JULY 1923

MECCANO MAGAZINE

Published in the interests of Boys

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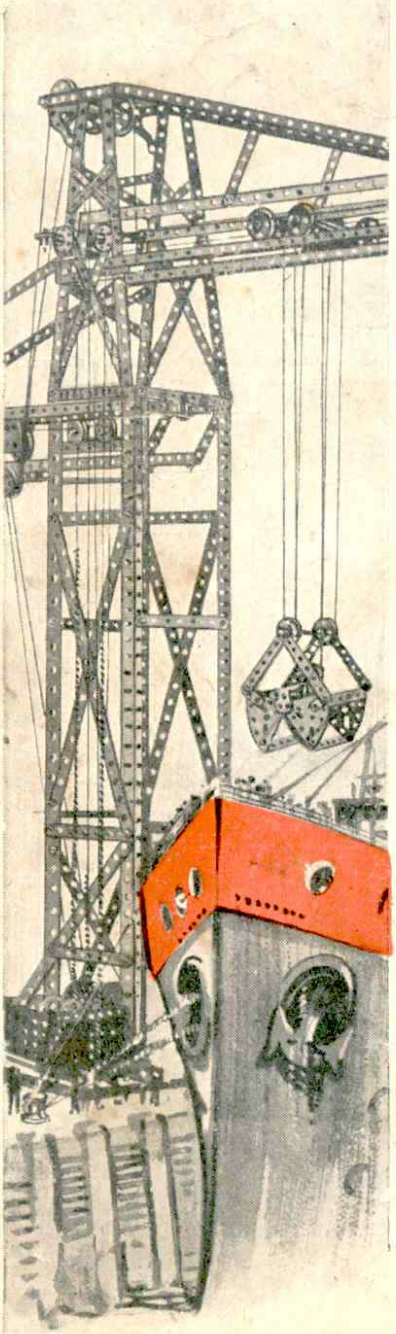
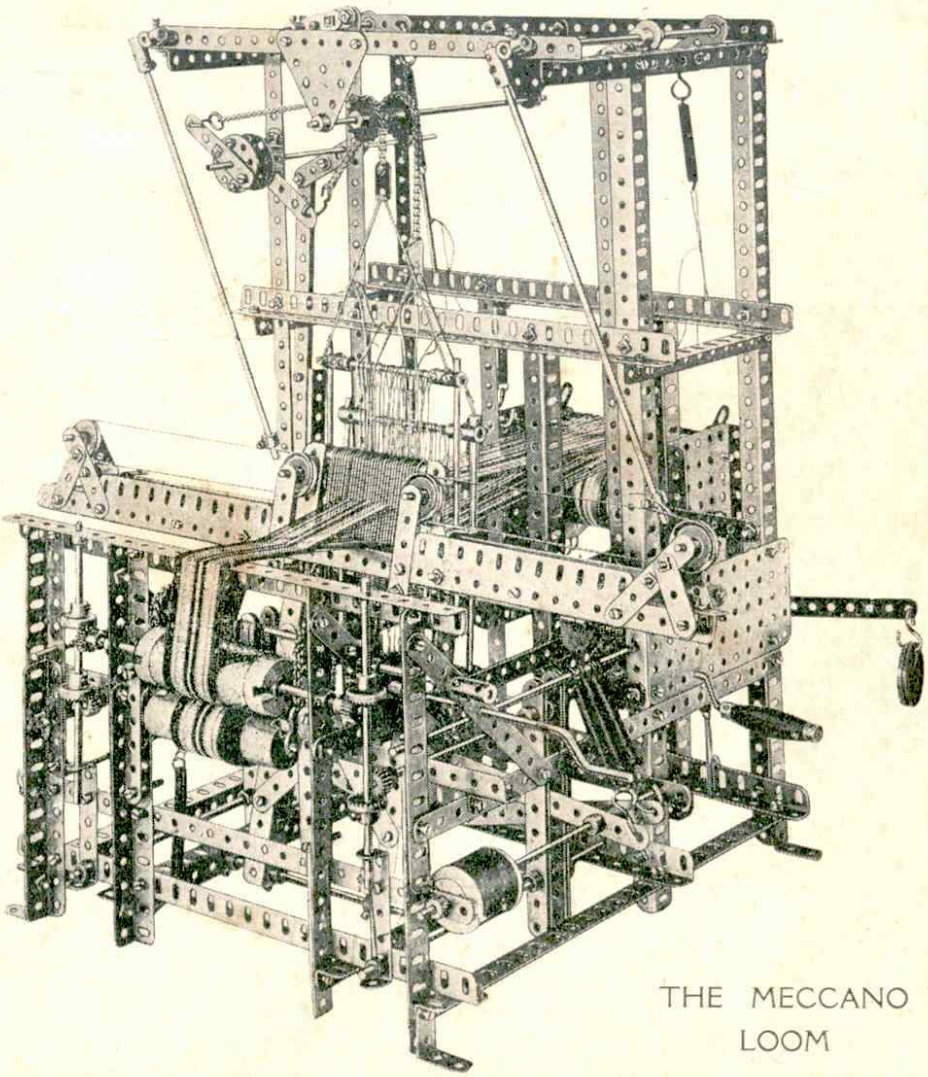




THE MECCANO LOOM

HOW TO BUILD A LOOM THAT WEAVES

FOR FULL INSTRUCTIONS—see page 74

EDITORIAL OFFICE
Binns Road,
LIVERPOOL

MECCANO MAGAZINE

PUBLISHED IN THE INTERESTS OF BOYS
on the
15th of each month

FOR the first time in its history the *Meccano Magazine* appears this month in a cover, and I am sure my readers will consider it a great improvement. Our distinctive title will be retained in future covers, but the illustration of the model in the centre will be changed from time to time, according to the model that is dealt with in that particular number of the "*M.M.*"

A new "dress" for the "M.M."

In our recent competition there were insistent demands for "more Meccano models." As already announced, I am making arrangements to meet the wishes of the majority of my readers in this respect. In our last issue we described how a Crystal Receiving Set for radio could be made from Meccano parts. In these pages we commence an article describing the building of the Meccano Model Loom for real weaving. This article, which will be concluded in our August issue, will be followed by instructions for building the Meccano Motor Chassis. Another article will follow showing how to build a Meccano "Grandfather's Clock" that will keep time as accurately as any grandfather's clock ever made, and later, instructions for building a new model of the High-Speed Ship Coaler.

