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Such a gathering is, of course, quite impossible, but Mr. Hornby has thought of celebrating the fifteenth birthday of Meccano Limited in a manner that will, he hopes, bring joy to the hearts of thousands of Meccano boys. He has decided to give a handsome birthday present to each purchaser of a Meccano Outfit, Hornby, Zulu or King George V. Train Set, whose birthday falls on the same date as his own.

This birthday gift will take the form of a handsome wallet in Morocco leather, and Mr. Hornby has taken the greatest interest and pleasure in its selection and design. It is strong, durable, and of excellent quality, and will wear for many years. Mr. Hornby hopes that it will serve as a pleasant reminder of him to those boys whose birthday is on the same date as his own.

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The latest development in radio-telegraphy makes it possible to control ships and aeroplanes from land stations.

* * *

The principle of this new development is very simple, and consists of transmitting on very short wave lengths to the object to be controlled. Reception is by valves, which are made to operate magnets, each having a special duty.

* * *

It is possible that in the near future New Zealand will have direct wireless communication instead of the present chain or relay system.

* * *

On a four-hour watch a Radio operator on the great liner "*Majestic*" recently transmitted two hundred complete messages. As the number of words ranged from 8—65 each message, the rate was a little more than one message in a minute.

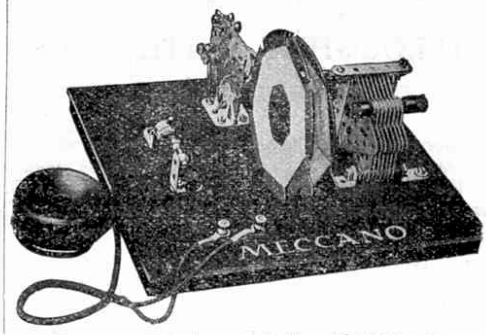
* * *

The Czecho-Slovakian Government has imposed a tax on all owners of radio apparatus.

* * *

A gentleman residing in Aberystwyth, whilst listening-in to an American broadcasting station, distinctly heard the clapping of hands in the concert room.

Build your own Radio Receiver



In a recent issue of the "*M.M.*" we gave full particulars for building a Radio Receiver from Meccano parts. These instructions may now be obtained in the form of a beautifully illustrated leaflet, printed on art paper (price 4d., post free).

In addition to Meccano parts being of service for the construction of a complete Crystal Receiving Set, they are of particular use for experimenting in Radio. Their standardisation and universal adaptability enable new circuits to be tried out, and changes to be quickly made.

If you are building a Radio Receiver or experimenting in any way, you will find these special Meccano Radio parts of great assistance.

Next month we hope to give a full list of Meccano Radio parts in fibre.

H. Foy (Salford).—If you crossed your aerial with your neighbour's in the way you indicate, and both of you were using crystal receivers, there would be no difference in the clarity and strength of the messages received. On the other hand, if one of you was using a valve set, then both your instruments would be affected by oscillation, so that it would be impossible for either of you to receive intelligible messages.

L. Hart (Liverpool).—Using a coil 2" diameter and 5" in length you should be able to receive broadcast transmitted on a wave-length of 200 to 400 metres up to a distance of 15 miles. From this you will see that it is impossible to receive telephony from Manchester. If you acquired a knowledge of the Morse code, however, you would find great enjoyment in listening-in to telegraphy transmitted from Seaforth and from ships at sea.

Gerald Briggs and Edwin England (Malta).—The Meccano agents in Malta (Malta Import & Export Agency, 15, Marina, Malta) will always be very happy to answer questions relating to local conditions governing the reception of telephony and telegraphy.

A. L. Chattell (Bedford).—A frame aerial erected in the way you mention would be quite efficient used in conjunction with a valve receiver. A frame aerial is not as good as the open type, however, and should not be used unless absolutely necessary, or by way of interesting experiment.

N. McAndrew (York).—Manchester is the nearest broadcasting station to York, but as it is approximately 70 miles distant the reception of broadcast with a Crystal Receiver would be impossible.

S. Williams (London N.W.6).—One Meccano Headphone is included in the Receiving Set. If desired, additional phones may be purchased separately at a cost of 10/- each.

John Hopkinson (Sowerby Bridge).—An ordinary telephone head-piece is not adapted to Radio receiving, it will be necessary for you to obtain more delicate head-phones.

HERE'S A LOUD SPEAKER YOU CAN AFFORD IT ONLY COSTS £1

120 ohms or 2,000 ohms.

We have only been able to secure a limited number of these excellent instruments and consequently can only accept orders with cash. Delivery will be made in strict rotation and as quickly as possible.

These Loud Speakers are thoroughly reliable and efficient and give excellent results.

Black Satin Finish, complete with Cord.

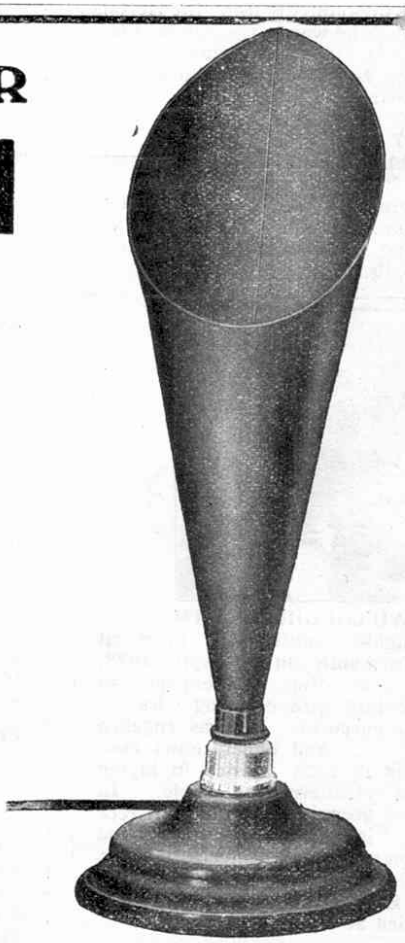
Headphones only 18/-

120 ohms, 2,000 ohms or 4,000 ohms.

Guaranteed efficient. Money returned if not satisfied. Send your order to-day.

H. W. ROSENWALD

21, Dale Street, LIVERPOOL



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A Talk about Aerials—(*cont. from page* 15)

2—4ft. below the ground, and soldering or clipping the earth wire to it. The wire netting should be laid flat in moist ground if possible, for it is due to the moisture in the earth that it is a conductor.

X.

As will be gathered, there is considerable scope for ingenuity in the erection of an aerial, and there is great fun to be obtained from experimenting with the various types.

It should be remembered that an aerial does not necessarily require to conform to the recognised standard type. For instance, before the war, I received time signals from the Eiffel Tower, Paris, using an ordinary bedstead as an aerial, well insulated from the floor by placing under the four legs glass supports sometimes used under pianos. Good Morse signals were also received on a wire stretched across a large lumber room at the top of the house, which wire, when not being employed for the reception of wireless signals, was used as an indoor clothes line. A Manchester friend of mine, with a four valve set, receives broadcast from the Manchester station using an ordinary kettle as an aerial!

(THE END).

Meccano Manuals of Instructions

The new complete Manual of Instructions is beautifully illustrated and contains all directions necessary for the construction of 400 splendid models. It includes a large number of entirely new and improved models—Transporter Bridge, Rotating and Hydraulic Crane, Theodolite, Travelling Gantry, Dredger, Lathe, Coal Cutting Machine, and many others of special interest.

Several new movements are included in the Manua and these are fully explained. Price 2/6. Postage 4d. extra.

There are also a limited amount of the No. 3 Manuals remaining. This Manual contains instructions for building a large number of recent and imposing models of great interest. These include Signal Gantry, Level Crossing Gates, Forth Bridge, Coal Cutting Machine, Vertical Log Saw. Each is beautifully illustrated in half-tone, a process of printing by which the component parts of every model may be clearly seen. Price 1/4½ post free.

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These Will Interest You

The Meccano Writing Pad is specially made for Meccano boys. It consists of fifty sheets of tinted bank paper, with cover and blotting. Each sheet bears a reproduction of the block shown on the cover. Price 1/- from any Meccano Dealer, or 1/3 direct from this office.

Bind your "*M.M.*"

This spring-back binder for *Meccano Magazines* 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).

Meccano Ltd., Binns Road, Liverpool

Results of the 1923-4 Championship

Model Building Competition

This has been a most successful competition, and I want to commend all those who have entered on the general excellence of the models that have been submitted.

