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PRICE

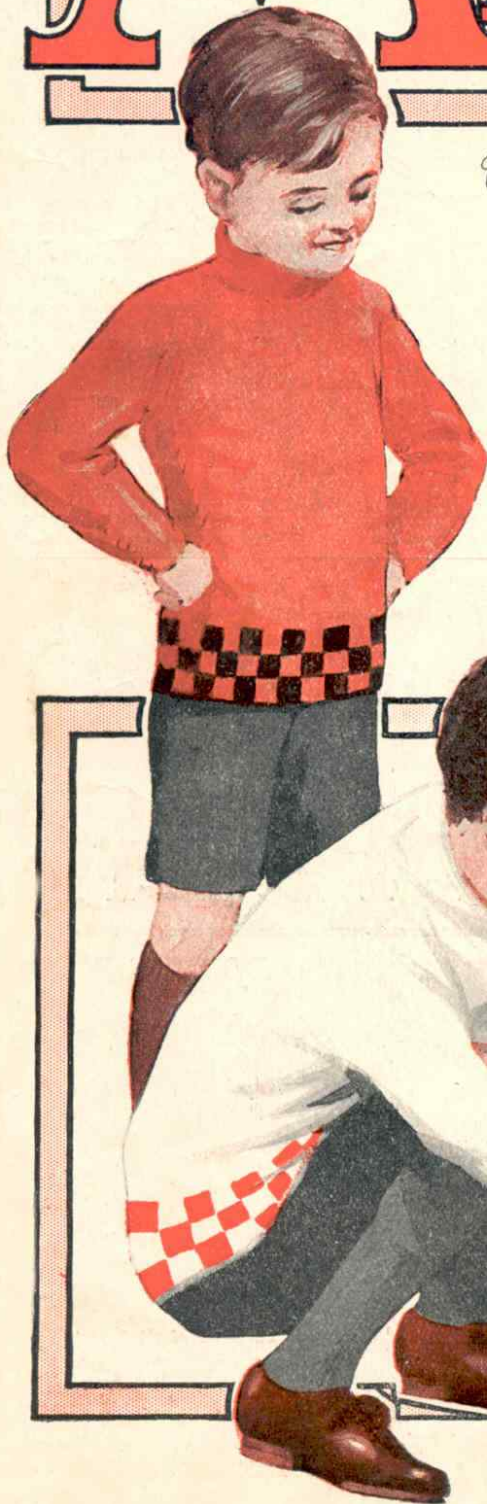
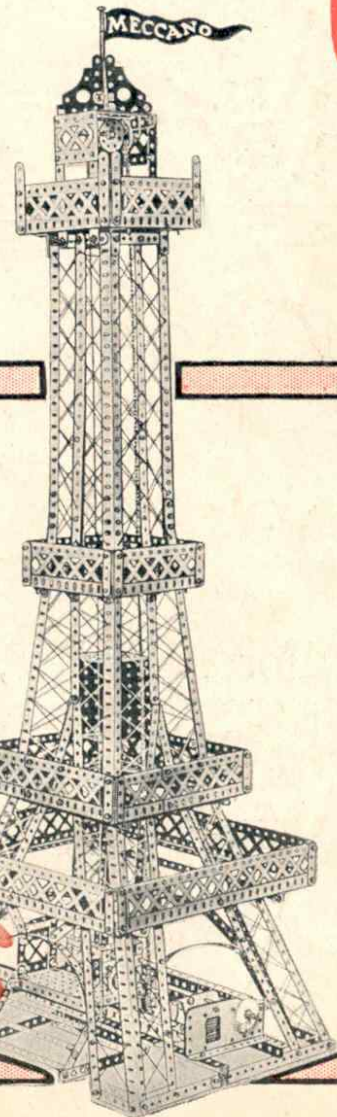
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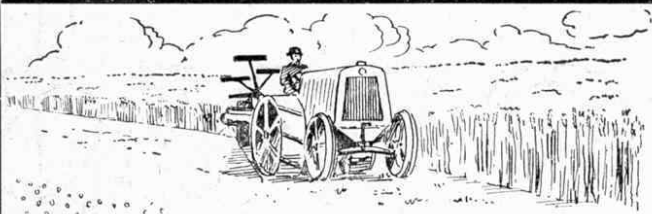
VOL. VII

NO. 8

RESULTS OF
OUR £250
MODEL
BUILDING
CONTEST

See Page 98





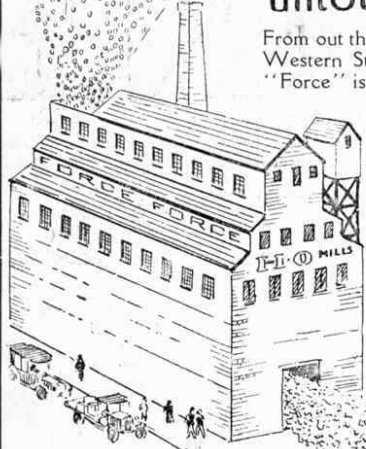
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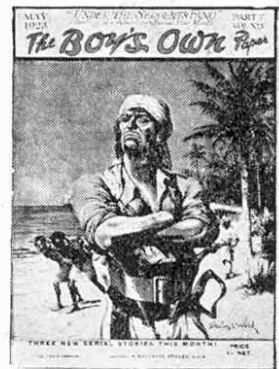
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MECCANO



MAGAZINE

PUBLISHED IN THE
INTERESTS OF BOYS

on the
15th of each month



EDITORIAL

AS was only to be expected, the July issue of the "M.M." met with a tremendously enthusiastic reception. The demands were so great that although many thousands of extra copies were printed, we were sold out a few days after publication. As a consequence, when readers whose subscriptions had not been received, applied for copies, they were disappointed to learn that there were none available. The moral is, of course, to place a regular order, either with your Meccano dealer or direct with this office. In orders dealt with at this office, a reminder is inserted with every Magazine with which the subscription expires, and the subscription should always be renewed in good time so as to avoid disappointment.

Sold Out!

Every day my mail bag has been filled with letters of congratulation from readers. The introduction of a coloured cover places the Magazine on a high level, and I hope shortly to be able to announce that arrangements have been completed by which the "M.M." may be ordered from any newsagent or bookstall. I am glad to think that my readers are pleased with the July issue, and I can assure them that our future numbers will be even better and more interesting. We have many surprises in store and many interesting features are being arranged, including several novel competitions. Altogether I am endeavouring to make the "M.M." the paper for Meccano boys.

Surprises in Store

In my remarks last month I promised to tell you something of the attractive programme I am mapping out for our future issues. In this connection I largely have in mind the suggestions made in the recent competition for "Improving the 'M.M.'" In the first place, the article on "How to Build the Meccano Loom," which concludes in this issue, will be followed next month by the first instalment of an article on building the Meccano Motor Chassis, the second and final instalment of which will appear in October. In November we shall publish instructions for building a splendid new model of a Grandfather's Clock.

Good Things Coming

This Meccano clock has been thoroughly tested here during the past twelve months, and improvements in its design have been effected from time to time. The resulting model stands about 6 ft. in height and keeps as accurate time as any Grandfather's clock ever made.

Later we shall publish instructions for building an entirely new model of the High-Speed Ship Cooler. I have always thought that this is one of the most interesting of our Meccano models, for all the movements for loading and unloading are controlled from the gear box. This model will appeal to all my readers, because when it has been built it affords endless fun, and no little dexterity is required for its operation. There are so many operations that the Meccano boy has to use intelligence and be quick with his fingers in order to carry out all of them successfully.

Another New Model

In next month's issue we shall commence an article dealing briefly with the wonderful story of the Motor Car. It will describe motoring in early days, when it was necessary for a man to walk in front of each car with a red flag. It will briefly describe the evolution of the petrol engine and its application to many purposes. The author of the article, who has himself ridden at Brooklands, will also give impressions of speed work on this wonderful racing track.

Thrills at Brooklands

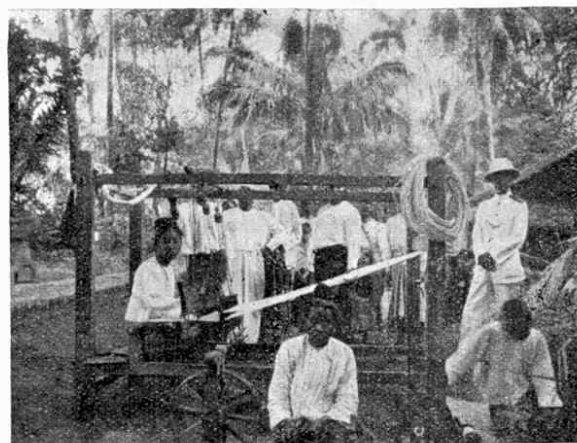
Altogether the article is one that I feel sure will appeal to our readers in general, and more particularly to those who construct the Meccano Motor Chassis.

I am pleased to say that many difficulties in the way of reproducing illustrations of stamps have now been overcome, and special arrangements are being made with the Postmaster-General to allow of our printing illustrations in this column. A Stamp Column without illustrations would be like a Meccano model without nuts and bolts! In our future numbers we shall illustrate, where possible, interesting new issues that are received from time to time, and we shall also reproduce illustrations of famous stamps as well as of stamps of general interest.

Several engineering articles have been arranged, and include a description of the wonderful new Cooler at Crewe Station, Giant Excavator at Essen in Germany, Planing Machines, Steam Navvies and Draglines.

In our last issue we published the first of a series of articles on famous bridges, and we shall shortly print an article dealing with the proposed new bridge across the Hudson River at New York. This will be followed by a description of "A Notable Engineering Feat," in which a double leaf Bascule Bridge at Chicago is concerned.

Hand-Loom in Use To-day



Photograph by

[W. M. Gerrard

ing factory as shown on page 93, we are better able to realise the great advances made by civilisation, as a result of the inventive genius of such men as Kay, Hargreaves, and Arkwright.

OUR photograph shows a Burmese woman working a hand-loom in far-away Burma. Here the peasant classes are being encouraged by the Government to earn their living by weaving in this way. In this native loom the warp threads are first placed in position across the loom, and the reed moves towards the weaver, who passes the shuttle between the warp by hand. It is interesting to note the healds, and the crude arrangement for lifting them. In the foreground is shown a primitive spinning wheel.

When we compare this Burmese hand-loom with the machinery of a modern weaving

THE MECCANO LOOM

FOR REAL WEAVING

INSTRUCTIONS FOR BUILDING THIS REMARKABLE MODEL

In this instalment we conclude the article on building the Meccano Loom, commenced in our July issue. This model illustrates the wonderful genius of the Meccano system, for every technical operation in the process of weaving is perfectly carried out, exactly as in actual manufacture. Hat-bands, ties and other similar fabrics may be woven with the Meccano Loom; and the skill and artistic abilities of the model-builder are expressed in the resulting patterns and combinations of colours.

(Continued).

Heald Motion

THIS is brought out in Fig. J. On the far end of the rod 8 is a crank 25 (two cranks butted together), the outer end of which is connected to $9\frac{1}{2}$ " and $5\frac{1}{2}$ " angle girders, overlapped 9 holes, forming a connection 26, the top of which is coupled to an extended crank 27 fixed to a rod 28. The element 27 is made up of a $2\frac{1}{2}$ " strip the end hole being on the rod 28, and with 2 cranks reversed and bolted through the strip.

On the other end of the rod 28 are secured 2 bush wheels 29, which are fastened together by $\frac{3}{4}$ " bolts. A $2\frac{1}{2}$ " strip 30 and 3" strip 31 are bolted to the bush wheels, and hooks are connected to the outer ends of these 2 strips. The chains 32 and 33 are passed over 1" sprocket wheels 34 on the rod 35 and are connected to the heald frames 36.

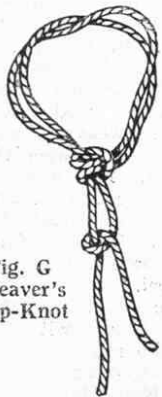
Slay

The construction of the slay 40A is shown in Fig. I, the reed consisting of a number of $2\frac{1}{2}$ " strips (spaced with washers) 40, mounted on upper and lower rods and carried on the angle girders 41 pivoted on the rod 42. The slay is rocked to and fro from a rod 43, Fig. C*, which is driven from the gear wheel 6, a $\frac{3}{4}$ " pinion 44 on the rod 43 meshing with the gear wheel 6.

On both ends of the rod 43 are fixed cranks 45 which are connected to the cranked bent strips 46, Fig. F, on the slay by means of $4\frac{1}{2}$ " strips 47. In Fig. B the rear strip is shown hanging down disconnected.

The sides of the slay consist of $5\frac{1}{2}$ " flat girders 48, and the pulley wheels 49 round which the picking cords run are carried as shown in illustration, Fig. I.

Fig. G Weaver's Slip-Knot



* Illustrated in the July "M.M."

The shuttle moves along the "slay," which supports and guides it as it is jerked from one side of the loom to the other by means of the "picking stick," suspended from above. Attached to the

on its outer hole by a hook coupled to a spring 56. The spring 56 therefore rocks the upper rod rearwardly, and takes up the slacking formed by the shedding action of the healds.

The beam 50 is braked by means of cords 57 passing over 2" pulleys 58 and secured to the frame of the loom, the other ends being connected to hooks 59, engaging a hole in the strip 60 pivoted at 61, weights 62 on the outer ends of the strip 60 putting the required frictional resistance on the beam 50.

Preparing to Weave

In preparing to weave, the first thing to be done is to pass the ends of the warp from the beam (situated at the back of the loom) through the mails of the healds and then through the reed. One or more threads are passed through each division of the reed, and attached to the taking-off roller.

By turning the crank, the shuttle is jerked across the loom and passes over the threads held down by the lower heald and beneath those raised by the upper heald, at the same time leaving in its wake a loose thread of weft. The slay then moves forward and brings up the reed, which drives before it this thread or "first pick" of the weft. By continuing to turn the handle, the same process is repeated, the shuttle being again jerked back and across the loom, this time from the other side. The reed again moves forward and presses up the second pick against the first. The taking-off roller in the meantime slowly rotates, and as the weaving proceeds it rolls around itself the woven fabric.