More Meccano Models

There will also be a special series of companion articles, which will deal with the subjects with which the models themselves are concerned. For instance, in this issue we commence an article dealing with spinning and weaving, which serves as a companion to the article on the Meccano Loom. In the same issue that deals with the Motor Chassis we shall tell the story of the motor car, and so on. The articles are being specially written for us by a well-known writer, and they will be illustrated by some splendid photographs. By these means I feel sure that our readers will thoroughly understand the subject with which the particular Meccano model is concerned.

A Novel Feature

There is one other point that I would like to explain. On the cover of this issue we are commencing to show the volume number of each issue. The "*M.M.*" has now been published since 1916, and allowing one volume per annum, the number of the present volume is "VIII." There will be twelve monthly parts to a volume, and the next volume will commence in January, 1924. In this issue and in future issues, the paging will be consecutive—that is to say instead of the pages being numbered 1 to 12 each month, they will commence on page 1 with the January number, and continue consecutively until the end of the year. We have published six issues this year, each of twelve pages, so that the first page of this present issue is numbered 73.

Serial Numbers of "M.M." pages

OUR £250 CONTEST

The Judges are now hard at work on the thousands of entries in our £250 Model Building Competition. Full results in the August "*M.M.*"

At this stage in its career it is very interesting to go back to the time when the "*M.M.*" was first issued, and to mark its subsequent progress. Publication commenced in 1916, with a single sheet, and I well remember the chorus of approval that heralded its appearance. Each day I received hundreds of letters from enthusiastic Meccano boys, and the circulation was at once a large one. The "*M.M.*" went on this way for some years, and owing to the shortage of paper, high cost of printing, etc., and the many difficulties created by the war, it was impossible for a long time to enlarge it. Things became a little easier in 1920, and in September of that year we increased the number of pages to eight.

The Growth of the "M.M."

In September, 1922, the size was again increased, this time to twelve pages, in order to find room for many additional topics of interest to all Meccano boys. Now we are able to increase the size of the "*M.M.*" to 16 pages and to provide a cover. We hope that the "*M.M.*" in its new dress will find favour both with our older readers, and with the big army of new readers who will swell the ranks during the coming months.

The increase in the number of our pages is largely made possible by the inclusion of advertisements. I have assured our advertisers that Meccano boys will support the "*M.M.*" and that, all things equal, if our readers wish to purchase any article they will certainly purchase it from advertisers in the "*M.M.*," rather than from other firms. Now, in order that our advertisers may realise the value of their advertisements in the "*M.M.*" it is desirable that all readers who reply to them should state that they "saw the advertisement in the '*Meccano Magazine.*'" By doing this they will support me, and show advertisers the value of the "*M.M.*" as a means of selling their goods.

A New Departure

Before I close my monthly "talk" I would draw your attention to two new features in this issue—the Bookshelf and the Stamp columns. In the former column we shall describe books that are of special interest to our readers, so that they may be kept in touch with the latest and best literature that is published for their benefit. Those who are members of the Free Libraries that exist in most towns to-day, will know at once which books to borrow, whilst those who are lucky enough to be asked to name a book for a birthday or other present will be able to do so at once! Thus both readers will be saved much time in their choice of suitable books. The Stamp Collectors' column is being conducted by an expert who has made a close study of the subject for many years. Our stamp enthusiasts may therefore depend upon receiving much reliable information and help. I am a keen stamp collector myself and I am always pleased to hear of boys who collect, for the hobby teaches geography in a delightful way, calls for care and orderliness, and accustoms one to be observant and to study detail.

Books and Stamps

Of the very attractive programme I am mapping out for our future issues I have not space to write this month, but I shall deal with this subject more fully in my Editorial Notes next month.

IMPORTANT NOTICE.

We are constantly asked to supply back numbers of the "*M.M.*" We print only sufficient copies to fill our regular orders, and back numbers cannot therefore be supplied. In order to prevent disappointment our readers are advised to place a regular order, either with a Meccano dealer or direct with us.

THE MECCANO LOOM

FOR REAL WEAVING

INSTRUCTIONS FOR BUILDING THIS REMARKABLE MODEL

No model could better illustrate the wonderful genius of the Meccano system than the Meccano Loom. In this model every technical operation in the process of weaving is perfectly carried out in miniature, exactly as in every-day practice in actual manufacture. The Loom is operated simply by the turning of a crank handle, which sets in motion the whole of the necessary operations.

THE main framework of the loom is made up as shown in Fig. B, both sides of the framework being similar in construction.

When the framework is built, proceed to insert the driving mechanism, Fig. C.

The main operating handle 1 on the rod 2 drives a ¾" pinion 3 meshing with a 50-toothed gear wheel 4 on the spindle of which is a ¾" pinion 5 meshing with 50-toothed gear wheels 6 and 7 driving them in opposite directions.

Picking Motion

On the rod 8 of the gear wheel 7 are fixed 2 1½" bush or pulley wheels 9 connected by 3 double angle brackets 10 forming a cam, Fig. D, upon which 2 5½" strips 11, placed together, pivoted at 12 ride, and are held in contact by the springs 13. The cams at each side of the loom are disposed oppositely, that is to say, the 3 double brackets 10 on one cam are on the top when the corresponding 3 double brackets on the other side are beneath. To the outer end of the strip 11 is bolted a 12½" angle girder 14 the top of which is connected to a crank 15 formed of two cranks butted together with a 2" strip between, secured on the rod 16. At the far end of this rod is another crank 17, to the outer end of which is connected a spring 18 which normally tends to hold the crank 15 down, and return it after it has been moved up by the cam. To the outer end of the rod 16, by means of 2 couplings 19, is attached the picking stick 20 formed by a 9½" rod, the lower end of which is connected to a cord 21 passing round 2 1" pulleys 22. This cord is connected to a double bent strip 23 which engages a shuttle and flicks it across the slay 24. As the cams 10 are oppositely disposed, the picking sticks at each side of the machine work in unison and throw the shuttle to and fro.