I warmly congratulate the Meccano Gold Medallist, the Cup holders and the Silver and Bronze Medallists in the various countries on their successes. I am sure that the handsome awards that are being despatched to them will serve as a pleasant reminder of a memorable contest.

I am arranging for a number of the prize-winning models to be illustrated in the *Meccano Magazine* from time to time as space permits. Whilst it will undoubtedly give pleasure to the winners to see their models illustrated and described, the models themselves will also provide happy hours of fun for the many, many thousands who daily follow the fortunes of Meccano. Every Meccano boy will certainly admire these models and wish to build them.

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Frank Hornby

Managing Director,
MECCANO LIMITED.

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SECTION "C": CHAMPIONSHIP CUPS

Group 1. Palmer, J. W., 20, All Saints' Green, Norwich. Meccano Tower.

Group 2. Whitney, E. H., Jnr., "Holmes," c/o P. O. Maclear, Cape Province, S. Africa. Self-Feeding and Reversing Electric Lathe.

Group 3. Cecco, E. de, Rivadavia 5492, Buenos Aires, Argentina. Aerial Pullman.

Group 4. Soucin, B., 51, Rue Grande Tannerie, Troyes, Aube, France. Motor Plough.

Group 5. Vuurde, G. V., Malakkastraat 166, Den Haag, Holland. Switch Gear.

Group 6. Tremi, D., Corso Monte Grappa 32, Genova, Italy. Diesel Motor.

Group 7. Surroca, E., Fernando Puig 25 (torre), Barcelona (SG), Spain. Electric Motor Chassis.

SECTION "B": CHAMPIONSHIP CUPS

Group 1. Shaw, J. A., 36, Randolph Street, Carlton Road, Nottingham. Twisting Machine.

Group 2. Brown, L. F., 202, Jarvie Street, Toronto, Canada. Cylinder Press.

Group 3. No Award.

Group 4. Richard, J., 9, Grand'Rue, Vandoeuvre, par Nancy, France. Funicular Railway and Lift.

Group 5. Boerma, A. P. A., Bilstraat 118, Utrecht, Holland. Clock.

Group 6. Vassallo, E., Viale Attilio Frosini 357, Pistoia, Firenze, Italy. Switchback.

Group 7. Agusti-Coranti N., Mallorca 313, Barcelona, Spain. Drawing Machine.

SECTION "A": CHAMPIONSHIP CUPS

Group 1. Walker, H. O., Knott Hall, Hebden Bridge, Yorks. Horizontal Tandem Condensing Steam Engine with Boiler.

Group 2. Kitto, F. E. A., Mount Pleasant, Bransgore, near Christchurch, New Zealand. Engineering Workshop.

Group 3. No Award.

Group 4. Bruère, P. de la, 76, Rue de la Bastille, Nantes, France. Travelling Gantry.

Group 5. Paalman, W., Jacob Cremerstraat 44, Arnhem, Holland. Electric Tram.

Group 6. Rognato, C., Piazzetta Carbone 18a, Ferrara. Cutting Machine for Vermicelli or Spaghetti.

Group 7. Viñamata, L. A., Mallorca 308-2°, Barcelona, Spain. Electric Tram.

SECTION "C": SILVER MEDALS

Adam, P., 2 Rue Louis Blanc, Bellevue, S.-et-O., France. Percussion Sounding Machine.
Aillaud, V., Agent Technique, Quartier Antelme, Six-Fours-la-Plage, Var, France. Electric Recording Chronograph.
Appert, P., 4, Boulevard de Cimiez, Nice, France. Mechanical Wool Rake.
Baché, L., 15, Avenue de la République, Colmar, France. Coal Loader.
Barrett, W. G., "Guernsey," 6, Irwell Street, Observatory, Capetown, S. Africa. Coal Transporter.
Bonfilhon, E., 18, Boulevard du 4 Septembre, La Seyne-sur-Mer, Var, France. Arc Lamp.
Boudier, P., 5, Rue Jeanne d'Arc, Rouen, France. Fair Amusement.
Brend, M., 83-5, Boulevard de Charonne, Paris XI. Funicular Railway.
Busoni, E., Via del Castagno 3, Firenze 22, Italy. Typewriter.
Chesters, H., 74, Ford Lane, Crewe. Boiler Lifting Crane.
Ching, E. J., 153, White Hart Lane, Barnes, London, S.W.13. Concrete Surface Crusher.
Corby, G., 99, Gatley Road, Cheadle, Ches. Variable Power Transmission.
Corsi, M., Lungarno Vespucci 2, Firenze, Italy. Express Locomotive.
Cosslett, V. E., 55, Dyer Street, Cirencester, Glos. Planimeter.
Couderos, P., Cosne d'Allier, France. Radial Travelling Crane.
Crankshaw, D., 5, Macleod Street, Nelson, Lancs. Station.
Dawber, S., 40, Harrogate Street, Wigan. Air Boats.
Degand, P., 61, Rue des Saints Pères, Paris 6. "Stock" Motor Plough.
Domenech, E. P., Calle de Aribau 98, Barcelona, Spain. Locomotive and Wagon.
Ecclestone, E., 123, Parliament Street, Burnley, Lancs. Mortar Mill.
Ferraro, G. O., Via Roma 58, Casale Monferrato, Alessandria, Italy. Double-Movement Revolving Swings.
Fong, C. S., 18, Middle Road, Singapore, Straits Settlements. Lock and Railway Drawbridge.
François, F., Perception, Viviers, Ardèche, France. Electric Crane.
Gardini, A., Machiavelli 25 int.5, Roma, Italy. Ironclad.
Garnier, A., Chez Mr. Sergeant, Boutencourt, par Blangy s/Bresle, Seine Infre., France. Shaping Machine.
Glauser, H., Quai de la Thièle 27, Yverdon, Switzerland. Concrete Mixer.
Goiffon, G., 61, Boulevard de la Madeleine, Marseille, France. Motor Loading Elevator.
Hilsum, M., Godelinderweg, Hilversum, Holland. Rack Railway.
Jacini, G., Via del Lauro 3, Milano 1, Italy. The Smiths.
Janne, E., 17, Rue d'Algésiras, Brest, Finistère, France. "Massicot" Paper Cutting Machine.
Jovellar, J. & J., Coso 176-3, Zaragoza, Spain. Motor Cycle and Sidecar.
Kennelly, F. T., 10, Bennetts Castle Lane, Chadwell Heath, Essex. Concrete Mixer.
Knowles, A. V., 20, Penrith Road, Basingstoke. Constantinesco Torque Converter.
L'Estrange, G. B., The Rectory, Killylea, Co. Armagh. Floating Crane.
Lake, R. A., Cranbrook, Albany Road, Harpfields, Stoke-on-Trent. Dragline Excavator.
MacGowan, G., 25-6, Luker Road, Allahabad, U.P., India. Combined Letter Balance and Weather Indicator.
Mackenzie, G., 9, Cowgatehead, Edinburgh. Triple Expansion Marine Engine.
Manduca, J. de Conti, Eltham House, 54, Sda Ridolfo, Sliema, Malta. Ship Coaler.
Mateos-Aguirre, O., Claudio Coello 109, Madrid, Spain. Bale Press.
Muñoz, R., Calle General Lopez 60 (oeste), Santa Fe, Argentina. Flax-Cutting Machine.

Further Adventures in Meccanoland

BRAINS AND INGENUITY IN THE CHAMPIONSHIP CONTEST

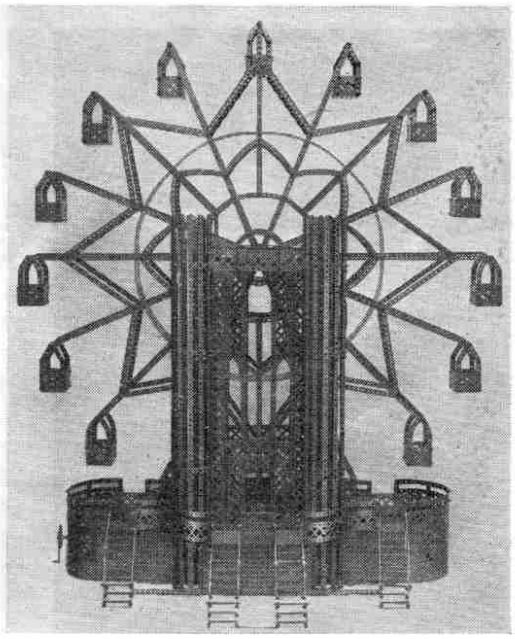
by "Spanner"

I HAVE just returned to London after a visit to the north of England, and on my way up I had an interesting experience about which I want to tell you boys. Before I started I made up my mind to pay a visit to the Meccano headquarters in order to see some of the new models in which I was specially interested, and I had written to Mr. Hornby telling him that I should arrive on a certain day.