A suitable material for use in this model is No. 8 Star

Fig. H Shuttle

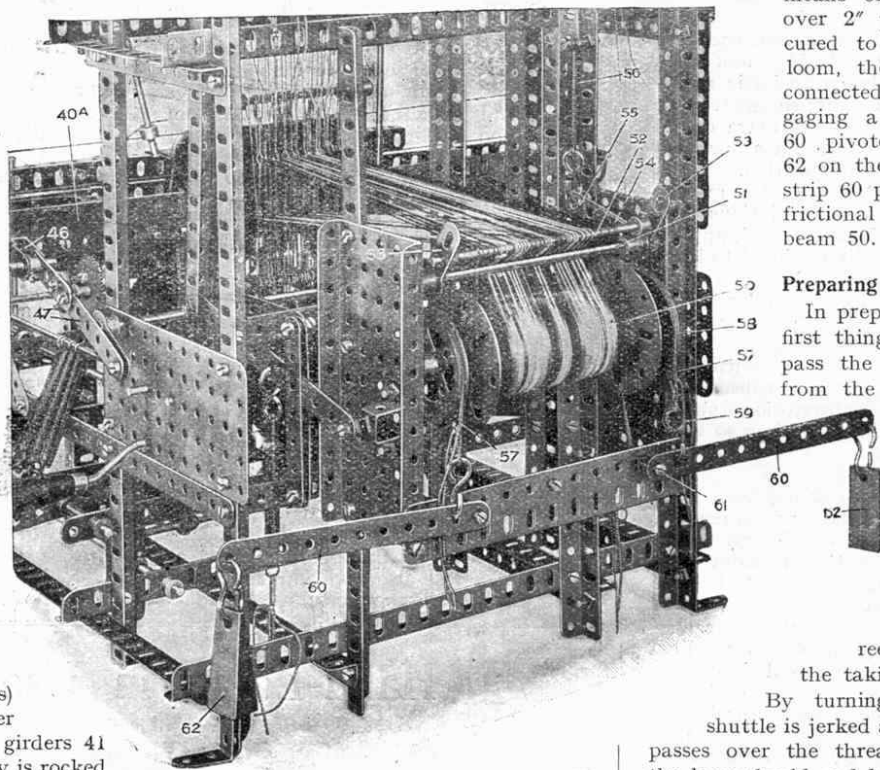


Fig. F

slay is the "reed," which moves forward with the slay, after every crossing of the warp by the weft.

Warp Thread Tension Mechanism

In order to compensate for the slacking of the warp threads which develops when the shed is formed by the motion of the healds, the warps are passed from the beam 50, Fig. F, under the rod 51 and over another rod 52 and thence through the eyes of the healds to the reed.

The rod 52 is given a continuous rearward tensional movement as follows: it is carried on cranks 53 fixed on the lower rod 51; another crank 54 to which is connected a $2\frac{1}{2}$ " strip 55, the end hole being threaded on the rod 51, is connected

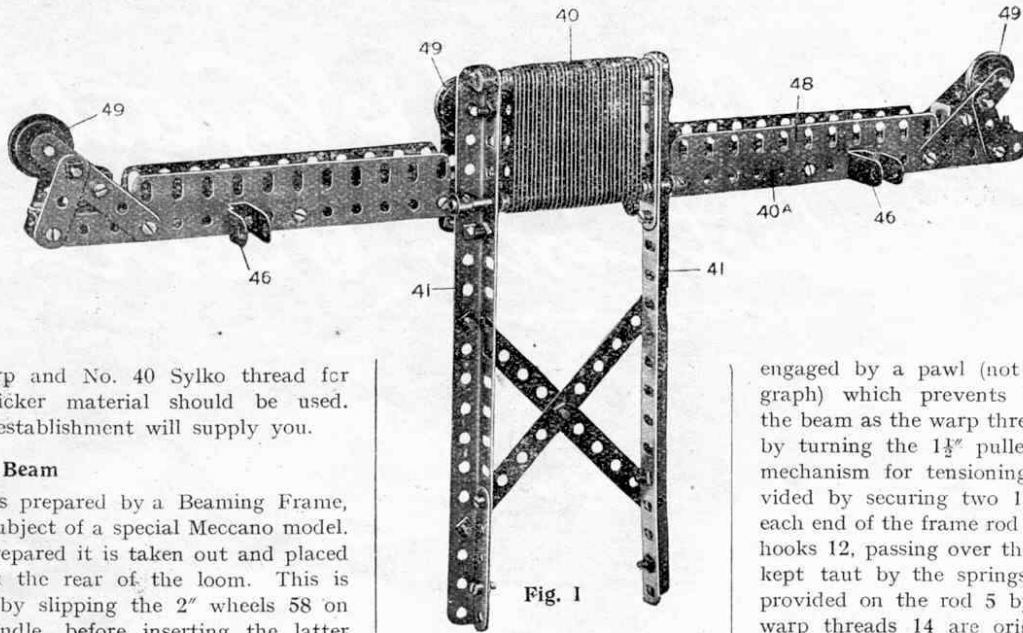


Fig. 1

Sylko for warp and No. 40 Sylko thread for weft. No thicker material should be used. Any drapery establishment will supply you.

Preparing the Beam

The beam is prepared by a Beaming Frame, which is the subject of a special Meccano model. After being prepared it is taken out and placed a position at the rear of the loom. This is accomplished by slipping the 2" wheels 58 on the beam spindle, before inserting the latter in the holes of the side flanged plates. After doing this the pulley wheels are secured to the spindle at each end to hold the beam in position.

All the ends of the threads are drawn under rod 51 and over 52, long enough to permit each thread to be passed through the healds in the following manner: the first warp thread is passed through the eye of the first heald in the near frame, and thence through the first aperture of the reed; the next thread is passed between the first two healds in the near frame and through the eye of the far frame and thence through the next aperture of the reed. The warp threads may be threaded through the reed spaces in pairs. This process is continued until all the ends are threaded through the reed. They are then carried over the front angle girder, under the sand roller 72 over the rod 73 and on to the take-up roller 74, where they are gripped under a rod in the slot of the roller. This operation is more conveniently performed by two persons with the aid of a reed hook.

For winding the weft thread on the spindle forming the cop the spindle should be removed from the shuttle, and one end inserted in the coupling 78, and the thread from bobbin 80 wound around it by turning the crank handle 79.

Fig. G illustrates a weaver's slip-knot, which is used when adjustments or tension is necessary.

In one of our future issues we hope to illustrate some of several patterns obtainable with the Meccano Loom.

How to Build the Beaming Frame

The Beaming Frame is illustrated on page 102 of this issue, and may be built as follows:

The frame 1, upon which the warp threads are wound, is built up of 12½" angle girders, 2 overlapped seven holes and bolted to a 5½" girder and 5½" strip crossed and connected to face plates 4 on the 11½" rod 5. Inside the frame, two 5½" angle girders are bolted nine holes from each end to form the inner bearings for the rods 5.

Another 5½" girder is bolted crosswise to these in the centre to form a stay. The warp threads are first wound upon the frame 1, and pass through the holes in a 24½" angle girder 6, and, converging together, pass between the 2½" strips 7 forming the reed, and so on to the beam 8. On the far side of the beam rod is a ½" pinion

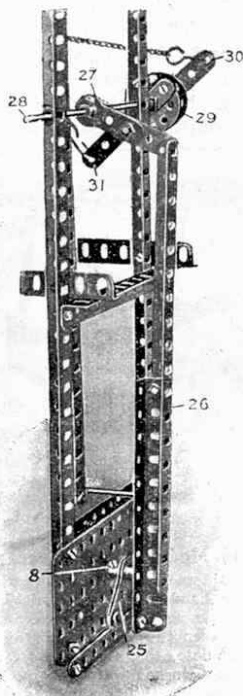


Fig. J

engaged by a pawl (not shown on the photograph) which prevents backward rotation of the beam as the warp threads are wound thereon by turning the 1½" pulley wheels 9. A brake mechanism for tensioning the frame 2 is provided by securing two 1" pulley wheels 10 at each end of the frame rod 5, cords 11, secured by hooks 12, passing over the pulleys 10 and being kept taut by the springs 12. A handle 13 is provided on the rod 5 by means of which the warp threads 14 are originally wound on the frame 2.

Parts Required for Building the Loom

6 of No. 1	3 of No. 27A
22 " " 2	4 " " 29
8 " " 3	2 " " 32
9 " " 4	6 " " 35
39 " " 5	195 " " 37
4 " " 6	33 " " 37A
4 " " 6A	198 " " 38
6 " " 7A	15 " " 43
17 " " 8	2 " " 44
3 " " 8A	5 " " 45
15 " " 9	2 " " 48A
2 " " 10	2 " " 52
8 " " 11	17 " " 57
4 " " 12	55 " " 59
4 " " 12A	15 " " 62
4 " " 13	13 " " 63
13 " " 13A	4 " " 67
10 " " 14	4 " " 70
1 " " 15	2 " " 76
1 " " 15A	4 " " 82
6 " " 16	12 " " 94
8 " " 18A	4 " " 96
2 " " 19	42 " " 101
2 " " 20A	6 " " 103
4 " " 21	1 " " 104
4 " " 22	1 " " 106
2 " " 24	1 " " 106A
5 " " 25	2 " " 109
5 " " 26	7 " " 111
5 " " 27	

Parts Required for Beaming Frame

2 of No. 1	6 of No. 21
4 " " 2	1 " " 26
44 " " 5	1 " " 33
4 " " 6	253 " " 37
4 " " 7	88 " " 38
2 " " 7A	4 " " 43
12 " " 8	8 " " 57
10 " " 9	10 " " 59
8 " " 12	1 " " 63
2 " " 13	1 " " 103
3 " " 14	4 " " 109

(THE END)

Turning Animal & Vegetable Products into Cloth



The Fascinating Story of Spinning and Weaving

(Continued)

This is the second instalment of this article, the subject of which contains many instances of the triumph of perseverance and industry over great difficulties. There is no more wonderful story than that of the textile industry.

INCLUDED in these processes are "picking" and "carding," which respectively clean the cotton of impurities, and arrange the fibres so that they all lie in the same direction.

Drawing and Twisting Cotton

These fibres are only 1/2000 inch diameter, and under the microscope are seen to resemble a flat ribbon, twisted like a stick of barley sugar. It seems almost impossible that these tiny fibres could by any process be disciplined into a long and continuous thread, yet the feat is accomplished by the process called "drawing." Here the fibres are drawn out into long strands, called "sliver," and in this form they resemble a thick tape. They then pass through a machine called a "slubber," where they are given a twist and wound on to bobbins. From here they pass to the "roving frame" and then to the spinning machine, which further twists the thread and tightens it up until it reaches the requisite quality and strength. It is not until the cotton fibres reach this stage that they are ready for the final process of weaving into cotton cloth.

Making Woollen Yarn

Wool, of course, is obtained from the fleece of sheep, and is imported into this country in large quantities from Australia

and New Zealand, in which countries large numbers of sheep are reared. A small quantity of wool is also obtained from sheep reared in this country.

As in the case of cotton the raw wool must first be treated by several processes, before it is suitable for weaving, an additional process being that which extracts the grease. The wool is first picked and cleaned, and then carded and twisted into yarn of varying thicknesses. It also has to be dyed before the cloth is made, if a pattern is desired in the finished

cloth, but if the finished article is to be of a uniform colour, the fabric may be dyed after weaving.

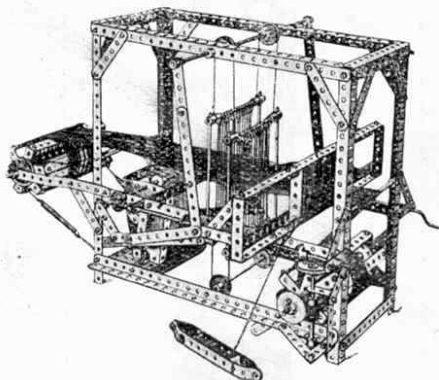
The Hand-Loom

All weaving was done on hand-loom until 1785, when the power-loom was invented. Hand-loomers are still in use in many parts of this country, in Scotland and Ireland for instance, and also in France. Nearly every farmhouse in Lancashire in the early days was an independent little factory, and hand-loomers were to be found in most of the cottages and houses in the towns and villages. The weaver himself generally bought the raw cotton. This was picked by his children, spun into thread by his wife or the elder girls, and then woven at the loom by his sons, whilst he carried it to the merchant for sale.

There were very few hand-loomers in England until about the second half of the 16th century, however, when religious persecutions drove the Protestant weavers from Holland, Flanders, and France, to this country. These refugees established themselves here, and many of the Flemish weavers settled in the neighbourhood of Manchester, now the centre of the cotton industry.

Improving the Loom

We have not space in this article to recount the story of the improvements and inventions in spinning machinery. These we shall hope to describe in some future issue, for they include many stories of courage and daring among men who had to overcome innumerable obstacles.



An Early Model of the Meccano Loom

In this article we describe how the earliest improvements in the hand-loom were made in connection with the shuttle which, in the early days, had to be passed between the warp threads by hand. It is interesting to note, too, that in its early form the Meccano Loom worked on this principle. One of the first improvements was to make the movement of the shuttle automatic, exactly as in the case of real loom practice. Compare the above illustration with the illustration of the Meccano Loom that appeared on the cover of our July issue, and note the wonderful improvements that have been effected in this model.

The Story of Spinning and Weaving (cont.)

Not the least of these difficulties was the hostility of the weavers themselves to the introduction of machinery into their daily lives.

In this article we must confine our remarks to dealing with the loom itself and describing as briefly as possible the principle on which it works and the chief inventions that have contributed to make the textile industry one of the most important in the world.

Warp and Weft

The earliest improvements in the ancient hand-loom were those made in connection with that part known as the shuttle. To understand exactly what this means we must remember that a woven fabric is composed of two elements, the "warp," or longitudinal threads, and the "weft," or cross-threads. If you examine your handkerchief or a tablecloth, you will see exactly what I mean. Notice how a woven fabric differs from one of another texture such as a stocking, jumper, or crochet pattern.

The interweaving of the warp by the weft, called the "picking motion," is effected by passing a thread from the shuttle between some of the threads of the warp. The shuttle moves from one side of the loom to the other, and each time it passes between the threads of the warp, it leaves behind a thread of weft.

Three Important Operations

There are three distinct operations necessary to enable the shuttle to accomplish this movement. The first is the opening of the warp, when some of the threads are raised for the second operation of picking. The third operation, which is called "beating up" the weft, consists of pressing the weft into position by the reed.

These three primary operations must be carried out on every loom, no matter whether it be the hand-loom of a cottager or the largest power-loom used in a modern spinning factory.

Up to the early part of the eighteenth century, the shuttle had to be "thrown" backwards and forwards by hand. This

was accomplished by two persons, who stood one on either side of the loom. As the shuttle was heavy, throwing the shuttle was very hard work, as well as being a very laborious and slow process. In 1750, however, John Kay, of Bolton, invented the "flying" shuttle. This consisted of a "picking stick" that drove the shuttle and saved the weavers from

were able to amass great fortunes from their inventions and discoveries in such days of golden opportunity, and many English families to-day owe their prosperity to the inventions of this period.