Take up Motion

This is shown in Fig. C. On the rod 63 of the gear wheel 6 are also mounted 2 worms 64 which engage and drive 57-toothed wheels 65 on rods 66. ½" pinions 67 (Fig. A) drive ¾" contrate wheels 68 on the vertical rods 69. It is to be noted that the contrate wheels 68 are reversed. Other ¾" contrate wheels 70 on the rods 69 engage and drive ½" pinions 71 on the sand roller 72. Owing to the gearing of the worm 64 and gear wheels 65 the necessary slow "take up" motion of the sand roller is imparted, and the woven material, after passing beneath the sand roller, passes over the rod 73 to the lower roller 74, on which the fabric is wound. The lower roller (74) is driven

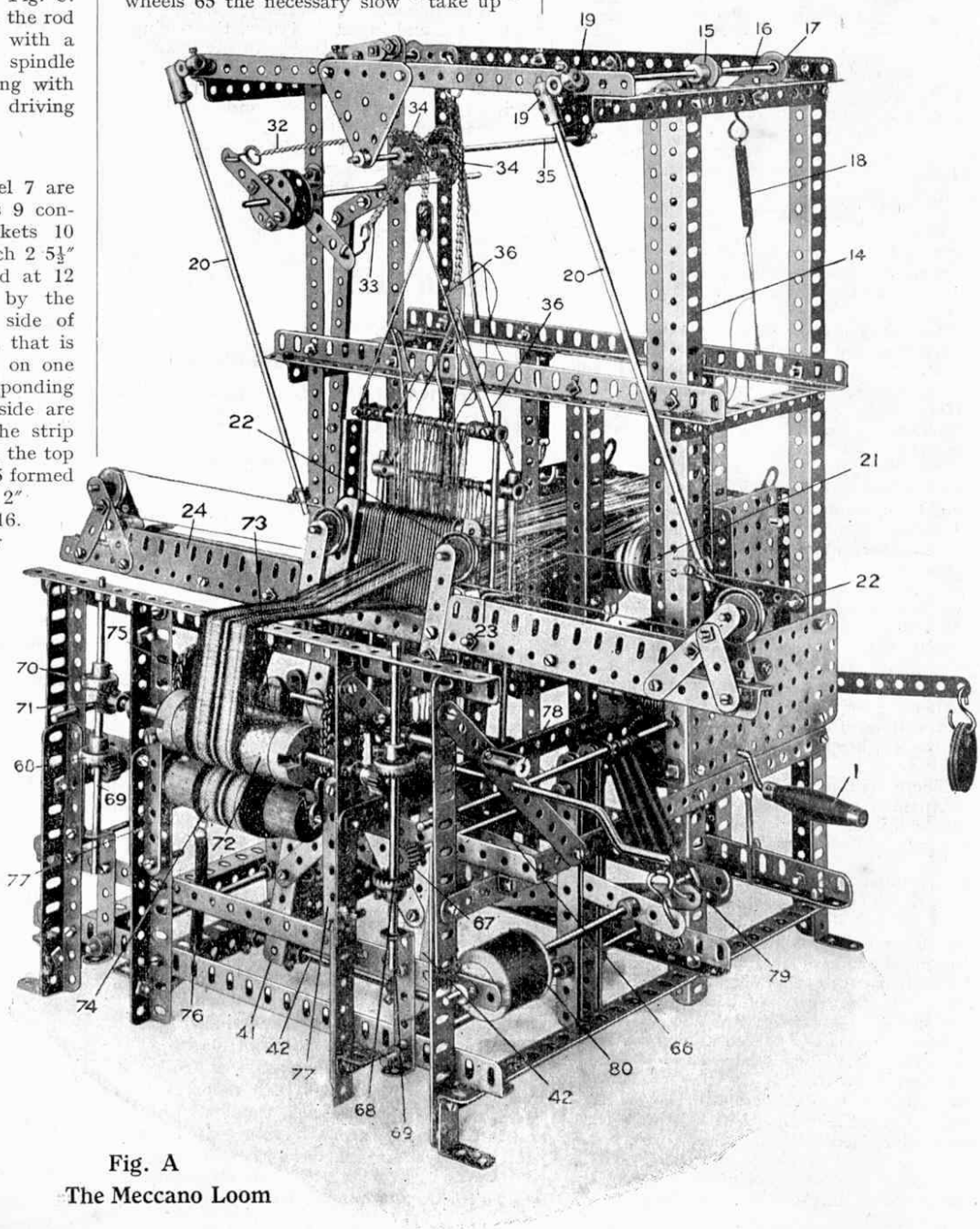


Fig. A
The Meccano Loom

The Meccano Loom—*(cont.)*

frictionally from the sand roller and is kept in frictional contact therewith by means of the chains 75 at either side, which are hooked on the rod of the roller 74 and are kept taut by springs 76 connected to the other end of the chains 75. The rod of the lower roller 74 is enabled to move away from the sand roller 72 so as to allow for the increasing diameter of the woven fabric thereon by causing the ends of its rod to engage between 2½″ strips 77 and the frame of the machine at each side.

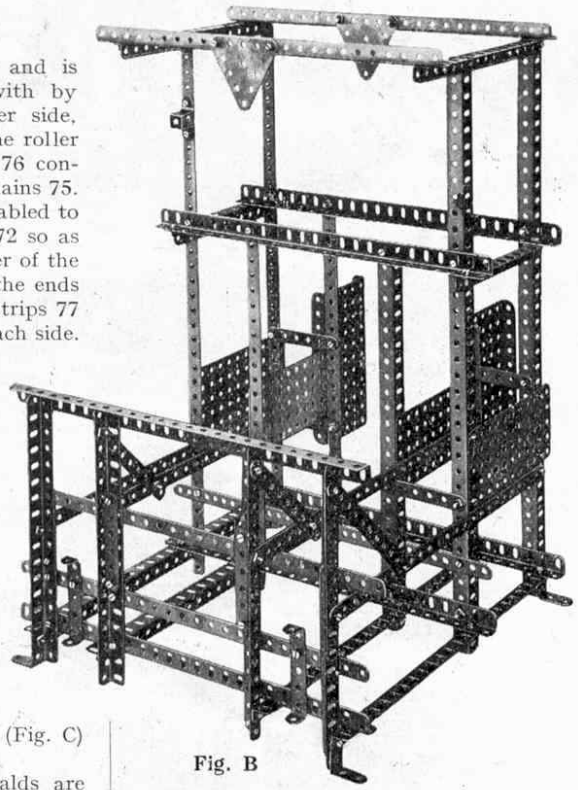


Fig. B

The Heald Frames

The construction of the heald frames will be clear from the detail given in Fig. E. The lower ends of the heald frames as shown in Fig. C are connected to 3½″ strips 37 coupled to 5½″ strips 38 controlled by the springs 39 which tend always to draw the heald frames down.