When I reached the offices I was told that Mr. Hornby was in the model room, and I was taken over to see him. I found him with two other gentlemen, absorbed in the study of a vast number of photographs and drawings which, they told me, were the entries in the Meccano Championship Competition.

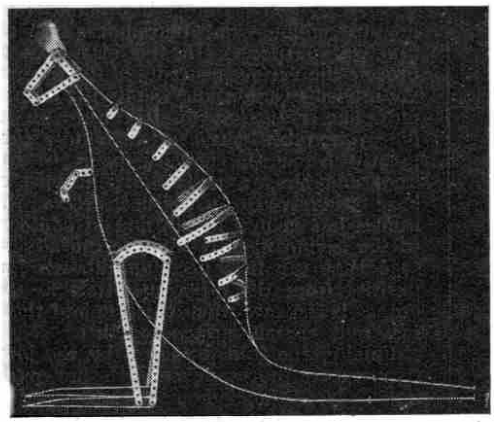
The adjudication had almost been completed at the time of my arrival, and Mr. Hornby told me what a difficult but fascinating task it had been.

"The keenest interest has been taken in this contest," he said, "and I have been amazed by the number of entries and by the ingenuity and inventiveness shown by the competitors. Another feature that is very gratifying to me is the increased interest taken in Meccano by boys in remote parts of the world."



Big Wheel

(Entered by H. Woodman, Melksham, Wilts.)



Kangaroo

(Entered by E. Hayward, Perth, West Australia)

Thousands of Entries

Mr. Hornby asked me if I would care to look through some of the entries, and you may be sure that I jumped at the opportunity. In fact, I told him that nothing would give me greater pleasure than to examine every single entry as he had done, and I observed an amused twinkle in his eye as he told me to "go ahead."

It was with great enthusiasm that I attacked the first classified section, which happened to be Section B containing all the entries from Great Britain, but at the end of two hours I found I had scarcely made any impression on the mass of entries! It became evident that either I should have to devote as many weeks to the examination as the judges had already done, or I should have to go through the entries much more quickly. I decided on the latter course, and made a selection of those entries from all countries that seemed to me to be worthy of attention and comment, and I hope that what I found of interest in them will also prove of interest to readers of the "*M.M.*"

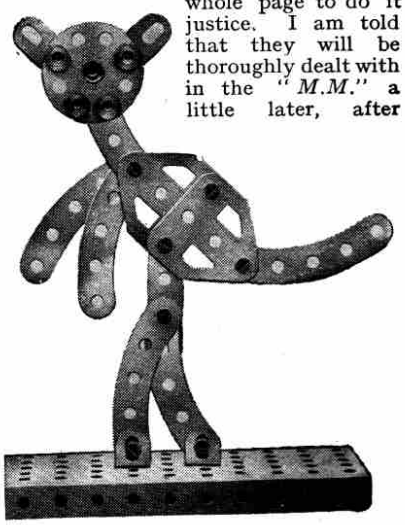
A Million Friends

It seemed to me to be a wonderful thing to have the work of all these vigorous young brains brought together in this way. There were entries—thousands of them—from every country, each entrant striving to create something new and to invent something worthy of commendation, and which would give an added pleasure to dwellers in the great Meccano World.

A large number of the competitors had sent photographs of themselves, either standing by their models or separately, and as I looked at their smiling faces I envied Mr. Hornby his million boy friends. There were smiles and greetings in all languages, and I saw that most of the boys were wearing the little triangular Meccano Guild Badge on their coats. This made me think what a glorious meeting we should have if only we could all get together! As a matter of fact, the competitors in this great Championship Contest had really come together in spirit at that moment, and there they were all smiling at each other and at me. I just yearned to be able to take each one in a quiet corner and talk over his model with him and discuss his difficulties.

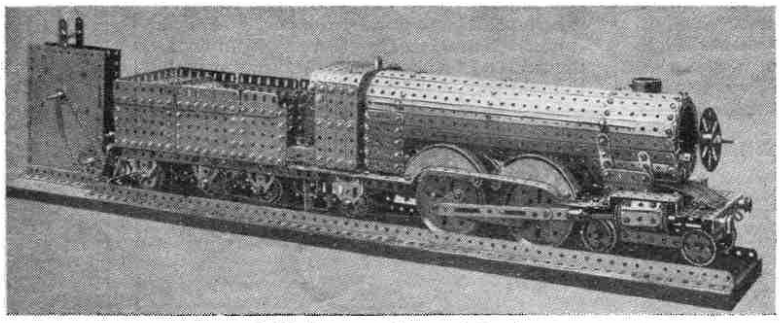
Better Photographs Wanted

I examined the entries that had secured the Championship Cups, but you will all realise that I cannot describe these, for each one would require a whole page to do it justice. I am told that they will be thoroughly dealt with in the "*M.M.*" a little later, after models have been built up from the details and photographs submitted by the entrants. I must say how excellent they all were, however, and how much I admired the ingenuity and inventiveness shown in them. My purpose in this article is rather to deal with Competition entries as a whole, and to tell you of one or two features of them that seemed to be both interesting and curious.



Felix

(Entered by K. G. Boggis, Beccles)

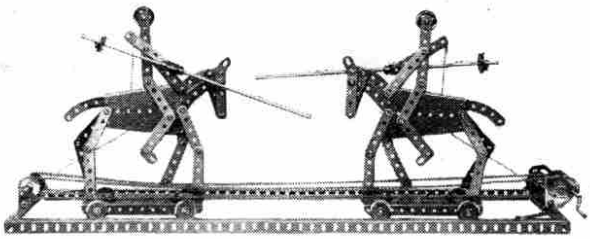


G.W. Locomotive and Tender

(Entered by W. Kendrick, Warrington)

Let me here remark on some of the reasons that

entries failed to attract the attention of the judges. Quite a number of competitors had sent in what were undoubtedly interesting models, but the photographs they sent did them anything but justice. In several instances the models in the photographs measured less than one inch



Knights Jousting

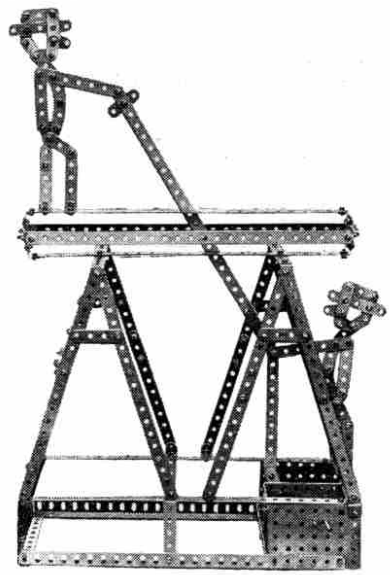
(Entered by R. Rousseau, Le Mans, Sarthe)

in diameter! You may imagine that it was quite impossible for the judges to form any idea of the details of construction of the models in photographs so small. Other photographs had been sent in "un-fixed," and by the time they reached the judges they had blackened all over and the image had disappeared completely. In such instances the boys had to be written to for new photographs and further particulars, all of which added to the delays and difficulties of adjudication. A perfectly clear photograph or drawing helps the judges considerably, and naturally increases the competitor's chances of gaining honours.

A Scale Model Locomotive

I observed that quite a number of competitors had designed very excellent models of locomotives, and much ingenuity had been shown in adapting Meccano parts to this somewhat trying type of structure. The drawback to models of this kind, of course, is that, on account of their weight and size, they cannot be used on the ordinary toy railway track. Although many boys may get an immense amount of pleasure in designing and constructing locos, these can never be classed as completely satisfactory Meccano models because they cannot be utilised for real work as in the case of a model of a Crane, Wagon, Clock or Chassis, etc.

For those boys who take an interest in designing locos, I am illustrating a very excellent model, sent in by W. Kendrick, of Warrington. Here the approved lines of loco construction have been followed with remarkable faithfulness, the special feature of the model being that it is on a scale of ½" to the foot. The model is founded on the general principles and construction of this type and is correct in proportion throughout. It is evident that much careful thought has been used in the design of the model, and I recommend my readers to have a shot at a similar construction and endeavour to improve on this fine effort.