James Hargreaves, of Blackburn, and Richard Arkwright, a Preston barber, both brought out inventions that improved the output of yarn. Crompton in 1787 invented his spinning "Mule," which combined the features of Hargreaves' and Cartwright's inventions. The steam engine, then lately perfected by Watt, was harnessed to drive the spinning mule, and a great increase in cotton production followed.

In 1785, Edmund Cartwright, an English clergyman, invented the power-loom, which enabled cloth of more uniform texture to be produced at a lower cost and in greater quantities.

Strange though it may seem, yet it is a fact that the power-loom was only slowly taken up. It was first used in Glasgow about the end of the eighteenth century, but about a century ago, it was rapidly adopted, especially after it was made so that the cloth was taken up mechanically, instead of it having to be continually pulled forward by the weaver.

Water Power and Horse Power

In these early days the power that was available was limited, and often advantage had to be taken of a waterfall to drive the mill, by means of a water-wheel. The alternative method was to drive the mill by a horse attached to a rotating capstan in the centre of a circle, around which it continuously walked.

Mills were built first at Nottingham and at Cromford in Derbyshire, and about 1776 at Oldham. Seven of these mills were worked by horses and three by water-power. Later, mills were erected

all over Lancashire in the valleys so as to obtain the advantage of power from the rivers and their tributaries.

It was not until 1785 that Watt's newly-invented steam engine was first applied

(Continued on p. 97)

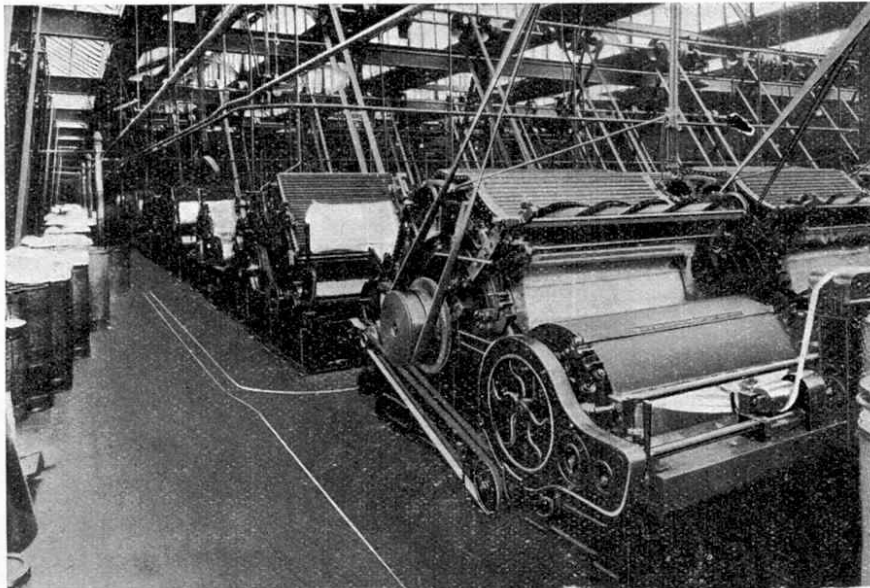


Photo by courtesy of

[Messrs. Horrockses, Crewdson & Co. Ltd.]

In this photograph is illustrated the process of "drawing," in which the cotton fibres are drawn into long strands called "sliver." The sliver is seen issuing from the machine on the right of the photograph.

throwing it with their hands.

Not only did the invention halve the necessary labour, but it also increased the production of the looms. Thus more yarn was required and attention was turned to improving the method of spinning, to keep pace with these increased demands.

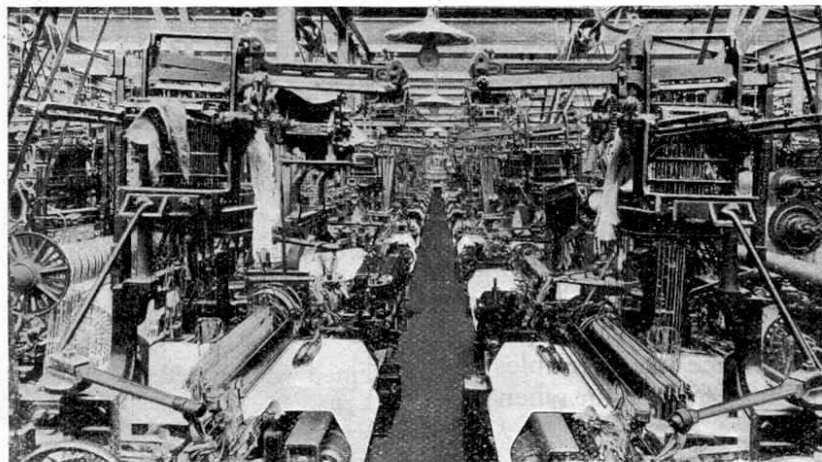


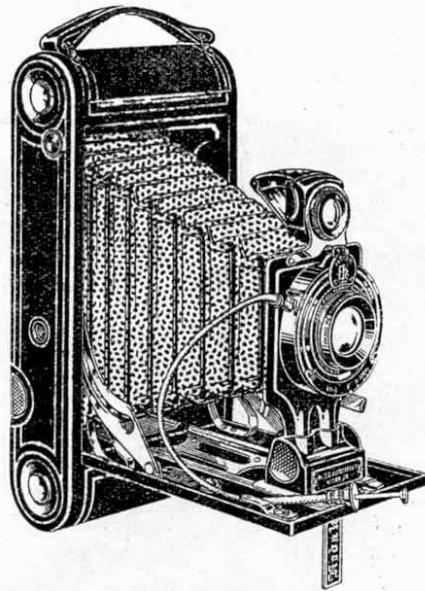
Photo by courtesy of

[Messrs. Horrockses, Crewdson & Co. Ltd.]

A scene in a modern weaving factory. Here the looms are shown weaving fancy cloth. Healds and shuttles are to be seen on the two machines in the immediate foreground, whilst a weaver's beam, with the warp threads in position, is shown on the loom to the left.

The Inventors' Opportunity

These were, indeed, wonderful times for inventors, and many are the romantic stories that could be written about this period. Men who were in lowly walks of life



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THE Meccano Photographers' Corner

TWO SPLENDID COMPETITIONS

Holiday Essay Competition

AS announced in our last issue, we are holding a Holiday Essay Competition on the same lines as the similar Competition held last year. The subject will again be some holiday experience, and this year the Competition will be divided into two sections (1) Photo-Essay, and (2) Essay Competition.

Photo-Essay Competition

In the Photo-Essay Competition the essay should be illustrated with photographs. These must be taken by the competitor, but may be developed and printed by others, if desired. This point will be taken into consideration when making the awards, however, for a boy who sends in an essay illustrated with photographs taken, developed, and printed by himself will naturally stand a better chance of winning a prize than will a boy who has only exposed the plate or film, and left the finishing off of his prints to others, who, perhaps, have more experience.

Photographs may be of any size, and of any finish, but it should be clearly stated whether or not they are the sole work of the entrant. They may be sent separately, or lightly gummed in position in the essay. The first prize in this section will be Meccano products to the value of £1 1s. 0d., and the second prize to the value of 10/6, to be chosen by the winner.

For those without Cameras

Section (2) is for boys who have no cameras, and prizes will be awarded for the best unillustrated essay. This section will be divided into two classes. (A) For

those of 14 years of age and under, (B) those over 14 years of age.

In this section three Hawk-eye cameras, made by the Kodak Company Limited, will be awarded as prizes. These cameras take photographs $2\frac{1}{4} \times 3\frac{1}{4}$ ", and the lucky winners will be able to enter the Photographic Competitions, which will be announced from time to time in our future issues.

There are many subjects about which your essay may be written, and there are no limitations, except that the subject should be something connected with holidays.

General Conditions

All essays should be neatly written on one side of the paper only. See that your full name, age, and address appear on the back of every sheet of paper, for there is always the possibility of a page becoming detached, in which case it might be mislaid if it does not bear the entrant's name on the back.

The Competitions close on 30th September next for entries from the United Kingdom, and 30th December for competitors overseas and abroad. Send in your essays well before that date if possible.

The winning essays will be published in the "M.M.," and this fact should be borne in mind by the entrants in the Photo-Essay Competition. It is impossible to make satisfactory blocks from "flat" or under-exposed

photographs. Bright prints, in which there is plenty of contrast and clear detail, are best for this purpose—and every reader delights in seeing good illustrations in these pages!

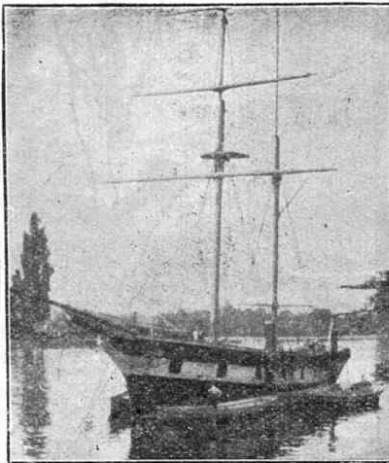


Photo by

[L. G. Davy

"An Old Stager"



Photo by

[Andrew Macara

Tynemouth Priory

Fourth Photographic Competition

THE rules of this Competition, which was announced in our last issue, are the same as in our previous Photographic Competitions which have been so successful. The subjects of this Competition are:—

(1) A SUMMER SCENE

or

(2) AN ANIMAL STUDY

and these subjects give plenty of scope for Meccano boys with cameras.

Photographs must be taken by the competitor, but need not necessarily be developed or printed by him. Each entrant should say if the printing and developing is his own work, as naturally this will be taken into consideration when judging the entries.

Photographs may be of any size and may be mounted or otherwise, and they may be printed on P.O.P., gaslight or bromide paper. The finish of the photograph will not be taken into consideration, the subject and its treatment being the main point. For instance, a boy who takes a photograph of a church steeple that looks as though it were falling backwards will not have so good a chance of a prize as a boy whose photograph shows the church steeple in a normal position, because it is much more difficult to obtain the latter photograph, as every photographer knows.

The Competition will be divided into two classes:—

(A) Boys of 14 years of age and under, and

(B) Boys over 14 years of age.

The first prize in each section will be a Hawk-Eye camera, made by the Kodak Company. The winning photographs will be published in the "M.M.," and any other photographs that may be used in the "M.M." after the Competition, will be paid for at our usual rates.

The closing date for entries from the United Kingdom is August 31st, and for entries from Overseas, 31st October next.

A PHOTOGRAPHIC PICTURE CALENDAR

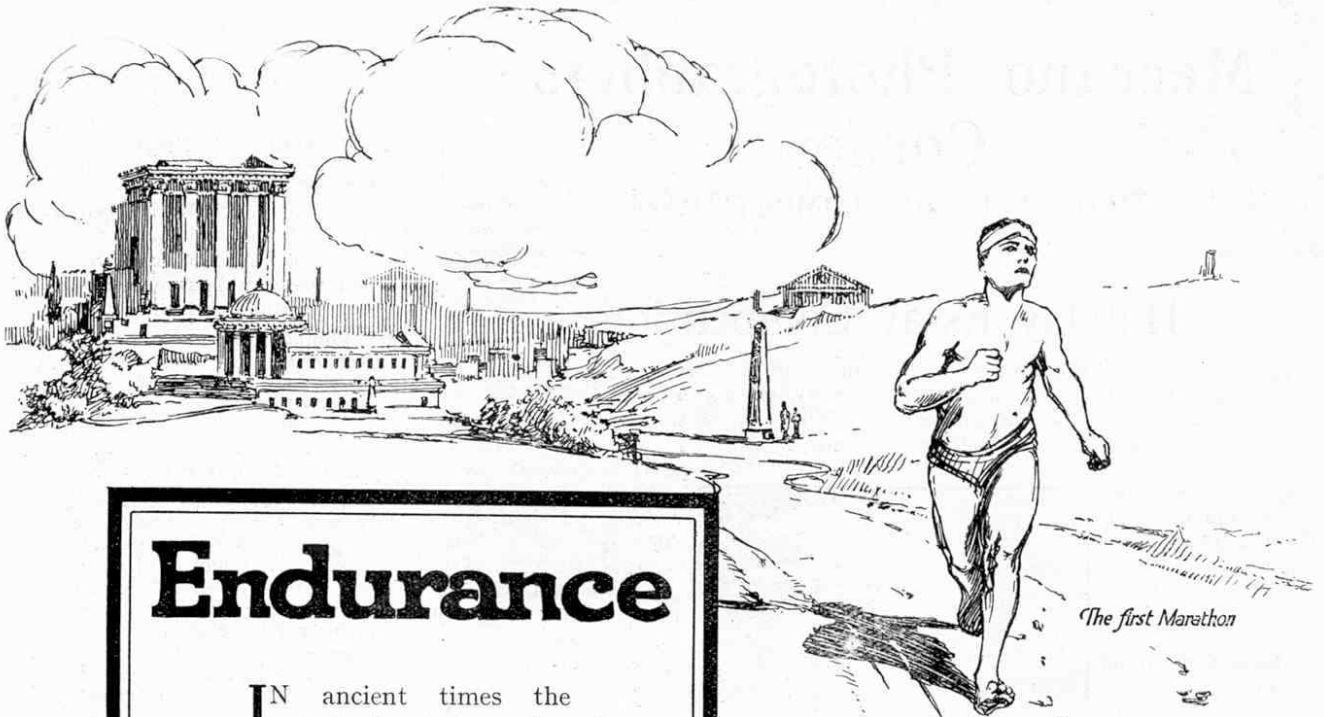
By Master J. Mellish.

Those boys who have cameras will find the making of a picture calendar a very fascinating pastime.

First of all it is desirable to choose a pretty scene, in which trees and bushes are outstanding features. When this has been done, a photograph is taken of it and the spot from which the exposure was made is carefully marked. On the same date in the following month, another photograph is taken from the same position.

Continue to take a photograph each month, until the end of the year, when, of course, you will have twelve plates or films. It is interesting to compare each print and to notice how the scene has changed in appearance each month, showing the difference between Summer and Winter, Autumn and Spring.

I am sure this idea will appeal to many thousands of Meccano boys, especially those who make photography their special hobby.