To adjust the healds correctly set them so that the eyes of both heald frame sets are level when the cranks 45 are vertical and the strips 47 (Fig. C) are horizontal.

As in actual practice, the healds are assembled vertically. In the Meccano Loom there are two frames, but there may be many more frames in actual looms. Whatever the number the frames are so arranged that when some are raised the others are pulled down. The healds thus serve to lift and depress the warp, so that the shuttle may be passed between the threads.

Purpose of the Healds

The healds consist of a number of wires, called "leaches," each having in its centre an eye, or "mail," which to a certain extent resembles the eye of a needle. The depression of the warp, referred to above, is made possible by passing the warp threads through these mails.

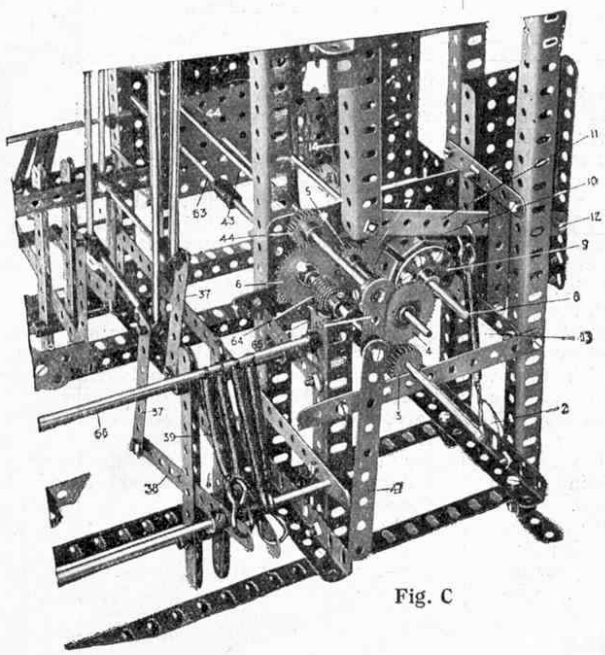


Fig. C

The warp is the thread that runs longitudinally, from the back to the front of the loom. The thread at right-angles to it is the "weft," which is introduced by the passing of the shuttle between the warp threads and pressed into position by the reed, both of which operations will be described in next month's "*M.M.*"

Pattern and Texture

It may here be remarked, perhaps, that the pattern depends upon the number of healds, the greater the number employed, the more complex is the resulting pattern. For the weaving of very complex figures the warp must be divided among a large number of healds.

When the Loom has been built, it is necessary to determine what pattern you will weave. Whether it be a tie or a hat-band that is your first effort, the choice of colours for the warp, and the colour of the weft will call into play your artistic qualities to no little extent, in addition to your manipulative abilities in the actual process of weaving.

In cases where specially intricate patterns are being worked, each individual warp thread may have its separate lifting apparatus. In such a case some automatic mechanism is necessary, in order that the pattern may be preserved when working at a high speed. Such a lifting mechanism is used in the "Dobby" loom, a model of which can also be successfully constructed by means of Meccano.

The pattern, which as we have seen depends on the number of healds employed, does not have any bearing on the texture of the woven fabrics. The closeness of the texture of any material depends upon the number of warp and weft threads to the inch. In actual manufacturing, fine cloth may have 125, or even more, threads to the inch both in warp and in weft.

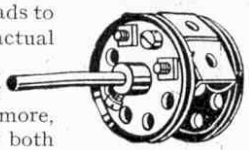


Fig. D

Thus in addition to the colour and the pattern, you will have to decide of what texture your fabric is to be.

Next month we shall continue these instructions for building the Meccano Loom by describing the Heald Motion, the construction of the Slay and the Reed, and of the warp thread Tension Mechanism. The article will conclude with some useful hints on preparing to weave, and full instructions will also be given in that issue for the construction of the Beaming Frame, a necessary model to those who build the Loom. We shall also give an illustration of some of the fabrics that have been woven on the Meccano Loom.

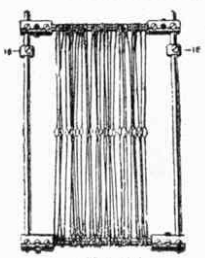


Fig. E

Parts Required

The following is a complete list of parts required for building the Loom, both those referred to in the above instalment and those that will be required to complete the model in accordance with the further instructions in next month's "*M.M.*"

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			

(To be continued)

Turning Animal & Vegetable Products into Cloth

The Fascinating Story of Spinning and Weaving

I.

MAN is the only creature that has to make clothes, and certainly a good deal of trouble would be saved if our bodies were covered with feathers or fur, thus making clothes unnecessary!

Sometimes people think that animals and birds are fortunate because they have not to provide themselves with clothes. Yet, on the other hand, there would be many drawbacks, if we were subject to the same conditions. For instance, we should not be able to change our winter clothes for the lighter apparel of summer when hot days came; nor could we wrap ourselves in extra heavy overcoats to brave the stormy days of winter. There would be many other disadvantages, too, for we could not change into flannels for cricket nor into "shorts" for footer. There would be no school colours, and no special caps for those boys in the school XI's! Then again, our mothers and sisters could not have pretty hats nor jumpers, and this in itself would be a terrible calamity indeed, from their point of view, though it would certainly save our fathers a good deal of expense!

The story of spinning and weaving is extremely interesting and contains endless instances of how perseverance and ingenuity have triumphed over great difficulties. Numerous inventions have converted the original hand loom into the wonderful power loom used in our factories to-day.

Clothes the Result of Progress

Clothes are the result of civilisation. We read in our history books that, thousands of years ago, before man was civilised, when his battle axes were made of stone and his tools and weapons of flint, he was clothed in the skins of wild animals. Before he thus thought of robbing the animals of their "clothes," primitive man was himself clothed only by a hairy skin. Indeed, in those days he probably more closely resembled an animal than a man. As his intelligence developed, however, and as he pushed further and further into the cold regions, he found the necessity for a covering for his body. Thus it came about that he thought of using the skins of the animals he hunted for food.

Spinning was One of the Early Arts

As time went on and man rose higher in intelligence, weaving was invented, and fabrics made of flax and similar materials took the place of skins. Some of these fabrics were dyed different colours, and others were decorated with bright patterns, giving a pleasing effect. In this respect we imitate the ancients even to-day, for we like to wear clothes of different patterns, and to have in our homes curtains and carpets in which colours play an important part.

