if any parts became lost or damaged they could be replaced, the train being built on the Meccano system of interchangeable parts. Slides were shown illustrating the manufacture of the trains, the Stamping and Spraying Departments, the Motor Assembling Department, and Testing Departments and Packing Rooms. Finally, when a photograph of Mr. Hornby was thrown upon the screen, there was vociferous applause, lasting for several minutes.

The Secretary's lecture was followed by some 20 slides dealing with outings and models made by the Holy Trinity Club, including the model which won the second prize in the inter-club model building competition. Slides were shown of the exterior of the Meccano works taken on the occasion of the visit of the Leader and Secretary last summer. We are able to reproduce here a photograph recently taken of the Holy Trinity Meccano Club.

Two flashlight photographs of the Rally were taken: one of the Rally itself, and the other of the Guild Secretary, Club Leaders and Secretaries on the platform. Notes of the Rally were taken by reporters, whose tables were illuminated by electric lights made with Meccano Electrical parts.



THE HOLY TRINITY MECCANO CLUB.

A Play-Writing Competition.

Many of our Meccano Clubs end their sessions by giving Exhibitions and Concerts, and often perform some sketch or little play. The audience at such an entertainment would appreciate more particularly a play which has some reference, or is based upon, Meccano, the chief hobby of the Club members. In these circumstances we have decided to hold a Competition, so that any readers who have an ability for play-writing may have an opportunity of exercising their talents. Cash prizes to the value of £5 will be awarded for the best plays submitted, with other awards for plays showing special merit. Entries should be received not later than May 30.

The play should be written or typed on one side of the paper only, and should be of such length that it will, when acted, occupy about half an hour. There may be more than one scene if necessary, but it should be remembered that as the successful plays will probably be performed by Club members, the scenery and costumes available will be somewhat limited. The scene and plot may be laid anywhere, although the play should in some way turn or bear upon, Meccano. Before the play opens some description should be given of where the scene is laid, the characters appearing in the play, and additional notes to assist the actors to accurately interpret the author's ideas, and produce the play satisfactorily.

OUTLINE OF "*Nonsense Nana.*"

To give some idea of how interesting a play may be written, it may be mentioned that a lady in India has written such a play entitled "*Nonsense Nana.*" In it there are three characters, Dick, his brother Robert, and Nana, the old nurse. Their parents are away in India and they are left in charge of Nana. The play is in two acts, in the first of which the boys are playing in their nurse's room, Robert being busy with Meccano. The telephone rings, and Dick having answered it returns breathlessly to tell them there has been an accident at the local mine and his Uncle wants him to cycle into the village at once for a doctor and ambulance. He rushes off into the snow and darkness of the night to fulfil his mission. Robert, returning to his Meccano finds he has left some necessary parts in the attic so takes his model up there to finish. Left alone, Nana reproaches herself for having let Dick go on such a night, when suddenly a terrible moan is heard. Nana remembers the old family legend, that "the 'Grey Maid' moans three times before the death of the Heir." Terrified she listens—again it comes, and yet again. "'Tis the 'Grey Maid'", she shrieks, "and Master Dick's the heir. He shouldn't have gone—he'll be killed, he'll be killed!" Robert hearing her cries rushes down, but she refuses to be comforted.

In Act 2, on Dick's safe return from his ride, Robert tells him of the moaning of the "Grey Maid." and as he is telling the story a sudden thought strikes him, and he rushes off to return a few seconds later proudly displaying the finished model—a fog-horn which he has completed with the aid of an old motor-horn found in the attic. He proceeds to give a demonstration of how beautifully it works—congratulating himself on the "ripping noise it makes." Nana, as the truth dawns upon her, collapses with relief, whilst the boys laugh heartily at her "Grey Maid"!

Club Notes.

MEADS M.C.—Closed on December 17 after a very successful session. Several new schemes are in hand for next session, and the Club members are promised an enjoyable time. *Secretary:* Master F. Moore, Chesterfield Cottage, Chesterfield Road, Meads, Eastbourne.

CRYPT GRAMMAR SCHOOL M.C.—Despite many drawbacks a fine programme has been carried out, including competitions, model-building evenings and lectures—all greatly enjoyed by the members. The Club Leader hopes that the next session will be even more successful. *Secretary:* Mr. E. A. Millar, Crypt Grammar School, Gloucester.

MIRFIELD M.C.—Monthly competitions are a special feature of this Club, and sometimes an evening is spent in the local Y.M.C.A. gymnasium. This alternative meets with considerable approval from the members, all of whom are keen and enthusiastic. The Secretary has recently been awarded a Special Merit Medallion. *Secretary:* Master L. Browning, 152, Bentinck Street, Doncaster.

MEXBORO' M.C. now has a membership of 82, is one of the largest and most flourishing in the Guild, and even more members are still being enrolled. The Club Leader writes:—"The only time I see a long face is when I say 'Now boys it has turned 8 o'clock, and time to go home!'" The Club Savings Bank is very popular, and many of the members have over 10s. in it. Master S. A. Skelton—the builder of a very fine model in a recent exhibition—has been granted a Special Merit Medallion for special administrative work, on the recommendation of the Club Leader. *Club Leader:* Mr. H. May, 17, High Street, Mexboro'.

ST. DAVID'S (TONYREFAIL) M.C.—At a recent meeting a lecture was given on "Marconi" by the Club Leader, Mr. F. Morse, and on another occasion Master W. Woolcock delivered a lecture on "The Electric Bell." It is regretted that Master J. Davies, the former Secretary, has had to resign, but Master Woolcock has taken the position. A Meccanograph model was loaned to the Club for 10th January. *Secretary:* Master W. Woolcock, 14, High Street, Tonyrefail.

CITY OF NORWICH SCHOOL M.C.—Has made very rapid progress. Master Fuddenham, a member of the above Club, won the first prize in a model-building competition organised by a local firm of Meccano dealers. The session closed with the Club's annual competition, which was very successful. *Secretary:* Master J. Long, 19, Newmarket Road, Norwich.

SOUTHVILLE (Bristol) M.C.—During the past session a lecture was given by Master S. Evans on "Meccano Parts and their Uses" and was much enjoyed by all the members. Discussion on various models is very popular among the Club members, and these together with the usual programme have made a very successful session. *Secretary:* Master S. Dembrey, 142, East Street, Bedminster, Bristol.

DUDLEY M.C.—Opened on 6th October with a programme consisting of model-building and drawing evenings, lectures, etc. The members spent an enjoyable session. *Secretary:* Master L. Grosvenor, 30, St. John's Street, Kate's Hill, Dudley.

KING STREET (Luton) M.C.—Continues to make good progress and the Meccano lecture "Lives of Inventors," sent from Headquarters, was much enjoyed. *Secretary:* Master W. Humby, Luton.

HOLY TRINITY (Barnsbury, N.1) M.C.—At the Exhibition held recently a profit of £3 18s. 0d. was made, of which all the members and officials of the Club are justly proud. The Guild Rally was also very successful and an account of this appears elsewhere in this Magazine. The Club Magazine continues to improve with every issue. A lecture on "The Microscope" was given by the Patron of the Club, the Rev. S. C. Rees-Jones, and Master D. E. Stretton hopes to give a series of articles in the Club Magazine on "Astronomy" in the near future. *Secretary:* Master D. E. Stretton, 25, Thornhill Houses, Thornhill Road, Barnsbury, London, N.1.

BLOEMFONTEIN (SOUTH AFRICA) M.C.—Has just concluded a successful session. The Cricket Club, established during the session, has proved very popular. A novel feature is a small Silver Cup to be won by one of the members. At the beginning of the session each member is given 100 marks; if he is late or does things he should not do, he loses marks. The boy who has the most marks at the end of the session wins the cup. This scheme is arousing great enthusiasm as each member is anxious to win the trophy. It is hoped to hold a Bazaar at the beginning of next session. *Secretary:* Master F. Lupton, 4, Loop Street, Bloemfontein, O. F. S.

NEW MALDEN M.C.—The winter session commenced on 3rd October, and since that date many happy evenings have been spent by the members. Interesting lectures have been given, and the members' interest continues to grow. An exhibition was held on 14th and 17th December with great success, and a model of the Meccano Motor Chassis was loaned from Headquarters on this occasion. Masters S. B. Evans and D. Forshaw are the winners of the Special Merit Medallions for this Club. *Secretary:* Master S. B Evans, 22, Howard Road, New Malden, Surrey.

SMALL HEATH MECCANO CLUB.—Continues to make good progress. The average attendance is 40 and new members are still being enrolled. The session closed with a successful concert and exhibition. *Secretary:* Master W. Edge, 131, Whitehall Road, Small Heath, Birmingham.

CIRENCESTER GRAMMAR SCHOOL M.C.—A very interesting programme was enjoyed last session, and as usual the Club meetings were well supported. The Meccano lecture "Lives of Inventors" proved very popular, and the members look forward to receiving the lecture "The World's Greatest Bridges" sometime next session. Although it is the usual rule to award only one Medallion to each Club for lectures an exception has been made in the case of this Club for there were quite a number of excellent papers delivered by the various members. Masters P. Richards and N. Gobey were the winners of the Special Merit Medallions. *Secretary:* Master N. Gobey, "Clovelly," Victoria Road, Cirencester.

CHURCH OF CHRIST SUNDAY SCHOOL (OLDHAM) M.C.—Any Meccano boy living near Oldham who has not already joined a Club should communicate with Mr. F. Durose, Highfield, Nr. Oldham, the Club Leader of the above mentioned Club. The programme for the last session included model-building evenings, lectures, etc., and was much enjoyed by all the members. *Secretary:* Mr. Chapman, 264, Lee Street, Oldham.

HILDENBOROUGH M.C.—Interesting lectures on "The Microscope," "The Davy Safety Lamp" and "The South of France" were delivered during the session, and the Leader hopes to be able to arrange for a personal friend of his to give another on "Walking Tours" very shortly. On the occasion of an enjoyable ramble through the woods, the various kinds of trees were pointed out to the members. *Secretary:* Master W. Bassett, Laburnham Cottage, Hildenborough, Kent.

SOUTH KIRKBY M.C. is one of the oldest Meccano Clubs in the Guild, and the members are as keen as ever. The Meccano Lecture "Lives of Inventors" was received with much approval. A very successful session has been held. *Secretary:* Master J. Williamson, School House, South Kirkby.

ST. ANNES (Leicester) M.C.—Recently held a Bazaar and Exhibition of Meccano Models. Meetings have had an average attendance of 24 boys, showing a great improvement over last year. Models illustrating methods of transport were made a subject for special study this session. The members have also built the model of the Meccanograph. *Secretary:* Master H. R. Smith, 8, Sunnycroft Road, Leicester.

RUABON M.C.—A local Exhibition held recently, included an excellent display of Meccano Models, constructed by the members of the Club. The local press described the Exhibition as being "A credit to the Leader and members of the Club." *Secretary:* Mr. A. H. Squire, Bryn End, Ruabon.

ASKEAN (New Cross S.E.14) M.C.—Programme included an interesting debate "Will Electricity supersede Steam Power?" An evening was arranged for five minute speeches, given by the members. *Secretary:* Master M. G. Capon, 50, Chestnut Road, West Norwood, S.E.27.

LISCARD HIGH SCHOOL M.C.—A very interesting programme was drawn up for the winter session. A football team has been formed, and the Club are considering the production of a Club Magazine. Lectures have been arranged, and an interesting feature is a Chess and Draughts Tournament. This runs through the session, games being played at successive meetings, and a prize being given to the winner. *Secretary:* Master B. Warburton, 11, Brisbane Avenue, New Brighton.

KING STREET (Luton) M.C.—An Exhibition and Social was held in December. Mr. S. Burgoyne, the enthusiastic Club Leader, arranged that at the end of each model-building evening, a short discussion on interesting "Current Events" should be held—a splendid idea. The programme for the session—which made a special feature of Lectures—was an interesting one, and all the members have had a busy session. *Secretary:* Master W. Humby, 74, Adelaide Street, Luton, Beds.

CRYPT GRAMMAR SCHOOL (Gloucester) M.C.—An interesting session was held and included a visit to the local power station. Lectures, competitions and model-building evenings were included in the programme. *Secretary:* Mr. E. A. Miller, Crypt Grammar School, Gloucester.

TONBRIDGE M.C.—In an exceedingly successful Exhibition of models held recently at Semadeni's Café, Tonbridge, a large number of models built were on view. The Exhibition was opened by Councilior Donald Clark, and so great was the number of visitors that the Club Leader, Mr. T. J. Wickham found it necessary to arrange for a further inspection of the Exhibition models on a subsequent evening. A competition was held in connection with the Exhibition and the first prizes in their respective sections were won by Masters S. Bull (Aeroplane), Newman (Gramophone), Wallen (Char-a-banc) and Pratt (Punching Machine). *Secretary:* Mr. Johnson, St. Mary's Road, Tonbridge.

LEAMINGTON M.C. held a very successful Bazaar in the Town Hall at the beginning of the session in aid of the St. Mary's Funds. In addition the Session included a number of interesting subjects such as lectures on "Bees," "The Advantages of Motor Transport," "Switzerland" (which was illustrated by coloured lantern slides), "Spiders," etc.; a Debate on "Will Light Cars supersede Motor Bicycles and Sidecars"; Model Building Evenings, etc. The Club boasts a troupe of "Nigger Minstrels" which does excellent and entertaining work. *Secretary:* Master G. M. Hare, 36, Willes Road, Leamington.

Clubs recently Affiliated.

FAIRWAY (Bexhill) M.C.—Although only recently affiliated, and having many difficulties to contend with, this Club has made very satisfactory progress. Any boys in Bexhill who are keen Meccano boys should get into touch with the Secretary of this Club without delay, for by so doing, they will undoubtedly spend many happy evenings in company with other Meccano boys. *Secretary:* Master W. G. Bradbrook-Chissell, 1, Wickham Avenue, Bexhill.

WELTEVREDEN M.C.—Is the first Club in the Dutch East Indies to be affiliated with the Guild. Judging from the enthusiastic tone of the correspondence received from the Secretary and Club Leader, the Club will rapidly develop into one of the strongest in the Guild. *Secretary:* Master R. E. Pilet, Raden Salehlaan, 54, Weltevreden, Java, Dutch East Indies.

BUTE (South Australia) M.C.—Although the "Bute Meccano Club" has been in existence for some little time it is only recently that it has become affiliated with the Guild. A very successful and interesting competition was held in October and the members are all hard at work to make their Club a success. *Secretary:* Master F. Barnes, Bute, South Australia.

MALVERN (South Africa) M.C.—This is another colonial Club which has been recently affiliated, and one which it is anticipated will do good work in connection with the Guild in the near future. *Secretary:* Master E. Sykes, c/o T. Henderson, P. O. Cleveland, Transvaal, South Africa.

Clubs not yet Affiliated.

BALHAM (London) M.C.—Club is being organised in Balham, London, and any Meccano boys in that district who are interested should immediately get into communication with Master A. Chantrain, 19, Martindale Road, Balham, London, S.W.12, who is the Secretary.

OBSERVATORY (South Africa) M.C. has been started in Cape Town and will become affiliated with the Guild very shortly. The Club had a big tent at a local Fair held there recently, and the Meccano models attracted much attention. An interesting programme has been arranged, and the Club is looking forward to an interesting session. *Secretary:* Master T. Bulling, 55, Arnold Street, Observatory, Cape Town, South Africa.

FIRST HALIFAX M.C.—This Club has just been organised and hopes to become affiliated with the Guild when the membership increases. Any boy living in Halifax is given a cordial invitation to join, and should communicate with the Secretary. *Secretary:* Master E. Littlefair, 4, Clare Street, Halifax.

A New Zealand Meccano Club.



TE AROHA MECCANO CLUB.

The above is a photograph of a successful Club established in 1920 at Te Aroha in New Zealand and I am sure our readers will agree that the members make as pleasing and as manly a group of Meccano boys as one could wish to see. The Club's motto is "Play the game, and if you fail try again." Owing to the difficulty in obtaining an adult Club Leader in Te Aroha, Master Ronald Hedge (the boy on the left of the two seated, in the above photograph) was temporarilly filling the post. It is with great regret that I have to announce that this Guild member died on 27th October last, from meningitis. "We have lost our best member" writes Master Elga Hinton, the Secretary. "He was our faithful Leader and had done good work for the Guild." I am sure that the sympathy of every Club and of every Guild member will be extended to the Te Aroha Meccano Club in its sad loss.

The Largest Crane in the World.

350-ton Crane at Philadelphia Navy Yard.

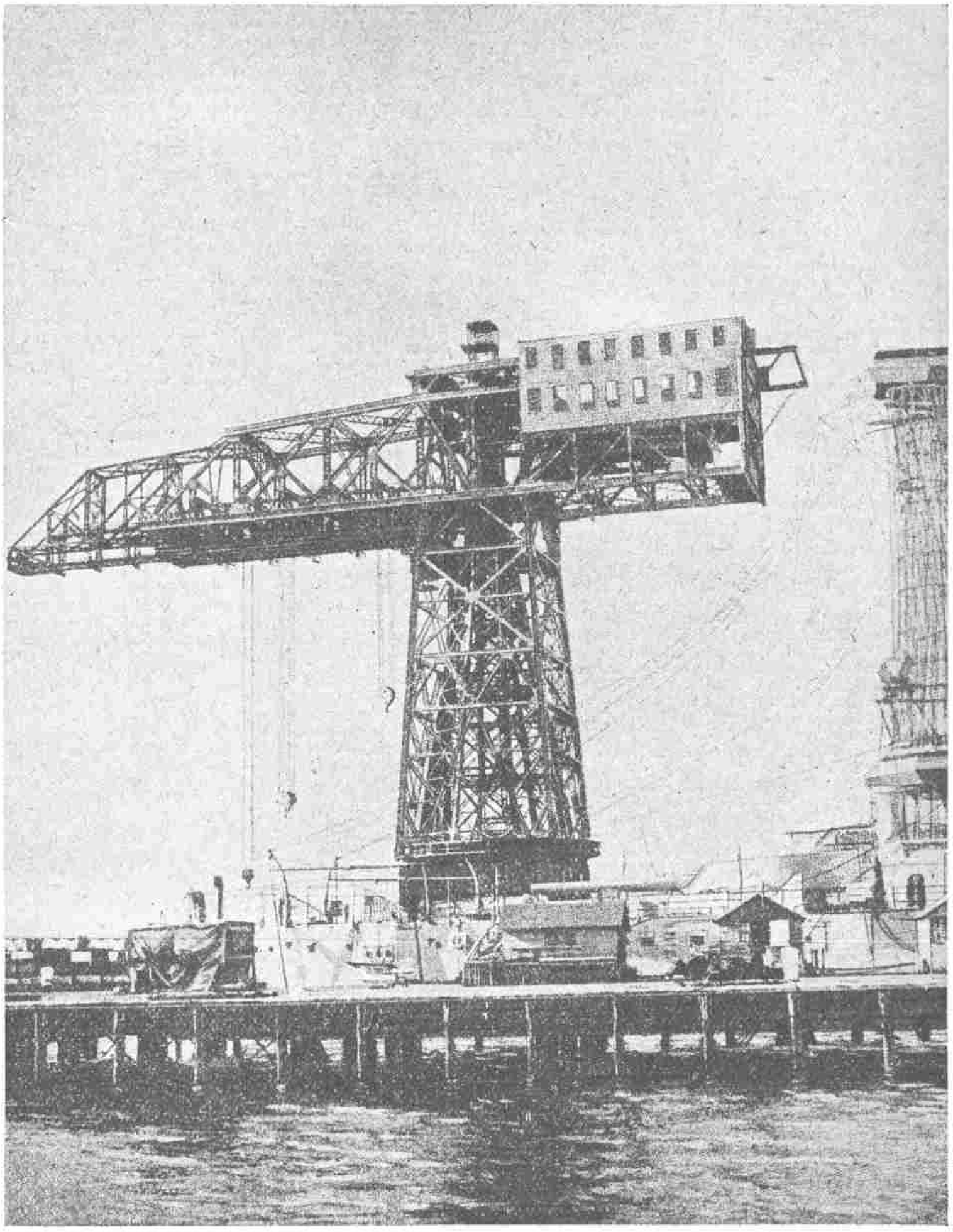
Boys who are interested in engineering are always fascinated in watching cranes at work, and we feel sure that all our readers would wish that they could see the world's largest crane lifting and swinging 350-ton loads with ease. For the majority of us this is not possible, as this monster crane is situated at Philadelphia, U.S.A., and is the property of the United States Navy. By the courtesy of *The Scientific American* we are enabled to reproduce the accompanying photograph, which well illustrates this wonderful structure, while the McMyler Inter State Co., the designers and builders of the crane, have been good enough to give us some particulars regarding its construction. We feel sure that a large number of our readers will be particularly interested in reproducing this crane in miniature by means of Meccano.

Although the crane has been installed only recently, its future seems somewhat uncertain, in the light of what is transpiring at the Washington Conference. The reason for the building of this enormous crane is the increased size of the elements entering into the construction of the modern dreadnought, for the crane is primarily intended to assist in the construction and repair of battleships. The great size of the crane was prompted by the desire to handle such elements as a whole, rather than have to dis-assemble them in order to make it possible to transport them and lift them into position in a dreadnought. Previous to the installation of this crane, for instance, the gun turrets were transferred to a dreadnought dis-assembled and were erected in position on board ship. By means of this great crane they may now be erected on the dock-side and placed on board as a complete unit. Thus considerable time is saved and the whole work facilitated.

The League Island crane, which cost over £200,000, stands on a pier extending out towards the Delaware and is thus able to operate over two docks. The structure contains some 2,000 tons of steel and 1,000 tons of machinery. Its height to the top of the observation tower is 250ft., and an electric passenger lift is provided to reach the upper part of the structure. No photograph can give any true idea of the tremendous size of this crane, beside which a battleship is completely dwarfed. The immensity of the great frame-work of steel can only be adequately understood when one stands beneath it, or climbs the steps of the central stairway to the platform 200ft. above.

The crane is of the hammer-head type, the total weight with load (about 4,000 tons) being carried on an elaborate pile foundation, driven well down in the gravel below and supported laterally. On this foundation there stands the massive four-legged structure called the stationary portal, the four legs of which support a system of steel girders, distributing and equalising the load.

This portal forms the main structure and upon it is mounted an octagonal tower, tapering to a point at the top. The top of the tower supports a roller bearing of special design, which carries the revolving cantilever truss. In order that the cantilever truss will remain stable for all unbalanced moments a structural frame or skirt is attached to the centre of the truss. It is built around the octagonal tower and is supported for horizontal reactions, and near the base of the octagonal tower on top of the portal, by means of a chain of rollers bearing against the circular path attached near the base of the octagonal tower.



THE LARGEST CRANE IN THE WORLD.

The crane is fitted with three hoists as follows:—Two main hoists of 175 gross tons capacity each, which may be operated singly or jointly. When operated jointly an equaliser beam is used, and is hooked into each main hoist. The centre of this equaliser beam contains a steel forged hook which has a working capacity of 350 gross tons. This weight of load can be handled at any radius up to 115ft.—the maximum radius for the main hoists. The height of the hoist above the top of the pier is 190ft.

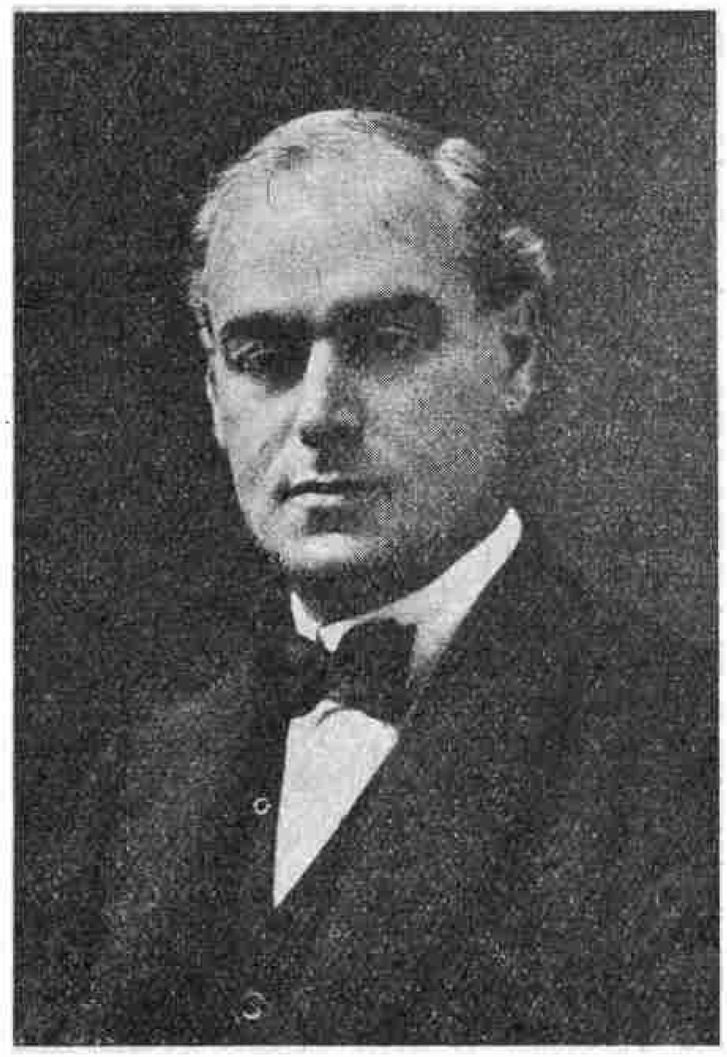
The building and erecting of this crane required 20 months from the date of signing of the contract, a special derrick being constructed for the purpose of its erection In order that both the rear and front cantilevers could be erected with the same derrick, the revolving mechanism of the crane was first installed and was made ready for operation simultaneously with the construction of the cantilevers. In order to keep the load as nearly balanced as possible the crane was revolved after a certain portion of the rear cantilever was installed to allow of a certain portion of the front cantilever being installed, the operation being reversed several times.

The World's Greatest Bridge.

Plans have recently been completed for the construction of a bridge from New York City to New Jersey, which when completed will be the largest bridge in the world. The bridge will be of the suspension type, and will span the Hudson river. It is to have two towers, and from one anchorage to the other the chains will measure 3,240ft., central span. The shore spans will each be 1,710ft. making a total, roughly of 6,650ft. or practically a mile and a half. The central span is over five times the length of the suspension bridge across the Menai Straits. The construction of this bridge will indeed be a great engineering feat, and one which will be followed by our readers with great interest.

The Late Sir Arthur Pearson

It is with deep regret that we have to record the death of Sir Arthur Pearson, Bart., G.B.E., who has been accidentally drowned in his bath.



THE LATE SIR ARTHUR PEARSON, BART., G.B.E.

Arthur Pearson, who was born in Wookey (near Wells), on February 24, 1866, was sent to a Preparatory School at Wimbledon when 10 years of age. Four years later he entered Winche ter College where he attained a splendid reputation in both cricket and football and carried off a number of prizes for general athletics, for he was very fond of sports.

In 1884—two years after leaving school—he was interested to read the announcement of a competition to be run by a popular weekly paper which offered a situation with a salary of £100 a year to the reader who secured the highest marks for answering ten questions each week. The competition ran over two months and aroused considerable interest—there were 4,000 entries. It was a keen test of general knowledge, the questions being extremely searching and requiring careful thought and long investigation. At this time Pearson was living in the village of Drayton Parslow, in Bucks., and he thought nothing of cycling 60 miles to Bedford and back, often three times a week, in order to consult the necessary books in the only available library. When the results were announced it was found that Pearson had won the prize with 414 marks, the runner-up having only 362.

In September, 1884, young Pearson came to London to take his first post at a salary of £100 per annum in the office of Sir George Newnes, the organiser of the competition. In six months the Managership of the office became vacant, and Mr. Newnes—as he then was—was exceedingly surprised to receive an application for the responsible post from young Pearson, who was then only 19. Pearson succeeded in persuading him that he could fulfil the duties and was appointed.

In 1889 Pearson became the first Manager of the *Review of Reviews* and later commenced business on his own account founding *Pearson's Weekly*, *Home Notes* and many other publications. Thus at 30 years of age he found himself Managing Director of a Limited Liability Company with a capital of £400,000.

About 1900 Mr. Pearson had some trouble with his eyes and a distinguished specialist informed him that he was in danger of losing his sight. Operation followed operation during subsequent years, but all was without avail, and in spite of every care he became totally blind.

Although Mr Pearson had a remarkable career in his early days the true strength of his character and his tremendous powers of organization did not become fully manifest until he was visited by this great affliction. In 1913 he joined the Council of the National Institute for the Blind and shortly afterwards was elected its Honorary Treasurer. On the 19th March, 1914, the new building—built from the funds Mr. Pearson had raised—was formally opened by H.M. the King. In the same year Mr. Pearson was elected President of the Institute, the highest honour it was in the power of the Committee to bestow. At the outbreak of the war the Prince of Wales requested him to undertake a great appeal for the National Relief Fund and, largely due to his energy, in the short space of a few months over £5,000,000 was placed at the disposal of the Committee.

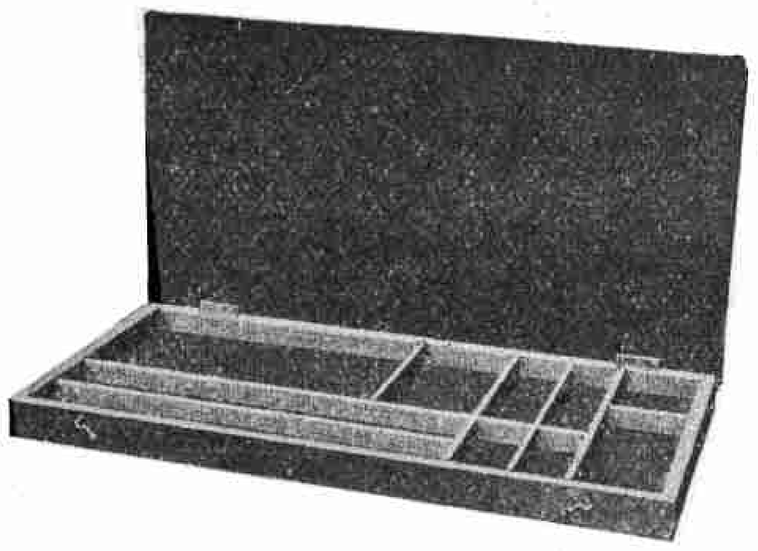
Sir Arthur Pearson was created a Baronet in 1916 in recognition of the great work he had done in the establishment of St. Dunstan's Hostel for Blinded Soldiers and Sailors, and the following year he had the additional honour of Grand Commander of the British Empire conferred upon him.

Sir Arthur had many interests throughout the whole of his life, and one of his greatest hobbies was the Fresh Air Fund, which he founded in 1891. His object was to give the poor children of the slums a day or a fortnight in the sweet air of the country. It is difficult for us to realise what this means to children who spend the whole year cooped up in surroundings where fresh air never enters, where food is the exception rather than the rule, and where a kind word is a rarity. The Fresh Air Fund took the children into the open and having provided good wholesome food and games for their amusement, brought them back at night tired and happy, with memories that they would cherish for months, or even years.

Sir Arthur Pearson was a splendid example of perseverence and cheerfulness in adversity, and his life well shows what can be done even though working under the greatest of all handicaps, that of blindness.

We are glad to pay tribute in the pages of *The Meccano Magazine* to the memory of this great and gifted man. Much of his life was devoted to making the lives of children brighter and healthier, and we entertain no shadow of doubt that the success which crowned all his efforts in this direction brought him the most intense happiness.

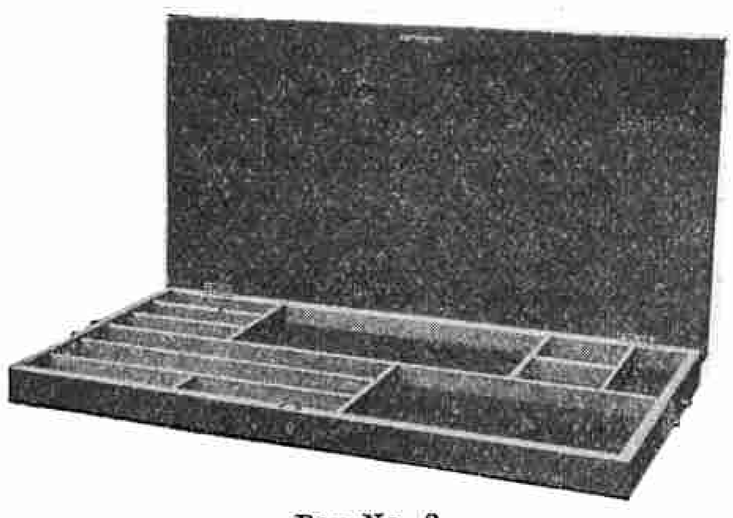
Storage Boxes.



Box No. 1.

We have in stock a limited number of empty boxes suitable for holding Meccano parts. The boxes are in two sizes, and are stained and polished imitation walnut. They are fitted with partitions and lined with green baize. The lids are hinged, and in the smaller size are fastened by two outside hooks, the larger size having a lock and key.

We illustrate the two types, and as our stock is only small we advise those of our readers who are interested to take immediate advantage of this opportunity.



Box No. 2.

The box measurements are as follows:—
No. 1, $20\frac{1}{4}'' \times 10\frac{1}{2}''$, depth $1\frac{1}{4}''$, price 7/6, postage 1/3.
No. 2, $24\frac{1}{4}'' \times 12\frac{1}{4}''$, depth $1\frac{1}{4}''$, price 12/6, postage 1/3.

ARE YOU ENTERING THE

Meccano Prize Competition—£250 in Prizes.

All Meccano boys should enter the big Meccano Prize Competition. There will be hundreds of prizes awarded including nine cash prizes to the value of £100, and Meccano Outfits to the value of not less than £150. As was the case last year, the Competition wil be divided into three sections:—

1. For boys under 10 years of age. 2. For boys between 10 and 14 years of age; and 3. For boys over 14 years of age.

In addition to the prizes mentioned above, the Meccano Guild is again offering three special prizes of £5 each in cash for the member of the Guild who gains the best prize in his section. There are no restrictions nor entrance fees. Any Meccano boy may enter, and the competitor who sends in a simple model made with a No. 0 Outfit stands just as good a chance of winning a prize as does a competitor who sends in a complicated model made with a No. 6 Outfit.

It is important to note that the Competition will close on the 15th April, 1922, for entries from the United Kingdom, and on the 31st May, 1922, for entries from the Colonies.



Our Mail Bag.

The Editor has a little talk in this column with his readers. Whether he has space to reply to them all here or not, he is always glad to hear from them. He receives hundreds of letters each day and only those which deal with matters which are likely to interest other Meccano boys can be dealt with here.

Correspondents will help the Editor if they will write on one side of the paper only.

T. BATTY (Kilburn, N.W.6).—Thank you for your letter. I am pleased to know that you intend keeping up your interest in Meccano. Your verses are very good but I regret I am not able to devote the space to print them. I have, however, added them to my collection.

"DICKIE" JONES (Cheltenham).—I feel that the only way in which I can pass on your good wishes ("to anybody and anything to do with Meccano") to those hundreds of thousands of people who have "to do with Meccano," is to print them in this column! The correct pronunciation is "Meck-Ar no." I hope you spent a merry Christmas with your joy wheel, and am interested to hear of your plans for the future.

G. DALZIEL (Glasgow).—I hope that you were successful in constructing the loom, which is indeed a very fine model: you will be able to equip all your friends with ties and hat-bands when the model is finished! I hope that although you are shortly leaving school your interest in Meccano will still continue.

I. M. H. ETHERINGTON (Southend).—Yes, Ivor, the study of secret codes, or "cryptography" as it is called, is a fascinating subject for study. In this connection you will probably be interested to know that an article on this subject explaining the mysteries of cypher-making appears in this month's 'Boys Own Paper" and I feel sure that you will find this of considerable interest. I look forward to reading the book which you intend writing on this subject when you grow up. I wish you every happiness and success at Mill Hill next Summer.

"DINKIE" JONES (Cleeve Hill).—

"Meccano is the nicest thing
That ever we have had;
When we're sad it makes us sing
Now we are all Meccano mad."

Very good, Dinkie! Let me hear from you again. I trust you have been able to build your overhead crane during the holidays.

D. L. F. BARBER (Witham).—"Thank you so much for your nice letters. They are always nice when they come from Meccanoland" We endeavour to make everything worth sending out whether it be a production of our factories or a letter to our readers and I am pleased to hear that we succeed in our efforts.

A. DAWSON (Eccles).—Your suggestion for issuing leaflets of instruction for the building of models which appear on the front pages of the *M.M.* has been noted. Such leaflets have already been issued in the case of the Chassis and the Loom. I reciprocate your good wishes for the New Year.

J. WILKINSON (Birtley).—The Guild Secretary is indeed pleased to know that you have been happier since you joined the Guild. He is endeavouring to find you a correspondent in France, and hopes that you will have a happy connection with him when you receive his name and address.

D. P. OATES (Morecambe).—I agree with you that the latest Meccano chassis is "an absolutely fine model, to say the least." I am interested to know you have recently gone to live at Morecambe, as I was motoring in that district a short time ago.

R. JOHNSON (Eccles).—I am pleased you think the *Meccano Magazine* becomes more and more interesting every time it is published. I would like to publish it more often, but there are a great many difficulties to be overcome before this can take place. However, I have the matter constantly before me and hope to be able to do something in this connection at a later date. I note your suggestion for a booklet on "Dick's Trip Round the Meccano Works," which I shall bear in mind.

V. E. SCAPLEHORN (Howard's Heath).—I am pleased to hear that you enjoy reading the *M.M.* I hope to continue the instructive articles which I have recently introduced and have a large number of fine photographs awaiting their turn to be included in our pages.

T. H. ROBINSON (Bridlington).—Congratulations on winning a "highly commended" certificate for a Meccano model at Sheffield open to all the boys of 13 schools. As you were the youngest to enter, and won third place with a model of a Gipsy Encampment, you have done splendidly.

T. KENDALL (Southampton).—I commend your suggestion for making models of the cranes and engineering structures which are now being illustrated in the *M.M.* I have no doubt that many other Meccano boys will be following your excellent example.

A. TIMS (Hockley).—I am interested to read of your efforts to start a Meccano Club. It was certainly a good idea to have your instruction book bound with leather. The verse you send is interesting, but scarcely good enough for publication in these columns. Try again, Albert!

R. H. WHITING (Bedford).—I am interested to know you consider the *M.M.* simply "splendiferoshous" although I myself have not so far looked upon it in that light! I trust that the Christmas pudding was the better for your attentions, and that your anticipations in regard to your Christmas presents were fully realised.

T. GRAHAM (Leeds).—No Tom, I am afraid that I cannot commend your suggestion to use the Mechanical Navvy for mixing mince-meat at the Festive Season! I am afraid that the work would not proceed with sufficient speed to satisfy those in charge of the complicated processes involved!

R. O. CHALLIS (Leigh-on-Sea).—I note your desire for the *Meccano Magazine* to be published more often, and that you suggest that if I cannot get enough to fill it I could use larger type! I am afraid our readers would not agree to this, Robert, and in any case the trouble is not so much how to fill the pages as to decide what to leave out! However, I look forward to the time when the *Meccano Magazine* will be the biggest and brightest of boys papers.

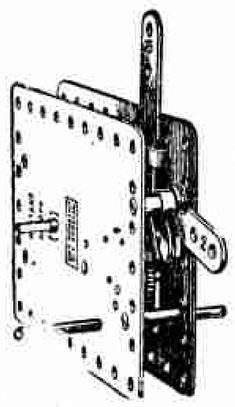
L. C. EDWARDS (Hull).—Yes, Laurence, we hope to continue to publish photographs of cranes and other engineering achievements of interest. We have several other good things in store for readers of the *M.M.*

R. E. BROWN (West Bromwich).—I note you think it would be an improvement if the accessory parts were renumbered. Many difficulties arise, however, making this impossible, at any rate for the present, chiefly owing to the new parts which are always being introduced.

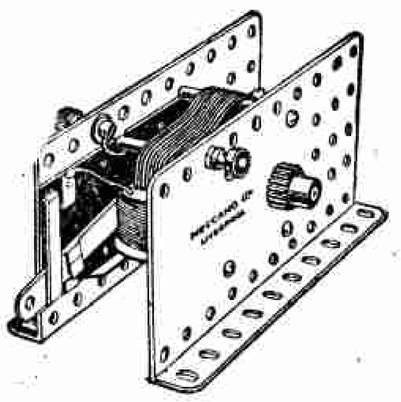
H. E. UNDERWOOD (Geneva).—I am always pleased to hear from you. It must have been exceedingly interesting to be able to be present at a session of the League of Nations, for which you were able to obtain a ticket for the Visitors' Gallery. I note that you read the *M.M.* during a rather dry speech!

Meccano Motors.

All boys should add a motor to their Outfits, for it greatly increases the fun of the hobby and enables models to be operated in a realistic way.



Clockwork Motor.—This is a splendid piece of mechanism, simple, powerful, reliable and free from danger. It is fitted with starting, stopping and reversing levers, and greater lifting power may be obtained by extra gearing made from Meccano parts. It is easy to understand, and all its movements are fully explained in the instructions which accompany it. Price each .. 12/6



Electric Motor.—The use of electricity exercises a great fascination for any intelligent boy, and this motor provides him with the means of running all his models by electricity. It is well designed, simple, strong and free from danger, and suitably geared it has a lifting-power of more than 30lbs. It takes 4-volts and may be run either by an accumulator or direct from the main. Where the main current is alternating a suitable transformer may be used, but where a direct current is employed the motor may be run direct from the main by means of the Meccano Charging Board, details of which were given in No. 21 of the *Meccano Magazine*. (An illustrated leaflet entitled "The Meccano Charging Board and How to Make It"—post free, 3d.—gives full details of this useful accessory.) The Electric Motor is provided with a reversing lever, starting and stopping mechanism. No more powerful or satisfactory toy electric motor has ever been designed. Price each .. 17/6

Meccano Inventor's Accessory Outfits.



By adding either or both of the Inventor's Accessory Outfits the possessor of any of the main Meccano Outfits is enabled to construct a very large number of further models, thereby deriving considerable extra enjoyment. The Inventor's Outfits contain a selected assortment of valuable parts which have been added to the Meccano system from time to time.

ACCESSORY OUTFIT "A" contains four large 3" pulley wheels, new gear wheels, washers, sprocket wheels and chain (for giving a positive drive), and braced girders. Price .. 10/-

ACCESSORY OUTFIT "B" contains a magnificent assortment of new parts including bevel gears, 1" gear wheels, flat and triangular plates, octagonal and strip couplings, screwed rods, curved and rack strips, hinges and buffers and couplings for constructing trains. Every boy who is interested in engineering subjects will find this Outfit of the greatest service to him, not only providing him with new movements, but also considerably extending the scope of his experiments. Price .. 25/-

The Meccano Manuals.



There are three Meccano Manuals of Instruction, Book No. 1 is the regular Manual which is included with the main Meccano Outfits and contains instructions for making 323 fine models. Price 2/6 (postage 3d. extra). Book No. 2 illustrates a large number of fine models and describes a series of simple scientific experiments. Price 1/3 (postage 2½d. extra).

The new Manual No. 3 contains illustrations and instructions for building a large number of entirely new and imposing models of great beauty. These include such interesting models as the Theodolite, Signal Gantry, Level-Crossing Gates, Revolving and Hydraulic Cranes, Coal Cutter, Lathe, Dredger, Planing Machine, Travelling Gantry, Wire-covering Machine, and Twin Elliptic Harmonograph.

The Manual is illustrated by an entirely new process, by which the component parts of every model may be clearly seen. The price is 1/3 (postage 1½d. extra).

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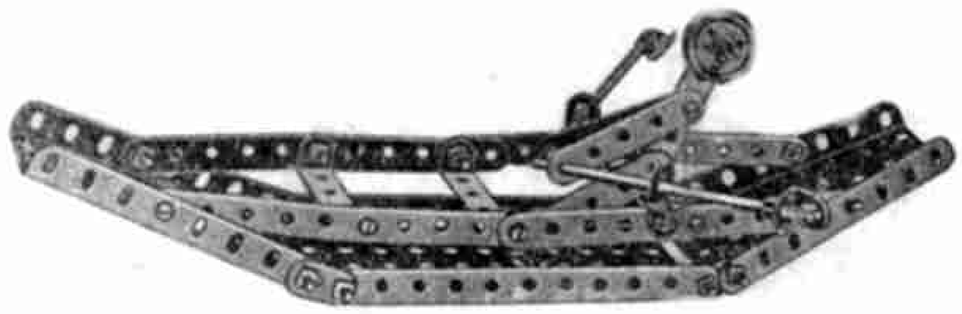
No. 22. MARCH-APRIL, 1922.



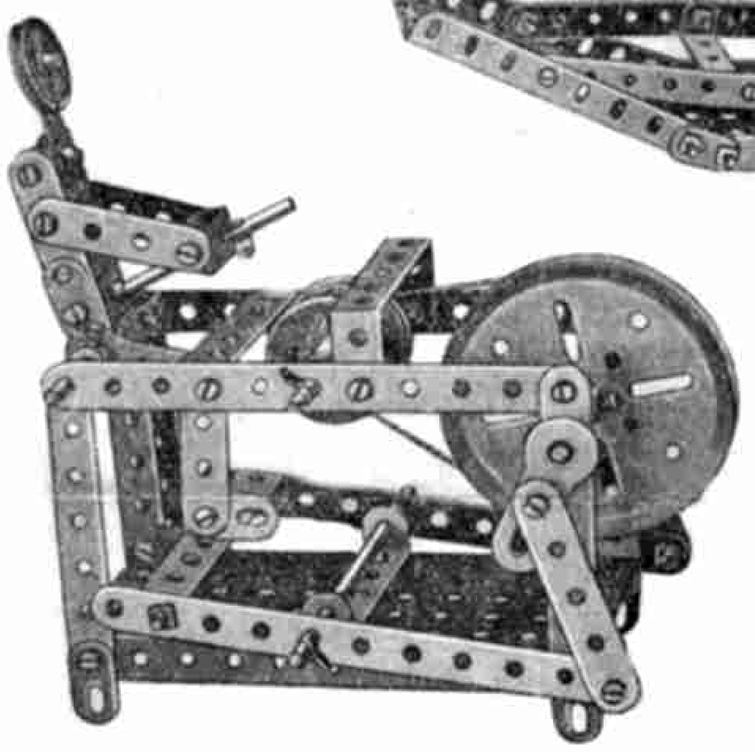
MECCANO MAGAZINE

PUBLISHED IN THE INTERESTS OF MECCANO BOYS.

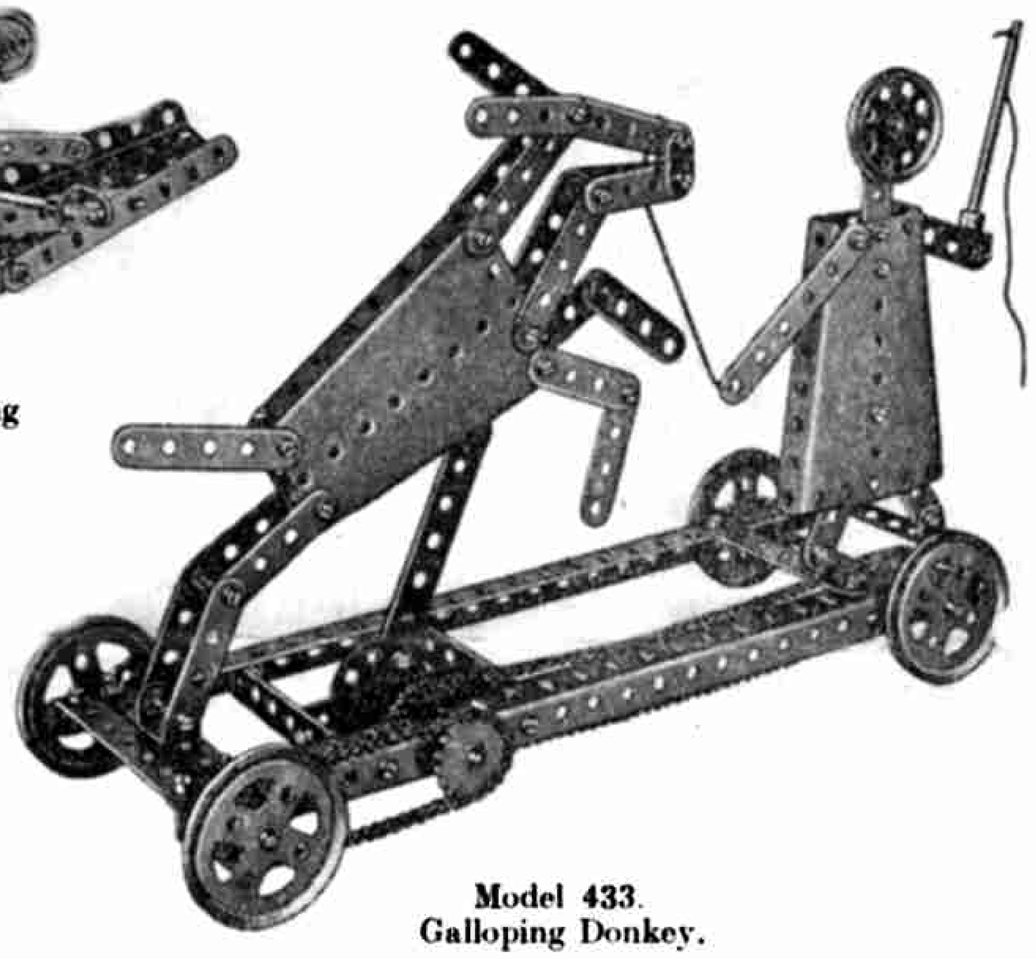
PRICE 1d



Model 436. Rowing Boat.



Model 432. Knife Grinder.



Model 433. Galloping Donkey.

The Lighter Side of Meccano.

Although Meccano is primarily engineering in miniature—and although the component parts of the system represent real engineering units and thus lend themselves more particularly to the building of models of engineering structures—a considerable amount of fun may be obtained by building models which are not directly connected with engineering. In No. 19 of the *Meccano Magazine* we illustrated in "St. George and the Dragon" a model which is a splendid example of extraordinary ingenuity displayed in the application of Meccano in a novel and unexpected manner. We have pleasure in featuring above three further models which well illustrate the lighter side of Meccano. They need no explanation and we have no doubt that many of our readers will take a pleasure in building them and perhaps improving on them. In this connection there is excellent ground for our readers to apply their imagination to the invention of new models on similar lines. No doubt they will find the loose pulley (No. 22a) of considerable use in models of this type, for the three holes give a very realistic reproduction of a human face with a particularly ingenuous expression!

Editorial.

Good News for "*M.M.*" Readers.

For some considerable time a very large percentage of the thousands of letters which I receive from my readers have been urging me to increase the size of the "*M.M.*" and to publish it more often. As has often been pointed out in the "Mail Bag" there have been many difficulties to be overcome in this connection. My readers will now be very pleased to know that for the last four months of the present year (September-December) we shall publish the *Meccano Magazine* monthly instead of bi-monthly, as at present. Possibly also it may have an increased number of pages but at the moment I cannot promise this definitely. The price will remain the same and I advise all my readers to send their subscriptions or to place their orders for the Magazine immediately, as there is certain to be a very large demand.

A Gift for your Chum.

Would you not like to give your chum—either for Easter, birthday, or on some other occasion—a gift which will remind him of you for a whole year? You can do this by sending a subscription for the *Meccano Magazine* to be mailed to him regularly. I have arranged for this scheme to be put into operation immediately, and full particulars will be sent on application.

Instruction Leaflets.

As most of our readers know, instructions for building the special Meccano models of the Motor Chassis and the Loom are now available on illustrated sheets. These are beautifully printed on art paper and show not only the complete models, but sectional photographs of all the essential details. The price of these leaflets is 4d. each, post free. A special leaflet giving full instructions for making and wiring the Meccano Charging Board, to enable the Meccano Motor to be run direct from the main (direct current only) is also available in the form of an illustrated leaflet. This costs 3d. post free.

Photographs and Articles Wanted.

As mentioned in the last issue of the *Meccano Magazine*, I am always pleased to consider paragraphs or short articles of general interest from my readers and to pay for such as are printed in these columns. The articles may be illustrated by drawings or photographs and need not necessarily be confined to Meccano or even to engineering subjects.

Editorial—(*continued*).

Nature-study, stamp-collecting, and the hundred-and-one other hobbies of boys all lend themselves to treatment in this manner. I feel sure that many of my readers will have had some interesting experiences in connection with their own particular hobbies which they can successfully set down on paper.

The Great £250 Competition.

The closing date for the great Meccano Competition is now drawing near and entries are arriving in large numbers each day. Every boy interested in Meccano should enter his ideas for new models and movements in this Competition, so that we may make them known to hundreds of thousands of other Meccano boys. Full particulars of the Competition are given elsewhere in this issue and if you have not already sent in your entry, do so without delay.

Meccano Rails, Points, and Crossings.

Elsewhere in this issue mention is made of the new Meccano Rails, Points, and Crossings. I wish that my readers could see the Meccano Factory where the workers are all kept busy and the machines are continuously stamping out hundreds of thousands of these Rails, to supply the ever increasing demand for British-made Rails. Meccano boys will easily understand why owners of Hornby and other trains prefer Meccano Rails, Points, and Crossings to those made on the Continent. They are built for hard wear and smooth running and in them is the same excellent quality of workmanship and material as is in Meccano itself.

The New Accessory Parts Lists.

I advise those readers who have not yet obtained a copy of the new Accessory Parts list to do so without delay. It has been reprinted in four-page form, instead of in one large sheet as hitherto and will be sent post free to any reader of the *Meccano Magazine* upon application.

The Life Story of Meccano.

In this issue appears the final instalment of the "Life Story of Meccano." This splendid account of the invention and subsequent development of Meccano, written by Mr. Frank Hornby, has been a feature of the *Meccano Magazine* since it commenced in No. 2 (November 1915). Although this final instalment marks the conclusion of an article in which the greatest interest has been shown, I am sure that all readers of the "*M.M.*" will agree that the Magazine will not be complete without an article from Mr. Hornby's pen. I hope to persuade the inventor of Meccano to contribute a further series of articles shortly.

The Life Story of Meccano.

By Frank Hornby.

(*Concluded*)

There are still other constructional toys, of course, in America but these are not exactly on Meccano lines and are not real engineering systems. They do not therefore, give us a great deal of trouble.



THE NEW MECCANO BUILDING, ELIZABETH, N.J., U.S.A.

A little while ago we purchased a very fine factory in the town of Elizabeth, New Jersey. This is a splendidly equipped building and might almost have been planned specially for our purpose. There will be no difficulty, therefore, in the future in properly attending to the assembling and distribution of Meccano throughout America from there. On this page you will find a picture of our new building, giving some idea of its size and importance. It has a floor space of over 36,500 square feet, is well lighted and heated and has beautiful maple floors. The building is about an hour's run from New York by train and has excellent facilities and conveniences for distributing our goods to all parts of the country.

I am sure that Meccano boys will be glad to know that the boys of America are as eager and enthusiastic as they are in this country in building Meccano models.

There are already a number of Meccano Clubs over there, run by enthusiastic boys and some of these Clubs are very successful indeed. Now that we have so much additional space and the proper facilities are available we shall launch the Meccano Guild in America, and I feel quite sure that it will be just as successful in the States as it has been in this country. You already know, of course, that there is an American edition of the *Meccano Magazine* circulating regularly among the Meccano boys in that country, and the full Guild programme will be announced in the columns of that Magazine in due course.

In these columns I have given the main facts in connection with the rapid rise to fame of the Meccano hobby, and I trust that all my readers have been interested in them. There are many other interesting sides of our business with which it would be out of place for me to deal in the "Life Story of Meccano." These I shall make the subject of other articles for the *Meccano Magazine* at some future date.

The history of Meccano is not yet complete. In fact I feel that even now the hobby is still in its infancy and that the most interesting part of its career has yet to come. At the present time it is rapidly extending, and spreading its influence into the remotest countries in the world. Wherever it goes it secures and maintains its hold upon the affections of both boys and men. Every year in this country more and more boys become devotees to Meccano, realising its wonderful possibilities for providing both amusement and instruction and its great influence for good.

I think I am right in saying that the hobby itself has never been so rapidly developed and exploited as at the present time. New possibilities are being discovered almost every day; new parts are being added to the system; new models are being constructed, and we go from strength to strength. Nothing can stand in the way of the further development of Meccano and in the coming years I firmly believe it will be considered that no boy's education will be complete without a course of Meccano model-building.

(The End)

REDUCTION IN PRICES
OF
MECCANO OUTFITS AND HORNBY TRAINS.

Recent reductions in manufacturing costs have enabled us to make a number of reductions in the prices of our goods. Readers of the *Meccano Magazine* are advised to study closely the list of Revised Prices which accompanies their issue.

A complete up-to-date illustrated list of Meccano Accessory Parts may be had on application.

A new aero engine of 1,000 h.p. and weighing only 2,200lb. was shown at the Napier Works, Acton, last month.

• • • •

Four aeroplanes in complete flying order were recently sold at Swansea for a total of £139 10s. One of the machines, with an 80 h.p. engine, was knocked down for £12 10s.

Suggestions by Meccano Boys.

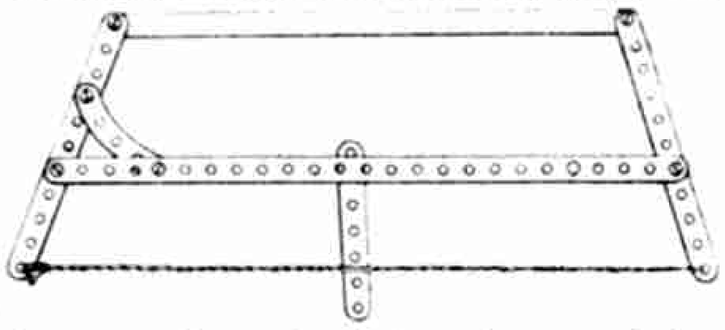
These columns are reserved for dealing with suggestions sent in by Meccano users for new parts, new models, and new ways of making Meccano model-building attractive. We are always glad to hear from any Meccano boy who has an idea which he considers will be useful to the Meccano system.

RAY H. BENNELL (Sutton).—We already list an eccentric (No. 130 in the Accessory parts list) that has an advantage over your suggestion in that it enables three different lengths of stroke to be obtained.

DENZIL MATKIN (Liverpool).—(1) The introduction of a circular saw is under consideration. (2) The winding of the coils is quite straightforward and should offer no difficulties if ordinary care is exercised. A thicker wire would not do, as the resistance offered would be too great for 4-volts.

————(2, Albury Road, Newcastle).—We cannot see any advantage in your suggestion for an eye-piece 2½" by ½". Have you found any use for this and in what way is it more adaptable than the one we list?

D. W. RICHARDSON (Hastings).—We doubt whether it would be desirable to include in our list of parts a 5½" metal saw. Regarding your suggestion for a circular saw, see reply to Denzil Matkin above. The



former may be purchased at any ironmonger's shop and a frame to hold it may be constructed as illustrated. Considerable power would be required to effectively drive the lathe. We shall, however, give it consideration.

H. R. PATTEN (West Drayton).—We shall give consideration to your suggestion for a flat and shaped radiator. Our difficulty, however, is to decide the correct size to be adaptable to the other Meccano parts. What would you suggest?

ARTHUR WORKMAN (Johannesburg).—We already include a roller (No. 106) in our list of parts.

BENJAMIN CORBYN (West Hartlepool).—The employment of flat Trunnions (No. 126a) gives a good balance to tracks, etc., and the introduction of a specially heavy plate solely for ballast purposes would not be justified. Suitable ballast can be procured locally. We do not advocate the application of Meccano parts to domestic use and are therefore sorry we cannot introduce the parts you suggest.

DONALD SIMPSON (Kelso).—The application of a 7½" strip has not yet become so universal as to warrant its introduction. Possibly in the future we may adopt it. The adaptation of the Hornby train to steam working is at the moment premature.

RUSSELL T. WHEELER (Abertillery).—The disadvantages of the hexagon nut are its bulk and consequent unsuitability for use in confined spaces and also the greater cost of its manufacture.

LESLIE KNIGHTS (Worsted, Norwich).—The simplest substitute for the pawl is made with a 1" fast pulley secured to a crank handle with a cord running over it and secured to a 5½" strip, loop fashion, with the strip fairly tightly fixed to the frame by lock nuts. See diagram "A" at back of complete Manual, page 129.

A. D. SMALLEY (Streatham Hill).—We are at present engaged on an improved clock movement. This will be published in due course in the "*M.M.*" We do not propose introducing drawing books as you suggest, for squared drawing paper can be obtained from any dealer in artists' materials. Would not our face plate (No. 109) serve the purpose of your suggested sketch? The disadvantage of a friction drive is that it is not positive, for when any pressure is exerted slipping quickly occurs. The flanged wheel you suggest, with the boss inside and a hole in the rim to negotiate the set screw, is not a correct engineering principle.

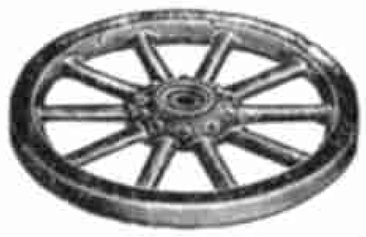
MICHAEL D. TOOLEY (Colchester).—We already list a 1" Gear Wheel (No. 31) and have, as yet, found no use for your suggested reversed rack segment.

WM. STRUCKETT (Tonbridge).—The introduction of helical gears is under consideration. A motor car can only "free wheel," as you term it, when the clutch is thrown out or the gears are disengaged.

HERBERT MOSSMANN (Hammersmith).—We are unable to follow the application of the new part you suggest.

H. C. MORRIS (Bristol).—We are experimenting with a buffer which may be adapted to a wagon made with Meccano and when this is ready it will be announced in the "*M.M.*" Your suggestion for a constructional Steam Engine is one which will require a great amount of consideration.

A Useful Wheel



We have a limited number of Meccano Part 19a, 3" wheel without collar and set-screw; price per set of four, 10d. (post free).

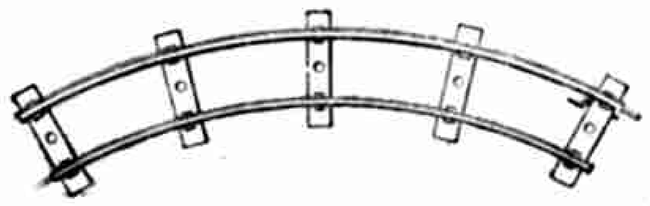
As we have only a small stock of these wheels on hand our readers are advised to take advantage of this offer before the stock is exhausted.

Meccano Rails, Points, and Crossings.

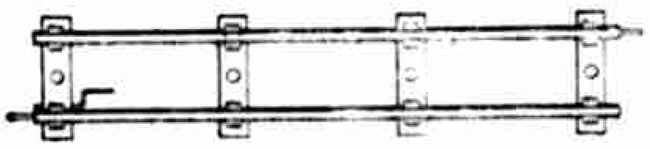
Several additions have recently been made to the existing Meccano Rails, Points and Crossings and a complete list will be sent on application.

Meccano Rails are greatly superior both in quality and appearance to continental-made Rails. The extra sleepers give an added steadiness to the track and the name of Meccano on each sleeper of Rails, Points and Crossings, stamps the genuine article.

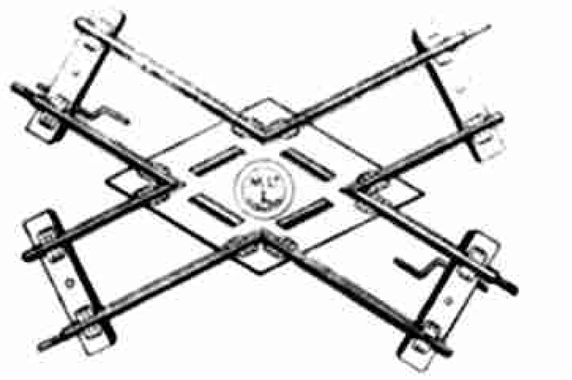
These Meccano products are made of the finest materials and hold together rigidly and strongly, for real workmanship is put into them.



		s.	d.
A1.	Curved Rails ..... per doz. (For 2ft. diam. circle.)	5	0
A2.	Curved Rails ..... „ (For 4ft. diam. circle.)	5	0



		s.	d.
B1.	Straight Rails ..... per doz.	5	0



		each	s.	d.
CA.	Acute-angle Crossings ...	2	6	

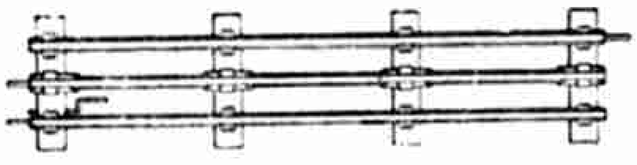
PL1. Left-hand Point (1ft. radius) each 3/9

(Right-hand Points, also right and left-hand points, 2ft. radius) each 3/9

Rails for Electric Trains.



		s.	d.
EA1.	Curved Rails ..... per doz. (For 2ft. diam. circle)	9	0
EA2.	Curved Rails ..... „ (For 4ft. diam. circle)	9	0



		s.	d.
EB1.	Straight Rails ..... per doz.	9	0

SEND FOR COMPLETE LIST OF MECCANO RAILS, POINTS, AND CROSSINGS.

A. POOLEY (Cambridge).—A small alteration is being made to the Clockwork Motor by which it is given a much longer run.

KENNETH GOODING (Ashton-under-Lyne).—See our reply to Leslie Knights, *re* brake action.

W. PRINGLE (W. Stanley, Co. Durham).—We are afraid we could not spare valuable space in the "*M.M.*" for the photographs you suggest. We appreciated very much indeed your kind wishes for the New Year.

H. M. HODGSON (Golder's Green).—We already list curved strips in two sizes, viz. 2½" and 5½". Are these the lines you suggest?

E. J. PRICE (Bexhill-on-Sea).—We shall introduce both a tank engine and petrol tank wagon this year. The date of issue will be duly notified in the "*M.M.*" A two-speed clockwork movement for the Hornby train would have to be specially designed and would scarcely be justified for the purpose you mention. Electrical speed controls are always cumbersome and could not be employed efficiently with low voltage current. We hope to produce a design of a three speed gear box this year.

R. H. BAILEY (Chiswick).—We already list a 1½" strip. Would this not suit your purpose? We are introducing a ½" Rod this year.

ROBERT S. LITTLE (Smethwick).—A pointed spindle would not register any design. A description of a pen suitable for designing machines is given in our No. 3 Manual, Model No. 453.

GEORGE REYNOLDS (Moseley, Birmingham).—At least four such cells as you mention would be necessary to work a 4-volt motor satisfactorily. Each cell has a capacity of about 1·5 volts but they soon run down and the zinc rod deteriorates rapidly under the effects of the acid.

NORMAN STANIFORTH (Dingle, Liverpool).—The bevel gears (No. 30) serve the purpose of your suggestion.

B. RUCK (Swansea).—We are now issuing "O" Gauge track with the third rail for electric trains and they are announced on this page. The whole subject of driving model electric railways from high power current is already under consideration. Our special screwdriver (No. 36a) would no doubt fill your requirements for a long screwdriver. Our experience has shown that nuts in awkward places can be negotiated fairly comfortably with this tool.

CHARLIE LITTLE (Blackburn).—The introduction of helical gears is under consideration. We are afraid that the construction of a steam engine is not quite as straightforward as you make out. We shall see what we can do to make the "*M.M.*" lighter reading by the introduction of a jokes column, space and opportunity permitting.

I. H. DELACOUR (Brixton).—The present Manuals of Instruction are under complete revision. Many additional examples of the employment of the clockwork motor will be shown in the new edition.

I. W. WHITWORTH (Bradford).—The whole subject of electrically driven trains is under review and any developments concerning this subject will be communicated through the pages of the "*M.M.*" We have already arranged to introduce various types of trucks for use with the Hornby trains.

K. POMEROY (Chelmsford).—Miniature lathe tools such as you suggest would only serve an ornamental purpose. We endeavour to adapt all parts to general use throughout the Meccano system.



The Secretary's Notes.

New Clubs. The success of the Guild movement continues in no uncertain manner and every week I have the pleasure of submitting to the President the names of new Clubs for affiliation. In this issue I am able to announce the affiliation of eleven new Clubs and I hope that any Meccano boys who live in the districts in which these Clubs are situated will give them their support by joining and attending the Club meetings regularly.

Club Membership Cards. The new Club Membership Card, announced in No. 21 "*M.M.*," has proved exceedingly popular and the demand for it from affiliated Clubs has been so great that we have recently had to have a third reprint. Any Clubs who have not received their supplies of the card should, therefore, apply at once stating the number of members on their roll. Only one card is available for each member of an affiliated Club.

Outdoor Sports. The time is now drawing near when those Club Leaders and Secretaries who look ahead will make arrangements for the entertainment of Club members during the summer months. When the fine evenings come, Meccano is naturally put on one side for the time being and a greater interest is taken in outdoor pursuits. This is only as it should be and cricket and tennis find many new recruits every summer. There is no more enjoyable method of spending the fine evenings than in enjoying one or other of these games. Our President is particularly keen on encouraging outdoor sports among members of the Guild and I hope to hear of the formation of many cricket and other teams among Meccano Clubs.

The Inter-Club Model Competition Attention has been previously drawn to the Inter-Club Competition which closes on the 31st of this month. Any Clubs who have not already sent in their entry should do so without delay. The cash prizes of this Competition make a valuable addition to Club funds and already a number of entries have been received.

A Meccano Play. Many of our Meccano Clubs successfully conclude their sessions with an Exhibition or a Concert. Not only does the work of organising and carrying through a good programme provide an interesting occupation, but the success of the effort gives pleasure to a large number of parents and friends, as well as to the members of the Club themselves. In this connection, as has already been announced in these columns, there is now available a short Meccano Play entitled *Nonsense Nana*, and I shall be very pleased to forward a copy of this play to any Club Leader who is arranging a concert.

Special Merit Medallions.

TWENTY-SEVEN AWARDS.

As announced in a previous issue of the Magazine, the awarding of Special Merit Medallions has been extended to members who do good Club work during the session in addition to those who give interesting Lectures. Consequently the number of Club members who have become eligible for these Medallions has increased considerably. Medallions have been awarded as follows for work during the past session :—

B. Warburton : Liscard High School M.C.
J. W. Gibbs and W. L. Edwards : Bromsgrove M.C.
L. Hall and H. Sandall : Small Heath M.C.
F. Coomb and A. Moore : Meads M.C.
R. Hardy : New Brancepeth M.C.
F. Hubball and A. Clements : Sparkbrook M.C.
T. Sutton : Norwich Enterprize M.C.
D. Boden : Dudley, M.C.
C. Broughton : Thornton Heath M.C.
G. W. Stevens and G. H. A. Murray : Jarrow-on-Tyne M.C.
G. Henderson : Airdrie M.C.
R. Coombs and W. Grindley : St. Mary with St. Gabriel M.C.
L. Goldsmith : King Street M.C.
H. Kilfoyle, Ruabon M.C.
J. W. Mayhew and J. S. Kelsall : Kenyon Hall M.C.
A. W. A. Dick-Cleland and W. B. Spiers : Kelvinside M.C.
J. Reynolds : Heamoor M.C.
H. Julian, South Wingfield M.C.
E. Sykes, Malvern M.C.

Each of the boys mentioned above has served his Club in some special capacity. Some have given interesting Lectures, others have worked hard for the good of the Club during the entire session. In my opinion each has earned his award. Mr. Hornby, our President, sends to them his congratulations and in this I am sure all Guild members will join most heartily.

For the benefit of those who are not familiar with how these awards are made I would point out that each Club is allotted two Medallions for each Winter Session. One Medallion is



SPECIAL MERIT MEDALLIONS
(*about half actual size*).

given to the member who delivers the best paper to his Club, while the other is granted to the boy who has done the best work throughout the Session. In connection with the former the subject of the Lecture is left entirely to the boy, the choice in the past having included "Engineering," "Stamp Collecting," "Astronomy," "Electricity," "Boys' Hobbies," and "Woodwork." When the paper has been read at the Club meeting it is sent to me together with any criticisms the Club Leader may care to offer. The award of the Medallion for the session's best work is at the discretion of the Club Leader.

The Medallions themselves are very beautiful in design and finish, and each one is engraved with the name of the recipient. Naturally they are much valued by the boys who win them.

Further awards will be made at the end of the present session and, as the President is desirous of encouraging Club members to win these Medallions, I trust that all Club Leaders will let me have their recommendations as soon as possible.

I have pleasure in reproducing the photograph of some of the winners of these special Merit Medallions.



Master D. Boden (right) with his brother (who is also a keen Meccano boy, and anxious to win a Medallion). Both are members of the "Dudley Meccano Club." Master D. Boden was awarded the Medallion on the recommendation of the Club Leader for having done specially good work throughout the entire session.



Master L. Hall is an enthusiastic Meccano boy and won his Merit Medallion for good all round work during the last Winter Session.



Master H. Sandall was awarded a Special Merit Medallion for his lecture on "Cameras." The lecture was well illustrated by black-board drawings, and the audience was interested from beginning to end.

The Guild Recruiting Campaign.

SPECIAL AWARDS.

In No. 21 of the *Meccano Magazine* I announced that any boy who recruited six more members to the Meccano Guild (in addition to three which he recruits in order to win a Recruiting Medallion) would be entitled to have his Medallion engraved with his name and the words "Special Award." Many boys are endeavouring to qualify for this mark of favour and I have pleasure in publishing here a list of the boys who have recently had their Medallions so engraved :—

N. Gobey, "Clovelly," Victoria Road, Cirencester.
B. Warburton, 11, Brisbane Avenue, New Brighton.
S. Elliott, 142, Beckton Road, Canning Town, London, E.16.

N. Bamforth, High Street, Codnor, Derby.
W. Barrett, 6, Irwell Street, Observatory, Cape Town, S.A.
E. Littlefair, 4, Clare Street, Halifax.

Further awards will be announced in future issues of the "*M.M.*" Particulars of the Recruiting Campaign, and a supply of application forms will be sent on request.

Club Notes.

NEW MALDEN M.C.—The Club Leader writes:—"The results of Club work are very good. The effect on the boys' work is marked: it certainly encourages them to tackle and master difficult problems Co-operation in their work produces a wonderful spirit of comradeship and self-reliance—an important factor in a boy's life—and makes men of them" A successful exhibition and concert took place on January 18, and the Club has gained a valuable addition in the person of Mr. R. H. Docwra, who has been elected Assistant Leader. *Secretary:* Master S. B. Evans, 22, Howard Road, New Malden.

ST. PAUL'S (Hammersmith) M.C.—Re-opened on January 13 with a social at which all present enjoyed themselves. The past session included individual speed tests in building, and also team work, in connection with which prizes were given. Interesting lectures have been given on "Telegraphy," "Magnetism," etc., with practical experiments, and mechanical principles have been studied. A model of the Transporter Bridge, loaned from Headquarters, proved to be of much interest. The Club has decided to take part in the Inter-Club Model Competition. Any boys living in the vicinity of this Club and who have not already joined should see the Secretary without delay. *Secretary:* Master V. J. Scott-Warrell, 41, Bridge Road, Hammersmith, London, W.6.

NEW BRANCEPETH M.C.—Winter session opened on October 8 and model building has been the main factor of the Club work. Two competitions were held, Master W. Bell and Master J. James carrying off the prizes. The Meccano lecture "Lives of Inventors," delivered by the latter proved highly interesting. *Secretary:* Master E. Furby, 9, Unthank Terrace, New Brancepeth.

ST. CEDD'S M.C. (London, E.16).—Continues to make good progress. On model-building evenings the Club Leader gives marks for the models built and the member who receives 100 marks is "top" for the evening. This causes great fun and enthusiasm. It is hoped to hold a social at the close of the session. *Secretary:* Master E. Furby, 9, Unthank Terrace, New Brancepeth.

AIRDRIE M.C.—An exhibition held recently drew over two thousand visitors and was a huge success, both socially and financially. The general progress of the Club during the two winter sessions has been excellent and the Club continues to increase in scope and usefulness. *Assistant Leader:* Master G. Henderson, "Meadowfield," George Street, Airdrie.