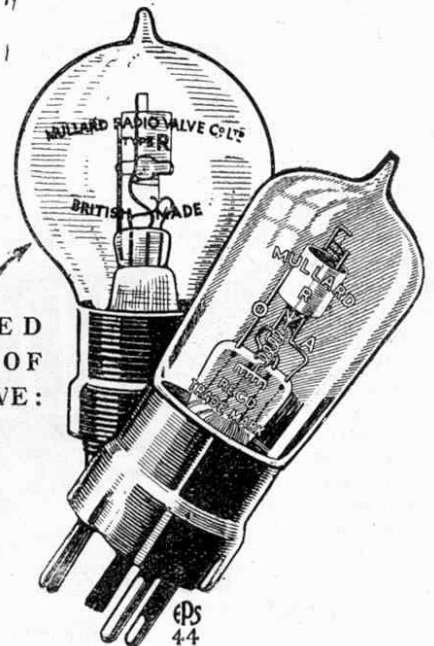
Endurance

IN ancient times the test of endurance lay in the running of races and in contests with wild beasts. To-day the demand for endurance is just as insistent, and anything which is to survive the stern competition must be of sound design and construction. For your wireless receiver you need Valves of endurance which will give unfailing satisfaction throughout a long life. If you wish to be assured of this specify

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REDUCED
PRICE OF
"R" VALVE:

15/-



Obtainable from all leading electricians, wireless dealers, etc.

Advt. of THE MULLARD RADIO VALVE CO. LTD., Balham, S.W.12.

Radio Replies



Dennis Hausford (Hockley).—A crystal does not wear away in the sense that it gets smaller. By constant use it gradually loses its power of detection, or in technical terms, its sensitiveness.

V. Boulton (Llanharan).—(1) A condenser is made up of separate conducting plates, each insulated from the other. The conducting surfaces are commonly tinfoil, copper, brass or aluminium. The insulating mediums are usually mica, impregnated paper, air, glass or oil. (2) By the use of a variable condenser very fine tuning may be accomplished.

K. Heywood (London, W.3).—It is undesirable to use two Sets receiving on different wave lengths with one aerial. Disturbances would be almost sure to occur which would prevent your being able to receive clear messages on either.

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. For this purpose some of the Meccano parts are made in special fibre, which gives perfect insulation. Certain of the parts are also available in brass, useful to experimenters on account of its non-magnetic qualities.

If you are building a Radio Receiver or experimenting in any way, you will find these special Meccano Radio parts of great assistance. Send for a full list, which will be mailed post free on application.

The Story of Spinning and Weaving

(Continued from p. 93).

to a cotton mill. After being successfully employed in this connection, however, it gradually superseded water-power, and power-looms became common. Weaving by hand-looms was discontinued and the weavers came into the towns and became operatives at the mills. Previous to this time, a farmer's business had been almost equally divided between cultivating the land and weaving cloth. The introduction of spinning and weaving by machinery, however, caused the farmer to give up this side of his business, being unable to compete with the power-looms of the newly-established factories.

It is a far cry from the hand-looms of the Ancient Egyptians to the giant power-looms of such a factory as that, for instance, of Messrs. Horrockses, Crewdson and Co. Ltd., where there are over 8,000 looms installed and where the weekly output is 600 miles of cloth! Nevertheless, the story of these intervening centuries is one of the greatest interest, and not the least extraordinary is the fact that all the changes and improvements have taken place in the last two hundred years!

THE END.

Singing to an Audience of 10,000



Our illustration shows a duet being broadcasted from the London Broadcasting Station. As will be seen, there are two microphones in use, thus enabling the sound to be transmitted more effectively. Behind the pianist is the famous peal of tubular bells, which delight many listeners-in. It is estimated that at least 10,000 people listen-in to the London station every night.

RADIOGRAMS



The world's most northern Radio station has just been fitted up on Jan Mayen, an extinct volcano in the Arctic Ocean, north of Iceland. As the world's weather originates in the Arctic zone, warnings of coming storms can now be sent from Jan Mayen. Arrangements are being made for the erection of three other stations in the Arctic to assist in broadcasting daily weather forecasts.

The highest radio station in the world is situated on the peak of Mount Corcovado, South America. It is over 2,100 ft. above the city of Rio de Janeiro.

Loud speakers have been fixed to the ceiling of the House of Representatives, Washington, and connected to microphone transmitters at the members' tables. The voice currents are carried to an amplifying apparatus situated in the basement, and from thence to the loud-speakers. They are also sent on to the radio station at Anacostia, from whence they are broadcast.

The largest crystal radio-receiving set ever built has recently been on view in New York. The set is 5 feet long, weighed over 200 pounds, and was wired up ready for use.

On the table in front of the speakers, at a political meeting the other day, a bouquet of beautiful flowers concealed the receiver of a new telephonic invention. By means of concealed wires a number of scientists in another part of the building were able to hear every word of the speeches, even the faintest whisper being clearly transmitted.

Radio-telephony has now been established in the British West Indies, and the inhabitants of the Grand Turk Islands will now be able to know when steamers are leaving Santo Domingo for their island. The Islands will benefit greatly, and the authorities will be able to keep in touch with the officials of the neighbouring Islands.

Mr. T. A. Nikirk, of Los Angeles, California, claims to be the first amateur to transmit radio messages across two oceans with a home-made set. He has sent messages that have been heard in France and also on the Chinese coast. He uses a 250-watt transmitting valve, or about one-quarter the power of the British broadcasting stations.

Meccano Radio Prices

RS1	Meccano Crystal Receiving Set, complete. Efficiency tested. Packed in strong carton ...	s. d.
RS2	Outfit containing parts to make Receiving Set, in strong carton ...	40 0
RS2a	do. do. do. less Phone ...	25 0 15 0
AS1	Aerial Set, complete, and ready for connecting to Receiver (including earth wire) ...	12 6

Results of the £250 Model Building Competition

Every year our annual Model Building Contest brings an increased number of entries and more excellent models. The Contest just closed has been no exception. It is very gratifying to me to see the high standard of the models submitted, and the ingenuity displayed by the competitors in designing new movements. The entries from our Colonies and Dominions overseas, from France, Italy, Spain and Belgium are again very numerous, and the task of selecting the winners has been one that has called for considerable discrimination and judgment.

The entrants from the countries named are to be congratulated, because of the fact that they have made a very fine show in competition with Meccano boys of many years' standing in the United Kingdom.

I congratulate the winning competitors on their successes, and would say that many of the unsuccessful competitors missed prizes by only a very few points. I look forward to seeing their names in lists of awards in future competitions.

Frank Hornby

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

Devan, P., 171, Avenue du Roule, Neuilly, Seine, France. Sewing Machine.	}	First Prize (Divided) - - - £20
Mason, S., 39a, Bridgewater Street, Tamworth. Horizontal Compound Engine.		
Bradley, J. F., Ganton Place, Woodhouse, Leeds. Stone Plane.	}	Second Prize (Divided) - - - £15
Hastings, H. C., 24, Brownswood Road, Finsbury Park, N.4. Railway Wrecking Crane.		
Guy, A. W., Kimberley, Summerheath Road, Hailsham. Lathe.	}	Third Prize (Divided) - - - £10
Jovellar, J., Coso-176-3 ^o , Zaragoza, Spain. Electric Printing Machine.		

Additional Prizes of Meccano Outfits and Train Sets, etc.

Aillaud, V., Quartier Antelme, Six-Fours la Plage, Var, France. Compound Steam Engine.	Miller, R., 58, Harcourt Street, Newark, Notts. Single Deal Frame Saw.
Allen, T. S., 9, Whitley Gardens, Southall. Printing Machine.	Morgan, G. H., 1, Alexandra Street, Dunfermline. Pit Head.
Anglodette, M., 16, Rue d'Orleans, Paris XIV. Machine for Sounding.	Moriere, A., Chateau d'Oex, Canton de Vaud, Switzerland. Dray.
Aquilina, A., 58, Strada Reale, Malta. Spinning Mill.	Nault, A., 751, Maple Street, Manchester, N.H., U.S.A. Touring Automobile.
Archer, A. J., 22, Lions Flats, Mandeville Street, Clapton Park, London, E.5. Railway Engine.	Nelson, J. H., Riccall Grange, Riccall, Yorks. Threshing Set.
Badré, P., 15, Avenue de la Republique, Colmar (Ht. Rhin). Giant Excavator.	Nichols, H. Birdsall, 13809, Orinoco Avenue, E. Cleveland, Ohio, U.S.A. Shaper.
Berni, P., via Pampi No. 5, interno 3, Sampierdarena, Italy. Electric Loco.	Norris, F. E., 50, Middleton Hall Road, King's Norton, Birmingham. Locomotive Coaling Plant.
Bianchi, V., Via Sabbione 461, Villa Alice, Bologna, Italy. Polistereoscope.	Nvss, D. R. B., "Victoria Lodge," Darjeeling, India. Transporter Crane.
Bing, R. L., 67, Boulevard Lannes, Paris XVI. Machine for Tracing Designs.	Page, E. W., 52, Warwick Road, New Southgate, London, N. Calculating Machine.
Blair, F. J., "Hawkesbury," St. Annes-on-Sea, Lancs. Knight.	Parrish, J. A., 108, Savage Gardens, New Beckton, London, E.6. 3-ton Electric Crane.
Bounds, E., 11, Arundel Street, Glebe, Sydney, N.S.W. Paper-Cutting Machine.	Parry, G. R., 11, Byfleet Road, Weybridge, Surrey. Turret Lathe.
Brayer, G., 134, Rue Chiers, Boulogne, France. Helicoidal Wire.	Péquignat, C., Ingénieur à Bruay, (Pas de Calais), France. Differential Reversing System.
Bricourt, L., 2, Rue Sivel, Paris XIV. Village Pump.	Pitkethly, R., Beehive Flats, Bendigo, Victoria, Australia. Designograph.
Brown, A. Junr., Farmerton, Fern, by Brechin, N.B. Ship Transporter.	Porter, J., 13, High Street, Freetown, Bury, Lancs. Rope-laying Machine.
Capitaine, J., 6, Rue Fantin Latour, Grenoble, (Isère), France. Clock.	Prudhommeaux, W., 20-22, Rue de l'Abbaye, Solesmes (Nord), France. Radio Telegraphic Transmitter.
Carel, B., 8, Rue Dutailly, Chaumont, France. Curule Chair.	Radclyffe, L., Laburnum Street, Blackburn, Victoria, Australia. Automatic Electric Drop Hammer.
Chevahel, M., 52, Rue Gambon, Bourges, France. Universal Wood-Saw.	Ramvez, Ch., 1, Rue Galliot, Namur, Belgium. System for Changing Speed by Degrees.
Clare, P., Chalfont Cottage, Station Road, Winslow. High-speed Hand Lathe.	Rant, M. R., French Bridge, Grant Rd., Post, Bombay 7, India. Spinning Machine.
Clark, H., West Cliffe, Guiseley, nr. Leeds. Lathe.	Rapaz, G., Rue des Moulins 14, Neuchatel, Switzerland. Automatic Machine for Sawing and Splitting Wood.
Clarke, W., 33, Oxford Road, Gee Cross, Hyde, Cheshire. Monkey Race.	Rishworth, J. C., Post Box No. 67, 15, Armenian Street, Georgetown, Madras, India. Coal-Shipping Plant.
Colby, A. B., 47, George Street, Providence, Rhode Island, U.S.A. Radio Inductance Winding Lathe.	Roberts, T. J., 170, Dryden Street, Liverpool. Hydraulic Bridge.
Cowell, J. A., 29, Cotterill Road, Surbiton, Surrey. Meccanotroupe.	Robineau, L., 51, Rue de Roumanie, Brussels, Belgium. Steam Engine.
Cunningham, W., 22, Baltic Avenue, Antrim Road, Belfast. Ransome Concrete Mixer.	Robinson, D. F., 23, Hill Street, Parkside, S. Australia. Wool Spinner.
Davidson, P., 8, Hermand Terrace, Merchiston, Edinburgh. Meccano Electric Car.	Rossignol le L. P., 22, St. Saviour's Road, Jersey. Workshop.
Derrier, M., 27, Rue David, Laon (Aisne), France. Sismograph.	Rowlands, A. F., "Roslin," 92, Erddig Road, Wrexham. "The Great Bear" Engine.
Dorsey, H. R., 5, Barrack Street, Meanwood Road, Leeds. Tamping Machine.	Ruy d'Arnaldas, G., Calçada do Pico 41, Funchal, Madeira Islands, Atlantic. Meccano Caricatograph.
Fantova, J. G., Calle Comercio N.3, Mahon, Balearic Isles, Mediterranean. The Whip.	Saddler, J. A., "Narbethong," Myall Avenue, Kensington Gardens, Adelaide, S.A. Railway Traverser.
Featherstonhaugh, W. S., Caia House, Caia Road, Wrexham. Coil Winder and Counter.	Saligot, J., 53, Rue de Loigny, Montargis, (Loiret), France. Alternating Log Saw.
Fouchaux, J., 19, Rue St. Bartholémy, St. Symphorien, Pres Tours, France. Fire Engine.	Schwartz, R., 255, Fg. St. Martin, Paris X. Coste's Air Motor.
Freeman, H. A., Renfrew, Willingdon, Sussex. Penny-in-slot Machine.	Septfours, P. de., Villa Cantoria, Avenue du Docteur Cazin, Berck-Plage (P.-d-C.), France. Locomotive.
Grey, L. W., 131, Kempton Road, East Ham, Essex. Light Cruiser.	Sereno, P., Via Sicilia 154, Roma, Italy. Writing Telegraphic Receiver.
Guereudian, A., Alfau 7, Ceuta, Spanish Morocco. Circular Wood Saw.	Stals, M., Chaussée de Termonde 51, Mont St. Amand, Gand, Belgium. An Errand Boy.
Guimiot, H., Boulevard Dupin, Perception, Varzy, (Hievre), France. Chronometer.	Stillwaugh, Anna K., 37, Pacific Avenue, Toronto, Canada. Brick-making Plant.
Guisepponi, N., Valle 1286, Beunos Aires, S. America. Steam Locomotive.	Surault, J., 108, Rue de la Tranchée, Poitiers, (Vienne), France. Automatic Hand Fan.
Hall, E., The Cottage, 36, Heath Road, Leighton Buzzard. Track Layer.	Surroca, E., Fernando Puig 25 (G), Barcelona, Spain. Electric Motor.
Hare, J., Kelland, Westholt, Henlow, nr. Biggleswade. Ford Chassis.	Tamblын, D. A., 6, Bond Street, Redruth, Cornwall. Automatic Reversing Gear.
Hart, E. M., Cranford, Newland Park, Hull. Electric Dockside Coal Hoist.	Tarrant, A. R., "Myora," Athelstan Road, South Camberwell, Melbourne, Victoria, Australia. Australian 5-Head Mine Battery.
Heeramaneck, D. R., 44, Alexandria Road, Harvey Road, New Ganadevi, Bombay, India. Concrete Mixer.	Taylor, A. S., 19, Roach Road, Sheffield. Workshop Micrometer.
Hitchcoe, S. H., "Strathmore," Solihull, nr. Birmingham. Rotary Tippler.	Thompson, E. L., Russell Avenue, Lindfield, N.S.W., Australia. Pontoon Crane.
Huizinga, M., Van Palandtstraat 5, Arnhem, Holland. Large Plough.	Visvikis, S., Maison Sarkissian, 1 Crahimieh, Alexandria, Egypt. Electric Clock.
Humbert, G., Soultz-sous-forêts, Frohnaecker, Bas-Rhin, France. Dynamo.	Wattrelo, A., 12, Place de l'Hôtel de Ville, La Ferté-sous-Jouarre, (S.-et-M.), France. Printing Machine.
Janne, E., 17, Rue d'Algésiras, Brest, Finistère, France. Printing Machine.	Wheeler, R. T., 32, Gladstone Street, Abertillery. Motor Chassis.
Jenkins, J., 8, Anderson Terrace, Longcroft, by Bonnybridge, Stirlingshire. Electric Coal-Cutting Machine.	Wild, J. H., 4814, Grand Boulevard, Chicago, Ill., U.S.A. Automatic Push-button Elevator.
Joannopoulos, J., 21, Rue Farges, Marseille, France. Three-Wheel Motor Lorry.	Wolf, G. de, Via Vittorio Veneto 6, Varese, Coma, Italy. Gantry Crane.
Lafitte, J., Ecole Maternelle de la Jeunesse, Toulouse, France. Spherometer.	Woodall, H. H., 2, Lestrangle Street, Cleethorpes. Heavy Cargo Crane.
Lautel, F., 9, Rue Gierre Bayen, Chaons sur Marne, France. Hydrostatic Balance.	Wulf, L. de, Rue Borluut 23, Gand, Belgium. Gear Box.
Lavie, J., 32, Rue de Brest, Morlaix, Finistère, France. Sieve.	Yeadell, W. H., 15, Oakley Square, London, N.W.1. Motor Car.
Lemercier, H., 95, Rue Ordener, Paris XVIII. Electric Shovel, Scourer and Loader.	
Lowe, W. H., 8, St. Andrew's Crescent, Blackhill, Co. Durham. The Mammoth.	
Luke, R., "Brondaeg," Woodcote Park, Purley, Surrey. S.S. "Majestic."	
Magnier, L., 49, Avenue Verdier, Montrange, (Seine), France. Cinematograph Apparatus.	
Mante, C., 5, Place Petit Scel, Montpellier, France. Parallel Ruler.	
Marken, L. M., 359, Sumatra Avenue, Akron, O., Goodyear Heights, U.S.A. Braiding Machine.	
Maucherat, G., 11, Rue Montévidéo, Marseille, France. Combined Sifting, Elevating and Distributing Machine.	