But spinning and weaving are of great antiquity, and as is the case with most arts and crafts, they were first practised in the East. Even at the time when Britain was covered with forests, and its inhabitants were uncivilised and clothed in skins, the people of Eastern nations were wearing woven cloth.

Weaving in Ancient Egypt

In accounts of the late Lord Carnarvon's wonderful discoveries we read of the fabrics found in the tomb of Tut-ankhamen, the mighty Pharoah who lived over 4,000 years ago.

Linen was known in Egypt in very early times, for in the Bible we read of Joseph being arrayed in fine linen. We read also that at the opening of the tabernacle constructed in the wilderness by Moses "the women . . . did spin with their hands and brought that which they had spun, both of blue and of purple and of scarlet and of fine linen."

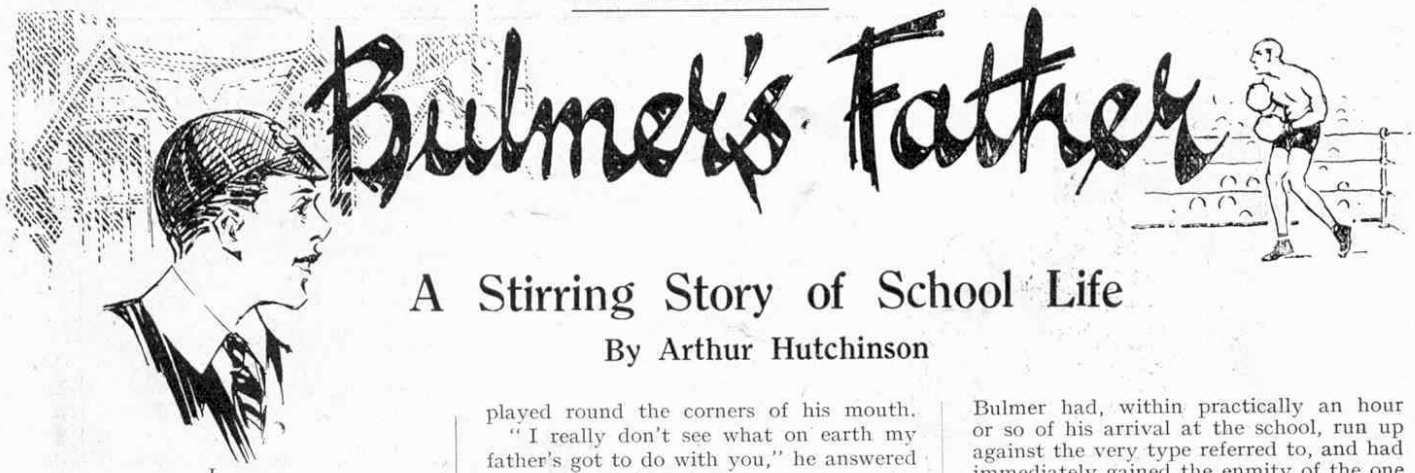
In India, cotton cloth was the ordinary wear of the inhabitants at least five hundred years B.C. The ancient historian, Strabo, speaks of flowered cottons or chintzes, and he particularly refers to the lustre and vivid quality of the dyes with which the Hindus figured their cloths. In early times, the ports beyond the Red Sea did a large trade in cotton cloth. We are reminded of this fact by the names of calico and muslin, for they are called after the towns, Calicut and Mosul respectively, in which they originated.

Vegetable and Animal Materials Make Clothes

To-day our clothes are generally made either from cotton or from wool, and it is wonderful to think that

(Continued on page 85)

OUR NEW SERIAL



Bulmer's Father

A Stirring Story of School Life

By Arthur Hutchinson

I.

IT was the first day of the winter term at St. Winifred's. Morning lessons were over, and knots of excited boys were grouped about the main corridor. Here and there a newcomer was to be found gazing tremulously at the outbursts of activity around him—a stranger in a strange land.

In front of a notice board, and eagerly scanning the news items upon it, stood Lawson major—the leader of the Upper Fourth—together with a few of his satellites. Suddenly Lawson sprang aside from the rest, and brought his hand down with a sweep upon the shoulder of a youngster who was trying to pass unnoticed.

"Hi! you," he cried, "What's your name?"

The youngster started back and gazed defiantly at his questioner.

"Are you deaf?" shouted Lawson, tightening his grip, "Can't you hear what I say? What's your name?"

"Bulmer," answered the boy unperturbed.

"How old are you?"

"Nearly fifteen."

"What's your Christian name?"

"John."

Lawson sniggered.

"And what's your father?"

"A man."

Lawson's snigger subsided into a frown.

"None of that," he said ominously, "You know what I mean. What does he do?"

The new boy drew himself up, and stared calmly into the eyes of his questioner.

"He minds his own business," he answered coolly, "which is more than a good many other people seem able to do."

The crowd that had now circled round the newcomer gasped. This from a new boy—it was incredulous! As for Lawson, his face reddened with fury, and he clenched his free fist.

"Here, none of your confounded cheek, you wretched numb-skull," he spluttered. "When you're asked a civil question, just you give a civil answer—see."

The youngster drew back and half closed his fists. Then in a flash he controlled himself and an aggravating smile played round the corners of his mouth.

"I really don't see what on earth my father's got to do with you," he answered quietly. "He's my father, not your's. Besides, what he does is his affair, not mine."

Again the group gasped, and anxiously awaited the next move, whilst Lawson remained speechless with wrath and indignation.

Lawson was cruelly twisting the arm of a terrified boy . . . .

"Well, is there any more of my family history you want to know?"

The audaciousness of this question broke the spell, and with a muttered exclamation of rage, Lawson grabbed the new boy by the collar.

"You confounded young puppy," he cried, "I'll teach you ——"

The rest of the sentence was drowned by hurried exclamations from the surrounding group. "Here comes the Doctor," passed from lip to lip, as a black-gowned figure appeared on the horizon. The next minute the group of boys had melted away, and young Bulmer was left standing alone. For a few seconds he remained gazing in the direction of the vanishing boys, and then, straightening his crumpled collar, he followed in their rear, and away from the approaching figure.

II.

It is a significant fact that so far as a boy's life at a public school is concerned, the first impression that he creates will really always remain a permanent one. It takes a good deal more than the sands of time to alter it. Woe betide, therefore, if that impression has been on the debit side of his account, especially if the principal creditor happens to be none other than the school bully.