CHURCH OF CHRIST S.S. M.C. (Oldham).—Membership is rapidly increasing. During the winter a number of interesting lectures have been given on constructional, mechanical and electrical engineering. The Club has enjoyed a very successful session, although it suffered in the early part, by the Secretary being indisposed. *Secretary:* Master M. O. Chapman, 264, Lee Street, Oldham

ST. DAVID'S M.C. (Tonyrefail).—Excellent progress has been made and the membership continues to increase despite the fact that local conditions are not very favourable at the moment. At the conclusion of last session the boys built a Transporter Bridge from their combined outfits, and the model was exhibited in the window of a local Meccano dealer. All the members are very enthusiastic, and the Club Leader writes "I feel just as enthusiastic as the lads themselves." *Secretary:* Master W. Woolcock, 14, High Street, Tonyrefail.

LEAMINGTON M.C.—Carries on its work for the third winter and with even greater success than hitherto. The Club has now its Debating Society and its Meccano Minstrel Troupe, and it is hoped shortly to organize a Library and a Bank as well as a Summer Sports Club. Recently a very successful Exhibition of Models was arranged, and an entertainment was given by the Minstrel Troupe. Two farces entitled *Nonsense Nana* and *The Rival Barbers* were produced. The show was an unqualified success, the chief difficulty being to find room for the audience. Over 200 people were present, and a profit of £7 was made when all expenses were paid. The Club have arranged to repeat the performance early in March at the Home for Incurables and later again at a local Hospital. *Secretary:* Master G. Hare, 36, Willes Road, Leamington.

Clubs recently Affiliated.

Any Meccano boys living in districts where Clubs have recently been affiliated or are being formed, should communicate with the Secretaries at the addresses shown, with a view to joining these Clubs.

ST. FRIDESWIDES M.C. (London, E.14).—*Secretary:* Master L. Looker, 81, Abbott Road, Poplar, London, E.14.

GT. TOTHAM M.C.—*Secretary:* Master Donald Barber, Oak Cottage, Gt. Totham, Witham.

PARKSTONE CONGREGATIONAL M.C.—Under the enthusiastic leadership of Mr. R. S. Carlile this Club has every prospect of success. There are 18 members at present ranging from 9 to 15 years of age, and they meet weekly from 6 p.m. to 8 p.m. It is hoped to hold an exhibition and concert very shortly and the Club also intends to compete in the Inter-Club Model Competition. *Secretary:* Master H. Morgan, "Clare Cot," Salterns Road, Parkstone, Dorset.

HIGHFIELD (St. Martin's) M.C.—This Club has been established in connection with the local Sunday School. A special feature is being made of essays in connection with which the Club Leader is offering prizes. The Club opened shortly after Christmas and already substantial progress has been made. *Club Leader:* Mr. J. H. Drewery, 1, Little Norton Road, North Wingfield, near Chesterfield.

KNUTSFORD LECTURE HALL M.C.—Chiefly owing to the exertions of Master L. Shepherd this Club was established in October last. There are now 11 members, and meetings are held regularly. *Secretary:* Master L. J. Shepherd, Grove Lodge, Knutsford.

SOUTH KIRKBY CHURCH M.C.—This is the second Club to be established in South Kirkby. Judging from the correspondence I have received there is every possibility of it developing into a really fine Club. *Secretary:* Master E. Papworth, Lydgate Hill Farm, South Kirkby, near Wakefield.

ST. JOHN THE BAPTIST'S (Toxteth) M.C.—Opened about two months ago, this Club is steadily growing and affiliation has been granted. Everything points to a successful future. *Leader:* Mr. J. S. Lewis, 37, Blythswood Street, Aigburth, Liverpool.

SITTINGBOURNE CONGREGATIONAL S.S. M.C.—Although the present membership only stands at 11, there is every prospect of an increase in membership in the future. To this end Meccano boys desirous of joining the Club should approach the Secretary without delay. *Secretary:* Master A. W. Goodhew, 11, Faith Street, Sittingbourne.

BROMLEY COUNTY SCHOOL (Boys) M.C.—Meetings are held in the classrooms of the Bromley County School for Boys under the supervision of the Headmaster. This is a School Club only. *Leader:* Mr. Reginald Airey, County School for Boys, Hayes Lane, Bromley.

HOLY TRINITY (Blackburn) M.C.—Successfully started under the leadership of a local engineer the second Club to be named "Holy Trinity Meccano Club" has come into existence. I hope it will prove as successful as the "Holy Trinity Meccano Club" which was established in Barnsbury, London, long before the organization of the Meccano Guild. *Secretary:* Master J. Catlow, 183, Whalley New Road, Blackburn.

NORMANDALE M.C.—This Club has been established and as soon as a little further progress has been made it will become affiliated. During the summer it is proposed to play tennis and cricket, and the members are in for an enjoyable time. *Leader:* Mr. Coopland, Warren Vale, Normandale, Wadsley, Sheffield.

Clubs not yet Affiliated.

BEDFORD M.C.—This Club has only recently been established, and I hope soon to have the pleasure of affiliating it with the Guild. Good progress is being made and any boys living in Bedford who wish to join should get into communication with the *Secretary*, Master G. Allen, 12, Maryville Road, Bedford.

BISHOPS STORTFORD AND DISTRICT M.C.—When the membership of this Club increases and the necessary preliminaries are settled, affiliation will be granted. In the meantime the Secretary will be pleased to hear from any Meccano boys in the district. *Secretary:* Master K. M. Tate, "Sayesbury," Hustock Road, Sawbridgeworth.

VICTORIA STREET M.C. (Hyde, Cheshire).—Good progress is being made and an interesting lecture was given recently by the Rev. S. R. Taylor on "The Meccano World." New members will be welcomed. *Secretary:* Master H. White, 15, Victoria Street, Newton, Hyde.

ROCK FERRY (Cheshire).—Master Kenneth Cooke, 56, Cavendish Drive, Rock Ferry, Birkenhead, is doing his utmost to found a Meccano Club in this district. Any boys interested should get into communication with him immediately, as he is anxious to commence activities.

Names Wanted.

Applications for membership of the Meccano Guild (as well as correspondents generally) should be careful to see that their full name and address is shown on their form of application or on their letters. I constantly receive forms and letters without names or addresses and it is, of course, quite impossible to deal with them for this reason.

At the present moment I have before me five application forms received during the last month with the following names, and I should be glad if the boys concerned would communicate their address to me so that I may deal with their applications for membership.

Ledger, E. (Grocer) ?
Highfield, R., 38, Milton Avenue ?
Jehand, Leslie C. Church House, ?
Banks, A., 18, Redstone Road, ?
Cole, E., "Camberra," St. John's Street, ?

A Happy Day for the "Airdrie Meccano Club."

To the scope and activities of Meccano Clubs there is no end. Some Meccano Clubs have Pierrot Troups and Concert Parties, others have Debating Societies, or Stamp Collecting, Astronomical and Woodwork Sections. Outdoor work includes Football and Cricket Teams, and Rambling Parties. Meccano boys are not slow to respond to appeals for assistance for charitable objects and on many occasions during the last year considerable sums have been raised for Hospitals and other good causes.

Quite recently a number of the members of the "Airdrie Meccano Club" participated in the Centenary Procession which took place in that town. I am sure that all Meccano boys will be interested to see the above photograph taken on that occasion, and they will all wish that they could have cheered with the crowd of spectators when the exhibit of the "Airdrie Meccano Club" passed.



THE AIRDRIE MECCANO CLUB'S DISPLAY AT THE BURGH CENTENARY.

The display itself was very fine, being mounted on a lorry suitably decorated with a number of Meccano models. Conspicuously shown was a gigantic Eiffel Tower, a Roundabout and a Windmill, all worked by electricity. Four Club members in costume accompanied the models. Master G. Henderson, the builder of the Eiffel Tower, was dressed as an engineer (a part which he happily filled), while another Club member represented Meccano. A third was dressed as a clown and occasioned much amusement, while an Indian Chief (who seemed to be keeping guard over the sacred treasures of his domain) added a picturesque touch to the tableaux.

The display met with tremendous enthusiasm and the Club Leader is quite justly very proud of his Club and the part they took in the Centenary Procession.

The Correspondence Club.

Guild members have long felt that they are members of a great brotherhood of boys, each having the same kind of thoughts, sharing the same pleasures and thrilled by the same ambitions. They long to know what kind of lives other boys are living, to tell them of their own schemes and ambitions, and to exchange notes about Meccano model building and the thousand-and-one other things in which boys delight. This desire is now made possible through the medium of our Correspondence Club, and any member who wishes to join should send for further particulars. To those boys who are studying a foreign language the Correspondence Club is of particular interest, for it is very often possible to find for them a correspondent in any country in which they are particularly interested. Those boys who prefer to correspond with Meccano Guild members abroad may be provided with correspondents in the Colonies or in the English-speaking countries. Many lasting friendships have been formed through the Correspondence Club and I sincerely hope that those members who are interested will take advantage of this opportunity of exchanging letters with other Guild members. Those who are interested should write to the Guild Secretary for further particulars.

Twelve Tons at One Bite!

A Giant Electric Shovel.

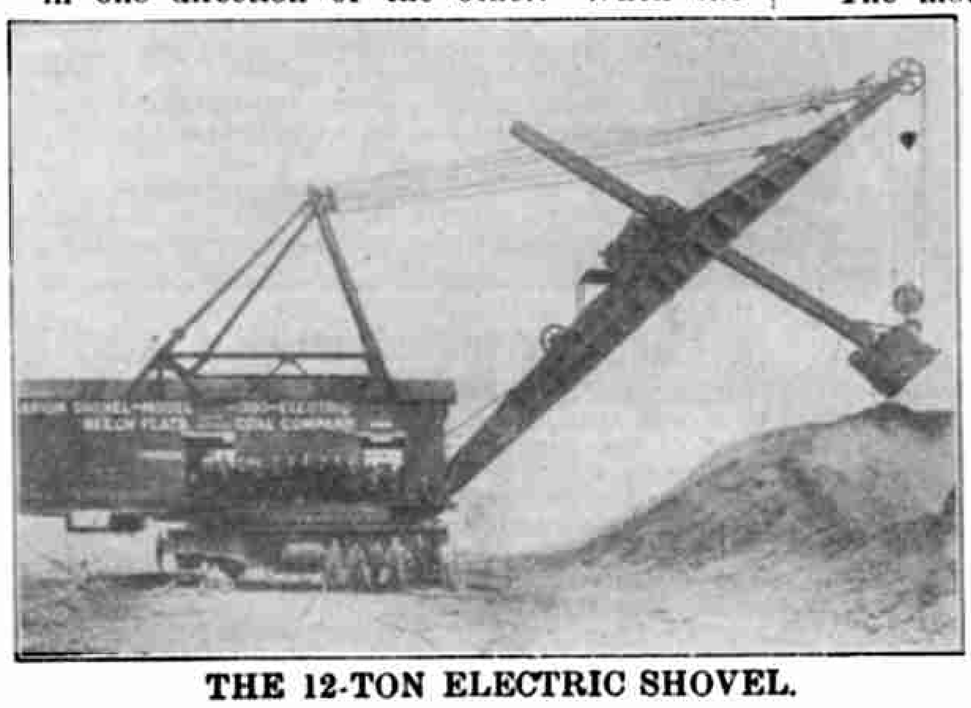
Twelve tons of earth at one bite! No, this is not the bite of a weird, prehistoric monster suddenly come to life again, but the capacity of a huge electric shovel recently installed in the iron-ore regions of Pennsylvania, U.S.A. This new implement is the largest type of shovel in the world and represents a type that will be of considerable service to engineers of the future. Its tooth-edged dipper is seven feet high and in its mouth four men could comfortably stand abreast. As it eats its way through an embankment, moving ahead day after day, it leaves behind a vast ditch with sloping sides, 206 feet across the top, 120 feet across the bottom and 65 feet high.

The handle of the dipper is 54 feet in length, the boom on which the handle works being 80 feet in length. The dipper and handle together weigh 25 tons. Although built on such giant-like lines, the shovel is not at all cumbersome as may be judged from the fact that only 40 to 45 seconds are required to complete one excavation.

These giant shovels will each dig out approximately 4,500 tons of earth in an eight-hour day. They show their superiority over the largest size of steam shovels in their longer reach, which allows them to work from one position all day. Although smaller shovels are able to make quicker bites, they lose time because they have to move ahead about twenty times a day to get closer to the work and so the loading track has to be relaid eight times a day.

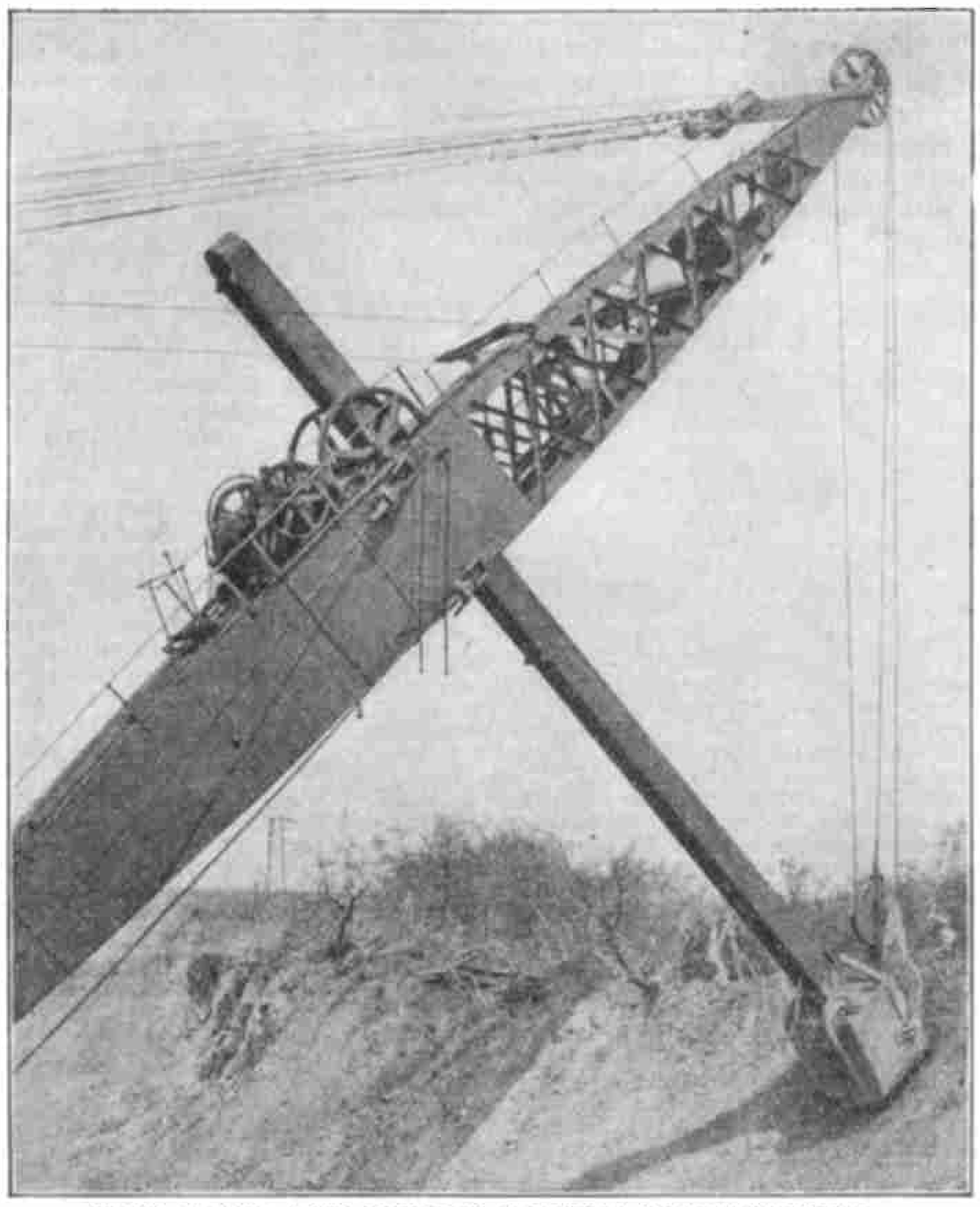
Controlling the Giant.

The shovel weighs 365 tons but requires only one man to control its movements. He is housed in a cab 50 feet in length and 30 feet in width, and operates all the machinery of this Titan with the utmost ease and without even moving from his position. With one hand he controls the lever that hoists the boom. With the other he operates a lever that drives the dipper into the bank. With his feet he works pedals that swing the boom in one direction or the other. When the boom has swung the loaded dipper to the point of unloading, the operator presses a button on the hoist lever which "trips the dipper," that is, the bottom of the dipper opens and the contents drop out. This electrical tripping of the dipper does away with the one man always necessary when steam shovels are employed. By means of another convenient lever, the operator causes the shovel to move forward on the loading tracks to a new position.



THE 12-TON ELECTRIC SHOVEL.

The following comparisons make it easier to realize the gigantic scale on which this great shovel works. In less than a minute it gouges out eight cubic yards weighing 12 tons of the earth's crust. Thus every time the capacious dipper digs into Mother Earth it extracts enough material to balance an imaginary pair of scales against the weight of nine or ten motor cars! With seven bites it could fill the living room of an average house from floor to ceiling without leaving an inch of space! It excavates at one scoop as much as would fill three five-ton trucks and at a single bite it could lift sufficient coal to supply the families of most Meccano boys for at least a couple of years!



THE BOOM AND DIPPER OF THE GIANT SHOVEL.

The accompanying photographs show the fourth shovel of this type to be manufactured. Its first week's work on an ore-bank at the Bethlehem Steel Company's works made clear the fact that it would repeat the records established by its three predecessors. The designers were especially gratified by its performance since there was a time, not many years ago, when shovels operating under any other power than steam were unthought of.

Carries its own Electrical System.

The motors operating the shovel receive power through a transmission line from a power plant, delivering electricity to the shovel at 4,000-volts. The shovel carries a miniature electrical system of its own and by means of this the electricity is transformed from alternating to direct current and is then supplied to the motors operating the various movements. Four motors perform the immediate driving operations. Two of 175 h.p. operate the hoist; one 105 h.p. motor takes care of the swing; and an 85 h.p. motor, mounted high up on the boom, thrusts the dipper into the earth.

Electric versus Steam Shovels.

A comparison between a 300 ton electric shovel and a 100 ton steam shovel shows that in a period of ten hours the electrical shovel, with its longer reach will deliver from 50 to 70 per cent. more tonnage than the steam shovel. For these reasons the electric shovel, despite its initial cost, is regarded as the shovel of the future. Not only does it embody great power, which is smoothly applied, but it is instantly and easily controlled and is very economical in operation. It is not surprising to find that the electric shovel has quickly become the successful competitor of the older type of steam shovel. Besides making one-man control possible, electric shovels have cut down the size of the crew to four men, as compared to the seven men required on a steam shovel. The crane man is entirely eliminated and even the size of the "pit-gang" has been reduced.

The electrical equipment of these giant shovels was furnished by the International General Electric Company of Schenectady, New York, and to this firm we are indebted for our illustrations.

The Meccano Manuals.



There are three Meccano Manuals of Instruction. Book No. 1 is the regular Manual which is included with the main Meccano Outfits and contains instructions for making 323 fine models. Price 2/6 (postage extra). Book No. 2 illustrates a large number of fine models and describes a series of simple scientific experiments. Price 1/3 (postage 2½d. extra).

Manual No. 3 contains illustrations and instructions for building a large number of entirely new and imposing models of great beauty. These include such interesting models as the Theodolite, Signal Gantry, Revolving and Hydraulic Cranes, Coal Cutter, Dredger, Travelling Gantry, and Twin Elliptic Harmonograph.

The price is 1/3 (postage 1½d. extra).

The Late Sir Ernest Shackleton

HIS LIFE OF GREAT ADVENTURE.

All Meccano boys read, with great regret, the news of the death of Sir Ernest Shackleton on the 5th January from heart failure. Sir Ernest died on board his ship the *Quest* off South Georgia on his way to the Antarctic, leading the Shackleton-Rowett expedition of exploration.

The expedition, which left this country in September last, is embarked on a voyage of discovery, and will cover over 30,000 miles. It is to visit various islands in the South Seas of which little is known and after searching for lost islands is then to explore the Antarctic continent. What visions this programme conjures up in every boy's mind and who does not wish that he could have been included in the crew of the *Quest?* To sail to those romantic lands, over the same seas as were explored by Captain Cook and many other famous pioneers, and finally to visit the baffling Antarctic. Those dark seas drew Shackleton's spirit as a magnet—and the very mention of the Antarctic reminds us of the tragic end of Scott's expedition, after successfully reaching the Pole in 1912, and of the solitude which is always associated with the spirit of Captain Oates, that "gallant English gentleman" who sacrificed himself in the vain endeavour to save his comrades.

The death of Sir Ernest—although a great blow and an irreparable loss—does not mean the abandonment of the expedition. It now proceeds, under the leadership of Sir Ernest's second in command—Commander Frank Wild—to carry out the plans originally made. The good wishes of every reader of the *Meccano Magazine* will follow the expedition on its long and adventurous voyage. All will eagerly await news of the successful accomplishment of its object and of the safe return of its members.

The Search for Knowledge.

Sir Ernest Shackleton was one of the greatest of the many illustrious explorers who have made the name of Britain famous and who have done so much by contributing new knowledge to British science and trade. Shackleton was a born leader of men. He constantly felt, and responded to, the call of the unknown. His main endeavour was to add something useful to the general store of human knowledge, a fact which is evident from the words he wrote on the eve of his departure from England in the *Quest* (September 17 last) when he said: "We may be only on the first rung of the ladder that leads to perfect knowledge, but unless these first steps are taken there can be no advancement of human knowledge."

Twenty Years of Exploration.

Although only 47 years of age, no less than twenty years of Sir Ernest's life had been spent on expeditions to the Antarctic. He had already taken part in three Polar expeditions, two of which he had himself led. His first expedition was made in 1901 in the *Discovery* as third lieutenant to Captain Scott, when the latter reached within 450 miles of the South Pole. In his second expedition in 1907, Shackleton took command. On



For this photograph of the late Sir Ernest Shackleton we are indebted to Lady Shackleton. It is the most recent portrait of the famous explorer.

January 9, 1909, he reached a point only 111 miles distant from the Pole and here he hoisted the Union Jack given him by the Queen. The party were only prevented from reaching the South Pole by a shortage of food. "The knowledge that with another 25lb. of biscuits and 30lb. of pemmican we could have achieved the Pole was certain, but regrets were useless," wrote Sir Ernest. In this expedition Mount Erebus, the most southerly volcano in the world, was ascended for the first time. The mountain stands over 13,000ft. high and when the party reached a height of 5,900ft. they found the temperature to be 50 degrees below freezing point! Here, for 30 hours, they were subjected to the rigours of a fearful blizzard. Undaunted, however, they toiled on to the summit of the volcano, where was to be seen a wonderful view of an active crater, half a mile wide and 800ft. deep. Volumes of steam and sulphuric gasses were being ejected to a height of over 2,000ft. above the crater.

The expedition also discovered eight mountain chains and surveyed over 100 mountains. New coasts and high mountains were located, while coal was discovered in the Antarctic continent. Some wonderful photographs were secured and a considerable amount of important information resulted. Another party from the same expedition reached the south magnetic pole for the first time in history. It is interesting to read that Sir Ernest wrote when at last he reached London: "Some of the experiences of our journey can never be effaced from my memory. It was during these periods that we learned that some Power beyond our own guided our footsteps. If we acknowledged this down among the ice—as we did—it is only fitting that we should remember it now when the same Power has brought us safely home."

(*To be concluded*)

Stainless Iron.

One of the most recent inventions is that of stainless iron. The new meta' has all the tarnish-resisting qualities of stainless steel. As everyone knows, steel is a very hard metal and can only be forged with difficulty. The new rustless iron, however, can be easily forged and turned. The discovery is an important one, not only for use in engineering structures but more particularly for articles used in our homes. We feel sure that our readers' mothers will be pleased to hear of it, for by its use all such household essentials as door-plates, handles, knockers, fenders, fire-irons, stair-rods, and the widest possible variety of kitchen utensils (even including cooking ranges) will no longer require to be cleaned and polished!

A Successful Competition.

An interesting Competition was recently organized by Messrs. Arber & Company, 159, Roman Road, Bow, London, E. A representative from Meccano Limited, judged the models and there were fifty entries divided into the classes shown below. All the Competitors evinced much enthusiasm and the models entered were of particular ingenuity. In awarding the prizes consideration was given to age, initiative, and clean work, and the Competition was so very successful that a second Competition is being held in the autumn.

	Winner.	Age.	Model.
Class A	J. Carnell	12 yrs.	Travelling Revolving Crane
Class B	J. Nelson	13 yrs.	Crane
Class C	R. Wallis	12 yrs.	Motor Lorry
Class D	C. Brand	7 yrs.	Invalid's Chair

£250 in Prizes—Meccano Prize Competition.

CLOSING DATE APRIL 15, 1922.



All Meccano boys should enter the big Meccano Prize Competition, the closing date of which is now drawing near. There will be hundreds of prizes awarded including nine cash prizes to the value of £100, and Meccano Outfits to the value of not less than £150. As was the case last year, the Competition is divided into three sections:—

1. For boys under 10 years of age; 2. For boys between 10 and 14 years of age; and 3. For boys over 14 years of age.

In addition to the prizes mentioned above, the Meccano Guild is again offering three special prizes of £5 each in cash for the member of the Guild who gains the best prize in his section. There are no restrictions nor entrance fees. Any Meccano boy may enter and the competitor who sends in a simple model made with a No. 0 Outfit stands just as good a chance of winning a prize as does a competitor who sends in a complicated model made with a No. 6 Outfit.

It is important to note that the Competition will close on the 15th April, 1922 for entries from the United Kingdom and on the 31st May, 1922, for entries from the Colonies.



Our Mail Bag.

The Editor has a little talk in this column with his readers. Whether he has space to reply to them all here or not, he is always glad to hear from them. He receives hundreds of letters each day and only those which deal with matters which are likely to interest other Meccano boys 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.

G. YOUNG (Holyhead).—Thank you for sending us a copy of your school essay in which you speak so highly of Meccano; we hope it received full marks. The six entry forms for the competition are being sent you by separate post.

LESLIE BENNETT (Liscard).—We were glad to have your "riddle-me-ree," but we are afraid it is scarcely difficult enough to tax the brains of the bright boys who read the *M.M.* Try again!

L. FROST (Biddulph).—Your criticism that most of the models which appear on the front page of the *M.M.* are rather difficult for boys with smaller outfits is quite just. Simple moodels will appear from time to time, and we hope you will like the three which are on the first page of this issue.

JOSEPH FILES (Farnworth).—We were very interested indeed to hear of your Meccano Exhibition and to learn that last year you had 80 different models submitted. We hope this year's display will be equally successful.

N. A. GOBEY (Cirencester).—Even though you are destined to be a bank clerk it is early yet to say that Meccano has not played an important part in your education. The knowledge and insight into engineering matters which it has given you, and your work in connection with your "Grammar School Meccano Club" will some day prove of value to you, we prophecy. At all events we are pleased to learn that your No. 6 Outfit continues to give you as much pleasure as ever. You have our best wishes in your career.

J. F. MITCHELL, (Brook Green, W.6).—We were interested to know that you and your friends appreciate the fact that old or damaged Meccano parts may be exchanged for new ones at half price. We wish as many boys as possible to know of this concession, for it is much more pleasurable to work with bright new parts than with rusty or damaged ones.

SIDNEY CONWAY (Trichinopoly).—We are pleased to have your interesting letter and to know something of the conditions under which you are living. Meccano evidently occupies a good deal of your own and your sister's time. We send our best wishes to both of you—and to "Zulu."

R. P. LAWRENCE (Nottingham).—You are quite right, writing in bed is a very difficult feat. We are interested to hear that the doctor approved your Meccano model and that it added to your comfort. We hope that you will soon be up and well again.

DOUGLAS IRVINE (Whakatane, N.Z.).—Many thanks for the interesting description of your trip to Auckland. We are sure you had an exciting time and we may be able to print your letter in full a little later.

Mr. C. F. D. HALL (Cambridge).—Our sorrow for your affliction is tempered by the knowledge that you derive so much happiness out of life. We know of many blind Meccano boys who all seem happy and seldom complain of what appears to be a hard lot. Blindness does appear to have a softening and humanising influence on those who are afflicted in this way and its influence seems to extend to all with whom they come in contact. We are always glad to hear from you.

Mr. E. A. BARLEY (Kegworth).—Your experience in connection with the Meccano competition that you organised in your School is by no means an unusual one. We can quite believe that the judging of 40 exhibits was a difficult matter. We trust that your forthcoming competition will be as successful as the last.

Mr. A. J. STOREY (Stoke-on-Trent).—We were most interested in hearing of your work amongst blind boys, and in knowing that the result of your experimenting with Meccano amongst them has been extremely gratifying from the educational point of view as well as that of interest to the boys. We shall be very glad to give you any assistance in our power in connection with this work.

J. E. MASON (Drighlington).—We have had so many requests for the story of Dick's visit to the Meccano Factory that we must certainly make an effort to publish it soon. Dick paid the visit and he enjoyed it very much; all that now remains is to write the story and to publish it.

Mr. J. M. FARISH (Dunscore).—"My son has built a beautiful model of a Glasgow tramcar with winding staircase like a real car, and has had it nicely decorated with holly. He has also lighted it with fairylights. His whole bent is for engineering and Meccano has been a great education for him." It gives us great pleasure to know of the enthusiasm of your boy for Meccano, and the pleasure which he derives from it. There is no doubt that the experience which he is now getting will be of the greatest possible service to him when he commences his business career.

LESLIE G. PULLEN (Birmingham).—"I take great interest in engineering, and I long to be a gentleman like Mr Frank Hornby." If you wish to follow in Mr. Hornby's footsteps, Leslie, you will have to work very hard, show undaunted courage in face of every obstacle, deal fairly and generously with all those with whom you are associated, have a friendly word for everyone, and do all the good you can. All this may call for great effort on your part, Leslie, but it is well worth the trying.

G. ROGERS (Smethwick).—"I am giving a conjuring entertainment shortly, and the children really believe I can do wonders. One boy has written asking me to produce a Hornby Goods' Train." We must congratulate you upon the intelligence of your audience. Judging from the remainder of your letter we have no doubt as to your ability to successfully perform the trick.

S. GRAHAM (Cambridge).—

"John was always buying fish and chips,
With every penny he could get,
Now he buys Meccano strips,
And has no cause to feel regret."

This was certainly a change for the better in John's habits, and both his digestion and his mind will share in the improvement. We have recorded you as our "million-and-first friend."

E. HOUGHTON (Anerley).—It was too bad of your mother to forbid you to join the Guild because you are a girl. There are thousands of girls who use Meccano, and very many of them are members of the Guild. We have no doubt you will shortly overcome all her objections.

C. W. UDALL (Birmingham).—Congratulations on your winning a scholarship at the Birmingham Technical School. It is a good idea to couple up your models to the driving wheel of the sewing machine and then treadling it, so long as your mother does not object! It is much more fun introducing an electric motor, however, and we would suggest that you try it.

T. HAYWOOD (Purley).—We note that you think the "*M.M.*" is rapidly improving. We shall continue to print illustrated articles on engineering topics and we have many new and attractive features in preparation to make our Magazine still more pleasurable to read.

S. SMITHERS (Maidstone).—Thanks for your suggestion for Meccano boys that they use Brasso for cleaning perforated strips, etc., when they get dull. There is no doubt that a little attention to the condition of Meccano parts makes a wonderful difference to the appearance of the built-up model.

A. M. EARLE (Southend-on-Sea).—Your poem commencing:—

"Perforated Strips are all slotted,
Angle Brackets are all dotted"

rhymes very nicely, but we fear the statements which it contains are not altogether truthful. The opening lines which we have quoted are not quite accutate, are they?

K. A. TAYLOR (Birkenhead).—

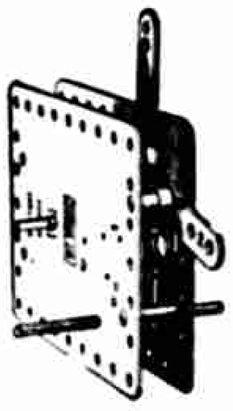
"Meccano is a very fine toy,
Made only for a very good boy,
And when to bed at night he goes
He counts the parts upon his toes
And thinks of Mr. Hornby."

We think that he would be better occupied going to sleep, Kenneth, but we can quite see that the poem would have been spoiled if he had done so.

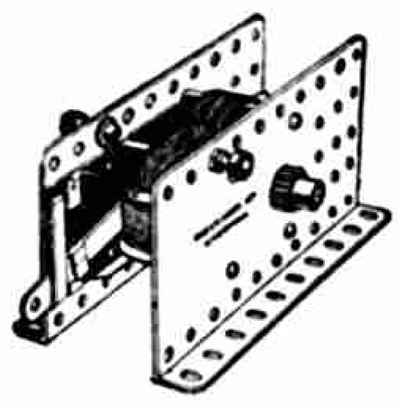
A. MACARA (Gateshead).—"Since I received your Meccano Medallion nothing but promotion has followed me. I have been made organist at our church, and am now filling a man's place in the factory where I work, besides many other minor advancements." We hope Andrew, that this is an illustration of cause and effect and that good luck will continue to follow you.

Meccano Motors.

All boys should add a motor to their Outfits, for it greatly increases the fun of the hobby and enables models to be operated in a realistic way.



Clockwork Motor. This is a splendid piece of mechanism, simple, powerful, reliable and free from danger. It is fitted with starting, stopping and reversing levers, and greater lifting power may be obtained by extra gearing made from Meccano parts. It is easy to understand, and all its movements are fully explained in the instructions which accompany it. Price each .. 9/-



Electric Motor. The use of electricity exercises a great fascination for any intelligent boy, and this motor provides him with the means of running all his models by electricity. It is well designed, simple, strong and free from danger, and suitably geared it has a lifting-power of more than 30lbs. It takes 4-volts and may be run either by an accumulator or direct from the main. Where the main current is alternating a suitable transformer may be used, but where a direct current is employed the motor may be run direct from the main by means of the Meccano Charging Board, which was announced in No. 21 of the *Meccano Magazine*. (An illustrated leaflet entitled "The Meccano Charging Board and How to Make It"—post free, 3d.—gives full details of this useful accessory.) The Electric Motor is provided with a reversing lever, starting and stopping mechanism. No more powerful or satisfactory toy electric motor has ever been designed. Price each .. 12/6

New Prices of Meccano.

No.			
0	Outfit with full instructions for building		**5/-**
1	do.	do.	**8/6**
2	do.	do.	**15/-**
3	do.	do.	**22/6**
4	do.	do.	**40/-**
5	do.	do. (Carton)	**55/-**
***5**	do.	do. (Wood)	**85/-**
***6**	do.	do. (Wood)	**140/-**

*In well finished cabinet with lock and key.

Accessory Outfits.

No.							
0a	Converting a	**No. 0**	into a	**No. 1**	..		**4/-**
1a	do.	do.	**1**	do.	**2**	..	**7/6**
2a	do.	do.	**2**	do.	**3**	..	**8/6**
3a	do.	do.	**3**	do.	**4**	..	**18/6**
4a	do.	do.	**4**	do.	**5**	..	**15/-**
5a	do.	do.	**5**	do.	**6**	Carton	**50/-**
5a	do.	do.	**5**	do.	**6**	Wood	**80/-**
Inventor's Outfit "A"					..	..	**8/6**
Inventor's Outfit "B"					..	..	**15/-**

Change of Address.

Subscribers should immediately notify the Editor of any change of address. Send a Postcard *giving the old and new address*, so that records may be kept up to date.

How to get the Meccano Magazine regularly.

The Meccano Magazine is now sold by most of the regular Meccano dealers but in order to prevent disappointment you should place an order with your dealer for a copy of each issue to be reserved for you. The price of each issue is 1d. If you experience difficulty we will mail you a copy regularly on receipt of 6d. for the next six issues, or 1/- for the next twelve.

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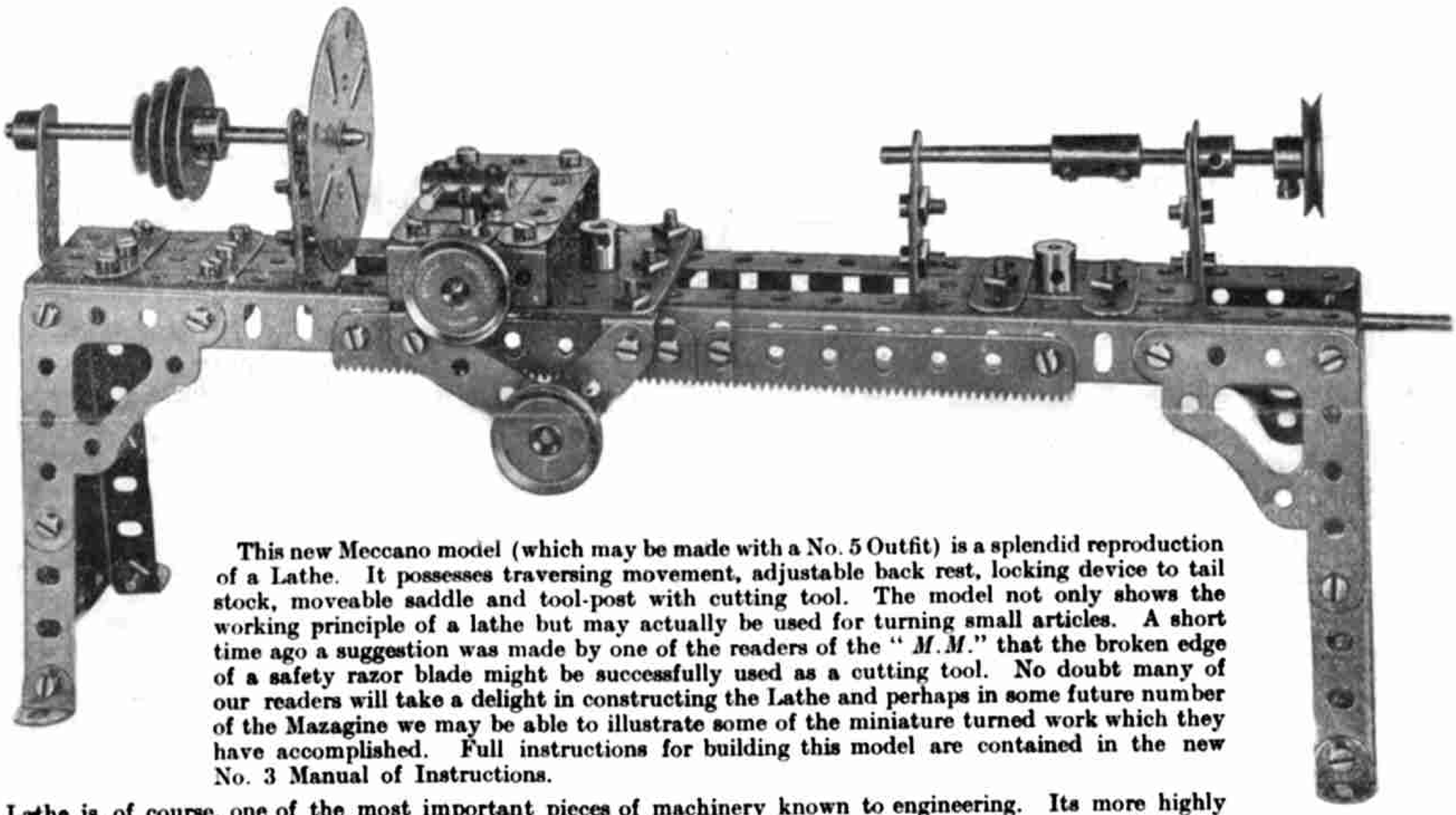


MECCANO MAGAZINE

PRICE 1d

PUBLISHED IN THE INTERESTS OF MECCANO BOYS.

A Fine New Meccano Model: The Lathe.



This new Meccano model (which may be made with a No. 5 Outfit) is a splendid reproduction of a Lathe. It possesses traversing movement, adjustable back rest, locking device to tail stock, moveable saddle and tool-post with cutting tool. The model not only shows the working principle of a lathe but may actually be used for turning small articles. A short time ago a suggestion was made by one of the readers of the "*M.M.*" that the broken edge of a safety razor blade might be successfully used as a cutting tool. No doubt many of our readers will take a delight in constructing the Lathe and perhaps in some future number of the Mazagine we may be able to illustrate some of the miniature turned work which they have accomplished. Full instructions for building this model are contained in the new No. 3 Manual of Instructions.

The Lathe is, of course, one of the most important pieces of machinery known to engineering. Its more highly developed form is the Capstan and Automatic Lathe and a large number of these machines are used in the manufacture of Meccano parts. By a series of successive operations the finished articles (such as buffers or threaded couplings) are turned out very rapidly. The machines need practically no attention except to be fed with lengths of raw material and it is a fascinating sight to watch a battery of these Lathes at work. Their action seems almost human and the spectator cannot but admire the skill and ingenuity of the engineers responsible for their design.

Editorial.

Big Competition Closed.

Our £250 Competition closed on April 15 so far as entries from the United Kingdom are concerned. Many thousands of models have been entered and the examination and adjudication, although proceeding as rapidly as possible, will necessarily take some time. We shall announce the results as soon as possible.

Play-Writing Competition.

Elsewhere in these pages attention is drawn to the fact that the Play-writing Competition closes on the 30th instant. This Competition offers an opportunity for those Meccano boys who have literary talent and a leaning to acting to show what they can do, and I have no doubt that the response will be considerable.

The New Zulu Trains.

In this issue is announced a fine new type of clockwork train and a tank loco, as well as several new trucks and wagons. These accessories add greatly to the fun to be obtained from owning a model railway.

A further announcement is also made in regard to a new type of point and the range of Meccano Rails, Points and Crossings is now considerable. A complete list will be sent on application. It is only natural for the owners of Hornby and other trains to prefer these products of the Meccano factory, for they are built for hard wear and are of the same excellent quality as is Meccano itself.

The Meccano Guild.

The Secretary of the Guild informs me that during the past winter the Guild has gone forward by leaps and bounds. He has been kept busy helping Meccano Clubs not only in this country, but also on the continent and overseas, where Meccano Clubs are increasing. It has always been my firm conviction that there is a great future before the Guild movement. The letters and reports which come from the various Clubs are full of enthusiasm and it is a delight to read them.

The Future of *The Meccano Magazine*.

I receive large numbers of letters from readers by every post, telling me how they consider the "*M.M.*" improves with each issue. In our last issue I was able to announce that the "*M.M.*" would be published monthly during the last four months of the present year (September to December). Some splendid features are in store for future issues, including photographs of a large number of such engineering appliances as cranes, bridges and

Editorial—(*continued*).

locos, in which Meccano boys delight. There are also some fine new Meccano models waiting to be announced. Every reader should see that his subscription is renewed or that a standing order is placed with his Meccano dealer.

Photographs Wanted.

As mentioned in the last issue of the "*M.M.*" I am always pleased to consider photographs for publication in these columns and to pay for those that are used. Numbers of photographs are submitted from time to time, but the work is not of a very high standard. With a view to further encouraging followers of the hobby I am announcing a Photographic Competition in this issue and I trust that all Meccano boys who have cameras will enter.

Honour for Mr. Hornby.

I feel sure that readers of the "*M.M.*" will be pleased to know that our Managing Director, Mr. Frank Hornby, has been elected President of the British Toy Manufacturers Association.

A Photographic Competition

GET OUT YOUR CAMERA!

There is no more interesting hobby than photography and now that summer is approaching there will be renewed activity in the dark room.

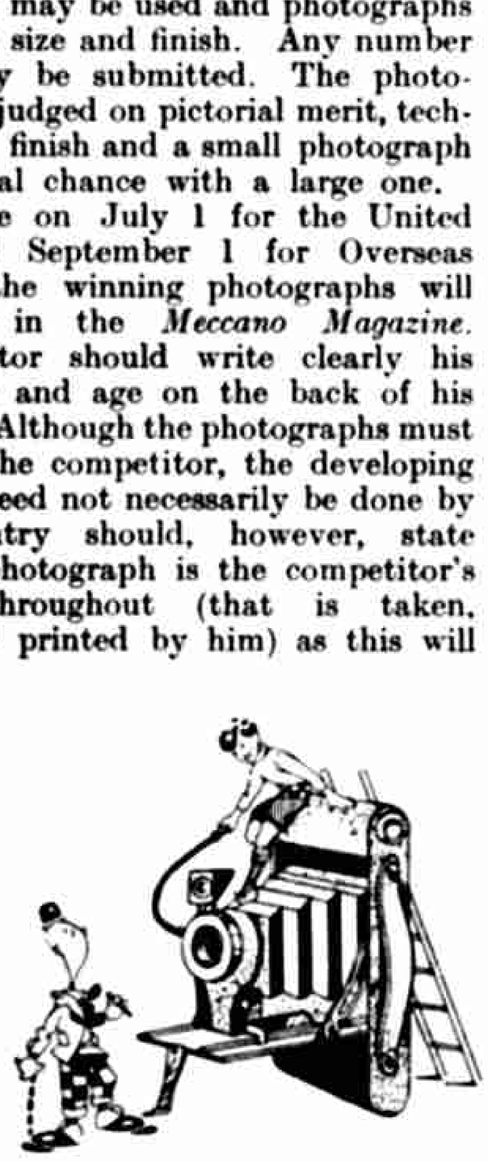


With a view to encouraging Meccano boys in this direction we announce a Photographic Competition. The First Prize will be a No. 1 Hornby Clockwork Train set, the Second Prize a Tin Printed Clockwork Train set. The Competition is divided into the three following sections.

(1) ARCHITECTURAL (photographs of churches, castles, abbeys, etc.).
(2) NATURE STUDY (photographs of birds, trees, animals, etc.).
(3) MISCELLANEOUS (landscapes, seaside views, groups, machinery, engines, etc.).

There are no restrictions whatever. Any type of camera may be used and photographs may be of any size and finish. Any number of entries may be submitted. The photographs will be judged on pictorial merit, technical skill and finish and a small photograph stands an equal chance with a large one.

Entries close on July 1 for the United Kingdom and September 1 for Overseas readers and the winning photographs will be published in the *Meccano Magazine*. Each competitor should write clearly his name, address and age on the back of his photograph. Although the photographs must be taken by the competitor, the developing and printing need not necessarily be done by him. The entry should, however, state whether the photograph is the competitor's sole work throughout (that is taken, developed and printed by him) as this will be taken into consideration when making the award.



A further special Holiday Essay and Photographic Competition will be announced in the July "*M.M.*"

New Meccano Parts.





57B. Loaded Hooks.. .. ..each 5d.
136 Hand-rail supports (with nuts) „ 3d.



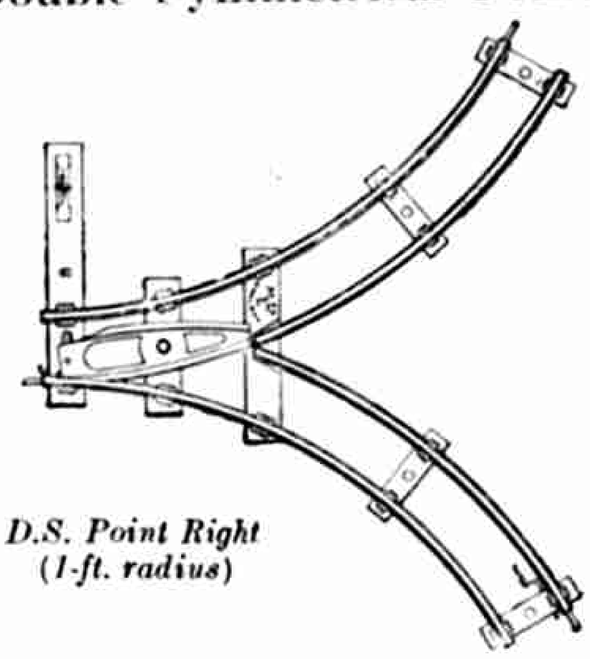
137 Wheel Flanges—for converting (by attachment) No. 109 Face Plates into Wheels .. each 4d.

Useful Wheels

We have a number of pressed wheels suitable for trollies, carts and other models. Our stock is limited and our readers are advised to take advantage of this offer immediately, as the stock will quickly be exhausted.

Road wheels, 2" in diameter, with collar and set screw. Price per set of four—9d. post free

Double Symmetrical Points.



D.S. Point Right (1-ft. radius)

(For 2ft. diameter circle).

		each—s.	d.
DSR1 (1ft. radius) ..	..Right	4	0
DSL1 („) ..	..Left	4	0
(For 4ft. diameter circle)			
DSR2 (2ft. radius) ..	..Right	4	0
DSL2 („) ..	..Left	4	0

Good Things in Store.

We feel sure our readers will be interested to hear that our future issues will contain many good things, amongst which are included:—

"THE LATE SIR ROSS SMITH AND HIS WORLD-FAMOUS FLIGHT."

"MECCANO IN A GERMAN PRISON CAMP" (by a British Officer).

"HOW MECCANO HELPED TO INVENT A MOTOR CYCLE" (by Lt.-Col. McKechnie).

"THE NEW *PACIFIC* TYPE G.N. LOCO."

"THE *MAJESTIC*, THE LARGEST LINER IN THE WORLD."

HOLIDAY ESSAY AND PHOTOGRAPHIC COMPETITION.

Clever Young Journalist

EDITS *The Star*.

We have pleasure in publishing a photograph of Master Alexander C. Forrester, of Loundoun House, Maxwell Park, Glasgow.

Master Forrester is publisher, editor, printer and distributor of a one-man magazine called *The Star*, issued every month.

The Star—one of the brightest results of amateur journalism we have seen—contains 22 closely typed pages, with a 12 page advertisement supplement. It is artistically



MASTER A. C. FORRESTER IS A KEEN MECCANO BOY.

illustrated by line and water-colour drawings, contains adventure stories, school stories and many other interesting items.

Master Forrester is to be congratulated not only on the quality of his publication but also on its long life, for it has been issued without a break since April 1919. He takes a just pride in the fact that *The Star* has never been even one day late in coming out.

Master Forrester has our every good wish for a long continuance of his work and a successful future for his magazine.

The British Industries Fair.

H.M. THE KING ADMIRES MECCANO

Most of our readers will have read of the great British Industries Fair held at the White City recently and we are sure that every Meccano boy wishes he could have seen the wonderful toys there exhibited. All the latest productions were shown, including many wonderful novelties, particulars of which cannot be given at present as they must remain secret until they are seen in the toyshops next Christmas.

The extent of the exhibition may be judged from the fact that if all the stands had been placed in a straight line they would have extended for 3½ miles. Over 200 tons of timber and 15 tons of nails were used in their erection!

Meccano, Ltd., were of course represented, a splendid display of models and Hornby Trains being exhibited. H.M. the King paid a visit to the stand and admired the Meccano model of the Forth Bridge over which Hornby Clockwork Trains were running. The extreme strength of the permanent way over which the trains ran was revealed when one of the Meccano representatives (who weighed over 11st.) stood upright on the rails crossing the bridge.



BRIGHT IDEAS

These columns are reserved for dealing with suggestions sent in by Meccano users for new parts, new models and new ways of making Meccano model-building attractive. We are always pleased to hear from any Meccano boy who has an idea which he considers will be useful in the Meccano system.

STEVEN FRANKLIN (Chiswick).—Up to the present we have discovered no use for a curved slotted strip. The purpose is served by our present 2½" curved strip. A self-centring chuck on the lines you suggest would not be possible with existing Meccano parts. It would have to be made specially and the great expense would not be justified. See our reply to J. C. Hill.

NORMAN WALLIS (Guigong, N.S.W.).—Perhaps some day we shall turn to the manufacture of boats, Norman, but not yet awhile.

N. STEPHEN (Aberdeen).—All our Models are under complete revision. Model No. 43 is now fitted with two guide ropes. Our No. 2 Manual contains models covering all Outfits. Regarding your difficulty with Model No. 50, we suggest you wait until our new 0-3 Manual is ready. The detail given is very clear and should require no special description.

JOHN W. DARLING (Delamere, Shanklin).—A clear description of the lock-nutting principle is given in diagram D at the back of the complete Manual, page 129. Its employment is shown in diagram N.

HUGH ROWLAND (Middlesboro').—Our rails are being made adaptable to most existing makes of rails.

FRANK BARLING (Hythe).—See our reply to D. W. Richardson, Hastings, *re* circular saw.

WM. L. SMITH (Bootle).—See latter part of our reply to B. Ruck, Swansea.

J. W. TRENAMAN (Ealing, W.).—We think existing Meccano parts could be adapted to the two shapes you suggest. The feature of Meccano is its adaptability.

ANDY STENNING.—We are afraid we cannot see any advantages to a 6" diameter gear-wheel. Have you found any uses for the slotted angle girder?

J. L. CANDLET (Tulse Hill).—We think your trapezoidal braced-girder has only one specific use. We design all our parts for standard use as far as possible.

V. G. SOUTH (London).—A double flanged plate, such as you suggest, may have some use and we shall consider it.

R. ANDERSON (Palmerston, N.Z.).—We propose issuing a separate flange for attachment to the face plate for making engine driving wheels. With the addition of the threaded boss to which the connecting rod may be fixed, a very good representation of a driving wheel can be made.

W. A. BECKETT (Birmingham).—We shall consider your suggestion for half circle bent plates to form cylinders, etc.

ALEC J. BINNIE (Wadsworth).—We would suggest that you use a pivot bolt to form a bearing for connecting coupling strips to your flanged wheels. We already have under consideration your suggestion for a double crank.

E. JORDAN (London).—We are always pleased to have suggestions and shall consider the eight-wheeled corridor (as an addition to the Hornby train system) and also your other suggestions.

I. BONFIELD (Hull).—We consider the present sprocket chain is quite strong enough. If it were to be made of thicker material to give extra strength, as you suggest, it would not engage correctly with the teeth of the sprocket wheels. Rails with wooden sleepers have not the same stability as those of our present type and, moreover, they are not so adaptable to mass production.

A. TENNYSON (Rotherham).—Such a strip as you mention has an ornamental use only. We endeavour to adapt all parts to general use.

W. R. FAIRWEATHER (Lozells, Birmingham).—Although the curved braced-girder would have its uses confined more or less to bridges we shall give it consideration.

JACK ROYDS (Reading).—We do not see the point in your suggestion for a coupling fitting the winding spindle at one end and a rod at the other. In designing a model containing a clockwork motor the position of the motor can generally be so arranged as to make it accessible to the ordinary winding key.

J. DONALD (Uddingston).—Any photographer would supply you with the information. We could not enter into the subject through the medium of the "*M.M.*"

LEWIS COLES (Wantage).—We are shortly placing on the market various types of trucks and two-way points.

J. D. ROWLEY (Greenwich).—We have already added additional lengths of screwed rods to our list.

ALAN L. A. VINER (Coventry).—We do not think a split bearing such as you suggest would be practical, but we shall give it consideration. We have under consideration the introduction of helical-gear wheels which we think will meet your purpose.

HERBERT MOSSMAN (Hammersmith).—We illustrate a Model Tank in our No. 2 Manual and we presume your suggestion for tubes is to represent guns. We shall consider the matter.

BERNARD HOBDEN (Battle, Sussex).—Your list of suggestions covers so wide a field that we are afraid we cannot reply in detail. Some of them have their points and these we shall consider.

ROBERT J. CAMP (Walworth, S.E.).—As we think your suggested shoulder bolt might be useful under circumstances requiring locking nuts we shall certainly consider it.

R. WOLFE (Wolverhampton).—The principle shown in your sketch is precisely the same as that of the Meccano Charging Board. We shall deal with this subject when our electrical Manual comes under revision.

R. S. ELIJAH (Dharwar).—Flat strip brushes are unsatisfactory for use with motors requiring power. Further, they quickly wear out through constant sparking.

THOMAS SPENCER (Bury).—It will not be a difficult matter for you to make a slight alteration in the construction of the jib top to accommodate the 1in. pulley wheel.

G. SLAIRMAND (Darlington).—A compression spring can be made by extending the present spring. We are re-designing the clock movement and hope to have this ready shortly.

GILBERT WILKS (Maida Vale).—A 6½in. rod may be made by a 4½in. and 2in. rod joined by a coupling. We scarcely see any advantage over our present wormwheel in a wormwheel to fit a 1in. pinion.

HAROLD GREY (Farnworth, near Bolton).—Perhaps some day we may issue longer strips to correspond with the long girders. The crank is weakened by placing a hole in it. We suggest gripping the end of the cord by means of a clip or attaching the cord to a collar.

LESLIE STABLES (Keswick).—The clockwork movement in the Hornby engine would not be sufficiently powerful to drive Meccano models.

H. TRICKWELL (St. Martin's, Guernsey).—We already list threaded rods varying from 11½in. to 2in. These have more possibilities than your suggested rod threaded only at the ends.

Q. H. O. HARRIES (Frinton-on-Sea).—We are at present designing a clockwork motor on the lines of a gramophone movement. This will have the advantage of greater power and length of run. We shall consider the possibilities of your suggestion regarding concentric gears. We announce in this number a flange for attachment to faceplates. Would not this also serve the purpose of your suggestion embodied in Fig. 6?

JACK CANE (London, S.W.).—We propose introducing various train accessories this year.

H. C. HASTINGS (London).—The 3in. pulley wheel makes a very suitable motor-car wheel with the addition of a rubber ring to represent a tyre. This is illustrated in our special leaflet of the Motor Chassis model.

ERIC MARRIAGE (Witham, Essex).—Your suggestion for a curved rack strip appears sound. We shall be interested to see its application in the model you are making for the competition.

ERNEST MILLER (Glasgow).—Your suggestion for a right angle bracket will receive consideration.

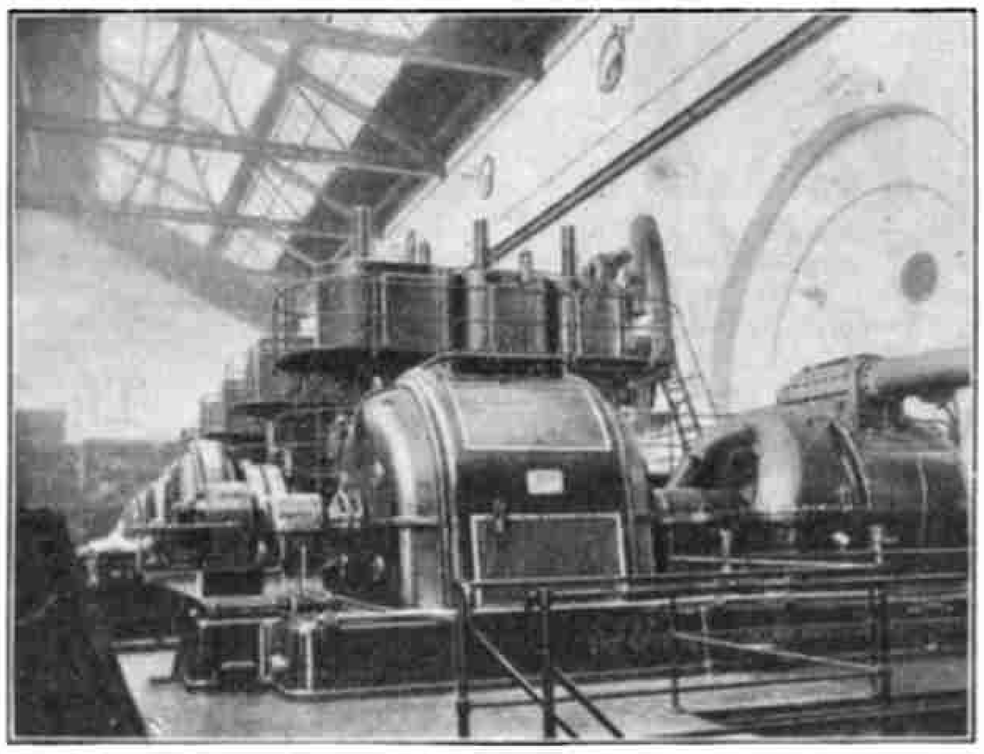
B. GREENHILL (S. Woodford).—Does your first suggestion refer to a bush wheel or a pulley wheel? If the latter we already list 2" and 3" pulley wheels. If the former, what advantages have you found it to possess over our present bush wheel or face plate? Similarly with your 1½" roller, have you found it has any advantages over our present 1" roller?

R. TEMPLE (Ludlow).—We shall consider your suggestion of a double crank shaft. Incidents of screws awkwardly placed are scarcely numerous enough to warrant the introduction of a special tool for dealing with them.

R. HARRISON (E. Molesay).—We adopted cord stays, etc., as being much easier of employment than wire.

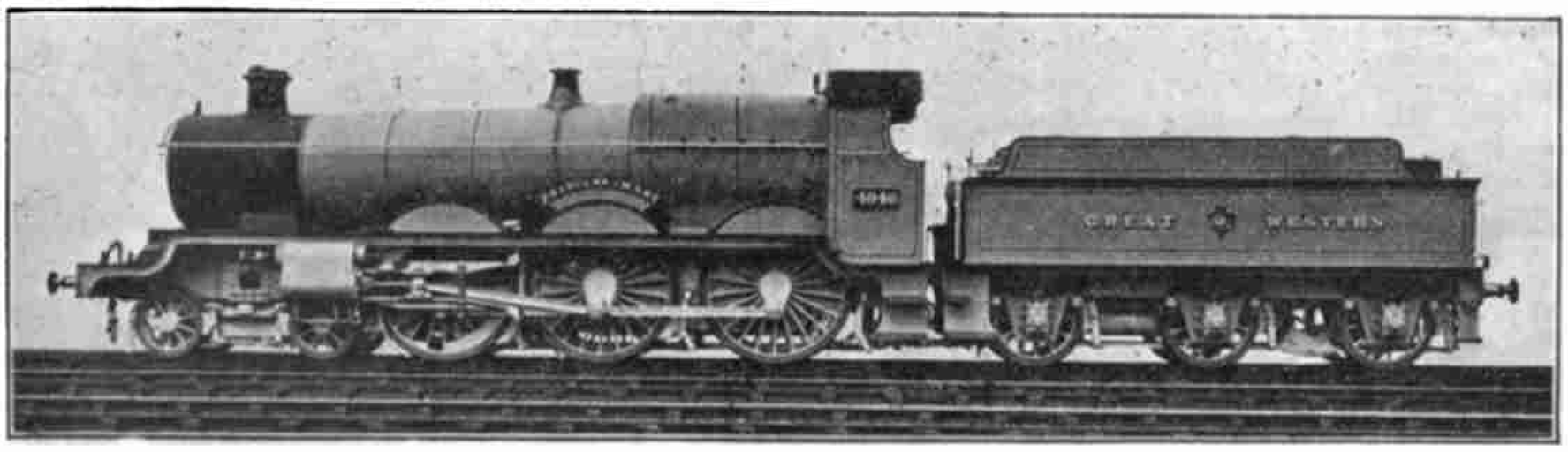
(*Continued on page 8.*)

An Electric Generating Station.



The above interesting photograph (contributed by Master Alan Russell, of Market Rasen), illustrates a line of alternating current dynamos in the Summer Lane Electric Generating Sub-Station at Birmingham. The dynamos are driven by Belliss Triple Expansion engines and the station is mainly used for supplying current to the trams in the city.

The Great Western Railway Locomotive "*Princess Mary.*"



Photograph by courtesy of [*Great Western Railway Co.*

Our illustration shows the fine G.W. loco "*Princess Mary.*" To this loco was allotted the happy task of conveying H.R.H. Princess Mary and Viscount Lascelles from Paddington to Shifnal, after their wedding. The train consisted of five coaches and it is an interesting fact that the preceding train out of Paddington was drawn by the engine "*Prince of Wales*" and that the one following the "honey-moon train" was drawn by the "*Prince Albert.*"



The Secretary's Notes.

The Close of the Winter Sessions

Now that the light evenings are here, attention is again turned to outdoor pursuits. Meccano boys are naturally healthy boys and the bright sunshine lures them to the woods, to camp; to the river, to row, to swim and to fish; to the cricket field; to the road, to cycle or to walk and to all the other joys of life that call to boys when the days are fine.

The last two sessions have been splendidly successful and all Club members throughout the country have worked hard for the good of their Clubs. Most of you intend to carry on during the summer months and I hope that all your Sports Clubs, Rambling Parties, Picnics, etc., will be as much enjoyed as have been the pursuits of the recent busy indoor sessions.

The Photographic Competition

I hope that all those Guild members who possess cameras will enter for the Photographic Competition announced in this issue. The scope of the competition is unlimited. If you are a lover of old castles, churches or abbeys, send in your entry under the "Architectural Section." If you study the ways of birds or the beauty of trees and flowers, your entry should come under the section of "Nature Study." If on the other hand you are more interested in the rattle and roar of machinery, or any of the other thousand-and-one subjects which cannot be classed separately, forward your entry under the "Miscellaneous Section."

Club Membership Cards

As announced in the last issue of the Magazine a further supply of membership cards was printed owing to the repeated number of requests I received for them. This supply is now practically exhausted and if there are still any Clubs without cards they should communicate with me without delay. When these membership cards are exhausted it is not intended to print more, until the commencement of the next winter session.

Lectures for Meccano Clubs

By the end of the summer I hope that a number of interesting lectures will be available for the use of Meccano Clubs. The lecture *Lives of Inventors* proved very popular last winter and I hope to be able to add others. Further information concerning these will be published in these columns later on.

A Warning.

I have several times had occasion to warn Guild members against begging letters received from abroad, and as the practice seems to be on the increase I am again mentioning the matter. The letters come principally from native boys on the West Coast of Africa who see the names and addresses of Meccano boys in the *Meccano Magazine*, either as prize-winners or in connection with the Guild. Sooner or later they ask for presents of fountain pens, silk handkerchiefs, etc., and offer to exchange native baskets and monkey-skins. I advise all Meccano boys to ignore communications of this type. If any doubtful correspondence is received it should at once be forwarded to me.

The Inter-Club Model Competition.

Successful Entries.

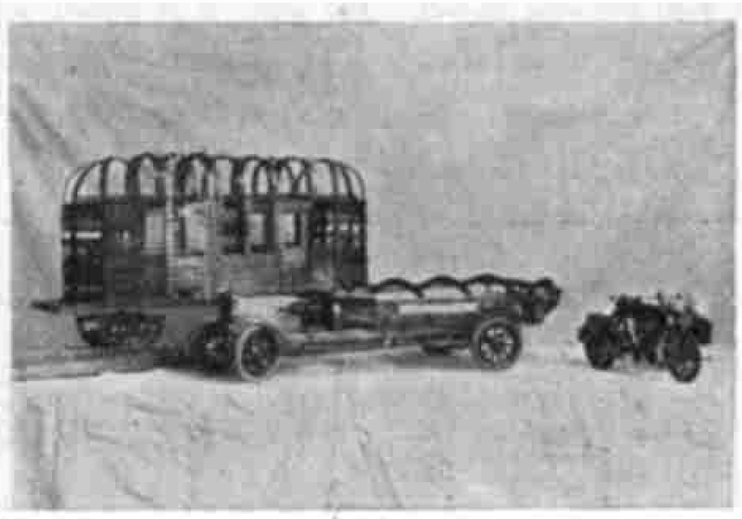
It is with great pleasure that I am able to announce the result of the above Competition which closed on March 31. As in previous years the entries submitted have been of a very high standard and the difficulty of adjudication has been considerable. As three of the models submitted are of almost equal excellence it has been decided to combine the two awards of £5 and £3 and to divide the sum between the three Clubs concerned.

The successful Clubs are:—New Malden Meccano Club ("Travelling in Three Periods—Past, Present, Future"); Kilmarnock (Riccarton) Meccano Club ("The Forth Bridge"); and Norwich Enterprize Meccano Club ("Meccano Town").



TRAVELLING IN THE PAST.

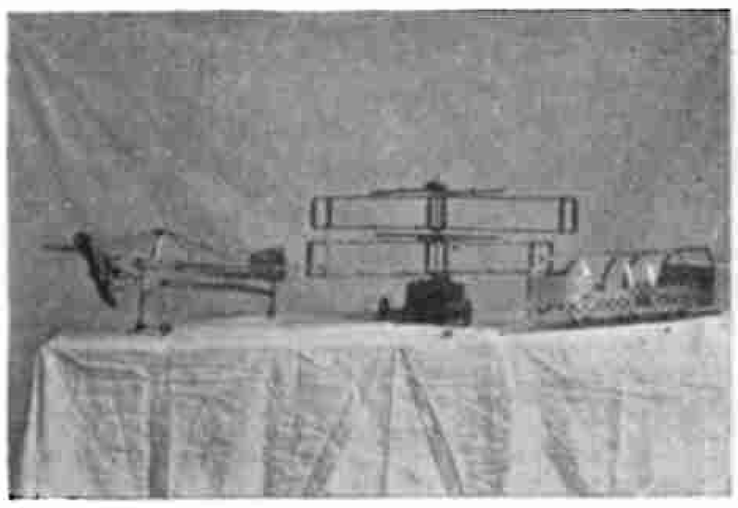
The New Malden Meccano Club's entry illustrates early methods of travel when journeys were made by stage coaches and, later, by early railways—represented by a model of the famous "Rocket." Travelling in the present progressive age is illustrated by means of such services as char-a-banc, electric loco. and motor cycles and side cars. The conveyances of the future are represented by the aeroplane, helicopter, and monorail.



TRAVELLING TO-DAY.

The Kilmarnock Meccano Club's model of the Forth Bridge, a very fine structure, is designed somewhat on the lines of the illustration appearing in the No. 22 Magazine.

The "Meccano Town" of the Norwich Enterprize Meccano Club is a complete reproduction in miniature of a busy town. A



TRAVELLING OF THE FUTURE.

transporter bridge spans a river on which a barge and a steam tug are busily at work, with a sailing ship looming in the distance. On the river banks, gigantic cranes lift and lower their loads, while the town itself includes such details as a railway station, tramcars, and even a church surrounded by grounds laid out with grass and sanded paths.

Many other interesting models were submitted, and of these the following are honourably mentioned:—Hammer Head Crane (Jarrow-on-Tyne Meccano Club), Aeroscope (Parkstone Congregational Meccano Club) and Aerodrome comprising Aeroplanes, Aeroplane Hangers, Searchlights, etc. (St. Thomas (Exeter) Meccano Club.)

Special Merit Medallions.

In the last issue of the "*M.M.*" I announced the award of Special Merit Medallions to twenty-seven Club members, who gave interesting lectures or rendered special service to their Clubs during the past session. I have pleasure in reproducing two further photographs of winners of these Special Merit Medallions. Two Medallions are allotted to each Club each session and I hope to announce further awards in the next issue of the "*M.M.*"



Master Barton Warburton, the energetic Secretary of the Liscard High School Meccano Club, who won his Special Merit Medallion on the recommendation of the Club Leader for good all-round service to the Club, extending over several sessions.

Master W. Grindley of the St. Mary-with-St.Gabriel Meccano Club was awarded the Special Merit Medallion for delivering two very excellent lectures on Printing Machines. He is shown wearing his Medallion.



Club Notes.

BUTE (S. Australia) M.C.—Some very interesting lectures were given last session by the Rev. F. Barnes and Master Bryant. The balance in the bank is increasing rapidly and altogether very favourable progress is being made. *Secretary:* Master F. Barnes, Bute, South Australia.

LEAMINGTON M.C.—Continues to make excellent progress. As it is the Club Leader's belief that "Enthusiasm runs the show" there is no lack of spirit in this Club. An exhibition and concert was arranged to conclude a most successful session. To this was invited the President, Lieut.-General Sir John Keir, the members of the Leamington Juvenile Committee and parents and friends of the members. The company were delighted and surprised by the members' display of talent in entertaining and also by the mechanical skill demonstrated by the splendid models. An impromptu concert included part songs, recitations, vocal and instrumental music. A Cinema entertainment was given by the Secretary, the programme including *The Gaumont Graphic*, *The Opal's Curse*, and *Ham in the Harem*. A Sports' Club has been arranged for the summer months. *Secretary:* Master G. M. Hare, 26, Willes Road, Leamington.

BUCKFASTLEIGH M.C.—The members have had a very enjoyable session and are looking forward to some enjoyable outings during the summer months. Rambles, picnics, and cycle runs are being arranged. It is hoped to produce the play *Nonsense Nana* in the open air some time this summer. *Secretary:* Master H. J. Parsons, Bell Cottage, Buckfastleigh, S. Devon.

ST. THOMAS (Exeter) M.C.—The programme for the past session included games evenings, model building and a number of interesting lectures. Major Rodwell who takes a great interest in the Club work (and has given lectures on more than one occasion) has kindly offered to allow the members to hear a Parisian Wireless Concert. In addition, enjoyable afternoons have been spent in football and it has been suggested that next year the Club should enter a team in one of the minor leagues. Picnics, cricket, and visits to local places of interest have been arranged for the summer months. *Secretary:* Master C. L. Bowyer, 5, Silver Terrace, Richmond Road, Exeter.

LISCARD HIGH SCHOOL M.C.—Has made splendid progress. Popular lectures have been given by Mr. Samuelson on "Electric Cars," "The Motor Cycle" and "Electricity." The session ended with a good balance in hand. *Secretary:* Master B. Warburton, 11, Brisbane Avenue, New Brighton, Cheshire.

WELTEVREDEN (Java) M.C.—The enthusiasm of this Club continues to increase and the membership now stands at thirty-three. The work of the Club has attracted the attention of an inspector of one of the local Secondary Schools who is contemplating the formation of Clubs in connection with the Secondary Schools of Java. *Secretary:* Master R. E. Pilet, Raden Salehlaan 54, Weltevreden, Java, Dutch East Indies.

KNUTSFORD LECTURE HALL M.C.—The first meeting of the Club was held in the Knutsford Lecture Hall on 20 January last. The first session, which has been very successful, included an interesting lecture on "Natural History" by the Leader. The session closed with a social evening at which tea was followed by a competition. The winners were Masters G. Merril and L. Shepherd. *Secretary:* Master L. Shepherd, Grove Lodge, Poft Road, Knutsford.

CARSHALTON AND DISTRICT M.C.—Have had a very enjoyable session, although the attendance has been low during the concluding meetings. Interesting lectures spread over three meetings were given on "Electricity" by the President. A lecture on "Practical Bee Keeping" by a local gentleman was illustrated by lantern slides. *Leader and Secretary:* Mr. E. H. Atkins, 46, Mill Lane, Carshalton, Surrey.

SMALL HEATH (Birmingham) M.C.—The session finished with a most successful exhibition and concert, the whole programme being provided by members with the exception of the pianist. The Club motto is "Be thorough in all you undertake to do, even if it is the negative action of sitting quiet to give others a fair chance" and all the members are doing their utmost to live up to it. Arrangements are being made for outings during the summer months. The Club are greatly indebted to Miss Edge, who has helped considerably in carrying on the meetings and in the Club work generally. *Secretary:* Master W. Edge, 131, Whitehall Road, Small Heath, Birmingham.

ST. DAVIDS (Tonyrefail), M.C.—The session closed with a successful exhibition and it is hoped to arrange a cricket team for the summer months. *Secretary:* Master W. F. Woolcock, 14, High Street, Tonyrefail.

GT. TOTHAM (Witham) M.C.—After two successful sessions it has been decided to hold meetings once a month during the summer. The members are keen and enthusiastic and it is hoped to produce the play *Nonsense Nana* very shortly. *Secretary:* Master D. Barber, Oak Cottage, Great Totham, Witham, Essex.

TONBRIDGE M.C.—To this Club is due the honour of having the first printed Club magazine. In a very interesting four page number I read that "On Tuesday evening of each week members of the Meccano Club, under competent leadership, may be seen busily erecting models of original design, or discussing models already built. Those who have watched the rapid growth of the Club cannot but be convinced of its popularity. The Club has now been in existence for two years, and has a roll of over forty members. This rapid growth has necessitated a removal from the old Clubroom in Barden Road." I congratulate the Club on its growth and its continued enthusiasm, and welcome the appearance of this new Club magazine. *Secretary:* Master W. Struckett, 23, Woodfield Road, Tonbridge, Kent.

NORWICH ENTERPRIZE M.C.—The last session was more successful than any before and in addition to the summer programme of picnics, rambles, cycle runs, photographic excursions and competitions, cross country runs, etc., it has been decided to hold regular meetings once a month. *Secretary:* Master J. Trevor Sutton, Burlingham House, nr. Norwich.

ST. MARY WITH ST. GABRIEL M.C.—A new Secretary has been elected in the person of Mr. Curle. The winter session has been more successful than any held hitherto, and there is every prospect of this success being maintained. *Secretary:* Mr. C. Curle, 37, Pullens Buildings, Peacock Street, London, S.E.

ST. CEDDS (London E16) M.C.—This Club continues to make good progress. Model building evenings have been very popular although quite a number of small competitions have been held also. *Secretary:* Master S. Elliott, 142, Beckton Road, Canning Town, London E.16.