SECTION "B"

- Happe, W. H., Junr., 365, Quincy Street, Brooklyn, New York, U.S.A. Quilted Lining Sewing Machine.
 Horsley, V., 11, Ashbourne Road, Eccles. Titan Crane.
 Smart, R., 47, Meldrum Road, Kirkcaldy, Fifeshire. Compound Steam Engine.
 Spazier, L., 9, Rue Cavallotte, Paris XVIII. Glass-Polishing Machine.
 Coll, C., Cortes 458, Barcelona, Spain. Rotating Mechanical Excavator.
 Fleux, J., 13, Rue Cortambert, Paris XVI. Water Mill.

- First Prize (Divided) - - - £15
 Second Prize (Divided) - - - £10
 Third Prize (Divided) - - - £6

Additional Prizes of Meccano Outfits and Train Sets, etc.

- Allnutt, P. L., 34, Wolsley Grove, Brighton Beach, P.D.11, Victoria, Australia. Gollath Crane.
 Ancona, R., Via Saracco (Portici) No. 1 Acqui, Alessandria, Italy. Machine for Polishing Marble.
 Agusti, F., Mallorca 313, Principal, Barcelona, Spain. Electric Wagon Chassis.
 Babu, P. V. R., Door No. 57, East Anjaneya Road, Basangudi, Bangalore City, India. Automatic Dumping Tractor.
 Ball, J. N., "Makura," Queenscliff Road, Queenscliff, via Manley, N.S.W., Australia. Wool Skeiner.
 Barnes, F., Hilborough Farm House, Herne Bay. Big Wheel.
 Bedford, W., Kyancutta, via Port Lincoln, S. Australia. Scrub Roller.
 Bernard, A., Nouvelles Galeries, Neuchâtel à Pans, Switzerland. Scenic Railway.
 Botto, A., Via Piemonte 63, Roma, Italy. Pendulum Clock.
 Boudier, M., 5, Rue Jeanne d'Arc, Rouen, France. Lighthouse.
 Bremner, D. T., 11, Frost Street, Queenstown, Cape Province. Electric Shovel.
 Brouard, J., 36, Rue Vercingétorix, Paris XIV. Machine for Whip-Stitching.
 Brown, B. F. A., "Halstead," Bellevue Avenue, Greenwich, Lane Cove, Sydney, N.S.W., Australia. Railway Breakdown Crane.
 Buchet, M., rue Corday 3, Yverdon, Switzerland. Propeller-driven Sledge.
 Candler, J. L., 103, Palace Road, Tulsa Hill, London, S.W.2. Meccano Motor.
 Caney, R. J. T., Cathedral Choir School, Worcester. Sheep-Shearing Machine.
 Carpenter, R., 56, Hammond Road East, Southall, Middlesex. G.W. Railway Trolley Crocodile H.
 Catalini, E., via del Colosseo 18, po 2, Roma, Italy. Carriage for removing Railway Trucks from one line to another.
 Chabot, R., Nouvelle Poudrerie, St. Medard en Jalles (Gironde), France. Horse Racing.
 Couffon, J., 11, Rue Hoche, Angers (Maine-et-Loire), France. Slate Quarry Extraction Gear.
 Craulle, P., 2, Rue Blériot, Hémin-Liétard, Pas-de-Calais. Bird Target.
 Debib, V., F. Venezian 30, (IV), Trieste, Venezia, Giulia. Transportable Crane.
 Degraeve, A., Rue de la République 14, St. Pol S/Mer, près de Dunkerque, Nord, France. Electric Pile Driver.
 Desbruslais, E., The Mall, Amritsar, Puniab, India. Coal Tippler.
 Dufour, R., Rue du Doyen 8, Aire-sur-la-Lys, Pas-de-Calais. Suspension Bridge.
 Faura, J., Aribau 95, Barcelona, Spain. Wimshurst Machine.
 Fenner, R. H., Third Avenue, Roodepoort North, Transvaal, South Africa. S.A. Railway Freight Engine.
 Ferdinand, F., Place de l'Hôtel de Ville, Viviers, Ardèche, France. Derrick Crane.
 Fisk, R. L., 30, Oxford Street, Bridlington. Meccano Motor Car Race Game.
 Forti, P., Via Ariosto N.3, Milano, Italy. Treadle Sewing Machine.
 Fromageot, A., 6, Avenue de l'Eglise, Le Chemay, Seine-et-Oise, France. Jib Crane, with Indicator.
 Fûri, H., Hôtel du Lac, Gunten, Lac de Thoune, Switzerland. Knife-Cleaning Machine.
 Glauser, H., Quai de la Thiele 27, Yverdon-les-Bains, Switzerland. Cylinder Gramophone.
 Glenn, A. G., 115, Rushmere Road, Ipswich. Anemometer.
 Gozzi, M., Via Canalino 1, Modena, Italy. Steam Engine.
 Heeramanek, G. R., 44, Alexandria Road, Harvey Road, New Gamdevi, Bombay, India. Truck Tractor.
 Heeramanek, V. R., 44, Alexandria Road, Harvey Road, New Gamdevi, Bombay, India. Aerial Ropeway.
 Hewison, C. H., Marr Vicarage, Doncaster. Locomotive.

- Hipperson, H. M., Waveney Walk, Beccles, Suffolk. Single Blade Log Saw.
 Hollambay, A. H., 7, Surrey Street, Goodwood, Adelaide, South Australia. Silk Winder.
 Jendron, Y., 72, Avenue Clement, Boulogne-sur-Seine, France. Battle Crusier.
 Jobson, R. H., Canfield, Pendre Avenue, Prestatyn. Grain Unloader.
 Jones, K., 45, Victoria Street, Whitstable, Kent. Cantilever Crane.
 Kirby, A. D., 8, Avenue Road, Trowbridge, Wilts. "Sentinel" Motor Steam Lorry.
 Kohring, W., Basildon Villa, Mawney's Road, Romford. Hydraulic Swivelling Crane.
 Lama, E., Campo di Marte, Casa Guocchi, Arezzo, Italy. Propeller Toy.
 Leclercq, A., 32, Rue du Logelbach, Colmar, (Ht. Rh.), France. Aeroplane Roundabout.
 Leigh-Hunt, C. J., 11, Soper Road, Berea, Johannesburg. Artesian Well.
 Lemaire, F., 12, Rue St. Remy, Epervy, Marne, France. Light Lorry.
 Malkani, T. K., c/o Messrs. Malkani Optical Company, Camp, Hyderabad Sind, India. Lift Tower.
 Marato, T., Cortes 704, Principal, Barcelona, Spain. Electric Lorry Chassis.
 Martin, A. T., 26, Bowden Road, Observatory, Cape Town. Cornish Pump.
 Mateos-Baron, O., Claudio Coello No. 109, pral Drcha, Madrid, Spain. Static Electricity Machine.
 McIntyre, H., Saginaw R. No. 6, Michigan, U.S.A. Tutankhamen's Cat.
 Morange, J., 21, Rue Eugene Destengne, Reims, France. Morse Telegraph Apparatus.
 Morton, A., Home-acres, Colinton, Midlothian. Cotton-winding Machine.
 Nibaret, S., 15, Rue des Jardins, Albi, Tarn, France. Sluice Gate.
 Nicholls, A., 40, Dorset Road, Levenshulme, Manchester. "Laxey Water Wheel."
 O'Connor, W. J., Stephen Terrace, Walkerville, South Australia. Pontoon Crane.
 Odero, L., Passo Caffaro No. 2-int 5, Genova, Italy. Racing Car.
 Osborn, C. B. L., 190, Church Street, British Guiana. Metronome.
 Parpia, I. S., c/o R. P. Parpia, Esq., c/o Messrs. Manchew & Narvadhanpar, Solicitors, Military Square Lane, Fort, Bombay, India. Indian Bullock Cart.
 Perraud, L., 38, Rue du Commerce, Sous-le-Saunier, Jura, France. Motor Bike and Sidecar.
 Perrin, R., 3, Rue Cavout, Genève, Switzerland. Electric Tramcar.
 Reichelt, T., Kulga, Via Gilgandra, N.S.W. Reaper-Thresher.
 Reymond, M., Rue des Moulins 69, Yverdon, Switzerland. Travelling Crane.
 Robins, H., 51, Rue Victor Hugo, Touroing, France. Cyclometer.
 Rosado, C., Caracas N 7, Madrid, Spain. Printing Machine.
 Sabbatini, S., Corso V.E. 37, Ancona, Italy. Meccanophone.
 Savona, J., 18, Strada St. Ursola, Valletta, Malta. Motor Scooter.
 Sellar, E. W., Sheep Street, Winslow, Bucks. Flip-Flap.
 Stanley, J., 2, Market Place, Ripley, Derbysh. Battleship.
 Theodoropoulo, N. G., Rue Canope, Camp-César, Alexandria, Egypt. Triple Extending Ladder on Running Carriage.
 Thomas, G., Rue du Tir 29, Meulhouse, Alsace. World's Largest Crane.
 Tinsley, A., 23, Sandford Road, Bradford. Road-sweeping Machine.
 Ullmann, E., 34, Rue du Petit Potet, Dijon, France. Transporter Bridge.
 Vassallo, E., Viale Attilio Frosini No. 357, Pistoia, Firenze, Italy. Chinese Villa.
 Veldhuyzen, J., Keizersgracht 100, Amsterdam. Table Telephone.
 Verdan, J. C., Saint-Aubin, Canton-du-Neuchâtel, Switzerland. Agricultural and Industrial Motor.
 Ward, J. G. D., 86, Merivale Lane, Christchurch, N.Z. Meccano Grafonola.
 Wharton, G., The Court Yard, Ringstead, King's Lynn. Spring Balance.
 Williams, A. H., 4, Springfield Road, Northfleet, Kent. Farm Wagon and Horses.
 Williams, D. H., 24, Ivy Street, Ipswich, Suffolk. Mammoth Crane.
 Willmer, H., 197, Shirebrook Road, Sheffield. "The Rocket."
 Wiltshire, A. N., 5, Westholm, Letchworth. Leather Roller.
 Wood, L., 87, Hutt Road, Petone, Wellington, N.Z. Lawn Tennis Marker.

SECTION "A"

- First, Second and Third Prizes (Divided) £25

- Boudart, B., 19 Bd. de la Gare, Beauvais (Oise). Mechanical Crane.
 Grech, G., 173, Prince of Wales Road, Sliema, Malta. Maltese Passenger Dghaisa.
 Lacey, D., 16, Grayham Road, New Malden, Surrey. Railway Breakdown Crane.
 Melville W., 44, Woodville Gardens, Langside, Glasgow. Giant Cantilever Crane.
 Round, C., 29, Elm Street, Hoyland Common, Yorks. Coal-Cutting Machine.

Additional Prizes of Meccano Outfits and Train Sets, etc.

- Akkeren, C. V., Spuistraat 98, 1 hoog, Amsterdam. Sawing Machine.
 Beuret, M., 21, Rue Marceau, Dijon, France. Quayside Crane and Lorry.
 Brochier, P., Chez le Notaire Brochier, Sennecay-le-Grand (Saône-et-Loire), France. The Boxers.
 Bruet, J., Longue rue Des Aulnes 31, Anvers, Belgium. Windmill.
 Cardon, J., 116, Rue Nationale, Lille, France. Omnibus.
 Cook, K. L. W., The Bungalow, 3b, Weyhill Road, Andover. Monkey on Stick.
 Devaux, R., 67, Avenue du Clos, St. Amand-les-Eaux. Locomotive.
 Doumain, E., Rue Marengo 114, Marseille, France. Child's Go-Cart.
 Fenner, H. H., Third Avenue, Roodepoort North, Transvaal, South Africa. Dutch Ox-wagon.
 Fuhrlinger, A., Faubourg de Belfort, Altkirch, Alsace. Multiple Saw, with Trolley.
 Hockett, A. J., Box 135 P.O., Stanthorpe, Queensland. Tin-Dredging Plant.
 Jacqueminart, J., Etat Civil Française, Poperinghe. Wind Motor.
 Kodel, J., 8, rue du Tir, Vesoul, France. Steam Packet Boat.
 Lennox, S., "The Bield," Chryston, Glasgow. Builder's Crane.
 Migliorati, L., Via Alessandro Monti 4, Brescia, Italy. Grape-Crusher.
 Neve, C., Holly Lodge, North Malvern. Crossley Gas Engine.