By a stroke of sheer bad luck, young Bulmer had, within practically an hour or so of his arrival at the school, run up against the very type referred to, and had immediately gained the enmity of the one boy of whom he should have steered clear. Outwardly, Bulmer did not seem to care a straw, and, to all intents and purposes, he went about with an air of unconcern, merely looking the other way whenever Lawson approached. Inwardly, however, things were altogether different, for deep down in his heart the boy nursed an intense feeling of resentment against the scorn and ridicule to which he was subject, not only from Lawson, but also from those—and they were many—who toadied to him.

If the truth were only known—Jack Bulmer was a type of boy quite different from the majority. Extremely sensitive to ridicule, he fell an easy victim to the force of a spiteful tongue, whereas a physical blow would leave him indifferent to the antagonism behind it. Warm-hearted and responsive by nature, he had it within his power to attract anyone to his side, but unfortunately his extreme sensitiveness prevented his giving full rein to his wish to do this. The result was that he was looked upon by a good many as "stand-off-ish."

There was one individual who had read between the lines, however, and who had taken a strange interest in Bulmer. This was none other than Brailsford, the captain of the school "rugger" fifteen and heavy-weight boxing representative at Aldershot. For some reason or other Brailsford had conceived a great liking for the new boy, and the two were often to be seen strolling and chatting together. This fact, needless to say, only added more fuel to the resentment harboured by Lawson and his satellites.

Thus matters went on, until an event happened that even to this day is referred to at St. Winifred's, and which, incidentally, placed young Bulmer upon another footing altogether.

III.

It was about the middle of the term on a certain Saturday afternoon. Owing to a last-minute scratching on the part of the opposing team, there was to be no football match, and the school was left to its own devices as to recreation. One

(*Continued on page* 85).

THE Meccano Photographers' Corner

TWO SPLENDID COMPETITIONS

Holiday Essay Competition

THE Holiday-essay Competition held last year proved such a success that it has been decided to hold another similar competition. The subject will again be some holiday experience, but this year the Competition will be divided into two sections :— (1) Photo-essay and (2) Essay Competition.

For those with Cameras

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, though this point will be taken into consideration when making the awards. 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 :—

(1) For those of 14 years of age and under,

(2) Those over 14 years of age.

In this section three Hawk-Eye cameras, made by the Kodak Co. Ltd., 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.

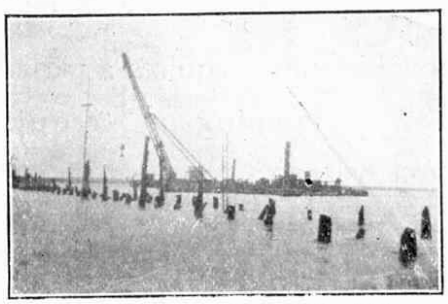
Photo by [*G. A. Short*

The Crucifix, Cournas, France

Subjects to Choose From

As to the subjects of the essays, these we leave to our readers, the only stipulation being that the subject chosen must be a holiday topic.

Some may deal with a thrilling and adventurous holiday expedition; others may choose to describe a visit to some beautiful and historical ruin : others, again, may write of a pleasant holiday in some interesting place where they had a very happy time. Last year the winning essay, which was published in No. 28 of the "*Meccano Magazine*," described a holiday in Ireland. On this page we print three photographs that accompanied another prize-essay, which described a Meccano boy's holiday on the Continent, and dealt in an interesting way with some relics of the War seen on the coast of France.



Raising Sunken Ships at Dunkirk

General Conditions

All essays should be neatly written, and 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 Competition closes 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.

Fourth Photographic Competition

FROM the majority of entries in the recent competition "Improving the '*M.M.*'" it is evident that the Photographic Competitions are among the most popular competitions with our readers. I have therefore pleasure in announcing a Fourth Photographic Competition.

The rules are the same as in our previous Competitions. Although the photograph must be taken by the competitor, he is at liberty to obtain outside help with the developing and printing. Photographs may be of any size, mounted or otherwise as the size will not be taken into consideration.

Photo by [*G. D. Davies*

Swallow Falls, Bettwys-y-Coed

A view well known to holiday-makers in North Wales.

Write your name and address clearly on your entries and state whether the printing and developing has also been done by yourself, as naturally this will be taken into account when judging the entries.

The subjects are to be either

(1) A SUMMER SCENE

or

(2) AN ANIMAL STUDY.

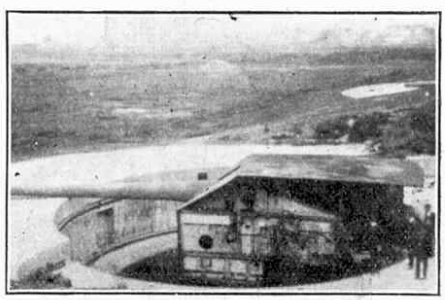
The Competition will be divided into two classes :—