MANORHAMILTON M.C.—Excellent progress has been made throughout the last session and the attendance has been good. A very successful concert was held towards the end of the session. *Secretary:* Master J. Leonard, Main Street, Manorhamilton.

Clubs recently Affiliated.

ORMSKIRK WOLF-CUB M.C.—Started in connection with the Wolf-Cub Pack of the Ormskirk and District Boy Scouts Association, this Club has made an excellent beginning. An Exhibition is being arranged for 1st April, at which it is proposed to illustrate the Coaling Industry, and among other models will be a working mine in miniature. *Secretary:* Senior Rover-Mate Chas. Walsh, 111, Wigan Road, Ormskirk.

BUCKFASTLEIGH M.C.—This Club was formed in December last with 15 members, and rapid progress is being made. *Secretary:* Master H. Parsons, Bell Cottage, Buckfastleigh.

JARROW-ON TYNE M.C.—Originally founded some months ago, this Club has now qualified for affiliation. The last session was very successful and an exceedingly interesting Lecture was given by Master G. H. A. Murray on "The Planets," for which he was awarded a Special Merit Medallion. *Secretary:* Master G. Stevens, Gorden House, Field Terrace, Jarrow-on-Tyne.

MANORHAMILTON M.C.—Although this Club has been in existence for some time it has only recently become affiliated. The members hope to perform the play *Nonsense Nana* in the near future. *Secretary:* Master J. Leonard, Main Street, Manorhamilton, Co. Leitrim, Ireland.

OBSERVATORY (South Africa) M.C.—This Club, mentioned in the last issue of the "*M.M.*" has now become affiliated with the Guild. All the members are keen and enthusiastic and some good times lie ahead. *Secretary:* Master W. Barrett, 6, Irwell Street, Observatory, Cape Province, South Africa.

SURBITON HILL M.C.—This Club has made an excellent start and I feel sure that the future will see it developing into one of the finest in the Guild. *Secretary:* Master L. W. J. Warren, 16, South Place, Surbiton Hill.

GRIMSBY CENTRAL M.C.—The session has included lectures, model-building evenings and a competition. At present the membership stands at twenty-three and this is very encouraging for a new Club. *Secretary:* Master Vernon Perry, 37, Littlefield Lane, Gt. Grimsby.

ROLLESTON (Burton-on-Trent) M.C.—The present membership is thirteen and the members are keen and enthusiastic. There is every prospect of the Club being very successful. *Secretary:* Master Phin Toon, Sherbourne House, Tutbury Road, Rolleston, Burton-on-Trent.

HUNTSPILL M.C.—The Rev. C. E. Pizey of the local Church has kindly consented to become the Club Leader of this Club and as the boys are very enthusiastic everything promises well for the future of the Club. *Secretary:* Master A. Hunt, West Huntspill, nr. Bridgwater.

OAKLANDS (Motherwell) M.C.—With an enthusiastic Club Leader and enthusiastic members the prospects of this Club are indeed bright. The members are very interested in the Recruiting Campaign. *Secretary:* Master L. A. Ford, Oakland, Catherine Street, Motherwell.

KILMARNOCK (Riccarton) M.C.—Although only recently affiliated, this Club has entered a very fine model for the Inter-Club Model Competition. Good progress has already been made in every direction. *Secretary:* Master A. Todd, 96, Campbell Street, Riccarton, Kilmarnock.

RUSSELL TOWN (Bristol) M.C.—Established in connection with the Russell Town Congregational Sunday School and thirteen members were enrolled on the first night. A fine Meccano competition was organized in connection with the Church Bazaar at Easter. *Secretary:* Master A. Palfrey, 16, Church Road, Redfield, Bristol.

SHIPBOURNE (Tonbridge) M.C.—Started with the help of the Tonbridge Meccano Club good progress has already been made, and a joint exhibition held on March 22 was very successful. *Leader and Secretary:* Mr. W. C. Cooksey, Marchurst, Tonbridge, Kent.

GULGONG PUBLIC SCHOOL BOY MECHANICS M.C.—(New South Wales)—Established in connection with the above school, the members meet regularly at the school. There is every prospect of this Club developing into one of the finest in Australia. *Secretary:* Master N. Wallis, "Yarrawin," Gulgong, New South Wales, Australia.

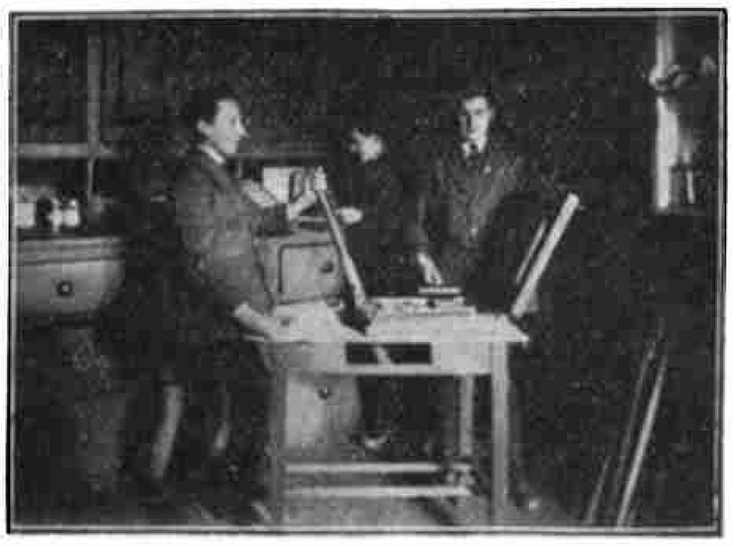
Club not yet Affiliated.

FELINFOEL M.C.—A very promising Club has recently been established in Felinfoel and I hope soon to have the pleasure of affiliating it with the Guild. In the meantime, any boys desirous of joining should communicate with the *Secretary:* Master H. J. Lloyd, "Ynyswen," Felinfoel, nr. Llanelly.

Meccano Club's Printing Press

AT KENYON HALL COLLEGE.

The members of the Kenyon Hall College Meccano Club are fortunate in that their studies include several practical subjects, one of which is printing. Kenyon is fourteen miles to the west of Manchester and the principal, Dr. J. Mastin, is also the Leader of the Meccano Club.



CLUB MEMBERS WITH THEIR PRINTING PRESS.

The above photograph shows three of the members at work with the "Adams" hand press. This machine is capable of printing up to foolscap size and the boys print their own notepaper, envelopes, postcards, circulars, etc., turning out some very excellent work. They also receive instruction in such practical subjects as the use of the soldering iron, mending leaks in pipes, fixing washers on taps, and learn to sole and repair their own boots with the aid of a complete boot-repairing outfit installed at the College.

The motto of the Club is *Si je veux, je peux* ("If I will, I can") and this spirit imbues everything the boys undertake.

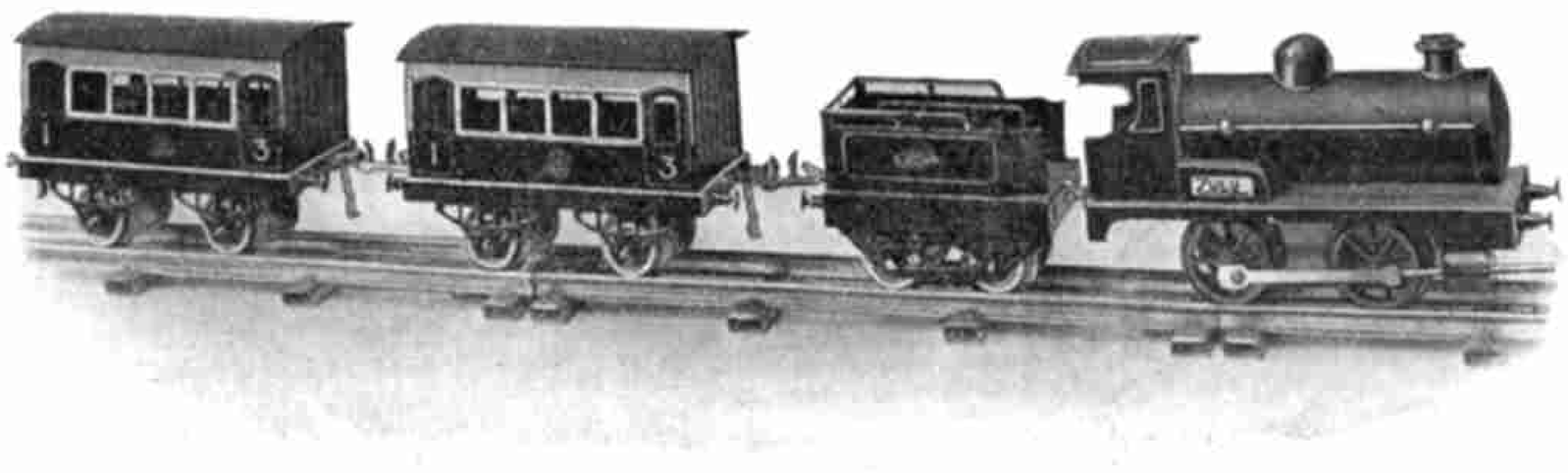
Sport is also a great feature of the Club including gymnastics, boxing, fencing, cricket, football, hockey, tennis, croquet, bowls, running, etc., under the supervision of Dr. Mastin, who is himself an athlete.

Masters J. W. Mayhew and J. S. Kelsall, two of the members, were recently awarded Special Merit Medallions.

Play-Writing Competition.

Entries are being received for the Play-writing Competition announced in the last number of the *Meccano Magazine*. The closing date of the Competition is May 30, 1922, so that there is yet time for any one interested to enter. Cash Prizes to the value of £5 will be awarded for the best efforts submitted with further awards for others showing special merit. It is important to remember that bare outlines for plays should not be submitted for this Competition. The play should be fully written out and arranged as nearly as possible on the correct lines. The scene and plot may be laid anywhere, although the play itself should in some way turn or bear upon Meccano.

Zulu Clockwork Trains.



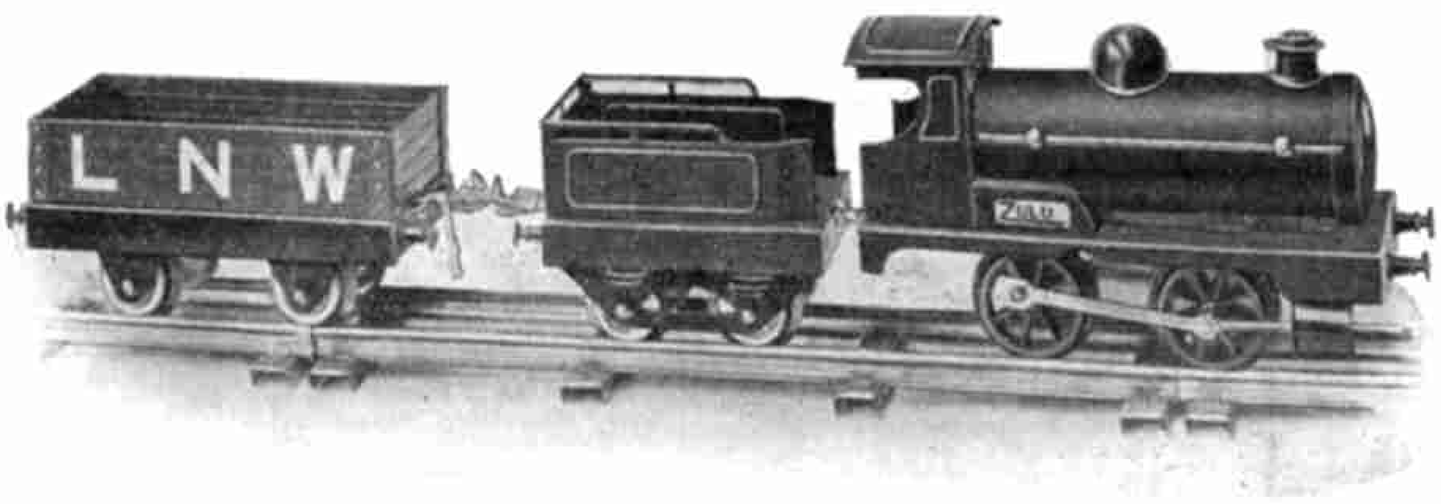
ZULU PASSENGER SET

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

Each set contains Loco Tender, two passenger Coaches and set of Rails, including a two-foot diameter circle and two straights. Gauge O, in black only.
Price 25/-.

Zulu Goods set as above but containing one wagon in place of passenger coaches.
Price 18/6.

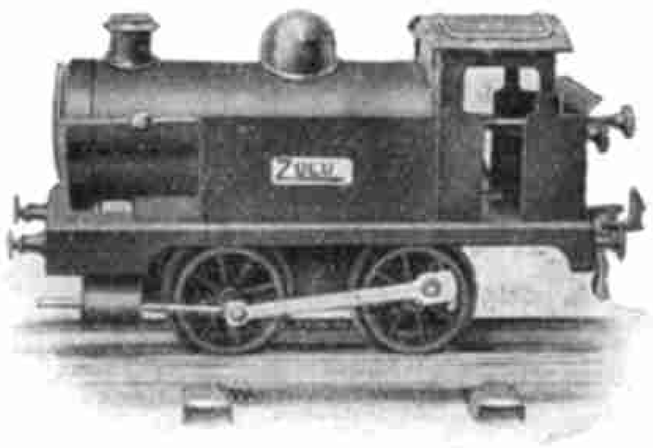
		s.	d.
Zulu Locos	.. .. .. each	10	6
Zulu Tenders	.. .. .. „	2	6
Zulu Passenger Coaches	.. .. „	5	0
Zulu Wagons	.. .. .. „	3	0



ZULU GOODS SET

Zulu Tank Loco.

A strong and durable loco capable of any amount of hard work; richly enamelled and highly finished; fitted with brake and governor; non-reversing. Gauge O, in black only. .. .. .. Price 12/-



Guarantee.

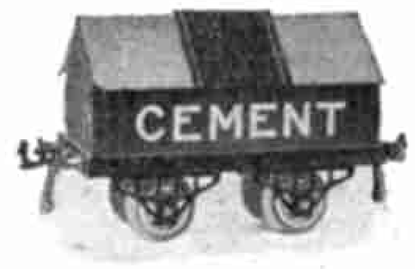
The Zulu Train is tested and its efficiency is guaranteed. A form of guarantee is furnished with each loco, in which we undertake to repair or replace it, at our option, if it fails to run satisfactorily from any other cause than misuse, within 60 days of date of purchase.

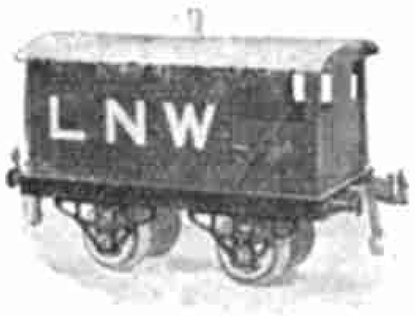
Clockwork Train Accessories.

Gauge 0.



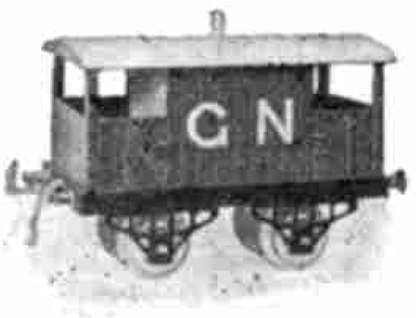
PETROL TANK WAGONS
In red, lettered gold.
each 3/6

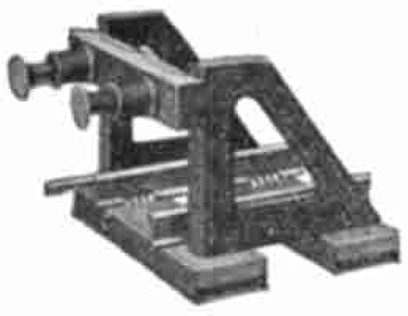




BRAKE VANS
Finished in colour to represent G.N. & L.N.W. systems .. .. each 4/-

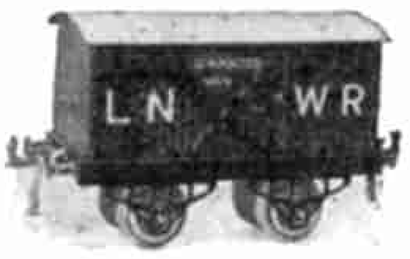
CEMENT WAGONS
Enamelled in colour,
each 4/6





GUNPOWDER WAGONS
Finished red .. each 4/-

SPRING BUFFER STOPS
Enamelled in colour.
each 2/-



The Late Sir Ernest Shackleton

HIS ADVENTURES IN THE ANTARCTIC

(concluded)

Shackleton next sailed for the South in the *Endurance*, leaving England before the outbreak of the war in 1914. It was decided to spend the winter in the Weddell Sea. Here terrible difficulties were encountered. The ship forced her way for over 1,000 miles through the pack-ice, but at last she became immovably fixed in the ice, drifting with it.



Photo by courtesy of [*Mr. Wm. Heinemann*

THE *ENDURANCE* FROZEN IN

The ice piled itself up to a height of 20ft. close to the ship, the pressure steadily increasing meanwhile and blocks weighing 20 tons were constantly thrown on to the ship. Sledges were placed on the deck with stores of food and the dogs were got into training, in case anything should happen to the ship.

THE LOSS OF THE *ENDURANCE*

On one occasion the *Endurance* was thrown on her beam ends in ten seconds by the movement of the ice. Eventually the pressure of the ice was so terrific that it crushed the ship, pushing out the stern and forcing the deck forward. By the courtesy of the publisher of Sir Ernest's famous book *South* (which every boy should read) we are able to reproduce a photograph of the *Endurance* as she appeared after thus being crushed by the ice.

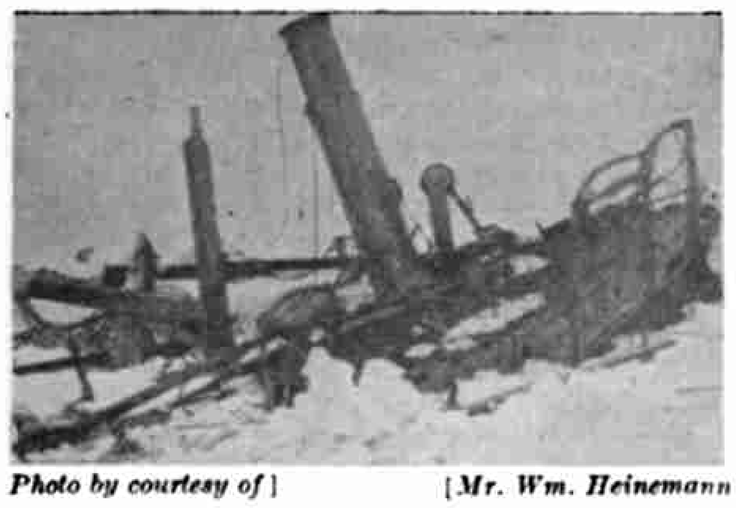


Photo by courtesy of [*Mr. Wm. Heinemann*

THE SHIP AS SHE APPEARED—CRUSHED BY THE ICE

After the disaster to the ship the crew landed on the ice and made an ocean camp and, having taken off all the scientific records, photographs, etc., it was decided to abandon the ship. Soon after this decision had been made the *Endurance* sank, leaving the camp isolated and floating on the ice. Fortunately the explorers had taken the precaution to keep with them the small boats and for two months they drifted on the ice. As soon as the ice broke up, however, they took to the boats and attempted to reach land. The nearest point was 346 miles distant and it was not reached until the following April when the voyagers landed on Elephant Island, after incredible hardships including intense cold, long nights, heavy blizzards, shortage of fuel and worn-out tents. Despite these difficulties the men were not discouraged for Sir Ernest kept up their spirits.

A DARING VOYAGE IN AN OPEN BOAT

After a brief respite he set out, with five volunteers, on what seemed an impossible voyage in an open boat, to obtain relief. Their objective was South Georgia and for 14 days they were constantly drenched with icy water and had to battle with snowstorms and gales. At last they sighted land, but they were so exhausted that it was not until a week later that Sir Ernest and two others were able to proceed on the second stage of their journey. This entailed a 36-hours' continuous scramble over glaciers, mountain ridges and snowfields, at a height of over 4,000ft. above sea level. The distance across the island was 30 miles and this was the first time it had ever been crossed.

The outposts of civilization were at last reached and a whaler from South Georgia took Sir Ernest to the Falkland Islands. From this point relief was sent to his three companions, who were brought in. "It was the Chilian Government," Sir Ernest wrote, "that was directly responsible for the rescue of my comrades. This Southern Republic was unwearied in its efforts to make a successful rescue and the gratitude of the whole party is due to them."

The expedition did not reach the Pole but in many ways it did important work of great scientific value, especially in clearing up the mystery of the Weddell Sea, previously described as being "the least known of all the seas."

THE PRESENT EXPEDITION

One of the most remarkable facts regarding the present expedition is the small size of the boat chosen for the voyage. The ship, aptly named the *Quest*, is a trim and stout little craft of only 125 tons. Of her Sir Ernest wrote: "Should anything happen in the ice it will have nothing to do with anything wrong with the ship. *The ship is all right.*" She is equipped with the most modern scientific apparatus including a wireless telegraphic and telephonic installation and also carries a seaplane.

EARLY TROUBLES

On the first part of her voyage she encountered exceedingly rough weather and across the Bay of Biscay had to battle with the enormous seas and heavy gales. At one time Sir Ernest did not leave the bridge for five days together. At another, the sea was so rough that no food could be cooked for many days, for owing to the violent motion of the ship no liquid would remain in any open-mouthed receptacle. Two of the crew became seriously ill from continual sickness and later were obliged to return home. This was not all, however, for the *Quest* experienced engine trouble and although a tug was sent from Lisbon to assist her, it was unable to face the mountainous seas and the little ship had to struggle to the shelter of the Tagus alone. After repairs had been carrfed out the *Quest* set off again, encountering even worse weather on her way to Madeira. Subsequently further engine trouble developed, and on reaching Rio de Janeiro new masts were fitted and other repairs effected. The *Quest* left Rio on December 17 last and it was on January 5 following, when the little vessel was off South Georgia, that Sir Ernest suddenly expired.

"NEVER THE LOST ENDEAVOUR"

In the loss of this gallant explorer every Meccano boy will feel a personal bereavement, for Sir Ernest Shackleton was a great Englishman. Courageous, cheerful and of unfailing



Photo by courtesy of ["*The Daily Mirror*"

THE LATE SIR ERNEST ON BOARD THE *QUEST*

This is one of the last photographs taken of the famous explorer and was a snapshot obtained on board his ship, when moored in the Thames, a few hours before she sailed.

resource, he never asked his men to perform a task which he would not have been the first to carry out himself. He shared every hardship with them and never exposed them to unnecessary risk. His determination to "win through" is well expressed in his farewell words to one of his friends

> "Never for me the lowered banner;
> Never the lost endeavour."

He was loved by all his men and although he was in name a commander he was always first a friend. We cannot pay too high a tribute to the memory of this great man and his wonderful example of courage, perseverance and determination will for ever remain before us.

(THE END.)

A Strange Superstition.

Some 200 miles south of Khartoum, a great work is in progress. This is the construction of the Sennar Dam on the Blue Nile. The stone for the Dam is being obtained from the granite quarries of the Segadi mountain. On this mountain are two large stone pillars representing human figures and called by the natives the King and Queen. The native Soudanese are Mohammedans and have a queer superstition that these two monuments are good spirits. Engineers have to exercise great care when blasting the rock so that nothing shall happen to the King and Queen, for any accident would be serious. The natives believe that should they be injured disaster would inevitably follow.



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 and 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.

J. C. PALMER (Uttoxeter).—Your riddle in rhyme is quite well constructed, but the answer is very obvious and most Meccano boys would guess it at once. We shall be glad to receive your article on Wireless Telegraphy.

P. BUNDY (Newbridge).—We are always pleased to hear of successes gained by Meccano boys and we congratulate you on passing your musical examination with such a high percentage of marks. We hope you will have a similar success in your woodwork examination. Many thanks for your kind wishes.

Mr. PERCY PARR (Bearwood).—We hope that your son's enthusiasm for Meccano does not worry you too much. We are quite sure that you appreciate the good which will result from his Meccano training and trust your efforts to form a Meccano Club in your neighbourhood will be successful.

H. BEANE (Gosport).—It pleases us very much to know that the knowledge you have acquired in listening to the lectures at your Meccano Club has been the means of your gaining such a splendid success in your science examination. It is just this side of the Meccano Clubs' activities that our secretary is so anxious to cultivate. Scores of interesting and helpful lectures are being given to Meccano boys every week during the winter months.

Mr. A. BARRACLOUGH (Bournemouth).—We are far from grudging the time we spend in writing to boys. We know that they very much like to hear from us and we endeavour to make our letters as helpful and interesting as possible. Your boy's letters to us are always welcome.

B. FISHER (Bournemouth).—You will find an announcement of a special binder for the "*Meccano Magazine*" in another column of this issue. Judging from the frequent requests for something of this kind that we regularly receive from boys, we have no doubt that the "*M.M.*" binder will be in great demand. Thanks for poetry which we may be able to use later.

J. LOCKHART (Handsworth).—Although you are 15 and have a lot of homework and other things to do, we think you are wise in keeping up your interest in the Meccano hobby. We are pleased to hear that you are getting along so well at your new school. We hope to be able to put you in touch with a suitable correspondent in France. You have our best wishes for your success in our big model-making competition.

H. A. LANKEY (Blandford).—A Club Secretary who flies into a temper and throws ink pots around is rather a dangerous individual and you were no doubt wise in appointing someone else. We are pleased to hear that your Club is making good progress.

A. PATTERSON (Pretoria).—Any Meccano Guild member whose badge has become damaged or lost may have it replaced by sending an application to the Guild Secretary accompanied by 7d. in stamps. We shall always be glad to hear of the doings of the "Pretoria Meccano Club."

D. JONES (Cheltenham).—We shall be very pleased to hear from your friend Rhona any time she cares to write to us. The Guild Recruiting Campaign is still open and the beautiful medallions are well worth winning and treasuring.

R. G. HECTOR (Birmingham).—We have had under consideration the introduction of special frames for the Guild Certificate, but the cost of postage and the risk of damage are so great that the scheme is scarcely practicable. Most Guild members have their certificates framed locally and no doubt this is the more economical way.

DONALD BARBER (Great Totham).—

"Meccano is a glorious toy
Just the thing for every boy,
From early morn till late at night
A Meccano boy is always bright.
If he joins the Meccano Guild
He will with happiness be filled
For every Guild boy, old or young,
Has tons of pleasure, tons of fun."

We are glad to print your nice piece of poetry. Some day we hope to publish a photograph of the Meccano Factory in the "*M.M.*", but owing to its situation it is rather difficult to secure a satisfactory view except from the air.

G. B. ORTON (Liverpool).—As you say, a secret code is scarcely necessary for Meccano boys, but we can quite understand that cryptography is a very fascinating study. "Aok arldt nnll okb gufhy ocro." The code from which this message to us is taken is a particularly interesting one and we wonder if any Meccano boy is clever enough to discover the meaning of the sentence.

E. TOWNSHEND (Bournville).—You will find "Meccano Products" this year an even better book than the last edition. It will be full of inspiration for the brainy boy. We are sorry we have not room for your poetry although it reads very nicely.

BRYAN SMITH (Rathmines).—Thanks for photograph of yourself in your fancy dress. We are not surprised to learn that it has gained you two prizes. You might send on your negative and we will endeavour to find a corner to reproduce your photograph in the "*M.M.*"

R. H. HALL (Knaresboro').—Meccano is a purely English toy invented by Mr. Hornby and manufactured in Liverpool. We trust that this information will allay all your doubts and fears.

LESLIE BENNETT (Liscard).—We are very interested to know that out of 36 boys in your class, 24 took Meccano as the subject of their essay on "My Favourite Hobby." Thanks for your puzzle which we may use later.

C. EVANS (Oakville, Ontario, Canada).—We are sorry you have had so much difficulty in obtaining Meccano parts. You will be interested to know that we have just opened a Meccano Depot at 11, Colborne Street, Toronto, and in case of any difficulty you might write there. Thanks for poetry which is very good, but scarcely suitable for the "*M.M.*"

Magazine Binder



In response to numerous requests we are introducing a spring-back binder for "Meccano Magazines." The binder has a strong stiff back, covered with imitation leather, tastefully tooled. It takes a large number of copies and keeps them neat and clean. In black, lettered gold. *Price 3/- each post free.*

Bright Ideas—(*continued*).

G. B. DENTY (Bristol).—See reply to A. La Viner on helical-gears. We allow 50 per cent. on old parts in exchange for new.

JACK DANIELS (High Wycombe).—Why not use the boiler and funnel of a Hornby Loco. It is sold separately and may be bolted to a Meccano plate.

ARTHUR HAGUE (Mossley Hill).—It would not be practical to adapt the present Hornby Loco. to a funnicular railway. A specially designed mechanism is necessary for this purpose.

ALBERT STACEY (East Ham, E. C.).—We shall keep your suggestion in mind for additions to the Hornby train system. We intend issuing a petrol tank and buffers shortly.

V. THOMAS (Shirebrook).—We do not think the uses of a U bolt are universal enough to warrant its introduction as a separate part. We are sorry to hear you have hurt your right hand and hope it will soon be better.

PHILIP BROWN (Leeds).—Various articles of engineering interest are inserted from time to time in the "*M.M.*" We have in hand an article on locomotives which will be inserted as space permits.

JONES (Penzance).—As each hole represents half an inch surely it is an easy matter to arrive at the size of the strip.

S. H. THOMPSON (Seamore).—Later this year we intend introducing an Electric Loco. of 4-volts, similar in type to our No. 2 Hornby Loco.

ALEC BURNETT (Camden Town).—Your Meccano veteran is very ingenious. It is an advantage for our adjudicators to have a photograph or model of entries to the Competition.

JOHN and DAVID ASTON (Sandford St. Martin).—Most of the parts you suggest are already included in our list. The others will have our consideration.

ALBERT TIMS (Hockley).—We shall consider the parts you suggest but it would help us if you were to give us some idea of their application.

C. R. BROAD (Wadsworth).—We are about to introduce a flange which may be attached to our present face plate forming a larger flanged wheel than our No. 20.

ARTHUR HEAL (Bath).—We are already experimenting with a connection for the crank shaft.

W. E. PRITCHARD (Prestwich).—We would like some further particulars as to the application of the spiral spring you suggest.

J. C. HILL (Ilkeston).—We doubt the usefulness of your suggested threaded collar. Our face plate may be used as a chuck for a lathe by securing threaded bosses to it.

W. G. SYMONS (Streatham).—We have already illustrated in No. 18 Magazine a type of sharp pointed pliers which we consider most suitable for joining or separating Meccano Sprocket Chain. We sell electrical parts separately and shall endeavour to arrange to have them included with our regular parts in the price lists. At the present time we are hard at work revising all the models illustrated in our regular manuals and bringing them up to date. After this has been done we intend dealing with the Electrical Manual.

JOHN B. HOOPER (Eastbourne).—We think the boiler of our No. 1 Hornby Loco. would serve your purpose. It may be purchased separately and may be attached to a rectangular plate.

New Prices of Meccano.

No.			
0	Outfit with full instructions for building		5/-
1	do.	do.	8/6
2	do.	do.	15/-
3	do.	do.	22/6
4	do	do.	40/-
5	do.	do.(Carton)	55/-
*5	do.	do.(Wood)	85/-
*6	do.	do.(,,)	140/-

*In well-finished cabinet with lock and key.

Accessory Outfits.

No.							
0a	Converting a	No. 0	into a	No. 1	..		4/-
1a	do.	do.	1	do.	2	..	7/6
2a	do.	do.	2	do.	3	..	8/6
3a	do.	do.	3	do.	4	..	18/6
4a	do.	do.	4	do.	5	..	15/-
5a	do.	do.	5	do.	6	Car.	50/-
5a	do.	do.	5	do.	6	Wood	80/-
Inventor's Outfit "A"					..	..	8/6
Inventor's Outfit "B"					..	..	15/-
Meccano Clockwork Motor						..	9/-

A Successful Meccano Competition.

A very successful Meccano model-building competition, recently held in Great Yarmouth, by Messrs. T. Fielding & Co., Ltd., 18, King Street, brought a very large number of entries, no two of which were alike. Many of the models proved so ingenious and of so high a general standard that the judging was indeed a difficult task. After very careful consideration the prizes were awarded as follows:—

	Name	Prize
1st	R. Baker	Horizontal Engine
2nd	W. Tuck	Steam Engine
3rd	J. Breeze	Meccano Motor
4th	L. Burman	Meccano Parts

After the competition the models were on show in Messrs. Fielding & Co.'s windows and attracted much attention and were the object of considerable admiration.

Change of Address.

Subscribers should immediately notify the Editor of any change of address. Send a Postcard *giving the old and new address*, so that records may be kept up to date.

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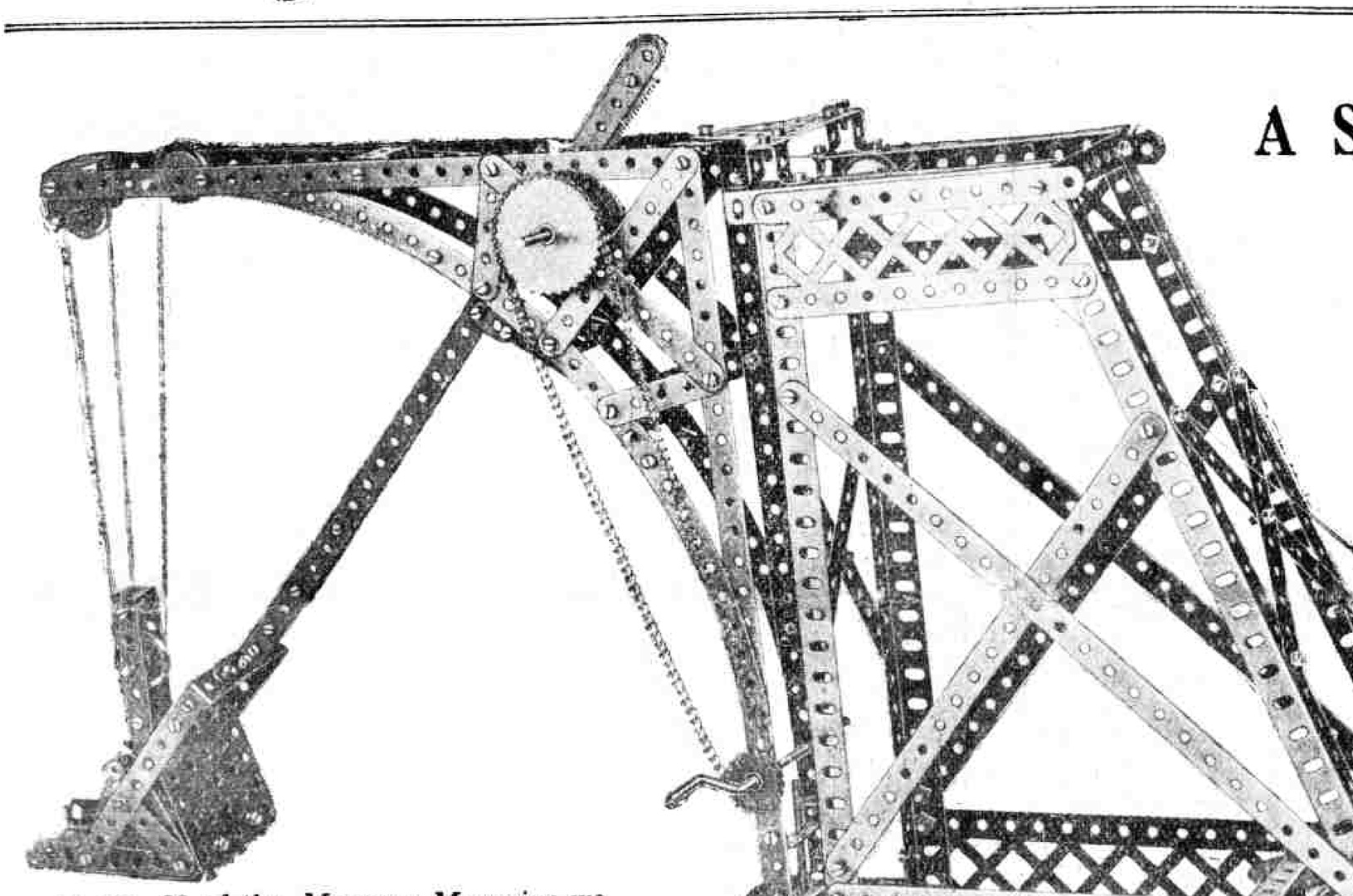
No. 25. JULY—AUGUST, 1922.



MECCANO MAGAZINE

PRICE 1d

PUBLISHED IN THE INTERESTS OF MECCANO BOYS.



A Splendid New Model

Mechanical Navvy

In No. 23 of the *Meccano Magazine* we described a Giant Shovel, and we now illustrate a splendid new Meccano Model of a similar type of machine.

Mechanical Navvies are used specially for excavation purposes, and they were particularly employed in making the Panama Canal. Indeed, it has been said that without the aid of gigantic steam shovels of this type, the construction of the Canal would not have been possible.

As our illustration shows, the hoisting of the bucket is effected by a Meccano Clockwork Motor, while a hand-operated crank handle actuates the gearing that in actual practice causes the bucket to dig into the embankment that is being removed. Some of these shovels scoop up as much as 12 tons of earth at one bite, and in an eight-hour day will excavate some 4,500 tons of earth, thus marking a great advance over the old methods of spade and pick.

Every Meccano boy will delight in constructing this beautiful model. Full instructions for building same are contained in the No. 3 Manual of Instructions.

Editorial.

Summer Activities.

Meccano boys are by no means idle during the summer, and although model-building is mostly reserved for the long winter evenings, there is a considerable amount of experimenting now going on, and many boys are continuing their work in this direction. During the fine evenings, a greater interest taken in outdoor pursuits. This is only as it should be, and I am always pleased to have reports of their outdoor activities from readers of the "*M.M.*" In this connection, the Guild Secretary informs me that many Meccano Clubs have again formed cricket teams this season, and that reports show they are everywhere having a very successful time.

The New £250 Competition.

A further big model-building competition will shortly be announced. Full particulars will be included in the next issue of the "*M.M.*"

Meccano Rails, Points and Crossings.

There is practically no limit to the number of rail formations that can be made with Meccano Rails, Points and Crossings. **We have issued a booklet to show the** wonderful variety of combinations to which Meccano Rails lend themselves. Sixty-two formations (made with both the 1 ft. and 2 ft. radius rails) are shown as suggestions. The price of the booklet is 4d. post free.

Our Photographic Competition.

The Photographic Competition announced in No. 24 *Meccano Magazine* has proved remarkably successful, and a large number of entries have been received from all parts of the country. Realising that during the summer holidays every Meccano boy will have interesting experiences to relate, we intend holding a further Photographic Competition. This Competition has been arranged in order to

Editorial—*(continued)*

encourage those boys with cameras to describe their experiences and illustrate them with photographs. Full particulars are given elsewhere in these columns.

£250 Competition results.

I have pleasure in announcing in this issue the results of the big Meccano Competition. The event has been most successful, and elsewhere in these pages Mr. Hornby pays a tribute to the excellence of the models submitted. I hope to illustrate many of these models in future issues of the "*M.M.*" as opportunity arises.

A New Feature.

I want specially to call the attention of all my readers to the important announcement on this page regarding Radio. Very soon every Meccano boy will be able to construct a perfectly efficient Radio Receiving Set from Meccano parts, and the *Meccano Magazine* will tell him all about this wonderful new science. Future numbers of the "*M.M.*" will be of absorbing interest to all who are following the progress of Wireless Telephony, and who desire to share its pleasures and fascination.

Meccano Manual No. 3.

I would advise those readers who have not yet secured their copy of this new Manual, to do so without delay. It includes a number of entirely new Meccano models, and is beautifully illustrated in half-tone. Some of the models have been illustrated recently in the pages of the "*M.M.*"

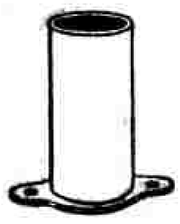
New Meccano Parts.



No. 18B.



No. 82.



No. 138.

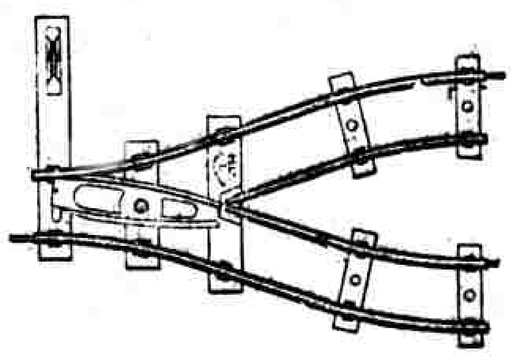
No. 18B Axle Rod, 1" .....each 1d.
No. 82 Screwed Rod 1" ..... „ 1d.

NOTE.—The above parts, discarded a short time ago, have been re-introduced. The 1" Axle Rod previously bore the number 18a. This number has now been allotted to the 1½" Axle Rod.

No. 138 Ship's Funnel.....each 4d.

NOTE.—No. 106 Cloth Roller will in future be known as Wooden Roller.

Parallel Points.



Parallel Point, Right.

		s.	d.
PPR	*Parallel Point, Right* each	3	0
PPL	„ „ *Left* each	3	0

Meccano and Radio.

A WONDERFUL NEW DEVELOPMENT.

Most of our readers are doubtless aware of the tremendous interest now being taken in Wireless Telephony in all progressive countries. America has so far taken the lead in this movement, and in that country high-power installations are established in all important and thickly populated centres, from which are transmitted news bulletins, concerts, stock and weather reports, shipping news, children's bedtime stories, fashion reports, sermons, etc., by Wireless Telephony. These installations are known as Broadcasting Stations, and anyone with a suitable receiving apparatus is privileged to "listen-in," and receive their wondrous and varied messages without restriction or payment.

The subject of radio transmission and reception is in itself a vast and complex science, but the installation of a receiving apparatus of sufficient power to receive messages from broadcasting stations at reasonable distances, is something which any bright intelligent boy can accomplish for himself with little difficulty.

Mr. Frank Hornby, the inventor of Meccano, and the Editor of the "*Meccano Magazine*" have just returned from a visit to the United States, where they have made a very close study of this subject. With the aid of a receiving set, constructed entirely of Meccano parts, and the addition of telephone ear-pieces, crystal, and one or two inexpensive fittings, they have listened to concerts, speeches, reports, etc., broadcasted from points five to twenty miles distant, with the greatest enjoyment.

The closest attention is being given by us to the development of this wonderful science, and experiments are being made that we already know will result in any Meccano boy being able to instal his own receiving set made from Meccano parts. Fuller announcements will be made in our September issue, and in the meantime we shall be glad to receive queries from our readers on any point connected with Wireless Telephony and Telegraphy, and to reply to them in our next issue. If a reply is desired through the post, a stamped addressed envelope should accompany the query.

Holiday Experiences.

Photo-Essay Competition

We have pleasure in announcing a special holiday Essay and Photographic Competition. Competitors are required to write a short essay on some holiday experience and illustrate it with photographs of their own taking. Essays should be neatly written on one side of the paper only, with the Competitor's name and address on the back of each sheet. The photographs may either be mounted separately or lightly gummed down in their places in the essay.

The subject of the essay we leave to the Competitor. It may be an account of some seaside holiday with photographs of the pier, the sands and the boats. Or it may be a holiday visit to some object of interest—a cathedral or abbey ruin—illustrated with appropriate photographs. On the other hand, some competitor may decide that a particular ramble in the country is of sufficient interest to warrant it being taken as the subject of the essay.

The Competition will be divided into two classes:

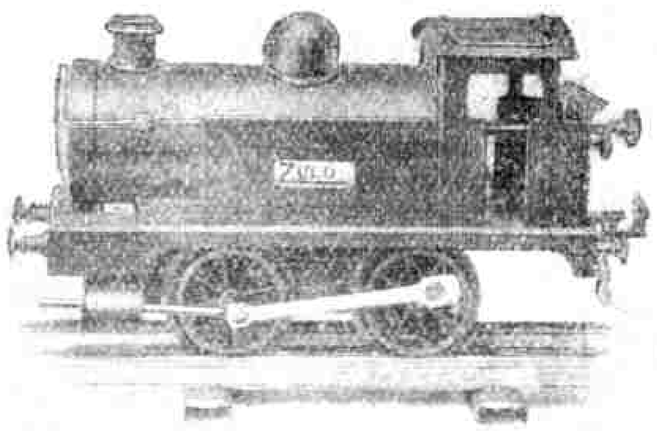
(1) For those of 12 years of age and under, and

(2) For those over 12 years of age.

The photographs need not necessarily be the sole work of the competitor (they may be developed and printed by others) but they must have been actually taken by the entrant. Competitors should state whether the photographs sent are their own work throughout, or whether assistance has been obtained in developing and printing, for this will be taken into consideration in making the awards.

The first prize will be a No. 1 Hornby Clockwork Train set, and other prizes will be awarded on merit. The Competition will close on the 15th September for the United Kingdom, and the 15th December for Overseas readers and those living outside the United Kingdom. The winning essay will be printed in the "*M.M.*"

Zulu Tank Loco.



In the *Meccano Magazine* No. 24, the Zulu Tank Loco is described as non-reversing. It has now been decided that the loco shall be of the reversing type, and the price will be 12 6 each.



BRIGHT IDEAS

These columns are reserved for dealing with suggestions sent in by Meccano users for new parts, new models and new ways of making Meccano model-building attractive. We are always pleased to hear from any Meccano boy who has an idea which he considers will be useful in the Meccano system.

Lewis Thorn (Enfield).—Pointed long-nosed pliers are the best to use for opening and closing the links of the sprocket chain. Any good tool shop can supply you.

P. O. Grady (Dublin).—We are always glad to help Meccano boys with any difficulty encountered during the construction of models. Simply write us in full. An instruction book such as you suggest would be too bulky, and, moreover, extremely costly.

Harry C. Gaman (Muswell Hill).—The guide rim which you suggest for holding the sprocket chain in the wheel, should not be necessary if the chain is sufficiently tight. Your suggestion for the conversion of an ordinary crank into a threaded crank is not practicable. We shall consider the introduction of a twisted strip for obtaining a vertical connection.

Willie Fleming (London).—5½" x ½" double angle strips bolted to two face plates give a fair representation of a boiler.

———— (Ashford, Kent).—Afraid we do not follow your suggestion for Hornby rails. We are considering a flat right angle piece.

Vane Stobbs (Blackheath).—Flat Trunnions, (No. 126a) make eminently suitable bearings for the axles of all trucks, motor cars, etc.

Eric Taylor (Westgate, Kent).—Should the application of our single crank shaft become wider, we shall consider the addition of a double crank.

Walter Wooton (Northampton).—Two or three turns round the crank handle, and a firm knot will hold the cord fast. A hole pierced in the crank handle would tend to weaken it.

G. Fensom (Wilden, Beds.).—There are possibilities in the twisted strip, and we will consider it.

W. J. Goodhead (Aston, Birmingham).—As an alternative to a threaded pin, a screwed rod could be employed when extra parts are required to be held by it. All electrical parts may be purchased separately. We appreciate your kind sentiments towards Meccano.

Gerald L. Greaves (Barnstaple).—We have introduced wheel flanges (No. 137) for attachment to face plates (No. 109), for making loco driving wheels. Two of these together would give the broad surface you suggest for belt drive, and would also have the advantage of guide rims. If practicable, a simple type of electrical generator will be introduced later.

Norman Collett (Handsworth, Birmingham).—We suggest you paste a small tab with the month and year on each issue of the "*M.M.*" This would give you a handy and quick reference.

W. S. Scott (Jarrow-on-Tyne).—The toothed sectors you suggest would have to be in a series of sizes, but we shall give the suggestion consideration.

K. Dutfield (South Hackney).—We hope to introduce a complete signal in connection with the Hornby Train series.



John W. Hatfield (Croydon).—Very useful pulley blocks may be made by means of Meccano strips or flat trunnions spaced with washers to allow freedom for the working of the pulleys. We illustrate two types above.

Wm. Brough (Glasgow).—We recently held a very successful Story Competition and shall announce another shortly. Space does not permit of the publication of the photographs you mention. Sorry to hear you have not been so well, but hope you are now quite fit again.

Reggie Osborne (Fulham, S.W.).—We shall consider your suggestions for the curved plate and the miniature packing case.

T. Brock (Icklingham).—Your suggestion of a printed Rule in the Manual will receive consideration.

D. Greenhill (South Woodford).—Most of the parts you mention are already in our list, the others we shall consider.

Richard Ball (Rainford).—We suggest you borrow from one of your chums the back numbers of the "*M.M.*" containing the early instalments of the "Life Story of Meccano." Unfortunately, the demand for these has been so great, that they are now out of print.

Harold L. Beer (Riverton, N.Z.).—See our reply to Wm. Brough, Glasgow

John Aspden (Drighlington, nr. Bradford)—Sorry, but we do not quite follow the meaning of your suggestion.

Stanley Graham (Cambridge).—A double cord makes an effective drive, there being less tendency for it to loosen. We have found that elastic does not assure a positive drive when even the slightest pressure is exerted. Regret space does not permit of our running an advertisement column in the "*M.M.*" at present. Many thanks for your good wishes.

F. Shelston (Swanage).—A 1½" rod has been introduced. Rods can be made to correspond in length to the strips, by taking two of acculumative length, and joining them with a coupling. This adaptability is one of the features of the Meccano system. Your suggested clutch departs too much from our standard, as the special parts would only have one specific use.

R. H. Bellamy (Birmingham).—We illustrate an electric signal on the lines of your suggestion in our Electrical Manual, Page 5.

E. A. Roden (Carleton).—As yet we have not found sufficient use for Angle Brackets and Double Angle Strips of a different angle to 90° to warrant their introduction.

W. Morris (Aberdare).—There is a choice of 1" angle brackets and 2½" x ½" double angle strips for the purpose you mention.

R. Pillans (Sunderland).—We shall see what we can do in arranging a drawing and painting competition.

Arthur Workman (Johannesburg, S.A.).—Would not the completely threaded rod serve the purpose of the half-threaded one you suggest?

Hector D. Sharpe (Grantham).—We doubt the advantages of the Angle Braced Girders and the cam you suggest has very limited uses, and scarcely justifies its inclusion. However, we shall give consideration to both your suggestions.

Roger Goss (Gorton).—We should be interested to know what application you have found for a curved girder rack segment.

Thos. McKeone (Salford).—Electricity, the power of the future, is far more interesting than steam, and we are developing the electrical side of Meccano as quickly as possible.

D. W. Dawn (Derby).—See our reply to Willie Fleming, of London (above.)

John Potts (Manly, N.S.W.).—You have the equivalent to the clockwork mechanism you suggest in the clockwork motor. You may obtain grub screws in any quantity you wish. Many thanks for your very kind wishes.

Geoffrey Ellaby (Bath).—Would not the 5½ inch curved strip serve your purpose? A 2-foot rod would not be of general utility. Elevator guides may be made out of angle girders.

Wm. McCondach (Banchory).—What do you consider are the advantages possessed by the 5" x 1" double angle strip you suggest? We have already under consideration the introduction of a circular saw.

J. I. Frawing (Cookham, Berks.).—See our reply to Willie Fleming, London, re boiler construction. Your suggested piston rod connection can be made from the strip coupling (No. 63b).

Jno. V. Yeoman (Berchem, Antwerp).—(a) Your suggestion for the boxing of the Accessory Outfits is not practicable on account of the great bulk and extra expense in the way of packing, freight, etc. (b) We have found that a strong application of spanner and screwdriver combined, has had the effect of securely fastening bolts and nuts. (c) A positive fastening of cord to a crank handle may be effected by making two or three laps round and securing with a double half-hitch knot or by a spring clip.

RESULT OF THE Photographic Competition.

Our first Photographic Competition has proved remarkably successful and a large number of entries have been received. On the whole the camera work has been good, and we hope that those competitors who have entered, but have not succeeded in winning prizes, will not be discouraged but will continue to endeavour to improve the quality of their work with a view to entering future Competitions. Those whose prints have won success, will also be encouraged to persevere, for photography is one of those hobbies in which a large amount of perseverance is necessary.



The Winning Photograph.

The subjects submitted were very varied, and the elimination of the winning prints was extremely difficult.

First Prize: No. 1. Hornby Clockwork Train Set.

Master C. Gordon Tusner, of 101, South Street, Park, Sheffield.

Photograph entitled, "A Woodland Waterfall."



The Second Prize.

Second Prize: Tin Printed Clockwork Train Set.

Master Edwin Faraage, of 5, Victoria Terrace, Pelton, London.

Photograph entitled, "Durham Cathedral."

It is hoped that some of the other photographs submitted will be reproduced in future numbers of the "*M.M.*" if space permits, when payment will be made at our usual rate.



The Secretary's Notes.

Progress of the Guild The Guild continues to make steady progress, every day bringing new members, and each week seeing the formation of new Clubs. In No. 23 of the "*M.M.*" it was announced that no less than 11 new Clubs were affiliated. The last issue announced the affiliation of 14 new Clubs, and on page 5, the affiliation of a further 13 Clubs is announced. The total, therefore, for the past four months, is 38 new Clubs—a remarkable record which demonstrates in no uncertain manner, the increasing success of the Meccano Guild.

The Summer Sessions. The Summer Sessions of the various Meccano Clubs are being enjoyed as much as were those in the Winter. Every day I receive bright, cheery letters from enthusiastic Club members, telling me of the grand times they are having, and Club Leaders write informing me of the various outings and other arrangements they are making. While the members of one Club pack up their kit bags and take the trail for Wickham Woods to spend a holiday camping out, the members of another Club are working hard for a Garden Fete and Exhibition. Yet other Clubs report that they are busy with their Cricket, Tennis and Rambling Sections. All are engaged in natural healthy pursuits, however, such as appeal to the heart of every boy especially if he be a Meccano Guild Member.

The Play Writing Competition This Competition has been eminently successful, and Guild members from all over the world have entered their efforts. Names of successful entrants will be found on this page, and to these boys I offer my congratulations.

Our Competitions The Photographic Competition just closed was well supported by Guild members, and I trust that the new Photo-Essay Competition announced elsewhere in these pages, will be equally well supported. No doubt some members will choose as the subject of their essay, an outing of their Club that particularly lends itself to treatment in this direction. The Editor tells me that further Competitions are in store for future issues, and the Meccano Guild will also announce Competitions from time to time, in addition to the Inter-Club Competitions that have been a feature of the past session.

Special Merit Medallions.

FURTHER AWARDS.

I have pleasure in publishing the photographs of four more winners of the Special Merit Medallions recently awarded. These medallions are awarded for good work or for specially good lectures, two being allotted to each Club during each session. The medallions themselves, which are here illustrated, are beautiful in design and finish, and each one is engraved with



the name of the recipient. Naturally they are much valued by the boys who win them. They will be allotted again next season, and I hope that every Guild member will endeavour to win one of these marks of merit.



Master S. Kelsall.

Master Stanley Kelsall received his Special Merit Medallion for his enthusiastic work in connection with the Kenyon Hall Meccano Club. He is shown wearing his Medallion.

Master R. Coombs is an enthusiastic member of the St. Mary-with St. Gabriel Meccano Club. He has been awarded a Special Merit Medallion for good all round work on the recommendation of the Club Leader.



Master R. Coombs.



Master W. B. Spiers

Master W. B. Spiers is a member of the Kelvinside Meccano Club and was awarded a Special Merit Medallion for delivering a very interesting lecture on "Model Making."

Master William Mayhew, of the Kenyon Hall Meccano Club, who has been awarded a Special Merit Medallion for good work in connection with the Club.



Master W. Mayhew.

RESULT OF THE

Play-Writing Competition.

I have pleasure in publishing the result of the Play-writing Competition, announced in No. 22 of the *Meccano Magazine*. A number of plays were received, and it is hoped that some of the winning plays will be available for Meccano Clubs next Session. It will be remembered that the Meccano Play "Nonsense Nana," was successfully acted by several of the Clubs last year.

1st Prize—Master H. V. Rollinson, South Wingfield, Alfreton.
"The Prize Winner." Prize £2 : 0 : 0.

The Second and Third Prizes are divided between :—

Master E. Sykes, Cleveland, Transvaal, S.A.
"Meccano to the Rescue." Prize £1 : 1 : 0.
Master L. A. Marshall, Battersea, London, S.W.8.
"The Twin's Wireless." Prize £1 : 1 : 0.

A Special Prize of £1 : 1 : 0 has been awarded to

Master J. S. Wright, Great Longstone, Nr. Bakewell, Derbyshire.
"After Thirteen Years."

We give below a short account of the winning play, "The Prize Winner."

In Act 1, two Meccano enthusiasts read a notice on the school door, of a proposed Meccano Club, and both are overjoyed at the prospect of a Club being formed.

Act 2 finds the two Meccano boys, Benny and Jack, busily working at a model, when Jack's brother Roger, enters. He scorns the idea of Meccano and the Club, but the Meccano boys feel convinced that in the end, Roger will realise his mistake and join them. The Club enters for the Inter-Club Competition, and Benny and Jack complete a fine model, of which they are justly proud. In their absence, Roger steals in, destroys the model, and laughs to think of the consternation when the members of the Club find their model ruined. Little does he know that a few minutes previously his father has taken a photograph of the model as a surprise for Jack, and that his wicked plan is thus frustrated. The boys are horrified to discover their model broken up, and their one concern is for the honour of their Club, for they had all set their hearts on winning the Competition. But evil is not allowed to prevail long, for Roger's father, having heard the culprit gloating over his deed, disgraces him in the presence of the others. Realising how thoroughly un-British and despicable he has been, however, Roger asks forgiveness and to be allowed to join the Club. This is readily granted, and the members forgive and shake hands.

Act 3 is the final triumph of perseverance and patience, when amidst breathless expectation, the Club Leader reads a letter informing the members that their model has gained first prize. No one is more pleased with the news than Roger, who realises how much happier a boy can be when he runs straight and "plays the game."

The Correspondence Club.

Guild members have long felt that they are members of a great brotherhood of boys, each having the same kind of thoughts, sharing the same pleasures and thrilled by the same ambitions. They long to know what kind of lives other boys are living, to tell them of their own schemes and ambitions, and to exchange notes about Meccano model building and the thousand and one other things in which boys delight. This desire is now made possible through the medium of our Correspondence Club, and any member who wishes to join should send for further particulars.

Club Notes.

Bromley Road County School M.C.—The members are so keen on model building that it has been decided to hold the meetings once a forthight throughout the summer months. Master D. Parnacott has been awarded a Special Merit Medallion. *Secretary:* Master D. Parnacott, Bromley County School for Boys, Bromley, Kent.

Meads (Eastbourne) **M.C.**—Continues to make steady progress, the Leader remarking in one of his letters "There is plenty of scope for our work in Eastbourne and we hope to be able to make our membership well over a hundred." I trust that this will come about in due course. *Secretary:* Master F. Moore, Chesterfield Cottage, Chesterfield Road, Meads, Eastbourne.

Gulgong (Australia) **M.C.**—Membership increasing and as all the boys are enthusiastic, this recently affiliated Club is making rapid progress. A model railway yard recently constructed by the members, has been greatly admired. *Secretary:* Master N. E. Wallis, "Yarrawin." Gulgong, New South Wales, Australia.

Sparkbrook M.C.—A very successful spring session has been held. Speed tests were arranged in connection with model building and session closed with an enjoyable Social. The Futuresque Concert Party gave two very fine entertainments, greatly appreciated by the members. *Secretary:* Master Francis Hubball, 71, Turner Street, Sparkbrook, Birmingham.

Liscard High School M.C.—The Leader, Mr. Casey, has been called away on business, but Mr. Samuels, a local gentleman, has kindly undertaken the supervision of the Club until his return. The boys are looking forward to an enjoyable Summer Session, and as the Secretary informs me that a "bumper" programme has been drawn up, I feel sure that the Session will come up to expectations. *Secretary:* Master B. Warburton, 11, Brisbane Avenue, New Brighton.

St. John the Baptist (Liverpool) **M.C.**—The work of the Club has been suspended for the Summer months, but the boys have organised a very fine cricket team, now in full swing. The Club Secretary has been awarded a Special Merit Medallion. *Secretary:* Master T. McCulloch, 37, Blythswood Street, Aigburth, Liverpool.

Kelvinside M.C.—Have made rapid progress and Mr. Dow has kindly consented to become President. A successful exhibition raised a considerable sum in aid of the Western Infirmary. An interesting Golf Competition has been arranged and it is hoped to establish a cricket team in connection with the Club. *Secretary:* A. W. A. Dick-Cleland, 14, Hillhead Gardens, Glasgow, W.

Jarrow-on-Tyne M.C.—Has almost doubled the membership since the last Winter Session. A fine lecture on "Electric Accumulators" was given by Master R. G. Noble, and was appreciated by the other members. *Secretary:* Master G. Stevens, Gordon House, Field Terrace, Jarrow-on-Tyne.

King Street (Luton) **M.C.**—Have held meetings every fortnight to the end of June. A regular summer programme has been drawn up and the members will have some enjoyable outings. *Secretary:* Master William Humby, 34, Adelaide Street, Luton, Beds.

Cirencester Grammar School M.C.—The last Session has been very successful, all having worked well. Some good work has been done, two of the members being awarded Special Merit Medallions. *Secretary:* Master P. Richards, 113, Dyer Street, Cirencester.

Wolverley School M.C.—Although the work of this Club has been somewhat retarded by necessary School regulations, the members are very keen and enthusiastic. Permission has been gained to visit the B.S.A. Factory at Small Heath, Birminhgam, and an enjoyable expedition is anticipated. *Secretary:* Master J. H. V. Topping, Bury Hall, Wolverley, Kidderminster

Ormskirk Wolf Cub M.C.—An Exhibition was recently held at which the Club gave an outline of the Coal Industry. A Model Coal Mine, constructed for the purpose, attracted much attention. During the summer the Club meets once a week and takes part with the rest of the Pack in the joys of tramping and camping. Some very enjoyable outings are in store for the members. *Secretary:* Master C. Walsh, 113, Wigan Road, Ormskirk.

Buckfastleigh M.C.—Membership increasing rapidly and during the session good progress has been made. Interesting lectures have been delivered on such subjects as "Cinematography," "Electricity," "The Panama Canal," "Shelling during the War," "War in the Air," and "The Telephone." *Secretary:* Master H. Parsons, Bell Cottages, Buckfastleigh.

Airdrie Y.M.C.A. M.C.—A successful session closed with an enjoyable social at which Billiards, Ping-Pong, and Draughts Contests were held. A Cricket team has been organised for summer months. The Club re-opens for regular work at the beginning of August. *Secretary:* Master W. B. G. Henderson, Meadowfield, George Street, Airdrie, N.B.

Holy Trinity (Barnsbury N.1) **M.C.**—Is one of the most successful Clubs in the Guild, despite the fact that during the last Session the energetic Leader, Mr. S. H. Wilson has not been able to devote so much time to the Club. The Club arranged a Stall at a Sale of Work, a special feature being the "Fine Art Gallery" The Club Savings Bank is still going strong and outings and visits to local places of interest have been arranged for the summer months. *Joint Secretaries:* Masters Stanley Bone, "The Rosary," Kents Hill Road, South Banfleet, and Walter Stretton, 25, Thornhill Houses, Thornhill Road, Barnsbury, London, N.1.

Parkstone Congregational M.C.—"The Session just closed has proved very successful and helpful, and a very happy time for all of us," writes the Club Secretary. Sports have been arranged for the summer session, which I am sure will prove equally successful. *Secretary:* Master F. Brumwell, "Strathyre," Fernside Avenue, Parkstone, Dorset.

Mexboro' M.C.—Two very successful exhibitions were held during the last winter session which closed with an enjoyable trip to Roche Abbey. The activities of the Club are now suspended until September. *Leader:* Mr. H. May, 17, High Street, Mexborough.

Heamoor M.C.—The Winter Session did not close until early in May, and the members are so enthusiastic over model building that they decided to purchase spare parts for Club use instead of going on a Club outing. Good all round progress has been made and the Session closed with a very successful Exhibition. Two members of the Club have been awarded Special Merit Medallions. *Secretary*. Master W. J. Eddy, 1, Holly Terrace, Heamoor.

Thornton Heath High School M.C.—During the summer months the members spend a good deal of time outdoors. Cricket matches are played, paper chases arranged, and swimming indulged in. A Fete and Fair are held in the School grounds to provide for the summer outing. During Whitsuntide holidays, the members and their leader spent a few days camping in Wickham Woods. The weather was ideal for camping out, and the boys spent a very happy holiday. *Secretary:* Master H. Rose, 18, Lyndhurst Road, Thornton Heath, London, S.E.

Claygate M.C.—A hut for the sole use of the Club, recently erected, was opened on 13th May, when a successful Rummage Sale was also held to help to cover expenses. A Sports and Carnival Day took place last month, and altogether the Club continues to be one of the most energetic in the Guild. *Leader:* Mr. J. W. Haynes, Fontmell, Covers Road, Claygate, Surrey.

St. Frideswides (London E.14) **M.C.**—This Club has vacancies for several new members, and any boy living in the vicinity of Poplar, E.14, should get into communication with Rev. Dudley Clark, St. Frideswides Vicarage, Follet Street, Poplar, London, E.14.

Clubs Recently Affiliated.

Emanuel School (London S.W.11) **M.C.**—Opened recently this Club now has 31 members. From the letters received from the Leader I feel sure that the Club is developing splendidly. *Secretary* Master F. Tyack, Emanuel School, Wandsworth Common, London, S.W.1.

Young Climbers (Bargoed) **M.C.**—This Club, successfully organised by Miss L. A. Davies, Gilfach, Bargoed, holds meetings regularly. Lectures have been given on "Physical Culture," "The Evolution of Machinery," "The Power of Steam and Electricity," "Ships throughout the Ages." The latter Lecture was illustrated with Lantern Slides and was greatly enjoyed. A very successful Exhibition, at which Mr. T. G. Jones presided, was held recently. *Secretary:* Master Leslie Jarman, "Brooklands," 42, Cardiff Road, Bargoed.

Bradford M.C.—This Club was formed in February last and affiliation was granted recently. *Secretary:* Master H. S. Newsome, 5, Duckworth Grove, Manningham, Bradford.

West View (Nottingham) **M.C.**—Recently established. Cricket and other sports have been arranged for the summer months. A very successful Session is anticipated. *Leader:* Mr. H. Cousens, 494, Mansfield Road, Sherwood, Nottingham.

Guild Members and the £250 Competition.

SPECIAL AWARDS TO MEMBERS.

A list of the prize-winners in the Great Model Building Competition, recently closed, is printed elsewhere in this issue. In addition to the valuable cash prizes and numerous other prizes awarded, the Guild offered three special prizes of £5 in cash to those of its members who gained the first prize in each section. Our President, Mr. Hornby, has paid a tribute to the excellence of the models submitted, and expresses his pleasure at the fact that members of the Guild have submitted many new models of ingenious design. This is not at all unexpected, of course, for among the members of the Guild are included some of the cleverest and most enthusiastic Meccano boys.

Cash prizes of £5 have been awarded as follows :—

Section A.—Bertie Dadson, 37, Hastings Road, Addiscombe. (Twin Beam Engine Pumps).

Section B.—B. Gardarsson, Hverfisgotu 50, Reykjavik, Iceland. (Electric Searchlight).

In Section C. there were six members who tied for the prize which has therefore been increased to £6, and each member will receive a cheque for £1 as his share.

Section C.—F. Henderson, 66, St. George's Road, Bellevue, Johannesburg.

A. Chapman, 33, Co-operative Street, Chester-le-Street.
W. A. Cullen, 8, Cliffe Avenue, Baildon, Shipley.
E. T. Jones, 33, Penmaesglas Terrace, Penycraig.
J. de Conti Manduca, 54, Sda. Ridolfo, Sliema.
D. S. Parnacott, 36, Anerley Road, Anerley, S.E.20.

Cobham M.C.—This Club has every prospect of being successful under the enthusiastic leadership of Mr. F. Dimond. An Exhibition was held recently and the members are all keen and enthusiastic. *Secretary:* Master Wm. Phillips, The Fox and Hounds, Cobham, Surrey.

Eastham M.C.—This young Club hopes to maintain the rapid progress already made. *Secretary:* Master James Yarnold, Eastham Farm Park, Eastham, Tenbury.

Bathgate M.C.—Model-building, Lantern Lectures and Social Evenings are helping to make this Club very enjoyable. The members are keen and enthusiastic, and hope to see their Club make good progress. *Secretary:* Master Forsyth Hardy, Hazelbank, Bathgate.

First Ceylon M.C.—As its name implies, this is the first Meccano Club to be established in Ceylon, and already good progress has been made. *Secretary:* Master B. K. Billimoria, Dharmaraga College, Kandy, Ceylon.

Huddersfield M.C.—A very successful Meccano Club has been established in Huddersfield under the leadership of Mr. J. S. Jowitt, Harewood House, Wentworth Street, Huddersfield. Any Huddersfield Meccano boy wishing to join a Club should approach either the Leader or Secretary without delay. *Secretary:* Master R. Roebuck, 411, Wakefield Road, Huddersfield.

Normandale (Sheffield) **M.C.**—Recently established this Club has made very good progress. Cricket, Tennis and Cycle runs have been arranged for the Summer months. *Secretary:* Master A. Towers, Old Wheel, Loxley, Nr. Sheffield.

Revelston (Edinburgh) **M.C.**—This Club has been in existence for about a couple of months, and is proving exceptionally successful. The members are keen and enthusiastic. *Secretary:* Master N. Higgins, 37, Merchiston Crescent, Edinburgh.

Mihi Creek (Australia) **M.C.**—This Club, formed in March, has now been affiliated. With a fine Leader and a splendid Club room, the members are striving to make the Club one of the best in Australia. *Secretary:* Master W. H. Cordingley, Uralla, New South Wales, Australia.

Invincible (Watford) **M.C.**—The membership is only small at the present, but as all the members are enthusiastic, the Club will certainly make rapid progress if they all pull together. *Secretary:* Master F. E. Challis, 107, Gladstone Road, Watford, Herts.

A New Club.

A new Club has been established in Loughborough, under the direction of the Rev. F. Tolhurst, St. Peter's Vicarage, Ashby Road, Loughborough. I hope shortly to be able to record the affiliation of this Club with the Guild. In the meantime any boy in Loughborough or district desiring to join should communicate with the *Secretary*, Master L. W. Goodman, 15, Oxford Street, Loughborough.

RESULT OF THE £250 MECCANO PRIZE COMPETITION.

FULL LIST OF AWARDS.

Our big annual Model-building Competition has again been extraordinarily successful. The entries have been more numerous, and have come from a much more extensive area than in any previous year. I have been particularly struck with the number and quality of entries received from our colonies, from France, Italy, Spain and Holland, and I congratulate the Meccano boys in those countries on the ingenuity and skill which they have shown, and upon the fact that they have made such a fine showing in competition with British Meccano boys of many years standing. I should like to congratulate all the winning competitors on their successes, and to express the hope that I shall see their names again in future lists of prize-winners.

Frank Hornby.

Section "C" (Competitors over 14 years of age)

E. C. Bairstow, 1, Minster Court, York. Clock.
Wright, W. E., 1, Belgrave Avenue, Leicester. Motor Cycle and Sidecar.

First Prize (Divided) - £20

Arnaud, R., 51, rue Mal Petain, Abbeville, Somme. Clock.
Kirkpatrick, M. B., 49, Coventry Road, Ilford, Essex. Loco Breakdown Crane.
Morgan, G., 1, Alexandra Street, Dunfermline. Battleship.
Whittaker, E. H., 86, Monton Road, Eccles, Manchester. Mitchell Appliance.

Second and Third Prizes (Divided) £25

Additional Prizes of Meccano Outfits and Train Sets.

Agustsson, Sig., c/o Mr. Arnar, Reykjavik, Iceland. Dredging Machine.
Aguirre, O. N., Claidio Coello 100, Madrid, Spain. Spanish Swing Seats.
Alberto, D., Via Angelo Masina, Accademio Americana, Rome. Ironing Machine.
Aldo, C., Via Chiepierra, Adria, Rovigo, Italy. Cable-making Machine.
Audrew, C. H. L., 2, Cortland Road, Wellington, Somerset. Meccano Micrometer Gauge.
Archer, R. W., 77, Holden Road, N. Finchley, London, N.12. Tank Locomotive.
Badre, P., 18, rue du Hagueneck, Colmar, Ht. Rhin. Wood Loader.
Barrass, G. S., Jr., 7, Chapel Row, New Lambton, Fence Houses, Co. Durham. Electric Hauling Machine.
Blaikie, W. R., Kent Road, Wooloowin, Brisbane, Queensland, Australia. Travelling Railway Gantry.
Bollinger, P., chez Fam. Widner-Haller, Kolliken et Aargan, Suisse. Fretsaw.
Brooks, A. A., "Mon Abri," Clarendon Grove, Mitcham, Surrey. Cone Clutch.
Busoni, E., Via S., Gallo 80, Firenze, Italy. Swivelling Crane.
Chapman, A., 33, Co-operative Street, Chester-le-Street, Co. Durham. Leather Glazier.
Clare, P., Chalfont Cottage, Station Road, Winslow, Bucks. Perpendicular Drill.
Clavié, R., Avenue Félix Faure 136, Paris XVeme. Topliss Crane.
Conti Manduca, J., 54 Sda. Ridolfo, "Eltham House," Sliema, Malta. Disappearing Gun.
Cookson, W. A., 23, Clarendon Street, Leamington Spa. Pontoon Crane.
Corby, G., 90, Gatley Road, Cheadle, Cheshire. Bacon Slicing Machine.
Cowell, J. A., 29, Cotteril Road, Surbiton, Surrey. The Meccano Rainbow.
Croix, H. la, Union Street, Millis, Mass., U.S.A. Portable Sawmill.
Cullen, W. A., 8, Cliffe Avenue, Baildon, Shipley. Hammer Head Crane.
Derrolf, G., Corso Vittorio Emanuele 49, Varese, Italy. Leather Roller.
Dorsey, H. R., 5, Barrack Street, Meanwood Road, Leeds. Improved Meccanograph.
England, A., 212, Lord Street, Fleetwood. Water Wheel driven beam Engine.
Fantova, J. G., Commercio 3, Mahon. Villa.
Fleming, D. E., 37, St. Peters Road, Croydon, Surrey. Overhead Mono-Railway.
Fraser, D. W., 7, Addingham Road, Mossley Hill, Liverpool. Treadle attachment to model Lathe.
Fulvio, M., Piazza della Vittorio 23, Gorizia, Italy. Piercer.
Gainsborg, E. C., 521, West 185th Street, New York. Switchback and lift runway.
Garnier, Andre, chez M. Sergeant a Bouttencourt, par Blangy, S/bresle. Seine infre. Lifting Jack.
Guilloux, G., Chateaubriant, L'Inf. The Cyclist.
Guiseppe, O., Via Giacomo, Medici 12, Firenze, Italy. Stereoscope.
Hare, J. K., Westholt, Henlow, Biggleswade, Beds. Electric Motor.
Hastings, H. C., 24, Brownswood Road, Finsbury Park, London, N.4. Portable Planing Saw.
Healey, W. M., 20, Talbot Road, Littlehampton, Sussex. Swing Bridge.
Helgason, J. Pall, Tjarnargata, Reykjavik, Iceland. Transporter Bridge.
Henderson, F., 66, St. Georges Road, Bellevue, Johannesburg, S.A. Wharf Coaling Plant.
Hudson, F. C., 7, Upper Brassey Street, Birkenhead. Tool Grinder.
Huizinga, M., Van Polland straat 5, Arnhem, Holland. Dredger.
Introna Lucia, Corso Vittorio, Emanuele No. 78, Bari, Italy. Big Wheel.
Jagger, C., 3, Melrose Street, Lee Mount, Halifax. Motor-driven Boring and Turning Mill.
Jan, A., 6, Rue du Chene Cholet, Maine et Loire. Aeroplane Roundabout.
Jester, E. & H., Box 393, Caldwell, Idaho, U.S.A. Automobile.
Johnson, R., 42, Cannon Street, Eccles, Manchester. Spring Balance.
Jones, E. T., 33, Penmaesglas Terrace, Penycraig, S.Wales. Intermittent Lighting Sign.
Langlois, J., 8, Rue des Chenizelles, Laon, Aisne. Race Game.
Lawyer, J., Lerna, Illinois, U.S.A. Farm Tractor.
Lewis, Maior L. C., c/o Messrs. Cox & Co., 16, Charing Cross, London. "Sir Meccano."
Lowe, W. H., 28, Henley Gardens, Consett, Co. Durham. The Fairburn Drilling Machine.
Mackillop, I., The Cottage, Hillsboro' Terrace, Ilfracombe, N. Devon. Motor Car Transmission.
Mario, S., Via S. Vincenzo No. 74-9, Genoa, Italy. Electric Crane.
Mate, R. E., 14, Eastfield Drive, Aigburth, Liverpool. Steam Winch.
Millan, A., 6, Villa Beausejour, Vincennes, Seine, France. "Looping" Meccano.
Miller, R. S., 58, Harcourt Street, Newark, Notts. Tenoning Machine.
Morrison, T., 8, Freeland Road, Ealing Common, London, W.5. Oscillating Ore Riddle.
Newsome, P., Hey Green, Meltham, Near Huddersfield. Meccano Express.
O'Donoghue, D. J., 364, Sydney Road, Coburg, Melbourne, Australia. Hulett Unloader.
Ormerod, H., 31, Heatley Street, Blackburn. Cyclist.
O'Neill, J. F., 11, Cathnor Road, Goldhawk Road, Shepherd's Bush, London, W. 12. Motor Lorry.
O'Neill, M., 3, Marine Terrace, Llanfairfachan, North Wales. Monkey up the Stick.
Pall J. Helgason, Tjarnargata Reykjavik, Iceland. Transporter Bridge.
Palmer, J. W., 20, All Saints Green, Norwich. Roundabout.
Parnacott, D. S., 36, Anerley Park, Anerley, London, S.E.20. Mechanical Fan.
Pianta, F., Via Casaregis 11/16, Genoa, Italy. Electric 4 volt Motor.
Pierse, J. J., Bushmount, Lixnaw, County Kerry. Motor Jack.
Pitkethly, R., 49, Alma Road, Caulfield, Melbourne, Australia. Scales.
Pivet, E., 45, rue des Montignies, Charleroi, Belgium. Tank.
Radclyffe, L., "Derwent," Blackburn, Victoria, Australia. Trembling Bell.
Rafn, H., 8, Blytsvej, Copenhagen, Denmark. Electric Number Indicator.
Rapaz, G., rue des Moulins 14, Neuchatel, Switzerland. Automatic Tractor.
Rappis, P. A. G., via G. B. Lanata, 1/6, Genoa (2), Italy. Bulk Cargo Discharger.
Reboul, O., 33, rue Tourasse, St. Jaen de Luz, Passes Pyrenees. Don Quixote on his horse, "Rossimante."
Renz, O. F. W., 960, St. Paul Court, Louisville, Kentucky. Steel Plate Planing Machine.
Ricketts, L. D., 20, Farnham Royal, Kensington, London, S.E.11. Suspended Electric Mono-Rail.
Roche, P., 13, Rue d'Alsace-Lorraine, Roanne, Loire, France. Meccano-type.
Rossouw, H., "Zomerlus," Wellington, South Africa. Panama Canal Crane.
Round, J. E., 29, Elm Street, Hoyland Common, Nr. Barnsley, Yorkshire. Power Brick Press.
Saddler, J. A., "Narbethong," Myall Avenue, Kensington Gardens, Adelaide, S.A. Telescopic Lift Bridge.
Sesma, G., 4th Avenida de Oriente 203, Puebla, Pue., Mexico. Cash Till.
Smith, J. R., 21, Alice Street, South Shields. Shipyard Derrick.
Smith, T. A., 11, Stratford Avenue, Beeston Hill, Leeds. Internal Combustion Cable Ploughing Machine.
Street, J., 20, May Street, Fenton, Stoke-on-Trent, Staffs. Automatic Slotting Machine.
Stubbs, P. M., 27, Colwyn Road, West Hartlepool. Single Needle Telegraph Instrument.
Surroia, y Sanz E., Calle Amigo 29, San Gervasio Barcelona. Electric Train.
Thompson, E. L., Inglewood, Rurrell Avenue, Lindfield, New South Wales, Australia. Visible Typewriter.
Vasquez de Parga, Luis, Monte Esquinza 11, Madrid. Auto with Motor.
Visvikis, S. S., Maison Sarkissian, 43, rue Price Ibrahim, Ibrahimieh, Alexandria, Egypt. Bicycle Tightrope Performer.
Walton, L. L., Westmout, Newland Park, Hull. Balance.
Watkins, H. S., 48, St. Aubyn Street, Devonport. Grandfather Clock.
White, F., 139, Victoria Road, Aston, Birmingham. Electric Engraving Machine.
Whitney, E. H., "Riverside," Harbour Hill, East London, South Africa. Self Feeding Lathe.
de Wulf, L., rue Borluut 23, Gand, Belgium. Gear Box.