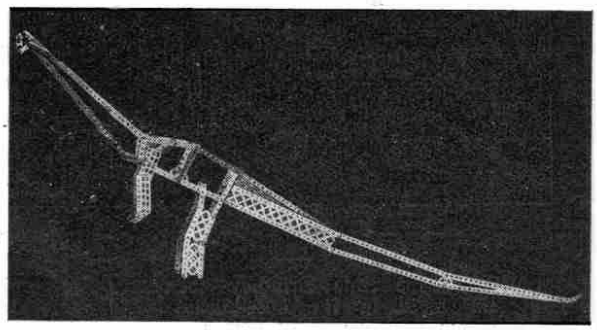
Sawing a Log

(Entered by R. Wijffels, St. Kruis, Zeeland, Holland)

Curved and Straight Lines

I have often thought that my young friends do not make quite sufficient use of the various curved parts that have been added to the Meccano system in recent years. Curved lines are often much more pleasing and artistic than straight lines, especially in constructional — as distinguished from mechanical —models. Thus the new Curved Strips, Architraves, Large Wheel Segments, etc., may often be used with pleasing effect.

I was pleased to notice that some of the competitors had recognised this, and the illustration on the previous page is a good example of what I mean. This Big Wheel was designed by H. Woodman, of Melksham,



Extinct Diplodocus

(Entered by W. Harvey, Thornton Heath)

Wilts., and incidentally, in the letter that accompanied his entry, he made a very happy reference to the many delightful evenings that Meccano had provided. Note the pleasing curves that this competitor has so successfully introduced. This is undoubtedly a good model, but in some of its details I believe it could even now be improved. I should be glad to know that some of my readers have conceived a liking for Mr. Woodman's impressive structure, and that they intend to try and go one better!

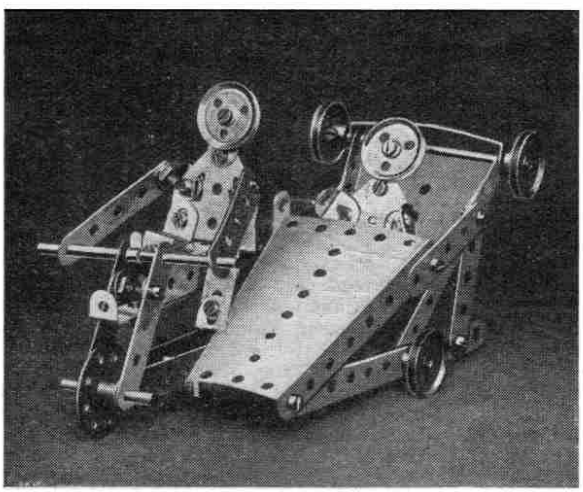
"Felix" and other Humorous Models

I was anxious to see how the younger boys had fared in this competition, and as I scanned the entries I experienced some pleasant thrills and incidentally had one or two unexpected laughs. Here for instance is a model sent in by K. G. Boggis, of Geldeston, which he calls "Felix." He states that Felix can sit down or run and perform all kinds of antics. He certainly cuts a comical figure!

Another humorous effort was that of R. Rousseau, of Le Mans, Sarthe, who sent in a model of jousting knights which he called the "Tournament." Both knights in armour and their fiery steeds are very life-like, and by turning a handle they may be made to tilt at each other in a very realistic manner.

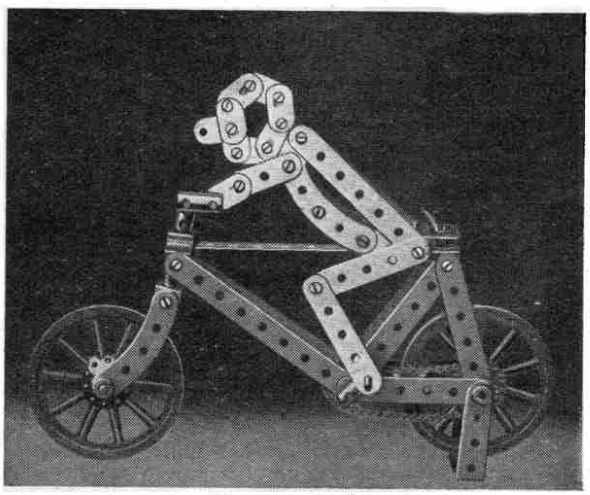
R. Wijffels, of St. Kruis, Zeeland, Holland, demonstrated that he has an

(Continued on page 245)



"A Meccano Boy's First Ride"

(Entered by M. Manning, Bristol)



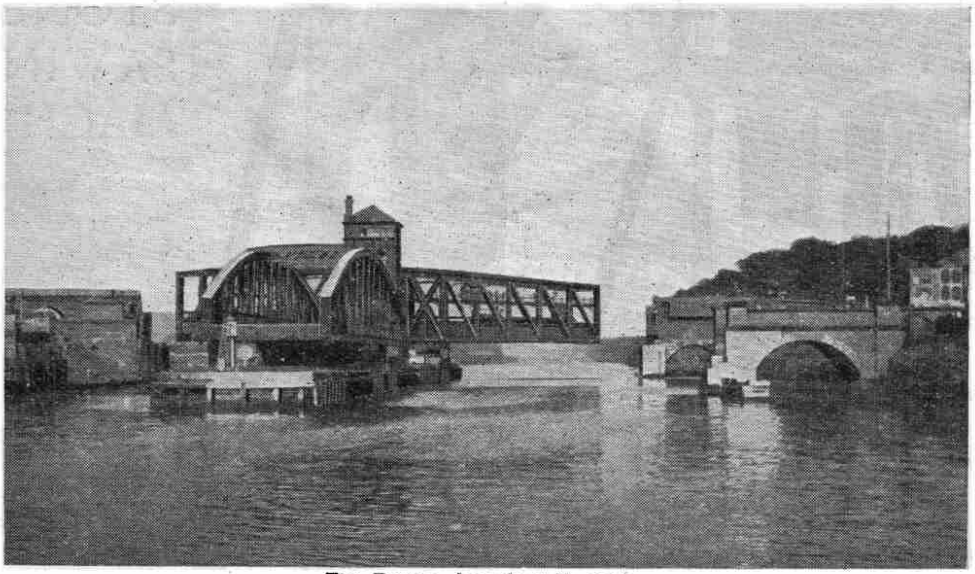
Meccano Cyclist

(Entered by J. Bouchenoir, Drancy, France)

operations, and plans were prepared and the application was put in. In the meantime work proceeded on such portions of the canal as could be carried out under the powers already obtained.

The necessary Parliamentary sanction was obtained in 1760, and now the Duke was free to carry his canal over the Irwell near Barton Bridge, about five miles west of Manchester, by means of a series of arches, and he was further authorised to extend a short branch to Longford Bridge near Stretford, the branch to Hollin Ferry being abandoned.

The aqueduct was, of course, the most difficult part of the undertaking. The proposal to carry barges on a bridge over the top of other barges navigating the river below was ridiculed by the general public as the idea of a lunatic. Even the Duke himself was rather uneasy about the project, and he called in another engineer to give his opinion. To the dismay of Brindley, this engineer said the aqueduct scheme was sheer folly, and wound up his report to the Duke with the words: "I have often heard of castles in the air, but never before saw where any of them were to be erected." Brindley was still confident as to the ultimate success of his scheme, however, and finally the Duke authorised him to carry it out.



The Barton Aqueduct To-day

Brindley's Remarkable Ingenuity

The Barton aqueduct built by Brindley was about 200 yards in length and 12 yards in width, the middle portion being supported by a bridge of three arches. It carried the canal over the river at a height of 39 ft., and so allowed the largest barges to pass beneath without lowering their masts. The canal passed over the arches in a channel carefully "puddled," that is, lined with a carefully-prepared mixture of well-tempered clay and sand, through which the water could not penetrate.

Brindley's remarkable ingenuity and resource are well illustrated by the way in which he dealt with the streams that flowed across the course of the canal. It was one of his fixed principles never to allow a stream or river to flow into a canal except for the purpose of supply, because he realised that in times of flood the rush of water into the canal would be dangerous to navigation. The plan he adopted in dealing with the River Medlock is an excellent example of his methods. He constructed a weir 366 yards in circumference, over which the river flowed into a well, from which it was conveyed along a subterranean passage into the River Irwell, which is close at hand.

An Underground Canal

In addition to cutting the canal itself, Brindley excavated a large basin at Worsley Mill, the starting point of the canal. The idea of this was to provide accommodation for a number of barges, and thus serve as a head for the navigation. He also cut a subterranean channel from the basin to connect the chief workings of the mine, so that the coal could be readily transferred in boats to the place of sale. In Brindley's time this underground canal was about a mile in length, but later it was enlarged until it extended for nearly 40 miles in all directions. The tunnel was arched with brickwork where it passed through coal or earth, but in passing through solid rock it was simply hewn out. The barges when loaded were drawn along by means of staples fixed in the sides of the tunnel, but when empty, and therefore higher in the water, they were so close to the roof that it was necessary for the bargemen to lie on their backs and propel the boats by pushing with their feet against the roof. This method was known as "legging."