- Piezi, A., 85, Ponte a Moriano, Lucca, Italy. Aerial Motor, Working Pump and Transmission.
 Probst, H., Reichensteinstrasse 40, Basel, Switzerland. Military Biplane.
 Richards, J., Misterton Rectory, Lutterworth, Rugby. Express Tank Engine.
 Ripamonti, E., Corso Garibaldi 10, Borgomanero, Italy. Sewing Machine.
 Ruffier, R., 3, jeu de Paume, Château Thierry, France. Backward and Forward Movement Balance Wheel.
 Stock, D. A. I., 23, Ditton Road, Surbiton. Galloping Horse.
 Thachella, L., Via Case Nuovo 14, Marina di Campo, Livorno, Italy. Torpedo Destroyer.
 Teenstra, R., Oostzeedijk 288b, Rotterdam. Double-action Rotating Crane.
 Thys, R., Avenue des Calliés 32, Louvain, Belgium. Big Wheel.
 Wheaton, P. G. L., 61, Junction Road, Andover. Letterpress.
 Wilson, J. D., 54, Richmond Avenue, Auckland Park, Johannesburg. Motor Repair Car.
 Winterbottom, M., 22, Isabella Street, Malvern, Victoria, Australia. Electric Mule.
 Wright, A., 487, Tuam Street, Linwood, Christchurch, New Zealand. Horse and Cart.
 Yeadell, R. D., 15, Oakley Square, London, N.W.1. Locomotive and Tender.

Special Certificates of Merit have been awarded to several hundreds of other entrants.

OUR NEW SERIAL



Bulmer's Father



A Stirring Story of School Life

By Arthur Hutchinson

SYNOPSIS

On the first day of the new term at St. Winifred's, Lawson, the school bully, asks some impertinent questions of Jack Bulmer,

a young newcomer. A fight is only prevented by the appearance of the headmaster. One Saturday afternoon Lawson, surrounded by a group of grinning boys, is twisting the arm of a junior when Jack Bulmer elbows his way through the group, strides up to Lawson and knocks his hand away from his grip of the younger boy.

IV.

"YOU infernal bully," he cried, as the astonished Lawson swung round upon him. Lawson's face instantly became a study in expression.

"It's you, is it, you wheedling imp?" he shouted, his face as black as thunder. "Get out of this before I kick you out!"

Young Bulmer never flinched.

"Leave go of that kid then!" he said quietly.

"Get out of it, do you hear?" roared Lawson, catching hold of the youngster again.

In a flash young Bulmer caught hold of his arm, and in a determined voice said:—

"Will you fight?"

At the words of this challenge a silence of astonishment fell upon the assembled group of boys. Faces became tense with excitement, and necks stretched forward to obtain a better view of this unexpected state of affairs. As for Lawson, he gazed for a moment in fury upon the calm figure that confronted him. Then rapidly he drew off his coat.

"I'll make you wish you'd never been born!" he cried, flinging his coat to the ground.

Jack Bulmer, too, removed his coat.

"We shall see!" he said grimly, as he faced the bully.

The next minute Lawson bore down with a mad rush upon young Bulmer. Blindly he flung out one fist and then another with no attempt at defence whatever, but only animated by a wild desire to flatten out his opponent as quickly as possible. Bulmer watched the avalanche about to descend upon him, and with a rapid step to one side, caused Lawson to pitch forward into space. Then promptly he shot out his left fist, and caught the bully a stinging blow on the

side of the head, as he was in the act of recovering his momentum.

There was an immediate gasp of surprise from the onlookers, whilst the surprised Lawson staggered back and blinked with outraged astonishment.

Again he lurched forward, but with a little less recklessness, and once more there sprang up into his face a hammer-like blow. Then someone shouted "Time!" and for a few seconds the two opponents stood apart breathing heavily.

quickly followed right upper cut to the point of the chin, sent the bully crashing to the ground, where he lay in a huddled heap.

There was a tense silence during which Lawson, with the assistance of two of his friends, rose painfully to his feet. He was completely beaten and he knew it, and young Bulmer, also perceiving this, reached down for his coat. A boy stepped forward, and helped him on with it, representing

by his action a curious change in public opinion.

Almost at the same moment a deep voice from somewhere called out "Well done, young 'un!" and, to the astonishment of everybody, Brailsford, who had been an unobserved witness of the fight, stepped out into the ring.

"Well done, youngster," he repeated, and Bulmer, glancing across at him, traced in the look in his eyes a subtle message that filled him with a strange secret joy.

Then another sound became audible, and it proceeded from the boys who now were gazing at young Bulmer with an expression

on their faces which he had never seen there before. Without a word he strode forward to where Lawson stood, and held out his hand.

"Will you shake?" he asked.

Lawson remained irresolute for a second, and then suddenly something from within seemed to prompt him. Some little urging voice that for so long had failed recognition, but which now at last, through some curious psychological reason, had gained a hearing. He put out his hand, and grasped that of Bulmer.

"Good!" cried Brailsford, with a smile of approval, as Bulmer, unable to control his emotion any longer, gave Lawson's hand another vigorous shake and hurried from the ring in the direction of the school buildings.

VI.

As soon as he had gone, Brailsford raised his hand.

"Listen here, you fellows," he said, as curious eyes were directed towards him. "I've got a few things I want to say, and I mean to say them, whether you like it or not."

There was a slight stir of uneasiness as he uttered these words, and Lawson, together with a few others, began to edge away.

(Continued on p. 102)



"I'll make you wish you'd never been born"

V.

Almost at once they were at it again, but this time Lawson was more cautious, and contented himself for a while with manœuvring his arms and fists in the manner of an excited windmill. Bulmer, remaining on the defensive, awaited the blow that he expected would soon be aimed at him. It was not long in coming. Suddenly one of Lawson's fists shot out like a piston, and landed—nowhere. And then it was that, for the first time, young Bulmer assumed the aggressive, and treated the astounded spectators to a display of scientific fighting that entirely took their breath away.

With surprising agility he danced round the bully, hitting him just when and where he pleased. As for Lawson, he was completely overwhelmed, and only the blindness of his fury prevented him from giving in there and then.

Soon the inevitable happened. With a cunning feint, young Bulmer drew Lawson's guard, and then, easily breaking through, dashed his left to the body, and, with a

Meccano Boys Vindicate their Good Name

Result of the recent "Sharp Eyes" Competition.

During the past two months my Mail Bag has been made very much heavier by the thousands of entries that have been received in the above competition. Sacks and sacks of entries have reached me, and you will understand how pleased I am at my readers' response to the challenge that I accepted on their behalf.

It will be remembered that a few months ago I mentioned to a gentleman, whom we will call "Mr. X," that Meccano boys were the keenest and most intelligent boys in the world, and how proud I was of them. I was very much taken aback when Mr. X. maintained that probably Meccano boys were just the ordinary type of boy with no more than the usual intelligence! When he claimed that he could submit a test that would demonstrate his contention, I at once accepted his challenge. Later I received a drawing of a Locomotive in which Mr. X. stated that he had purposely made several mistakes, and that he was prepared to give a prize to the Meccano boy who specified every error. The drawing was published in our May and June issues.



Master S. H. Judson,
winner of the Second Prize

When the closing date came I telephoned Mr. X., inviting him to Binns Road to judge the entries. When he came, I took him into a special room, where there was a heap of entries on the table. Mr. X. seemed very surprised to see that so many Meccano boys had responded to his challenge. You may imagine his consternation, however, when I showed him some mail bags crammed with further entries!

"Why," he exclaimed, "it will take me weeks to go through these!"

I felt like saying "It would serve you right if you had to do it!" but refrained.

He begged me to help him in his difficult task, and so I arranged for our competition staff to deal with the matter on his behalf, and sort out and classify the entries ready for his final consideration.



Master A. D. Smalley,
winner of the First Prize

I would have given a great deal if I could have had the thousands of entrants with me to enjoy the look of utter bewilderment on the face of Mr. X. when he left the building. He was even more bewildered when he called the second time and was told that the boy who had found the most mistakes had tabulated 184 errors in the drawing! To say that Mr. X. was dumbfounded is no exaggeration, but it was my turn to be surprised when I learned that he himself had purposely shown only 39 mistakes in his drawing!

Mr. X. has gracefully admitted that he had completely under-rated the intelligence and ability of Meccano boys, and he has addressed to me this letter with the request that I should reproduce it in these columns:—

Liverpool,
July 16th, 1923.

My Dear Meccano Boys,

I feel that in some measure I owe you an apology, and it is with appropriate humility that I write this letter to ask your pardon for ever having questioned your sharpness and intelligence. The results of the competition have shown me that Meccano boys do possess exceptional powers of observation and alert brains, and, what is more, they know how to use them. I am not ashamed to acknowledge myself in the wrong, and henceforth I shall always regard Meccano boys as being the embodiment of all that is best in the youth of the country.

Under separate cover I am sending the prize to the winner of the competition.

Yours faithfully,

JOHN X.

As will be gathered from the foregoing remarks, the judging of the entries has been a long and arduous task, which was not made any the lighter by the fact that it took place during a week of tropical

weather. The winner of the competition is Master A. D. Smalley, of 18, Girdler's Road, London, whose entry shows 184 errors, which have been checked over and confirmed by Mr. X. I am sure that you will all join with me in extending hearty congratulations to Master Smalley on his keen powers of observation, and the wonderful patience he has shown in listing the errors. The special prize of a handsome Silver Watch has been forwarded to the successful competitor.

The second prize of Meccano Goods to the value of half-a-guinea to the runner-up, has been won by Master S. H. Judson, 11, The Grove, Highgate Road, London, who found 145 mistakes. A third prize of Meccano Goods, also to the value of half-a-guinea, has been awarded to Master H. R. Smith, 8, Sunnycroft Road, Leicester, who listed 130 errors.

A large number of readers submitted entries showing over one hundred errors, but in almost every case the total was reduced by the judges, owing to mistakes being shown that were not really genuine.



Master H. R. Smith,
winner of the Third Prize

The following is a list of competitors who, in the opinion of the judges, submitted entries of one hundred errors or over:—

- Beresford, M. Winspear, "Beech House," Walton, Liverpool.
- Boyce, E., "Eastrop," 147, Ashby Road, Loughborough.
- Butler, H. T., "Ellerkeld," Brigham, nr. Cocker mouth.
- Day, Ernest, 42, Oriel Road, Bootle, Liverpool.
- Hobbs, H., 23, Grove Park Avenue, Brislington.
- Howell, Reginald, 32, Aubrey Road, Small Heath.
- Maxwell, J., 9, Athol Street, Birkenhead.
- Moore, Ivor C., "Burcot," Harbord Road, Cromer.
- Peacock, D. W., St. Bartholomew's Vicarage, Bradford.
- Thornburn, Wellington Cottage, Berwick.

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.

H. Atkins (Letherhead).—"I was grieved to hear of the untimely end of my subscription. The coroner brought in a verdict of 'Death through Neglect' and severely censured the subscriber, who promised that it should not occur again!" A promise is a promise, Harry, and your good name has now no stain on it. You will receive the "M.M." regularly for a year.

T. Holmshaw, Jr. (Sheffield).—Your comments on our competition prizes are just, and we shall in future work more on the lines you suggest. In the meantime if any winning competitor prefers to have the value in Meccano parts instead of taking the prizes offered, this will be quite in order. Thank you for your promise of an article on railways in August.

N. Hill (Helston).—We are glad to receive interesting photos and short articles from Meccano boys at any time, and to pay for them when published. You live in a lonely corner of the earth, Norman, and we are pleased you find Meccano and the "M.M." such good company.

H. Thomson (Scotstoun).—To improve the "M.M." by publishing two Magazines instead of one, each devoted to different subjects, is, we fear, impracticable. In any case, what about the poor Editor?

J. M. Crowther (Morecambe).—Your suggestion is already covered by the Guild Correspondence Club, which enables Meccano boys in other countries to describe their lives to other Meccano boys. Write to the Secretary of the Guild for full particulars.

H. Davies (Portsmouth).—We note that your friend in a recent examination replied to the question "What is Oceania?" by saying that it was "that Continent which contains no land." His strong point is evidently not Geography! We hope you have an enjoyable holiday.

A. Nutting (Boston, Mass.).—At first we were inclined to be surprised at your statement that "there are 75,000 people in Massachusetts, all native-born Americans, who can neither speak nor write the English language." On thinking the matter over, however, we have come to the conclusion that probably the accuracy of your figures may be explained by the fact that every one of the 75,000 inhabitants is under two years of age! Is our solution correct?

Alec Yorke (Nottingham).—"Stand erect on the right foot, raise the left foot behind you and grasp the toe of the boot of the left foot with the left hand, balance carefully and lower the body until the left knee touches the floor, now rise to an erect position retaining your hold on the left foot." It is exercises such as these that keep Editors young, Alec, and although we have not succeeded in accomplishing this difficult feat as yet, we mean to try again to-morrow morning before breakfast! We quite agree that there must be "a certain knack necessary (not a trick in any way) otherwise it is impossible."

P. H. Gregory (Hove).—We often read letters that make us feel that we would very much like to know the writers personally, and that was how we felt after reading your cheery letter, Philip! We were sorry to hear of the sad end of your Meccano Club, but we quite understand the difficulties. We are most pleased to hear that your health is so much improved and that you can now get along with your studies. We note that you do not wish to "mess up the 'M.M.' by introducing blood-and-thunder serials, football forecast competitions," etc. There is really no danger of this happening. Your typing is good for a beginner, but you should use double spacing.

F. C. Poultnoy (St. Helens).—We are inclined to agree with you that a little more humour in the pages of the "M.M." would be appreciated. We must see what we can do in this connection. We are afraid we cannot start a page for girls and a page for grown-ups at present, as 16 pages are all too few in which to cater for Meccano boys.

J. Wyllie (Leith).—We do not think stories of the Great War would be appreciated, as most of us would like to forget it!

Bulmer's Father—(cont).

"No, you don't," said Brailsford in a warning voice. "You can just remain where you are. You've got to stop and listen, for it's to you that I want particularly to address myself." He paused, then continued, "It's about young Bulmer that I'm chiefly concerned, and I'm going to tell you straight out that ever since he's been here you've acted like a pack of downright cads towards him. I don't say you're all to blame, for a good many of you—well—you've been led by the nose to do it. Yes, you may well look round at Lawson. I'm not blind. I know only too well where the trouble lies, and it's jolly well got to stop, although I'm inclined to think that from to-day it will stop, and of its own accord. You've had an object lesson to-day, and it's done you more good than any amount of gassing that I could give you."