Section "B"

Hughes, Leslie, 80, Barnwell Road, Brixton, London, S.W.2. Mitchell Appliance. — **First Prize - - - - £15**

Greenway, E., 43, Douglas Road, Handsworth, Birmingham. Breakdown Crane.
Houdry, M., 83, Boulevard du Port Royal, Paris, 13. Rolling Bridge for Workshop. — **Second Prize - - (Divided) £10**

Gardarsson, B., Hverfisgata 50, Reykjavik, Iceland. Electric Searchlight. ..
Rogers, F. C., 360, Lloyd Avenue, Providence R. I., U.S.A. Track laying Machine. — **Third Prize - - (Divided) £6**

Additional Prizes of Meccano Outfits and Train Sets.

Ashby, G. E., 55, Club Road, Ipoh, Perak, F.M.S. Two Seater Car.
Baron, O. M., Claudio Coello 109, Madrid, Spain. Operating Theatre.
Bean, J. D., 100, State Street, Doylestown Pa. Miniature Park.
Berard, G., 9, Quai de Seine, Herblay, Seine-et-Oise. Vertical Saw.
Berthoud, P., 5, Promenade Nior, Neuchatel, Switzerland. Engine.
Bonnel, P., 75, rue des Salines, Lous le Soierier, Jura, France. Aeroplane Roundabout.
Bouclier, J., 8, Rue Longe Porte, Langres, Hte. Marne. Rolling Stairway.
Bourne, P. T., 7, Southfield Avenue, Rotten Park, Birmingham. Revolver.
Candlish, G., 45, Edgemont Gardens, Langside, Glasgow. Loom.
Cass, R. H., 14, St. Mary's Street, Ely, Cambridgeshire. Spur Gear and Keyway Cutter.
Cavallini, A., via Chieparro 22, Adria, Rovivo, Italy. Cart moved by Weights.
Child, W. H., Jr., Main Street, Hingham, Mass., U.S.A. Woodman and Mortiser.
Cito, C., 10, Rue Henri Marichal, Ixelles, Brussels. Rotating Crane.
Cullare, E. B., Cortes 591, 1 Barcelona, Spain. Watch Tower.
Dagger, P. F., Foxt-Whiston Vicarage, Froghall, Stoke-on-Trent. The Rocket.
Dales, R. P., 15, Muschamp Road, Peckham, London, S.E.15. Milkman and Cart.
Daver, P. S., Soonamai Mansions, Garden Lane, Khetwadi, Bombay, India. Stamp Rack.
Degand, P., 61, rue des Saints-Peres, Paris 6. Invalid's Chair.
De Katt, via Camilla 6, Genoa. Knife Cleaner.
Dessaint, J., 62, rue de Pologne, Saint-Germain-en-Laye, Seine-et-Oise. Clock Escapement.
Dymond, F., Stonehill, Abingdon, Berks. Electric Light Plant.
Elsdon-Dew, R., "Bonizive," Valley Road, Parktown, Johannesburg, S.A. River Barage.
Francois, F., Perception, Viviers, Ardeche. Signal Gantry.
Glauser, H., Quai de la Thiele 27, Yverdon, Vaud, Switzerland. Roundabout.
Gooch, E. L., 146, Rylance Street, Ashton Old Road, Ardwick, Manchester. Desk and Revolving Chair.
Griffiths, G. A., 1, Eastfield Drive, Sefton Park, Liverpool. Operating Table.
Guinand, A., Renmark, South Australia. Roundabout.
Hanrott, C. C., The Orchard Farm, Woldingham, Surrey. Self-lift Tractor.
Harrison, F. G., 72, Umberslade Road, Selly Oak, Birmingham. Breakdown Train.
Hawkridge, P. J., Sunningdown, Beacon Oak Road, Tenterden, Kent. Lighthouse.
Heeramaneck, V. R., 44, Alexandra Road, Harvey Road, Gamdevi, Bombay, India. Conveyor.
Heeramaneck, D. R., 44, Alexandra Road, Harvey Road, Gamdevi, Bombay, India. Path Excavator.
Henderson, O. B., North Lodge, Wemyss Bay. Letter Balance.
Herrenschmidt, T. D., Le Wacken 2, Strasbourg, (Bas-Rhin). Railway Crane.
Jobson, R. H., "Besbrook," Linden Walk, Prestatyn. Horse Power Gear.
Jones, C. J., 72, Grant Street, Cottlesloe, Western Australia. Stripper.
Kettle, N., 8, Emily Street, Hull Road, York. Railway Station.
Kogge, R., 1134, So. Kedzie Avenue, Chicago, Ill. Engine Room of Icehouse.
Lambrechtsen, C. L. M., Albertus, Perkstraat 10, Hilversum, Holland. Revolving Lighthouse.
Laune, A., R. Argentina, La Rioja, Bartolome, Mitre 906. Argentine Cruiser.
Leloup, G., 9, Rue de la Banque, Chambery (Savoie). Mortar Mixer.
Lyman, L., 3, Holloway Terrace, Greythorp, West Hartlepool. Excavator.
Malmstead, Eleanor, 2038, 15th St. Moline, Ill., U.S.A. Army Tractor.
Massagrande, D., Viale Garibaldi 8, Milan, Italy. Dough Cutting Machine.
Maurizio, M., via Cavalletto 1-7, Genoa. Tackle.
Molina, P. y Benito Valle, La Flamenca, Aranjuez, Spain. Reaping and Binding Machine.
Morris, E. W., 429, East 51 Street, New York City. Freight Transporter Bridge.
Moses, L., 73, Manchester Road, Lostock Gralam, Cheshire. Weather Chart.
Page, E. W., 52, Warwick Road, New Southgate, London N. Magician and Magic Box, and Control for Clockwork Motor.
Plen, M., Box 25, Nigel, Transvaal, South Africa. Rickshaw.
Prezioso Liabordo, Via Gioinborttiste Grimani 2, Lido-Venezio, Italy. Sliding Bridge.
Prezoso, L., Via Negroponte 25, Lido di Venezia, Italy. Vertical Borer.
Ramachandra Babu, P. V., Door 7/6 3rd Cross Road, Shankarpuram, Bangalore City, India. Designograph.
Rostan F., Cercle Litteaire, No. 1a Place, St. Francois, Switzerland. Automatic Skein Bobbin.
Ruffin, M., 310, Washington Avenue, S. W. Roanoke, Va., U.S.A. Printing Machine.
Salter, A. B., Warrenton, Manitoba. Log Saw.
Scarcereau, R., 9, Rue de Frignicourt, Vitry-le-Francois, Marne. Joy Wheel.
Servolle, J., 19, Rue du Marche, Vichy, Allier. Mono-Rail.
Sergio, S., Via Simonetti 2, Ancona. Monkey on Stick.
Sharman, C. P., 17, Northumberland Road, Broomhill, Sheffield. Velvet Coaster.
Shillito, R., 34, Main Street, Wombwell, Nr. Barnsley. Church.
Smith, F., 11, Stratford Avenue, Beeston Hill, Leeds. Plough.
Smith, T. A., Oakwood, Borrowash, Nr. Derby. Timber Cutting Machine.
Terriere, R., 77, Boulevard de la Marie, Franconville (S/O). Mechanical Duck.
Tibbenham, D., The Lines, Stowmarket. Penny in Slot Machine.
Tisserand, R., 8, Avenue Chauchard, Versailles. Helicopter.
Turlan, J., 17, Boulevard Garibaldi, Paris 15. Barrier.
Veronese B., Via Flora 6-3, Genoa 18. Dreadnought.
Watson, K. H., Jr., Richfield Springs, New York, U.S.A. Rotary Snowplough.

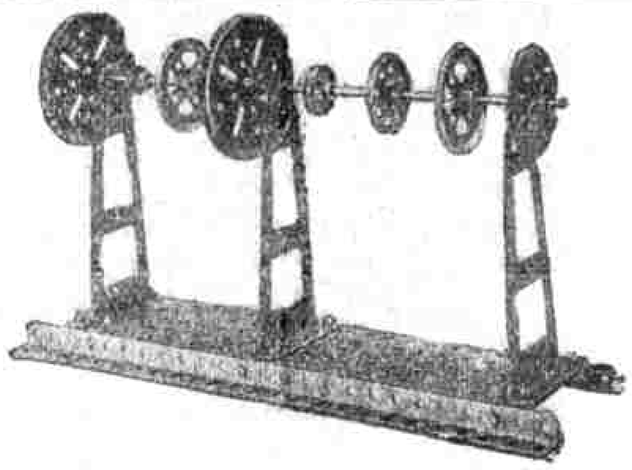
Section "A"

Dadson, Bertie, 37, Hastings Road, Addiscombe, Surrey. Twin Beam Engine Pumps.
MacKinder, H., Sidi-Gaber, Maison Solimon Mahmoud, Ramleh, Alexandria, Egypt. Sakieh or Water Elevator.
Salvioni, E., Via Tagliata, No. 25-8 Savona, Genoa. Three Phase Electric Loco. — **First and Second Prizes (Divided) £20**

Melville, William, 44, Woodville Gardens, Langside, Glasgow, S. Railway Breakdown Crane. — **Third Prize - - - - - £4**

Additional Prizes of Meccano Outfits and Train Sets, Etc.

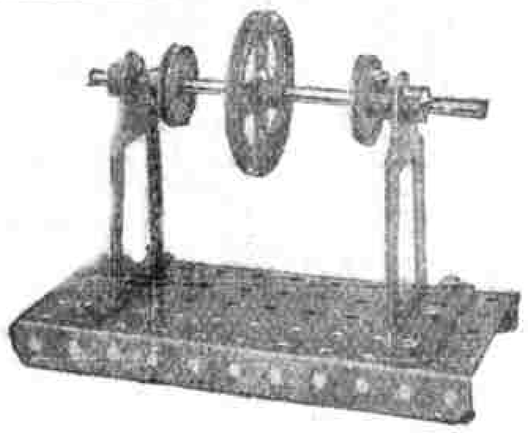
Besano G., Piazza Belgioioso 1, Milan, Italy. Donkey with moving head.
Bower, C.M., "Kenmore," Mawney's Road, Romford, Essex. Automatic Conveyor.
Bowyer, D., 5, Silver Terrace, Exeter. Baker's Dough Machine.
Brundrett, F.C., 339, Waterloo Road, Hanley, Stoke-on-Trent. Platform Scales.
Cella, M., Via Garibaldi, 53, Lodi, Milan, Italy. Colossus of Rhodes.
Chabot, R., Nouvelle Poudrerie, St. Medard-en-Jalles, Gironde, France. Quadricycle Rider.
Chaussivert, A., 28, Avenue d'Italie, Paris. Windmill.
Clarkson, J., 250, Reddings Lane, Hall Green, Birmingham. Bird.
Crousaz, B., Passiflora, St. Peters-in-the-Wood, Guernsey. Windmill.
Earle, R., 37, Crescent Avenue, Newton Centre, Mass., U.S.A. Electric Ice Cutter.
Ezio, R., Via Garibaldi 10, Borgomanero, Novara. Small Lorry.
Grech, G., 173, Prince of Wales Road, Sliema, Malta. Maltese Cross.
Henderson, E., 600, McCartney Street, Easton, Pa., U.S.A. Paper Cutter.
Hindley, O. W., The Gables School, Cantelupe Road, Bexhill-on-Sea. Oogley Bird.
Jones, F. S. B., 71, Hartington Road, Liverpool. Giant Shovel.
Keyser, A., Crabethstraat 6, Gouda, Holland. Electric Tramway Repair Car.
Kirkman, B. 134, Green Street, Forest Gate, London. Wallpaper Trimming Machine.
Lerolle, J. M., 47, Rue de Lisbonne, Paris, 8. Crane.
Liegeois, Raymond and Louis, 130, rue de Paris, Pantin, Seine. Steamer.
Lopez, M. Rossi Bernal, Soriano 26, Jaen, Spain. Portable Wheel.
Olivati, G. C., Stabilimenti Way Assauto, Asti, Alessandria, Italy. Tight-rope Acrobat.
Phillips, W., 27, Harle Street, Neath, Glam. Harp.
Pollet, N. J. and Jacques, 41, Boulevard Pater, Valenciennes, Nord, France. Electric Crane.
Rosso, N. E., Via Garibaldi, 42-3, Sestri Ponente, Genoa, Italy. Tricycle.
Seguin, J., 2, rue General Bouchu, a Is-sur-Tille, (Cote d'Or) France. Helicopter.
Smith, H., and Pye, H., Rose Villa, Seghill, Northumberland. Pit Head Gear.
Van Groenewond, A. H. J., Coorutherstraat 47, Utrecht, Holland. Gymnast.
Van de Voorde, Rue Pelican 23, Gand, Belgium. Automatic Mill.
Whard, J. R. de, Biltstraat 101a, Utrecht, Holland. Windmill.
Wildmann, E., Piazza Scorcola No. 320, Trieste, Italy. Tricycle.
Winterbottom, M., 18, Ramsgate Street, Glenelg, South Australia. Elevating Sack Conveyor.
Woodward, W. F., 3, Salop Street, Wolverhapmton. Sewing Machine.



Meccano Shafting Standards.

These Shafting Standards are designed on the Meccano system with equidistant holes. Our illustration shows how strong and serviceable shafting may be constructed from Meccano Parts with the aid of these standards.

		s.	d.	
Price,	Standards only, Large	1	0	each.
„	„ „ Small	—	8	„



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, and 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.

H. J. Lewis (Wynberg, S.A.)—I was pleased to hear that you are "overjoyed that the '*M.M.*' will be published oftener." I have had hundreds of letters containing similar expressions. I note you are now in this country for three months, and hope that you will have a very pleasant holiday. Shall you be able to come to Liverpool to see us ?

Eric Reynolds (N. Wairoa, N.Z.)—I shall endeavour to find you a correspondent in England, Eric, and I have pleasure in printing your little verse.

"Of all the lands throughout the world,
New Zealand is the best,
Of all the toys that reach this shore
Meccano's stands the test."

T. French (Walthamstow)—Thank you for your suggestion, but I fear we have not sufficient space in the "*M.M.*" for diagrams of various engines showing how they work. I hope to publish illustrations of types of locos from time to time, however, and the first—a photograph of the "*Princess Mary*"—appeared in our last issue.

A. C. West (Hull)—I was very pleased to hear that you found Meccano of the greatest use in your lessons in Mechanics. I do not think that our readers would be content to wait so that the "*M.M.*" could be published once a year as a complete volume. It is to obviate this, that we have introduced the special spring-back Magazine binder. Your riddle-me-ree is interesting, but I do not think the answer will present any difficulty to the sharp boys who read these pages.

T. Bullen (Melling)—You have sacrificed the truth in composing your little verse, Tom, as Meccano is not made of steel "so that it will rattle," but because steel is the strongest possible material.

G. Happs (Worsbro' Bridge)—Thank you for your four verses, George, but these are scarcely up to standard. Carry out the spirit of verse four, and "try, try again.

B. G. Papaeonstantino (Athens, Greece)—Mr. Hornby wishes me to thank you, Basil, and the large number of his other friends, for your congratulations on his being elected the President of the British Toy Manufacturers' Association.

S. Atkinson (Pipe Hill, Lichfield)—Whilst thanking you for your suggestion, I regret there is not sufficient space in the pages of each issue of the "*M.M.*" for articles on Gardening. Although I agree that the subject is interesting, I have dozens of articles on Engineering, and similar subjects, awaiting publication, and these claim priority.

R. H. Parker (Farndon)—Thank you for your congratulations, which I have passed to Mr. Hornby. I was interested to read the poetry you sent.

W. E. Lee (Worcester)—Thank you for your story, William, for which I shall endeavour to find a corner in some future issue of the "*M.M.*"

G. Orton (Litherland)—It is as well to be able to name the models you have built when entering them in the Competition. If you have any difficulty in this connection, I shall always be glad to help you, before you send in your entry, if you will send me a description of your model. I think a suitable name for the model you describe would be "Gravity Telpher Span."

W. J. Palmer (Cheltenham)--**and others.**—I have pleasure in publishing the solution of the code message sent by G. Orton, and published in the last issue of the Magazine. It is "All good luck to Frank Hornby."

To translate the cryptic message, the first five letters of the code are set down, the next five are written underneath them, and so on. The message is then decoded by reading down the columns in succession.

Mr. H. Cousens (Nottingham)—I am pleased to hear of your nephew's interest in Meccano, and that he has turned out some interesting models. I note that you endorse our claims that Meccano is more than a toy.

W. Sykes (Kenyon Hall)—Thank you for your paragraph regarding Meccano. If the sun shines for 17 hours a day at Kenyon during the summer months, you are certainly more favourably situated than most towns in this country. At the same time, your suggestion that models are as easily built in the open air in the summer, as by the fireside in winter, is a good one, and no doubt many Meccano boys take advantage of the fine days to build out of doors.

G. R. Ellaby (Bath)—Your suggestion that Meccano boys should adopt as their motto "Truthfully" is a good one, and I recommend it to my readers.

J. R. Sturzaker (Garstang)—I am pleased to know that you think the "*M.M.*" is ripping, and that it gets better with every issue. I have had hundreds of letters to the same effect recently, and can assure you there are plenty of good things in store for my readers. The Photographic Competition has been a great success.

G. Hare (Leamington)—The new Zulu trains derive their name from a well-known Great Western train that runs between Paddington and Birkenhead. I agree that sometimes trains have peculiar names, as, for instance, the "Flying Scotchman." No doubt you know of several others.

R. H. Whiting (Bedford)—Scenery for the Hornby Railway track may easily be made by enthusiasts who are handy with their tools. A good effect may be obtained with cardboard and coloured paper, and very realistic cuttings and embankments made by sprinkling sand on cardboard that is wet with gum or thin glue. Such accessories as tunnels and signals will no doubt be added to the Hornby system from time to time, as opportunity allows.

Mr. F. E. Bolt (London)—Your design for a special jersey for Meccano boys is very good, but I think that the jersey worn by the Meccano boys in our illustrations is quite satisfactory. Several Meccano boys have had jerseys made similar to those illustrated and are very proud to wear them.

R. H. George (Naples)—I was very interested to hear from you, Henry, and to know that you are such an enthusiastic Meccano boy. Send along the photographs you have, and I will see if I can find space to publish them in the "*M.M.*"

D. Dunn (St. Vincent B.W.I.)—I have pleasure in printing your verse, Donald, and hope to hear from you again in the near future. Readers of the "*M.M.*" would, I am sure, be interested to hear of your life in the British West Indies.

"'Tis strange, methinks, concerning toys,
How many salesmen speak.
Some call divine the top and twine,
And some the doll with squeak.
From some you hear the praise of balls,
Or "Best made Doll's Piano,"
But what a shame that few proclaim,
The joys of great Meccano."

V. Halpe (Ceylon)—I was pleased to hear that Meccano has been a real God-send to you. Your remarks in regard to the Prince of Wales' visit to Ceylon are very interesting, and Colombo Harbour must have been a wonderful sight with the decorated ships and coloured electric light displays.

G. Evans (Oakville, Ontario)—We are announcing another big £250 Competition in the next issue of the "*M.M.*" We have recently opened a Depot in Canada, at 11, Colborne Street, Toronto. We are afraid the contributions you send are not altogether suitable for publication in these pages.

C. M. Aldridge (Reading)—"At a concert a week ago they had no music-stand. I suddenly had a brain-wave and made one out of Meccano." Your action does not surprise me, as this is just the thing a keen Meccano boy would do.

Magazine Binder.



In response to numerous requests we have introduced a spring-back binder for "*Meccano Magazines.*" The binder has a strong stiff back, covered with imitation leather, tastefully tooled. It takes a large number of copies and keeps them neat and clean. In black, lettered gold. Price 3/- each, post free.

The Meccano Manuals.



There are three Meccano Manuals of Instruction. Book No. 1 is the regular Manual that is included with the main Meccano Outfits and contains instructions for making 323 fine models. Price 2/6 (postage 3d. extra). Book No. 2 illustrates a large number of fine models and describes a series of simple scientific experiments. Price 1/3 (postage 2½d. extra.)

The No. 3 Manual contains illustrations and instructions for building a large number of entirely new and imposing models of great beauty. These include such interesting models as the Theodolite, Signal Gantry, Level Crossing Gates, Revolving and Hydraulic Cranes, Coal Cutter, Lathe, Dredger, Planing Machine, Travelling Gantry, Wire Covering Machine, Twin Eliptic Harmonograph, etc. The Manual is beautifully illustrated by an entirely new process, by which the component parts of every model may be clearly seen. The price is 1/3d., postage 2½d.

New Prices of Meccano.

No.			
0	Outfit with full instructions for building		5 -
1	do.	do.	8 6
2	do.	do.	15 -
3	do.	do.	22 6
4	do.	do.	40 -
5	do.	do. (Carton	55 -
*5	do.	do. (Wood	35 -
*6	do.	do. (,,	140 -

* In well-finished cabinet with lock and key.

Accessory Outfits.

No.						
0a	Converting a **No.** 0	into a **No.** 1	..	4 -
1a	do.	do.	1	do.	2	.. 7 6
2a	do.	do.	2	do.	3	.. 8 6
3a	do.	do.	3	do.	4	.. 12 6
4a	do.	do.	4	do.	5	.. 15 -
5a	do.	do.	5	do.	6	Car 30 -
5a	do.	do.	5	do.	6	Wood 30 -
Inventor's Outfit		"A"	..	..		8 6
,,	,,	"B"	..	..		15 -
Clockwork Motor		..	..	..		9 -
,,	,,	..	..	..		12 6

Change of Address.

Subscribers should immediately notify the Editor of any change of address. Send a Postcard *giving the old and new address*, so that records may be kept up to date.

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No. 26

SEPTEMBER, 1922



MECCANO MAGAZINE

PUBLISHED IN THE INTERESTS OF MECCANO BOYS.

PRICE 1d

In America and Canada

By the Editor

IN company with Mr. Frank Hornby, I have just paid a visit to the United States and Canada and some of our experiences there will, I am sure, be of interest to readers of the *Meccano Magazine*.

We sailed from Liverpool on the "*Baltic*" on 27th May and, after a pleasant and uneventful passage, arrived at New York on 6th June, where we were met by officials of Meccano Company Inc. We found New York in the throes of an intense heat wave, which lasted during the whole of our stay there. It was just as hot at midnight as at midday and at times the heat was so great that sleep was out of the question. Light clothing, electric fans and iced drinks were the order of the day—and of the night too!

During the first week of our visit we spent most of our time at the new Meccano building in Elizabeth, New Jersey, a large and prosperous town twelve miles from New York City. Here, under the capable management of Mr. J. P. Porteous (who has had much experience in England and on the Continent), assisted by the Sales Manager, Mr. H. H. Dobson, excellent arrangements have been made for dealing with our rapidly increasing business in America, and we were delighted to learn of the progress that has been made in this connection.

RADIO

IN future it is our intention to devote considerable space in the *Meccano Magazine* to Radio matters. News from all parts of the world relating to wireless will be collected and reported, and the latest developments and inventions in this new science will be featured and illustrated.

With the aid of Meccano parts any boy can now build his own Radio Set, and the *Meccano Magazine* will keep him right up to date on all Radio improvements.

The Editor



THE NEW MECCANO BUILDING AT ELIZABETH, NEW JERSEY.

MECCANO AND RADIO.

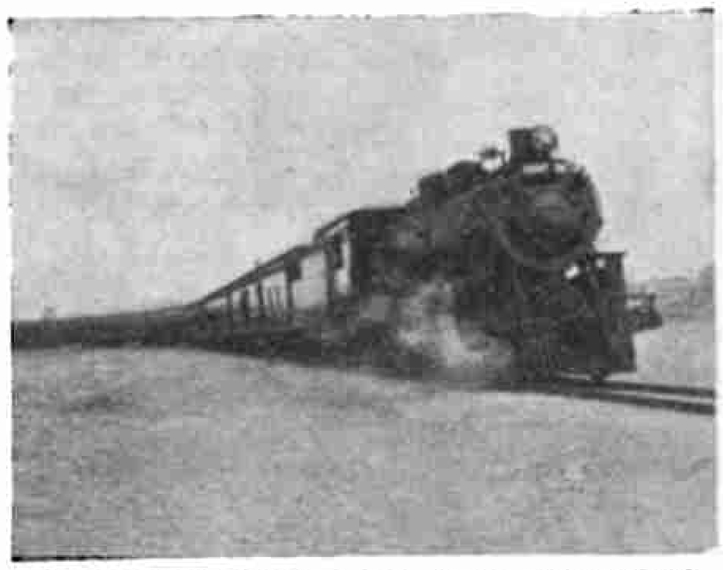
For some time past Mr. Hornby has been experimenting with a Meccano Radio Apparatus and under his guidance our electrical experimenters in Elizabeth had been working on a Meccano Set suitable for receiving either telegraphic or telephonic wireless messages. Just before we arrived, this apparatus had been perfected and connected to the aerial over our building. There was great excitement, when it was found that a concert being broadcasted in New York by the Wanamaker's Stores was heard with a clearness that could only be described as wonderful.

WE LISTEN IN.

The apparatus is simplicity itself, and such is the adaptability of the Meccano parts that all the requirements of Wireless Telephony were met and the results were every whit as good as those obtained from an expensive receiving set, which had been placed beside the Meccano set for comparison. From New York came speeches, songs, instrumental music, weather reports, etc., with great clarity, and we realised that here was another amazing example of the value of the Meccano system. A duplicate of the receiving set was built for us to bring to England, and British Meccano boys are destined to find in it the most fascinating and useful model they have ever built.

On 14th June we journeyed to Toronto to see our new Canadian Headquarters that have recently been opened. We travelled by night train through Albany and Buffalo, arriving at Toronto early in the morning.

Our breakfast in the train was served by coal-black attendants dressed in pure white and was a very picturesque function. Ham and eggs, coffee and melon, and apple pie taste much better when served by these gentlemen, whose broad, friendly smiling faces radiate a comfortable atmosphere throughout the dining saloon!



A FAMOUS TRAIN ON THE CANADIAN NATIONAL GRAND TRUNK RAILWAYS.

This train, the "Continental Limited," is an all steel train and runs across the Canadian Continent. It is built throughout of steel and is here seen pulling out of Vancouver for Montreal.

MECCANO IN CANADA.

At Toronto we were met by our Canadian Manager, Mr. Wilfred Jones, who quickly put us in touch with all the Meccano doings and possibilities. In that large and important Dominion, the great trading problem is the immense distances between the important towns. From St. John's, Newfoundland, to Montreal the distance is 1,100 miles, or over 200 miles further than from Land's End to John o' Groats, the most northerly point of Scotland. If you will look at your map of Canada you will see that even 1,100 miles is only a short distance across that vast country. Further west, the distance between Montreal and Winnipeg is 1,422 miles and from Winnipeg to Vancouver 1,481 miles.

IN AMERICA AND CANADA (*cont.*)

Travelling in Canada is a very costly business and takes a long time, and the cost of carriage on goods sent by rail is naturally also very high. However, Canadian boys want their Meccano just as keenly as boys in Britain, and we see that they get it.

TORONTO'S FUTURE IMPORTANCE.

Toronto itself is a fine commercial centre and it was our good fortune to have the important features of the city shown and explained to us by Mr. Slater, of the famous T. Eaton Stores. Mr. Slater is one of the shrewdest and most genial men who ever left Scotland for the good of Canada, and he placed himself and his car at our disposal the afternoon after we arrived. We were extremely interested to learn from him that in a comparatively short time it will be possible for large ocean-going vessels to sail right up the St. Lawrence River into Lake Ontario and to deliver their cargoes at the docks in Toronto. This will be made possible by the river being made navigable and the cutting of a great canal. Although this is a big project, its accomplishment will greatly enhance the importance of the city of Toronto. Mr. Slater showed us over the T. Eaton Stores and by the courtesy of Mr. J. A. Jackson we also had an opportunity of seeing over the Robert Simpson Stores and were much interested. These two Department Stores are wonderful organisations and compare most favourably with similar Stores in any other part of the world.

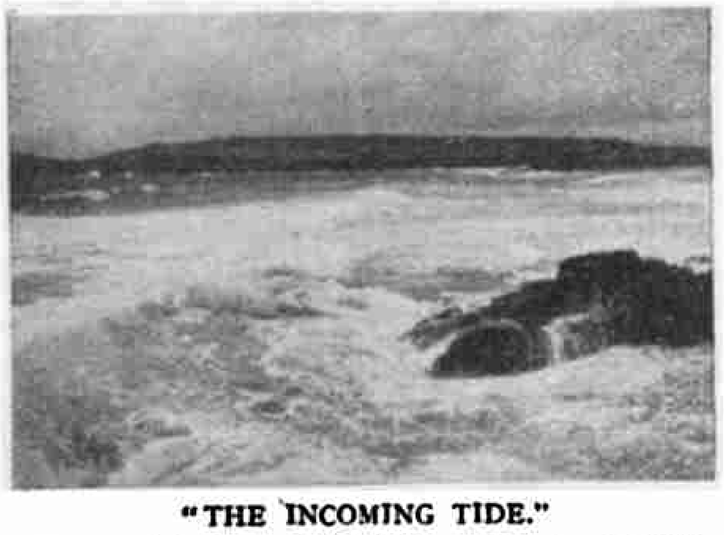
(To be continued.)

From the Recent Photographic Competition.



"CHUM" POSING FOR A SNAP.
Photograph by Master Arthur J. Jones, of Maidenhead, Berks.

The two photographs in this column were entered for our last Competition and serve to show the standard of work desirable. These photographs did not win a prize, but as they have been published they are being paid for at the usual rates. The Editor is at all times pleased to consider interesting photographs for publication, apart from Photographic Competitions and will pay for any that are used.



"THE INCOMING TIDE."
Photograph by Master Phillip Gage, of London, N.W. 8.



Meccano Activity.

In September, springtime commences in Meccanoland, and the coming season promises to be the most active and enjoyable season in the history of this famous country. Meccano model building, Hornby and Zulu trains, Electrical experiments, Meccano Club meetings, Guild activities, £250 Best Model and other Competitions as usual—and now Radio Receiving in its most perfect and enjoyable form. Truly, Meccano boys are in for a happy time.

The "*M.M.*" Bigger and Oftener.

The *Meccano Magazine* in its present form is too small to record all the news and happenings in Meccanoland, and from now on it will contain twelve pages and during the winter months will be published monthly. This will enable us to print many of the interesting and useful articles on Engineering, Electricity and Radio that we have by us. We shall also be able to include articles on many other subjects of general interest to Meccano boys, that formerly had to be omitted owing to lack of space.

Start the Season Well.

This is the time of year when boys are taking stock of their Meccano parts to see that everything is in order and ready for building. I want to remind readers that Meccano Limited will replace old or damaged parts with bright new parts, on payment of half list prices. The old parts should be returned either through a dealer or direct, accompanied by a list and a remittance to cover the cost of the new parts required.

New Competitions.

There will be many competitions for Meccano boys to enter this winter, and I believe all my readers will take the keenest interest in them. The big £250 Best Model Competition will be run as usual, and many others will be announced in the columns of the "*M.M.*" from time to time.

The Best Rails for Hornby Trains.

Meccano Limited is anxious that all users of Hornby Trains shall use suitable rails in order to get the best results. The Meccano rails are strong and rigid, have an increased number of sleepers and fit together perfectly, thus ensuring smooth running. A well-illustrated list of ingenious rail designs—showing how all kinds of formations may be built up with the aid of Meccano rails, points and crossings—has recently been published, and will be sent to any address on receipt of stamps value 4d. A copy of this booklet is now enclosed with each Hornby and Zulu Train Set.

The New Meccano Book.

I specially wish to draw the attention of all readers of the "*M.M.*" to the new booklet, "*Meccano Products*," particulars of which are given elsewhere in these pages.

New Meccano Parts.

No.			s.	d.
1B.	Perforated Strips, 7½" long,	per ½ doz.	0	8
8B.	Angle Girders, 7½" long	,, ,,	1	2
12B.	Angle Brackets, 1" × ½"	... each	0	1



55A.	Perf. Strips, slotted, 2" long,	each	0	1
69B.	Grub Screws, $\frac{7}{32}$" long...	per doz.	0	6





95A.	Sprocket Wheels, 1½" diam.	each	0	4
96A.	,, ,, ¾" ...	,,	0	3
120A	Spring Buffers	per pair	0	8

A New Photographic Competition.



The recent Photographic Competition was so well supported that we have arranged a further Competition on similar lines with a view to encouraging Meccano boys to pursue this interesting hobby. As before, the Competition will be divided into three sections :—

(1) ARCHITECTURAL (photographs of churches, castles, abbeys, etc.).

(2) NATURE STUDY (photographs of birds, trees, animals, etc.).

(3) MISCELLANEOUS (landscapes, seaside views, groups, machinery, engines, etc.)

There are no restrictions and any type of camera may be used. Prints may be of any size and finished in any way, it being immaterial whether they are mounted or not. The photographs must be taken by the competitor but the developing and printing may be done by others. The entry, however, should state whether the photograph is the competitor's sole work throughout (that is, taken, developed, and printed by him) as this will naturally be taken into consideration when making the award. The entries will be judged on their pictorial merit.

In our last Competition a large proportion of the photographs were of animals, and no more pleasing subject could be found in this connection than your pet dog. It should be pointed out, however, that family groups and portraits of the entrant's relations, whilst interesting in themselves, are not as a rule of sufficient general interest to warrant their inclusion in the pages of the "*M.M.*" As the winning photographs will be published in these columns this point should be borne in mind.

The closing date for the United Kingdom is 1st November and for Overseas 31st December next. The first prize will be a No. 1 Hornby Clockwork Train Set and the second prize a Tin Printed Train Set. Other prizes will also be awarded according to merit.



BRIGHT IDEAS

These columns are reserved for dealing with suggestions sent in by Meccano users for new parts, new models and new ways of making Meccano model-building attractive. We are always pleased to hear from any Meccano boy who has an idea which he considers will be useful in the Meccano system.

Evan Watkin (New Cross, London, S.E.).—Pulley wheels with serrated edges were war-time expedients and were dispensed with when better materials became available. We shall be interested to hear of the advantages possessed by the combined collar and double bent strips you suggest.

A. Sarjeant (Smethwick, Birmingham).—A boat launching gear is illustrated in our No. 2 Manual, Model No. 416.

Dick Fortescue (Blackheath, S.E.).—Your suggested double bent strips have a great disadvantage in that they depart from our equidistant half-inch standard.

William Griffith (Brisbane, Queensland).—To be of general utility curved rack strips such as you suggest would have to be made in a variety of diameters. At the moment their possibilities are undeveloped, but we shall give your suggestion consideration.

William and Lloyd Oppatt (Wanbi).—A 1½" Contrate wheel geared to a ½" pinion will give you a fast drive. There would be no use for worm wheels with various pitches for the same effect may be obtained from existing parts. We do not quite follow the description of your suggested cam. Send us a sketch with full particulars.

H. Atkins (Leatherhead).—We have under consideration an alteration in the pitch of our propeller blades. Experiments in this direction with the model revolving aeroplane have been highly successful.

Ronald Selling (London, S.W.).—(1) Models of motor cars vary so much in size that it would be impossible to issue a standard bonnet. (2) Bits and drills in miniature would be very costly and would only serve an ornamental purpose.

Deconynck Andre, (Lille).—We already list a triple throw eccentric. Adjustments could be made by attaching a strip coupling and using a threaded rod.

G. McKenzie (Brondesbury, N.W.).—Your suggested propeller in one piece would be somewhat costly. The existing parts have the advantage of being interchangeable as well as giving a fairly good representation of an aero propeller.

Arthur Rainey (Bristol).—Perhaps at a later date we shall enlarge the variety of our types of engines. We have recently introduced various new types of trucks, including a brake van.

R. Harrison (E. Molesey).—Our long experience of models has shown that the existing spanner is quite long enough without the extension you suggest.

Ronald Walker (Golcar).—Our 2" pulley wheel is an excellent replica of a motor steering wheel.

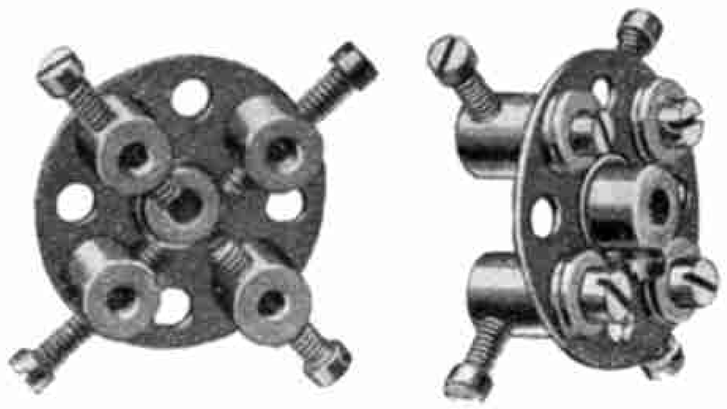
Arthur Hammonds (Totterdown).—24½" braced girders are awkward and restricted in use. Two 12½" are more convenient and can be employed in both instances. The same applies to 24½" strips.

Gerald Liardit (Manningham, Bradford).—Centre rail contact has proved to be the best method for model electric railways, both from a manufacturing and practical point of view. Regarding your suggested rack girder, would not the existing rack strip serve the same purpose? We scarcely see any advantages in the type of gear wheel you suggest.

L. R. Stockdale (Thirsk).—Instructions for building new models of a complicated nature will always be issued in leaflet form.

J. Wm. Harvey (Huddersfield).—We should like to hear what use you have found for the combined wheel and coupling.

Leonard Asquith (Leeds).—See our reply above to Ronald Selling, London, re bonnets. This applies equally to radiators.



A. M. Bentley (Leicester).—Your suggested chuck would mean the introduction of a special part. A very good chuck may be made from existing parts, as illustrated above. (2) The rack strip was introduced to fill the requirements of your suggested toothed rod. (3) Would not the face plate serve the purpose of your third suggestion?

Jack Lord (Haslingden).—Your suggested eccentric would be somewhat costly to produce. Would not our triple throw eccentric serve the purpose?

James E. Govan (Melrose).—See our reply above to Sidney Dalton re rubber rings. (2) Surely it is not necessary to use a hammer to make your rods go through your wheels. Are you quite sure you have freed the set screws properly?

C. Lycett (Milton Regis, Kent).—Bent strips are included with each Outfit and make possible the construction of the models within the scope of the outfits. Elaboration of models must, of course, be catered for by the addition of separate parts.

A. Despeyroux (Menzin).—We include a propeller blade, No. 41, in our list.

N. Forbes-Wilkinson (Claygate).—Two 1" angle brackets bolted together would give the formation you suggest.

H. Pollard (Deal, Kent).—Sorry, but we cannot follow your description of a modified bush wheel.

S. H. Chaplin (Saltley, Birmingham).—Our wheels are not designed for belt drives. We incorporated the cord in our system as being the most convenient agent for the purpose.

Arthur Hepworth (Brighouse).—(1) We shall keep your suggestion in mind when we re-design the clockwork motor. (2) Squared rods and wheels with squared holes would have only limited uses. They would not be of general adaptability. We should be interested to hear of any uses you have found for them. (3) Slotting the bolts at the end of the shank would not be practical. You must build your models so as to make the bolt heads accessible.

Bernard Walsnage (Cantley, near Doncaster).—1" gear wheels would only mesh with each other and would consequently give no ratio. Four speeds are ample for any and every use, and even vehicles of heavy haulage capacity are seldom fitted with more than three speeds. We shall be interested to see your gear box when entered for the Competition.

A. Sirins (Denu Lune).—Your suggestions are perfectly sound. We have had the introduction of saws, chucks, tools, etc., under consideration for some little time, and hope to include them as opportunity occurs

Four Clever Meccano Boys who won Prizes in the recent £250 Competition.



Master W. A. Cullen of Baildon, Yorkshire, who won a prize of a No. 4 Meccano Outfit in Section "C" for his splendid model of a Hammer-head Crane.

We have pleasure in publishing the photographs of four Meccano boys who were successful in winning prizes in the recent £250 Model-building Competition. Every year brings an increasing number of entries from all parts of the world and the ingenuity displayed by the competitors in devising new movements and models is considerable. We feel sure that all readers of the "*M.M.*" will join us in extending congratulations to these four boys and also to the very many other winners.



Master M. B. Kirkpatrick of Ilford who shared the second and third cash prizes in Section "C" for his model of a Loco Breakdown Crane.



Master Ennio Salvioni of Genoa, who shared the first and second cash prizes in Section "A" for his model of a Three Phase Electric Loco.



Master B. Gardarsson of Reykjavik, Iceland, who won one of the cash prizes in Section "B" and also the special prize of £5 awarded by the Meccano Guild for his model of an Electric Searchlight.

THE NEW MODEL-BUILDING COMPETITION.

£250 in Cash and other Prizes.

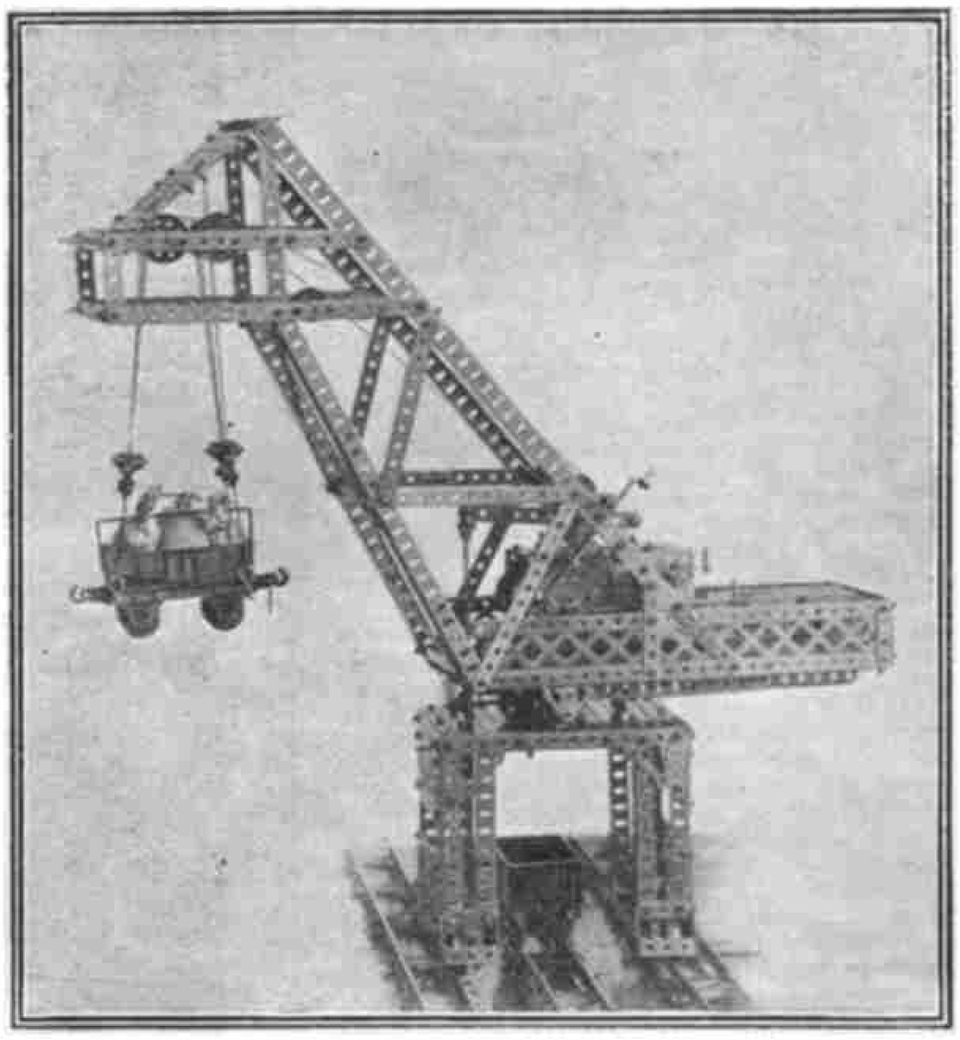
Another Competition has now been arranged on similar lines to the Competition recently closed. There will be hundreds of prizes awarded, including nine prizes in cash to the value of £100 and Meccano Outfits to the value of not less than £150. As was the case last year, the Competition will be divided into three sections: (1) for boys under 10 years of age; (2) for boys between 10 and 14 years of age; and (3) for boys over 14 years of age. There are no restrictions and no entrance fees. Any Meccano boy may enter and full particulars and entry form will be sent on receipt of a post card. The closing date for the Competition will be the 15th April, 1923, for entries from the United Kingdom and 31st May, 1923, for entries from Overseas.

Model of a Mitchell Appliance

Wins a FIRST PRIZE IN MECCANO £250 COMPETITION.



THE MITCHELL APPLIANCE AT BLACKBURN POWER STATION EMPTYING A WAGON.



THE WINNING MODEL OF THE MITCHELL APPLIANCE.

MASTER LESLIE HUGHES, of 80, Barnwell Road, Brixton, London, S.W.2, has built a splendid Meccano model of a Mitchell Appliance, which he entered for the recent Meccano £250 Model-building Competition. This fine model was awarded the first prize in Section B and we have pleasure in illustrating it above.

Knowing that it would be of interest to Messrs. The Mitchell Conveyor and Transporter Co., of London, the manufacturers of this wonderful appliance, we sent a photograph of the model to them. It is interesting to find that they have congratulated Master Hughes on his excellent work and as an additional appreciation they have sent him a cheque for £5. It is by the courtesy of the Mitchell Conveyor and Transporter Co. that we are able to reproduce the above illustration from a photograph of an actual Mitchell appliance.

CRANE LIFTS FULL RAILWAY WAGON.

This appliance, which handles coal in a novel method and is in use at the Electricity Works of the Blackburn Corporation, consists of an electric revolving crane that travels round the store ground. It is capable of lifting full railway wagons from any point on the track and discharging the coal for a distance of 40 ft. on either side. The coal is brought to the power station in trucks by rail and in barges by canal, and in both cases the crane performs the operation of unloading.

A large quantity of coal is required at a power station and the problem of handling all this coal cheaply and efficiently—from the time it arrives in wagons or barges until it is consumed—has an important bearing on the price charged for the current used in our homes and factories. Thus this crane has a distinct claim on the interest of every one of our readers who uses electricity in general, and those Meccano boys living in Blackburn in particular.

The crane, which is entirely operated by one man, rises to a height of 50 ft. above the ground level and is built on an under-carriage arranged to allow wagons to pass underneath. It runs on a 12 ft. gauge track and is provided with hoisting,



MASTER LESLIE HUGHES.

travelling and slewing motion, each electrically operated by separate motors.

A superstructure is mounted on the under-carriage, supporting the operating machinery and driver's cabin, which is placed in a position to enable the operator to see the entire working of the crane.

Except for braking, slewing and travelling, no mechanical levers or brakes are used, the whole control being exercised by means of electric controllers within reach of the operator. The hoisting winch is provided with two separate motors and drums with rope attachments. These ropes are fixed to either end of a specially designed cradle on which the wagon rests. The cradle being adjusted, the motors hoist it in a horizontal position to the required elevation, when the crane revolves until it is over the point for unloading. Here a single winch comes into motion tilting the wagon until the coal discharges through the end door. The hoisting speed with wagon is 30 ft. per minute.

When hoisted the cradle lifts the wagon by means of its axle and by an ingenious attachment the wagon is prevented from sliding off the cradle when in an inclined position.

The cradle is carried on four wheels, running on an inside track and when disengaged from the ropes it can be easily pushed under a wagon for lifting. After returning the empty truck to the track the crane continues to lower the cradle until it is again on its special track, ready for the next wagon to be hoisted.

The crane is fitted with a patent automatic weigher and totalizer capable of recording the exact weight handled at any moment. This is possible either when a wagon is weighed or when the grab is used, the only difference being that in the case of the grab the record is registered automatically, whereas when wagons are being lifted the weight is recorded by hand in the operator's cabin.

"GRABBING" COAL FROM BARGES.

Electric grabs, having a capacity of 1¼ tons and a hoisting speed of 120 ft. per minute, are provided for use with this crane. These can be readily attached to the hoisting ropes after the wagon cradle is disengaged. When grabbing from the barges the crane delivers the coal direct to the receiving hopper of a skip-hoist, which elevates the coal to the bunkers of the boiler house. Thus the coal is taken from the barges to the boiler without any form of man-handling. The maximum

(*Continued on page* 12.)



RADIO SECTION

A MESSAGE TO MECCANO USERS

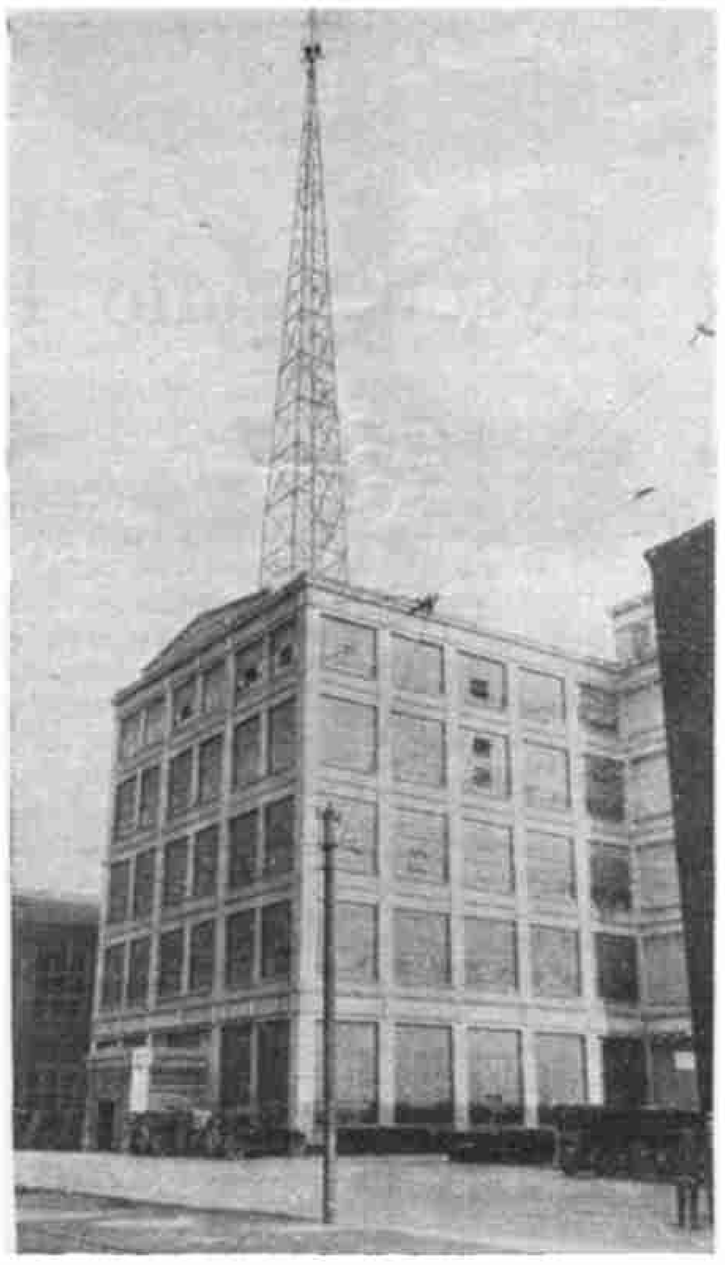
For many months past I have been giving very close attention to the subject of Radio, and I have become firmly convinced of the importance and possibilities of this new and wonderful science. I am anxious, therefore, that every Meccano boy shall have his share in the pleasure that I am convinced Radio is destined to bring to the human race.

In America and Canada there are thousands of boys who are at the present time owners of their own Radio Receiving Sets. Every day they receive not only telegraphic messages in the Morse code, but also concerts, speeches, weather reports, etc., by wireless telephony. Every Meccano boy should make it his business to acquire as much knowledge as possible of radio matters. In my opinion, the discovery and development of wireless communication has conferred as much benefit on mankind as has any invention or discovery of modern times. Not only has it established throughout the world extremely rapid and certain inter-communication over both long and short distances, but it has made cheaper quick transmission of messages. In these, and in many other ways, its commercial value is inestimable.

Wireless telephony, the most recent development of this new science, enables clear and effective conversations to be carried on over great distances. This development has undoubtedly opened up a great new industry, devoted to the dissemination of both instruction and entertainment in a new and wonderful way.

Installations have already been set up at three hundred and sixty populous centres in America. These installations, called "Broadcasting Stations," are capable of transmitting wireless telephonic messages, and each one, at certain fixed hours each day, transmits a programme previously announced in the local daily press. This entertainment consists of orchestral music, singing, lectures in botany, astronomy and other interesting subjects, market reports, fashion reports, results of sporting events, speeches or dance music. Any one located within the radius and possessing a suitable receiving set can enjoy these programmes seated comfortably at the fire-side.

A Radio receiving set is a comparatively simple instrument and I believe I am quite right in saying that considerably more than half the sets in use in this country and abroad are either home-made or have been assembled and fixed up completely by the persons who are using them. It is also fortunate that whilst the theory of Radio is abstruse and requires a good deal of study, the actual receiving of messages is not much more complicated than the installing of a gramophone in the home.



OUR ILLUSTRATION SHOWS ONE OF THE TWO AERIAL TOWERS OF THE MOST POWERFUL BROADCASTING STATION IN THE UNITED STATES.

Its great height of over 180 ft. may be judged by noting the two steeplejacks at the top of the tower. The station is owned by the General Electric Company of Schenectady.

The first time I heard a wireless concert was with the aid of a simple receiving set, which, with the exception of ear telephones, a small inexpensive fitting called a Crystal, some ordinary electric wire, and one or two simple electric fittings—was made entirely from Meccano parts. The extraordinary efficiency of this simple receiving set, and the intense pleasure it gave, determined me to do all in my power to make it possible for every Meccano boy to receive Radio messages, and to share in the pleasure and instruction afforded by this remarkable new science.

In Great Britain the progress of Radio has been much delayed by the absence of broadcasting stations, but the difficulties in this matter have now been overcome. Shortly there will be powerful broadcasting stations installed in the most populous centres throughout the country. When this is done a tremendous impulse will be given to Radio and it is my desire to see all Meccano boys early in the field.

An Instruction Leaflet for the building of a Meccano Crystal Receiving Set is now available and you will find particulars of this on another page. You should apply for this Radio Leaflet at once.

Our Wireless Experts are at work on Meccano Valve Receiving Sets and full particulars of these will be announced in the *Meccano Magazine* as soon as they are ready. In the meantime I would urge every Meccano boy to keep in very close touch with all that goes on in the world of Radio by following the articles that will appear in future issues of the *Meccano Magazine*.

If you experience any difficulty in understanding the subject, or in constructing your Receiving Set, you should write to our Radio Editor who will solve your difficulties and make everything clear to you.

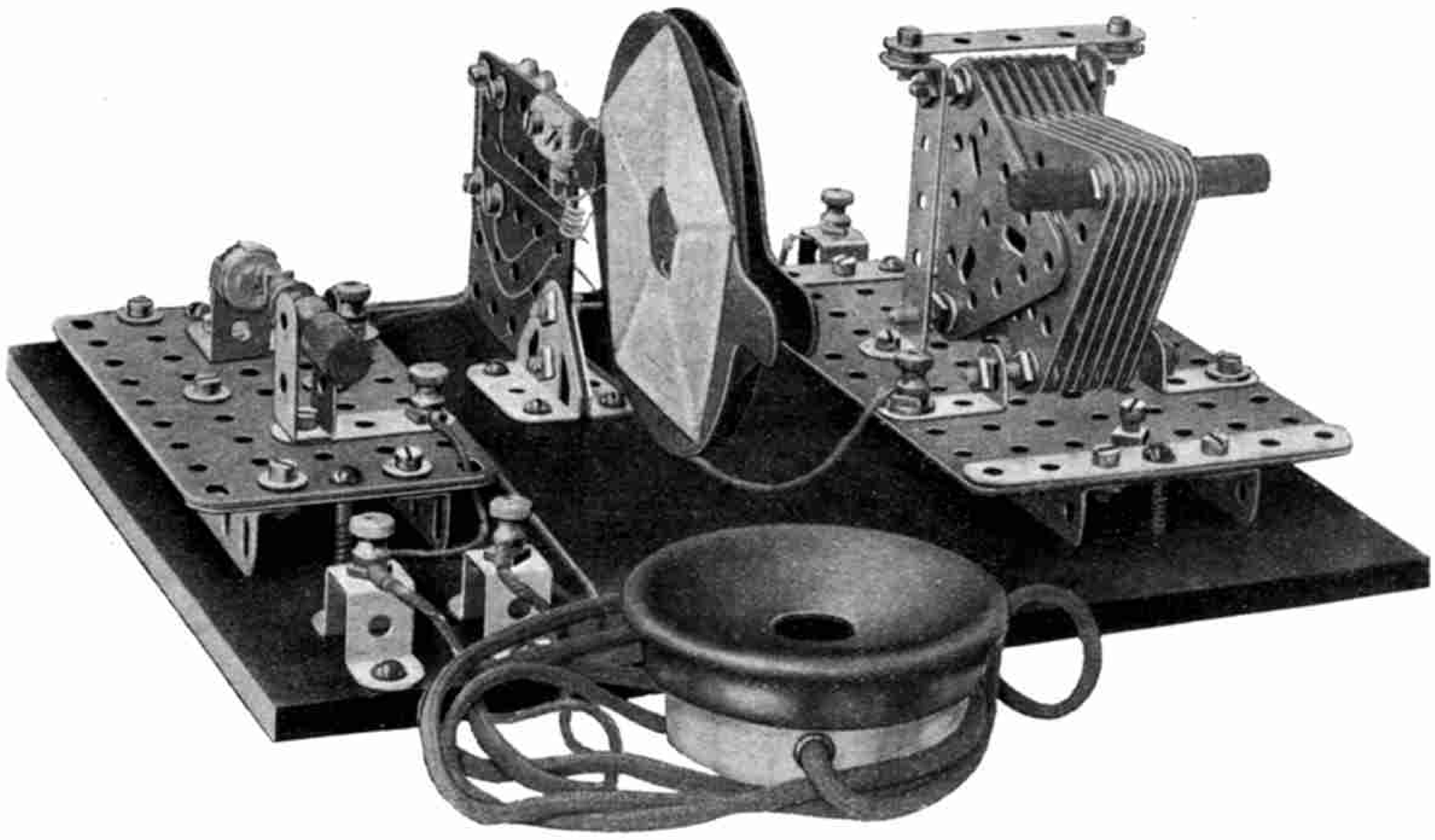
Frank Hornby

A Giant Aeroplane

A giant bombing aeroplane has been designed for the British authorities and will shortly undergo strenuous official tests.

This machine will be fitted with a 1,000 h.p. "Cub" engine, and will have two decks. The elaborate release gearing and instruments for the accurate dropping of bombs are fitted on the lower deck, whilst on the upper deck the pilot and the navigator will have their quarters.

The machine is designed to be a fighting bomber with an exceptional radius of action. Both decks are fitted with gun positions, so that the aeroplane can resist attacks from all sides.



The Meccano Crystal Radio Receiving Set.

Our illustration shows the Meccano Crystal Receiving Set and we wish to draw our readers' special attention to its great simplicity in design and manner of construction. Any intelligent boy can assemble it in one evening. It has been tested thoroughly in London, Paris and New York and in each of these cities clear telephonic and telegraphic messages have been received. In London we have listened to broadcasted concerts from Marconi House. In New York, where the opportunities for testing are much greater than in this country, it has proved to be as efficient as the more costly and elaborate instruments in use there. In Paris we have listened to concerts broadcasted from the Eiffel Tower and have heard them with great clarity.

No scientific instrument ever introduced has been subjected to more thorough tests than the Meccano Radio Receiving Set and if properly adjusted, according to the simple instructions, it will be found to be highly efficient. It is suitable for receiving telephonic or telegraphic messages on a wave length of 360 metres. Provided that the instrument is installed within a distance of about 25 miles from any of the broadcasting stations, it will be suitable for "listening in" to the concerts, etc., that will be broadcasted in accordance with the arrangements made by the Postmaster-General with the Broadcasting Company of which Meccano Limited is a member.

Tests and experiments are being made continuously by trained Radio experts in the Meccano factories. Already several valuable discoveries have led to improved results in Radio receiving with the aid of Meccano parts. These will be fully described in future numbers of the *Meccano Magazine*.

We are very desirous that all Meccano boys shall be kept in close touch with the Radio movement and that they shall participate fully in the pleasures that this great invention will bring If you live within 25 miles of a broadcasting station the Meccano Crystal Set is the simplest and most effective apparatus with which to commence to enjoy this wonderful new science. Your first step should be to send for the Meccano Radio Instruction Leaflet. This will be forwarded post free on receipt of 3d. in stamps. If you reside more than 25 miles from a broadcasting station you will require a more powerful receiving set, and in this connection our Radio Department is now at work on a Meccano Valve Set, and full particulars will be announced in the "*M.M.*" as soon as it is ready.

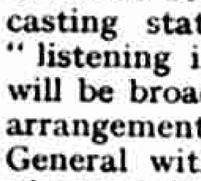
If you are in any difficulty in regard either to your apparatus or to the erection of your aerial, do not hesitate to write to the Editor, Radio Department, *Meccano Magazine*, Old Swan, Liverpool, who will be glad to help you.

Prices of Meccano Radio Receiving Set and Special Radio Parts.

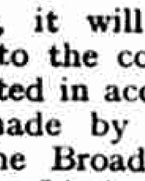
RS1. Meccano Crystal Receiving Set, complete. Efficiency tested. Packed in strong carton. price 55/-

RS2. Outfit containing parts to make Meccano Crystal Receiving Set, in strong carton...price 45/-

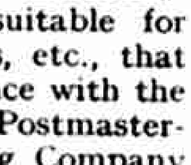
No.	Meccano Radio Parts.	s.	d.
401.	Specially Prepared Fibre Flat Plates, 4½" × 2½" ... each	0	3
402.	Specially Prepared Fibre Flat Plates, 2½" × 2½" ... „	0	2
403.	Specially Prepared Fibre Triangular Plates, 2½" ... each	0	1



(No. 404)

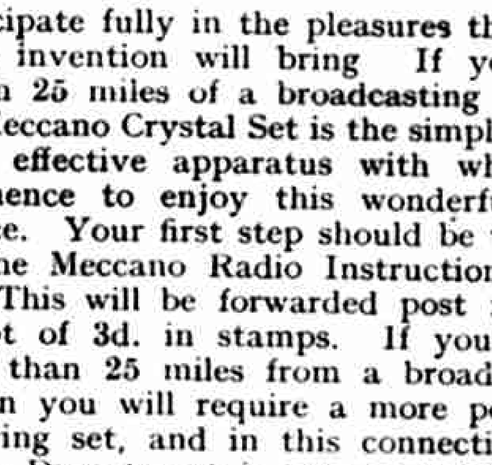


(No. 410)



(No. 411)

404.	Insulating Handles ... each	0	3
405.	Brass Washers, 1/32" ... doz.	0	4
406.	9" Lengths 22s Bell-wire with Tags ... ... each	0	2
407.	Inductance Discs (wound to 250 metres) ... per pair	6	0



(No. 408)

408.	Single Telephone Receivers each	18	6



409.	Detector Arm, Complete each	1	0
410.	Meccolite Crystals Mounted (Complete with Clips, No. 411) each	2	6
411.	Clips for Crystals ... ... „	0	3
412.	Mounting Boards ... ... „	5	0
	Instruction Leaflets ... ... „	0	2

The Coming of Radio

The Greatest of All Inventions

ALTHOUGH RADIO may be said to be one of the most difficult and complicated of sciences, yet fortunately for the world at large, a clear understanding of its most attractive side is a comparatively simple matter. This is demonstrated by the fact that wireless messages themselves, radiated through a medium about which even our greatest scientists know but little, may be received by means of a few Meccano parts, and one or two additions. The marvels of this wonderful subject will appeal greatly to all Meccano boys, for in it there is so much to explore and so many opportunities for them to turn their inventive powers to good account.

RADIO IN THE U.S.A.

American boys have already had some experience of Radio and in many cases they use home-made instruments, some of which are extraordinarily simple. America has certainly gone "Radio mad" and from the number of sets in use, the number of broadcasting stations and the variety of the programmes sent out, we can well believe that this pastime is exceedingly popular. Radio receiving sets are as common as gramophones (which is saying a good deal, so far as American homes are concerned) and interesting Radio magazines and periodicals are very numerous and occupy prominent places on the bookstalls.

To a certain extent this popularity of Radio in America is due to there having been no restrictions upon the amateur. At one time both transmitting and receiving stations might be installed and equipped without restraint, either as to their number or the power of the apparatus used.

The absence of restrictions had its disadvantages, however, for it resulted in general confusion and a considerable amount of "jamming." This means that the receiving of a message or concert programme is interrupted by messages from some other station or stations, with the result that the listener-in hears nothing but a confused babel of sounds or shrieks. This state of things is very undesirable, and measures have been taken by the United States Government to put a stop to it by limiting the number and power of amateur transmitting stations.

PROGRESS IN THIS COUNTRY.

In the United Kingdom the Postmaster-General has always exercised a very strict control over all wireless installations. From the very beginning it has been necessary for the amateur to apply for a licence to erect an aerial. He must give full particulars of the instruments he proposes to use and of his aerial, and must satisfy the Postmaster on other matters.

At present there are over 13,000 amateur receiving stations in this country. Only some 250 amateurs are allowed to send messages, however, licences for sending stations not being often granted. When they are granted they permit the use of a comparatively low power only. There are other restrictions also, all tending to keep a very close hand upon the wireless amateur, so that this great science shall not reach a state of confusion similar to that existing in the States.

THE WAR HELPED RADIO.

Notwithstanding these restrictions, amateur wireless operators in Great Britain have made considerable progress. In their technical skill they are certainly equal to, if not better than, amateur operators in any other country. They have had to make the best of things under the existing conditions, and this has inspired a considerable amount of ingenuity in their treatment of the problems that have been presented, and, incidentally, has led to several interesting inventions.

Amateur wireless installations are not by any means new in this country. There were indeed many well-equipped stations in operation long before the War.

It is largely due to the inventions and to the great advances made in Radio during war-time, that the present interest has arisen in the subject. The invention of a particularly useful article called the "valve" is largely responsible for making possible wireless telephony.

Although valves were used by the French during the War, it is only during the last year or two that the invention has been successfully applied commercially. It has made possible the broadcasting of music and speech of such a nature as will appeal to every one, and to Meccano boys in particular.

THE FUTURE OF RADIO.

At present Radio is developing very rapidly in this country. Our Government, in consultation with several of the leading Radio firms, has been giving close attention to the possibilities of broadcasting. It has been decided that broadcasting stations shall be established in certain towns, in different parts of the country. At present these stations are being equipped with the necessary instruments and experiments are being made in transmitting music and concert programmes.

Those scientists interested in this side of the subject realise that they have a great deal to learn in connection with Radio and as soon as they feel sure that they have mastered the first difficulties, we may be certain that broadcasting will commence in real earnest in this country.

When this takes place, Meccano boys throughout the land will be able to receive every day concerts and music, speeches, lectures, and stories. The main thing to remember at the present time is that this great science is in its infancy and can only be developed by degrees. New ideas are brought out almost every day, and it is impossible to state what to-morrow will bring.



Arthur T. Smith (Purley).—I am very pleased to see that you are interested in Radio and elsewhere in these pages you will find full particulars in answer to your enquiry. I note that you "think Meccano can play a good part in Wireless."—You are quite correct, Arthur, and there is a wonderful opportunity for enjoyment ahead for Meccano boys.

H. J. Rowlands (Penygroes) writes: "I am very keen to know and to gain what knowledge I can about Wireless telegraphy. I am sure you will be interested to know that my home is only about four miles from Britain's greatest Wireless Station."—Although you are so near to this great station at Carnarvon you will have difficulty in receiving their signals, as this is one of the highest-powered stations in the country. It is used for communicating with Australia and usually works on a wave-length of 32,000 metres, whereas broadcasting will not exceed 500 metres. Quite a different apparatus is required to receive either of these wave-lengths.

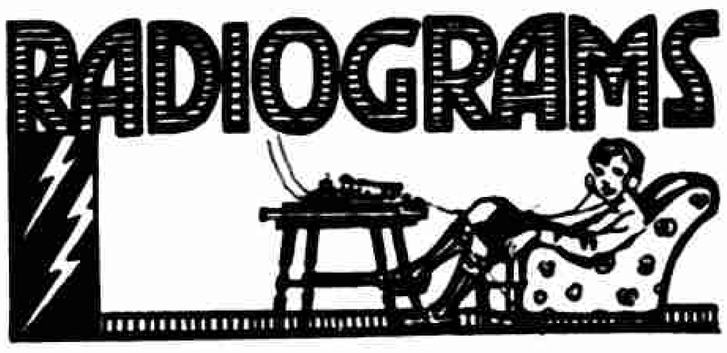
J. A. C. Shaw (Manchester).—Full particulars of the Meccano Radio Set are given elsewhere in these pages, together with the cost. You are fortunate in being situated in one of the cities from which broadcasting will take place and you will be able to receive the concerts and lectures with a Meccano Crystal Set.

R. R. Gray (Rotherham).—I congratulate you on your enterprise in wishing to have "the first large Outfit in your district" and note that you intend to instal a valve receiving set in your spare time. We hope to publish particulars of a Meccano Valve Set at an early date.

E. Sole (East Ham, London, E.6).—Elsewhere in these pages you will see that a very fine Radio Set can be made from Meccano parts. Living in London you should be able to receive not only the concerts broadcasted from Marconi House, but also many other telephonic messages. For instance, the Croydon air station speaking to the pilots on the cross-Channel service and amateur stations transmitting telephony. We hope to hear from you further when you have built your set.

Oswald M. Yeomans (Redditch).—Full particulars of a Wireless Set built with Meccano parts are given in this issue. The Meccano Set is the finest crystal set on the market and gives most wonderful results.

R. Arnaud (Abbéville, Somme).—"I have recently installed in my house a Wireless Receiving Station and in this Meccano was of great help to me. I was able to utilise a great number of the parts."—We are pleased to hear this further instance of the adaptability of the Meccano parts, Robert, and you will be interested to see the Radio announcements in this connection in these pages.



A radio receiving set has recently been installed at Buckingham Palace. This must surely be a sign that the King himself is showing a keen interest in Radio.

* * *

Mr. Marconi recently expressed the opinion that "there is nothing in the world that can rob Radio of its popularity with the people It is here to stay"

* * *

Some idea of the extent of the apparatus required for long-distance transmission is obtained from the fact that the proposed station at Bourne, in Lincolnshire, to communicate direct with Australia will have aerials a mile in length and half-a-mile in breadth!

* * *

The Bourne Station will be the largest in this country and will be capable of transmitting for reception to places as far distant as Poona (India), Johannesburg (South Africa) and Perth (Australia).

* * *

Direct communication was established recently between a new wireless station at St. Assise, France, and New York, when the President of France sent the first message to President Harding. This new station is the most powerful in the world and is capable of sending six messages simultaneously.

* * *

Messages from St. Assise may be sent at the rate of 100 words a minute. This is an extraordinary achievement, for when six messages are being despatched at this speed the station speaks to different parts of the world at the rate of 36,000 words per hour.

* * *

The valve, or vacuum tube that has made wireless telephony commercially possible is the outcome of the work of several scientists. It may be called the modern Aladdin's Lamp. We hope shortly to publish an article in which its action is fully explained.

* * *

Radio has been responsible for saving thousands of lives. It is specially valuable in the case of fire on board ship, and over 700 persons were rescued from the "*Titanic*" in response to the sinking vessel's wireless calls for help. Had wireless not been discovered it is improbable that these passengers would have been saved.

* * *

Another well-known instance is that of the "*Volturno*" on board which fire broke out in mid-Atlantic. A wireless call for help was sent out and no fewer than eleven vessels responded. They raced up under full steam from a radius of 200 miles and were the means of saving 521 persons from being burned to death.