The canal was successfully completed, and on 17th July, 1761, the first boatload of the Duke's coal passed over the Barton aqueduct on its way to Manchester.

The result of Brindley's "castle in the air" was that the people of Manchester received regular supplies of coal at a much cheaper rate than ever before. For a long time the aqueduct remained the wonder of the neighbourhood, crowds of people coming daily from all parts to see it.

Brindley in London

The canal between Worsley and Manchester had opened up a regular supply of coal, but there remained the difficulty of transporting the raw materials of trade from Liverpool to Manchester. The Duke of Bridgewater was determined to overcome this difficulty, and in less than two months from the opening of the Worsley canal Brindley was engaged in a survey for a proposed canal to join it with the Mersey near Runcorn, from where there was a natural tideway to Liverpool.

At the same time the Duke made arrangements to present a Bill before Parliament, and early in 1762 Brindley went to London as chief witness before a Parliamentary Committee. He was naturally a very thrifty man, spending as little as possible on clothes, but on this occasion he apparently thought it necessary to be well dressed. His note-books tell us that he spent one guinea—an entire week's pay—on a pair of new breeches, two guineas on a coat and waistcoat of broadcloth, and six shillings on a pair of new shoes!

It was during this stay in London that Brindley paid his first and last visit to a theatre. His friend, Gilbert, the Duke's agent, persuaded him to go to see the famous actor Garrick in the play of "*Richard III.*" but the result was unfortunate. The play excited Brindley so much and so completely disturbed his ideas that he was unable to do any business at all for some days! He declared that nothing should ever tempt him again to enter a theatre, and he kept steadfastly to his resolution.

NEXT MONTH:—

THE GRAND TRUNK CANAL

Further Adventures in Meccanoland—

(*Continued from page* 243)

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(*To be continued*)

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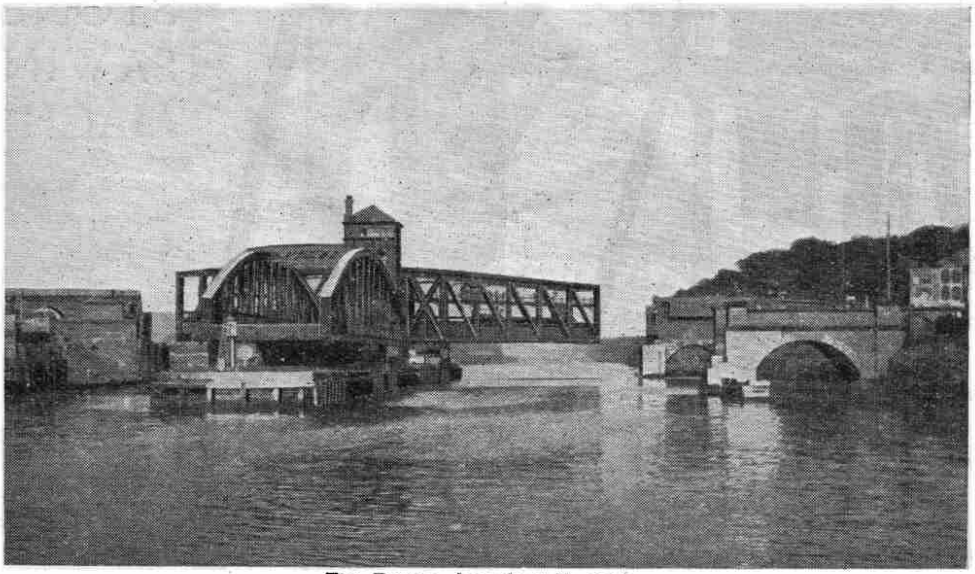

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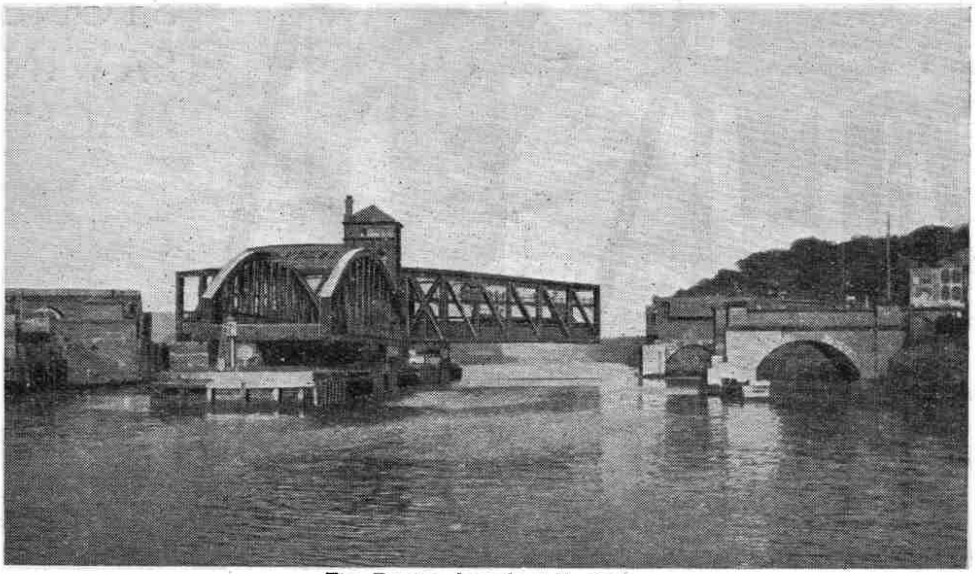
operations, and plans were prepared and the application was put in. In the meantime work proceeded on such portions of the canal as could be carried out under the powers already obtained.

The necessary Parliamentary sanction was obtained in 1760, and now the Duke was free to carry his canal over the Irwell near Barton Bridge, about five miles west of Manchester, by means of a series of arches, and he was further authorised to extend a short branch to Longford Bridge near Stretford, the branch to Hollin Ferry being abandoned.

The aqueduct was, of course, the most difficult part of the undertaking. The proposal to carry barges on a bridge over the top of other barges navigating the river below was ridiculed by the general public as the idea of a lunatic. Even the Duke himself was rather uneasy about the project, and he called in another engineer to give his opinion. To the dismay of Brindley, this engineer said the aqueduct scheme was sheer folly, and wound up his report to the Duke with the words: "I have often heard of castles in the air, but never before saw where any of them were to be erected." Brindley was still confident as to the ultimate success of his scheme, however, and finally the Duke authorised him to carry it out.



The Barton Aqueduct To-day

Brindley's Remarkable Ingenuity

The Barton aqueduct built by Brindley was about 200 yards in length and 12 yards in width, the middle portion being supported by a bridge of three arches. It carried the canal over the river at a height of 39 ft., and so allowed the largest barges to pass beneath without lowering their masts. The canal passed over the arches in a channel carefully "puddled," that is, lined with a carefully-prepared mixture of well-tempered clay and sand, through which the water could not penetrate.

Brindley's remarkable ingenuity and resource are well illustrated by the way in which he dealt with the streams that flowed across the course of the canal. It was one of his fixed principles never to allow a stream or river to flow into a canal except for the purpose of supply, because he realised that in times of flood the rush of water into the canal would be dangerous to navigation. The plan he adopted in dealing with the River Medlock is an excellent example of his methods. He constructed a weir 366 yards in circumference, over which the river flowed into a well, from which it was conveyed along a subterranean passage into the River Irwell, which is close at hand.

An Underground Canal

In addition to cutting the canal itself, Brindley excavated a large basin at Worsley Mill, the starting point of the canal. The idea of this was to provide accommodation for a number of barges, and thus serve as a head for the navigation. He also cut a subterranean channel from the basin to connect the chief workings of the mine, so that the coal could be readily transferred in boats to the place of sale. In Brindley's time this underground canal was about a mile in length, but later it was enlarged until it extended for nearly 40 miles in all directions. The tunnel was arched with brickwork where it passed through coal or earth, but in passing through solid rock it was simply hewn out. The barges when loaded were drawn along by means of staples fixed in the sides of the tunnel, but when empty, and therefore higher in the water, they were so close to the roof that it was necessary for the bargemen to lie on their backs and propel the boats by pushing with their feet against the roof. This method was known as "legging."

The canal was successfully completed, and on 17th July, 1761, the first boatload of the Duke's coal passed over the Barton aqueduct on its way to Manchester.