Class A. Boys of 14 years of age and under

and

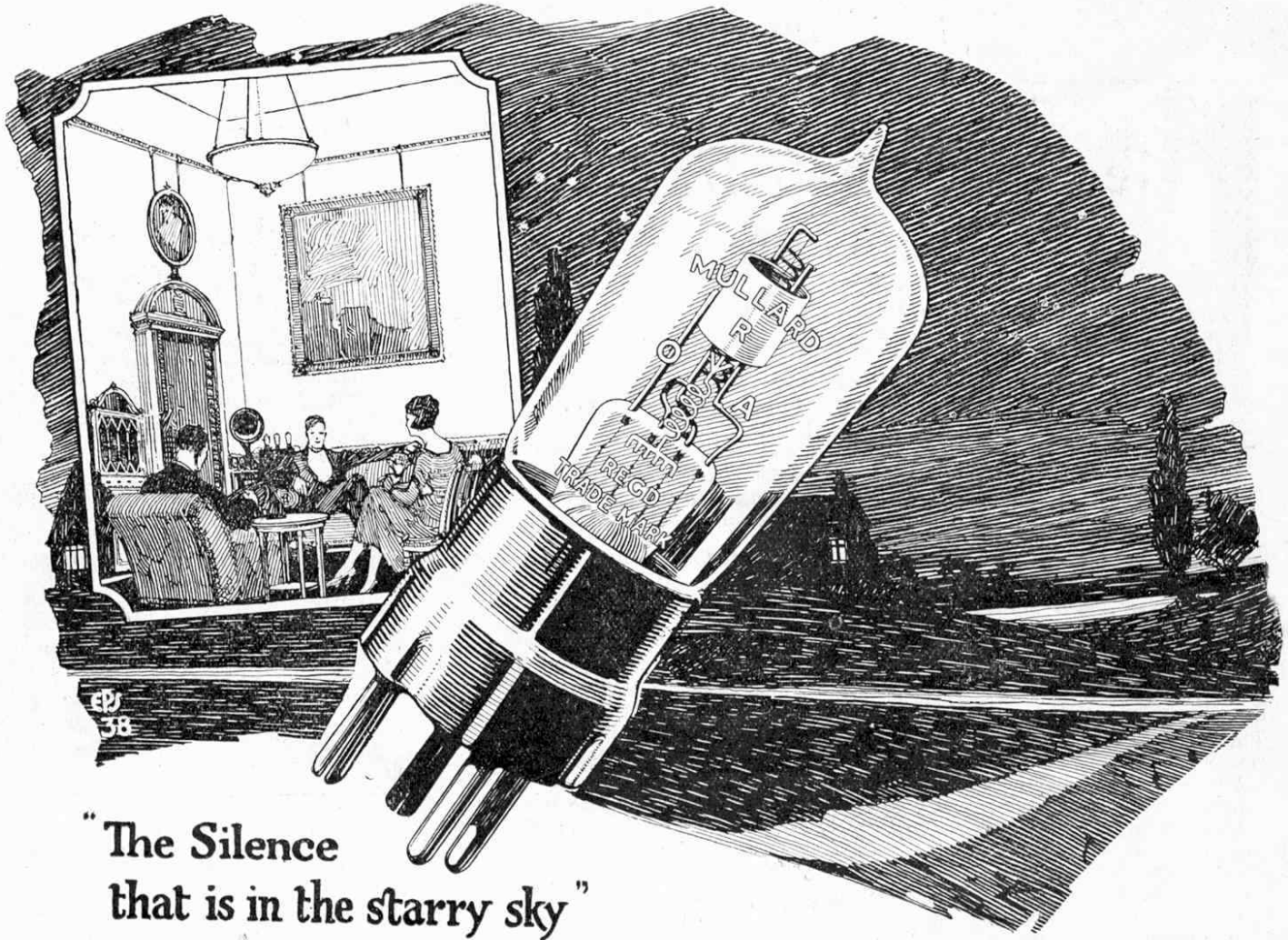
Class B. Boys over 14 years of age.

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.



German Gun on the French Coast near Dunkirk

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



"The Silence that is in the starry sky"

MULLARD SUPERIOR WIRELESS VALVES

Price: 15/-

THE human ear can only detect from 12-33,000 vibrations per second. *A Valve translates up to 1,000,000 vibrations per second.*

Turning Silence into Sound

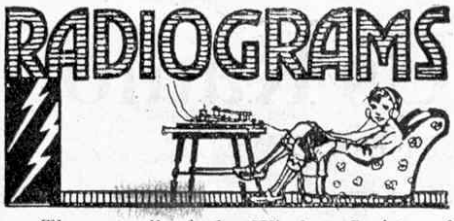
Good Listening requires a perfect ear. Good "Listening-in" requires a perfect valve.

That means a

Mullard

OBTAINABLE FROM ALL THE BEST ELECTRICIANS, WIRELESS DEALERS, ETC.

Advt. of The Mullard Radio Valve Co. Ltd., Balham, S.W.12.



The council of the Wireless Society of London, of which organisation the Prince of Wales is a patron, have opened a movement to assist the blind to operate receiving sets and so bring entertainment and instruction within their reach.

* * *

Captain Ian Fraser, the blind chairman of St. Dunstan's, recently broadcast a speech from Marconi House, London. He earnestly asked wireless amateurs to teach one or more of the two thousand totally blinded ex-Servicemen the art of operating a receiving set.

* * *

It is well known that the blind develop a wonderful sense of hearing, and for this reason they are perhaps better equipped for "listening-in" than the average person. The comparative simplicity of operation of a receiving set should enable them to quickly become efficient operators.

* * *

Amateurs in and around Liverpool are able to hear the Lightship at the Mersey Bar telephoning the Dock Office at 7.0 a.m., 9.0 a.m., 11.0 a.m., 12 noon, 1.0 p.m. and then every two hours until 9.0 p.m. The Lightship when commencing conversation merely calls "Dock Office," the call being answered by "Bar Ship."

* * *

Radio dances recently inaugurated at Highgate, London, are proving an unqualified success.

* * *

The Radio installation of the Detroit Police Department has been given the call letters "K O P." This is surely pure genius on somebody's part!

N. T. Brown (Birmingham).—The Buzzer illustrated in the Electrical Manual will serve your purpose, and you should proceed in the following manner:—From the frame, run a wire to earth, and from the point number 5 shown in the illustration, conduct to aerial.

G. Robinson (Romford).—Wave length has nothing to do with the distance from which messages may be heard. This depends, firstly upon the power with which the messages are being transmitted, and secondly upon the sensitiveness of the receiving apparatus.

J. Parkinson (Grimsby).—A frame aerial is not to be recommended, and should only be used as a matter of interesting experiment. You may obtain better results if you sling an aerial wire between the walls of your room, insulating it from the walls and slinging it, if possible, in an upper room. Only actual experiment can show whether this would be satisfactory. A wire attached to the window frame of an upper room and run to the bottom of the back garden is much to be preferred.

W. Robinson (Kilmarnock).—As you are well beyond the 25 mile limit, you could not receive telephony at Kilmarnock with a Crystal Set.

P. N. Leopold (Hamilton).—There is no Broadcasting Station at Aberdeen, although we believe that one may be established there in the near future.

C. Cyril Harris (Fleet).—The Meccano Crystal Receiver may be supplemented by a high frequency amplifier, which would considerably increase its range, and under favourable circumstances enable telephony to be heard up to a distance of 50—100 miles.

Jack Marsden (Sheffield).—(1) The Meccano Receiving Set does not include an aerial. This is sold separately, price 12/6 complete. (2) Very fine tuning may be obtained with the adjustments on the Meccano Set without the aid of a variable condenser. (3) Regarding ear-phones see our reply to H. J. Rickards, Birmingham. (4) You cannot use a loud-speaker with your Set without a valve amplifier, and only then if you are near a Broadcasting Station.