* * *

One of the latest inventions in connection with Radio is the sending of photographs without wires. This is a remarkable process possessing great possibilities. Another invention upon which several scientists are at work is wireless tele-vision, or seeing without wires. There is little reason to doubt that the day is not far distant when this suggestion will become practicable.

* * *

The great wireless station at Clifden, in Ireland, was recently burned down by the Irregular troops. The receiver and other parts were completely destroyed and the damage is estimated at about £70,000. The vast number of messages that this station transmitted every day to America are now being sent from Onga.

* * *

As all readers of the "*M.M.*" know, Radio is extensively used for sending messages from ships at sea in the form of wireless telegrams. During last year some 45,000 of such messages were sent by White Star liners alone. Even greater use is being made of this means of communication during the present year, for during the first six months over 39,000 messages were sent from White Star liners.

* * *

An old umbrella frame, stripped of its cover, is being used as an aerial for his portable wireless set by an enterprising Radio enthusiast.

* * *

During the last two or three months some 5,000 amateurs have been granted licenses for receiving sets. The number in use in this country is now over 13,000.

Radio Instruction Leaflet.

Every Meccano boy should possess a copy of the new Radio Instruction Leaflet which gives full instructions for the construction of the Meccano Crystal Receiving Set. It also contains a list of the new Meccano Radio parts used in this connection.

The Leaflet, which is beautifully illustrated, is now in the printers' hands and supplies will be available within the next few days. The price is 3d. post free. Orders will be executed as soon as the leaflet is ready and you are advised to order your copy immediately.



Concerts are broadcasted at the present time from the Hague in Holland on Sunday and Thursday evenings from 8 to 9 p.m. The wave length used is 1085 meters, the call letters being P C G G. The power is being considerably increased and a new aerial devised. Owing to the distance these concerts can, of course, only be heard on valve sets.

* * *

Those Meccano boys who live in London and own a Meccano Crystal Set will have no difficulty in receiving the concerts broadcasted between 5 and 7.30 p.m. from Marconi House on a wave length of 360 meters. It should be noted that these concerts are not sent out every day, but it is worth listening in on the chance that some music may be heard about the time mentioned. The call letters of Marconi House are 2 L O.

* * *

Concerts are also sent out from Writtle (Chelmsford) at 8 p.m. on Tuesdays on a wave length of 400 metres. The call letters are 2 M T.

* * *

The organisation of the Broadcasting Company, which is being formed for transmission of concerts from several large towns in England, is being pushed forward as rapidly as possible. There are many difficulties in the way and special apparatus has to be installed, all of which takes time. Although everything possible is being done to expedite matters it will be some weeks yet before broadcasting takes place from the selected centres.

* * *

Radio enthusiasts in Liverpool and district often hear the Mersey Docks and Harbour Board Offices speaking to the lightship at the Mersey Bar on a wave length of 450 metres. The telephony is generally exceedingly clear and it is most interesting to hear the report of the watchers on the lightship as to the state of the weather in the channel, and other similar details.

Meccano and Wireless.

SOME USES FOR MECCANO PARTS.

We recently received an interesting letter from Miss Winifred Iles, Kingswood, near Bristol, who writes:—

"I am delighted to see that Meccano is to be used for making wireless apparatus. I venture to describe half-a-dozen ways in which I have seen Meccano parts used with excellent effect in wireless receiving sets.

"(1) In the making of one's own condensers Meccano parts are invaluable. The plates of the condenser may be mounted on a short Meccano rod and thereby rotated. They may be spaced by Meccano washers. The capacity of the condenser may be varied by the turning of a knob at the top, made of a Meccano 1" pulley wheel. If you wish to effect very fine tuning, and to avoid the proximity of the hand, an 8" rod, fixed by a coupling at right angles to the short rod on which the plates are rotated, is just the thing that is required to vary the

(*Continued in next column.*)

capacity of the condenser. By this you will see that about the only parts of a condenser any one can make, that are not made of Meccano, are the plates.*

"(2) I have made a capital little tapping-key from a single seven-holed strip, bent so that it will spring back if pressed down. I know that more elaborate keys may be made, as for example Model No. 75 in the Book of Instructions.

"(3) Meccano nuts and bolts are useful for a variety of purposes, among which may be mentioned their utility as studs on a variable inductance, where a moveable switch-arm has to sweep round and establish contact with a certain part of the coil within the box. A perforated strip may be used as the switch-arm.

"(4) The rack strip, together with a pinion wheel, is very useful where it is desired to vary the degree of coupling between two coils. The rack strip is fixed along one side of the coil, and a rod on which a pinion wheel is rotated fixed at right angles to it. If the rod is then turned, the pinion wheel will engage with the rack strip, and will move the coil backwards and forwards, nearer or further away from the fixed coil, as is desired.

"I know that the ideas I have set down here are not a scrap original. I can only hope that they will be of some small use to you."

* *Excellent Condenser Plates may be made with No. 76 2½" Triangular Plates.*—Ed.



THE SECRETARY'S NOTES.

The Past Session. It has been very gratifying to me to see the increasing enthusiasm of Meccano Clubs in general and to note the extension of their activities. This last Summer Session has been most enjoyable, the members having followed out-door pursuits with their usual spirit. Among Meccano Guild members are found the healthiest and happiest boys in the world, who greatly enjoy camping out, cycling, rowing, cricket and tennis.

The Autumn Session. At the present time great preparations are being made for the Autumn Session. I have been in touch with Club Leaders and know that interesting programmes are now being drawn up, and that by the end of the month the Autumn Session will be in full swing. Any Meccano boy living in the vicinity of a Meccano Club should at once communicate with the Club Leader or Secretary, so that he may share in the fun and look forward to Club night as the happiest night in the week.

The Recruiting Campaign. In connection with the Recruiting Campaign, which will be continued during the coming winter, a Medallion is awarded to those members who enrol three new members in the Guild. I would mention that this Campaign is open to every Guild member whether or not he is a Club member. Six additional recruits, making nine in all, entitles the member to have his Medallion engraved with his name and the words "Special Award."

Lost Guild Badges. I have received quite a number of letters from Meccano boys reporting that they have lost their Guild badges. For their information, I would say that new badges may be obtained on payment of 7d. Should the enamel of a badge become chipped or worn, or the badge broken, a new badge will be forwarded on receipt of a remittance of a similar amount. A lost Recruiting Medallion cannot be replaced, but a new one will be supplied on three additional recruits being enrolled.

Meccano Lectures. At the moment the Lectures available for use in connection with Meccano Clubs are "Lives of Inventors" and "The Story of Our Ships." The former Lecture has been revised and I am sure that both will prove immensely interesting to Club members. Copies will be forwarded on loan to Club Leaders on request. The play "*Nonsense Nana*" will also be available again this year, for tnose Clubs who intend giving a concert or similar performance.

Club Membership Cards. The printing of the new Club Membership Card is now in hand. Club Leaders should advise me as soon as possible how many they will require, so that supplies may be forwarded immediately they are received from the printers. As was the case last year, these cards are supplied free to affiliated Clubs, and I feel sure that they will prove as popular as ever.

Holiday Essay Competition. I hope that all Guild members who were able to do so have taken part in the "Holiday Essay Competition," for I think that this is one of the most interesting Competitions that has yet been arranged. I am sure that all who have been away this year must have interesting holiday snapshots, and Guild members have proved in the past that they can draw "word pictures" with their pens as successfully as they can take photographs with their cameras.

U.S.A. Boys Request. Several Meccano boys living in the United States wish to correspond with English Meccano boys. Any Guild member who desires to respond should write to me for further particulars.

Special Merit Medallions.

The award of several Special Merit Medallions was announced in recent issues of the "*M.M.*" and I am able to publish further photographs of successful Guild Members.



The Medallions, which are here illustrated, are very beautiful in both design and finish and have been produced specially for us by a well-known firm. On each Medallion is engraved the name of the recipient.



Master G. H. A. Murray of the Jarrow-on-Tyne Meccano Club is an energetic Guild worker and has been presented with the Special Merit Medallion for a fine astronomical lecture he delivered to the Club on "The Planets."



Master Greenway, of the "Stanley Road M.C." Worcester, who has been awarded his S.M. Medallion for good work on the recommendation of his Club Leader.



Master H. G. van der Sluis, of Den Haag, Holland, who won his Special Merit Medallion for his excellent work in connection with the Weltevreden Meccano Club in the Dutch West Indies. Master van der Sluis was an enthusiastic member of this Club up to the time of his return to Holland recently, and he is now contemplating the formation of a Meccano Club in Den Haag. He is a very enthusiastic Guild member and it is a pleasure to receive from him long and interesting letters in very excellent English. We wish him every success in his new sphere and hope soon to announce that The Hague Meccano Club has commenced activities.

A Happy Guild Member.



Master Pierre de Wet, a happy-looking Guild Member who has done excellent work in connection with the Meccano Guild in Pretoria, S. Africa. He has won a Recruiting Medallion and, as will be seen from the photograph, Master de Wet is also an enthusiastic Boy Scout.



M CLUB NOTES C

Cobham M.C.—Recently held a very successful Exhibition in connection with the local Flower Show. There were two Sections, the First Prize in Section 1 being won by Master S. Impey (Motor Char-a-banc) and the Second by Master O. Osborne (Delivery Van), while in Section 2 Master C. Redfern (Biplane) took the First Prize and Master C. Cornell (Triplane) won the Second Prize. The Club start the Autumn Session with a credit balance in hand and a very enjoyable time is anticipated. *Secretary:* Master Wm. Phillips, The Fox & Hounds, Cobham, Surrey.

Malvern (S. Africa) **M.C.**—The last Session included Lectures on "Metallurgy," "Films" and "Submarines." A picnic and a Sale of Work were both successful, over £28 being realised, of which £17 was sent to a local home, £2 to the Sunday School and the balance added to the Club funds. The Secretary will be pleased to welcome new members. *Secretary:* Master C. Gunnell, 177 St. Frusqun Street, Malvern, Transvaal, South Africa.

Bute (Australia) **M.C.**—This overseas Club continues to make good progress, despite the fact that as yet the membership is but small. With the Club funds spare parts are purchased for the general use of Club members. In a recent competition Master H. Ellery was successful in winning the first prize. Mr. G. W. Kendrew has kindly undertaken the leadership of this Club, the previous Leader having left the district. The Club is endeavouring to organise a concert. *Secretary:* Master F. K. Barnes, Bute, S. Australia.

West View (Nottingham) **M.C.**—Club work has been carried on during the greater portion of the Summer and interesting Lectures given by the Club Leader on "Balloons and Aeroplanes" and "Electric Motors." An illustrated Lecture on "How to make a Wireless Set" was also given and a Competition arranged for the construction of a wireless set. In addition to the ordinary Club work, cricket and other outings have been enjoyed. *Secretary:* Mr. H. Cousens, 494, Mansfield Road, Sherwood, Nottingham.

Mihi Creek (Australia) **M.C.**—This Club, organised at a remote sheep station in New South Wales, has held a very successful Exhibition at which a number of interesting models were exhibited. These included a Mountain Railway, a Railway Station, an Oscillating Steam Engine, a Rotating Crane and an Overhead Bridge. The Club Leader writes: "I wish you could see the smiling faces of the younger members after they have completed building their models, or the agonised faces of the older ones when they try their skill at some engineering structure and fail to use their heads sufficiently to make a real engineering model!" The progress of the Club since its inception has been all that could be desired and the interest displayed by its members amply repays the work entailed in its formation. *Secretary:* Master H. W. Cordingley, Mihi, Uralla, New South Wales, Australia.

Liscard High School M.C.—The Summer Session has been very successful, the members being keen and enthusiastic. Programme has included ten-minute lectures on "Swimming," "Lighthouses," "Gibraltar Rock," etc. Some enjoyable picnics have been organised, including excursions to Electricity and Printing Works, etc. A very successful exhibition and concert was held some time ago, the members acting with great success the Meccano play "Nonsense Nana." *Secretary:* Master B. Warburton, 11, Brisbane Avenue, New Brighton.

Willaston School M.C.—Master A. V. Bass, Willaston School, Nantwich, has now been elected Secretary of the "Willaston School Meccano Club." It has been decided to hold an exhibition at the close of the present session. Some of the models to be exhibited are High-speed Ship Coaler, Pullman Car, Dredger, etc. The present session has proved highly successful.

Dudley M.C.—New members are joining every week; and in addition to the Club work, Saturday rambles and cricket matches have been an important item during the Summer months. An interesting Yacht Race has been arranged in which the Club is divided into patrols, each entering a certain number of yachts. *Secretary:* Master F. W. Whitehouse, 16 New Rawley Road, Dudley.

Club Recently Affiliated.

Kilmarnock Academy M.C.—Established under the leadership of Miss J. Maxwell, this Club has recently become affiliated with the Guild and there is every prospect for its future. The members are all keen and enthusiastic and already considerable progress has been made. *Secretary:* Master R. McCluny, 19, Irvine Road, Kilmarnock.

Clubs Not Yet Affiliated.

Devonport M.C.—A Meccano Club is being established by Master Charles Springgay, 1, St. Aubyn's Avenue, Keyham, Devonport, with whom any Meccano boy wishing to join should communicate.

Calcutta M.C.—This Club, although only recently commenced, has already made rapid progress, and it is hoped will become affiliated with the Guild very soon. The members are very keen and a successful Session is anticipated. *Secretary:* Master A. N. Chowdhury, 35/2 Beadon St., Calcutta, India.

An Interesting Display by the "Thornton Heath Meccano Club."

Under the direction of Mr. F. Bolt, the Leader of the "Thornton Heath Meccano Club," a very enjoyable Fete was held recently in connection with the Thornton Heath School. Despite the fact that throughout the entire function the Clerk of the Weather was not favourably disposed, the display was a great success. Parents and friends of the members attended in large numbers and, protected by mackintoshes, turned up their collars and made the best of the bad weather.



Members of the "Thornton Heath Meccano Club" dressed as "Flappers," etc., at a recent Sale of Work where they organised a very successful stall.

The grand parade first attracted the attention of the visitors. Led by the 29th Beckenham Division of Scouts, the procession was very imposing. The boys wore costumes representative of many different characters including Charlie Chaplin, Chinese Mandarins, "Old Bill," Indian Prince, Red Indians, Spanish Pirate and "Flappers."

The parade was followed by a polo match, one boy acting as the pony with the rider on his back, and no little amusement was occasioned while the goals were being scored. This was followed by a football match in sacks, after which a spectular show was successfully given by the 29th Beckenham Scouts. Under the direction ot a Scoutmaster a camp was pitched, fires lighted and a meal cooked, while the first aid section rendered help to a cyclist who had opportunely come to grief.

Unfortunately, owing to the weather, the remainder of the programme had to be abandoned, and after refreshments the class-rooms were visited, the visitors viewing with interest the various Meccano models that were on show.

A humorous exhibition of pictures was greatly enjoyed, the visitors finding considerable amusement in such items as "The Three Stars" (an empty bottle of a well-known brandy), "Scientific Subjects" (illustrated by displaying such papers as the "Magnet" and "Rainbow") and a solitary line to represent "An Unfinished Picture of Lloyd George."

The Inter-Club Model Competition.

AN APPRECIATIVE LETTER.

The result of the Inter-Club model-building competition was announced in our last issue, and I print below an interesting letter, received from the enthusiastic Leader of the New Malden Meccano Club. This Club shared the combined first and second prizes with the Norwich Enterprise and the Kilmarnock Clubs.

NEW MALDEN.

Dear Secretary,

The cheque for £2 13s. 4d. was received safely this morning, and on behalf of the members of the New Malden Meccano Club, I extend our thanks. The whole school went nearly mad with joy this morning after receiving the news, and it has been an exceedingly happy day for all.

It was with great pleasure that I received the news, for it appears to me a return of thanks from my boys. I do my best for them, and they know that in turn I expect the best work from them. The result convinces me of their loyalty to master and to work.

I am hoping to take the boys to Portsmouth Harbour and Dockyard shortly, for when in the Navy I saw plenty of interesting material for Meccano boys to study.

With best wishes,

Yours very sincerely,

V. HAMMOND,

Leader.

S.M. Medallions for Best Papers.

I am particularly desirous of encouraging members to read instructive papers on subjects that interest them. It is excellent training for boys to stand up before their friends and to address them in this way. A popular and instructive discourse should be aimed at, to last from a quarter to half an hour. A discussion may follow, the other members adding some interesting facts to those dealt with by the member who reads the paper.

In order to offer encouragement I am this session again allotting a Special Medallion to each Club, to be given to the member who delivers the best paper. After the papers have been read at the Club meetings they must be sent to me (with any comments by the Secretary or Leader) at the end of each session. I trust that all Club Leaders will help me to make this valuable part of the Meccano Club work a great success.

How Each Member May Help.

Enthusiastic members may do a good turn to the Guild movement by recruiting new members, and I want all Meccano boys to understand the objects of the Guild. Once they realise for what the Meccano Guild stands they will join its ranks enthusiastically and without hesitation. There are many thousands of Meccano boys in this country who, strange to say, have never yet heard either of the Meccano Guild nor the *Meccano Magazine!* This scarcely seems possible, so widely do we endeavour to make both known, yet the numerous enquiries I receive every day show this to be the case. I want all to help me to spread the knowledge of the Guild far and wide.



THE RECRUITING MEDALLION.

Every member should endeavour to enrol at least three new members. To each member who obtains three new recruits for the Guild a handsome medallion will be awarded. This Medallion (which is here illustrated, actual size) is one of why any boy may well be proud.

A SPECIAL AWARD.

To those who already possess the medallion I am offering a further mark of favour. When they have recruited six more members for the Guild, in addition to the three recruited for the medallions—making nine in all—I arrange to have their names engraved on their medallions, together with the words "Special Merit." Any member who wishes to take advantage of this offer, and who has qualified to do so, should forward to this office full particulars of the six additional members recruited together with his medallions so that they may be engraved.

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, and 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.

J. Whittaker (Colne).—Binns Road is famous for many things, but we have not so far found any bird's nests in it, so you will understand why we are not able to send you any bird's eggs for your collection. We hope yourself and your chums enjoyed the Magazines which we sent to you.

F. A. Inskip (Bedford).—Your suggestion for a new Competition is quite good and we may adopt it later. We are able now to increase the size of the "*M.M.*" and to issue it more frequently, and this, we hope, will cause your anger against us to abate!

Chas. Morley (Barnet).—Thanks for photograph of your pet cow. He looks well fed and full of go, and does credit to your bringing up.

L. D. Lonsdale (St. Annes).—We are gratified to know that Meccano has helped you in your work, and that you consider it one of your greatest treasures. We wish you continued prosperity, and we hope you will write us occasionally.

R. T. Hopford (Melsungen, Germany).—We are interested to hear of the sport you and your sister have with your Meccano models. If you will write to us, describing your ocean game a little more fully, we will try to publish it in the "*M.M.*" for the benefit of Meccano users.

D. Mortimer (Bradford).—Your Meccano model workshop is evidently an elaborate affair and we shall be very pleased to receive a photo of it. We hope you will continue to "dream sweet dreams of Meccanoland."

N. W. Cresswell (Wakefield).—We note your suggestion for a Stamp Collectors' column in the "*M.M.*" but we have so much Meccano and Radio news to report that we fear there is no room for this at present. We may adopt your suggestion later.

G. Corby (Cheadle).—We are glad your prize has given you such pleasure. We shall probably need extra space to publish all the Meccano news at Christmas so there *may* be a double number.

R. Hillair (Southampton).—To own a line of steamships is a great ambition and we hope you will some day succeed. There is some hard work in front of you, but it can be done. Anyhow you have made a line of Meccano models, and that is a good start. You have our best wishes, Ronald.

W. L. Curtis (Launceston, Tasmania).—We congratulate you on winning first prize two years in succession with your Meccano models. Your type C 3 Moulder appears to be well constructed. The building of your yacht is also a clever achievement. Thanks for photos.

R. Shillito (Wombwell).—It was an excellent idea to visit another prize-winner in your district, and to compare models with him, and we are glad to know that Master Round received you so well. Every day that goes by sees new friendships formed by Meccano boys of the right sturdy type.

M. Page (New Southgate).—We are indeed sorry to know that Eric is in such a precarious state of health, and we trust that the measures which you are taking will result in a great improvement. We are glad to hear that the prize awarded to him in our £250 Competition gave him such pleasure and that Meccano is such a solace to him.

J. E. Ethall (Carnarvon).—Thanks for your excellent photo of Carnarvon Castle, which we may use. We congratulate you on your School successes.

D. Theron (Wellington, Cape Colony).—We note that all your play hours are occupied with Meccano and that you have just made the discovery that it is your best friend. We have sent you a copy of "Dick's Visit to Meccanoland," which we know you will enjoy. Thanks for your suggestion that we issue writing pads with a Meccano badge printed on it, which we may adopt a little later.

A. Ward (Bournemouth).—It calls for real courage to acknowledge a fault and express regret for it, and your letter gave us pleasure. When you get well again you must help your Club in every way in your power. We hope you will write us occasionally.

G. Allen (Wisbech).—By all means send an account of your hay-making experiences, and if it is really interesting we will try to print it in the "*M.M.*" A monthly photographic competition during the Summer might appeal to many of our readers and we will think the matter over.

I. M. H. Etherington (Thorpe Bay).—

"Ah! strong is the bond which links up each boy,
Who plays with Meccano—his teacher—his toy,
For high is his aim, and broad is his view,
Each link in the chain of Meccano rings true."

Your other verses are perfectly true, Ivor, but as you suggest, they might be considered libellous.

C. Martin (Beningbrough).—We appreciate your high praise of the "*M.M.*" but we fear we do not understand the riddle you have sent to us. We are glad you are experiencing so much pleasure through our Correspondence Club.

E. C. Smith (Dulbydilla).—You live a long way from everything and everybody, Eric, and it pleases us to know that Meccano and the Guild make you feel that you are in close touch with British boys and less lonely. We like to read your newsy letters.

Eric Reynolds (Wairoa, N.Z.):—

"Of all the lands throughout the world
New Zealand is the best.
And of all the toys that have reached this shore
Meccano has stood the test."

Very creditable statements, Eric, indicating your personal character in a nutshell—patriotic, happy and contented.

G. Campbell (Buenos Aires).—Your verse expresses excellent sentiments but it does not rhyme too well. Try again. Go ahead with your Club by all means, and let us know how you progress, and how we can help you.

J. A. Cowell (Surbiton).—"When you get a Meccano Outfit you also get a big number of friends in the Meccano Company who are always glad to help you in all sorts of ways."—You have not only expressed this very nicely, James, but you have also hit on a profound truth.

J. C. Clark (Guston).—No, John, we do not own the Great Western Railway Company and we do not know how any such rumour could have started. Thanks for your holiday wishes and for your promise to send us a copy of the "Chronicle."

J. Candler (Tulse Hill).—We are very glad to know you are getting a little better. With Peter and Tim in attendance and your No. 5 Outfit by your side your convalescence should be pleasant and rapid. We hope you will write to us as often as you feel strong enough to do so.

Mary de Bonsen (Taplow).—To reply to such pleasing letters as yours is anything but "a bother." Your description of the Old Corner Cottage makes us sigh for breezes from the sea. We have noted your change of address.

H. J. Ryan (Portsmouth).—Many thanks for your article on the Forth Bridge which we shall read with interest. We may be able to use it later

T. G. Ellaby (Bath).—You are evidently as fanciful and full of imagination as your famous grandfather. We will endeavour to put you into correspondence with a Meccano boy on your favourite island. We wish you better luck in the new £250 Competition.

New Meccano Manuals.

REVISED OUTFITS. MORE MODELS.



For a considerable time past Mr Hornby has been enaged on a revision of all the models that appear in the Meccano 0–3 Manual and this has necessitated the reconstruction of all the Outfits. All Meccano Outfits now contain a selection of the new parts that have been added to the Meccano system from time to time, thus bringing within their range many fine new models. The Manuals have also been reprinted and illustrated by an entirely new process, making the detail of each model clear.

In future there will be three Manuals, the 0 Manual for simple models built with the 0 Outfit, the 0–3 Manual comprising models built with any of the Outfits from 0–3 and the Complete Manual, which comprises a selection of models that may be built with every Outfit from 0–7. This latter Manual is a very fine publication and should be in the hands of every Meccano boy. It includes instructions for building most of the models shown in the present No. 3 Manual.

A limited supply of the No. 3 Manual is still available and those boys who have not yet purchased their copies should do so without delay.

PRICES OF MANUALS:		s.	d.
0 Manual	post free	0	6
0–3 ,,	,,	1	2
Complete Manual	,,	2	10
No. 3 Manual	,,	1	4½

An Amateur Editor who Publishes, Edits and Prints

The Meccano Engineer.

We are pleased to be able to publish a photograph of Master Hubert H. Lansley, of 26, Thornton Road, Barnet, editor and publisher of *The Meccano Engineer*.

This bright little paper is beautifully produced, and every page is well thought out. One of its most original features is a free insurance scheme, by which registered readers are indemnified against breakage of any Meccano parts. *The Meccano Engineer* guarantees to renew all broken or damaged parts free of charge. Hubert tells us that he will be pleased to send a copy of his paper to any Meccano boy on receiving an order. The price is 1½d. post free, and it is issued bi-monthly during the summer season, and monthly during the winter.



MASTER HUBERT H. LANSLEY.

Hubert is a keen member of the Meccano Guild and has been a Meccano enthusiast for over nine years, having been presented with a No. 1 Outfit on his fifth birthday, and being now the lucky possessor of "more than a No. 6." He writes: "During those nine years I have never tired of this great hobby. So far, I have made every model I have set my mind on, from the Loom downwards. In my opinion, this latter model is the crowning triumph in Meccano's long list of successes. I am firmly convinced that there is no limit to the possibilities of this wonderful, educational toy."

We congratulate you, Hubert, on the well-balanced appearance and the continued excellence of your little magazine, and we hope the day will soon come when we shall see *The Meccano Engineer* in print.

HORNBY CLOCK WORK TRAINS

A MOST valuable and remarkable feature of the Hornby Train is that it can be taken to pieces and rebuilt just as may a Meccano model. All the parts are standardised and there is as much fun taking Loco, Tender, Coaches and Wagons to pieces and rebuilding them as there is in playing with them. Any lost or damaged parts may be replaced with new ones.

The clockwork is a splendid piece of mechanism with accurately-cut gears, ensuring smooth running, and the workmanship and finish are of the highest quality. The Loco is fitted with reversing-gear, brake and governor.

PERFECT MECHANISM: BEAUTIFUL FINISH: STANDARDISED PARTS



HORNBY CLOCKWORK TRAIN PRICES.

No. 1. SET.		No 2. SET.	
Passenger Sets each	35/-	Pullman Sets each	70/-
Goods " "	25/6	Goods " "	45/-
Locos " "	16/-	Locos "	30/-
Tenders "	3,6	Tenders "	4/-
Passenger Coaches	6/6	Pullman Cars "	16/-
Wagons	3/9	Wagons "	3/9

ZULU CLOCK WORK TRAINS

Guarantee.

Hornby and Zulu trains are tested and their efficiency is guaranteed. A form of guarantee is furnished with each loco and we undertake to repair or replace, at our option, any loco that fails to run satisfactorily from any cause other than misuse, within 60 days of purchase.

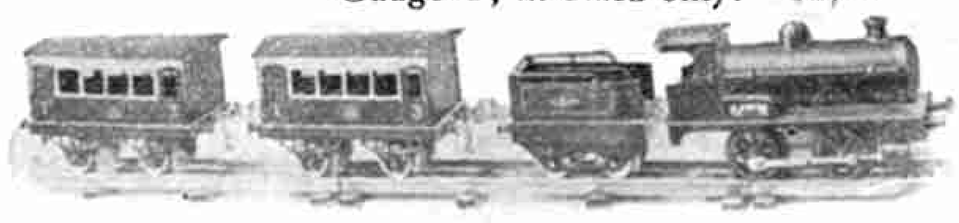
THE Zulu Clockwork Train is a new and cheaper type of mechanical train, the chief characteristics of which are fine and durable mechanism and immense strength of construction in all parts. The Zulu Loco is well designed and efficient, and will give long and excellent service. Richly enamelled and highly finished, fitted with brake and governor, non-reversing.

ZULU CLOCKWORK TRAIN PRICES.

Passenger Sets	each	25/-
Goods Sets	"	18/6
Locos	"	10/6
Passenger Coaches	"	5/-
Tenders	"	2/6
Wagons	"	3/-

ZULU TANK LOCO

A STRONG and durable Loco capable of any amount of hard work; richly enamelled and highly finished; fitted with reversing gear, brake and governor. Gauge O, in black only. 12/6.



MECCANO LIMITED Binns Road LIVERPOOL

Magazine Binder.



In response to numerous requests we have introduced a spring-back binder for *Meccano Magazines*. The binder has a strong stiff back, covered with imitation leather, tastefully tooled. It takes a large number of copies and keeps them neat and clean. In black, lettered gold. Price 3/- each, post free.

Change of Address.

Subscribers should immediately notify the Editor of any change of address. Send a Postcard *giving the old and new address*, so that records may be kept up to date.

MITCHELL APPLIANCE (*continued from p. 4.*)

load of which the crane is capable is 20 tons. The hoisting drums are driven by means of a train of suitably designed machine-cut gearing. A brake operated by solenoid holds the load in any position, when the current is cut off from the motor. Slewing motors, with a speed of 1¼ revs. per minute, are fitted with a slipping clutch which prevents any undue load being transferred to the motor and gearing.

The crane travels at a speed of 60 ft. per minute, this motion being performed by one electric motor placed on the platform, at the level of the upper part of the undercarriage. Power is transmitted by means of shaft and reduction gear to the wheels of the carriage, four of which are driven.

A film of this very interesting crane will shortly be appearing and any readers of the "*M.M.*" who are fortunate enough to see this film will be in the happy position of being able to give their friends a full explanation of how this unusual type of crane is worked.

How to get the *Meccano Magazine* regularly.

The *Meccano Magazine* is now sold by most of the regular Meccano dealers but in order to prevent disappointment you should place an order with your dealer for a copy of each issue to be reserved for you. The price of each issue is 1d. If you experience difficulty we will mail you a copy regularly on receipt of 6d. for the next six issues, or 1/- for the next twelve.

The New Meccano Book.



A beautiful new Meccano book has been compiled and should be in the hands of every Meccano boy. It illustrates and describes each Outfit and gives full particulars of the Meccano Clockwork and Electric Motors. It also includes details of the Hornby and Zulu Clockwork Trains, the Tin Printed Trains and a full list of the Meccano Rails, Points and Crossings. A valuable feature also is a fully illustrated list of the entire range of Meccano parts, including all the new and valuable parts added to date.

Every reader of the *Meccano Magazine* should possess one of these beautiful new booklets. A copy will be sent free on receipt of a postcard and as the demand will be very great, you should take advantage of this splendid offer and write at once for your copy. Put "*M.M.*" after your name for reference.

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No. 27 OCTOBER, 1922



MECCANO MAGAZINE

PRICE 1d

PUBLISHED IN THE INTERESTS OF BOYS.

In America and Canada

BY THE EDITOR.

(Concluded.

WE left Toronto feeling that the value of Meccano was becoming fully recognised throughout Canada, and that our future there is a particularly bright one.

We had decided to visit Niagara Falls on our way back to New York, and instead of returning by train we took the boat at Toronto, making the passage across the end of Lake Ontario to Lewiston. This is a small town about five miles below the Falls on the American side of the Lake. From here a tramway line runs to the town of Niagara Falls, and we took our seats in the car awaiting the arrival of our boat.

The day was wonderfully fine and sunny, and the conditions were ideal for seeing the Falls. Our tram ran along the side of the River Niagara all the way up and we thus had an opportunity of watching the rapid course of the stream at close quarters.

THE NIAGARA FALLS.

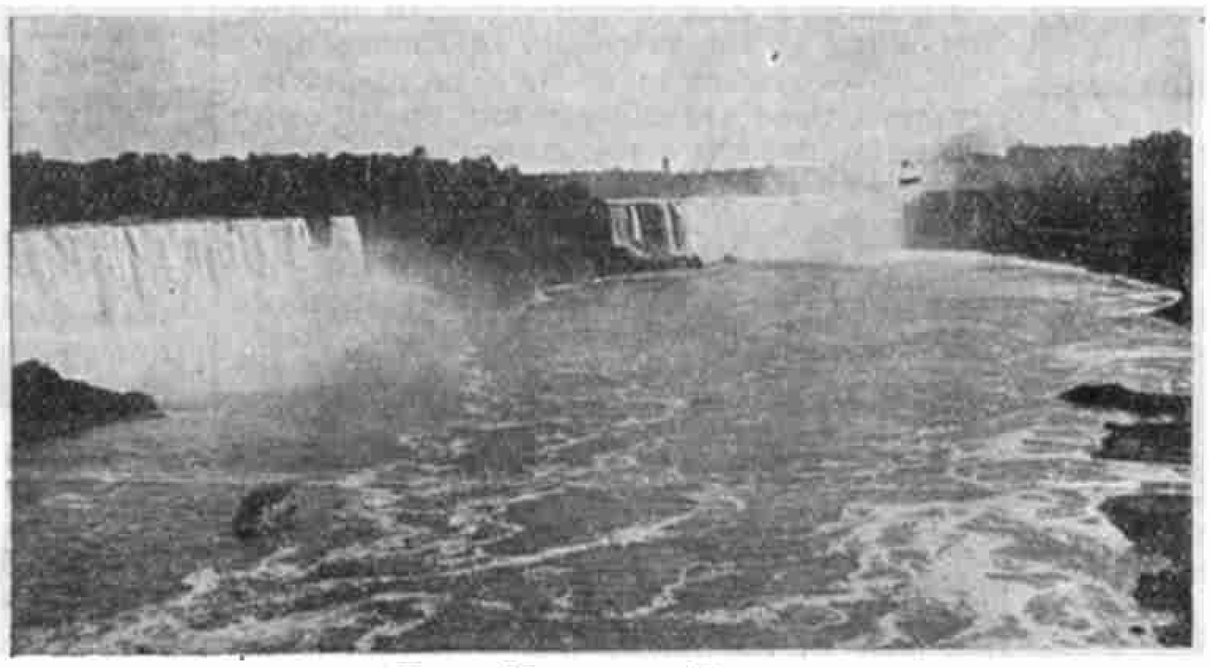
Mr. Hornby had already seen the Falls a number of times, but this was my first visit. I followed every foot of the mighty torrent as eagerly as any of you Meccano boys would have done, had you been there with us.

The River Niagara flows into Lake Ontario between Lewiston and Queenston on the Canadian side and here it is a wide stream giving but little outward evidence of its great strength.

As we proceeded up the river from Lewiston, the river narrowed, causing an enormous increase in the rapidity and strength of the current. We passed "Devil's Hole" on our left, where in 1763 a number of British soldiers were ambushed and massacred by Red Indians.

THE FAMOUS RAPIDS.

Soon we came to the famous Whirlpool and the Whirlpool Rapids, which appeared to me second only to the Falls themselves in grandeur. As the great river tumbled and tossed over its rocky bed, I wondered that the very boulders themselves were not up-rooted and hurled into the Lake below, so great seemed to be the power of the current.



THE NIAGARA FALLS.

To the left is shown the famous steamer "Maid of the Mist," *which takes visitors close to the Falls.*



A CLOSE VIEW OF THE FALLS.

100,000,000 *tons of water pass over the Falls every hour.*

Leaving the tram car, on reaching the town of Niagara Falls, we walked down to the bridge spanning the river to the Canadian shore. Looking up the river from the centre of this bridge we had our first view of the Falls. From there, walking up the river on the Canadian side for about a mile, we saw them from every point of vantage in all their wonderful glory.

I could quote you figures giving the height of the Falls and the volume of the water passing over them each minute but in a case of this kind mere figures do not impress or mean much. I can only tell you that I saw an immense Lake pouring its contents over a precipice of great height in a graceful curve and, on its outward plunge, breaking up into a glorious white curtain. As it fell on the rocks below it threw up a cloud of spray that rose much higher than the Falls themselves.

As the sunshine fell on the spray a wonderful rainbow formed and seemed to embrace the whole of the Falls, presenting a scene of surpassing beauty.

HYDRO-ELECTRIC POWER.

One feature of the Falls that will appeal specially to Meccano boys is that the enormous energy is now being utilised for generating electricity for power and lighting purposes. At the present time there are eight large stations on the edge of the Falls and the River. These deliver a total of 1,295,000 h.p., and new and larger plant is now in course of erection. In a short time the whole of the power and lighting in the Province of Ontario will be generated from the Niagara Falls.

We left Niagara in the evening and proceeded by express tram car to Buffalo, where we boarded the night train for New York.

The remainder of our stay in America was devoted to planning the future of Meccano in that country and enquiring more closely into the situation in regard to Radio. The result of our investigations

In America and Canada (*cont.*)

will reveal themselves to you boys in due course in the columns of the "*M.M.*" and in the special Radio apparatus that is now being manufactured in our factories.

RETURN TO LIVERPOOL.

We sailed for Liverpool on 25th June on the "Adriatic," having as our companions



THE WHIRLPOOL RAPIDS.

at the Captain's table, Sir Arthur and Lady Conan Doyle. Sir Arthur is, of course, the writer of the famous Sherlock Holmes stories and I may say that we found his conversation even more stimulating and interesting than his writings. He is deeply interested in Radio at the present time, and he carried a receiving set with him, which—with the aid of a temporary aerial erected for him by the ship's wireless operator—he had opportunities of testing on the voyage across.

We arrived in Liverpool on 2nd July and were glad to be back again at the home of Meccano—glad to engage ourselves once more in the big problem of how to fill the lives of Meccano boys in this and every country in the world with interest, happiness and fun.

THE END.

Good Things in Store.

There are many interesting articles and splendid illustrations in store for future numbers of the "*M.M.*" We are shortly to have articles dealing with the famous locomotives the "*Great Bear*" and the "*Great Northern*," the most recently-built locomotive in this country. We are also arranging for an article describing the world's greatest liner the "*Majestic*." Articles dealing with giant cranes, turbines, and other remarkable machinery are only waiting an opportunity to be published.

In the Radio Section we are commencing in this issue a splendid article on the Thermionic Valve, which explains, in as simple a manner as possible, this highly technical piece of apparatus. This article will be continued over our next two or three issues. Articles are also in hand dealing with the Morse Code and with the invention of the telephone—both subjects of great interest to Radio enthusiasts.

Several short stories are also to be published and as soon as space permits I am hoping to be able to include a splendid Red Indian story from the pen of a well-known writer.



WHAT an extraordinary world this would be without Engineering! There would be no trains, trams or motor cars; no steamships; no large buildings; no telegraphs or telephones; no cutlery, except such primitive stuff as could be made by hand. There would be none of the thousand-and-one machine-made contrivances that contribute so much to our daily comfort and convenience. Worst of all there would be no Meccano.

Engineering Essential to Modern Life.

Without question Engineering is one of the most important factors in our ever-day life, and the boy who goes through life without acquiring a measure of knowledge of this great and fascinating subject is an anomaly—almost a tragedy. An understanding of the principles of Engineering is an enjoyment in itself. The ability to apply these principles for one's own entertainment is a joy known only to the boy who pursues the Meccano hobby.

It Pays to Learn.

I hold pronounced views on the question of boys possessing a good working-knowledge of machines and of the work they do. For instance any boy who has been well grounded in this subject will recognise instantly a well-produced article, when making a purchase; he will refuse anything that he sees has been badly made. There is a great deal of shoddy merchandise offered to the public nowadays, but the boy who knows something of how such merchandise is produced does not buy it.

Knowledge Gives More Enjoyment to Life.

I have often been greatly struck when travelling in the company of boys, by the marked intelligence that they display as each fresh engineering work is encountered. They know how a telpher railway works. They give names to the various types of cranes they see and describe how they function. They are familiar with the various methods of constructing bridges and discuss the comparative merits and advantages of different types. They tell me how a motor develops its power and the functions of each unit, and know under what circumstances a hydraulic is better than an electric elevator.

Their interest in life and in all the wonderful things around them is enormous, and because their minds have been stimulated by their engineering hobby, they derive untold pleasure and additional knowledge every day that goes by.

* * *

Boys and Reading.

What omnivorous readers boys are! I have known one of them read a book a day for weeks on end and, what is even more strange, he could describe to me every incident in any of the books he had read without making a mistake! I consider reading to be one of the greatest joys given to us, and I am always glad to meet and talk with boys who are fond of books. Such boys talk intelligently on a wide range of subjects and usually are able to express themselves with greater clearness than boys who have no love for reading.

Don't Waste Time Reading Second-rate Books.

I like boys who read books, but the books they read must be good books, or they are assuredly wasting their time and missing the true enjoyment that should be their's. When I speak of good books I do not necessarily mean books dealing with religious matters—although these undoubtedly have their place and value—but have in mind more particularly books written by first-class writers. Books of travel and adventure; of home and school life. Books on historical and even technical subjects, written by wise men who, despite their learning and experience, have still retained the boyish mind and outlook. What a range of such writers there is to choose from: Charles Dickens, R. L. Stevenson, Ballantyne, Mayne Reid, G. A. Henty, Kingston, Mark Twain, Jules Verne, Talbot Baines Reed and a score of others—all writers of strong moving stories of adventure that no boy can read without feeling spurred on to lead a better and more vigorous life.

Which Are the Best Boys' Books?

It would be difficult to say which is the best type of books for boys. Everything depends on the individual taste, and the range to select from is just as wide as the tastes and preferences of the boys themselves. At all events a competition that will be announced in the next number of the "*M.M.*" will reveal to us the kind of books that boys prefer to read. I want all my readers to look for this competition, and to urge the claims of their own favourite books.

The First Photographic Competition.

OVERSEAS SECTION.



The Overseas Section of the First Photographic Competition closed on 1 September and the above is a reproduction of the winning entry. This is a photograph of the Tamil Arch at Singapore, erected in honour of H.R.H. The Prince of Wales, on his recent visit to the Straits Settlements. The prize-winner is Master C. Marcus, 31, Selegie Road, Singapore, S.S.

I would remind readers that our Second Photographic Competition is now in progress. Full particulars are announced elsewhere in these columns.



BRIGHT IDEAS

These columns are reserved for dealing with suggestions sent in by Meccano users for new parts, new models and new ways of making Meccano model-building attractive. We are always pleased to hear from any Meccano boy who has an idea which he considers will be useful in the Meccano system.

C. L. Bowyer (Exeter).—(1) We are interested in your suggested 2½" curved slotted strip. (2) We should very much like to see a photograph of your model of Stephenson's reversing link motion or any other model incorporating this principle. (3) It is unnecessary to join a pulley to a pinion by means of a peg connection between the bosses, for use in a back-geared lathe. Both wheels may be secured in the normal way to the rod upon which they are mounted. We should be glad to hear of any further instances where this particular connection could be employed.

Sigbert Leach (Newtown, N. Wales).—Perhaps at some later date we may consider the introduction of dogs as an adjunct to the various Meccano cranes.

F. E. R. Nunn (Colchester).—We shall give consideration to your idea for wire tie rods of varying lengths.

Edward Clarke (Leicester).—Curved strips such as you suggest would be confined to definite diameters. The trouble will be in determining the most useful diameters, but shall go into the matter.

Frank Littlewood (Slaithwaite).—Your idea for a 4-volt motor driving a dynamo to generate current for the motor raises the old question of perpetual motion. It cannot be obtained this way, Frank!

P. Crees (Nottingham).—A strong application of your screwdriver and spanner to the nut and bolt securing the present type of hinge will give you a firm fastening.

Edwin Richardson (Louth).—We shall go carefully into your idea for a tractor wheel.

E. Greaves (Leeds).—We are continually adding to our list of train accessories. Perhaps at a later date we may include a departure indicator.

W. O. Sharp (Purley).—(1) If the present type of buffer (No. 120) were any longer it would be out of proportion. (2) See our reply to F. E. R. Nunn (above) re wire stays.

Donald Crowther (Leamington Spa).—(1) We are afraid that we cannot promise to publish a diary at present. (2) A good representation of a boiler may be made with two face plates joined together by double angle strips of the desired length.

John Dowing (Crouch End, N.)—We have in mind the introduction of a station for Hornby Trains. We do not quite follow your second suggestion.

Denzil Matkin (Liverpool).—The Editor is contemplating publication in the "*M.M.*" of a series of interesting articles on electricity as soon as opportunity permits.

Fred Wingfield (Sheffield).—Re diary, see reply to D. Crowther (above). We regret there is not at present space in the "*M.M.*" for a jokes column.

Robert A. Childers (Dublin).—The present threaded boss is quite large enough for making a joint between two threaded rods. A nut on both rods screwed tightly against the ends of the boss will give a secure fastening.

Cecil Beaven (Trowbridge).—We are afraid the present design of clockwork motor is not adaptable to a speed regulator. Its power is limited and any check put upon the spring would decrease the efficiency of the motor.

D. Askerley (Eccles).—We have in mind an extension of the range of bevel gears, but we must first determine the most useful ratios.

E. Diaper (Southampton).—We are already making a modification in our spanner in order to fulfil the requirements you suggest.

W. E. Pickard (Prestwick).—Thanks for your explanation of the suggested spiral spring. As you probably know, this type of spring is only used for very small and weak movements. Further, we do not favour a spring as a separate unit for power on account of the danger of sudden expansion, through perhaps an accidental release. Many serious accidents have occurred from this cause.

F. Moore (Southport).—(1) Two or three turns round the crank-handle and than a tight knot will prevent the cord from slipping. (2) What use do you suggest for a rack strip with teeth on both edges? (3) You will find that the architrave (No. 108) or the trunnion (No. 126) make excellent corner brackets.

Wm. and Lloyd Oppalt (Wambi, S. Aus.).—We are at the moment exploring the possibilities of a spiral gear. All the effects of a crown wheel as described by you can be obtained by a 50-toothed gear-wheel meshing with a ½" pinion or a 57-toothed gear-wheel meshing with a ½" pinion.

Alex. M. Hardie (Aberdeen).—We are afraid a crankshaft of the type you mention will be too costly to manufacture.

M. Ninet (Nancy).—(1) The Triple Throw Eccentric will give the same movement as your suggested wheel with the displaced centre. (2) The hexagonal plate has already been suggested to us. We shall go carefully into the matter of its adaptability.

C. C. M. Giffin (Letchworth).—What is the application of your suggested spring catch?

———— (White Swan Hotel, Alnwick).—Two face plates connected by double angle strips make a good representation of a large roller or boiler.

A. Armstrong (Loughborough).—If any scope for circular plates develops we shall introduce them, but at present we have found no special use for them.

R. Freeman (Finchley, N.).—Thanks for your explanation of the curved or bent strip. As many Meccano users require different diameters to their curves the question of bending is best left to individual requirements.

J. Hazlewood and Friend (Coventry).—Many thanks for the suggestion of the securing nut, prior to the assembling of the boiler and movement of the Hornby engine. We shall pass this on to the Works for their consideration.

H. S. Thornely (Horwick, near Bolton).—Some years ago we used to keep a stock of rubber rings for tyres, etc., for models, but since they very quickly perished, we ceased holding stocks.

J. N. Crorks (Shipley).—(1) The making of models to scale is a specialised business. (2) Our tank loco is similar in style and finish to Hornby Engines. (3) We shall see what we can do in the way of introducing miniature milk cans.

L. Dennis (Sherwood, Notts.).—(1) We hope to bring out an electric tram this year. (2) A bush wheel and threaded pin will give you the same effect as the double boss you suggest.

James Adams (Motherwell).—(1) The type of hook you suggest would be a little costly to produce and not very adaptable to quantity production. (2) A buffer beam may be constructed from a 2½" strip with our standard buffers fastened to it.

Robert M. Dickie (Muswell Hill, N.).—(1) Your idea for a 2½" × 2½" flanged plate has already been anticipated. See our reply to John Sackett, in No. 72 of the "*M.M.*" (2) We have recently designed a model of a ship and for the rudder we used a rod with a triangular plate fastened to it by means of two collars. It would not be worth while introducing a special rudder piece.

N. J. Clerks (Wokingham, Berks.).—We are experimenting at the moment on a 3½" gear wheel.

Robert Higgins (Lassodie, Dunferm.).—Regret, but space does not permit of our running a sale and exchange column in the "*M.M.*"

M. Revenet (Versailles).—Your suggested toothed-wheel, 75 mm. diameter and 2 cm. thick with five faces, would be an extraordinarily costly article and would not justify its restricted application.

M. Hirtzeberger (Paris).—As our 25 mm. Pinion Wheel with the pawl makes a perfect rachet action, there would be no advantage in introducing the rachet wheel you suggest.

Walter S. Warmes.—Sorry, but we do not understand what you mean by a "worm-and-worm" wheel.

Hubert Manson (Liverpool).—We do not advocate the use of strips and girders for railways track. They are not altogether satisfactory, but if the scope of curved sections increases in other directions we shall certainly consider their introduction.

L. Hawkins (Reading).—(1) The adaptability of Meccano is such that very good representations of cylinders and pistons may be constructed from it. To introduce made-up cylinders and pistons as you suggest would only be duplication. (2) The couplings on the Hornby Trains are made long to permit of free action of the carriage on the narrow radius curves, otherwise the buffers would foul each other.

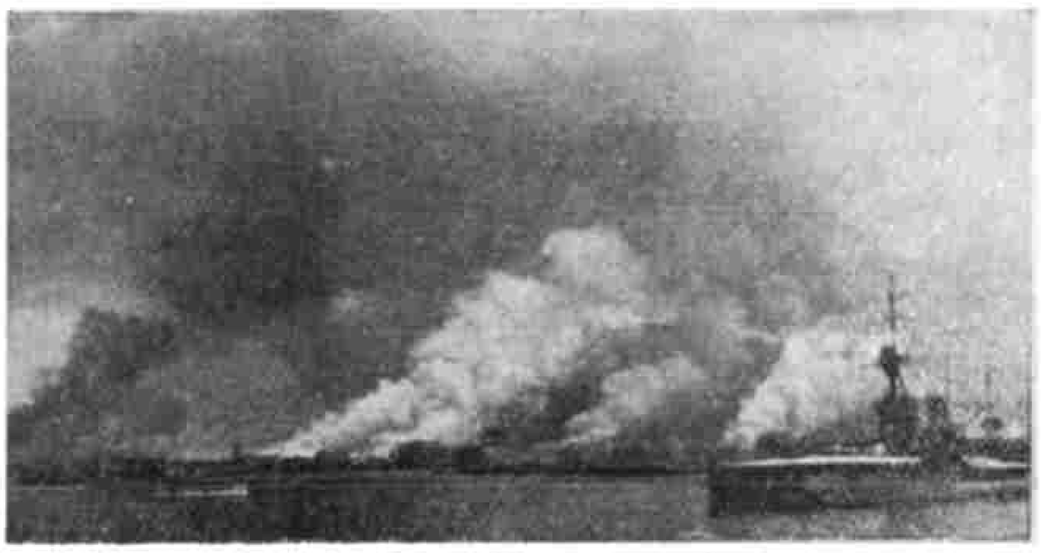
W. Schofield (Paignton, S. Devon).—The question of curved plates and sections would require very careful thought. It would be necessary to have these adaptable to general use.

A. W. Elwell (Linfield).—Thanks for your idea for obtaining a low gearing on the clockwork motor. We shall go into this and, if practical, communicate it to other Meccano users.

G. Anderson (Chatham).—(1) The latest type of rachet gear on the Hornby Trains is similar to that on the clockwork motor. (2) and (3) We are introducing an electric Hornby Train this year, also a greater variety of trucks. (4) A spring buffer stop is now included in our list of parts.

A Meccano Boy in Burning Smyrna.

All Meccano boys will have read in the newspapers last month how the Turkish army defeated the Greeks and captured Smyrna, as well as many other towns and villages in Asia Minor. In the course of these operations Smyrna was destroyed by a great fire and readers of the "*M.M.*" will be interested to see the accompanying photograph which has been sent by a Meccano boy who lived at Smyrna. Master Alec Issigorins—our friend in question—is an enthusiastic reader of the "*M.M.*" and he writes as follows:—



THE TOWN OF SMYRNA IN FLAMES.

H.M.S. "Maine,"

14th September, 1922.

DEAR MR. EDITOR,

I have found some spare time, and I decided to sit down and give you some terrible news, for at this moment I am about 700 miles away from home, and by to-morrow I shall have reached Malta! As you will already have learned, it is no use my explaining the retreat of the Greek army, and the danger of Smyrna. All the English subjects received orders from the British Consulate that we were to leave Smyrna in a special boat. I feel lost without my Meccano Outfit and I do not suppose I shall see it again or any of my drawings of models that I have invented.

"I wonder what the Turks will think when they find my Meccano Sets and if they will suppose that they are an enemy wireless apparatus or some form of infernal machine.

"You will not be able to communicate with me because I have no address at the present moment. I shall let you have it as soon as possible and then I hope you will write to me, for a letter from you will cheer me up immensely.

Good-bye,
Yours sincerely,
ALEC ISSIGORINS.

Since the above letter was written I have received a second letter from Master Issigorins, who is now at Valetta, Malta, along with many other refugees from Smyrna, who are being accommodated in Lazzaretto. His enthusiasm is demonstrated by the fact that in spite of his being a refugee, and having gone through some terrible experiences during the last week or two, one of the first things he did was to obtain from the Meccano Depôt at Valetta, competition entry forms, catalogues, etc., to replace those that had been destroyed in the fire at Smyrna. Master Issigorins is a keen member of the Meccano Guild and is now endeavouring to form a Meccano Club in Valetta.

I feel sure that our readers will extend to him their sympathy on account of the fact that he has lost all his Meccano and other possessions and also will wish him every success in his attempt to form a Club in his new surroundings.

A Great Airman: The Late Sir Ross Smith.

and his

Flight from England to Australia.

All Meccano boys will share the general regret expressed recently on the occurrence of the accident that ended in the tragic deaths of Sir Ross M. Smith and his friend and engineer, Lieutenant J. M. Bennett. The accident arose during a test flight of the Vickers-Amphibian bi-plane at Brooklands, and science generally and aerial navigation in particular, will feel the sad loss of these courageous and accomplished airmen.

The tragedy is more closely brought home to readers of the *Meccano Magazine* for the Editor was in correspondence with the gallant Sir Ross the day before his death, with a view to obtaining for the pages of the "*M.M.*" some particulars of his contemplated great flight around the world, for which he was testing his machine when he met his death.

A GREAT FLIGHT.

Sir Ross Smith and Lieutenant Bennett won undying fame in 1919 by flying from England to Australia. In this adventure they were joined by Sir Keith Smith—brother to Sir Ross—and Sergeant Shiers. This great flight was a remarkable performance, for although the whole journey across half the globe took less than 28 days, the actual flying time was only 124 hours, during which time a distance of over 11,000 miles was covered. We are able to give our readers some particulars of this wonderful achievement, in which we feel sure they will be interested.

THE AIRMAN'S WAR SERVICE.

Sir Ross McPherson Smith, K.B.E., M.C. and bar, D.F.C. 2 bars, A.F.C., Order of Nahda, was born in Adelaide, South Australia, on 4th December, 1892, of Scottish parents. He and his brother were educated at Queen's School, Adelaide, and at Warriston School, Moffat, Scotland.

At the outbreak of the war, he enlisted in the Australian Light Horse and served at Gallipoli and at Sinai. Subsequently while serving with the Australian Flying Corps in Palestine, he gained numerous distinctions as a bombing aviator. Still later, with Sergeants Bennett and Shiers, and accompanied by Air Marshal Sir W. Salmond, he made the first air flight from Cairo to Calcutta, for which he was awarded the Air Force Cross. Such was his ability and strength of character, that in a comparatively short flying career, he had already made his mark, and was rightly considered one of the premier aviators in the world. Later further pioneer work fell to his lot, and he made long reconnaissances with General Borton for suitable places for aerodromes in Burma, Siam, Malay and the Dutch East Indies.



THE LATE SIR ROSS SMITH.

SERGEANT BENNETT.

Sergeant J. M. Bennett, M.S.M., A.F.M., was born at St. Kilda, Melbourne, in 1892. After receiving a thorough and early training in motor engineering, he was employed with several prominent motor firms in Australia. He enlisted in the motor transport of the Australian Imperial Forces, sailing as a 1st class Air Mechanic in No. 1 Squadron Australian Flying Corps. After serving in Egypt and Palestine, he took part in the Cairo to Calcutta flight, already mentioned, and received the Air Force Medal. He also served with the North West Forces in the recent Afghan War.

A £10,000 PRIZE.

After the War, the possibilities of commercial aviation became a popular topic, and to stimulate enterprise various prizes were offered for certain specific flights. First, attempts were made to fly the Atlantic, and, after Hawker's dramatic failure through engine trouble, success came to two plucky Britishers, the late Sir John Alcock and his navigator, Sir Whitten Browne.

The Australian Government then offered a prize of £10,000 for a successful flight from England to Australia, the conditions being that it was to (1) be made on the same machine; (2) take no longer than 28 days, and (3) be limited to Australian subjects.

As was only natural, this competition attracted the attention of Captain (as he was then) Ross Smith, his brother Keith and Sergeant Bennett, all of whom were ready and anxious to further the interests of flying. Quickly deciding to make the attempt, Sir Ross prepared for the flight, securing a Vickers-Vimy machine from Messrs. Vickers Ltd., by whose courtesy we are able to reproduce a photograph of the machine and its crew.

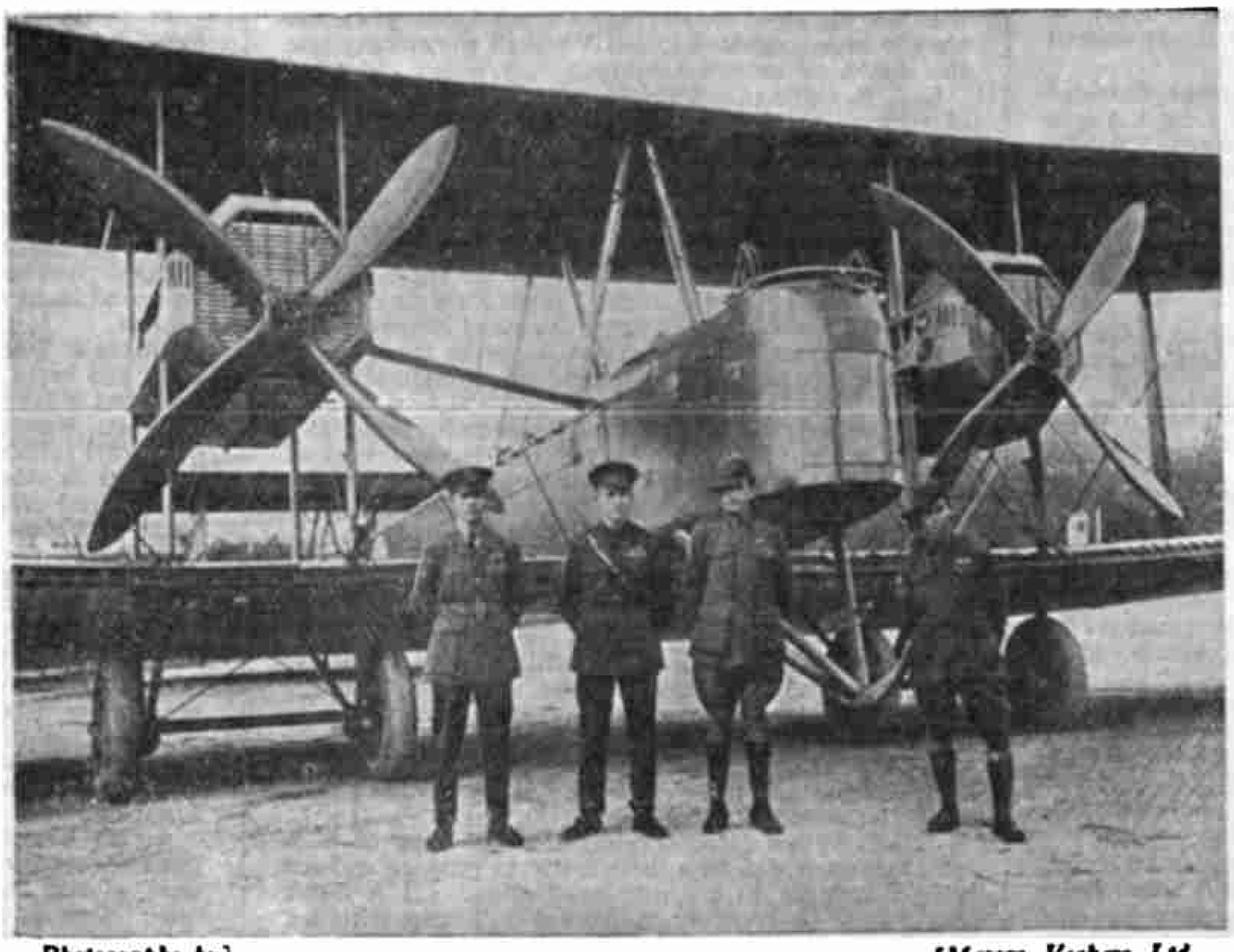
THE VICKERS-VIMY.

Except that it carries a smaller quantity of petrol, this machine was of a similar type to the Royal Air Force aeroplanes built for long-distance bombing, and to that used by Sir John Alcock in his Atlantic flight. It was fitted with two 350 H.P. Rolls-Royce "Eagle" Mark VIII engines. Petrol was drawn from the main tanks by two petrol pumps, and delivered to the service tank fixed on the top planes: from here it fell by gravity to the engines.

The Vimy had a span of 67 feet, a height of 15 feet, and an overall length of 42 feet 8 inches, and when fully loaded with stores and crew of four, it weighed 5 tons.

Sir Ross Smith soon found he was not to have things all in his own hands, for others were also attempting the Australian flight. It may be mentioned, however, that on the 13th of November, 1919, these other competitors (Lieutenant Roger Douglas and Lieutenant J. L. Ross) crashed with their machine, an "Alliance" driven by a 450 h.p. Napier Aero engine, and were killed at Surbiton just after setting out for Australia.

(To be continued)



Photographs by [*Messrs. Vickers, Ltd.*

THE FLIGHT TO AUSTRALIA.

Sir Keith Smith, the late Sir Ross Smith and Sergeants Bennett and Shiers, in front of the Vickers-Vimy on which the great flight to Australia was made. The photograph was taken immediately before the departure of the intrepid airmen.



RADIO SECTION

The Thermionic Valve.

THE INVENTION THAT MADE WIRELESS TELEPHONY POSSIBLE.

THE reader of any recent Radio book or periodical is certain to come across references to the "Thermionic Valve," an appliance that is one of the most notable discoveries of modern science. It is important for all interested in Radio to understand exactly what this wonderful valve is, and to know how it works. In order to do this, however, it will be necessary to deal with one or two matters that apparently have no bearing on the subject. For example, at first sight it may not seem that the discovery of the new element called Radium could bear any relationship to Wireless. Yet it has, as a matter of fact, an important connection with the scientific side of the subject, as we shall shortly see.

Elements and Atoms.

It has been established that everything — stars, planets, minerals, animals, and vegetables—is made up of one or more elements, existing either alone or combined in a thousand different ways to form compounds. Those of you who are studying Chemistry will know that it is possible to analyse, or break up, compounds. Water, for instance, may be broken up into the gases Hydrogen and Oxygen, there being two parts of the former to one of the latter. You will also know that there are substances, called "elements," that cannot be broken up. At present 81 of these elements are known and they include such substances as Aluminium, Gold, Hydrogen, Iron, Mercury, Oxygen, Platinum, Silver and Zinc.

Elements are built up of the same substance throughout. Nothing but iron can be got out of iron, nothing but silver out of silver; and no matter what heat or what other means are applied, the result is always the same.

Elements Bound by Chemical Force.

These elements combine in varying proportions and form compounds, the nature and appearance of which may be very different from the elements they contain. In everyday life, when things are simply mixed together, you generally know what the mixture will be like when it is made. (What cook would dare to make a plum pudding if this were not true!)

Elements are not simply mixed together, however, but are bound together by what is called chemical force. This causes such amazing changes to take place that no one—not even the most expert cook!—could guess beforehand what the resulting compound would be like.

Elements may be compared with the letters of the alphabet and compounds with the words formed by joining the letters together. There is one great difference, however, which is that though you may count how many letters there are in a word, you cannot see how many elements there are in a compound.

Knowing that the twenty-six letters of the alphabet may be used to form thousands of words, we are better able to realise the enormous number of compounds to which the eighty-one elements lend themselves.

Elements are Built of Atoms.

If we were ignorant of the number of letters in the alphabet it would not be a difficult matter to obtain the required information by taking a book and writing down in a separate place each different letter as it occurs. Soon all the twenty-six letters would have been written down, although we should find that some of the letters were rarer than others—q, x and z, for example.

The world resembles a book and the objects in it are built up of elements. By analysing or pulling them to pieces we are able to discover the elements of which they are composed.

As we have already seen, there are 81 elements. Some of these, such as iron and gold, are comparatively common and so were discovered long ago. Others (as the letters q, x and z) are rare; a few are very rare indeed. Perhaps there are still a few even rarer elements that remain undiscovered, waiting until science advances yet further before they can be made to disclose their secrets and their hiding places.

Elements themselves are built up of atoms. Until recent years atoms were believed to be the smallest possible particles to have a separate existence. Those of you who are studying chemistry will be familiar with this belief, which is called the "Atomic Theory."

Radium and Electrons.

In 1898 Professor and Madam Curie, two eminent French physicists, startled the scientific world by discovering a new element. This was called Radium, and it is one of the rarest elements and one of the most difficult to purify.

The discovery of Radium completely upset many accepted ideas, included in which was the Atomic Theory. The belief that the atom is the smallest body that could have a separate existence has now been superseded by the Electron Theory, first advanced by Professor J. J. Thompson in 1899. This theory holds that atoms themselves are composed of even yet smaller bodies, which Professor Thompson named "corpuscles." These small bodies are now called "electrons" and they form the foundation on which the "Electron Theory" is based.

The Incredibly Minute Electron.

It is wonderful to think of the triumph of scientific investigation that enables us to learn about the inconceivable minuteness of these tiny particles. Even the atom is so minute as to be far beyond the range of our most powerful microscopes—instruments that will take photographs of the corpuscles in our blood so that when the films are thrown upon the screen each corpuscle appears as large as a cart-wheel!

(To be continued.)



When Thomas Alva Edison, the greatest inventor of all time, commenced his scientific experiments he was engaged as a newsboy. Chemistry, printing and physics engaged his attention in turn, and his inventions in connection with electricity alone are numbered by the hundred.

The second instalment of this article *"The Thermionic Valve"* will appear in the November *"M.M."* and it will describe how Edison accidently made a curious discovery that has since been developed to become of the greatest importance to Radio.

This article, which has been specially written for the "Meccano Magazine," deals with the principles of the Themionic Valve, an important appliance in Radio. The above instalment describes Atoms and Electrons, the minutest known bodies. Future instalments will detail the inventions that led up to the wonderful appliances that have made possible the wireless telephony of to-day.

Radio Replies



M. Pien (Pretoria, S.A.).—(1) The plates with equi-distant holes, now made in Specially Prepared Fibre, will overcome the insulation difficulty to which you refer. (2) Brass terminals are already included in the list of Meccano Electrical parts. They are, of course, applicable to Radio use. (3) A condenser may be made from 2½" triangular plates (No. 76) as was illustrated in No. 26 of the "*M.M.*" (4) Special inductances are listed under No. 407 of the Radio parts. (5) Full particulars of the Meccano Radio Set, embodying the above-mentioned parts, were given in the issue already mentioned. We hope that you will obtain a considerable amount of pleasure from your Meccano Receiving Set.

W. E. Blandford (Stourbridge).—We are pleased to have the Radio news paragraphs you contribute and we shall endeavour to use them in some future issue of the "*M.M.*" We trust that your interest in Radio matters will continue to grow.

J. Bateup (Swansea).—(1) Although it will be quite possible for you to make your own inductance coil, you will find the Meccano Inductance Discs (No. 407) eminently suitable. (2) If you are in any difficulty with your wiring, write us again and we shall be pleased to help you if possible. (3) A licence is necessary to use any Radio Receiving Set and the Meccano Set is no exception to this regulation.

C. Udall (Saltley, Birmingham).—We are pleased to note you are interested in Radio and your suggestion that we should issue a small book dealing with the subject will certainly receive consideration. Full particulars how to make a Meccano Receiving Set are given in the special Radio Instruction Leaflet (price 3d. post free).

W. B. G. Henderson (Airdrie).—"We are running a wireless section with the Airdrie Meccano Club, combined with Meccano. We have commenced to erect our aerial and hope to finish it next week. Our Set at present is a Crystal Set, but by Christmas we shall have a Valve Set."—We are pleased to hear of this enterprise of the Airdrie Meccano Club and no doubt many other Clubs will also open Radio sections during the coming winter. Your suggestion that a special badge should be issued for Meccano Radio Enthusiasts is having consideration.

Mr. R. Samuel (Wallasey).—"I am glad you intend to develop the Wireless side of Meccano. My brother-in-law was the senior officer of the "Lusitania" when she was sunk and you can easily imagine how greatly the death roll would have been increased but for having the means of sending out that wonderful S.O.S."—We are interested to hear of your connection with the sinking of this great liner and hope you will be able to prevail upon your relation to send us an account of his experiences. We feel sure they would be of particular interest to Meccano boys.

W. Goodhead (Aston).—The Meccano Crystal Receiving Set does not include an aerial. A complete aerial set is sold separately, however, as announced elsewhere in this issue.

G. A. C. Lynch (Crosby).—Under present arrangements the nearest Broadcasting Station to Crosby will be Manchester. A suggestion has been made, however, that a broadcasting station be established at Seaforth, but on this point we have, as yet, no official information.

R. Harrison (Creek Road, ———?).—The Meccano Valve Set is not yet on the market. It will be announced in the "*M.M.*" as soon as ready. Your letter does not give a complete address and if you will forward this the Radio Instruction Leaflet ordered will be sent to you.

J. Nolan (Poplar).—It would be quite possible to make a Transmitting Set with Meccano parts but in view of the difficulty that users would have in obtaining from the Post Office a licence for transmitting, we do not contemplate such a development at present.

G. Fletcher (Chesterfield).—Your nearest broadcasting station will be Manchester, although Birmingham is only slightly further away. As Manchester is about 70 miles from Chesterfield you will require a valve set to receive telephony.

T. Grenfell (Wimbledon).—A list of Meccano Radio parts appeared in No. 26 of the "*M.M.*," a copy of which is being sent you. You will find a photograph of the Meccano Crystal Set in the same Magazine.

E. W. Adams (North Ferriby).—Instructions how to make a variable condenser are contained in the Radio leaflet. An illustration of a condenser made from Meccano parts appeared in the last number of the Magazine, and full particulars of Meccano Radio parts were also announced. There is no Radio Manual of Instructions yet. We may issue one in the future.

P. Williams (Warrington).—"Although the proposed broadcasting station at Manchester is not yet set up, there is nothing like being prepared."—We congratulate you on your enterprise, Frank, and note you intend having a Meccano Crystal Set in the near future.

H. A. Bungard (Scarboro').—(1) The nearest broadcasting station to Hove is Marconi House, London, about 60 miles distant. You will require a valve set to receive Telephony at that distance. (2) Croydon is not a broadcasting station, although telephony is transmitted from the Aerodrome there to pilots crossing the Channel nearly the whole of the day.

R. Richardson (Wolverhampton).—We have no information of a broadcasting station at Castle Bromwich. The official station will be established at Birmingham but it is possible that amateurs living in Castle Bromwich are transmitting telephony.

H. C. Wilkinson (Bedale).—We are pleased to hear of your enthusiasm to learn more about Radio. We note you "predict a great epidemic of 'Radioitis' among Meccano boys and that the only antidote to the epidemic will be a Crystal Receiving Set for each patient!"—Fortunately this disease, although very catching, is unlike most diseases in that it has beneficial effects!

H. Ashworth (Blackpool).—(1) No doubt you will be able to build the Meccano Receiving Set from the Meccano parts that you already have in your Outfit with the addition of a few special parts such as crystal, telephone ear-piece, etc. Full particulars are being sent you. (2) A receiving licence costs 10/- per annum and you should apply for particulars to the Post Office.

R. Part (Brighton).—Regarding your query about the nearest broadcasting station, see reply to H. A. Bungard (above). The same remarks apply to Brighton as to Hove.

H. A. Langley (Croydon).—(1) In regard to your query re licence, see reply to J. A. H. Arkwright (page 7). (2) Articles on Radio will continue to be published in the "*M.M.*" and we shall deal with the theory of wireless in the near future.

(Continued on page 7).

Radio Receiver De Luxe.



Photo by] [Mr. P Edelman.

The receiving of Radio messages is generally associated with complicated apparatus, tuning coils or inductance discs, condensers, thermionic valves and a multiplicity of other appliances. Such an array of apparatus is not always necessary, as is demonstrated by the accompanying illustration, which shows a Radio receiver with a neat and handsome appearance.

The problem of avoiding the very forbidding appearance of the usual apparatus to which many people object, has been solved by placing the receiver in a cabinet which closely resembles a gramophone cabinet. The batteries are contained in the left-hand side, while the receiving apparatus and loud speaker are on the right. Hidden wires connect to the aerial, and altogether this form of receiving apparatus is suitable for installation in a drawing room. It has the additional advantage that the delicate elements are protected both from dust and damage and the idea is one that will commend itself to tidy and methodical Meccano boys.

Broadcasting News

There is a rumour that the very powerful French Station at Sainte Assise will shortly broadcast telephony. Full particulars will be announced in the "*M.M.*" as soon as they are made known.

• • •

Concerts are sent out from Writtle, Chelmsford, at 8 p.m. on Tuesdays on a wave length of 400 metres.

• • •

In London music and telephony may be heard on almost any evening between 8 and 10 p.m. on a wave length of 400 metres, being sent out by many amateurs who have transmitting licences.

• • •

Music is also transmitted by Messrs. Burnham from Blackheath about 9 p.m. every evening, on a wave-length of 400 metres.

• • •

The Hague Concerts are still broadcasted from 8 p.m. to 9 p.m. on Sundays and also during the afternoon at 2.30 and 5.30 p.m. The wave-length remains 1,085 metres. Concerts are also sent out on Thursdays from 8 p.m. to 9 p.m. on the same wave-length.

Königswusterhausen, a station near Berlin, transmits telephony at 8 a.m. and 11.30 a.m. and may occassionally be heard speaking to Warsaw on a wave-length of 2,500 and 4,100 metres. The speech is, of course, in German, and has often been heard at the Meccano Works, Liverpool, on a three valve set.

• • •

Unfortunately, the Broadcasting Company that is being organised is meeting with some difficulties and until these are settled broadcasting cannot commence. It is hoped that the difficulties will be adjusted at an early date and full particulars of broadcasting will be published in these columns as soon as they are made known.

• • •

Weather reports are broadcasted each day from the Air Ministry, the Eiffel Tower and other European Stations. The messages are sent in code, but any amateur may pick them up and translate them, thus drawing up his own weather forecast.

• • •

Those Meccano boys who live near Croydon and possess a receiving apparatus tuned to receive a wave length of 900 metres, will be able to hear throughout the day the Air Station speaking to aeroplanes engaged in the Cross-Channel service. It is wonderful to think that the pilots are in constant telephonic touch with the Aerodrome and that it is even possible for a passenger to send a message to his office in the City, when flying several thousand feet in the air over the English Channel.

• • •

According to present arrangements the official stations from which concerts, etc., will be broadcasted are London, Birmingham, Manchester, Newcastle, Plymouth, Edinburgh or Glasgow, and Aberdeen.

The Mystery of Radio: Scientists Puzzled.

MESSAGES TRANSMITTED BY AN UNKNOWN FORCE.

IN times gone by the greatest mystery that our forefathers could imagine was the appearance of the family ghost at night in the corridors of the Moated Grange and the whispering of a message of warning from beyond the grave. Such happenings as these are mysteries no longer, but to-day we have a more mysterious voice, which, travelling through space, brings us messages of cheer that originate in some far-off town or country.

This wonderful voice, carried by wireless telephony, is made possible by a force of which we know but little. It is strange that even in this twentieth century, with our many scientific attainments, we have to admit defeat in this matter. Our greatest scientists have endeavoured—and are still endeavouring—to solve the riddle of this mysterious force, which you have probably guessed is electricity. Although we are more or less ignorant of the nature and composition of the force that we are employing, we are able to use it to light and heat our towns and cities and to work the machinery of our factories. We know how to make, or "generate," it and we know how to store it and conduct it from one place to another, but what electricity actually is we do not know.

WONDERFUL ELECTRONS.