The result of Brindley's "castle in the air" was that the people of Manchester received regular supplies of coal at a much cheaper rate than ever before. For a long time the aqueduct remained the wonder of the neighbourhood, crowds of people coming daily from all parts to see it.

Brindley in London

The canal between Worsley and Manchester had opened up a regular supply of coal, but there remained the difficulty of transporting the raw materials of trade from Liverpool to Manchester. The Duke of Bridgewater was determined to overcome this difficulty, and in less than two months from the opening of the Worsley canal Brindley was engaged in a survey for a proposed canal to join it with the Mersey near Runcorn, from where there was a natural tideway to Liverpool.

At the same time the Duke made arrangements to present a Bill before Parliament, and early in 1762 Brindley went to London as chief witness before a Parliamentary Committee. He was naturally a very thrifty man, spending as little as possible on clothes, but on this occasion he apparently thought it necessary to be well dressed. His note-books tell us that he spent one guinea—an entire week's pay—on a pair of new breeches, two guineas on a coat and waistcoat of broadcloth, and six shillings on a pair of new shoes!

It was during this stay in London that Brindley paid his first and last visit to a theatre. His friend, Gilbert, the Duke's agent, persuaded him to go to see the famous actor Garrick in the play of "*Richard III.*" but the result was unfortunate. The play excited Brindley so much and so completely disturbed his ideas that he was unable to do any business at all for some days! He declared that nothing should ever tempt him again to enter a theatre, and he kept steadfastly to his resolution.

NEXT MONTH:—

THE GRAND TRUNK CANAL

Further Adventures in Meccanoland—

(*Continued from page* 243)

eye for the grotesque as well as the humorous by entering his model of the "Log Sawers." Very complete instructions were attached to the entry, and I am quite sure that the model works in a most realistic manner.

A very realistic model of a Kangaroo was submitted by Eric Hayward, of Perth, Western Australia. Eric calls his model a "Dinkum Aussie," which certainly sounds a good description of this interesting animal—a purely Australian product I believe!

An interesting Meccano "Cyclist," was sent in by Jack Bouchenoir, of Drancy, France; "A Meccano Boy's First Ride" by M. Manning, of Bristol, and "Diplodocus" by Wallace Harvey, of Thornton Heath. There were entries of a similar kind from France, Italy and Spain—indeed almost every country in the world was represented in this class of model, all of them showing a lively imagination and a keen sense of humour.

There is ample evidence here that, apart from the purely mechanical and engineering side of the Meccano hobby, the regular parts of the system may be cleverly used in designing all kinds of novel and unexpected objects. I and my young friends must certainly try our hands at this kind of thing, and the Editor tells me that he will encourage the suggestion by a special competition later in the year.

(*To be continued*)

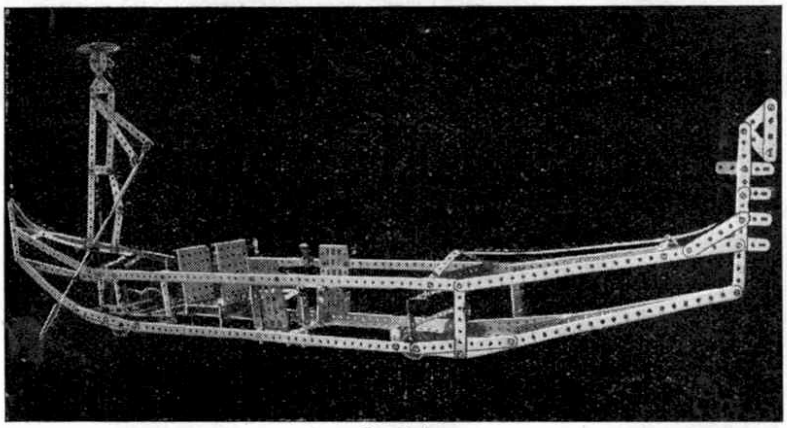
Further Adventures in Meccanoland

II. BRAINS AND INGENUITY IN THE CHAMPIONSHIP CONTEST

by "Spanner"

BEFORE passing on to other types of models submitted by competitors I want to illustrate two further humorous examples of a type of model that most of my readers no doubt will find interesting.

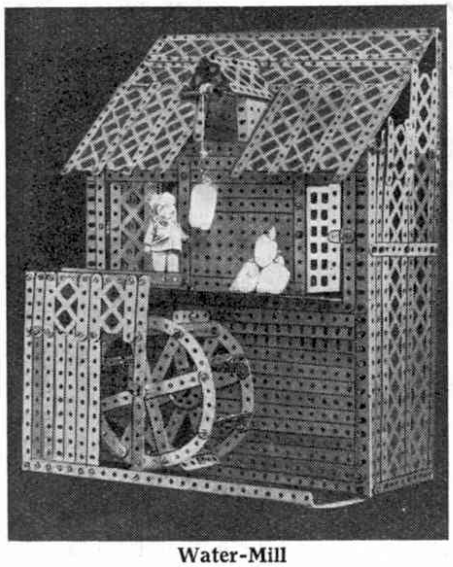
The first is a Gondola, entered by G. W. Healy, of London. This model is quite nicely proportioned, and Master Healy tells us that the gondolier actually rows when the gondola is pushed along the floor. This is very interesting and ingenious, of course, but at the same time I do not think that this competitor has made quite the most of his model. For one thing its general appearance gives the impression of flimsiness, and further, the designer has omitted the cabin in the centre of the boat, which is a characteristic feature of all gondolas intended to carry passengers. I feel sure that some of my readers could improve on this model and, no doubt, Master Healy himself could carry his own design a little further.



Gondola

(Entered by G. W. Healy, London)

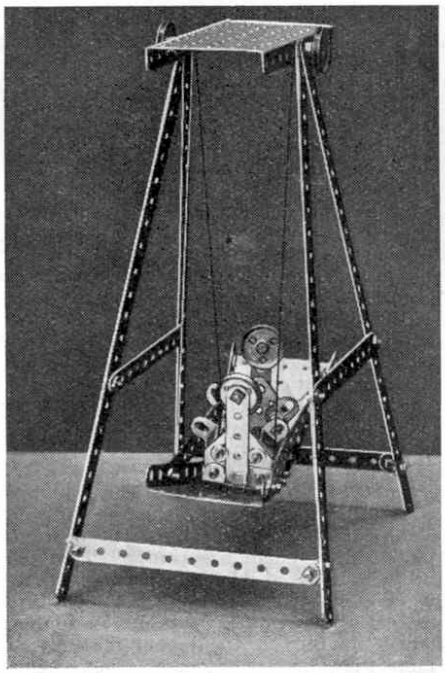
While looking at this model I recalled the recent statement made in a number of newspapers that the rowing gondola on the canals of Venice is doomed, and that within the next eighteen months every gondola must be fitted with an electric motor. It is difficult to believe that this is really the decision of the Venetian authorities, and I should have thought that they would be much more likely to prohibit motor gondolas altogether. Motor boats moving swiftly along narrow canals inevitably raise a considerable amount of wash, and I believe that there have already been complaints that the wash from the comparatively small number of motor boats at present running is damaging the water-fronts of some of the ancient Venetian buildings. The general introduction of motor power would certainly speed up traffic in Venice, but all those who have visited this wonderful city will feel regret at the thought of the disappearance of the picturesque gondolier.



Water-Mill

(Entered by M. Michel, of Havre)

Another model on humorous lines is "The Twins on a Swinging Boat," submitted by M. Manning, of Bristol. I have already given one example of the work of this competitor, who appears to have a strong leaning towards models of this kind, and certainly he possesses considerable skill in designing them. He even goes as far as to suggest that Meccano Ltd. should feature humorous models a little more strongly, on the ground that such models would appeal to the younger Meccano boys. I think it is quite probable that Master Manning is not very far wrong in this idea.

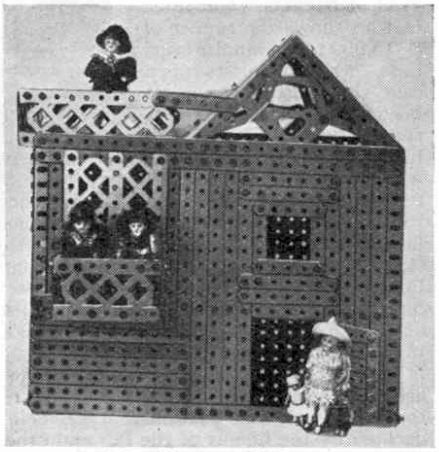


The Meccano Twins on a Swing Boat

(Entered by M. Manning, Bristol)

I was rather surprised to find that such a large number of competitors had tried their hands at designing sailing ships and steamers, and I was struck by the pleasing results obtained. I have only space to illustrate one example of this type—an interesting model of a steamer sent in by J. Ruwet, of Liege. The designing and building of this model must have called for a great deal of thought and ingenuity, and the result is certainly quite successful. The model evidently follows the lines of Continental-built steamers, and I have no doubt that many of my readers could design a vessel that would resemble more closely the production of our own shipyards.