"Now there's another thing I'm going to tell you," he went on, "and I have my reasons for doing so, as I'll point out directly. I refer to Bulmer's father. Fifteen years or so ago, Bulmer's father was a professional boxer." Here Brailsford paused, for the effect of his statement had been almost electrical. "Yes, a professional boxer," he repeated with emphasis. "In fact, at that particular time he held the light-weight championship of Great Britain. Now perhaps some of the snobs amongst you will stare, and that's exactly what I want you to do. That's exactly why I'm publishing this fact—to make you stare." He paused again and then went

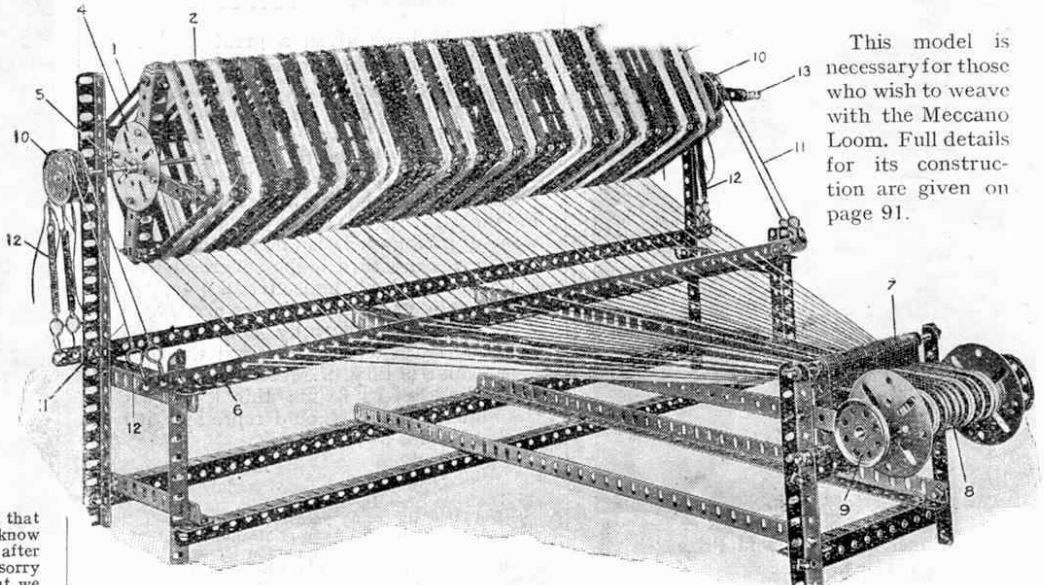
on, "I know what public schools are, and St. Winifred's is no better or no worse than any of them. They all contain a certain element of snobbery, so there you've got it. Why is it that one of the first things that you ask a new boy is 'What's your father?' I'll tell you. It is simply because you are prompted to do so by sheer snobbery and nothing else. What *does* it matter what a fellow's father is, so long as the youngster himself is 'white,' and knows how to play the game. I wouldn't care a rap what my father was, so long as he did his duty by me and, by jove, if ever a man's done his duty by his son it's Bulmer's father. I happen to know, you see. I happen to know that they idolise each other, and that it is Mr. Bulmer's hope and ambition to see that whatever opportunities of—well—smoothing the rough edge that he lacked in life, will not be denied to his boy."

Once more he paused and smiled encouragingly. "Now then, you fellows, I've had my say, and I hope it's done you good. Young Bulmer has taught you a lesson in chivalry even though his father is a professional boxer, and, by the way, I may as well tell you that I'm asking his father to come down to watch the match here next Saturday. He will be my guest, and I'm jolly proud of the fact!"

Without another word he strolled off, leaving behind him a crowd of dumbstruck boys.

(To be continued).

The Meccano Beaming Frame



This model is necessary for those who wish to weave with the Meccano Loom. Full details for its construction are given on page 91.

Mail Bag—(cont).

J. Smith (Sheffield).—We hope to adopt your suggestion when we print the second instalment of "Dick's Visit," which deals with Dick in the Meccano Works.

R. Johnson (Lytham).—Your suggestion for a page in which Meccano boys describe their new parts is already covered by our "Bright Ideas" column.

W. Singeisen (Brixham).—Unfortunately, we are unable to increase the "M.M." to the size you suggest because of the much greater cost in printing.

T. H. Lyons (Skipton).—As we already answer such questions under headings of "Bright Ideas," "Radio Replies" and "Mail Bag," your suggestion is scarcely a novel one.

STAMP COLLECTORS

Unfortunately, owing to extra demands on our space made by the list of Prize Winners in our £250 Model Building Competition, we have been compelled to omit our Stamp Collecting Column from this issue.



The Secretary's Notes

The Summer Session is now at its height and the majority of Guild members are enjoying their Cricket, Tennis, Rowing and Cycling. Several Summer Sports Swimming and Rambling Clubs have been formed, and my mail bag is filled with letters of appreciation of the great organisation that has enabled Guild members to take part in these pleasant recreations. From the enthusiastic letters received it would almost seem that a Sports Session is the best method of keeping the members together during the Summer months. Our President, who has recently returned from America, was delighted to hear of the Summer activities of the Guild, for he takes a very keen interest in all out-door recreations. Nothing pleases him more than to hear that Guild members are actively engaged in sport these fine days.

Although the Meccano Writing Pad was only announced in our last issue, I have already received many letters written on this paper. The Meccano Writing Paper was introduced at the request of Guild members who suggested that Meccano boys should have their own notepaper. I think the Meccano Writing Pad will serve the purpose admirably. Those who have not done so, should order a Pad at once, so that their correspondents will know immediately that Meccano is their favourite hobby. Full particulars will be found elsewhere on this page.

The attention of Guild members is drawn to the two splendid Competitions now running. The Fourth Photographic Competition is governed by the same rules as the previous successful Competitions, and I hope that Guild members who possess cameras will compete. The Holiday Essay Competition affords considerable scope to those members who are good at pen pictures. I do not think that much difficulty will be experienced in choosing a suitable subject. See that your essay is neatly written on one side of the paper only, and make sure that your name and address appears on the back of each sheet.



CLUB NOTES



St. Mary (Newington) M.C. (London).—Resulting from a meeting held recently, the rules have been revised and the name of the Club has been altered from the "St. Mary-with-St. Gabriel M.C." to the above. A Lecture on the "Metropolitan Railway" was given by the Club Leader, whilst the Radio Section has been given instruction on Wireless construction and electricity by Mr. Dowsett (Superintendent of the Wireless and Electricity Section). A visit was recently paid to the County of London Electric Supply Co.'s works, and an interesting insight obtained into commercial generation. On June 23rd the annual Summer Outing was held. The Club, in general continues to make steady progress. *Secretary:* Mr. C. Curle, 37, Pullen's Buildings, Peacock Street, London, S.E.

Holy Trinity (London) M.C.—Advices from the Leader indicate that the members are busily preparing for their 5th Annual Exhibition, which will be of two days duration. Several other London Clubs are helping with the function, and there will be displays of Electrical Models, Models demonstrating mechanical principles, Wireless and Morse Apparatus, Photography, Fretwork, etc. There will also be Radio and Lantern Demonstrations, Concerts, etc. The exhibition promises to be the most successful yet held. A Printing Press has been purchased and the Club hope to publish their Magazine in print next September. *Secretary:* Master S. Bone, "The Rosary," Kents Hill Road, South Benfleet, Essex.

Leamington M.C.—Continues to make excellent progress. The popular Meccano Minstrel Troupe recently gave a very successful performance in the Pavilion of the Jephson Gardens. I hope to be able to publish a photograph of the Minstrels in an early issue of the Magazine. *Secretary:* Mr. G. Hare, 36, Willes Road, Leamington.

Claygate Juvenile Club (Meccano Section).—Model building and carpentry were very popular during the last indoor Session. A very successful Sports and Fancy Dress Carnival was recently held, and several of the members wore costumes representative of various Meccano models. *Secretary:* Mr. Brittnal, Vale Road, Claygate, Surrey.

Luton M.C.—The last indoor Session was concluded by a successful Exhibition. Meetings are held during the Summer. The Radio Section of the Club is making good progress. *Secretary:* Master W. Humby, 34, Adelaide Street, Luton.

West View (Nottingham) M.C.—Excellent progress has again been made by this Club and the membership is steadily increasing. By the kind permission of Mr. F. W. Davies, Engineer and General Manager of the Nottingham Water Dept., a visit was paid to the Waterworks. Descriptions of interesting machinery and valves were given by the managers of each particular department. Two additional activities of the Club are a Camera Section and a Library. A Photographic Competition is being held, and a prize will be awarded for the best photograph taken during the Session. *Leader:* Mr. H. W. R. Cousins, 494, Mansfield Road, Sherwood, Nottingham.

Cobham M.C.—Has held a very successful Session. The members entered for a Competition at the Cobham Flower Show, and in a similar Competition held in March last, Master O. Impey won a prize with his model of a Loading Crane. *Secretary:* Master Wm. Phillips, The Fox and Hounds, Cobham, Surrey.

Buckfastleigh M.C.—Have had Paper Chases and Cycle Runs. Hope to secure a new Club-room for the next Winter Session. *Secretary:* Master H. Parsons, Bell Cottage, Buckfastleigh, S. Devon.

Leckhampton M.C.—Recently held a very successful Exhibition, for which every member constructed a separate model. Over £6 was realised and the members enjoyed every moment spent in connection with the work. The Club membership is increasing. Some enjoyable games of cricket have been played. *Secretary:* Master B. Rhodes, Cotswold View, Charlton Lane, Leckhampton, Cheltenham.

Club Recently Affiliated

Boston Model Making M.C.—Recently established under the leadership of Mr. P. T. Oliver, of Boston, this Club has now become affiliated with the Guild and good progress is being made. At present there is a membership of eight, all of whom are keen and enthusiastic. *Secretary:* Master A. Robinson, 30, Woodville Road, Boston, Lincs.

Club not yet Affiliated

Tanunda (S. Australia) M.C.—This Club has only just been organised and as soon as it comes under the direction of a responsible gentleman it will be affiliated with the Guild. *Secretary:* Master H. Wallent, Tanunda, South Australia.

Meccano Club Leaders

No. 5. Mr. J. S. LEWIS



Mr. J. S. Lewis is the Club Leader of the "St. John-the-Baptist's M.C.," Liverpool. Mr. Lewis is very interested in the welfare of boys, and although this Club is not very large, it is very energetic. At present the members are busy playing cricket with the same amount of enthusiasm as they engage in their indoor work in the Winter Sessions. It is pleasing to know that, under the coaching of Mr. Lewis, the Club team has won six out of the seven matches played, and drawn one. Both Mr. Lewis and his Club have our very good wishes for a successful future.

The Meccano Writing Pad

In response to numerous requests, we have now prepared a special Writing Pad for Meccano boys. The Pad consists of fifty sheets of tinted bank paper, with cover and blotting paper. Each sheet bears a reproduction of the block shown on the cover.



The Meccano Writing Pad may be obtained from your regular Meccano dealer (price 1/-), or direct from this office (price 1/3, post free). It is just the thing to use when writing to your friends, for it shows them at once that you are a Meccano boy.

New Meccano Outfits



A new Outfit has been introduced for beginners in the Meccano hobby. This is the 00 Outfit, which is capable of building 40 models. The price is 3/6 each. An 00a Outfit has also been introduced for converting the 00 into an 0 Outfit, price 1/6.

The No. 6 Outfit may now be obtained in a strong carton at the reduced price of 105/-. This Outfit is additional to the No. 6 Outfit, at present sold in an oak cabinet, price 140/-. The contents of the new carton Outfit are identical with the No. 6 Outfit as at present sold.

NEW NUMBERS FOR MECCANO PARTS

In future all double angle strips will be grouped together and known by the following serial numbers:—

Double angle strips, size	Old Number	New Number
2 1/2" x 1 1/2" ...	112	47
3" x 1 1/2" ...	112a	47a
1 1/2" x 1 1/2" ...	60a	48
2 1/2" x 1 1/2" ...	60	48a
3 1/2" x 1 1/2" ...	60b	48b
4 1/2" x 1 1/2" ...	60d	48c
5 1/2" x 1 1/2" ...	60c	48d

There is no change in the number (46) of double angle strips, 2 1/2" x 1".

Small Advertisements

Small advertisements are inserted in these columns at 1/- per line (average seven words to the line), or 10/- per inch (average 12 lines to the inch). Cash with order. Letters to Advertisement Manager, "Meccano Magazine," Binns Road, Liverpool.

FOUNTAIN PENS (British Made) complete with filler and box, marked 10/6. Our price 1/9 post free. Box No. 21, c/o "Meccano Magazine," Liverpool.

BOYS! MAKE POCKET MONEY, by selling Fountain Pens. 2/6 to 5/- per week easily earned. Send for full particulars. Box No. 31, c/o "Meccano Magazine," Liverpool.

ADVICE, HANDBOOK & CONSULTATIONS FREE. King, Registered Patent Agent, 146a, Queen Victoria Street, London, E.C. 37 years references.

SPLENDIDFEROSUSH CALLING! HELLO, EVERYONE!

Wonderful Crystal Receiving Sets 5/- each, post free. Foreign 6/-. Boys, take this opportunity while the offer remains. Absolutely Genuine. High Finish. G. Hare, 36, Willes Road, Leamington.

UNUSED STAMPS AT FACE VALUE. We have a large number of unused stamps from the colonies and foreign countries, which have been sent from time to time in payment for goods. We are prepared to dispose of these stamps as long as our stock lasts, at face value. We will endeavour to send stamps of any country specified, but we cannot exchange these stamps, or enter into any correspondence in regard thereto, once they have been despatched. For 6d. or 1/- we will send assorted stamps to that value, and 1d. should be added for postage. Orders over 2/6 will be sent post free. Stamp collectors are advised to order early and so secure the advantage of this unique offer.

"STAMPS," MECCANO LTD., BINNS ROAD, LIVERPOOL.

STAMP COLLECTORS. Sell your duplicates by advertising them in the "Sale and Exchange" column of the "Meccano Magazine."

25 DIFFERENT STAMPS 1/-, post free. Remit P.O. Wood, 75, Moorfield Road, Pendleton, Manchester.

BRITISH EMPIRE LATEST ISSUES. ALL MINT SETS.
 ANTIGUA, 1d. yellow-green, Script, ... 1d.
 BRITISH HONDURAS, 2 c. brown, Script ... 2d.
 IRAQ, Pictorials, 1, 1 1/2, 2 & 3 A's ... 11d.
 LEEWARDS, 1d. & 2d., Script ... 4d.
 ST. KITTS-NEVIS, 1d. & 2d. Script ... 4d.
 SARAWAK, 2 c. & 10 c., new colours ... 6d.