It is believed and explained in another article in this issue that all matter is composed of minute particles called "atoms," and that atoms themselves are composed of electrons, or smaller particles. Electrons exist everywhere and it is by gathering them in a power-house that we obtain a supply of electricity. We apply electrons in a certain way and compel them to radiate heat or light at our will. By applying them to particular mechanism we obtain power to move our machinery. It is electrons that carry voices a thousand miles, or flash messages across continents and oceans.

It is the same mysterious force that accomplishes any of these things, the only difference being in the mechanism to which the force is attached and the method in which it is applied.

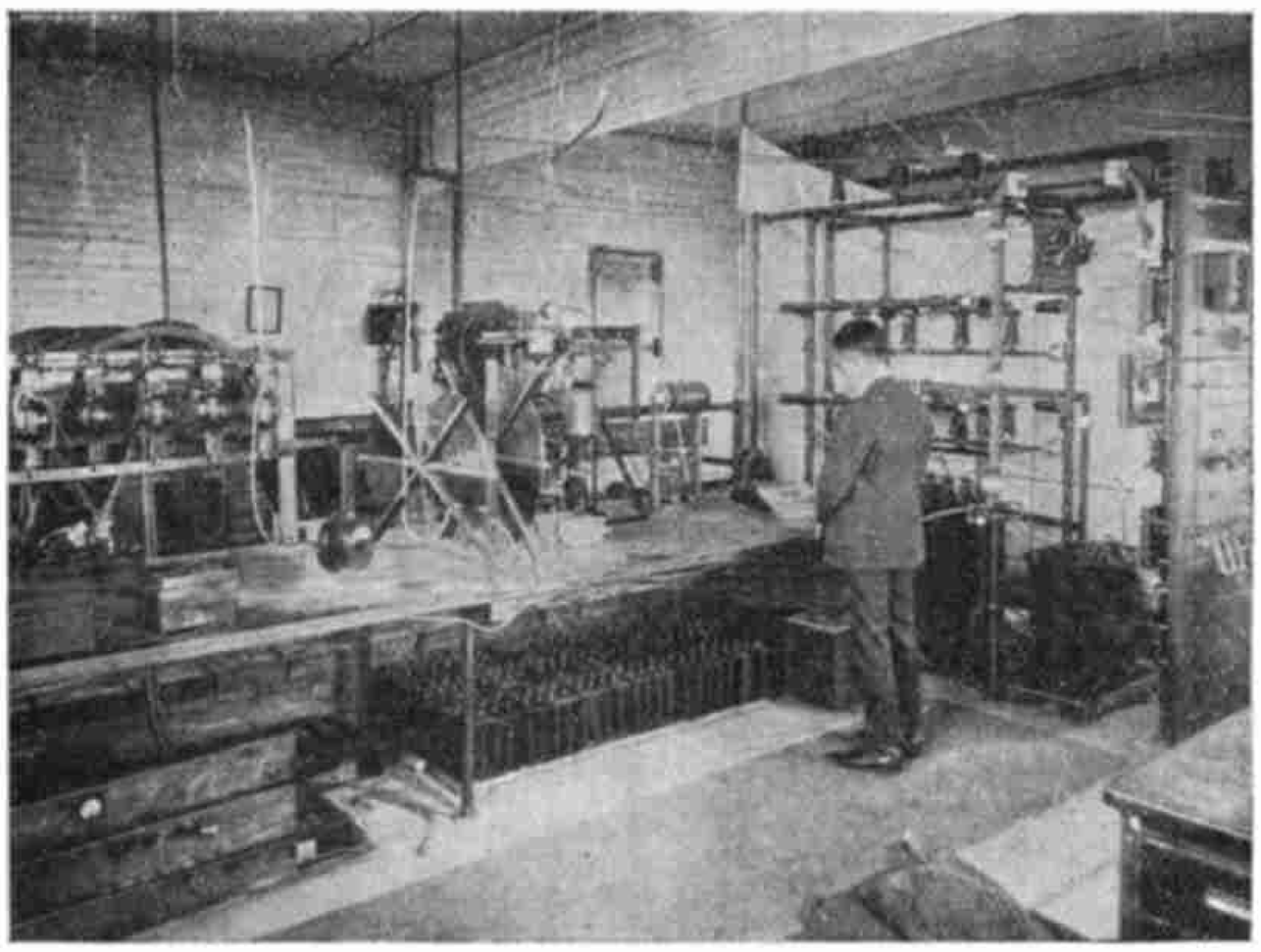
RADIO TRAVELS EVERYWHERE.

One of the most wonderful things about Radio is the fact that when a broadcasting station sends out a message it travels in all directions. A message sent out from a station situated in London, for instance, may be picked up with suitable apparatus in any part of the room in which you are sitting. Not only that, but it may be picked up in any room in your house, in any house in your street, or in any street in your town, in any town in your country and in any country in the world. More than this, it may be picked up by a ship on the ocean, or by an aeroplane flying thousands of feet above the earth's surface. Recent experiments have proved that wireless messages may be received even at the bottom of a mine-shaft, hundreds of feet below the ground.

THE MYSTERIOUS ETHER

The transmission of messages is accomplished through a mysterious medium called the ether, the nature of which no one can explain. Ether is supposed to fill all space — not only the space between worlds, but the space between the atoms of matter of which, as we have seen, solid objects are composed. It is by means of this all-pervading ether that wireless impulses are able to travel through solid objects such as the walls of a house.

Closely associated with the transmission of wireless impulses through the ether is the transmission of light and heat, each of these subjects obeying the same peculiar laws. We shall have an opportunity of learning more about this curious relationship in a future article in these columns.



The Interior of a Broadcasting Station.

This photograph shows the interior of the most powerful Radio Broadcasting Station in America. The aerial of this Station, (which is owned by the General Electric Company at Schnectady, New York,) was illustrated in the last number of our Magazine.

The apparatus shown amplifies the voice or music several thousand times before throwing it into space.

Recently, telephony from this station was picked up by an hotel at Santa Clara, Cuba, 1,450 miles away. The management cabled to the Broadcasting Station saying "Do not stop your music, we are dancing to it down here."

In the centre of the illustration are shown the tuning inductances and on the left are some of the large amplifying valves.

RADIO REPLIES (*Continued from page 6*)

J. A. H. Arkwright (Blackburn).—(1) The nearest broadcasting station to Blackburn will be Manchester. (2) The range of any crystal receiving set is limited to approximately 25 miles from the broadcasting centre, although telephony has been received over a greater distance than this on some occasions. Morse signals (i.e. telegraphy) may be received with a crystal set perhaps up to and over 100 miles. (3) According to present arrangements the wave lenth for broadcasting will be 450 metres. (4) You will require a licence for receiving with any instrument, whether it is a crystal or valve. (5) At present we do not list a double headgear but you can easily make one by attaching two of our single phones to a 12½" Meccano strip.

R. Johnson (Eccles).—We are pleased to hear of your interest in Radio and that your patience was not entirely exhausted before the publication of particulars of the Meccano Receiving Set. We note that you consider your prophecy, that "the Meccano Set would be better than any other," has been fulfilled.

A. W. Earland (Matlock).—Thank you for the cuttings showing the honeycomb coil-winder made from Meccano parts, which we had already seen. This is a further illustration of the universal adaptability of the Meccano system to any and every purpose.

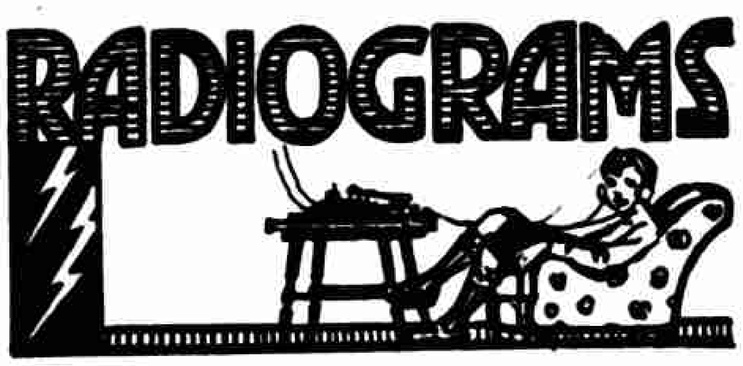
R. Hillair (Southampton).—We were particularly interested to hear of your friend having constructed a Radio earphone from a tooth-paste tin and that it gave clear signals and should be pleased to have full particulars. We feel sure that the result of his ingenuity will interest readers of the "*M.M.*" Perhaps you will be able to arrange for the information to be sent along.

G. R. Perkins (Friddington).—Broadcasting stations are not yet in regular operation. When they are established the nearest station to your home will be Birmingham.

G. Dalziel (Glasgow).—Full particulars of the Meccano Radio Set were announced in No. 26 of the "*M.M.*" We trust that your ambition to own a Radio Receiving Set will soon be realised.

J. R. Smith (South Shields).—See our reply (above) to G. Dalziel. We are interested to hear that you have constructed a Crystal Receiving Set. The information you require was contained in No. 26 of the "*M.M.*", a copy of which is being sent you. You should now send for a copy of the Radio Instruction Leaflet (price 3d., post free).

W. G. Symons (London).—It is only certain crystals that require a battery. The efficiency of silicon and of crystals containing fused silica (such as carborundum) is considerably increased in this way. Meccolite, made by Meccano Limited, gives good results without the aid of additional current.



Wireless is being increasingly used in Germany, especially in communicating with the United States. In 1920 two-and-a-half million words were transmitted and last year the total reached eight-and-a-half millions. The existing Company, which has stations at Nauen, Teltow and Hanover, is extending its apparatus to cope with the increased demand.

* * *

Wireless telephonic communication is to be established between the town of Winnipeg and the great Hydro-Electric Power House, 80 miles distant.

* * *

It has been suggested that insects may communicate by some form of wireless. The suggestion opens up a wide field for considerable research on a very interesting subject. Whether or not insects are fitted with transmitting sets we do not know, but most insects have at least two antennae!

* * *

An American boy has recently made a Radio receiving apparatus that is contained in a pickle bottle. It is fitted with a crystal detector and is claimed to give good results.

A wireless set has recently been installed at Wennington Road School, Southport, by one of the masters interested in Radio. It is proposed to use the installation for educating the scholars in the new science.

* * *

The progress of the machines in the recent air race was "wirelessed" to the Air Ministry from six stations in different parts of the country. Frequent reports of the weather en route were also received by Radio. Those boys living in London were able to follow the machines competing in the race by means of a special map placed in a window in Kingsway.

* * *

There has recently been held a Wireless Exhibition at the Central Hall, Westminster. One of the features that attracted considerable attention was a model airship, controlled by wireless.

* * *

It is not a difficult thing to construct the necessary apparatus to enable this to be done. Those who prefer to do so, might adapt the apparatus to control an electric train or other model.

* * *

In America, where many of the sets in use are of the valve type, valves are known as vacuum tubes. The great popularity of Radio in that country may be judged by the fact that the present output of valves in the States is about 200,000 per month.

* * *

It is now claimed that in addition to travelling through the ether, wireless waves also travel through the earth. An American scientist states that in long-distance transmission, the waves never reach the receiving antennæ through the air at all, but are received at the base of the aerial.

The messages transmitted by the new British station at Leafield, near Oxford, to Halifax, Nova Scotia, have been distinctly heard at Melbourne, Perth and Sydney (Australia), over 11,000 miles distant. They have also been heard in South Africa. This is especially interesting as Leafield is not an extraordinarily powerful station.

* * *

The construction of a new British station is under consideration by the Government. As the plans at present stand, it will be at least seven times as powerful as the station at Leafield.

* * *

The generators at the powerful Sainte Assise Radio Station are driven by 1,800 h.p. Diesel engines—a type of oil engine that is rapidly coming to the fore in engineering. Diesel engines are now being used for propelling certain classes of ships, instead of steam engines or turbines. They are also proving very satisfactory in their even more recent application, that of generating power for Radio transmission.

* * *

The French Government Station at Bordeaux, and the Radio Central of the United States, were the most powerful stations in the world, until the building of the great station at Sainte Assise. Those who are able to receive signals from the Eiffel Tower know that it is a very powerful station. Sainte Assise, however, is nearly forty times more powerful.

* * *

The Sainte Assise Station, the most powerful in the world, will, when finally completed, be capable of direct communication with Saigon in Indo-China, 8,000 miles distant.

* * *

Mr. Marconi is at present paying special attention to experiments with radio waves of short wave length. This type of wave has been found more adaptable than the longer waves for transmitting across short distances on land, or between ships close together at sea.

Guild Members Hear Parisian Concert.

The members of the Exeter Meccano Club recently had an opportunity of listening-in to a wireless concert, broadcasted from Paris.

They were enabled to do this by the use of a three valve receiver set, with an additional outside loose-coupled tuning inductance. This set is installed at the house of a local gentleman who takes a great interest in the Club.

Master Bowyer, the enthusiastic secretary of the Exeter Meccano Club, tells me he is making a receiving set for installation at his school. This set is to be of the two-valve type having one rectifying and one amplifying valve. The loose-coupled tuning inductance, consisting of a coil, has a number of "tappings" taken from it to a switch, sliding inside another coil of a similar type but of larger diameter. When the large coil is not enclosing any of the turns of wire of the smaller coil, it is said to be "loose-coupled," and when completely enclosed it is "tight-coupled."

We feel sure that our readers will be pleased to hear from Master Bowyer again, when the set is installed, and to know something of the results obtained from it.

Meccano Receiving Set.



The Meccano Crystal Receiving Set has been thoroughly tested and has received concerts, music, etc., broadcasted in London, Paris and New York. It is suitable for receiving telephony (speech, music, etc.) or telegraphic messages (Morse) on a wave length of approximately 450 metres.

Readers of the "*M.M.*" who have not yet obtained the Meccano Radio Leaflet, which gives full instructions for making this splendid receiving set, should send for a copy at once. (Post free 3d.)

The New Meccano Book.



A beautiful new Meccano book has been compiled and should be in the hands of every Meccano boy. It illustrates and describes each Outfit and gives full particulars of the Meccano Clockwork and Electric Motors. It also includes details of the Hornby and Zulu Clockwork Trains, Tin Printed Trains and a full list of Meccano Rails, Points and Crossings. A valuable feature also is a fully illustrated list of the entire range of Meccano parts, including all the new and valuable parts added to date.

Every reader of the *Meccano Magazine* should possess one of these beautiful new booklets. A copy will be sent free on receipt of a postcard and as the demand will be very great, you should take advantage of this splendid offer and write at once for your copy. Put "*M.M.*" after your name for reference.

The Photographic Competition.

Our Second Photographic Competition was announced in No. 26 of the "*M.M.*" It is divided into three sections:—

(1) ARCHITECTURAL. (2) NATURE STUDY. (3) MISCELLANEOUS.

There are no restrictions and any type of camera may be used. Prints may be of any size and finished in any way, it being immaterial whether they are mounted or not. The photographs must be taken by the competitor but the developing and printing may be done by others. The entries will be judged on their pictorial merit.

The closing date for the United Kingdom is 1st November and for Overseas 31st December next. The first prize will be a No. 1. Hornby Clockwork Train Set and the second prize a Tin Printed Train Set. Other prizes will also be awarded according to merit.

THE MECCANO GUILD

THE SECRETARY'S NOTES.

A Meccano Guild for France.

British Meccano boys will be interested to know that, owing to the numerous and persistent appeals from Meccano boys living in France, a Meccano Guild is being inaugurated in that country, with Headquarters at Paris. French Meccano boys will now form Clubs, hold Meetings, Lectures, Debates, Concerts, Exhibitions, etc., and many happy times are ahead for them. The French Guild will, of course, be affiliated to our own organisation, and Guild members will join me in extending their congratulations to fellow members in France, and in wishing the French Meccano Guild every success.

A Year of Progress.

The activities of Meccano Clubs have commenced and members are already enjoying the opening nights of the first Winter Session. I feel sure that the present year will be the most progressive yet known by the Guild. Every day large numbers of new members are enrolled and in many districts local gentlemen are evincing interest in, and paying tribute to, the splendid work done by the various Clubs. The Clubs already formed are increasing in their enthusiasm for Club work, and many new Clubs are being established in connection with Schools, Scout Troops and other similar organisations.

The Guild and Radio.

There appears to be no limit to the wonders of electricity and development succeeds development with bewildering rapidity. It is wonderful to think that it is now within the power of every Guild member to receive wireless messages with the aid of the new Meccano Crystal Receiving Set. I am sure that all Guild members will be greatly interested in this, the latest addition to the Meccano hobby, and several Clubs are installing special Receiving Sets and arranging one night each week as a Radio evening.

Correspondence between Members.

I am pleased to notice the increased activities in connection with the Correspondence Club. Guild members have long felt that they belonged to a great brotherhood of boys, each having the same thoughts, sharing the same pleasures, and thrilled by the same ambitions. They often think of other Guild members in far corners of the earth, and wish that they might learn something of what they are doing in those far off countries. The Guild Correspondence Club makes this possible, and already many lasting friendships have been formed through its medium. Those members who are interested, and wish to take advantage of this opportunity of exchanging letters with other Guild members, should write to me for further particulars.

A Warning.

I have several times had occasion to warn Guild members against begging letters received from abroad, and as the practice seems to be on the increase I am again mentioning the matter. The letters come principally from native boys on the West Coast of Africa who see the names and addresses of Meccano boys in the *Meccano Magazine*, either as prize-winners or in connection with the Guild. Sooner or later they ask for presents of fountain pens, silk handkerchiefs, etc., and offer to exchange native baskets and monkey-skins. I advise all Meccano boys to ignore communications of this type. If any doubtful correspondence is received it should at once be forwarded to me.

An Interesting Letter from a Guild Member.



MR. R. ROBINSON, OF BECCLES.

Mr. R. Robinson of Beccles is a keen Meccano Guild member and the following extract from one of his letters will, I think, be of general interest:—

> "The emotions I experienced upon reading your letter were many and varied. Perhaps the predominant one was pride—pride intermingled with elation. Another and deeper emotion was stirred when I thought of the fine spirit of fellowship which must animate the Guild, that its Secretary should write to a member at such length and with such careful wording, as he did to me. My expression may be clumsy but I am sure you will appreciate my feelings. Your letter seemed like one from an old friend rather than from the Secretary of a big organisation. I am not, I hope, a sentimentalist but I thought these feelings, occasioned by your letter, might interest the writer."

This is just the spirit that the Guild strives to promote—a spirit of comradeship and good-feeling. I am pleased to think that Guild Members regard me as a friend who is ready to lend a helping hand and to put things right as far as lies within my power, when they are in difficulty.

Special Merit Medallions.

AWARDED AGAIN THIS SESSION.

I am particularly desirous of encouraging members to read instructive papers on subjects that interest them. It is excellent training for boys to stand up before their friends and to address them in this way. A popular and instructive discourse should be aimed at, to last from a quarter to half an hour. A discussion may follow, the other members adding some interesting facts to those dealt with by the member who reads the paper.

PREPARING THE PAPERS.

In getting up such papers the great secret is thorough preparation. Facts should be sought for from every possible source such



THE SPECIAL MERIT MEDALLIONS.

as parents, libraries, teachers, fellow-workers, and chums. The facts thus obtained should be set down briefly and clearly, in proper order, and the whole paper should be rehearsed and correctly timed. It may be illustrated by working models.

There are a great number of subjects to choose from in all branches in engineering and science, and I am sure that Club Secretaries will be very pleased to hear from members who will offer to read such papers at their Clubs.

In order to offer encouragment I am this session again allotting one Special Medallion to each Club, to be given to the member who delivers the best paper. After the papers have been read at the Club meetings they must be sent to me (with any comments by the Secretary or Leader) at the end of each session. I trust that all Club Leaders will help me to make this valuable part of the Meccano Club work a great success.

The Recruiting Campaign.

Enthusiastic members may do a good turn to the Guild movement by recruiting new members, and I want all Meccano boys to understand the objects of the Guild. Once they realise for what the Meccano Guild stands they will join its ranks enthusiastically and without hesitation. There are many thousands of Meccano boys in this country who, strange to say, have never yet heard either of the Meccano Guild nor the *Meccano Magazine*! This scarcely seems possible, so widely do we endeavour to make both known, yet the numerous enquiries I receive every day show this to be the case. I want all to help me to spread the knowledge of the Guild far and wide.



THE RECRUITING MEDALLION.

Every member should endeavour to enrol at least three new members. To each member who obtains three new members for the Guild a handsome medallion will be awarded. This Medallion (which is here illustrated, actual size) is one of which any boy may well be proud.

Send for full particulars of the Recruiting Campaign to the Guild Secretary.



CLUB NOTES

Short reports of Club doings are printed in this column. Should any Guild member desire to join any of the Clubs mentioned he should write for particulars to the Club Secretary, whose name and address is given.

Loughborough M.C.—There is every prospect of a fine Club being established in Loughborough, for the enthusiastic Secretary has obtained a Club-room and an adult Club Leader. Members are now wanted and any Meccano boy living in Loughborough should immediately write to, or call upon, Master S. W. Goodman, 15, Oxford Street, Loughborough, for full particulars.

Parkstone Congregational M.C.—The first Winter Session commenced on 16 September. It is hoped to hold an Exhibition and Concert early in the New Year and to this end the members are working enthusiastically. The members endeavour to remember the Club motto, "*Perseverantia Vincit*" in everything they undertake. *Secretary:* Master F. Brumwell, Fernside Avenue, Parkstone.

St. Mary with St. Gabriel M.C. (London, S.E.11).—Programme for the Session includes Lantern Lectures, Fret-work and the usual Club work. This Club is combining with the Holy Trinity Meccano Club in a joint Club Exhibition to be held on 28 October. A bright and interesting magazine is run in connection with the Club. *Secretary:* Mr. C Curle, 37, Pullens Buildings, Peacock Street, London, S.E.

West View M.C. (Nottingham).—Only a small Club as yet but has already made quite good progress. Interesting Lectures and Competitions have been arranged for the Session just started and Meccano boys living in the vicinity of Sherwood, Nottingham, are invited to join. *Secretary:* Mr. H. W. R. Cousens, 494, Mansfield Road, Sherwood, Nottingham.

Kilmarnock (Riccarton) M.C.—It has been arranged that visitors may call on Club nights to see the work being done by the members and later on it is hoped to set apart a definite Club night for visitors. An interesting programme has been drawn up and it is proposed that an Exhibition be held in the near future. *Secretary:* Master A. Todd, 98, Campbell Street, Riccarton, Kilmarnock.

Airdrie Meccano and Wireless Club.—The name of the "Airdrie Y.M.C.A. Meccano Club" has been changed as shown, a Radio Section having been introduced. Although at present the Club only possesses a Crystal Set, they hope by Christmas to have one that is more powerful. Club work is also being followed with enthusiasm. *Secretary:* Master W. B. Gardner Henderson, "Rosehall," Airdrie.

King Street (Luton) M.C.—This Club is also giving attention to Radio, and several evenings are being devoted to this subject in the programme for the coming Session. Extensive alterations have been made to the Club premises and the Session is now in full swing. *Secretary:* Mr. S. Burgoyne, 58, Wellington St., Luton.

Cobham M.C.—An excellent start has been made and the Club is fortunate in having Colonel Trollope as President. Lectures, Social Evenings, Exhibitions and Model Building are being arranged, and the Club is making rapid progress. *Secretary:* Master Wm. Phillips, The Fox and Hounds, Cobham, Surrey.

Exeter M.C.—At a recent Fête held in Exeter a Meccano model-building competition was arranged and quite a number of the members of the Club participated. Recently an attempt was made to establish another Club in Exeter but this has now joined the (then) St. Thomas (Exeter) M.C. and the club re-named "Exeter Meccano Club." *Secretary:* Master C. L. Bowyer, 5, Silver Terrace, Richmond Road, Exeter.

Kenyon Hall College M.C.—Owing to examinations, etc., during the past two sessions, no great amount of Club work has been done. The members are all keen and enthusiastic however, and in this connection two of the boys, Masters J. S. Kelsall and J. W. Mayhew were awarded Special Merit Medallions. *Secretary:* Master J. W. Mayhew, Kenyon Hall College, Kenyon, near Manchester.

Club Recently Affiliated.

1st Herne Bay M.C.—Through the united efforts of Mr S. J. Sims and Master C. W. Russell this Club has become affiliated with the Guild and already rapid progress has been made. *Secretary:* Master C. W. Russell, 4, Clifton Villas, South Road, Herne Bay.

Cheadle Hulme Boys' School M.C.—This Club was first formed during the last Winter Session, but it has remained inactive during the summer months. The members were all keen to start the Winter Session in real earnest, however, and since affiliation has been granted the Club work has been going ahead with full swing. The meetings are held on a Saturday in the schoolroom and occasionally additional Lectures will be given on Friday evenings. *Secretary:* Master J. Wilson, "Nidis," Bramhall Lane, Bramhall, Cheshire.

£250 IN PRIZES.

Meccano Model-building Competition.

Cash prizes to the value of £100, Meccano Outfits, Inventors' Accessory Outfits, Hornby Trains and Zulu Trains to the value of £150.

These prizes will be awarded in the next Meccano Model-building Competition, for which every Meccano boy should enter. As was the case last year, the Competition will be divided into three sections (1) for boys under 10 years of age, (2) for boys between 10 and 14 years of age and (3) for boys over 14 years of age.

There are no restrictions and no entrance fees. Full particulars and entry form will be sent on application. The closing date for the Competition will be 15th April, 1923, for entries from the United Kingdom and the 30th May, 1923, for entries from Overseas.

Meccano Minstrels at Princes Risborough.

I have pleasure in publishing a photograph of the Minstrel Troupe organised in connection with the "Princes Risborough Meccano Club," the members of which are as jolly a set of minstrels as they look. The Princes Risborough Meccano Minstrels have already given several entertainments, all of which have been eminently successful, and have added the sum of over £17 to the Club funds. Part of the amount has been devoted to purchasing the necessary instruments for a Drum and Fife Band and this is now well in hand practising having commenced.

Under the capable direction of Mr. Robert Bailey, the enthusiastic Leader, the Princes Risborough Meccano Club has become one of the most progressive of our Clubs. They have a very fine Football Team, and during the coming winter it is proposed to introduce a Hand work-Class in addition to the ordinary Club work.

All the members are now working enthusiastically for an Exhibition and Sale of Work that is being arranged to take place about Christmas time



MR. ROBERT BAILEY



THE PRINCES RISBOROUGH MINSTRELS.

Clubs Not Yet Affiliated.

Birkenhead North End M.C.—A Meccano Club is being established in Birkenhead and any boys living in the vicinity of Upper Brassey Street, Claughton or North End should communicate with the *Secretary:* Master E. Roland Hudsom, 7 Upper Brassey Street, Birkenhead.

Soerabaia (Java) M.C.—This Club (Dutch East Indies) is being organised by a Dutch member of the Guild. He is working enthusiastically so that the Club may become affiliated with the Guild and, doubtless, before long this will be brought about. *Secretary:* Mijn Heer J. G. Wijnen, R., Sumatradwarsstr, 4, Soerabaia (Java), Dutch East Indies.

Names Wanted.

I have several letters and application forms for membership of the Meccano Guild that have been received with incomplete addresses, and it is, of course, quite impossible for me to reply to them. The undermentioned boys should send me their full address, when their letters will be dealt with and the applications sent forward:—

Albert Keen, ——?, Tamworth.
Arthur Jackson, ——?
Kenneth Hudson, Washing Street, ——?
Malcolm Macdonald, Dunnikier House, ——?
William Goad, Prince Roack, ——?
J. V. Braithwaite, ——?
B. D. Molesworth, ——?
R. Harrison, Creek Road, ——?
F. Brockway, Bourne St., ——?

A Joint Club Exhibition

To be held by the

HOLY TRINITY MECCANO CLUB.

On 28 October next a joint Exhibition will be held in the Holy Trinity Parish Hall, Barnsbury, N 1., by the "Holy Trinity" and the "St. Mary-with-St. Gabriel" Meccano Clubs. A hearty invitation is extended to any Meccano boy in London who is interested.

In addition to the usual Exhibition it is hoped to include Radio and Lantern Demonstrations and from letters which I have received everything augurs well for a really enjoyable and successful Exhibition.

A small charge is being made for admittance: 8d. for adults and 4d. for boys under 14. The Exhibition lasts from 3 p.m. to 10 p.m.

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, and 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.

C. W. Udall (Saltley).—

"A Meccano boy is always happy,
Merry, bright and cheerful,
He is always buying spare parts
And never is he tearful."

This is not quite a poetic gem, Charles, but the facts as you state them are beyond dispute. We are pleased you are progressing so well in your studies. You will be able to obtain all the information on Radio for which you ask in this and succeeding numbers of the "*M.M.*"

J. Green. Jr. (Biggar).—So many suggestions are now being sent in to us that we are unable to reply to them immediately in our "Bright Ideas" column. You must exercise just a little patience, Joseph. Now that the "*M.M.*" is to be issued monthly during the winter, we shall doubtless be able to keep this useful column more up to date.

C. C. H. Weeks (Norfolk).—In the event of a Guild Badge being lost, a new one can be obtained from the Guild Secretary by sending a remittance to cover the cost. We have sent by separate post all the literature you asked for.

H. Stephens (Castleford).—"I enjoy Meccano better than anything else. When it rains it makes it brighter." We welcome you into the Meccano fold, Herbert, and we prophecy much enjoyment and fun for you as you settle down to life in Meccanoland.

A E Drew (Birmingham).—

"Beside unfinished homework he lay,
His pencil in his hand.
His dream was fair, his thoughts were there
In Happy Meccanoland.
Again in the mist of shadow and sleep
He saw his favourite land."

Your other verses are equally good, but we cannot find space for them all. We note that they are after Longfellow, but we rather suspect that if he could read them, Longfellow would be after you!

Dickie Jones (Cleeve Hill).—We are glad to have more of your bright breezy letters, and to hear of the splendid times you had at the sea. We may start a Stamp Collector's corner in the "*M.M.*" later.

F. W. Stephenson (Preston).—Sorry we could not come over to the Preston Guild, but we read all about it in the papers and were much impressed. We should certainly like to see the photos you took of this great event.

A. E. Rough (Wakefield).—We congratulate you on having won a City Minor and Stonie Scholarship. You will enjoy Meccano model building all the more after your enforced rest. We hope you will take a keen interest in Radio during the coming Winter.

Two New Competitions

WHICH IS YOUR FAVOURITE MAGAZINE?

The amount of literature written and offered to the British boy for his amusement and instruction is nothing short of colossal. It is safe to say that there is not a boy in the country who does not regularly read one or more weekly or monthly publications.

We are anxious to find out just what class of reading our readers like best, and we are therefore offering a prize of a No. 1 Hornby Train Set for the best article (consisting of not more than 100 words) on—

"MY FAVOURITE MAGAZINE AND WHY I LIKE IT."

Any weekly or monthly magazine printed and published in Great Britain may be dealt with *but not the "Meccano Magazine."* This Competition will close on 31 December, 1922. Mark your envelope "Favourite Magazine Competition."

I also invite my readers to send me a list of what in their opinions are

THE FOUR BEST MAGAZINES

for boys, published in this country, in what they consider to be the order of merit.

A Meccano Clockwork Motor will be awarded to the boy who places the four magazines nearest to the list of best magazines, as voted for by all readers participating in this competition. *The name of the "Meccano Magazine" must not appear in lists submitted.*

The voting must be on postcards only, which must be received not later than 31 December, 1922. Address postcards Meccano Ltd., Binns Road, Liverpool, and mark them "Best Magazines Competition."

A Successful Competitor



Master Fred. C. Rogers, of Providence, Rhode Island, U.S.A.

who won one of the cash prizes in Section B in the recent Meccano Model Building Competition. The successful entry was a model of a Track Laying Machine.

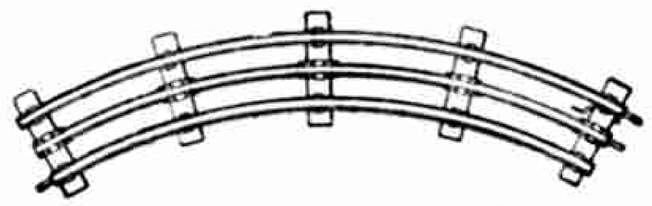
New Meccano Rails.

Owners of Gauge 0 clockwork and steam trains will be pleased to hear that the Meccano Curved Rails and Points may now be obtained in 9 in. radius, giving a circle of 1 ft. 6 in. diameter. Particulars and prices are given below.

(For 1 ft. 6 in. diameter circle.)

A9.	Curved Rails (9 in. radius)	per doz.	3/-
PR9.	Right hand point	each	2/6
PL9.	Left "	"	2/6

New Electric Rails



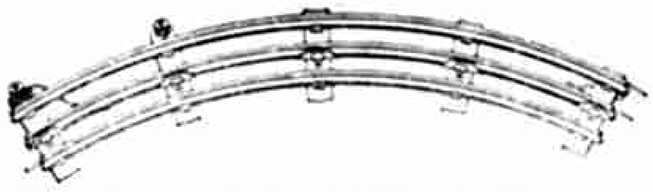
(For 2 ft. diameter circle.)

EA1.	Curved Rails (1 ft. radius)	per doz.	8/-
EA1½.	" Half Rails	"	5/-
EA1¼.	" Quarter "	"	4/6

(For 4 ft. diameter circle.)

EA2.	Curved Rails (2 ft. radius)	per doz.	8/-
EA2½.	" Half Rails	"	5/-
EA2¼.	" Quarter "	"	4/6
EB1.	Straight Rails	...per doz.	7/-
EB½.	" Half Rails ...	"	4/6
EB¼.	" Quarter " ...	"	4/-

Terminal Rails.



EAT1.	Curved Rail with Terminals (1 ft. radius) ...	each	1/2
EAT2.	Curved Rail with Terminals (2 ft. radius) ...	each	1/3

New Meccano Manuals.



There are three Manuals, the 0 Manual for simple models built with the 0 Outfit, the 0–3 Manual comprising models built with any of the Outfits from 0–3 and the Complete Manual, which comprises a selection of models that may be built with every Outfit from 0–7. This latter Manual is a very fine publication and should be in the hands of every Meccano boy. It includes instructions for building most of the models shown in the present No. 3 Manual. A limited supply of the No. 3 Manual is still available.

PRICES OF MANUALS:		s.	d.
0 Manual	post free ...	0	6
0–3 "	" ...	1	2
Complete Manual ...	" ...	2	10
No. 3 Manual	" ...	1	4½

Change of Address.

Subscribers should immediately notify the Editor of any change of address. Send a Postcard *giving the old and new address*, so that records may be kept up to date.

MECCANO

Engineering for Boys

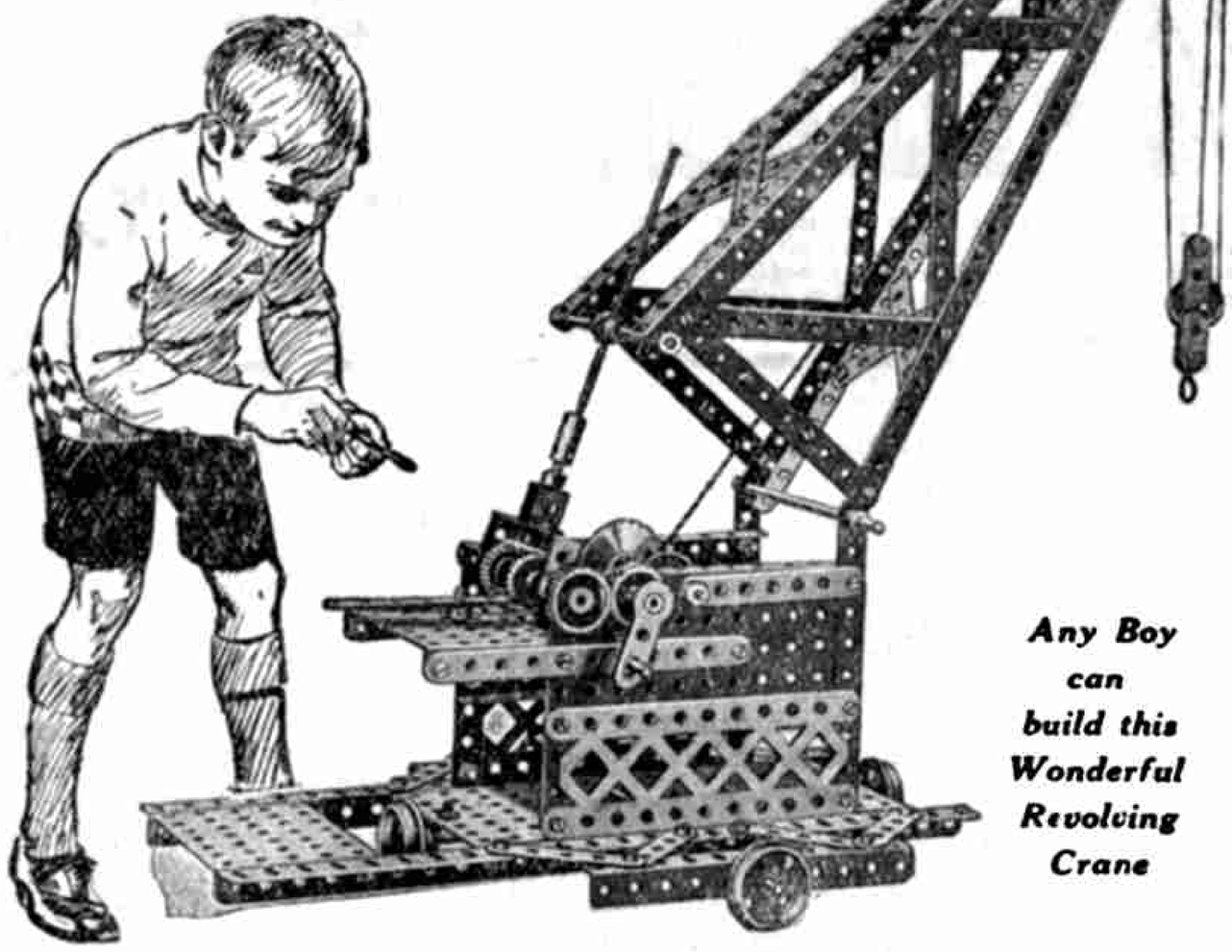
REAL ENGINEERING. The reason why you can build such wonderful models with Meccano is that every part is a real engineering piece—each perfectly designed and accurately made. You can build hundreds of models with Meccano—you never come to the end of Meccano fun.

ANYWHERE BETWEEN 5 and 70 is the correct age to start Meccano. The youngest boy can begin to build the moment he gets his Outfit.

FULL INSTRUCTIONS. A big illustrated Book of Instructions goes with each Outfit, making everything perfectly clear.

MECCANO PRICES

No. 0 Outfit	5/-	No. 3 Outfit	22/6
No. 1 "	8/6	No. 4 "	40/-
No. 2 "	15/-	No. 5 (carton)	55/-
No. 5 Presentation Outfit	85/-		
No. 6 " "	140/-		
No. 7 " "	370/-		



Any Boy can build this Wonderful Revolving Crane

HORNBY CLOCK WORK TRAINS

THE TRAIN WITH A GUARANTEE

A MOST valuable and remarkable feature of the Hornby Train is that it can be taken to pieces and rebuilt just as may a Meccano model. All the parts are standardised and there is as much fun taking Loco, Tender, Coaches and Wagons to pieces and rebuilding them as there is in playing with them. Any lost or damaged parts may be replaced with new ones.

The clockwork is a splendid piece of mechanism with accurately-cut gears, ensuring smooth running, and the workmanship and finish are of the highest quality. The Loco is fitted with reversing-gear, brake and governor.

PERFECT MECHANISM: BEAUTIFUL FINISH: STANDARDISED PARTS



HORNBY CLOCKWORK TRAIN PRICES.

No. 1. SET.		No 2. SET.	
Passenger Sets each	35/-	Pullman Sets each	70/-
Goods " "	25/6	Goods " "	45/-
Locos " "	16/	Locos " "	30/-
Tenders "	3/6	Tenders "	4/-
Passenger Coaches	6/6	Pullman Cars "	16/-
Wagons	3/9	Wagons "	3/9

ZULU CLOCK WORK TRAINS

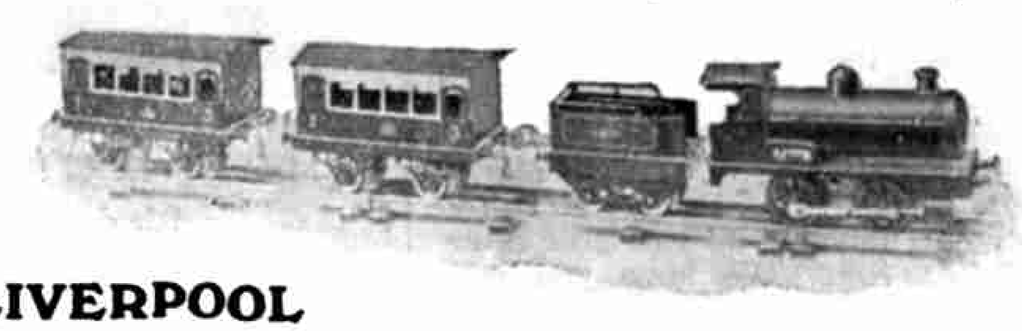
THE Zulu Clockwork Train is a new and cheaper type of mechanical train, the chief characteristics of which are fine and durable mechanism and immense strength of construction in all parts. The Zulu Loco is well designed and efficient, and will give long and excellent service. Richly enamelled and highly finished, fitted with brake and governor, non-reversing.

ZULU CLOCKWORK TRAIN PRICES.

Passenger Sets	each	25/-
Goods Sets	"	18/6
Locos	"	10/6
Passenger Coaches	"	5/-
Tenders	"	2/6
Wagons	"	3/-

ZULU TANK LOCO

A STRONG and durable Loco capable of any amount of hard work; richly enamelled and highly finished; fitted with reversing gear, brake and governor. Gauge O in black only. 12/6



MECCANO LIMITED Binns Road LIVERPOOL

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THE NEXT NUMBER OF THE "M.M." WILL BE PUBLISHED ON 15th DECEMBER

No. 28 NOVEMBER, 1922



MECCANO MAGAZINE

PRICE 1d

PUBLISHED IN THE INTERESTS OF BOYS.

A Great Airman.

THE LATE SIR ROSS SMITH AND HIS Flight from England to Australia.

(Continued)

At 9.10 a.m. on the 12th November, 1919, the great Vimy, carrying the four aviators, left Hounslow on its historic trip followed by the good wishes of everyone. Even though Sir Ross and his crew had had some experience of the route during their war service, there was no mistaking the magnitude of their task.

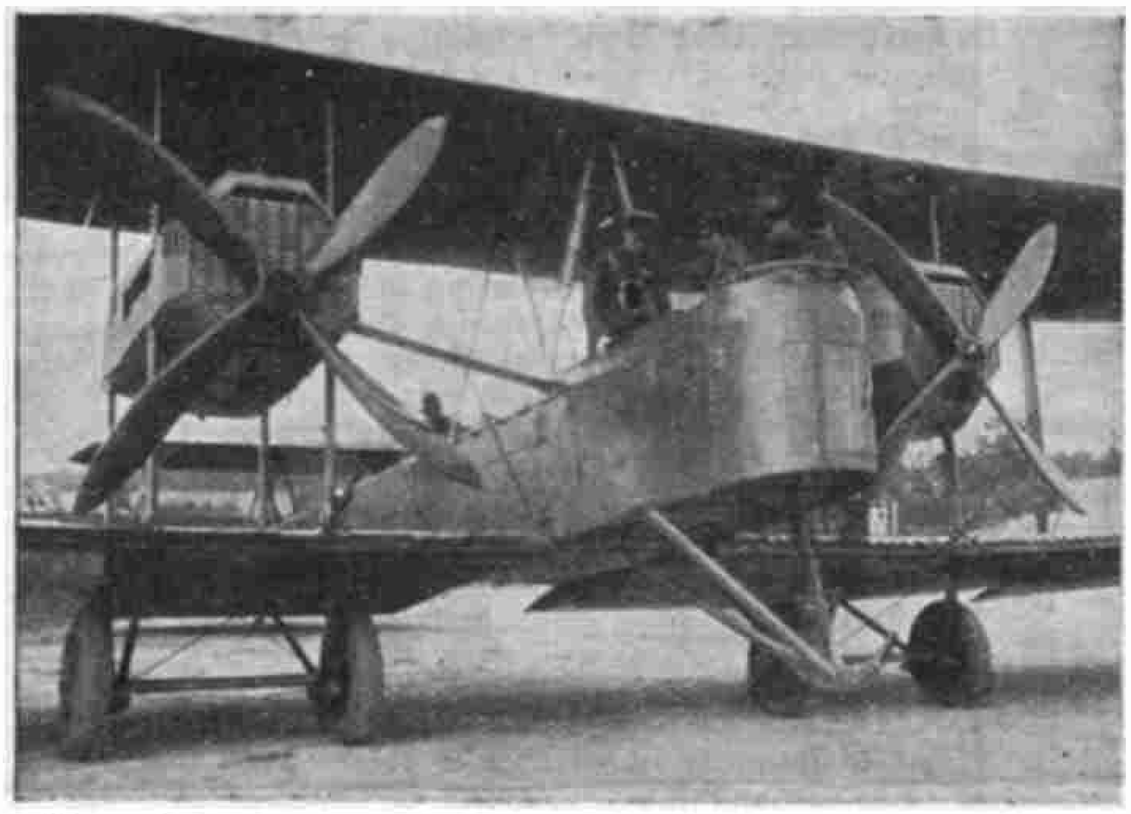
Intense Cold Encountered.

After staying the previous night at Lyons, the adventurers arrived at Pisa at 2.40 p.m. on 13th November. Intense cold was experienced on the first day, "instruments frozen; machine covered with ice; food too frozen to eat; and much time wasted avoiding storms" says the diary. The next day was perfect for flying, however, and a successful landing was made at Rome on the 15th, followed by a departure on the following day for Taranto. Taranto, which was reached 11.45 a.m., is in the south of Italy, and was greatly used by British troops as a port of embarkation for the East during the War. The flight over Italy is briefly described in the diary:—"Passed over Capua and Naples. Turned east over mountains; air bumpy; frequently falling many feet. Flew low over Vesuvius. Good wind."

On the next day (the 17th) the aviators arrived at Suda Bay in Crete, having flown through rain all day. From Suda Bay a southerly course was taken, but the weather was again reported "bad, with rain across Mediterranean." The ground-speed and drift were checked by observations on two steamers, and the aeroplane then "crossed the coast at Sollum, flying east for Cairo, over Matruh and Wadinatrun. "Hope land Damascus or Bagdad to-morrow," says the diary. "Thirty flying hours to Cairo. Vimy going perfectly."

Over the Libyan Desert.

This part of the flight was of more than ordinary interest to the party—for the gallant airmen had all had some experience of Egypt, and their return by air revived a local interest. During the War, the Libyan or Western Desert of Egypt was the scene of a campaign against the Senussi Arabs living in the oasis of Siwa, south of Sollum. The Australian Flying Corps, together with Armoured Car Patrols, played no small part in the success of these operations. The course of the Vimy across Libya lay over Moghara, a small oasis containing brackish water, that had been occupied by British troops during the Senussi operations.



Photograph by [*Messrs. Vickers Ltd.*

Sir Ross and his brother, Sir Keith, with Sergt. Bennett preparing to leave Croydon Aerodrome on their great flight to Australia.

The flight from England to Cairo took, in all, only thirty flying hours. It was indeed a fine feat, and one of which the party must have been justly proud.

Taking the air on the 19th, the Vimy steered a course from Cairo to Damascus, and the journey proceeded in stages until Karachi (India) was reached on the 24th. The flight to Delhi, on the following day, occupied 9½ hours and constituted the longest period the machine remained in the air. It was necessary to fly at a high altitude on account of the desert dust, which caused Sir Ross some anxiety about his engines. On the following days Delhi, Calcutta and Rangoon were all reached in turn, and the following section of the flight is best described in the pilot's own words:—

From the Aviator's Diary.

"We left Rangoon at 7 a.m. on 1st December arriving Bangkok at 1 p.m. We passed through a heavy storm above the mountains. South-east of Moulmein thick cloud delayed us. We climbed to 9,000 feet and got over the worst of it. Then we followed the River Menam south. Every convenience was prepared for us at Bangkok, the greatest assistance and courtesy being shown by Prince Pitsanoluke and the Siamese Aviation Corps. We left Bangkok for Singapore on 2nd December, and were escorted for the first 50 miles by four Siamese machines.

"The course south, along the east coast of Malay, for the first two hours was good, but we then met a heavy monsoon. The wind was strong and changeable, sometimes with us and sometimes against us. It was necessary to fly at a height of 500 feet for three hours, following the coast. We were almost blinded by rain, but the country was impossible for landing, and we had to continue, hoping for the best in the worst flying conditions ever encountered. The aerodrome at Singora was bad and stumpy. We had to land in a cross wind on a small dry patch but came safely down. Later, however, in 'taxi-ing' the machine, the tail-skid caught a root and broke a fitting. The local population showed great interest at the sight of an aeroplane.

"Owing to the bad weather we found we could not reach Singapore without more petrol, and wired to the Asiastic Petroleum Company at Penang to send some urgently.

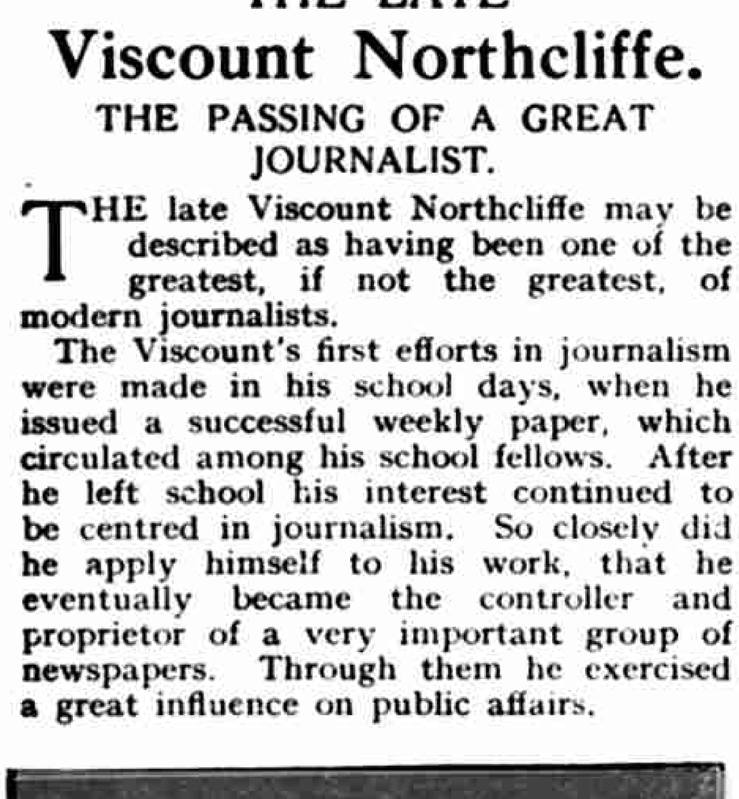
(*Continued on page* 3)

THE LATE Viscount Northcliffe.

THE PASSING OF A GREAT JOURNALIST.

THE late Viscount Northcliffe may be described as having been one of the greatest, if not the greatest, of modern journalists.

The Viscount's first efforts in journalism were made in his school days, when he issued a successful weekly paper, which circulated among his school fellows. After he left school his interest continued to be centred in journalism. So closely did he apply himself to his work, that he eventually became the controller and proprietor of a very important group of newspapers. Through them he exercised a great influence on public affairs.



Only a few months before his death he had returned from an extended tour around the world, and Meccano Radio enthusiasts will be interested to know that as a result of this tour he predicted a great wireless boom in this country. He remarked that the proud position of the newspaper was about to be challenged by broadcast wireless. "Broadcasting wireless means," he said, "that everyone will one day be able to subscribe to a news agency and receive sporting, financial, political and general news spoken in their own homes by the wireless telephone." More recently he gave a lead in this country in Radio broadcasting by arranging for the *Daily Mail* concerts to be broadcasted twice a week from The Hague.

Viscount Northcliffe was ever mindful of the conditions of his workpeople and was always seeking to improve them. It is not surprising to find, therefore, that he was beloved by his many employees, to whom he was familiarly known as "The Chief." He was often to be found behind the scenes in his newspaper offices and was intimately acquainted with the members of his staffs.

In the building up of his great interests he was always on the look-out for initiative and enterprise. On one occasion he was so struck by the intelligent answer of a bright boy in the *Times* office that he caused him to be given every opportunity for advancement. That his judgment was sound is shown by the fact that this same boy is now a very capable sub-editor.



IT is a good thing for a boy to take an interest in everything that goes on around him. The faculty of observation counts more in the formation of character and in the shaping of a career than anything else I know. Every item of knowledge or information acquired is a stepping stone to further knowledge. If a boy learns where the sun rises and sets, and why, he is led on to enquire into all the wonderful ways in which the sun affects every moment of our lives. Knowledge of every little fact in connection with Engineering, Electricity, Botany, Geology, Chemistry, and similar subjects, that is acquired through a natural or a cultivated faculty of observation, opens up for exploration a new and delightful avenue of knowledge and interest.

Be Observant.

There is no doubt whatever that the boy who lives the most enjoyable life is the boy with the widest range of interests. He has the biggest circle of admiring friends, gets on best after he has left school and takes up the big work to be done in life, incidentally making for himself the best position and the most money. This boy allows nothing of moment to pass him by without enquiring into its whys and wherefores.

Nature has given every boy some particular bent and inclination towards some part of the world's activities and happy is the boy who finds his direction early in life. As you grow older, you will observe the tragedy of men doing work for which they have neither inclination nor fitness. You will instinctively realise that these men might be happy and prosperous in a more congenial atmosphere. As it is, they are square pegs in round holes—men whose lives have gone awry, from lack of early direction.

Square Pegs in Round Holes.

What is your particular bent and natural inclination? In what work would you be most prosperous and successful? Very few boys can answer these questions correctly and yet they are of immense importance to them. Progress or stagnation; prosperity or poverty; success or failure, depend upon them.

What is Your Natural Bent?

I am of opinion that a boy's hobbies and play-time pursuits have a greater influence on his career than any other factor. I would advise every boy to take up all those hobbies that appeal specially to him. The naturally observant boy will have no difficulty in selecting attractive and enjoyable hobbies and these he will pursue keenly and with enthusiasm. More than this, he will acquire the habit of taking an intelligent and practical interest in everything in life, as it comes along. He will be capable of forming sensible opinions on most matters, and, when the time comes for the selection of his future career, his own views will count for more than a little in the choice.

The Importance of Good Hobbies.

As a matter of fact, the successes of very many eminent men have been founded on the hobbies which they pursued as boys. You will remember that in the last issue of the "*M.M.*" we referred to the fact that the great inventor Edison commenced work as a newsboy. His hobbies—chemistry, printing and physics—quickly altered the course of his life, and led him on to those wonderful inventions that are destined to be associated with his name for all time. We have only to read the lives of famous men—inventors, engineers and scientists—to find the tremendous influence that their boyish hobbies exercised over them. Once we realise this, we shall see how desirable it is for us to select our hobbies with care and to follow them keenly and thoroughly. The boy who masters his hobbies will master his business when he grows to be a man.

Select Your Hobbies Carefully.

A Successful Competitor



We have pleasure in publishing a photograph of Dr. E. C. Bairstow, who will be well known to many readers of the "*M.M.*" as the organist of York Minster. Dr. Bairstow was successful in sharing the first prize in Section "C" (cash £20) with another competitor in our recent Competition. We feel sure that Meccano boys will be interested in reading the following remarks from this well-known musician, and join us in congratulating him on his recent success.

"*YORK.*

"It has always been my custom to have on hand something that, whilst appealing to the imagination and general interest is in complete contrast to my usual work. The building of original models in Meccano has been the pleasantest of my hobbies during the last twelve years. The most interesting experience of all has been the building of the clock which won me the prize. There were many problems to solve and the solution of each one had to be attempted by several different methods before success was finally attained."

Note These Dates.

The following are the dates on which the undermentioned Meccano Competitions close (For full particulars see page 4) :—

1922.		
31 Dec.		"My Favourite Magazine."
31 ,,		"The Four Best Magazines."
31 ,,		"The Six Best Books."
1923		
31 Jan.		"Third Photo. Competition."
31 March.		Inter-Club Competition (Guild).
15 April.	£250	Model-building Competition.
30 May.	£250	Model-building Competition (Overseas).



This Hydraulic Coal Hoist lifts a full truck of coals, weighing 30 tons, to a height of 60 ft.

Giant Hoist Lifts 30 Tons

The modern tendency to handle merchandise in bulk grows stronger every year, as new devices are invented to speed up work in almost every branch of manufacture and industry.

We have pleasure in publishing a photograph of one of the three giant coal hoists recently erected by the Great Western Railway Company at Queen's Dock, Newport (Mon.). By means of these hoists full trucks of coal are elevated to a desired height and then tipped, causing their contents to slide down a shute into the ship's hold or bunkers, as the case may be.

Full trucks are conveyed to the hoist by rails running along the Quay side. After having been hoisted and tipped, the trucks leave the hoist at the upper, or gantry, level.

The gross lifting power of each hoist is 30 tons, the hoist motion being operated by twin hydraulic rams working downwards in cylinders. On the top of these cylinders there is a tipping cylinder, the ram of which works upwards, the lifting mechanism operating from the side of the hoist frame.

A tipping cradle is contained in the hoist carriage, and the tipping rope is so reeved that a truck may be tipped at any desired level within the lifting range of the hoist, namely from the quay level to 60 feet above.

The shute is capable of being moved vertically upon the hoist frame to any position within the tipping range, and its overhanging end is supported by chains that may be extended or withdrawn. In this way the incline may be varied as, and when, required.

The two cranes mounted at the top of the framework are for anti-breakage purposes. That is to say, they are used for discharging coal before the shute comes into operation. The cranes deposit small quantities of coal on board ship, and this coal forms a cone in the steamer's hold. By these means, less coal is broken in falling from the shute when the main tip is working.

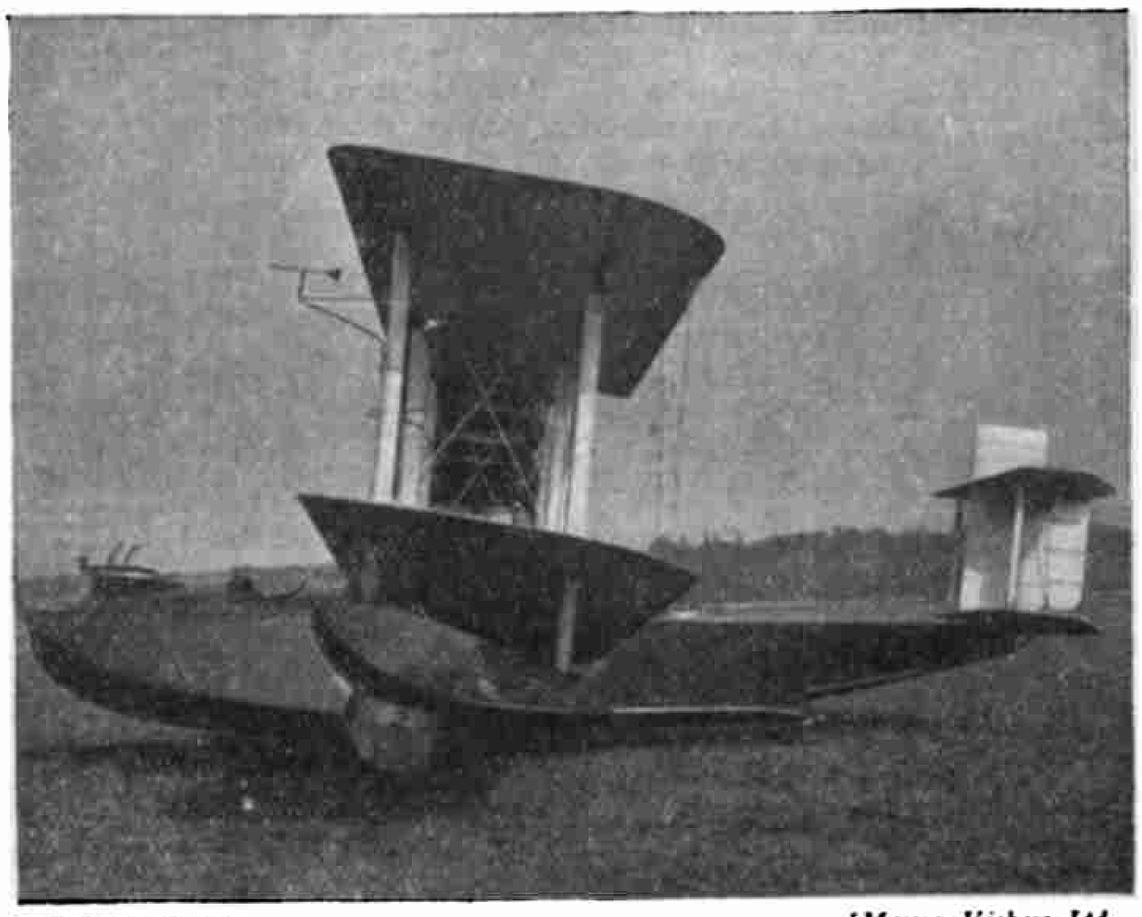
A Great Airman—*(continued from page 1)*.

" During the night there were heavy squalls and the crew had to hold down the machine all through the night. Great assistance and kindly hospitality was given by Prince Yugula and the local officials.

Road Cleared by Convicts.

" On 4th December (my birthday) we decided to try for Singapore. We left Singora at 10 a.m. and found the aerodrome very wet and the ' take-off ' very rough, although convicts had cleared away the stumps. We were lucky to get off in a cross wind, and flew at a height from 2,000 to 5,000 feet all the way. We arrived at Singapore at 5 a.m., and had a great reception from a huge crowd. Hope to reach Java on the 6th and Port Darwin on the 10th. Vimy and crew all well."

Java was reached as anticipated and a good landing made at Surabaya, but owing to the aerodrome having been constructed on reclaimed land, the Vimy sank in the soft ground in " taxi-ing." The efforts of 200 coolies for seven hours were necessary to move the machine 400 yards, and to construct a road of bamboo mats for the " take-off." This road was finished by dark next day, but on being tried, the machine swerved off the road and was again bogged. At noon another effort was made, this time successfully, and bamboo mats were sent flying in all directions as the machine took the air !



Photograph by [*Messrs. Vickers Ltd.*

The Vickers-Amphibian on which the late Sir Ross Smith intended to attempt his flight round the world.

Australia Sighted.

On the 10th, the plucky crew were thrilled at the sight of the Australian coast, gradually looming ahead. The coast was sighted fully forty miles away, and a landing having been made at Port Darwin, the England to Australia flight became an accomplished fact. The prize and the honour were won, and the whole world joined in well-deserved congratulations to the intrepid airmen. Captain Ross Smith—hailed by the New York Press as the world's foremost aviator — and his brother, Keith, received knighthoods from the King in recognition of their wonderful work, being made Knights of the British Empire.

(To be concluded)

Essay Competition Result.

We have pleasure in announcing the result of the Photo-Essay Competition, particulars of which were given in No. 25 of the "*M.M.*" The first prize of a Hornby No. 1 Clockwork Set has been awarded to Master C. R. Blanc, of Tullamore, Kings Co., Ireland, and the winning Essay is printed below. A tin-printed Clockwork Train Set has been awarded to Miss Winifred Hicks, London, N.W.11, and a similar prize has been despatched to Master G. P. West, of London, W.2.

The following entrants are honourably mentioned :—

Master A. G. Sanders, London.
" B. L. Simmonds, Forest Hill, S.E.
" W. S. Mitchell, Edinburgh.
" J. B. Wilkinson, Blackburn.

THE PRIZE-WINNING ESSAY.

A Holiday in Ireland

By CHARLIE R. BLANC.

THIS year we spent our holidays at Wicklow, where we had a very enjoyable time. We expected to reach Wicklow during the evening but owing to our train being held up by Irish Irregulars, and some of our passengers searched, we missed our connections and had to stay the night at an hotel. We started early next morning, however, and reached Wicklow in time for a bathe. We went down every subsequent morning for a swim, although the weather was not always ideal for bathing.

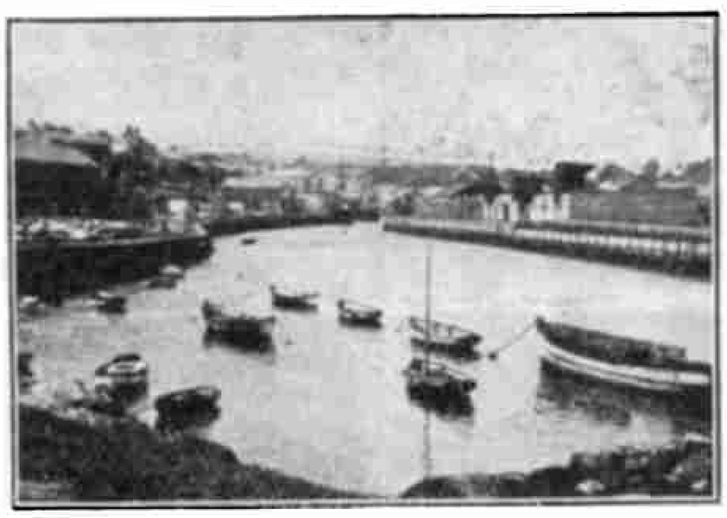
My birthday happened to fall during the holidays and I was given a lovely little Brownie Camera, which I made good use of. Here is one of the photos that I took of a goat, as we were passing over the Golf Links on one of our rambles.



An Irish Goat.

The Wicklow Regatta was held during our stay, but when the day came, the weather turned out so bad that the event was not a very great success. This was a pity, because the Regatta is only held once a year and the event is anticipated with great expectation by every one. During the Regatta, big waves dashed right over the pier, and the sea was so rough that many of the races had to be abandoned. Because of the weather I think that more people went to some merry-go-rounds that happened to be in the town, than to the Regatta !

Near Wicklow, between the river and the sea, is a stretch of land called the "Murraghs." This was originally five miles long and quite broad, but the sea has so encroached on it during the last few years that most of it has now disappeared. The railings have had to be moved back ever so far, and even now many of the iron railings have become twisted and broken



The River at Wicklow.

by the force of the waves. Many of the houses near the sea once had large gardens, but now have only small strips of land, and most of them had to be rebuilt further back from the sea. This is not the end of the bad luck of the people in this district, for during a storm a few years ago, the

(*Continued on page* 10.)

Best Books for Boys Competition.

Which are the six best books for boys is a difficult question to answer, for everything depends upon the taste of the individual reader.

We are anxious to find out just exactly what type of books readers of the "*M.M.*" prefer—whether they prefer fiction to any other class and if so what type of fiction : school stories, adventures, historical novels, detective tales, etc. For this purpose we announce a Competition in which entrants should send a list of what they consider are the six best books for boys.

The books should be arranged in order of merit and the first prize, a No. 1 Hornby Train Set, will be awarded to the reader who places the six books in the order nearest to that order of merit voted for by all readers participating in the Competition.

The voting must be on post cards only and they should reach the Editor of the "*M.M.*" before the 31st January next. Mark your postcards " Best Book Competition."

Favourite Magazine Competition.

We are anxious to find out just what class of reading our readers like best, and we are therefore offering a prize of a No. 1 Hornby Train Set for the best article (consisting of not more than 100 words) on—

"MY FAVOURITE MAGAZINE AND WHY I LIKE IT."

Any weekly or monthly magazine printed and published in Great Britain may be dealt with *but not the* "*Meccano Magazine.*" This Competition will close on 31 December, 1922. Mark your envelope " Favourite Magazine Competition."

I also invite my readers to send me a list of what in their opinions are

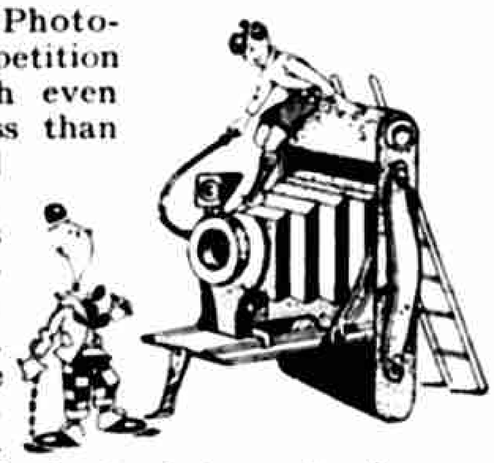
THE FOUR BEST MAGAZINES

for boys published in this country, in what they consider to be the order of merit. A Meccano Clockwork Motor will be awarded to the boy who places the four magazines nearest to the list of best magazines, as voted for by all the readers participating in this competition. *The name of the "Meccano Magazine" must not appear in lists submitted.*

The voting must be on postcards only, which must be received not later than 31 December, 1922. Address postcards Meccano Ltd., Binns Road, Liverpool, and mark them " Best Magazines Competition."

Third Photographic Competition.

Our second Photographic Competition has met with even greater success than the original competition. The results will be announced in our next issue.



We announce a third photographic competition for the best photograph of

"A WINTER SCENE."

There are no restrictions or entry fees and any type of camera may be used. Prints may be of any size and finished in any way, it being immaterial whether they are mounted or not. The photographs must be taken by the competitor but the developing and printing may be done by others. The entries will be judged on their pictorial merit.

The closing date is 31 January, 1923. The first prize will be a No. 1 Hornby Clockwork Train Set and other prizes will also be awarded according to merit.

£250 IN PRIZES.

Meccano Model-building Competition.

Cash prizes to the value of £100, Meccano Outfits, Inventors' Accessory Outfits, Hornby Trains and Zulu Trains to the value of £150.

These prizes will be awarded in the next Meccano-building Competition, for which every Meccano boy should enter. As was the case last year, the Competition will be divided into three sections (1) for boys under 10 years of age, (2) for boys between 10 and 14 years of age and (3) for boys over 14 years of age.

There are no restrictions and no entrance fees. Full particulars and entry form will be sent on application. The closing date for the Competition will be 15th April, 1923, for entries from the United Kingdom and the 30th May, 1923, for entries from Overseas.



RADIO SECTION

The Thermionic Valve.

THE INVENTION THAT MADE WIRELESS TELEPHONY POSSIBLE.

The following is the second instalment of an article specially written for the "Meccano Magazine," dealing with the principles of the Thermionic Valve, an important appliance in Radio. The following instalment describes the mysterious effect discovered by the famous scientist, Edison. Future instalments will detail the inventions that have led to the wonderful appliance that made possible the wireless telephony of to-day.

(Continued)

We are better able to imagine the extreme minuteness of the atom by using an illustration given by Lord Kelvin. This illustrious scientist estimated that if we could enlarge a rain drop until it is the size of the earth, each of the atoms of which it is composed would themselves be no larger than a marble!

When this comparison was made the existence of the electron was undreamed of. With the twentieth century came the discovery of Radium, and—as we have seen—the Atomic Theory gave place to the Electron Theory, which holds the field to-day. Existing estimates of the size of the smallest known particles went by the board, and new ideas were advanced to deal with the incredibly minute electrons.

Bearing in mind Lord Kelvin's illustration of the minuteness of the atom, let us see how the electron compares with it in size. It has been estimated that if an atom were enlarged to the size of St. Paul's Cathedral, an electron in comparison would be represented by the size of this printer's full stop (.) flying about in the inside of the building!

Each Atom a Miniature System.

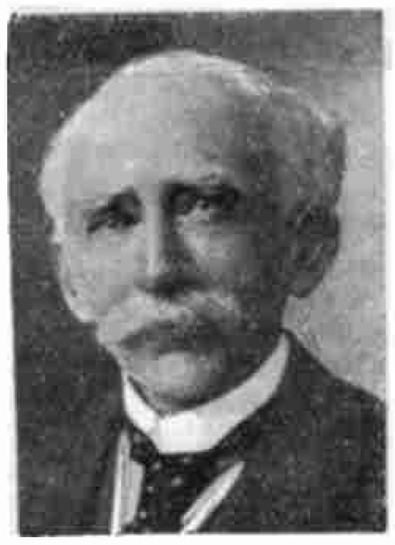
Atoms contain varying numbers of electrons and these are arranged in different ways, depending on whether the substance that they form is a solid, a liquid or a gas. So far as is known, the smallest atom is that of hydrogen and this itself is composed of some 2,000 electrons.

It is believed that the electrons of an atom circulate or revolve around a common centre of gravity, thus forming a microscopic model of our own Solar system in which, as we all know, the planets revolve around the Sun. The electrons fly about within the confines of their microscopic system with such terrific power that the atom could be made to do all the work of the world—*if* we could but find the magic key to unlock the secret of the atom! Realising the great importance that this discovery would have upon the future of the world, the problem is engaging the attention of our greatest scientists.

Although many ingenious devices have been thought of, to test the properties of atoms and their component electrons, much important work remains to be accomplished in this mysterious yet fascinating branch of scientific research.

Electrons and Radio.

You will no doubt be saying to yourself that this is all very interesting and very wonderful, but what have atoms or electrons to do with Radio in general and with the Thermionic Valve in particular? When I mention that the Thermionic Valve is sometimes called the Electron Valve, and explain that electrons and electricity are as closely connected as their names are similar—just as are Radium and Radio—you will understand that there is a distinct connection between the two subjects. Indeed, there is more than a connection for a current (really a "running," as the name implies) of electricity is actually a stream of electrons passing through a conductor, the strength of the current depending upon the number of electrons that are flowing.



Our illustration shows Dr. J. R. Fleming, F.R.S., Professor of Electrical Engineering at the University College, London. Dr. Fleming invented the Thermionic Valve that revolutionised the practice of wireless telegraphy and telephony, both in transmission and reception. In our next issue we shall describe how Dr. Fleming was led to his discovery by adapting the mysterious effect, observed by Edison, that is described on this page.

A New Aladdin's Lamp.

The Thermionic Valve has been called the modern Aladdin's lamp. All Meccano boys will have read in the *"Arabian Nights"* of the wonders that Aladdin was able to conjure up with the aid of his old lamp. The modern Aladdin's lamp brings even greater wonders within the grasp of its possessor—wonders so amazing that even the highly imaginative author of *"A Thousand and One Nights"* never dreamed of them.

In its outward appearance this wonderful appliance resembles a small electric lamp-globe. A closer inspection shows that, in addition to the filament (or fine thread of wire that becomes incandescent when the current is switched on) there are two other elements, called "the plate" and "the grid" (see page 6). In order that we may understand the purpose that they serve we must learn how they came to be adopted in the position we now find them.

A Mysterious Effect.

The incandescent electric lamp, in its earliest form had a thread of carbon placed in the vacuum inside the globe. In the early days, when he was experimenting with this carbon lamp, Edison discovered a peculiar action that he could not explain. He had noticed that by continual use of the lamp the inside of the globe became blackened, as if covered with a fine deposit. Indeed, in the course of time the globe became so blackened that the amount of light was considerably diminished.

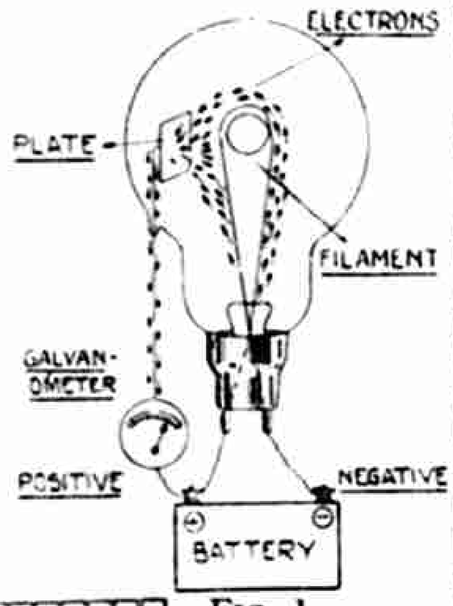


FIG. 1.

Edison determined to investigate this curious action, and in order that he might do so, he fixed inside the lamp a small metal plate, near the filament but insulated from it. He was surprised to notice that when this plate was connected to the positive terminal of a battery a curious thing happened. Although there was no metallic connection between the filament and the plate, an electric current passed along the wire from the plate. This was clearly shown by an instrument, called a galvanometer, connected between the plate and the battery (see Fig. 1).

In puzzling over this remarkable effect, Edison came to the conclusion that the current leaped from the filament across the gap to the plate. Continuing his experiments, he noticed that the current would not leap the gap when the negative terminal was connected to the plate. No matter how strong the current, the delicate galvanometer showed that not even the minutest current passed when the connection was made in this way (see Fig. 2).