With reference to marine designs I may mention in passing that there appears to be a great deal of scope in models of various types of Dredgers, Fire-Boats and such like vessels, in addition to Repair Ships carrying cranes and similar appliances.



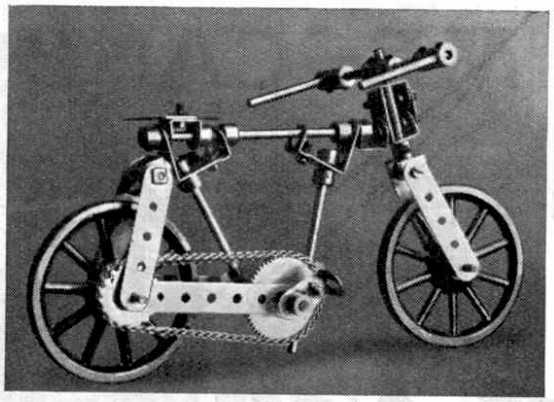
The Meccano House

(Entered by J. R. P. Yraolo, of Buenos Aires)

While I was enjoying myself among the humorous entries I came across two or three models that struck a really tragic note. One of these was a model of an old-time gibbet on which our forefathers used to hang malefactors for even such small offences as stealing a sheep! One or two Meccano boys in France sent in models of a guillotine which, as we all know, is the apparatus used for cutting off the heads of criminals who are sentenced to death in that country, our method of

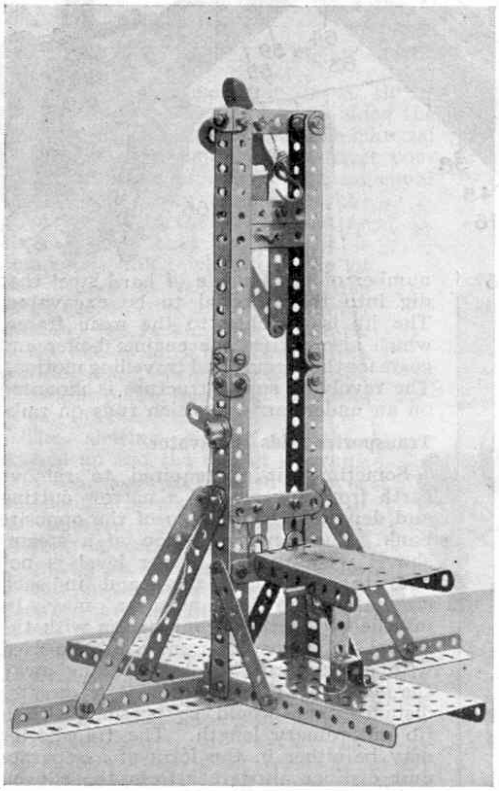
hanging apparently not being considered good enough!

Mention of the name "guillotine" brings up memories of the tragic times of the French Revolution, when the French Communists sent so many of their fellow-countrymen to death. This unpleasant instrument was officially introduced into France in 1792 as the means of inflicting capital punishment. It was named after the man who was believed to be its inventor, Dr. Joseph Guillotin. I am able to illustrate one of these models submitted by Rene Lafette, of Belfort, who states that, both in shape and in method of operation, it closely resembles a real guillotine. It certainly is a sinister-looking object, and its effectiveness might be further added to by using a safety-razor blade as the knife, in which case perhaps somebody's dolls would make good subjects (or objects) for decapitation!



A Meccano Bicycle

(Entered by F. E. Salom, of Barcelona)



Guillotine

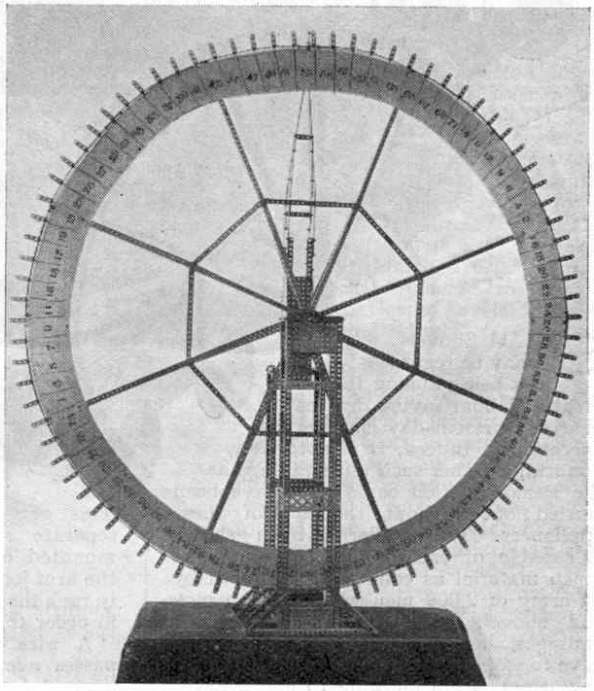
(Entered by Rene Lafette, of Belfort)

As far as I am concerned I should always handle the model with the greatest care for fear of getting my finger in the wrong place!

It is rather interesting to remember that there is another form of guillotine that is employed for much more pleasant purposes. This is the machine used by printers and bookbinders for cutting paper and trimming the edges of books after the sheets have been sewn together. This machine is similar in general construction to its gruesome big brother.

Another model from France is one sent in by Pierre Boudier, of Rouen, which is named a "Persian Roulette." You know, of course, that roulette is a gambling game, and apparently the big wheel with the numbers on it is spun round rapidly and the person whose number stops at the vertical pointer is the winner. Along with his entry the inventor enclosed a cutting from a Rouen newspaper, containing an account of a juvenile ball that was held recently at the Hotel de France, Rouen, where his model was used for distributing prizes. For the benefit of my readers, most of whom undoubtedly study French at school, I give the following extract from the newspaper:—"*Une Loterie fit des heureux; les lots étaient de qualité; ils avaient été offerts par les commercants rouennais. Et le jeu de la roulette persane, édifié grâce a l'ingeniosité etonnante de M. Pierre Boudier, seulement âgé de 14 ans, fonctionna à merveille.*"

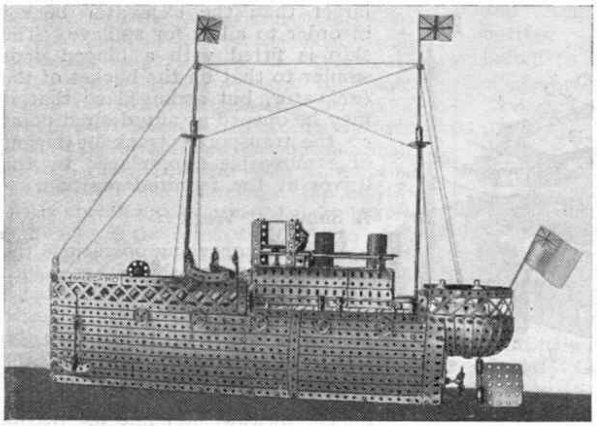
I noticed that many of the entrants in this competition had utilised Meccano parts for constructional purposes, and in the majority of cases had met with considerable success. Take, for instance, the "Meccano House" designed by J. R. Pereyra Yraolo, of Buenos Aires. Here we see young ladies looking out on the balcony while "mother," a matron of quite remarkable dignity, enjoys the sun on the roof garden. I am inclined to think that the designer of this model had some help from a sister, and I can imagine the fun that the building, decorating, and photographing of this model created in the family circle. Another model on very similar lines is the "Water-Mill" entered by Maurice Michel, of Havre, France. Master Michel, in describing his model, states that it is operated by a Meccano electric motor and that with each turn of the wheel the sack of flour is raised or lowered. There is quite a lot of fun to be had from models of this kind, and I should very much like to see the idea further developed.