POSTAGE EXTRA.
 ALEC KRISTICH (Member N.R.P., No. 279), 82, Marchmont Street, Russell Square, London, W.C.1.

Photographers

TRADE MARK **'TABLOID'** BRAND

SEPIA TONER

for bromide and gaslight prints

Makes your album distinctive
 Try it to-day. 2/-, all Dealers

BURROUGHS WELLCOME & CO. LONDON

NOV 3848 COPYRIGHT

MAKE YOUR OWN ELECTRIC LIGHT

These wonderful Dynamos light brilliantly a 4-6 volt lamp and take very little power to drive

5/-

Post 6d. Lamps 3d.

GREENS, Dept. N., 85, Ne Oxford St., London.

100 DIFFERENT STAMPS FREE!
 including many mint, British Colonials, War, etc.
 Send no Money, just a Postcard,
 and request our approvals (clients abroad 6d.).
 Lisburn & Townsend, 166, Islington, Liverpool.

A GOOD FOUNDATION

for any model can be made with Plasticine—in 16 Colours. By mixing, various kinds of Marble can be imitated. Plasticine has scores of uses besides modelling. Let us tell you of some. Specimen Box of 5 Colours, The Rainbow, Post Free, 1/2.

ALSO PLAY-WAX AND NOVLART.

HARBUTTS' PLASTICINE LTD.,
 99, Bathampton, Bath.

A Useful Tool



Our illustration shows a type of screwdriver useful for reaching bolts in inaccessible places on models. We are disposing of these screwdrivers, whilst our stock lasts, at the special price of 10d. each, post free. MECCANO LTD., Binns Road, Liverpool.

When replying to advertisements in these columns, please state that the advertisement was seen in the "M.M." By so doing you will help us.

CUT THIS OUT

"Meccano" Pen Coupon. Value 3d.
 Send 5 of these coupons with only 2/9 direct to the Fleet Pen Co., 119, Fleet Street, E.C. 4.
 You will receive by return a splendid British 14-ct. Gold Nibbed Fleet Fountain Pen value 10/6. (Fine, Medium, or Broad Nib). If only 1 coupon is sent, the price is 3/9. 3d. less for each extra coupon up to 4 (Pocket Clip 4d.). Satisfaction guaranteed. Your own name gilt letters, either pen 1/- extra.
 Lever Self-Filling Model with Safety Cap, 2/- extra.

LOTT'S BRICKS :: Build :: Model Houses

A Fascinating and Amusing Toy for Boys and Girls of all Ages

Series "B"

Box 1.	18 Models	8/6
" 2.	18 "	9/-
" 3.	42 "	17/6

Series "C"

Box 1.	6 Models	3/6
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Garden Sets, containing Trees, Shrubs, Fences, Shells, etc., 4/6 & 6/6 per box.
 Sets are complete and self-contained, with Plans, Bricks, and Roofs.

Write for Illustrated List and Free Samples, enclosing 1 1/2d. stamp.

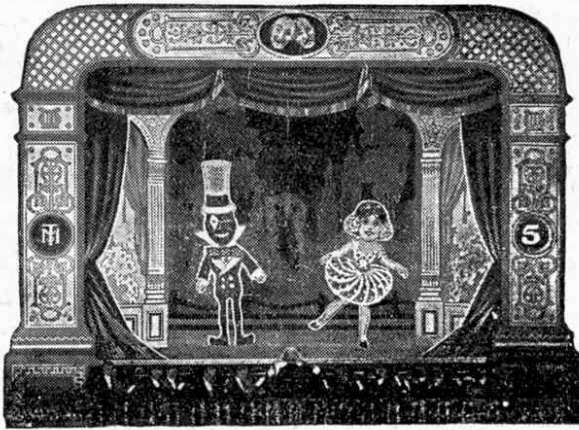
STONE BLOCKS FOR MODEL RAILWAY CONSTRUCTION
 Packed in 1/- Cartons

Dimensions of Blocks:

3" x 1" x 1/2"	1" x 1" x 1"
2" x 1" x 1"	1" x 1" x 1/2"
2" x 1" x 1/2"	1" x 1/2" x 1/2"
1" x 1/2" x 1/4"	

If not obtainable at your Local Dealer's, write for Sample Carton, enclosing 1/3 in stamps.

Lott's Bricks Ltd., Watford, England.



No. 11. Empire Theatre of Varieties.

This is a beautiful and entertaining toy, with all the romance and glamour of the stage. The pleasure to be derived from the performance, given by the eight Artistes, is extreme. The show is a tremendous success at a Children's Party, and a supply of Programmes can be given round by the "Ushers." All the Stars are billed on Special Posters.

Price ... 6/- complete, post free.

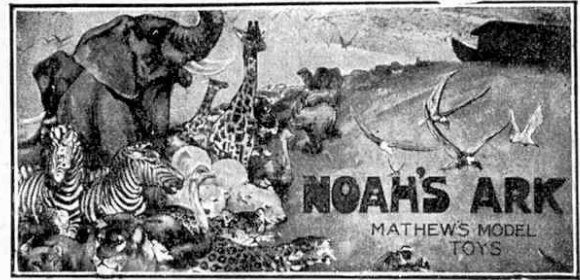
Buy only one and you will want others

SEND FOR FULL LIST

FROM

Mathews' Model Toy Factory

Short Street, LEICESTER



No. 5. Noah's Ark.

What a beautiful toy for a child; the Animals are exactly like the real ones, in natural colours and stand up. It is great fun to watch them marching into the Ark with Mr. and Mrs. Noah behind them.

Price ... 6/- complete, post free.



No. 24. Star Kinema.

A Real Kinema Performance at home. Easily operated, and causes endless amusement.

Price ... 4/- complete, post free.

BOYS You are not alive if you do not know what can be done with SECCOTINE. Make your models. Mend your books. Affix tyres to bicycles with it.

GIRLS Dress dolls. Make new hats and repair old ones. Mend house shoes. Patch clothes. Fix drawings to prevent rubbing. Put rings on curtains without sewing, etc., etc.

SECCOTINE

IN THE HOUSE

The best general adhesive the world knows. Sticks wood, leather, bone, paper, etc., objects large or small.

Registered Trade Mark.

Tubes 4½d., 6d., 9d. Everywhere.

Firmas (^{Heat}Seccotine)

McGAW, STEVENSON & ORR LIMITED,

Regd. Trade Mark.

for glass, china, delph, etc. Articles joined with it can be boiled without coming asunder.

The Linenhall Works : : Belfast

Tubes
6d.

Telegrams :
"Glacier, Belfast."

Telephone :
4261 (3 lines).

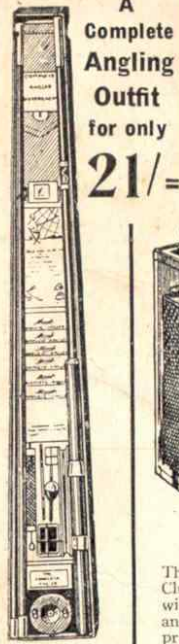
Ladies can do a thousand things in the house with it. Silks, Satins, Laces are renewed with a weak solution.

WRITE TO THE WORKS FOR A FREE BOOKLET.

The World's Big Store for Boys

GAMAGES

No matter what you want, you'll find "just the thing" at Gamages. Sports needs, Meccano Spares, Engines, Wireless, Cameras, Camping Gear, Cycles—everything is stocked in such a variety as to make selection an easy matter. If unable to call, send for a catalogue (mentioning what you are interested in) and a copy will be sent post free. You can then order your requirements by post—you will not be disappointed in the goods.



A Complete Angling Outfit for only **21/=**

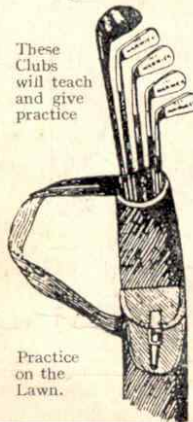
MILWARDS "COMPLETE ANGLERS' OUTFIT"
for coarse fishing. Strongly made and well finished Rod, Reel, Line, Tackle and Bait, all complete in fancy box with book of instructions. Ideal for the beginner. Price, only **21/=**



Fuller's Block Accumulators

Special offer of ex-W.D. stock, but absolutely unused, 2 volt 40 amp. Special Price **10/6**
4 volt 40 amp. Special Price **21/-**
6 volt 40 amp. Special Price **31/6**
Post 1/6
BOXES to hold 5 of these Accumulators with lid and carrying strap ... **1/6**
Postage extra

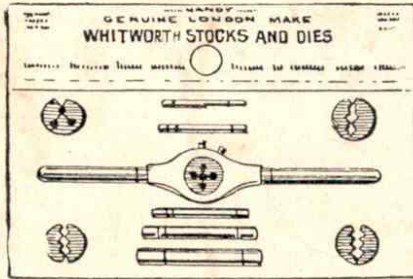
These Clubs will teach and give practice



GOLF for the BOYS

Junior Golf Clubs. Set of 4 clubs including Driver, Iron, Mashie and Putter. All correct to scale. Complete in Tan Canvas Bag, for Boys 9 to 12 years. Price Complete **21/=**

MAKE YOUR OWN NUTS AND BOLTS

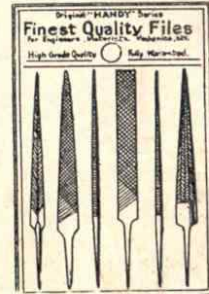


Sets of Whitworth Stocks and Dies

Set No.	Cutting	3/16, 1/2 in.	Postage 3d.
1	1/16, 3/32, 1/8, 5/16 in.	7/6 per set	
2	1/16, 3/32, 1/8, 5/16 in.	8/3 "	
3	1/16, 3/32, 1/8, 5/16 in.	9/9 "	
4	1/16, 3/32, 1/8, 5/16 in.	10/- "	
5	1/16, 3/32, 1/8, 5/16 in.	12/- "	
6	1/16, 3/32, 1/8, 5/16 in.	12/- "	
7	1/16, 3/32, 1/8, 5/16 in.	12/- "	

The above sets can be supplied in any variety of sizes in Whitworth thread from 1/16 to 5/16 by 32nds, in British Association thread from 0 to 10, also in millimetre and cycle threads.

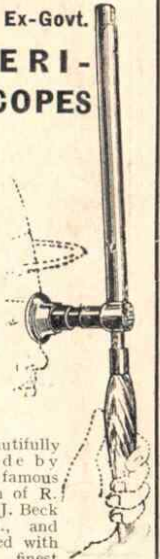
SPECIAL LINE GOOD FILES



Six assorted files on card, all of very best quality. Price only **2/6**
Post 4d.

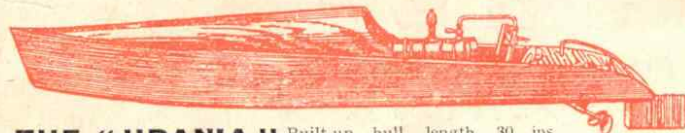
BOYS! EVERYTHING YOU WANT IS IN GAMAGES CATALOGUE—AND IT'S SENT POST FREE

Special Offer of Ex-Govt. PERISCOPIES



Beautifully made by the famous firm of R. & J. Beck Ltd., and fitted with the finest prisms and focussing eyepiece. Cost 3 GUINEAS EACH. This periscope will enable you to see over walls, hedges, or from any "cover" without being seen yourself. Try one—and see how fine one is for Scouting Games, Stalking, and the like. Finished in Field Grey. Length 22 ins.

SPECIAL PRICE **5/-**
Postage free.



THE "URANIA" Built-up hull, length 30 ins. Beam 3 ins. Long spray hood and adjustable rudder. Approximate distance 250 yards. Price **21/=**

"URANIA" Class V Built-up hull, length 30 ins. Beam 5 ins. Long spray hood and adjustable rudder. Approximate distance 250 yards. Price **35/=**
Post free

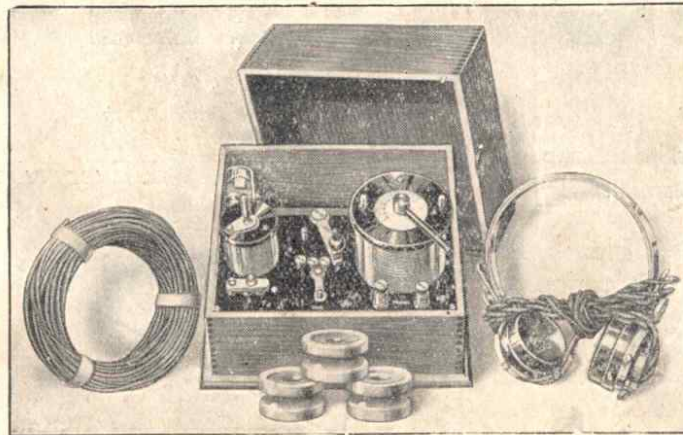
The Very Latest in "Urania" MODEL BOATS

driven by COMPRESSED AIR, pumped into "D.A.P." (Patent) armoured cylinder by means of a cycle tyre pump. The engine is oscillating, with hand-ground faces and heavy flywheel. Powerful, buoyant and speedy. NO SMELL, NO OIL, NO DANGER. Owing to the buoyancy of the air container, these boats are UNSINKABLE. Now you see how superior they are, and at Gamages they are quite cheap in price!



GAMAGES "IDEAL" CRYSTAL RECEIVING SET

Fully licensed by Postmaster-General and stamped "B.B.C." Regd. No. 226. Tuning Coil wound with best quality wire and tapped in seven places. The Crystal Detector, designed to prevent dust from deteriorating the sensitivity of the crystal, contains our famous "Permanite" Crystal, which has given such excellent results. A Fixed Condenser is incorporated, while terminals are fitted for extra inductance. High-grade, sensitive Head-phones are supplied. The task of finding a sensitive spot on the crystal is minimised by means of a buzzer. Complete in polished Mahogany Cabinet, with instruments mounted on polished Ebonite; Phones, Aerial Wire, and Insulators ready for use.



OF EXCEPTIONAL INTEREST TO "HOME-BOYS"

Whether you're an outdoor boy or not, there are times—dark, rainy evenings, when you're forced to become "home-boys." These are the times when our "Ideal" Crystal Receiving Set is most appreciated, though, of course, you can take it into the garden on fine evenings. It will receive telephony for 25 miles, and signals from Spark stations using a wave-length of 300-500 metres for 150 to 200 miles. A detailed description is given on other side of illustration. Price **£4:4s.**

A. W. GAMAGE LTD., HOLBORN, LONDON, E.C.1