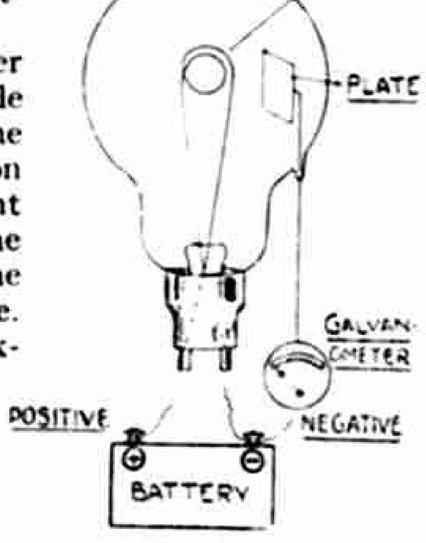


FIG. 2.

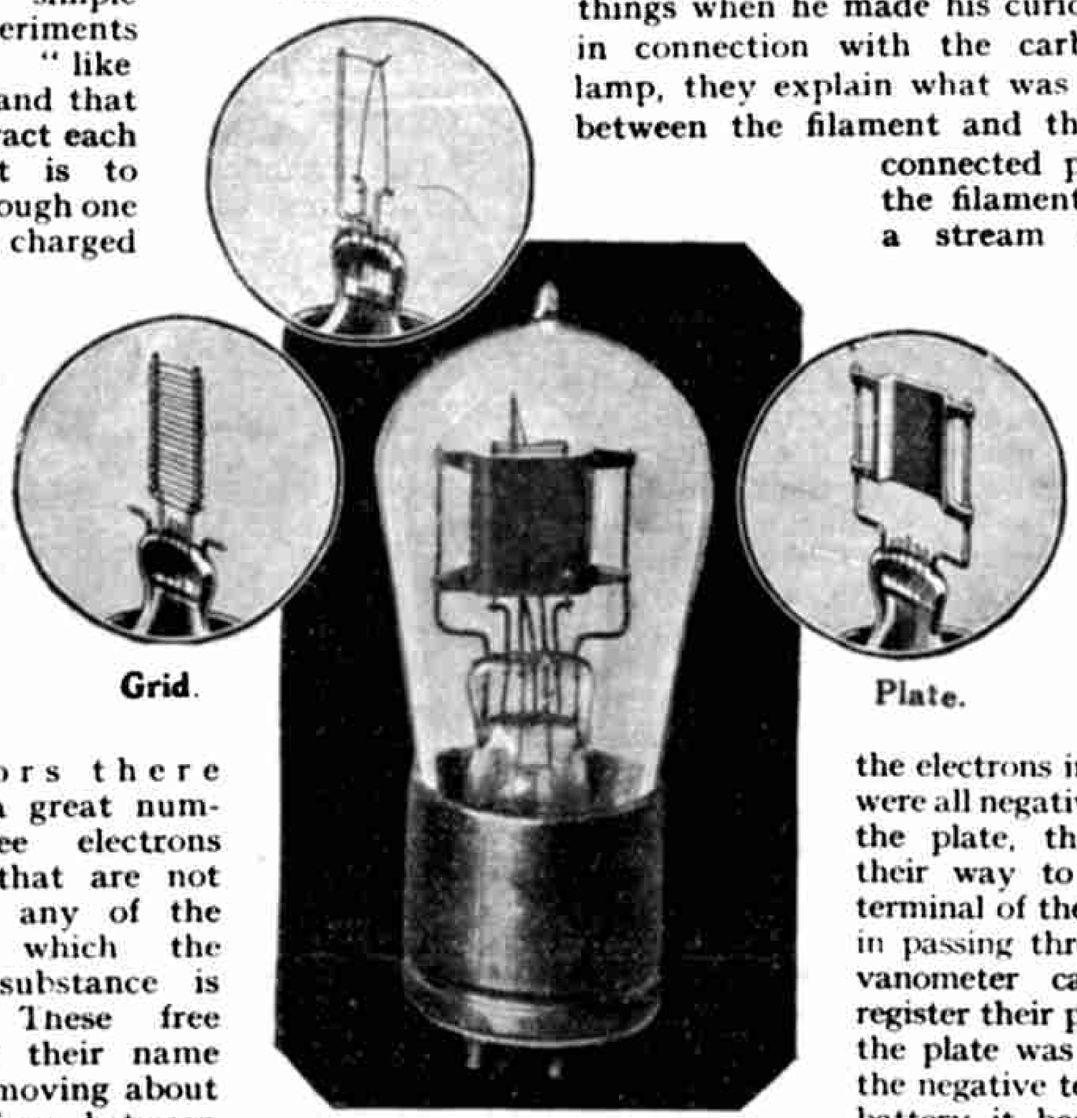
The Thermionic Valve (*continued*).

Repulsion and Attraction.

We have mentioned that an electric current is really a flowing stream of electrons — the smallest bodies known with a separate existence. We may now mention that an atom is believed to be composed of a nucleus of electrons, each of which carries a positive charge of electricity. This nucleus is surrounded by electrons, each carrying a charge of negative electricity.

Those of you who have made simple electrical experiments know that "like repels like" and that "unlikes attract each other." That is to say, that although one negatively-charged electron repels another negatively-charged electron, it will be attracted by an electron that carries a positive charge.

In substances that are electrical conductors there are always a great number of free electrons —electrons that are not attached to any of the atoms of which the conducting substance is composed. These free electrons, as their name implies, are moving about in all directions between the atoms of the conductor. When the conductor forms part of an electric circuit, however many of these free electrons are pushed along, as it were, by the electric current, and are made to flow in one direction. It has been found that if the conducting substance is heated these movements of the free electrons become even more pronounced. If the substance be made very hot the electrons fly off from the conducting body and attach themselves to other near-by bodies.



Photograph by courtesy of "Popular Science Monthly."

A typical Thermionic Valve.

Showing the three essential parts: Filament, Grid and Plate. When in position as shown in the centre illustration, the Plate encloses the other two parts.

The Leaping Electrons.

Although Edison did not know these things when he made his curious discovery in connection with the carbon filament lamp, they explain what was taking place between the filament and the positively-connected plate. When the filament was heated a stream of electrons flew off and attached themselves to the near-by plate. They were encouraged to do this because the plate was charged with positive electrons and the electrons in the filament were all negative. Arrived at the plate, they continued their way to the positive terminal of the battery, and in passing through the galvanometer caused it to register their passage. When the plate was connected to the negative terminal of the battery it became charged with negative electrons. The electrons of the filament, being also negative, did not leap the gap between the filament and the plate for, as we have already seen, "like repels like."

(*To be continued*)



Michael Petras (Addlestone).—A lattice coil winder may be made from Meccano parts. Our experts are experimenting with yet another type of coil winder, which will be built up in the same way and more will be heard of this at a later date.

W. J. Levett (Tilbury Docks).—You should be able to listen-in to Marconi House, as this is well within the 25 mile radius, which is usually looked upon as being the maximum range for telephony on a Crystal Receiver.

Stanley Graham (London, S.E.5).—It is possible to use more than one Crystal with the Meccano Crystal Receiver by fixing a bush wheel (No. 24) in the place of a single crystal cup and mounting on it four cups at opposite points. By turning the wheel it is possible to select any of the four crystals required.

L. Harrison (Leeds).—Detectors are sometimes more satisfactory when the crystals are supported in a vertical position.

D. Taylor (Middleton, near Manchester).—You should be able to receive Radio messages with an aerial 50 feet long, although it is desirable to use an aerial 100 feet in length with a Meccano Crystal Set.

R. L. T. Harding (London, N.6).—There is no reason why your Receiving Set should be absolutely stationary. It may be moved about provided that you do not alter the length of the down lead (the cable which connects the aerial to the condenser) which should always be kept as short as possible.

F. J. Moss (Salford).—A "wave" in wireless means the impulse, or power, that is sent out by the transmitter. I hope soon to publish an article on wireless waves, to explain them more fully.

Brian Calverley (Birmingham).—There is no necessity to have two telephone receivers for use with a wireless set. Provided you have good hearing, one will be quite sufficient.

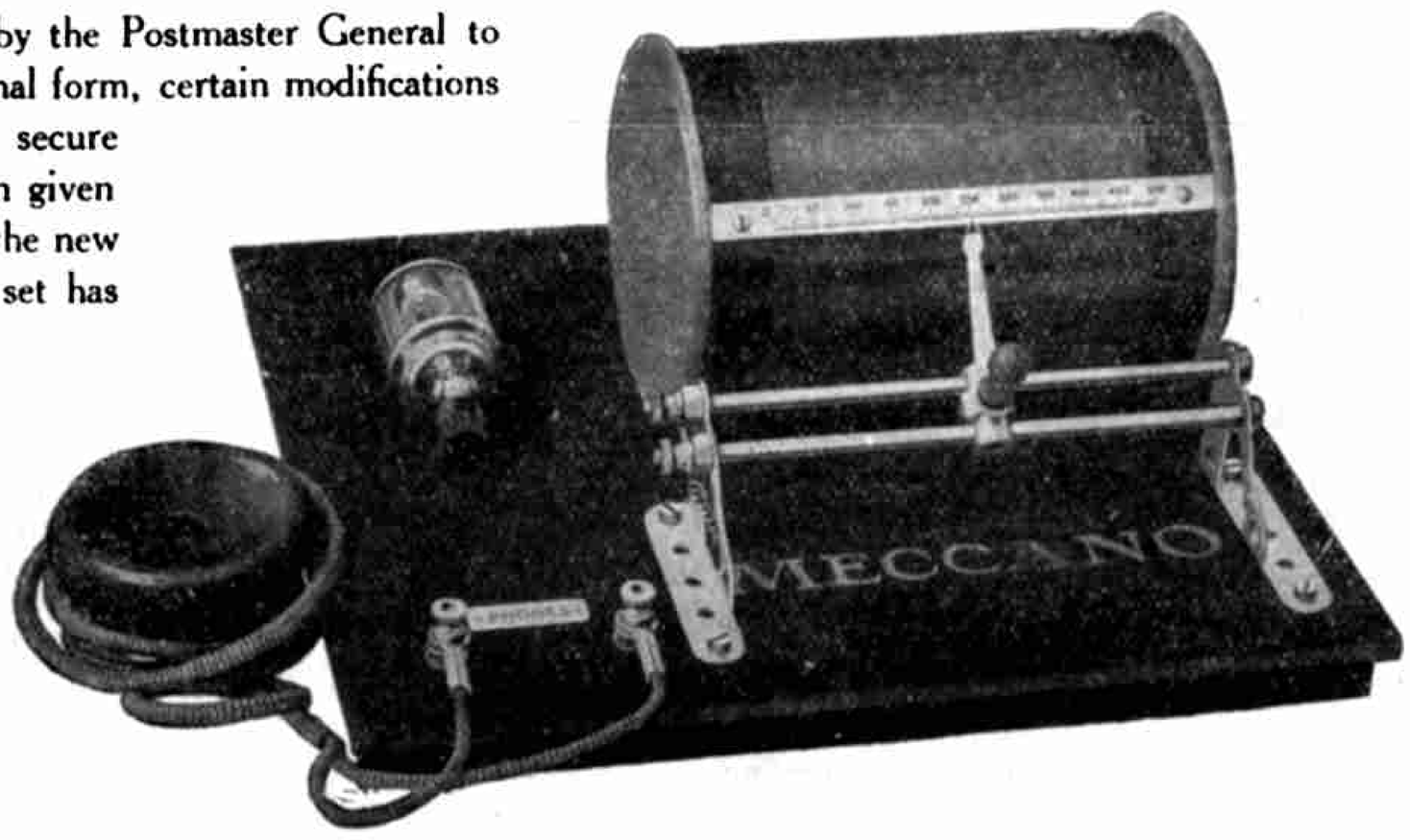
E. K. Robeson (London, W.2).—An indoor Frame Aerial can only be used with a Valve Set. You are the first person to my knowledge, to report a satisfactory result from a Frame Aerial used with a Crystal Receiver, and I shall be glad to have some further particulars of this interesting experiment.

L. Baxter (Birmingham).—You should be able to hear concerts on a Meccano Crystal Set when the Birmingham Broadcasting Station is transmitting.

Eric Bygott (Huddersfield).—(1) It is just possible that you might be able to receive the Manchester Broadcasting Station with a Crystal Receiving Set, as you are about 25 miles away. It would, however, be safer to instal a Valve Set, details and price of which will shortly be announced in the "*M.M.*" (2) It is not possible to use a frame aerial with a Meccano Crystal Set. (3) Your suggested method of constructing an aerial by stretching the wire between the rafters of the roof, would not be satisfactory.

The New Meccano Crystal Radio Receiving Set.

Technical objections having been raised by the Postmaster General to the Meccano Crystal Receiving Set in its original form, certain modifications have been made in the design in order to secure official approval. This approval has now been given and we have pleasure in illustrating herewith the new Meccano Crystal Receiving Set. The new set has been tested very thoroughly, receiving telephony and Morse with great clearness. It is wound to receive on wave lengths up to 500 metres. We believe that the alterations introduced constitute a great improvement and that our new Set is even better than the set announced in No. 26 of the "*M.M.*" The price of the Set remains the same, 55/-, including single telephone receiver.



Dr. Graham Bell

THE INVENTOR OF THE TELEPHONE.

All Meccano boys have noticed the blue enamelled sign which until recently was exhibited outside telephone call offices. The bell was the "trade mark" adopted because the telephone was invented by Dr. Bell. This article tells of the early life of this remarkable scientist.

OF the many hundreds of inventions brought out during the past century one of the most interesting and useful is the telephone. Within the space of fifty years this instrument has developed from a crude laboratory toy into a means of communication, involving millions of conversations every day throughout the world. To-day the telephone is so much used and so indispensable in our daily life that we are inclined to wonder how our grandfathers managed without it. Dr. Graham Bell, who died recently (2nd August last) on his estate in Nova Scotia, was the man who gave this wonderful invention to the world. We think our readers will be interested to read of his early work, for it enables us to learn something of the wonderful life and the brilliant achievements of a very charming man.

Dr. Alexander Graham Bell was born in Edinburgh in the year 1847, his father being a man of some distinction as a teacher of elocution and instructor of the deaf and dumb. Young Bell attended the Edinburgh High School, proceeding later to the Universities of Edinburgh and London. His father, who had visited America in connection with a system of 'visible speech,' or lip reading as it is sometimes called, removed to America in 1870. He was accompanied by his son, Alexander, who at that time was threatened with a serious illness.

In 1871 young Bell was employed teaching at Boston University, but later he established his own school where he taught his father's system of visible speech. In his spare time he experimented with tuning forks, magnets and electrical batteries. For three years he worked in this way and in 1874 evolved what he called the "harmonic telegraph," a device for sending ten or twelve Morse signals over a single wire at the same time, by utilising a peculiar phenomenon known as the law of sympathetic vibration. It was in the endeavour to develop this invention that Dr. Bell met his colleague, Mr. Thomas A. Watson.

A HAPPY ACCIDENT.

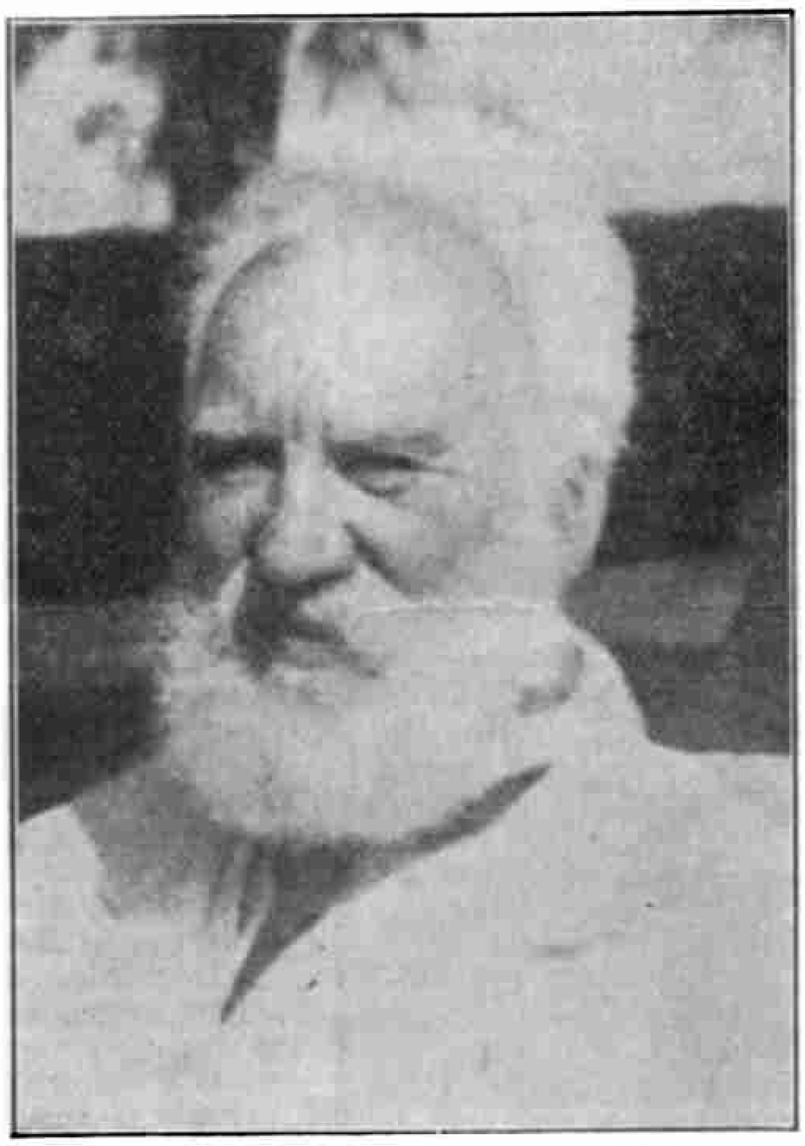
It is a surprising fact that the means of transmitting sounds over wires was discovered by Dr. Bell through the result of an accidental misadjustment of his telegraphic apparatus. This happened one day in 1875 when, after a long series of experiments, one of the transmitter springs stuck, causing the magnetized steel to generate a current. Travelling over the wire this current caused a faint sound to be made in the receiver, and we can imagine the young scientist's excitement when he realised what this faint sound really meant. His dream of telephonic speech was within the bounds of possibility!

The principle once having been established, young Bell worked with a will to develop what he called the "talking telegraph," and on the 10th March, 1876, his efforts were crowned with success. On this memorable day Dr. Bell spoke into a telephone fixed in an attic:—

"Mr. Watson, come here. I want you!"

In the basement at the other end of 100 feet of wire his assistant listened, and then came rushing into the attic, shouting excitedly:—

"I heard you; I could hear what you said!"



Photograph] *[Underwood.*

A recent photograph of the late Dr. Graham Bell.

This is the story of the birth of the telephone, as it was simply told by Dr. Bell himself. The inventor liked to add to it, however, by recalling that after English, the Japanese language was the next to be sent over the telephone. "I had two Japanese students," he said. "One of them asked me if the telephone could speak Japanese. I told him to try!"

STARTLING AN EMPEROR.

Experiments proceeded apace until, on the 9th October, 1876, Dr. Bell and Mr. Watson made the first telephonic communication over a considerable distance. The conversation took place between Cambridge and Boston (U.S.A.). A short time afterwards the Boston *Globe* received the first telephonic newspaper report.

Remarkable though it now seems, Dr. Bell was at that time unable to interest anyone in his invention. Often on approaching business men they turned him away, saying that they had no time to bother with him or his "fool talking-machine."

At an exhibition held in 1876 at Philadelphia, however, the invention attracted the attention of Dom Pedro, Emperor of Brazil, who took up the receiver to listen to a voice speaking from the far end of the room. Hearing the voice, the Emperor dropped the receiver in a startled manner, and exclaimed "It speaks!" This event caught the popular fancy and drew more attention to the invention than all Bell's efforts with business men.

The first telephone company ever established, the Bell Telephone Association, was formed, and in 1877 there were 778 telephones in use. From that date the popularity of the telephone has continued to grow steadily, until to-day we find instruments installed in almost every office and place of business and in many private houses.

There is no doubt that the introduction and development of the telephone is one of the greatest triumphs of the twentieth century. Yet Dr. Bell, the scientist, was never interested in the commercial side of his invention. This was left to others to develop, while the inventor struck off into new fields. "It has always been that way," he said, "after I have made a discovery and got it under way, my interest in it lessens."

It is amusing to find that towards the close of his life Dr. Bell found the telephone such a source of annoyance that he had it removed from his room.

DR. BELL DISCOVERS THE "PHOTOPHONE."

As a scientist Dr. Bell was always a strenuous and diligent worker. In addition to the telephone many other inventions and discoveries stand to his credit, including an instrument for transmitting sound by variations in a beam of light. This discovery was made in 1880, eight years before Hertz published his famous theory on "ether waves." It made possible telephony without wires, but by a different principle to that employed in Radio. The greatest distance over which it was used successfully in a large number of experiments was about 250 yards and thus, although the discovery was interesting from a scientific standpoint, it was not a commercial success.

Still intent on wireless telephony, Bell next invented the thermophone, which relied for its working basis on the variations in the intensity of heat waves. With this apparatus speech was transmitted over only 100 yards, so that it was not as effective as the photophone.

In his later years Dr. Bell spent some time investigating Radio matters, eventually becoming an ardent enthusiast.

DR. BELL'S USEFUL LIFE.

Dr. Bell was truly a remarkable man, for not only was there no department in Physics that he had not touched, but he also found time to interest himself in the problems of mechanical flight. In the days when aviation was in its infancy he contributed valuable work in the attempt to conquer the air.

(Continued on page 10.)



A plan has been advanced in Chicago for equipping every policeman in the force with a miniature receiving set. It is suggested that the city should be divided into ten zones, each having its own wave length. Thus a central operator could immediately send messages concerning robberies or other crimes to the policeman in the districts in which the crimes had taken place.

• • •

Mr. Marconi recently said that it is beyond his power to picture what man will be doing with "the thunderbolt of Radio" during the next ten years.

The discovery of electro-magnetic waves in the ether is generally attributed to Hertz, but the Americans are endeavouring to claim the honour of the discovery for Professor Thompson, one of the first scientists to experiment with induction. These experiments, it is claimed, were made twelve years before those of Hertz.

• • •

In this connection it may be remarked that the well-known inventor, T. A. Edison, discovered what he called an "Etheric force" as early as 1875. He arrived at the conclusion that a new force was present that would enable electrical currents to be induced without any connection with the source of the current.

• • •

In order to keep up to date, the Marconi Wireless Station at New Brunswick has had to be practically rebuilt three times within the last ten years. This has cost about £1,000,000.

A suggestion has been made that there will soon be placed upon the market a coin-in-the-slot Radio Receiver, to be installed in hotels, railway stations and other public places. All that will be necessary to enjoy a varied programme of music will be to drop a coin in the slot and "tune in," by adjusting a pointer on the apparatus until the required Broadcasting Station is heard.

• • •

Telephone messages, broadcasted from a distance of more than 100 miles, have recently been received on board a passenger train at San Francisco. The experiment marks a record as being the longest distance over which radio communication has been established on moving trains.

• • •

Mr. Marconi recently declared that Radio will have advanced to such an extent in the next ten years, that the apparatus now in use will be then practically worthless.



Photograph] ["*Illustrated World.*"

General Squier, of the United States Army, demonstrating the possibility of using electric light wires in place of an aerial.

A Novel Method of Reception

RADIO CONCERTS RECEIVED ON ELECTRIC LIGHT WIRES.

One of the most interesting of the many recent inventions in Radio is that of Major-General Squier, Chief of the U.S. Army Signal Corps General Squier recently demonstrated that Radio waves may be received by electric light wires and that when this method is employed the outdoor aerial is eliminated. To make this possible, of course, the transmitting station couples up to the electric light wires instead of to an aerial, the second connection being made to earth in the usual way.

Our illustration shows General Squier and his friends receiving a Radio concert by connecting the lead-in wire of his receiver to a lamp-socket. The impulses received over the light wires were amplified by the receiving apparatus on the table, conducted to the load speaker on the wall, and, as soon as the switch was turned on, the room was flooded with music. This immediately ceased whenever the electric light switch was turned off.

It is scarcely necessary to add that we do not recommend any reader of the "*M.M.*" to experiment in this direction, unless he is familiar with the working of an electric light circuit. He may not only damage his apparatus and fuse the lights of the house, but may also cause some injury to himself.



Concerts are sent out from Writtle, Chelmsford, at 8 p.m. on Tuesdays on a wave length of 400 metres.

• • •

In London music and telephony may be heard on almost any evening between 8 and 10 p.m. on wave lengths of from 60 to 400 metres, being sent out by many amateurs who have transmitting licences.

• • •

Music is also transmitted by Messrs. Burnham from Blackheath about 9 p.m. every evening, on a wave length of 440 metres.

• • •

The Hague Concerts are now broadcasted on Sundays during the afternoon from 3 to 5 p.m. on a wave length of 1,085 metres.

• • •

Weather reports are broadcasted each day from the Air Ministry, the Eiffel Tower, and other European Stations. The messages are sent in code, but any amateur may pick them up and translate them, thus drawing up his own weather forecast.

• • •

Königswusterhausen, a station near Berlin, transmits telephony at 7 a.m. and 10.30 a.m. and may occassionally be heard speaking to Warsaw on a wave length of 2,800 and 4,100 metres. The speech is, of course, in German, and has been heard at the Meccano Works, Liverpool, on a three valve set.

Those Meccano boys who live near Croydon and possess a receiving apparatus tuned to receive a wave length of 900 metres, will be able to hear throughout the day the Air Station speaking to aeroplanes engaged in the Cross-Channel service.

• • •

Broadcasting may be heard in the London area from Marconi House at intervals during the day and evening. The wave length is 360 metres and the call letters 2 L O.

• • •

Telephony is transmitted from the Eiffel Tower, Paris, at 7.20 and 11.15 a.m. daily on a wave length of 2,600 metres.

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Music and speech is transmitted in the Newcastle area from 6 p.m. and 7.30 p.m. daily on a wave length of 440 metres, the call letters being 5 B A.



THE SECRETARY'S NOTES.

I wish Guild members could look over my shoulder as I open my morning mail. They would read

The First Winter Session.

of Meccano Clubs in all parts of the world, busily engaged in the activities of the First Winter Session. They would see, too, hundreds of letters from Club members telling me how they look forward to Club Night and giving me details of the jolly times they are having. These activities are not all indoors, however, for the sports side is being well catered for. Meccano Clubs have their own Football Teams, Concert Parties, Hobbies Sections, Gymnastic Classes, etc., and every week the general scope of the Clubs increase in every way.

In an earlier issue of the Magazine I announced that two Meccano Lectures—namely, a revised edition of "Lives of Inventors" and an entirely new lecture "The Story of Our Ships"—

Meccano Lectures.

were available for the use of Meccano Clubs. These lectures have met with a great reception from those Clubs who have already had copies. In this connection the Secretary of the "Oaklands (Motherwell) Meccano Club" writes:—"I return herewith your splendid lecture 'The Story of Our Ships' and I must say that from every point of view it has proved a complete success. The members of the Club shouted 'encore' and it had to be read all over again! The second reading was followed by an interesting discussion by the boys themselves. One of the members was particularly keen on having a copy of it and he wrote it out at my dictation; now, I learn, that every member has taken a copy from him. Some testimonial!"

Copies of both lectures are available singly, the only stipulation being that they are returned after the lecture is read so that they may be passed on to other Clubs.

Owing to the very extensive response to the announcement made in No. 26 of the "*M.M*" all the American Meccano boys

Corresponding with American Boys.

who wished to correspond with English boys have been accommodated. The many English boys who have not been put into communication with American boys will be fixed up as soon as possible.

The Recruiting Campaign is again in full swing. In this connection I should like to impress upon members how essential it is that their names and addresses should appear on the back of each recruiting form as, otherwise, there is no means of recording their recruits. When a member has recruited three members a handsome Medallion is despatched to him. If he then obtains six additional recruits—making nine in all—he returns his Medallion to be engraved with his name and the words "Special Award." I shall be pleased to send further particulars on request.

The Recruiting Campaign.

As in previous years two Cash Prizes of £5 and £3 will be awarded for the best models built by Meccano Clubs during the Winter Session. The conditions of entry are that the model should be the joint work of the Club members and that it must be constructed at the Club meetings. There is no restriction as to the size or type of the model or to the number of parts used in its construction. The model itself is not to be sent in, but either a clear sketch or photograph submitted. The models will be judged by the President of the Guild, Mr. Frank Hornby, and the closing date of this Competition is 31 March, 1923.

The Inter-Club Competition.

Almost every day I hear from Guild Members who are interested in stamp-collecting—a hobby that has not only a fascination but one that is of great educational value. During the long winter evenings it is very delightful to turn over the pages of a well-filled album, examining the neatly mounted stamps. Historical events, geographical features and engineering structures are often depicted on stamps.

Are You a Stamp Collector?

The Editor tells me that in the near future it may be possible to devote a column of the "*M.M.*" exclusively to stamp-collecting. I am sure this will receive the warm support of many hundreds of Guild members. In the meantime I shall be pleased to do what I can to help stamp collectors by placing them in communication with fellow-enthusiasts.

The "Claygate Meccano Club's" Carnival.

During the past session the "Claygate Meccano Club" held a very successful Fancy Dress Carnival and Field Day. Both Sections (Boys and Girls) of the Club participated in the event, which was organised to wipe off the debt on the newly-erected Club premises.

The Claygate Brass Band was in attendance and in addition to a Fancy Dress Parade and Sports, the programme included numerous side shows and competitions. There were also Model Engineering, Needlework and Knitting Exhibitions and dancing was indulged in during the evening. Among the Meccano exhibits were a number of original models and in connection with this section eight cash prizes were awarded.

The day was thoroughly enjoyable and successful and is typical of the thorough-going and energetic "Claygate Meccano Club," which continues to make progress in every way.



CLUB NOTES

Shor reports of Club doings are printed in this column. Should any Guild member desire to join any of the Clubs mentioned he should write for particulars to the Club Secretary, whose name and address is given.

Thornton Heath High School M.C.—On 5 October the new Club-room, looking bright with Meccano posters, pictures and fresh paint, was opened, to the delight of all the members. At previous meetings there had been an interesting lantern lecture, "A Thousand Miles Through India." Another very enjoyable Lecture was given by the Librarian of Croydon, Mr. W. C. Berwick Sayers, F.L.A., on "Landmarks of Croydon History." The Football Team is in excellent form and the first match was won with a score of 6–3, the players being encouraged by shouts of "Play up the Guild" from the Club's enthusiastic supporters. *Secretary:* Master S. Sutton, 13, Campbell Road, Thornton Heath.

St. Cedd's M.C.—The commencement of the Winter Session saw a new Club Leader installed—Mr. Woodhouse, of 52, Fisher Street, Plaistow. The Secretary of the Club was awarded a Special Merit Medallion at the close of the last Winter Session. *Secretary:* Master S. Elliott, 142, Beckton Road, Canning Town, London, E. 16.

West View M.C.—A very successful exhibition was held on 19 October and a creditable display of Meccano models was shown. The electrical section included Burglary Alarm, Electric Bell, Telephone, etc., and during the early portion of the evening the room was illuminated with electric light, fitted up and connected by the boys themselves. A complete model of a Wireless Receiving Set was another special feature and models of Mountain Railway, Roundabout, Windmill, Motor Lorry, etc., were also on view. The Meccano Lecture, "The Story of Our Ships," Part 1, has been given, meeting with great enthusiasm. *Leader:* Mr. H. Cousens, 494, Mansfield Road, Sherwood, Nottingham.

Weltreveden (Dutch East Indies) M.C.—Continues to make excellent progress and at a recent Exhibition many fine models were shown, including Coal-tip, Dredger, Level Crossing, etc. A very interesting trip was made to a neighbouring town to see the Coal-bunkers there. The members watched with wonder the Grab lift coal out of the ship and haul it to the place where it had to be dropped. The Club also visited the Dry Docks. *Secretary:* Master R. E. Pilet, Raden Salehlaan, 54, Weltreveden, Java, Dutch East Indies.

Clubs Recently Affiliated.

1st Herne Bay M.C.—This Club has been in existence since the beginning of the year and has now become affiliated with the Guild. *Secretary:* Master C. W. Russell, 4, Clifton Villas, South Road, Herne Bay, Kent.

Calcutta (India) M.C.—This is the second Indian Meccano Club to become affiliated with the Guild and it is entirely owing to the enthusiasm and hard work of the Secretary who has been endeavouring to get the Club established for some time past. *Secretary:* Master A. N. Roy Chowdury, 35/2, Beadon Street, Calcutta, India.

1st Belfast M.C.—Since this Club was first established accommodation has been kindly provided by the Strandtown Unionist Club. Many local gentlemen, interested in the Club, have kindly offered to deliver Lectures. The members are looking forward to a Lecture by Major Rupert Stanley, a prominent Naturalist. An interesting demonstration on Electric Bell Fitting and Wiring was recently given and was greatly appreciated by the members. *Secretary:* Master J. Sinclair, 39, Oakland Avenue, Bloomfield, Belfast.

Central Secondary School (Sheffield) M.C.—At the first meeting twenty-seven members were present, a very fine start for a newly-affiliated Club. All the members are enthusiastic and I feel confident that this Club will make rapid progress. *Secretary:* Master A. S. Taylor, Fern Lea Villas, 19, Roach Road, Eccleshall, Sheffield.

Invercargill (New Zealand) M.C.—Started at the suggestion of Master Arnold Laytham, this Club has now twenty-eight members and successful meetings are being held every week. Master Laytham has persuaded his father to act as Leader. Excellent progress is being made. *Leader:* Mr. W. H. Laytham, 10, Chelmsford Street, North Invercargill, Southland, New Zealand.

Clubs Not Yet Affiliated.

Birkenhead North End M.C.—A Meccano Club has recently been established in Birkenhead and Meccano boys residing in the vicinity of Upper Brassey Street, Claughton or North End, should communicate with the *Secretary:* Master Eric R. Hudson, 7, Upper Brassey Street, Birkenhead.

Brixton M.C.—A Club is being formed in Brixton and as soon as an adult Club Leader is obtained, affiliation will be granted. In the meantime meetings are being held regularly. *Secretary:* Master J. Slocombe, 30, Briston Road, Brixton, London, S.W.9.

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, and 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.

R. Stanbury (Tavistock).—"Ybnr ohk narfdna on acce motkcu ldo ogl la."—We have passed your kind message on to the inventor of Meccano and he wishes us to thank you. Your code is not a very difficult one to discover and we wonder how many of our readers can decipher your message.

G. Evetts (Streatham).—Thanks for your suggestions for Observation Cars, Cattle Trucks, etc., which shall have consideration.

Mr. R. Samuel (Wallasey).—"I have a keen Meccanoite in my son aged 7 years, who often falls asleep with his models at his side."—Your letter gave us much pleasure and we feel sure that the Liscard H.S. Meccano Club is fortunate in having secured your services as Leader.

Gilley Kowitz (Muldu, Queensland).—When our ears burn again we shall know that you are thinking of us, Gilley. We always thought that the rabbit was your biggest pest over there, but evidently the "Prickly Pear" runs it a close race. We have received all your letters and enjoyed them.

W. Dixon (Norton-on-Tees).—We were very interested in hearing of your model of an overhead railway, which we can well believe works excellently. We may be able to publish the "Life Story of Meccano" in booklet form at some future date.

J. P. Vevers (Bridlington).—Thanks for photos of Bridlington Harbour, which unfortunately are not sufficiently clear for publication. Try again. We appreciate the kind things you say of the "*M.M.*" and are glad to know that your Hornby train is such a success.

A. W. Earlans (Mortlake).—Thank you for sending us cuttings from a wireless magazine describing a coil-winder made from Meccano parts. This and other useful radio fitments made from Meccano will be illustrated in forthcoming issues of the "*M.M.*" Accept our congratulations on your school successes.

E. W. Coney (Turner's Hill).—The interest which older boys take in Meccano has been greatly extended by the introduction of the Meccano Radio Receiving Set, and you are now coming to the age when it will materially add to both your enjoyment and your knowledge. We shall always be very glad to help you with any model where you experience any difficulty.

D. J. Grundy (Hendon).—We are very sorry to hear that you have had such a severe attack of rheumatic fever, and we hope you will soon be quite well again. We are glad Meccano has helped to make the weary hours more pleasurable.

R. Goodban (Chatham).—We had no idea dogs could be trained to work Meccano models. Your's is evidently more than usually intelligent.

S. Graham (Camberwell).—We are glad to know that Meccano has been the means of your securing a good berth, and we appreciate the many complimentary things you say about ourselves. Your queries are being dealt with by the Radio Editor. Thanks for Competition suggestions.

B. H. Lord (Rochdale).—You are right to work hard at your school lessons, even if you have to neglect Model building a little. Your new Magazine is a creditable first attempt. Let us see future numbers.

F. A. Hill (Peckham).—Your rebuke that we have not devoted the four extra pages to model railways would have hurt us very much indeed if we had not received so many letters of commendation for having given them over to radio matters! You are a voice in the wilderness, F. A., and the only thing left for you to do is to step into line and acquire a receiving set of your own. We are interested in the "Southern Express Railway" and especially in the news that yourself and co-directors have decided upon the addition of a Zulu Tank Loco to your rolling stock.

T. H. Robinson (Bridlington).—It is early yet to say whether you would be able to take up a position in our factory. As you are only 10 years of age you have some years of schooling to put in before you take up engineering as a profession. We are impressed by your earnestness, and advise you to pay close attention to your studies.

R. K. Amiasell (Elmina).—"I have read your magazine with incredible gladness."—We read your letter with exactly the same feeling, R. K. Write us again.

Good Things in Store.

The following articles will appear in future numbers of the *Meccano Magazine*.

"Meccano Helps to Invent a Motor Cycle," by Lt.-Col. W. E. McKechnie.
"A Giant Block-setting Crane."
"The 1,000 h.p. Napier Aero Engine."
"The World's Largest Liner."
"Two Famous Locomotives, the *Great Bear* and the *Great Northern*."
"How Jimmy Thornton Made Good."
"Signalling by the Morse Code."

No Meccano boy should miss any of these interesting articles. A regular order for the "*M.M.*" should be placed with your dealer or direct with this office.

Loading Up a 'Plane.



The above photograph, taken on the sands near Swansea, shows an aviator filling up with petrol. The snap was contributed by Master James Yarnold, of Eastham Park, Wells, Tenbury Worc.

New Meccano Manual.

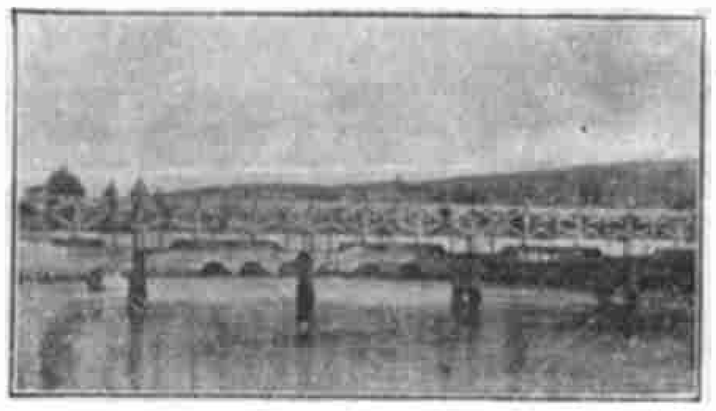


There are three Manuals, the 0 Manual for simple models built with the 0 Outfit, the 0–3 Manual comprising models built with any of the Outfits from 0–3 and the Complete Manual, which comprises a selection of models that may be built with every Outfit from 0–7. This latter Manual is a very fine publication and should be in the hands of every Meccano boy. It includes instructions for building most of the models shown in the present No. 3 Manual. A limited supply of the No. 3 Manual is still available.

Prices of Manuals:		s.	d.
0 Manual	post free ...	0	6
0–3 ,, ...	,, ...	1	2
Complete Manual ...	,, ...	2	10
No. 3 Manual	,, ...	1	4½

A Holiday in Ireland (*continued from page 4*).

river was swollen so much by the inrush of water from the sea that it burst its banks. Many of the adjacent houses were flooded out, and their occupants had to take refuge in the bedrooms and could not come downstairs until the storm had abated. Each morning on our way to the beach we had to cross a footbridge across the River Leitrim. There were four or five swans



Footbridge Across River Leitrim.

on the river and they were extraordinarily tame. When they saw anyone on the bridge they immediately came to be fed.

One day we went to see the lighthouse, and the keeper showed us over it. He even went to the trouble of lighting the lantern to show us how it worked. It was wonderful to see how the light was reflected from the upper and lower prisms of glass to the centre reflectors, of which there were three. The light was a revolving one and the reflector floated in a tank of mercury, to ensure smoothness in revolving. There have been two lighthouses at this spot but one was struck by lightning and the other was condemned because its beam was not visible from all directions.

Just before we left we made an expedition to the Silver Strand, a very beautiful place where there are many interesting caves. Its beauty is renowned even to American visitors, who seldom leave that part of Ireland without first seeing the Silver Strand.

Altogether we spent a very happy holiday and you may be sure we were sorry when the time came to go home.

Change of Address.

Subscribers should immediately notify the Editor of any change of address. Send a Postcard *giving the old and new address*, so that records may be kept up to date.

Dr. Graham Bell (*continued from page 7*).

In looking back over Dr. Bell's career we cannot fail to realise the greatness of his work and of all that he has done for the world. Not only did he, as an inventor, "dream dreams," but he lived to see his dreams come true. A word-picture of him, drawn in the Autumn of his life, shows us a majestic figure—a strong commanding type of a man—tall and finely built, moving amongst a happy family group. His skin tanned by the open air, his thick white hair flung back, he still possessed the clear blue eye of a young man.

We are pleased to pay tribute to the memory of so devoted a scientist, whose career bore such wonderful fruit in the cause of science and the pursuit of knowledge.



BRIGHT IDEAS

These columns are reserved for dealing with suggestions sent in by Meccano users for new parts, new models and new ways of making Meccano model-building attractive. We are always pleased to hear from any Meccano boy who has an idea which he considers will be useful in the Meccano system.

Hugh King (Farringdon, Hants).—We shall give consideration to your idea for a 2½" hexagon plate.

Andrew A. Mellwraith (Kilmarnock).—We regret that lack of space does not permit of the insertion of the photographs you mention.

Dennis R. Marshall (Leeds).—As an alternative to using a strip as a connecting rod you could employ a rod with a coupling at either end, connection being made horizontally through the end hole in the coupling by means of a ½" bolt. One or two spacing washers on the bolt would ensure free action. This is an instance of existing Meccano parts being adaptable and obviating the creation of special parts.

Allan D. Low.—We are contemplating the printing of a rule on the backs of all Manuals. We realise the help it will prove to all Meccano users. It already appears in the new No. 0 Manual.

Harry J. Saker (South Darenth, Kent).—We doubt the usefulness of the forked flat bracket you suggest, but we shall give it careful thought.

K. Lord (Narborough, nr. Leicester).—The roller feeds for a cinematograph would only be useful for this one purpose. Any new part which we issue is designed for general use as far as possible. In any case, a successful working model of a cinematograph could not be made without a lens and this is out of our province.

M. Peyron a Montcornet (Aisne).—We have not yet decided to introduce a circular saw and the matter is still under consideration.

R. Shank (New Southgate, N.).—(1) We do not see that it is necessary to dispense with the boss in the crank piece you suggest for use as a connection for crane arm stays. (2) Models of motor vehicles vary so in size that we could not very well standardise radiators and bonnets. (3) Our 3" pulley wheel with a rubber ring makes an admirable motor car wheel. (4) We cannot follow the application of the eye piece and bracket you suggest.

Owen Shaw (Gravesend).—Face plates, joined by double angle strips of the desired length, give a fairly good representation of a locomotive boiler.

David Gardner (Fulham).—Many thanks for drawing of the improved vertical engine you suggest. No doubt some time in the future we shall turn our attention to the development of steam models.

J. R. P. Edkins (Baxenden).—The water motor did not meet with any great demand and was superseded by our electric motor.

Ilan Raynauf (Marseille).—The H. girder which you suggest would have a very limited use as a Meccano part. Our existing parts are capable of performing the functions you name.

M. Lausedet Brignois.—We shall consider your suggestion for a large locomotive driving wheel.

C. Basil de Lavnay (Wimbledon, S.W.).—We do not quite follow your suggestion for an acute angle bracket.

A. Wedgewood (Harrogate).—We are continually adding accessories to the Hornby Train system as opportunity occurs. No doubt we shall introduce a loco shed in due course.

Colin Mackenzie (Herne Bay, Auckland, N.Z.).—We are afraid your suggestion would be rather a difficult subject to incorporate in a film picture. It would scarcely be practical. Many thanks for your good wishes and we hope you had an ejoyable time at Rotorua.

V. Georges Fromont.—We have not yet found the need for a larger bevel gear. A 1¼" contrate wheel operated by a ½" pinion would no doubt serve your purpose. We have in mind a flat loose pulley which between two flanged pulleys could be used for changing a belt drive. Curved strips are already contained in our list of parts and we think these could be used for the purpose you suggest. Your other suggestions will have our consideration.

L. B. Holt.—(1) We have in mind the addition of a flange to the clockwork motor. (2) Stainless steel has yet to be produced at a cost that will permit its use for general purposes. At present its production cost is very high. (3) Although not quite so realistic metal sleepers for rails, etc., have proved more satisfactory than wooden ones.

Sidney Dalton (Sheffield).—We do not supply rubber rings to represent motor tyres but they may be obtained from any rubber goods store. An expansion spring may be made into a compression spring by removing the end loops and stretching out the coils. The removal of the loops can easily be effected by the use of small shears or wire cutters.

The New Meccano Building in Paris.

By Frank Hornby.

Boys in Great Britain have always followed the progress of Meccano in other countries with much keenness and I feel sure they will be interested to hear of the success that is crowning our efforts to make Meccano products as popular in France as they are in this country. In one way, at all events, the history of our career there, has been a repetition of our experience in England.



THE NEW MECCANO BUILDING IN PARIS.

Over ten years ago we opened a small office at No. 17 Rue Bleu, Paris, under the charge of a representative, with one clerk. We were crowded out of there, however, in very quick time, and we moved into much larger premises in Rue Ambroise Thomas. This again, soon became too small for us, but owing to the War we were compelled to make the best of the situation. At the end of the War, we immediately searched for more commodious premises, but found nothing suitable. Shortly after, however, a very desirable piece of land came into the market in the Rue Rébeval, not far from the centre of Paris, and as soon as I heard of this I went over to inspect it. I saw that it was an exceedingly suitable position for the Meccano business, and immediately effected a purchase. Without delay our architect prepared plans for a building that would give us the accommodation and facilities we desired. The work of erecting the building was pushed forward with all speed, and at the beginning of the present year it was completed and ready for our occupation.

I was most anxious that, in addition to the building being suitable for our business, spacious, well-lighted, etc., it should also possess some architectural beauty and merit, and I leave my readers to judge from the accompanying illustration how far our architect has succeeded in giving expression to my views. In a special article which appeared in *The Architect*, the writer, referring to the dignity and pleasing effect of the Meccano building, states that it has attracted considerable interest in Paris and that the French Authorities themselves have expressed their pleasure at such enterprise.

The Meccano building covers 9,000 square feet, stands on an elevated site, and is conveniently situated for the rapid distribution of our goods throughout France. We have now been in occupation of the premises for several months, and I foresee that large as they are, our French business will grow so rapidly that soon even this building will be none too commodious for us.

Stanley J. Graham (Camberwell, S.E.).—The large circular plates which you mention are very limited in scope. In addition, their great size would offer difficulties in packing. For smaller circular constructions see our reply (above) to Owen Shaw, Gravesend.

Rex A. Addison (St. Leonards-on-Sea).—A guide rail in narrow gauge and radius rails is not practical. Furthermore, its addition would add considerably to the cost.

Herbert Monsman (Hammersmith, W.).—We should be interested to hear of any use you have found for the suggested double strip coupling. We are afraid such a piece would be very costly to make.

Raymond Evans (West Bromwich).—Our Manuals are undergoing complete revision. The model of the beam scales has been reconstructed on the lines of the scientific balance with the beam actuated by a lever.

M. Thuault (Blois).—We have under consideration the introduction of a 3½" gear wheel. This will fill the requirements of your suggested piece precisely.

B. Sewell (St. Leonards-on-Sea).—The inclusion of a smaller pinion than half-inch would not be practical as it would depart from our half-inch standard.

Harold Wise (Grantham).—Quite a big proportion of your extensive suggestion list is dealt with in this column. You will doubtless recognise the subjects as you read through it. Electrical accessory parts may be purchased separately from any Meccano dealer.

H. R. Dorsey (Leeds).—We do not think that there is scope for a threaded washer. The ordinary nut would serve the same purpose.

G. Speight (Sheffield).—(1) The crank piece would serve the same purpose as your suggested strip with a boss for a bearing for a high-speed shaft. The method we usually adopt for heavy friction bearings is to superimpose strips. (2) We do not quite follow your reference to the pivots in the flanged wheel. Our present type of flanged wheel is pressed from one piece with the exception of the boss.

H. Barton (Swansea).—(1) We should be interested to hear of the precise application of the triangular plates you mention. (2) We have issued detachable flanges for attachment to Face Plates for making larger flanged wheels.

Alan L. Gibson (Halifax).—Perhaps some time in the future we shall manufacture a mechanical motor car, but not yet awhile.

HORNBY CLOCK WORK TRAINS

THE TRAIN WITH A GUARANTEE.

A MOST valuable and remarkable feature of the Hornby Train is that it can be taken to pieces and rebuilt just as may a Meccano model. All the parts are standardised and there is as much fun taking Loco, Tender, Coaches and Wagons to pieces and rebuilding them as there is in playing with them. Any lost or damaged parts may be replaced with new ones.

The clockwork is a splendid piece of mechanism with accurately-cut gears, ensuring smooth running, and the workmanship and finish are of the highest quality. The Loco is fitted with reversing-gear, brake and governor.

PERFECT MECHANISM: BEAUTIFUL FINISH: STANDARDISED PARTS



HORNBY CLOCKWORK TRAIN PRICES.

No. 1. SET.		No. 2. SET.	
Passenger Sets each	35/-	Pullman Sets each	70/-
Goods " "	25/6	Goods " "	45/-
Locos " "	16/-	Locos " "	30/-
Tenders "	3/6	Tenders "	4/-
Passenger Coaches	6/6	Pullman Cars "	16/-
Wagons	3/9	Wagons "	3/9

ZULU CLOCK WORK TRAINS

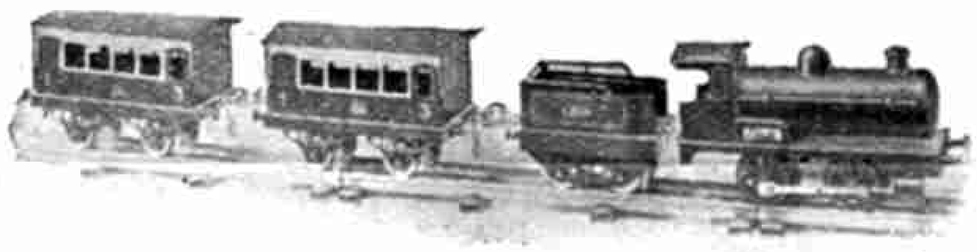
THE Zulu Clockwork Train is a new and cheaper type ot mechanical train, the chief characteristics of which are fine and durable mechanism and immense strength of construction in all parts. The Zulu Loco is well designed and efficient, and will give long and excellent service. Richly enamelled and highly finished, fitted with brake and governor, non-reversing.

ZULU CLOCKWORK TRAIN PRICES.

Passenger Sets	each	25/-
Goods Sets	"	18/6
Locos	"	10/6
Passenger Coaches	"	5/-
Tenders		2/6
Wagons		3/-

ZULU TANK LOCO

A STRONG and durable Loco capable of any amount of hard work; richly enamelled and highly finished; fitted with reversing gear, brake and governor. Gauge O in black only. 12/6



MECCANO LIMITED Binns Road LIVERPOOL

The New Meccano Book.



A beautiful new Meccano book has been compiled and should be in the hands of every Meccano boy. It illustrates and describes each Outfit and gives full particulars of the Meccano Clockwork and Electric Motors.

Every reader of the *Meccano Magazine* should possess one of these beautiful new booklets. A copy will be sent free on receipt of a postcard and as the demand will be very great, you should take advantage of this splendid offer and write at once for your copy. Put "*M.M.*" after your name for reference.

New Timber Wagon.



We have pleasure in announcing the introduction of a new timber wagon as illustrated above. The wagon is made in Gauge 0 and is beautifully enamelled in colours and stoved. It possesses the usual high finish.

Complete with load of timber, each 2/-.

New Meccano Outfits: Nos. 6a and 7.

We have pleasure in announcing two new Meccano Outfits, Nos. 6A and 7. No. 6A is, of course, an Accessory Outfit converting a No. 6 into a No. 7. The No. 7 is a complete and comprehensive Outfit, containing the Meccano parts necessary to build all the models in the new big Manual of Instructions. These include such special models as the Loom for real weaving, the Motor Chassis, Stiff Leg Derrick, Meccanograph, Eiffel Tower, High Speed Ship Coaler, Transporter Bridge, Forth Bridge, Hydraulic Crane, Dredger, etc.



The No. 7 Outfit also contains a Clockwork Motor, Electric Motor and a 4-volt Accumulator, a range of all the new Meccano parts, including electrical accessory parts, with full electrical instructions. The Outfit is contained in a beautifully finished oak cabinet with lock and key and makes an ideal present for a boy interested in mechanics and electricity.

PRICES:

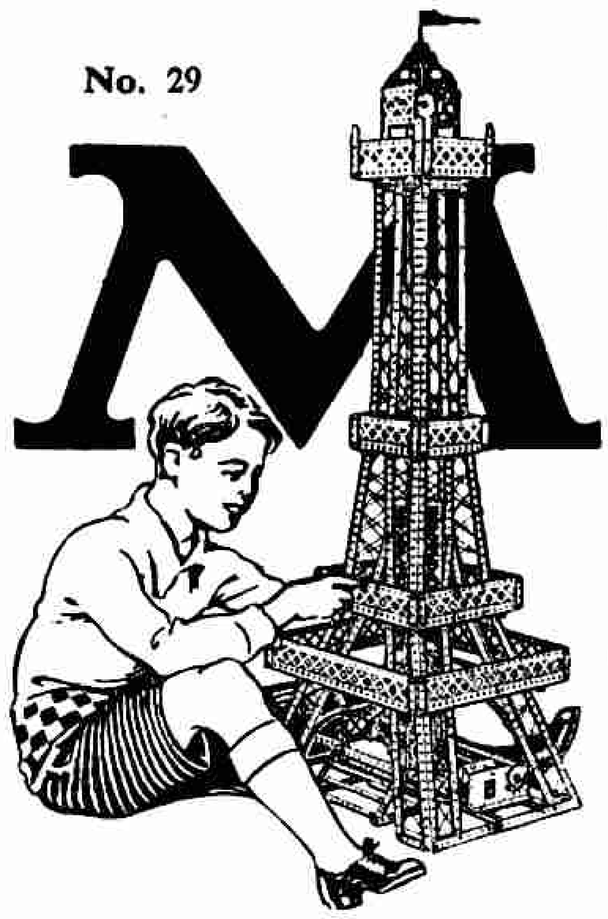
Meccano Outfit No. 6A (for converting No. 6 into No. 7) 210/-

Meccano Outfit No. 7 (packed in beautifully-finished oak cabinet with lock and key 370/-

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THE NEXT NUMBER OF THE "M.M." WILL BE PUBLISHED ON 15th JANUARY

No. 29 DECEMBER, 1922



MECCANO MAGAZINE

PRICE 1d

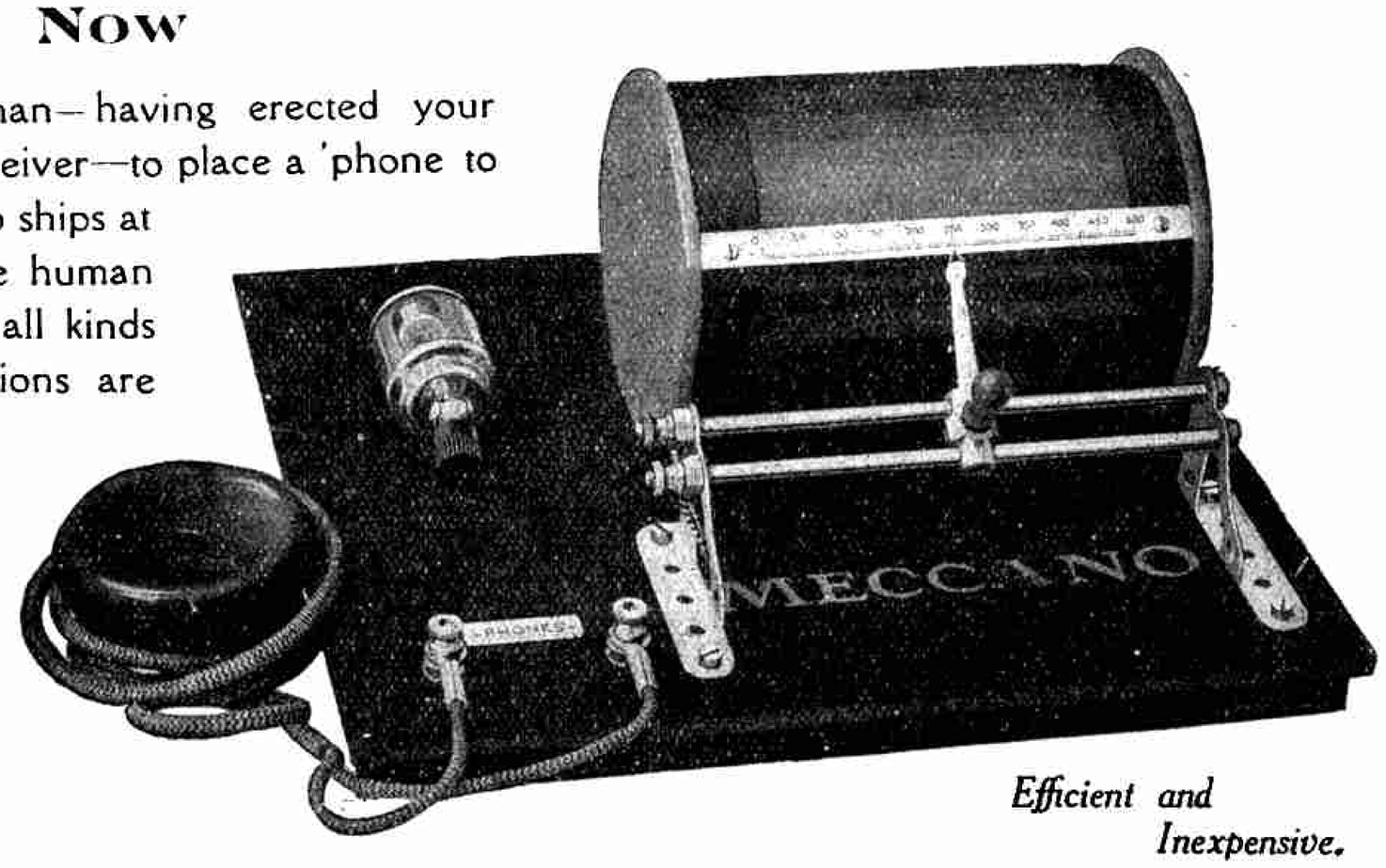
PUBLISHED IN THE INTERESTS OF BOYS.

The Meccano Crystal Radio Receiving Set

For Broadcasting and Morse Reception.

START RADIO NOW

WHAT can be more delightful than—having erected your aerial and connected it to your receiver—to place a 'phone to your ear and hear land stations signalling to ships at sea and ships signalling back; to hear the human voice in song and speech, and music of all kinds with perfect clearness. Broadcasting stations are now installed in London, Birmingham and Manchester, and we understand that the erection of additional stations in Cardiff, Newcastle, Plymouth and Edinburgh (or Aberdeen or Glasgow) is being proceeded with, and that these stations will be in operation shortly.



Efficient and Inexpensive.

The Meccano Crystal Receiving Set will receive telephony (i.e. music and speech) up to 20 or 30 miles. It is not a toy but a piece of scientific apparatus with which any boy may spend hours of delight and enjoyment "listening in." It has been thoroughly tested and has received with great clearness music and speech from broadcasting stations.

The Meccano Receiving Set is low in cost and is complete in itself, ready to be connected to any aerial. A complete Aerial Set is sold separately. After you have purchased this set there is no additional expense (with the exception of a Post Office licence, which costs 10/-), for the concerts are broadcasted free of charge.

Every boy should see that he has a Meccano Crystal Receiving Set for Christmas. Our new booklet, *The Meccano Crystal Receiving Set*, explains Radio so that every boy is able to understand how simple is the reception of broadcast telephony and Morse messages. This booklet will be sent post free to any reader of the "*M.M.*" on application.

PRICES:

Meccano Crystal Receiving Set complete	55/-
Aerial Set (including antenna, lead-in and aerial wires, and insulators) ...	12/6



EDITORIAL

FOR a long time past there has been much unemployment in the country, and often you boys must have wondered why some men are out of work and hard up, whilst others are in steady jobs and doing well. I think I can tell you. When bad times come in business and an employer finds it necessary to reduce his staff of workers, the first to be sent away are those who are the least efficient—those who have not made themselves indispensable to the business and who can be most easily spared. The men retained are the key men of the business, as you might call them—those who have mastered their jobs thoroughly and without whose services the business would seriously suffer.

Two Classes of workers.

Some day every boy who reads these lines will be in one of these two classes, and to-day is the time to decide which. Believe me, you cannot put off the decision, because you are at this moment heading straight for a business career of some kind. The habits of industry or laziness, keen observation or mental dullness, that you are forming now will go with you when you start in business.

Which Class is Your's?

It is not by listening or by reading that we become proficient, but by doing. You can learn off by heart the finest book on cricket ever written, yet when you stand at the wicket you will probably leave after the first straight ball. The way to learn to play cricket is to keep on playing. You can certainly gain much from books and by listening to experts, but proficiency comes only after hard practical work.

Learning by doing applies just as much in business and in all the serious things of life, as in sport. If you are learning a modern language it is only by speaking and reading it constantly that you can become proficient. The way to learn to write and to draw is to write and draw, and to keep on writing and drawing. The same principle holds good in business. It is not the dreamers, and the listeners who go farthest, but the "doers."

We Learn by Doing.

You will learn by and by that one of the greatest pleasures in life is in striving and working for something worth having, and that the moment you get it the pleasure has gone. The hunter derives his pleasure from the chase, the stalking, the lying in wait, and the final rounding up of his quarry, and not from the dead animals he may bring home. Any successful man will tell you that the happiest time in his life was when he was working hard and building up his reputation and good name, and that by the time he had realised

Build for Success.

Three Interesting Competitions.

Which are the Six Best Books for Boys?

Which are the six best books for boys is a difficult question to answer, for everything depends upon the taste of the individual reader.

We are anxious to find out just exactly what type of books readers of the "*M.M.*" prefer—whether they prefer fiction to any other class and if so what type of fiction: school stories, adventures, historical novels, detective tales, etc. For this purpose we announce a Competition in which entrants should send a list of what they consider are the six best books for boys.

The books should be arranged in order of merit and the first prize, a No. 1 Hornby Train Set, will be awarded to the reader who places the six books in the order nearest to that order of merit voted for by all readers participating in the Competition.

The voting must be on post cards only and they should reach the Editor of the "*M.M.*" before the 31st January next. Mark your postcards "Best Book Competition."

Which is Your Favourite Magazine?

We are anxious to find out just what class of reading our readers like best, and we are therefore offering a prize of a No. 1 Hornby Train Set for the best article (consisting of not more than 100 words) on—

"MY FAVOURITE MAGAZINE AND WHY I LIKE IT."

Any weekly or monthly magazine printed and published in Great Britain may be dealt with but not the *Meccano Magazine*. This Competition will close on 31 December, 1922. Mark your envelope "Favourite Magazine Competition."

I also invite my readers to send me a list of which in their opinion are

THE FOUR BEST MAGAZINES

for boys published in this country, in what they consider to be the order of merit. A Meccano Clockwork Motor will be awarded to the boy who places the four magazines nearest to the list of best magazines, as voted for by all the readers participating in this competition.

The voting must be on postcards only, which must be received not later than 31 December, 1922. Address postcards Meccano Ltd., Binns Road, Liverpool, and mark them "Best Magazines Competition."

£250 IN PRIZES.

Meccano Model-Building Competition

Cash prizes to the value of £100, Meccano Outfits, Inventors' Accessory Outfits, Hornby Trains and Zulu Trains to the value of £150.

These prizes will be awarded in the next Meccano-building Competition, for which every Meccano boy should enter. As was the case last year, the Competition will be divided into three sections (1) for boys under 10 years of age, (2) for boys between 10 and 14 years of age and (3) for boys over 14 years of age.

There are no restrictions and no entrance fees. Full particulars and entry form will be sent on application. The closing date for the Competition will be 15th April, 1923, for entries from the United Kingdom, and the 30th May, 1923, for entries from Overseas.

Ask your dealer, or send to us, for an Entry Form.



Editorial *(continued).*

that success was his, all the thrill had gone. The boy or man to be envied, and whose happiness we may well covet, is the one who is building up, building up every day, forming his character on definite lines, gaining experience, shouldering responsibility after responsibility, and planning and striving to make a name for himself. The most enjoyable and most profitable game in the world is work.

A New Invention.

A new process has been invented by Mr. H. Bolton of Sheffield for joining tram rails, which will ensure a perfectly smooth and unbroken track. This improved process of welding makes it possible to dispense with joints, except for crossings. The method is already being put into operation in Sheffield, whilst negotiations are in hand with Johannesburg, Calcutta and other big cities abroad with a view to their adoption of the new process.

A Great Airman: The Late Sir Ross Smith

and his

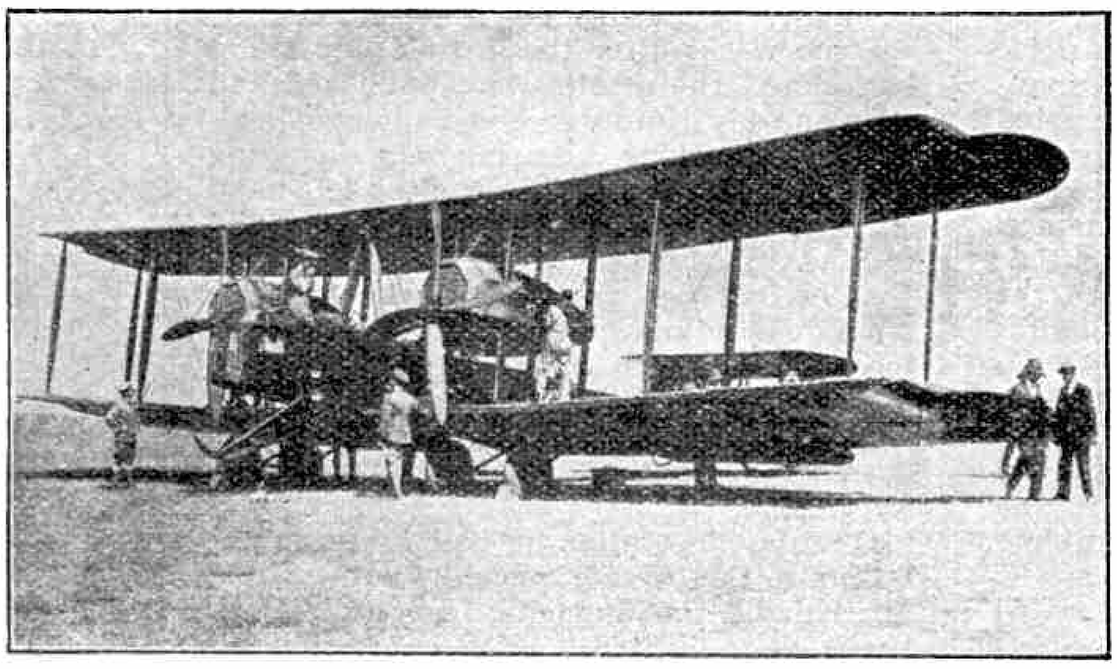
Flight from England to Australia.

(Concluded)

Flight Round the World Proposed.

Soon after landing in Australia, Sir Ross began to discuss the idea of a "round-the-world" flight. Finally he and his brother made up their minds to sail for England by different routes, so that they might look for the most favourable course for the suggested project. Both arrived in England and compared notes, and it was soon decided to make the attempt.

When the aviators had parted company in Australia, Sergeant Bennett had eagerly promised to join the next adventure that the brothers might contemplate. The bond of attachment between the brothers and their former companion and engineer was exemplified in a cable inviting him to join in the "round-the-world" flight. Immediately on receiving this cable, Sergeant Bennet gave up his work. Two days later he was on his way to England.



Photograph by] [*Messrs. Vickers Ltd.*

The late Sir Ross Smith and his companions landing in Australia immediately after their great flight from England.

The Vickers-Viking.

As on the former occasion, the machine chosen for the new enterprise was designed by the famous Vickers Firm, to whom we are indebted for some of the fine photographs that have illustrated this serial.

The Vickers Viking-Amphibian is the latest product of aircraft research, combining the best features of aeroplane, seaplane and flying boat. It is a single-engined biplane, the central hull resembling a boat, but fitted with a special chassis for ground landings. The machine is thus able to alight on, or take-off from, either land or water, a characteristic that marks a most important advance in aeroplane construction. The machine is driven by a 450 H.P. Napier engine of a type known to the British Air Ministry as the "Lion." The Napier "Lion" was originally designed to satisfy military conditions but since the cessation of hostilities has been used for commercial purposes. On the Vickers-Viking the engine drives a "pusher" air screw and is supported above the hull by struts in the main-plane strut-way.

The dimensions of the machine selected were:—Length overall, 34 feet. Height overall, 14 feet. Span, 50 feet. Accommodation for six passengers was provided and a petrol capacity of 90 gallons. Full speed near sea level was 105 m.p.h.

Details of the Flight.

Such a type of aircraft as this, was obviously the only one to be considered for a flight that involved a journey of 21,500 miles, along the coast lines, over vast bodies of water, and across the Atlantic Ocean. It was hoped to complete the flight in 240 flying hours, spread over a period of about three months. It was planned that the last stage should be from Newfoundland to Ireland, allowing 18 hours for the Atlantic crossing. By this arrangement the airmen calculated that by leaving Newfoundland (some day during July) at 2 o'clock in the afternoon, they could complete the flight to London by noon the day following. An additional tank was to be fitted for the Atlantic crossing, thus bringing the petrol capacity up to 390 gallons.

The Fatal Test-Flight.

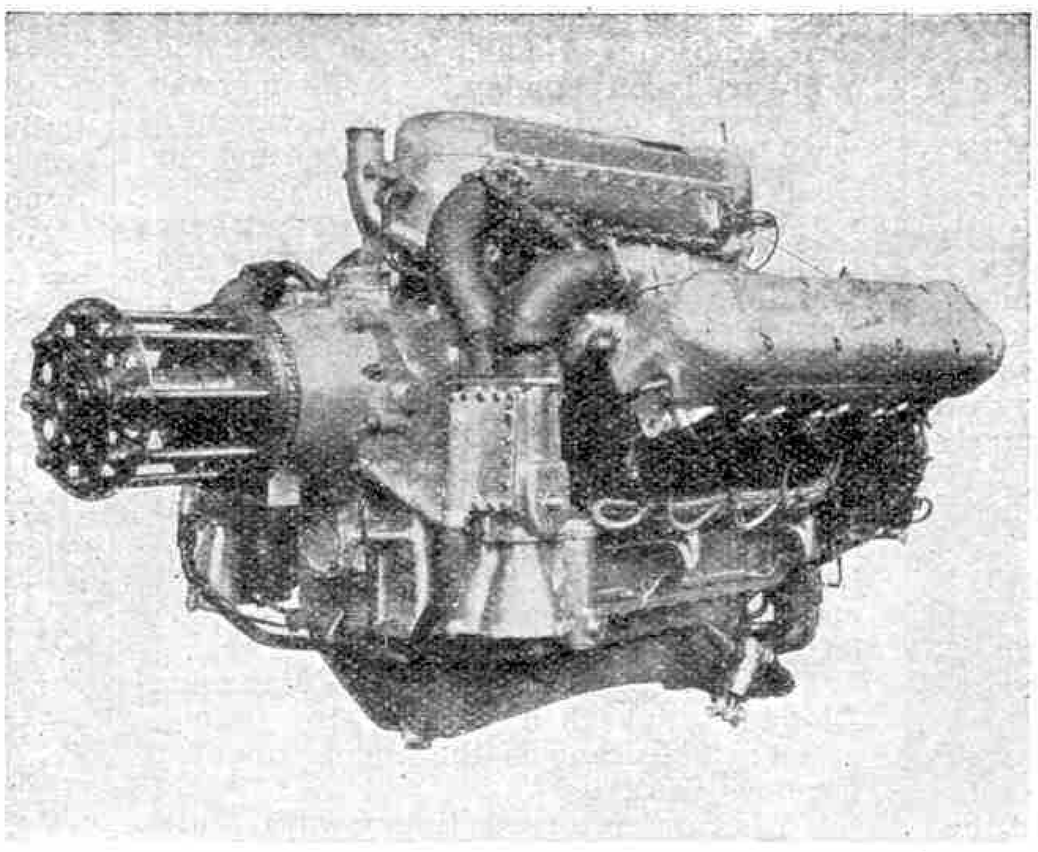
The programme fixed upon 25th April for the commencement of the flight from Croydon Aerodrome, and preliminary flying tests of the machine were being made. On the 13th April Captain Corkrill, chief test pilot of Messrs. Vickers Ltd., having flown the Amphibian for half-an-hour, handed it over to Sir Ross for a test flight. Sir Keith, who was also to have taken part in this trial, arrived at the aerodrome a few minutes too late, and the flight was made without him.

Then came the fatal accident. In turning, flying speed was somehow lost and the machine commenced a spin, from which the pilot was unable to recover. The spin ended in a nose dive and, with a sickening crash, the great Amphibian, for which so much had been planned, was a mass of wreckage on the Brooklands Motor Track. Sir Ross, the pilot, was killed instantly in his seat and Sergeant Bennett, the faithful engineer, received such terrible injuries that he died a few minutes after being picked up.

Heroes of the Air.

Thus a nation and a great Empire mourned the loss of two of her bravest sons, and to that glorious list of heroes who have given their lives to the conquest of the air were added two more names. They will go down to posterity as examples of courage, endurance and sacrifice in the cause of knowledge and progress—the names of two men who set out to conquer and to do big things. For these reasons alone we are proud to be able to pay a tribute to their memory in the pages of the "*M.M.*"

THE END.



Photograph by] [*Messrs. Napier & Sons, Ltd.*

The 450 H.P. "Napier Lion" Aero Engine.

It is claimed that this engine has more British records to its credit than any other aero engine.

Giant 'Planes.

Great importance is attached to recent developments in the construction of giant aeroplanes. An aeroplane with accommodation for 25 infantrymen, with full equipment, including machine guns, has been built at Coventry for the British Army. It is driven by two 450 h.p. Napier "Lion" engines and has a speed, fully loaded, of 100 miles per hour.

The U.S. Navy also are building a giant aeroplane that is to have a wing span of 150 ft. The power unit consists of three 400 h.p. Liberty Motors in streamline and geared to an 18 ft. three-bladed propeller. The 'plane will have a maximum speed of 110 miles per hour and a cruising radius of 3,000 miles. It is claimed that an all-metal monoplane equipped with a similar power plant would be capable of a speed of 150 miles per hour, for 20 hours with 12 passengers aboard.

How Jimmy Thornton Made Good

By MASTER HARRY R. WICKLINE.

Jimmy Thornton's dad had been an engineer at a great steel works in his native town of Bridgeville, but a fearful accident occurred one day, resulting in his losing his life along with several other workmen. Jimmy helped to support his Mother and little sister and was employed as an office boy with a firm of motor vehicle manufacturers. He was very much interested in engineering and in his spare time would go into the shops and watch the expert mechanics assembling the motors. Engines, transmissions, gear-boxes and differentials grew from a collection of parts into the splendid and powerful " Forward " motor trucks under the efforts of the workmen.

In his leisure hours at home Jimmy would get out his Meccano Outfit and build many models, striving to imitate in miniature the " Forward " truck. The lessons he had learned in the assembling shop were well remembered, for as he wanted to be a motor engineer, he had done all that he could to learn the fascinating business. Henderson, the foreman, took an active interest in Jimmy, giving him many hints and other assistance. Every man on the staff, from the chief draughtsmen downwards, was a friend of Jimmy's. He soon knew the " Forward " truck by heart and was able to explain everything about it that an ordinary person could wish to know and in addition many things that only an expert would think of enquiring about.