Persian Roulette

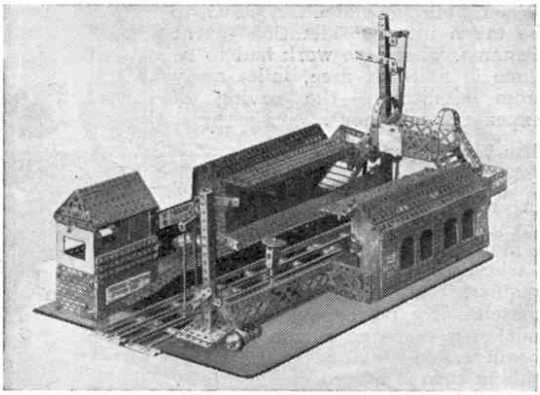
(Entered by Pierre Boudier, of Rouen)

(Continued on page 294)



Meccano Steamer

(Entered by J. Ruwet, of Liege)



Railway Station

(Entered by D. Crankshaw, of Nelson)

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A. Cullen (Dublin).—We are glad to hear from you after so long an interval, and we are interested to know of your radio activities. We do quite a lot of listening-in ourselves when we have time. There is no easy method of learning the Morse code—continuous practice is the only way.

R. Hopford (Kurhessen, Germany).—Sorry, but we scarcely think we shall be able to feature conjuring tricks in the "*M.M.*," and most of our correspondents tell us that they prefer the present type of articles to serial stories, which they can get in almost any other publication. A Nature column is much called for, however, and we shall commence one soon. Your suggestion for new Meccano plates has been passed on to the right quarter and will be considered.

Electricity—(*cont. from page* 281)

pipe-lines that run down to the power-house.

Turbines of 30,000 h.p.

The generating plant for this station is being built by Messrs. The English Electric Company, to whom we are indebted for these details of the scheme. Five units are to be constructed, each of which will consist of a twin impulse turbine of 30,000 h.p. driving an alternator generating current at 12,000 volts. These machines will be the largest ever built in this country.

Water Power in Scottish Highlands

Comparatively little has been done to harness water power in England, for here the conditions generally are not favourable for developments of this kind. Considerable progress has been made, however, in Scotland. It is estimated that the waters of the Scottish Highlands are capable of producing over 400,000 h.p., but so far only a small portion of this power has been developed. The British Aluminium Company have a hydro-electric plant at Kinlochleven generating 33,000 h.p. and the company have obtained Parliamentary powers to develop a further scheme which will bring the total up to over 100,000 h.p. Other developments are contemplated, and in a few years something like 150,000 h.p. is expected to be generated throughout the Highlands.

A considerable amount of the available water power in various countries on the Continent has already been developed, and many important schemes are contemplated in the near future. Progress has been most rapid in Switzerland and Scandinavia, where streams and falls exist in abundance.

In this article we have only dealt with water power derived from rivers and waterfalls. Considerable attention is now being devoted to the problem of utilising the enormous power of the tides. The harnessing of the tides demands special methods which are of great interest, and in a future article we intend to describe the progress already made and the possibilities of the future.

A Meccano Champion

Albert Shaw, of Nottingham, winner of the Meccano Championship Cup in Section B of the £250 Model Building Competition. His model of a Twisting Machine is very ingenious, and the award was well merited.

Further Adventures in Meccanoland—

(*Continued from page* 283)

This reminds me that there are lots of good models waiting to be invented. I remember a little while ago seeing in Leeds a large clock in front of which stood the figures of two men. At the stroke of each hour one of the figures struck a bell the correct number of times and the second figure made the same number of strokes on an anvil. I felt at the time that I should be able to reproduce in Meccano these figures and their movements, and I intend to have a try at it, unless some quick-thinking Meccano boy gets in ahead of me.

There were so many thousands of entries in the various sections of the Competition that, in order to get through them in a reasonable time, I could only devote a very few moments to each one, however excellent and novel it might be. At the same time there were a few I did linger over a little, not because they possessed any particular mechanical originality or merit, but because they showed what seemed to me more than usual imagination. In one or two instances the competitors had suggested ideas that might very easily be developed into excellent schemes of play. Mr. Hornby tells me that Meccano boys in steadily-increasing numbers are now building up very comprehensive Hornby Train systems, and many Meccano models are well adapted for use on such railways. Cranes, Bridges, Trucks, Warehouses with elevators, Coaling Stations, Weigh-bridges and Signal Gantries, each a real working model, may all be used and will add a great deal to the completeness of a railway system.

A short time ago I remember seeing in the home of one of my young Meccano friends a most wonderful model of the Forth Bridge, on which had been laid a double track of rails for the builder's trains. Of course, such a model as this requires a very big room, but every boy who possesses a Hornby loco, coaches, wagons and a set of rails can use the smaller Meccano Cranes, Warehouses, etc., with splendid effect. Just take a glance at a model of a Railway Station sent in by Donald Crankshaw, of Nelson, and I am sure you will realise the force of what I am saying. Here we have a complete station with signals, bridge and signal box, all made with Meccano parts and looking most realistic and effective. This is certainly an idea which might be carried much further and I commend it to all my readers who own Meccano and Hornby Trains.

Quite a number of competitors had sent in models of Bicycles, but I did not see anything that seemed to me altogether satisfactory. I am illustrating a typical example entered by F. E. Salom, of Barcelona. This model is nicely proportioned, although I feel sure that many of the details could be greatly improved.

I lingered a long time over the models that had won Championship Cups for their inventors, and I should like nothing better than to build each one by myself with the aid of the photographs and drawings that accompanied them. I wish I had space to go on and tell my readers about each one of them, but I am afraid I have already exceeded the space at my disposal. Anyhow, Mr. Hornby informs me that all the Championship models will be built up, photographed, described and published in the *Meccano Magazine* in due course, as soon as opportunity allows this considerable task to be undertaken.

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OUR MAIL BAG

In this column the Editor replies to letters from his readers, from whom he is always pleased to hear. He receives hundreds of letters each day, but only those that deal with matters of general interest can be dealt with here.

Correspondents will help the Editor if they will write neatly in ink and on one side of the paper only.

G. Alexander (Liverpool).—We agree that many readers would be interested in a cricket column, but until we are able to increase the size of the "*M.M.*" we cannot possibly add a feature of this kind. The name "Meccano" is simply a word coined from the word "Mechanics," and was evolved from the original name, which was "Mechanics Made Easy"—a rather cumbersome title.

G. Gill (Kincardine-on-Forth).—Your cheery letter arrived on a dull, wet morning when everybody was feeling rather grumpy and it did us a world of good. Your riddle is good :—Q. "Why is it foolish to try to light a fire with the '*M.M.*'"? A. "Because it is not dry!" It is never going to be dry, G. G., and there is every reason for your belief that the "*M.M.*" will continue to improve with every issue.

S. Miller (Ahoghill, Co. Antrim).—Your suggested cards would certainly be useful in cases where a Guild member is asked the meaning of his badge, and we shall give the idea serious consideration. As regards your query—"How can a bird fall sitting on a tree?" we haven't the slightest idea unless it is "bough-legged" (Sorry—that is a bad one!). Once we start thinking about this sort of thing, we keep at it night and day, and the kindest thing you can do is to tell the answer at once and put us out of our misery!

L. King (Hyde).—The last sentence in your letter—"I don't think you can beat a Meccano boy unless you use a strap"—exactly hits the reason why Meccano boys are so successful. Whether they are engaged in building a model for a competition, or writing prize essays or worrying over puzzles of some kind, we find Meccano boys have a wonderful spirit of dogged perseverance. This, together with the keen and alert brains that are the result of Meccano training, ensures success in almost all circumstances.

L. Bropley (Stoneycroft).—"Why is a mouse when it spins?" Oh! Leonard, we've only just returned from a holiday and it was raining all the time, and we expected something more soothing than this from the first letter that we opened! We liked the rest of your letter though, very much indeed.

W. T. Castle (Clitheroe).—We read your letter with much interest and we shall be happy to see your article on Model Railways, and if suitable, to publish it. We should much like to examine your "Willowdene Model Railway." The new Hornby Train accessories will help you. Like yourself, most boys derive the keenest pleasure from building up a sound toy railway system.

E. Roberts (Leeds).—"Hysteresis" is a term used in physics to denote a retardation or lagging effect and it has nothing to do with your sister's tendencies! If you were an Editor, Eric, you wouldn't be playing with models and trains *all* the time, and if you only knew what we have to put up with you might never dream of trying to be one. For instance, your friend Simpson "wants to know lots of things about motor-cars and is going to write" to us, and lots of other boys want to know lots of things about lots of other things and they are all going to write to us. It's fine being an Editor, Eric, but it's not easy!

J. Candler (Tulse Hill).—"If there is to be no £250 Competition next year I think I shall die." We hope not, John, but we promise you that if there is no big contest next year, there will be other events that you may find even more interesting and more calculated to save your life and make it happy!

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