One day Jimmy received a long official-looking envelope.

At the time this story is written Jimmy's attention was centred on the big Meccano Competition, and his great desire was to win a prize. He often thought eagerly of the cash prizes that would mean so much to him, for his father, good and kind though he had been, had left them little with which to fight the battle of life.

At his home the model on which he had been working was now completed and Jimmy had the satisfaction of seeing it work just like its great counterpart. One day he took his model to the works and showed it to Henderson who looked at it and said :—

" Lad, you are a genius. It is indeed the ' Forward ' truck in miniature."

After having received this commendation, he hopefully filled up his entry form for the Meccano Competition and despatched it wishing that it might receive the first prize, for that would mean a great deal to him and his Mother. Meantime he worked hard, and day after day dreaming of becoming a motor engineer. His dreams did not stop at that, however, but soared until he saw himself chairman of a Motor Company of his own !

Some weeks after the great Competition had closed the results were published and then one day Jimmy received a long official-looking envelope, bearing the inspiring name " Meccano Ltd." in the top left-hand corner. Eagerly he tore it open and found inside a cheque for £15. When he read that he had won the second prize with his truck his joy knew no bounds. His success in this, his first competition, did not " turn his head " however, but he continued to work as hard as ever, every day considerably improving and adding to his knowledge.

One day just after he had taken in the letters to the private office, he noticed that Mr. Knight, the Managing Director, seemed to be very excited. Such expressions as " That order cannot be lost " and " Where is Dobson ? " filled the air. [Dobson was the Sales Manager for the " Forward " Company.] " The boss must have important business on hand to be so excited " thought Jimmy as he went about his duties. Later in the morning he was summoned to Mr. Knight's office and sent with a telegram recalling Mr. Dobson, who was travelling in Scotland. On coming back Jimmy saw that the Managing Director was pacing the floor and the Works Manager and two other Directors were in consultation with him.

Passing the door of the office, Jimmy heard Mr. Knight saying :

" We cannot lose this deal. It will bring us more business, for the firm from whom this enquiry comes are the largest wholesale grocers in the country. To sell them a fleet of a hundred ' Forward ' Trucks will bring our firm to the favourable notice of many other truck buyers. Mr. Addison is to be here in the morning and if Dobson cannot be here to talk to him, the deal is off. We must have some one to explain the working details of the truck to Mr. Addison ; Henderson is sick and Williams is on holiday." [Williams was the general engineer for the Company.] " We simply cannot lose this deal and our rivals across the way are after it also."

Jimmy waited to hear no more but very timidly opened the door of the office and said in a weak voice :

" Perhaps I can help you."

" *You !* " exclaimed the three in chorus, " What do you know about trucks ? "

" Very little," said Jimmy, " but I do believe I can explain the truck to Mr. Addison. I won a prize for a model of it from Meccano Ltd., Sir, and it worked just like the real truck. Henderson also taught me a whole lot about it. Please, Sir, do let me try."

" H—m—," mused the Managing Director, and then turning to Jimmy, asked : " Meccano is the engineering toy for boys, isn't it ? "

" Yes Sir," returned Jimmy with pride, " you can make anything with Meccano."

" Before we give you permission," said the Managing Director," we should like to see this model of your's."

So Jimmy went home to fetch his model. He explained it to the Managing Director in whose mind no doubt lingered. It was the " Forward " truck in miniature.

" Wonderful ! You are a real mechanic," said the Managing Director. " You shall talk to Mr. Addison."



Jimmy explains his model of the "Forward" Truck.

The next morning Mr. Addison called and Jimmy, dressed in his best, was ready to receive him. Jimmy showed his Meccano model of the " Forward " Truck and explained it so well that in an hour's time the Managing Director had the firm's order for a hundred trucks.

After the interview Mr. Addison, talking to Mr. Knight, asked :

" Where did you get that lad ? "

On being told, Mr. Addison said : " He knows your truck from A to Z."

" Yes," said the Managing Director smilingly, " he is our youngest engineer."

From that time Mr. Knight took an active interest in Jimmy who learned the business so thoroughly that to-day Mr. James Thornton, though only twenty-six years of age, is Assistant Manager of the " Forward " firm and bids fair to reach a higher position before long. In speaking of his success to his friends he would say " It is all due to Meccano. Without my Meccano I wouldn't be where I am now. Boys, if you want to be something, get a Meccano Outfit and with it study the principles of engineering."

He was only voicing the sentiments of a million other happy Meccano boys many of whom will surely become enrolled amongst the world's greatest engineers.

Note These Dates.

The following are the dates on which the undermentioned Meccano Competitions close (for full particulars see page 2) :—

1922.

31 Dec. " My Favourite Magazine."

31 ,, " The Four Best Magazines."

1923.

31 Jan. " Third Photo. Competition."

31 ,, " The Six Best Books."

31 March. Inter-Club Competition (Guild).

15 April. £250 Model-building Competition.

30 May. £250 Model-building Competition (Overseas).



RADIO SECTION

The Thermionic Valve.

THE INVENTION THAT MADE WIRELESS TELEPHONY POSSIBLE.

The following, the third instalment of an article specially written for the "Meccano Magazine," explains the principle of the Thermionic Valve and describes Professor Fleming's application of the "Edison effect" to Radio. The final instalment, which will appear in the next number of the "M.M.," will explain how Dr. Lee de Forest, an American Scientist, further improved the valve.

(Continued)

Edison Suggests Wireless Communication.

Desiring to perfect his incandescent electric lamp, Edison did not immediately pursue his discovery of the peculiar action, which became known as the "Edison effect." That he realised its importance, however, is demonstrated by the fact that he took out a patent protecting the discovery. The scientific vision of this remarkable inventor is made clear when we find that his patent specification illustrates a suggested means of wireless communication and includes diagrams of receiving wires that are not unlike the aerial antennæ now in general use.

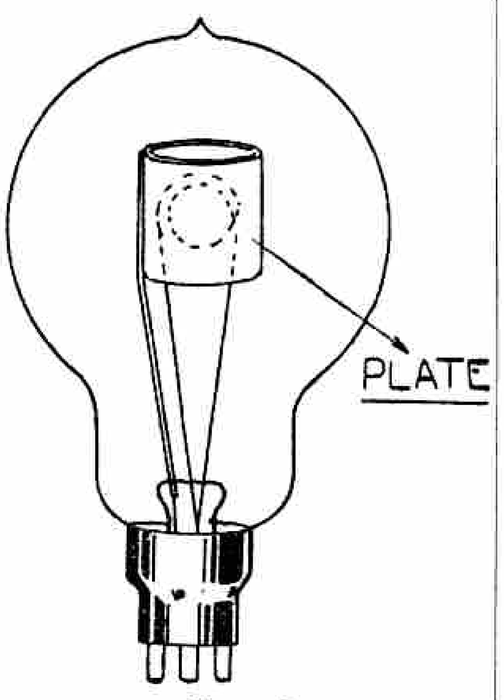


FIG. 3.

It is interesting to remark in passing that Edison's patent was subsequently acquired by Senator Marconi, who was at that time developing his inventions in wireless telegraphy.

The idea of the evaporation of electrons from hot bodies was not completely established until 1912. From this theory is drawn the important conclusion that while electrons (or electronic energy) can freely leave the surface of a hot metal, they cannot leave the surface of a metal that is cold.* We thus see why it is that the electrons cannot leap from the plate to the filament, for the plate is a cold metal from which the free electrons cannot escape.

* By "cold" we mean any metal below a dull red glow—an important fact for those who use valve sets to remember.

"Sounds" that we cannot Hear.

Edison's effect was adapted by Professor J. A. Fleming for use in Radio work. Those of you who have studied electricity know that there are two types of current called "Direct" and "Alternating." They are called thus because in Direct current the electrons flow in one continuous direction, but in Alternating the current changes direction alternately. It is currents of the latter type that are dealt with in Radio reception, for the transmitting station disturbs the ether by sending out alternating oscillations, which fall upon the aerial of the receiving station.

These oscillations are much too rapid to become audible in a telephone earpiece, for just in the same way that our eyes cannot perceive the ultra-violet rays of the spectrum, the mechanism of the human ear cannot deal with such extremely rapid vibrations. To render the oscillations audible, therefore, the current must be changed from Alternating to Direct. I wonder if you have already guessed how Professor Fleming showed this might be done by using Edison's discovery?

Prof. Fleming Adapts Edison's Discovery to Radio.

We have already seen that the plate in the carbon lamp attracts negative electrons, but repels positive electrons. If we place the plate and the filament of such a lamp in the circuit of an alternating current, it is clear that only the negative electrons will be allowed to leap from the filament to the plate—the positive electrons being repelled by the plate. Thus only half the alternating current will pass through the circuit. The electrons of which that half is composed will be travelling in one direction only, thus forming a direct current, which—as Professor Fleming pointed out in 1904—can be made audible to the human ear with a telephone receiver.

Those of you who understand the working of a motor-cycle engine know that the inlet valve opens and allows petrol-vapour to pass from the induction pipe to the combustion chamber. Immediately the gas has passed, the inlet valve closes and the explosion takes place. The inlet valve allows the gas to pass only in one direction, and the positively-charged plate acts in exactly the same way. Now you will understand how it is that a modified electric lamp comes to be called a Valve.

Not only did Professor Fleming show how the Edison Effect might be applied to Radio and used as a Detector, but he also brought the plate nearer to the filament and altered its shape. Edison has used a small rectangular plate, but Professor Fleming introduced a cylindrical plate, or one that surrounds the filament as shown in figure 3. It will be clear that by doing this the efficiency of the valve was greatly increased, for by surrounding the filament, the plate captured the electrons that leave the filament on all sides, whereas Edison had only captured a few on his small plate. The shaded portion in Fig. 4 shows the area in which no electrons were captured with the plate as used by Edison.

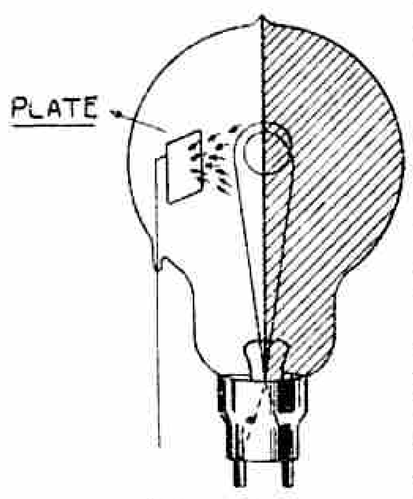
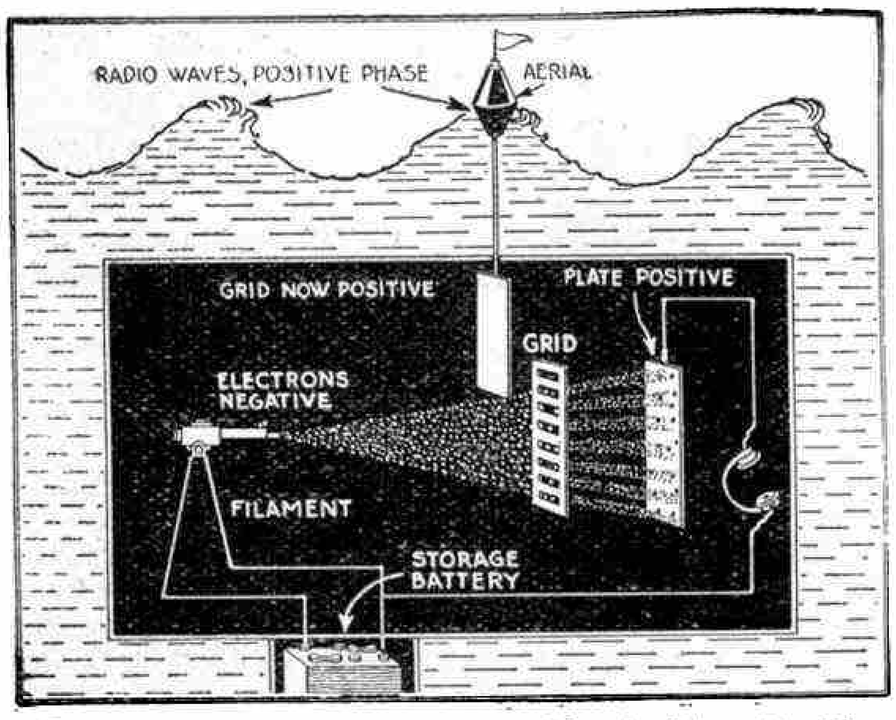


FIG. 4.

The apparatus may, in fact, be compared with a machine-gun (the filament) which is bombarding a target (the plate) with bullets (the electrons). These bullets must pass through the grid before they reach the target, the oscillations from the aerial causing the grid to act as a spasmodic shield. When the positive half of the aerial current reaches the grid the negative electrons are allowed free access to pass to the target (see Fig. 5).

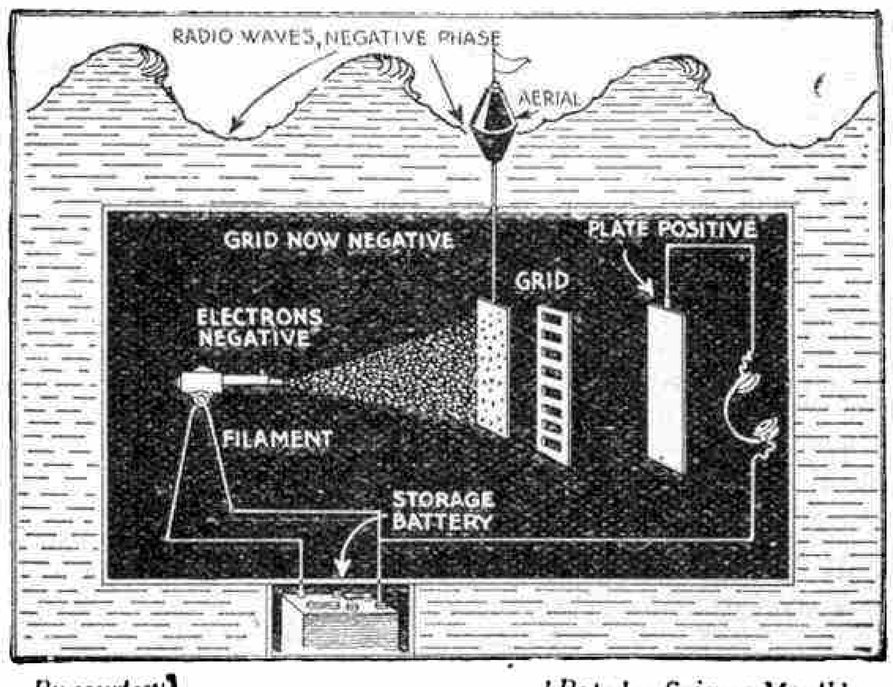
(To be concluded.)



By courtesy [*Popular Science Monthly.*

FIG. 5.

The filament of a valve resembles a machine gun, electrons taking the place of bullets.



By courtesy [*Popular Science Monthly.*

FIG. 6.

The grid of a valve acts as a shield between machine gun and target.



W. G. Symons (London).—(1) Crystals must always be of high resistance and so should telephone head pieces. (2) Single ear-phones vary in resistance from 1,000 to 2,000 ohms. (3) Two ear-phones connected in series would have a combined maximum resistance of 2,000 to 4,000 ohms. (4) Meccano ear-phones are each wound to a resistance of 2,000 ohms. This resistance has been chosen as being the most suitable for general purposes.

Lawrence Salter (Southall).—You have omitted to give your address.

W. G. Symons (Streatham, London, S.W.16).—The tuning buzzer is sometimes helpful in getting a correct wave length adjustment quickly. However the Meccano Crystal Receiver allows one to tune-in so quickly to the desired wave length that it is doubtful if a buzzer can be considered of great importance.

B. Spencer (Hull).—The cost of the Meccano Receiving Set has been kept as low as possible in order to place a set within reach of the average boy, rather than introduce too costly an apparatus. Refinements can always be added later.

J. G. Shennan (Aberdeen).—(1) Your specification refers to a fixed or blocking condenser which would not allow you to "tune-in" or modify incoming signals. (2) A broadcasting reception licence is necessary. This is obtainable from the Post Office, and it costs 10/-.

C. Woods (Diss, Norfolk).—We are experimenting with a Valve Set, and it is hoped to place this on the Market in the near future. It will be announced in the "*M.M.*" when ready. The fact that your aerial is enclosed on all sides by houses will not prevent you receiving, but it is better to get as open a position as possible. You should be able to obtain triangular flat plates from your dealer, but if you are unable to do so send your order here for attention.

O. Moore Ede (Rugby).—(1) Every Meccano Radio Set is thoroughly tested but it would not be practicable to give a guarantee of reception of signals and broadcasting in a defined range. There are so many factors to consider, such as atmospheric conditions, insulation, and position of aerial and the like. (2) Do not use a gas pipe for earthing. Can you not attach your earthwire to a water-pipe, or failing a water-pipe, to any metallic fitting running to the ground.

R. J. Thomas (Bath).—(1) I do not know of any Broadcasting Station within a radius of 25 miles of Penmachno. (2) The large and powerful Station at Carnarvon is not a Broadcasting Station; it transmits code messages on high wave lengths. (3) You could receive telephony from Manchester by using a Valve Set. The Meccano Valve Set will shortly be on the market, and will be announced in the "*M.M.*" in due course.

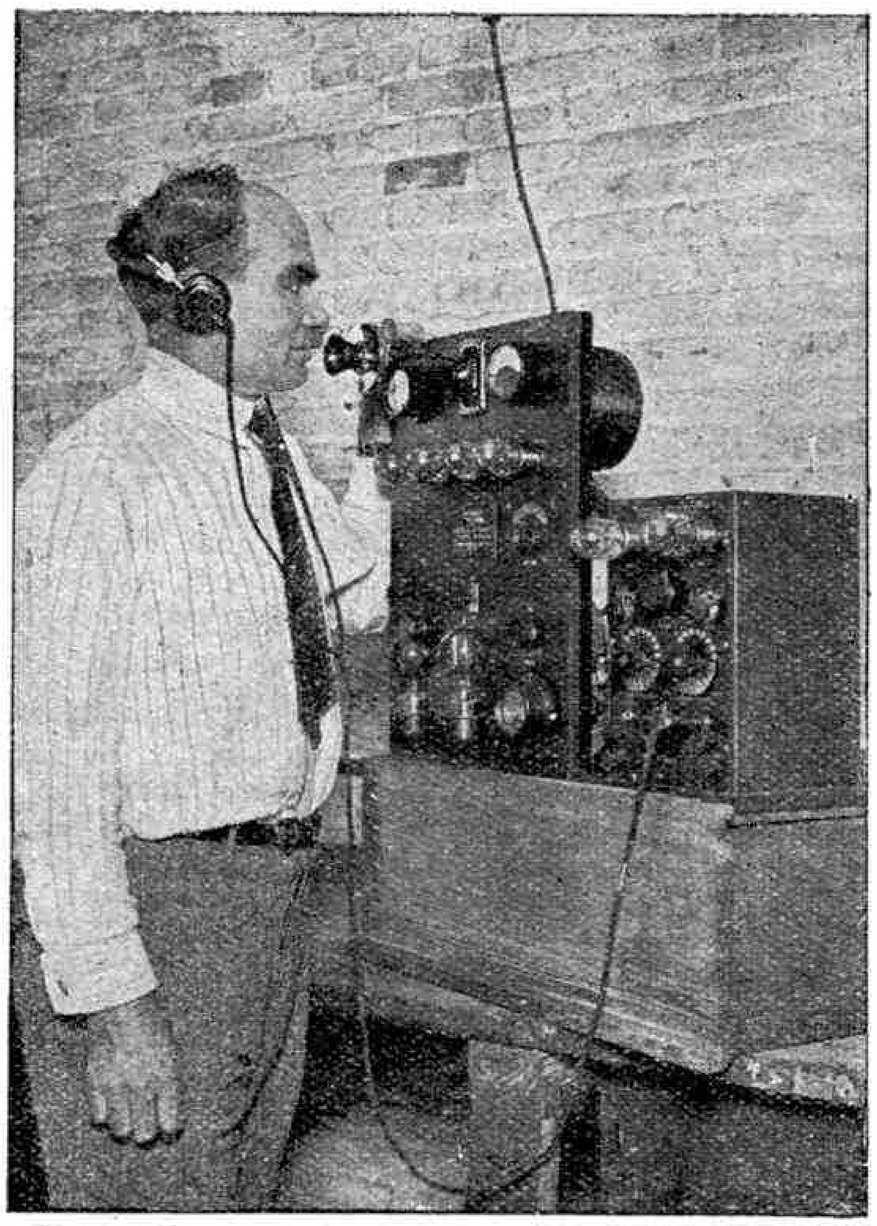
David Lloyd (London, E.3).—An article will shortly appear in the "*M.M.*" dealing with the construction of aerials.

O. Hill (Brimington).—(1) With a Valve Set it should be possible to hear concerts broadcasted from both Manchester and Birmingham. (2) An announcement will be made in a forthcoming issue of the "*M.M.*" giving full details of the Meccano Valve Set. (3) The Meccano Crystal Set will receive on wave-lengths of up to approximately 500 metres.

N. W. Hopkins (Gathurst, near Wigan).—(1) The Mersey Docks and Harbour Board speak to the Bar Lightship, usually on a wave-length of 440 metres. (2) It does not follow that messages transmitted on a given wave-length will be received in a certain radius on apparatus capable of accepting that wave length, unless the incoming message has retained its power. (3) The broadcasting station at Manchester will probably transmit on a wave-length of 360–400 metres, employing sufficient power to allow clear reception within a wide radius. (4) I am unable to say whether there will be a broadcasting station at Liverpool—we should all welcome one.

Thomas Hine (London, S.E.16).—The Meccano Crystal Set is a tested instrument in every sense of the word and gives clear reproduction without distortion.

T. Banbury (Leyton).—Tuning coils wound on a hollow cylinder may be used with or without a condenser, as a sliding connection partly serves the purpose of a condenser and thus "tunes-in" to obtain the desired result. Many tuning coil receivers are fitted with a condenser in addition to the slide arrangement in order to give finer tuning. It is only with cylindrical coils that a slider can be used, condensers being used for other types of coils.



Photograph [*Radio Broadcast.*

Dr. Lee de Forest Broadcasting in America.

Dr. de Forest's Latest Invention

Dr. de Forest, whose name is well-known in connection with the perfecting of the Thermionic Valve, has recently invented a new Radio Transmitter that will operate from the socket of an electric lamp.

Up to the present it has been necessary to have special apparatus to generate the current to operate the transmitter, but this difficulty has also been overcome in the new invention.

The details of the apparatus have not yet been made public, but we are able to reproduce a photograph of Dr. de Forest using his new invention to broadcast to thousands of listeners in.

William Pringle (West Stanley, Co. Durham).—I am very interested to know that you have made a Wireless Set with Meccano parts, and that it works splendidly and should be glad to have full particulars.

J. C. Moore-Hills (Felsted, Essex).—Your nearest Broadcasting Station (London) is outside the range of a Crystal Set for telephony. You should however, be able to receive telegraphy transmitted from distances up to 100 miles. In your case, this should enable you to receive code messages from ships at sea.

W. Anderson (Preston).—Much depends upon the power of the sending station. You could not listen-in to the Hague Concerts with a Crystal Set—to receive them a Valve Set is required. If your ear-phones are both of the same resistance (denoted by figures stamped on them) you could have them made into a double head-set, and use them on your Wireless Set. If one is stamped say 1,000 and the other 1,500, the resistance will be unequal, and they would not be suitable for use as a double head-set. From what you say, it would appear that your ear-phones are for use with an ordinary household short-distance telephone. They may, therefore, be unsuited for use as wireless phones.

J. Harris (Clovelly, N. Devon).—I am not quite clear as to your meaning when you ask whether you "must have an Outfit as well as a Meccano Radio." There is in preparation a one valve amplifying unit to be connected to the Meccano Crystal Set.

R. Greaves (Derby).—I am interested to hear that you are making a complete wireless installation at your school and I shall be glad to hear that this has been successful.

Frank Hyde (Liscard).—The nearest Broadcasting Station will be Manchester, which distance is outside the range of a Crystal Receiving Set. You should, however, be able to listen-in to ships at sea, and receive telegraphy transmitted from distances up to (and perhaps over) 100 miles. You will be interested to know that the Bar Lightship sends telephony daily upon a wave length of 440 metres, which is within the range of the Meccano Crystal Receiving Set, and several amateur stations transmit telephony in Liverpool and district.

B. Wellwood (Hastings).—The Meccano Crystal Receiving Set conforms to the requirements of the Postmaster-General, and is designed to receive broadcasting on the wave-length stated, but allowing a margin, up to approximately 500 metres. Aerial outfits are supplied separately.

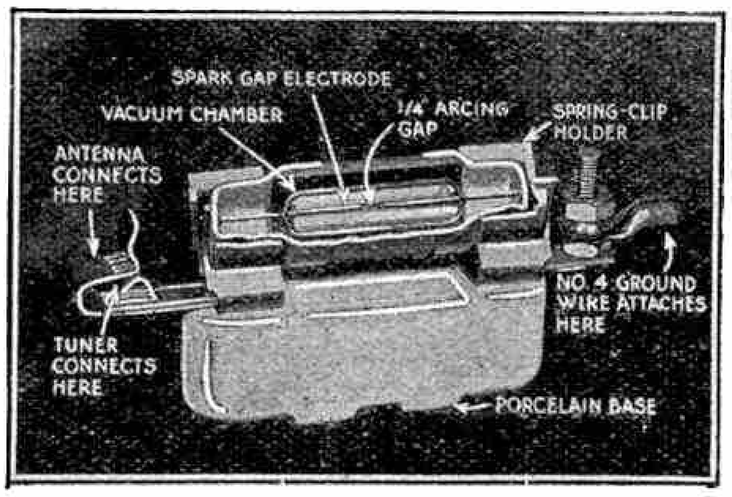
F. Donald Cawley (Hale).—The Meccano Receiver is a single 'phone. Two of these however, could be attached together by means of a 12½" Meccano strip, thus forming double head-gear.

(*Continued on page* 12.)

Trapping a Flash of Lightning.

In nearly all large Radio stations, and in many amateur stations also, a device called a "lightning arrester" is used to prevent possible damage to the apparatus by lightning.

The principal part of a lightning-arrester is known as a "Vacuum Gap." This consists of two wires separated by about ¼" and enclosed in a tube from



Photograph by courtesy of "Popular Science Monthly."

which the air has been exhausted. When lightning strikes the aerial it is conducted to the lightning-arrester. Here it comes to the vacuum gap, and, finding it easier to jump the gap than to follow the fine wire in the receiving instruments (which offers a greater resistance) it is directed to the ground wire, and so is earthed without doing any damage.

In America, insurance companies require all Radio Sets with outdoor aerials to be protected by an approved device.

Signalling by Means of "Dot and Dash"

AN INVENTION WITH FAR-REACHING BENEFITS.

No matter how loudly one may shout, or how powerful one's lungs may be, the human voice cannot carry for more than a few hundred yards in normal circumstances. As the transmission of messages by the human voice is thus very limited in its range, other means have had to be adopted for communicating over a distance. One of the earliest means of signalling was by beacons, or bright fires, on hill tops.

Warning Beaccns.

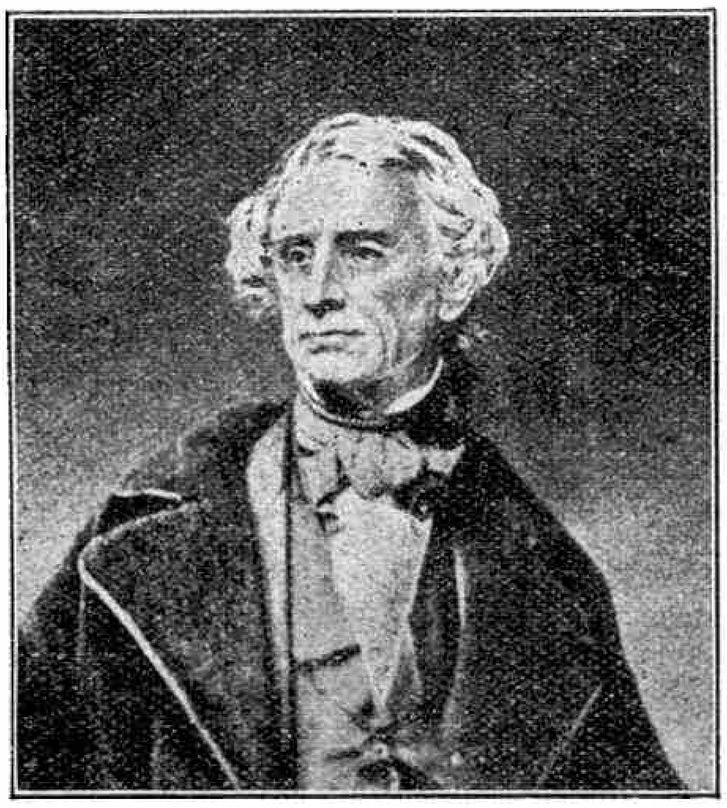
Beacons were generally used as alarm signals and in this way a warning of invasion, or news of the movements of some enemy, was conveyed from hill to hill, and so over a wide area of the country, in a comparatively short time. The earliest beacons were simply stacks of wood on high places; later, pitch was often employed. Watchers were always on duty at these beacons and horsemen were stationed at most of them to give notice in daytime of an enemy's approach, for the fire could only be seen at night. Beacons were maintained by a tax levied by the Sheriff of the County. We are reminded of these early signal stations by the names of several high points, such as Brecknock Beacon, Beamsley Beacon, etc.



Photo by] [*Siemens Bros. & Co., Ltd.*

Telegraph Sounder Instrument.

Showing Sender Key and Sounder. Messages may be received automatically on the tape recording instrument also shown.



Professor S. F. B. Morse.

(We are indebted to Messrs. Constable & Co., Ltd., for permission to reproduce this engraving, which appears in "S. F. B. Morse, His Letters and Journals.")

Smoke Signals.

Savages often used pillars of smoke for signalling. These they controlled by breaking up the ascending smoke clouds with a blanket, as they rose from the fire. This caused a disjointed pillar to appear in the sky, becoming visible over a wide area. The different appearances of the smoke had various meanings, according to a prearranged code. Even to-day some native races communicate news over surprisingly long distances, by beating in a peculiar way on their *tom-toms*, or native drums.

In all forms of signalling a code is necessary. Although language itself may be described as being a code for the expression of ideas, it is not a successful code unless it is common knowledge to both the sender and the receiver of a message. A particular language say English—is of no use to a Frenchman, who wishes to send a message and has no knowledge of English.

The Morse Code.

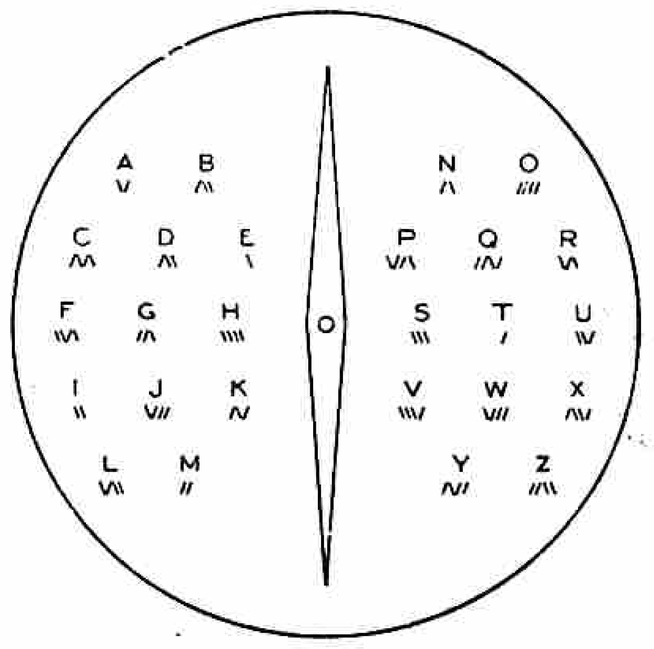
When it was discovered that electricity could provide a powerful medium for the transmission of messages by means of sound, it was also realised that it was very necessary to arrange a code for the interpretation of these sound signals. After many experiments the code ultimately adopted was one in which different combinations of telegraphic sounds represent letters of the alphabet. This code is called the Morse Code, because it was invented by S. F. B. Morse, an American artist and inventor. The use of the Morse Code is now universal, irrespective of language.

Professor Morse was born at Charleston, Massachusetts, on 27th April, 1791, and graduated at the University of Yale in 1810. He visited England to study painting with Benjamin West and in 1813 was awarded the Gold Medal of the Adelphi Society of Arts for the "*Dying Hercules*," his first effort in sculpture. Returning to New York in 1813 he became Professor of Design at New York University.

Although an artist of attainment and distinction, Professor Morse was also deeply interested in science and was an ardent student of chemistry. He devoted much time to electrical and galvanic experiments and after a visit to Havre, in 1832, conceived the idea of an electro-magnetic telegraph, the working of which he demonstrated in 1837. An attempt to patent the invention in England was unsuccessful and a bitter and prolonged controversy ensued with Professor Wheatstone over the priority of the invention, Wheatstone claiming it as his own.

"Sounder" and "Needle" Receivers.

Morse developed his code for use in connection with his system of telegraphy and this was quickly adopted in most European countries. It is largely upon the Morse code that our modern system of telegraphy has been built up. Sound signals—"dots and dashes"—are sent over an electro-magnet wire and are received on one of two types of instruments. In the first, or "sounder" type, the sounds are noted by the interval of silence between one and the next. A short sharp sound is described as a "dot," and one three times as long as a "dash."



In the second, or "needle" type, a metal needle, pivoted in the centre, is made to deflect to the left or right. On each side of it is fixed a piece of metal with different tones. The ear of the receiving operator is trained to detect the dissimilar notes, caused by the needle being deflected and striking either of the pieces of metal. These sounds represent either dots or dashes.

The accompanying diagram shows the alphabet with the deflections of the needle illustrated under each letter, giving the combinations of dots and dashes representing each. It will be noted that the

Signalling by Means of "Dot and Dash" (*contd.*)

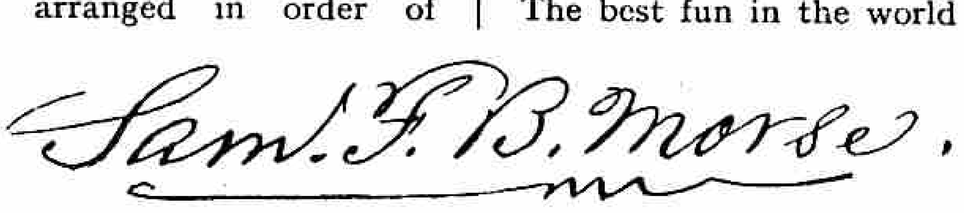


Photo by] [*Siemens Bros. & Co., Ltd.*

Single Needle Telegraph Instrument.

letters "E" and "T" are represented by a single deflection to the left and to the right respectively. The combinations throughout are arranged in order of simplicity, according to the number of times that the letters they signify occur. The particular arrangement of letters in the English language renders the needle system specially applicable for use with it.

Those of of our readers who are Boy Scouts will know that the Morse Code is used not only in signalling by sound, but also in visual signalling. Visual signalling may be carried out by means of flags, the heliograph, or, at night, by lamps. Indeed, whenever a distinction can be made between a dot and a dash—a short and long interval—the Morse Code may be used to spell out messages.

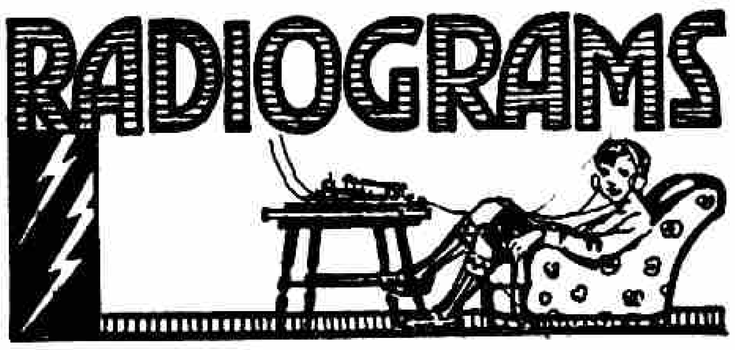


Professor Morse's Signature

Learning Morse.

The many boys who are taking an interest in Radio will no doubt wish to learn the Morse Code, so that they may be able to read messages from ships at sea, as well as from land stations which transmit only in Morse. The best way to learn Morse is by constant practice with a buzzer such as may easily be made from Meccano, as described in the Electrical Manual. By accustoming the ear to the sound intervals and letter combinations, a knowledge of the code is gradually acquired. Gramophone records of the Morse Code may also be obtained and afford an easy and inexpensive method of practising the reception of messages at different speeds.

Although code practice may, perhaps, appear to be dull work, it must be remembered that there is drudgery in all work. The best fun in the world is to work with a zest and to find each day that you can do something that you could not accomplish the day before. After a little practice at code you will become increasingly expert until the time comes when you will be able to pick up messages on your receiving set and astonish your friends by interpreting into an intelligible message what seems to them only a confused jumble of noises.



An important orchestral concert, given by the New York Philharmonic Orchestra, was recently broadcasted by Radio. The concert was first transmitted by special wire to the broadcasting station WJZ at Newark, New Jersey (a distance of about 20 miles) from whence it was amplified and broadcast.

* * *

The concert was enjoyed at Headquarters of Meccano Inc., at Elizabeth, N.J. It was particularly interesting to our New York representatives to hear the wonderful music reproduced with great clearness of tone by the Meccano Crystal Receiving Set.

The concert itself was performed to 10,000 persons in the New York Stadium and by means of Radio it is estimated that it was heard by over half a million people.

* * *

Experiments with Radio for the transmission of police messages in America are reported to have proved a complete success. It is proposed to equip the eight high-power cars used by the Detective Department in Chicago with both sending and receiving sets.

* * *

During Radio experiments recently conducted on a train at San Francisco, a concert was received so clearly that passengers on the train were able to dance to the music. The train was equipped both with receiving and transmitting apparatus and, in spite of rain and thunderstorms, constant communication was maintained with the broadcasting station 100 miles distant.

* * *

The American liner "*Leviathan*" is now being reconditioned and refitted. When completed its 740 cabins will each have a Radio Receiving Set installed.



The Manchester Broadcasting Station is now transmitting nightly but not at present on Sundays. The wave length is 385 metres and the power approximately 1,500 watts.

On a recent evening the programme was as follows:—5.55 p.m. Calling-up. 6, Children's Story. 6.15, News. 6.30, Children's Story. 6.50, Pianoforte Recital. 7.30, Entertainer. 7.35, Fashion Notes. 7.50, Short Lecture. 8 to 9.10, Operatic Records. 9.15, Late News. 9.25, Dance Music. 10, Final Announcements and "Good-night."

* * *

Broadcasting may be heard in the London area from Marconi House during the evening. The wave length is 369 metres and the call letters 2 L O. The power used is about 1,500 watts.

News is broadcasted at 6 p.m., concert at 8, late news 9, and a second concert at 9.30 p.m.

* * *

Broadcast may now be heard every evening from the Birmingham Broadcasting Station at Witton. The power is about 1,500 watts and the wave length 425 metres. The call signal 2 W P. The programme begins at 6.30 p.m. with a concert.

* * *

Broadcast is sent out from the Eiffel Tower, Paris, from 6.25 to 6.50 p.m., when a concert (in French) is transmitted. The wave length is 2,600 metres, the power 4,000 watts and the call signal L O.

* * *

The Russian Government is to undertake the organisation of broadcast concerts, speeches, and lectures.

* * *

Amateurs in this country and in France, Holland and Germany will endeavour to pick up messages transmitted by wireless amateurs in Canada and the United States. The tests will be carried out until the 21st instant., transmission being made from midnight to 6 a.m.

* * *

Owing to disturbances from "atmospherics" the concerts broadcasted every Thursday from the Hague will be discontinued. Whilst these concerts have been badly jammed, the Sunday concerts have been received successfully all over the country and will therefore continue to be given.

* * *

Amateurs in London and district may hear during almost any evening the following amateur stations sending out telephony on wave lengths between 200–300 metres. After each station we give the call letters:—

Park Lane, London ...	2 B Z.
Blackheath	2 F Z.
Snaresbrook, E.	2 K T.
Purley	2 K Z.
Hammersmith	2 L W.
Walthamstow	2 O N.



The Secretary's Notes.

By the time that Guild Members read these lines they will be anticipating many Christmas activities. They will realise with a start that the old year has nearly passed and that Christmas is almost here. Already many correspondents have written telling me of the increased Meccano joys that the coming Christmas will bring them. Others are anticipating the ever-welcome holidays, when school books will be put away and the days are free for frolic and fun. I sincerely hope that all anticipations will be realised and that the New Year will bring happiness and success to every Guild member.

Christmas Greetings.

The first of the busy Winter Sessions—now drawing to a close—has proved very successful. The Guild has been increasingly active this Session. Not only have many new Clubs been formed, but existing Clubs have engaged in many new activities. At the moment the majority of Clubs are preparing for Concerts, Exhibitions, or Displays for the Christmas Holidays. At the same time the ordinary Club work goes merrily on, the members meeting together on club nights for model building, lectures, or some other interesting programme arranged by the Club Leader.

Close of First Session.

The Club Membership Cards—the issuing of which was announced in the September "*M.M.*"—have now been available for some time. The new Card is very similar to that of last year and the majority of Meccano Clubs have already received supplies. Every member of an affiliated Club may obtain a card from his Club Secretary. Any Club requiring further supplies should apply at once.

Membership Cards.

As announced in the last issue of the "*M.M.*" the Recruiting Campaign is again in full swing. In this connection I should like to impress upon members how essential it is that their names and addresses should appear on the back of each recruiting form as, otherwise, there is no means of recording their recruits. When a member has recruited three members a handsome Medallion is despatched to him. If he then obtains six additional recruits—making nine in all—he returns his Medallion to be engraved with his name and the words "Special Award." I shall be pleased to send further particulars on request.

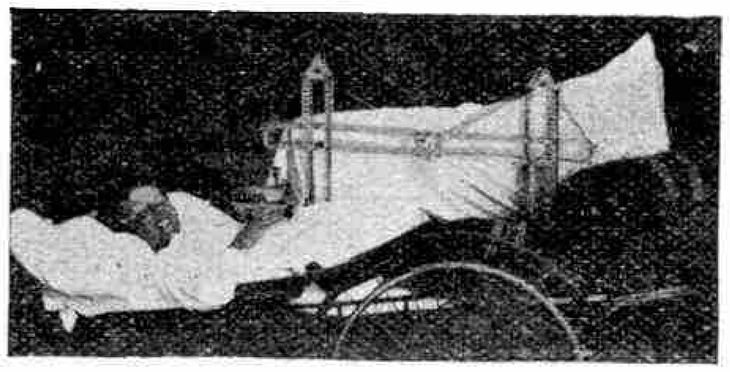
The Recruiting Campaign.

In my "*Notes*" last month I drew attention to the fact that two Cash Prizes of £5 and £3 will be awarded for the best models built by Meccano Clubs during the Winter Session. The conditions of entry are that the model should be the joint work of the Club members and that it must be constructed at the Club meetings. There is no restriction as to the size or type of the model or to the number of parts used in its construction. The model itself is not to be sent in, but either a clear sketch or photograph submitted. The models will be judged by the President of the Guild, Mr. Frank Hornby, and the closing date of this Competition is 31 March, 1923.

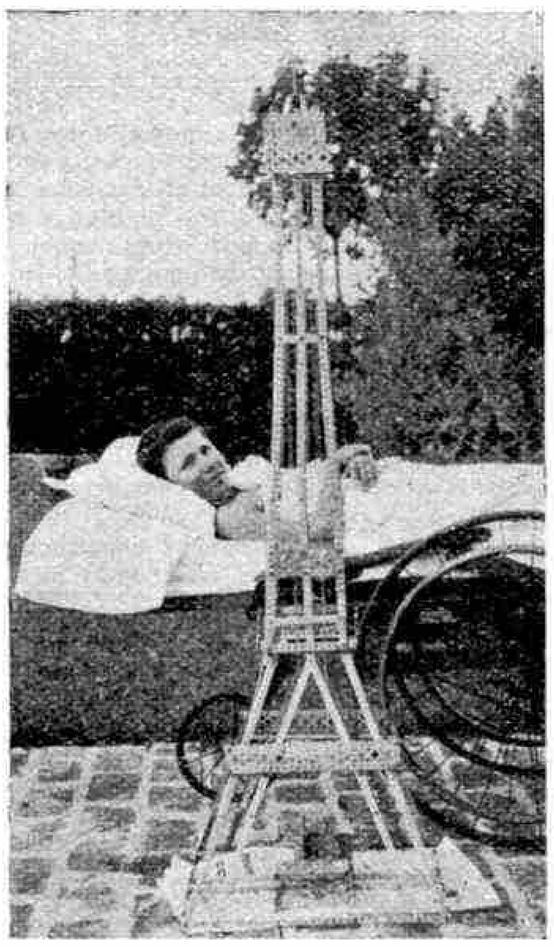
The Inter-Club Competition.

One of Meccano's Million Boy Friends.

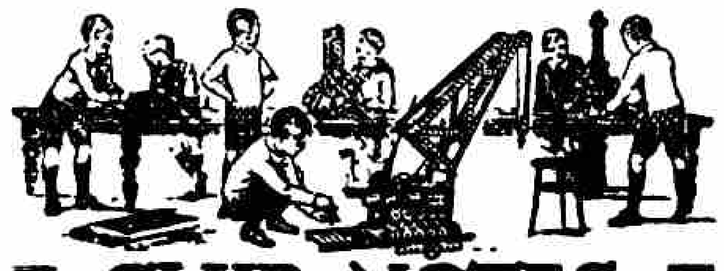
A Happy Meccano Boy in S. America.



Here are two photographs of Master George Campbell who lives in Buenos Aires, South America. He is a most enthusiastic Guild member, and despite the fact that he is at present unable to walk, he has succeeded in establishing quite a successful Meccano Club which will probably be affiliated with the Guild very shortly.



Master Campbell is a keen Meccano model-builder, and spends a good deal of his time in following his hobby. He has built many fine models, including the model of the Eiffel Tower, shown above. He has joined the Guild Correspondence Club, and takes the *Meccano Magazine* regularly, and is thus a real up-to-date Meccano boy, whose bright cheery letters it is a pleasure to read.



CLUB NOTES

Short reports of Club doings are printed in this column. Should any Guild member desire to join any of the Clubs mentioned he should write for particulars to the Club Secretary, whose name and address is given.

Fairway (Bexhill-on-Sea) M.C.—The members are still all keen and enthusiastic. Mr. Granger, B.Sc., a local gentleman, is displaying great interest in the Club and he has kindly promised to take the chair at some of the meetings. A successful Winter Session is anticipated. *Secretary:* Master W. C. Bradbrook-Chissell, 1, Wickham Avenue, Bexhill-on-Sea.

Buckfastleigh M.C.—Affiliated last year, this Club has recommenced activities. The Leader is Mr. A. Chivall and a Club-room has been kindly provided by the Vicar, the Rev. J. Lucas. Several friends are taking a great interest in Club affairs and altogether the present Session promises to be even more successful than those held hitherto. *Secretary:* Master H. Parsons, Bell Cottage, Buckfastleigh, S. Devon.

Kilmarnock (Riccarton) M.C.—A successful Exhibition was held recently and a number of interesting models were on view. Parents and friends were invited and nearly £1 was added to the Club funds. The Club continues to make good progress in every way. *Secretary:* Master A. Todd, 96, Campbell Street, Riccarton, Kilmarnock.

St. Paul's, Hammersmith, M.C.—Under the direction of Mr. Paulus, who is interested in mechanics, electricity, and wireless, this Club has every prospect of holding two very progressive and enjoyable Sessions. A very fine display held recently interested the Mayor, and other local friends. *Secretary:* Mr. V. J. Scott Warrell, 41, Bridge Road, Hammersmith, London, W.6.

Holy Trinity (Blackburn) M.C.—Good work is being done and the members have commenced to prepare for the Concert and Exhibition, to take place next Spring, at which it is probable that the Meccano Play "*Nonsense Nana*" will be produced. *Secretary:* Master J. Catlow, 183, Whalley New Road, Blackburn.

1st Belfast M.C.—A very successful Concert was held recently and it is hoped to purchase a No. 6 Outfit for the general use of the Club in the near future. Arrangements are being made to secure a Camp for the use of the members during the Summer months. At present there are over sixty members. *Secretary:* Master J. Sinclair, 39, Oakland Avenue, Bloomfield, Belfast.

Clubs Recently Affiliated.

Swaffan M.C.—Established in connection with the Swaffin Road Boys' School, by enthusiastic boys under the supervision of one of the staff, Mr. J. Lever. *Leader and Secretary:* Mr. J. Lever, Swaffield Road L.C.C. (B.) School, The Grove, Wandsworth, S.W.18.

Chard M.C.—Now has sixteen members and since inauguration there has been a full attendance each night. An interesting syllabus has been drawn up, including model building, lectures, competitions, etc. *Secretary:* Master Frank Macey, 17, Ashfield, Chard, Somerset.

Mount Gould (Plymouth) M.C.—Meetings held every Tuesday night. The membership stands at sixteen, and with a Club Leader who is an engineer, I feel sure that rapid progress will be made. *Secretary:* Master Donald Frost, 28, Carfrae Terrace, Lipson, Plymouth.

Woodville (Thornton Heath) M.C.—Formed in connection with the Sunday School attached to the Woodville Road Methodist Church and already good progress has been made. *Secretary:* Master B. Morley, 12, Liverpool Road, Thornton Heath, Croydon.

Limes School M.C.—Meetings held every week and the Club which was organised by scholars at the Limes School is steadily increasing in size and usefulness. *Secretary:* Master E. T. Lean, The Limes School, Croydon.

Roan School (London, S.E.22) M.C.—This is another School Club and an interesting programme is being arranged and will, I feel sure, meet with the approval of all the members. *Secretary:* Master A. H. Savage, 144, Werlanger Road, New Cross, London.

Clubs Not Yet Affiliated.

Hanson (Bradford) M.C.—When this Club is permanently established affiliation will be granted. The present membership stands at fifteen, and the Club Leader, Mr. J. R. Whitworth, 107, Curzon Road, Bradford, will be pleased to welcome new members.

Petone (N.Z.) M.C.—This Club is being run under the temporary leadership of Mr. G. H. Harrison. Meccano boys living in Wellington should get into touch with the *Leader:* Mr. G. H. Harrison, 63, Hutt Road, Wellington, New Zealand.

Brierley Hill M.C.—A Club is being formed here and any boys who are interested should communicate with the *Secretary:* Master C. Lee, The Cottage, 1, Pensnett Road, Brierley Hill, Staffs.

Mossley Hill (Liverpool) M.C.—Master Jack Hesketh, 23, Oakdale Road, Mossley Hill, Liverpool, is endeavouring to start a Meccano Club in that district. Meccano boys in the district are invited to call and see Master Hesketh.



BRIGHT IDEAS

These columns are reserved for dealing with suggestions sent in by Meccano users for new parts, new models and new ways of making Meccano model-building attractive. We are always pleased to hear from any Meccano boy who has an idea which he considers will be useful in the Meccano system.

J. Aspin (Birmingham).—(1) Ideas for new parts are made clearer if instances of their applications are given. What uses have you found for the suggested ratchet gears? (2) We already list a Lattice Girder Bridge in conjunction with the Hornby Train series and have under consideration the introduction of a signal unit for Hornby Trains.

D. Wilman (London, N.).—See the first part of our reply (above) to J. Aspin, Birmingham. What uses have you found for the suggested "free wheel" piece?

F. E. R. Nunn (Colchester).—(1) The great obstacle to a constructional spring motor is the handling of the spring. Serious accidents often occur in the dissembling and assembling of a spring unit in other than expert hands. (2) The universal coupling enables a joint in shafting to be made at varying angles. Your suggested spring coupling would not ensure a positive drive.

M. Demont a Montigny—(En-Arronaise Aisne).—Connecting two face plates with double angle strips of the desired length will give a fairly good representation of an engine boiler. It is rather a difficult matter to standardise curved sections.

Herbert Lee (Bridport, Dorset).—We are continually increasing our range of rolling stock for Hornby Trains. We suggest you apply to your dealer for our latest list.

M. Bordenane (Neuilly, S. Seine).—The theory of your hinged coupling is alright, but unfortunately it is not a practical article of manufacture.

Eric Hart (Hove).—Ball bearings for wheels of small dimensions are not practical. Moreover, they would be too expensive.

A. J. Gibbs (Leytonstone, E.)—Your suggested ball race certainly contains possibilities. We shall go into the matter very carefully.

J. H. Wilson (Dowlais, Glam.).—We shall give careful consideration to your suggestion for fixing a boss to the rack segment.

G. T. Taylor (Marlow).—Models of cars and lorries vary so in size that a standard radiator is not feasible.

Geoffrey W. Dobson (S. Ealing).—(1) Our Electrical Manual will be revised shortly and the principle of the two-way switch will be dealt with in detail. (2) In Model No. 2, Fig. 2, there is also an insulating washer between the switch arm and the plate at 5. (3) By not insulating the negative terminal on the motor the convenient method of framing one side of the motor is possible. This method is adopted in the latest type electric trains.

Martin MacFarlane (Plymouth).—Sorry, but afraid we do not follow your suggestion for a curved strip.

J. Street (Fenton, Staffs.)—(1) We now include in our list of parts detachable discs for attachment to face plates. This should give you the size of flanged wheel for which you ask. (2) If the possibilities of cam wheels develop we shall certainly introduce them. (3) We should be interested to hear of any use you have found for the tapped gear wheel. (4) Your suggested modification to the eye piece, making it capable of being used with a 12½" strip, is sound, and we shall go carefully into the matter.

Douglas Heathfield (Johannesburg, S.A.).—We have introduced a flanged disc somewhat on the lines of your suggestion.

E. Thompson (York).—Rails in Gauge 1 will be issued shortly.

T. A. Bosomworth (Bridlington).—If circumstances permit, we hope to be able to issue a turntable next year.

John Morris (Shinfield, near Reading).—The ½" pitch sprocket wheel you suggest departs from our standard and we could not manufacture it.

Gillie Kowitz (Muldu, Queensland, Australia).—The present spring may be attached by its loop to a strip with a nut and bolt by simply extending the last coil a little.

M. Roesqueyrous (Bordeaux).—We have yet to find sufficient scope for large circular plates to warrant their inclusion in the Meccano system.

Gordon Phillips (E. Croydon).—(1) We doubt the advantages of 18½" and 24½" strips. Up to the present we have found no scope for them. (2) Increased length of rod may be easily effected by the use of the coupling. (3) What are the particular advantages of an isosceles triangular plate?

Stanley Hale (Abingdon).—What uses have you found for the suggested curved strip?

M. Vuillemin-Beaune (Cote d'Or).—(1) A 3" pulley wheel with a rubber ring gives a very good representation of an automobile wheel (see our model Motor Chassis). (2) We think the interior triangular bracket you suggest may have some uses and we shall give it consideration.

John C. Potts (Queensland).—The placing of the boss inside the flange of the flanged wheel would be disadvantageous on account of the inaccessibility of the set screw.

Sidney Heckford (Colchester).—(1) The present 1½" pulley may be used as a loose pulley by leaving the set screw unsecured. (2) We do not see any advantage in a smaller fly wheel. (3) The difficulties of wire stays are their inadaptability to varying lengths, their method of tightening and securing. (4) We have adopted string as being the most convenient agent for driving.

L. Pariente-Oran (Algerie).—(1) We are at the moment experimenting with an escapement constructed with existing Meccano parts. It is being used in a model clock we are designing and has proved very successful. No doubt it would be adapted to the other uses you mention. (2) We already demonstrate an electro magnet in our Electrical Manual.

Rene Castellan (Marseille).—We are sorry, but we do not quite follow your description of the Meccano rail system you have devised. Send us a little sketch.

John C. Morton (Belfast).—We do not advocate the making of track from Meccano parts, as it is not altogether satisfactory.

G. Doulet-Gonesse (Seine et Oise).—It would scarcely be worth while introducing a special sewing machine needle, unless it could be used with an actual working model.

E. Raffells (Anfield, Liverpool).—(1) We deprecate the adverse criticism of the engineers to whom you have submitted your models. We have on record numerous high tributes to Meccano from eminent engineers and scientists, many of whom employ the Meccano System in their experimental work. (2) See our reply above to G. Speight, Sheffield, re bearing. (3) We do not quite follow the suggestion contained in your Fig. B. Also we should be interested to hear of the application you have found for the suggestion in Fig. D.

J. Petitdemange (Neuilly, Seine).—We think that curved girder sections might be useful and we shall consider the idea.

Jack McCaskill (Gairloch, Ross-shire).—(1) A crane drum may be made from two face plates connected together by means of double angle strips of the required length. (2) If we issued a double action steam cylinder, we should have to issue the remainder of the model and as an independent item it would be useless.

John King (Greenwich, S.E.).—We shall give consideration to your suggestion for making braced girders 2½" wide with a centre hole in the latticing.

H. Wright (London, S.E.).—See our reply (above) to John King, Greenwich, re braced girders.

R. Clarke (Woking).—Our latest type of electric motor is fitted with an armature axle of standard size.

Michael Petras (London).—We shall go carefully into the question of providing the bobbins with a means of attachment to Meccano parts.

M. Broc (Arras).—(1) The occasions on which the suggested crank head would be used are so few that it would scarcely be worth introducing it specially. (2) Regarding your second suggestion, would not a short rod with a collar and set screw, to act as the head, serve the same purpose? Further, the threaded pin could be used where a short length rod is required. (3) We have under consideration the introduction of single angle strips which would give the formation you suggest.

Harry C. Key (Calcutta).—We are continually increasing the range of rolling stock of the Hornby Trains and the type of wagon you suggest may be included at a later date.

Austin Broomhead (Birmingham).—You will find that rack strips (No. 110) will serve the purpose of a rack rail.

L. D. Ricketts (Kennington, S.E.11).—We scarcely think it necessary to manufacture a pulley wheel with a deeper groove than that already in existence. For all general purposes we have found that the present depth of groove meets all requirements.

J. W. Walton (Northants).—(1) The part you suggest for the pump arm and plunger may be made with a strip, a strip coupling and a rod. (2) Steps for motor cars, wagons, etc., may be made by attaching either a 1" reversed angle bracket (No. 124) or a ½" reversed angle bracket (No. 125) to the sides of the chassis.

Second Photographic Competition Results.



Photo by [*F. W. Osborne.*

The Nave.

We have pleasure in announcing the results of the above, the names of the prize-winners being as follows:—

Section 1.—Master F. W. Osborne,
50, Earlsdon Avenue, Coventry.

Section 2.—Master G. Rennison,
East View, Seaton Delaval.

Section 3.—Master F. E. Paul,
15, Albert Grove, Southsea.

These boys are to be congratulated on the excellence of their work, Master F. W. Osborne's interior view of a Church being a particularly fine study in light and shade. "The Reaper" with the team of patient horses is a splendid piece of outdoor work, whilst "The Harbour, Naples," is another well-taken view.

The first prize, a No. 1 Hornby Clockwork Train Set, has been despatched to Master Osborne, and Zulu Train Sets to Masters Rennison and Paul.

The general standard of work submitted was very high and was even better than that submitted in our previous Competition. I sincerely trust that I shall have the pleasure of again seeing the names of the prize-winners in competitions of a similar character in the future.

The attention of our readers is drawn to the Third Photographic Competition, full particulars of which appear elsewhere on this page.

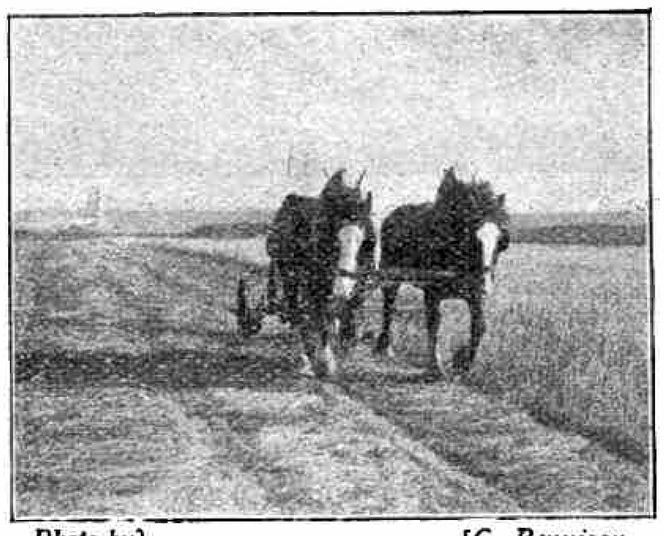


Photo by [*G. Rennison.*

The Reaper.

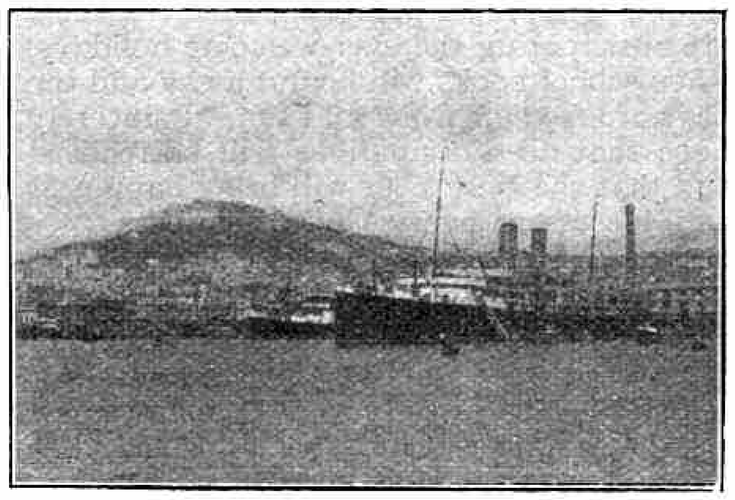


Photo by [*F. E. Paul.*

The Harbour, Naples.

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, and 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.

A. G. Binnie (Wandsworth).—We are pleased to know that our new booklet *Meccano Products* is so popular in your school. It is certainly a fine list of glorious toys. We note that you think that in its new form the "*M.M.*" is "spiffing." Your poetry does not rhyme too well, but there is no doubt as to its sincerity and truthfulness.

L. Cresswell (Forest Gate).—Some day we may be able to start a Photography Column in the "*M.M.*" but at present limited space and a surfeit of interesting articles places it "out of court."

K. Addison (St. Leonards-on-Sea).—We are pleased to know that you enjoyed building a Big Wheel and an Eiffel Tower for your dealer to exhibit in his window. This was good building practice for you, and at the same time you were doing your dealer a great service.

Eric Smith (Dulbydilla).—Thanks for your interesting letter and for your suggestions in connection with the Guild, which we will consider. The photographs are safely to hand and may be used later.

W. Jones (Denton).—We are pleased to know that you find our letters helpful. We trust you will soon be safely through all your present troubles.

Leon Willis (Scarborough).—There is no objection to your Competition drawings being done in pencil, provided they are clear and easy to follow. We are afraid it would not be practicable to build with Meccano parts model aeroplanes that would fly.

Horace Drew (South Croydon).—Your suggestion that we should include a coloured photograph of Mr. Hornby in the Christmas number is a seasonable one but unfortunately there are practical difficulties in the way that make it impossible. We are pleased to hear of the good progress of your Club and look forward to receiving the promised photograph.

A. R. Robinson (Beccles).—We quite agree with you that no man need fear failure if he can truthfully say "I have done my best." We trust your ambition to become a B.Sc. will be fulfilled and that you will win that University Scholarship.

H. White (Newton Hyde).—We hope shortly to deal with the questions you have raised in the Radio Section of the "*M.M.*" In the meantime you will be interested to know that both light and electric waves travel at about 186,000 miles per second, while sound waves travel about 1,090 feet per second.

E. J. Baker (Torrington).—We are pleased to have your opinion that the "*M.M.*" is better with every issue. The suggestion regarding Club note-paper has not been overlooked and we are inclined to agree with you, that for Meccano writing-pads there would be a "roaring trade."

Robert Allen (Darvel).—
"Father sits by the fire and reads the 'Evening Times.'
My sister, on the hearthrug, looks at her nursery rhymes,
Mother in the parlour, plays upon the piano,
But I'm the happiest of them all with my Meccano."

I am sure all our readers will agree with you, Robert, but we must mention that Meccano does not rhyme with "piano." The correct pronunciation is, of course, "Mek-ar-no."

J. Thomson (Leith).—"I hope that stories adventure, yarns and so forth will never appear in the "*M.M.*" for there is quite a sufficiency of other information without taking up valuable space for stories."—We are inclined to agree with you, John, but many of our readers have expressed the desire that we should include fiction and, as you know, it is an Editor's ambition to try to satisfy the taste of all his readers.

F. K. Butterworth (London, S.E.26).—Many readers of the "*M.M.*" are clever carpenters, and no doubt they have already adapted your suggestion to make a special cupboard for their spare parts.

E. Robinson (Lyndhurst).—"The Magazine improves in all ways with every issue. When I read the last number I felt like coming to Liverpool and giving you all the praise I possibly could."—We should have been pleased to see you, Ernest, and we hope you will be able to pay us a visit in the future.

MECCANO
FOR CHRISTMAS



NEW PARTS

BIGGER OUTFITS

SPLENDID NEW MODELS

OUTFITS FROM 5/- to 370/-

EVERY MECCANO PART IS A REAL ENGINEERING PIECE

£250 PRIZE COMPETITION

Towers, Cranes, Bridges, and hundreds of Engineering structures may be built in model form by any boy with Meccano. This year Meccano Outfits are bigger and hundreds of new models are made possible by the introduction of new parts.

SEND FOR THIS BOOK

If you have not already had this splendid new Meccano book send for it to-day. A copy will be mailed free on request. Put "*M.M.*" after your name.

MECCANO LTD., Binns Road, LIVERPOOL



Choosing My Christmas Present.

By Mrs. Hilda Hadley.

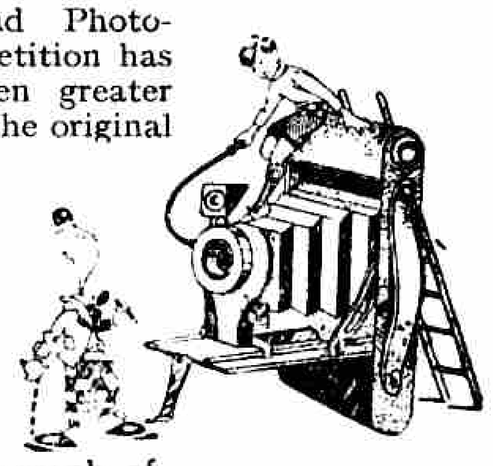
I.

When boys and girls are filled with glee,
And Xmas holidays are here,
My Mother says: "Now, Peter, see
What you would like to have this year;
There are some lovely books to buy,
And rubber fishes by the score,
Toy aeroplanes that really fly,
And cannons for the nursery floor."
But my reply is always plain:
"*I want a Hornby Clockwork Train!*"

II.

I like tin soldiers very much,
The teddy bears are fully grown,
But I would give a million such
To have one "Hornby" all my own
The hands within my pockets itch
To wind and run it on the floor,
O would I were an Idle Rich,
Instead of just a Newly Poor!
So this is always my refrain:
"*I want a Hornby Clockwork Train!*"

Third Photo. Competition.



Our second Photographic Competition has met with even greater success than the original competition, and in response to several requests we announce a third photographic competition. The prize will be awarded for the best photograph of

"A WINTER SCENE."

There are no restrictions or entry fees and any type of camera may be used. Prints may be of any size and finished in any way, it being immaterial whether they are mounted or not. The photographs must be taken by the competitor but the developing and printing may be done by others. The entries will be judged on their pictorial merit.

The closing date is 31 January, 1923. The first prize will be a No. 1 Hornby Clockwork Train Set and other prizes will also be awarded according to merit.

A Christmas Present for your Chum.

For Christmas, or New Year would you not like to give your chum a present that he will really appreciate? Let us tell you how you may do this—send him the *Meccano Magazine* regularly. To send him six issues will cost you 6d. or twelve issues will cost 1/–. As each issue reaches him by post, your friend will be reminded of your thoughtfulness, and we warrant he will thoroughly enjoy reading every line of this fine Magazine. With the first number we will write a little note to your friend telling him of your kindness and conveying your good wishes to him.

Special order forms in connection with the above matter may be obtained on application. Orders sent by letter will, however, receive the same attention.

Magazine Binder.



In response to numerous requests we have introduced a spring-back binder for *Meccano Magazines*. The binder has a strong stiff back, covered with imitation leather, tastefully tooled. It takes a large number of copies and keeps them neat and clean. In black, lettered gold. Price 3/– each, post free.

RADIO REPLIES (*continued from page 6*).

F. Berry (Cloughford).—The use of an ordinary telephone ear-piece receiver is not recommended, as the resistance is often unsuited to radio work. The resistance of radio 'phones ranges from 1,000 to 4,000 ohms. The Meccano 'phone has a resistance of 2,000 ohms, and is suitable for all general radio purposes.

W. Fleming (London, W.1).—Meccano Radio Sets are designed to conform to the requirements of the P.M.G. and are adapted to tune to certain limits in the vicinity of the wave length used for Broadcasting. The Meccano Valve Set will have a wider range of reception.

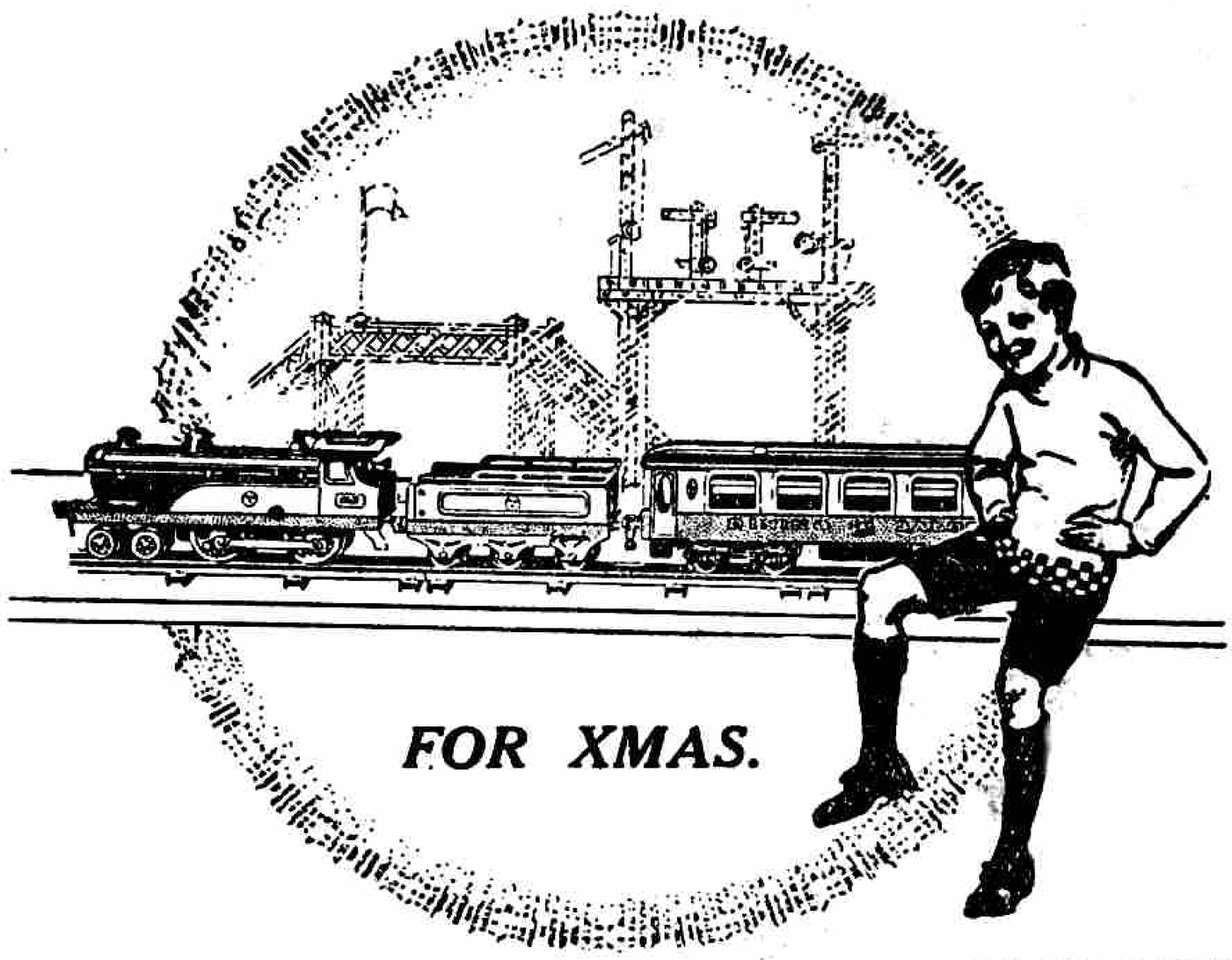
R. W. Schofield (Southport).—Your nearest Broadcasting Station will be Manchester, which is outside the range of a Crystal Set for receiving telephony. There is, I believe, an amateur station at Birkdale, from which messages are occasionally transmitted, although I have no definite information on this point.

F. Hulatt (London, S.E.1).—The resistance of the Meccano 'phone is 2,000 ohms. Write to me again when you encounter any radio difficulty.

N. Sunderland (Manchester).—The addition of plates to the condenser would not increase the wave length. If, however, the condenser is placed in the secondary circuit, instead of its present position in the primary circuit, longer wave lengths could be received. A loud speaker might be used with a Crystal Set, but would not give good results.

C. Hetherington (Glasgow).—C.W. signals can be received by a Valve Set because it possesses a Heterodyne ratio or action (which roughly means, rythmic beating on time of oscillations) a property not possessed by a Crystal Receiver.

HORNBY CLOCKWORK TRAINS



FOR XMAS.

PERFECT MECHANISM - BEAUTIFUL FINISH - STANDARDISED PARTS

PRICES.

No. 1 SET.

Passenger Sets each	35/–
Goods " "	25/6
Locos "	16/–
Tenders "	3/6
Passenger Coaches	6/6
Wagons	3/9

No. 2 SET.

Pullman Sets each	70/–
Goods " "	45/–
Locos "	30/–
Tenders "	4/–
Pullman Cars "	16/–
Wagons "	3/9

The Hornby Train is a beautiful piece of workmanship, the smartest looking and the smoothest running Clockwork Train you ever saw; delightful to handle and to watch as it dashes busily round its track. One of its most valuable features is that it can be taken to pieces and rebuilt just like a Meccano model. Any lost or damaged parts may be replaced with new ones.

A HORNBY TRAIN LASTS FOR EVER!



FREE TO READERS OF THE "*M.M.*"

This splendid new Meccano book describes the Hornby and Zulu Clockwork Trains and no boy should be without it. A copy will be mailed free on request. Put "*M.M.*" after your name for reference.

B. Summers (Westcott).—I am afraid a reliable telephone receiver cannot be obtained at a cheaper price than 18/6.

S. Smith (London, S.W.4).—An open space is preferable for the erection of an aerial but a Radio wave is not greatly influenced by structural matter, such as buildings, trees and the like. Provided that a reasonable height at one end of the aerial can be secured, and the aerial well insulated, reception will not be difficult. I suggest you erect an aerial at least 20 feet from the earth at one end, and if you can attain this elevation at the corresponding end, so much the better. If you are unable to elevate your aerial at both ends to 20 feet, it will be in order if it runs from a height of 20 feet at the one end, to 8 to 12 feet at the other. The position of the aerial is chiefly a question of local conditions.

Noel Brewis (Gateshead).—Yes, there is to be a Broadcasting Station at Newcastle and it will be possible for you to listen in with a Meccano Crystal Receiving Set.

T. N. McNaughtan (Glasgow).—Broadcasting Stations are to be erected at London, Plymouth, Birmingham, Manchester, Newcastle, and Aberdeen. There will also be a Broadcasting Station at either Glasgow or Edinburgh.

F. Whitworth (Manchester).—The aerial is a very important part of the Wireless Outfit, for it receives the vibrations or impulses sent out by the transmitting stations and conveys them by means of the leading-in wire to the receiver. The term antenna is often used to signify an aerial—for the meaning of antenna is a feeder—and that is the duty of a wireless aerial, literally to feel or search for signals.

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