Harold Robinson (Nottingham).—The lead-in wire from the antenna is connected to the terminal on the Receiving Set labelled "Aerial."

Michael Petros (Narbethong).—As wireless regulations are not so strict in Australia as in the United Kingdom you will no doubt be able to use our Constructional Receiving Set (No. 2) without having to obtain a special licence. An Instruction Leaflet for assembling this Set may be obtained from the Meccano Depot, 379, Kent Street, Sydney.

H. J. Rickards (Birmingham).—(1) The Meccano Receiving Set is provided with one head-phone, but if desirable, double head-phones may easily be connected; these should have a resistance of 2,000 ohms. (2) All transmitting stations are given call letters for purposes of identification. (3) The length of the aerial between the insulators, plus the length of the lead-in wire must not exceed 100 feet.

John McCaskill (Gaerloch).—(1) The Meccano Radio Receiver No. 1 is not provided with a condenser or inductance discs. It is specially adapted for very fine tuning without the aid of these accessories. (2) A double wire aerial is quite satisfactory with a Meccano Receiver.

D. O. Boyd (Scorrier).—See our reply above to C. Cyril Harris.

The Men Who Gave Us Radio:

IV. GRAHAM BELL, TROWBRIDGE AND CLERKE-MAXWELL

In previous articles under this heading we have described the work of several scientists who contributed to the invention of Radio as we know it to-day. In our last issue we showed how Steinheil, Morse and Lindsay transmitted messages without wires by using the earth and water as conducting media. On this page we deal with the invention of the telephone, an instrument that played a very important part in the development of Radio. We also describe experiments in signalling by induction which marked an important advance in the progress of the science.

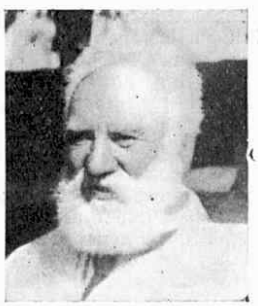
Nine people out of ten, if asked who invented Radio, would reply "Marconi." They are surprised to find that the science of Radio is the result of researches extending over the past century. Those who devoted themselves to a study of the science in the early days made valuable contributions to the store of human knowledge. It was only as a result of their investigations that Marconi was able to evolve in a practical form the first system of Wireless Telegraphy, by which signals could be transmitted and received over considerable distances.

Graham Bell

UP to this time the only means of electrical communication was the telegraph. In 1876, however, Dr. Graham Bell invented the telephone, the introduction of which played an important part in the study of wireless communication.

In 1871 young Bell was employed teaching at Boston University, and in his spare time experimented with tuning forks, magnets and electrical batteries. For three years he worked in this way, and in 1874 evolved what he called the "harmonic telegraph," a device for sending ten or twelve Morse signals over a single wire at the same time.

The manner in which he came to invent the telephone, and the first messages spoken with it, have already been described in the pages of the "*M.M.*" As far as wireless is concerned, the importance of Bell's discovery is difficult to estimate, for the telephone placed in the hands of scientists a marvellously delicate instrument. It was infinitely more sensitive than any apparatus previously employed and was found of much greater sensitiveness than the mirror galvanometer, which previously had been employed to detect minute currents. Professor Pierce, in America, found that the Bell telephone was so sensitive that it gave audible signals with 1/100,000th part of the current of a single Leclanché cell.



Alexander Graham Bell was born in Edinburgh in 1847. He attended the Edinburgh High School and proceeded later to the University and to London. In 1870 he went to America and taught at the Boston University. He experimented with telegraphic systems, but his greatest discovery was the telephone. He died on 2 August, 1922, at Nova Scotia.

Trowbridge

About 1880 Professor John Trowbridge, of Harvard University, suggested a method by which he thought it possible for ships at sea to communicate one with another. In his plan a ship was to be provided with a powerful dynamo, one terminal of which was "earthed" in the water at the bow of the vessel. The other terminal was connected to a long wire, insulated except at its extreme end. This wire trailed over the stern and its end was kept near the surface by a buoy. The current was thus spread over a large area of water. According to Trowbridge's plan, this current could be detected by any other ship, fitted with a similar wire, the signals being received by means of a telephone. The suggestion was never proceeded with, however, because the power required was so great as to make it impracticable.

Clerke-Maxwell

We must now mention James Clerke-Maxwell, a brilliant mathematician, whose studies in connection with the theory of electricity and magnetism were of the greatest assistance to workers who followed him. Clerke-Maxwell was educated at Edinburgh Academy, and before he was fifteen years of age his first scientific paper was read to the Royal Society of Edinburgh. He studied for three years at the University of Edinburgh, going up to Cambridge in 1850, where he gained several honours. In 1871 he was appointed Professor of Experimental Physics in the University of Cambridge.

Clerke-Maxwell's greatest work was his treatise "*Electricity and Magnetism*," published in 1873. In this book he advanced a new theory of electrical and magnetic phenomena. He also investigated many other interesting subjects, including the measurement of colour-sensation; the construction of the wonderful ring-system of the planet Saturn; and studied Molecules, Matter and Motion.

In addition to this formidable list, he devoted a considerable time to the investigation of Heat and Light. He was surprised to find that there was a striking resemblance between the value of certain electrical mathematical formulæ and the figure representing the velocity of light. As a result of further investigations he announced (in 1863) that both light and electricity travel through space by means of the ether, and that they are composed of electric-magnetic waves. At that time it was not possible to prove this statement, and indeed it was not until 1888 that the truth of Clerke-Maxwell's brilliant prediction was demonstrated experimentally by Professor Hertz.

Trowbridge's Inductive Method

Up to this period all systems advanced for solving the problem of communication without wires were based on the methods of Morse and Lindsay. If they varied at all it was only in regard to unimportant details, all depending upon the principles of conduction, first discovered by Sommering and Steinheil.

In 1891, however, Trowbridge suggested a new method of signalling without wires by the use of electro-magnetic induction. This phenomenon is produced by passing a current through a coil of wire, when

James Clerke-Maxwell was the brilliant mathematician who predicted the existence of the Hertzian waves. He was Professor in Marischal College, Aberdeen; in King's College, London, and later at Cambridge. Born 13 June 1831 at Edinburgh, he died 5 November 1879.

The Men who Gave Us Radio—*(cont.)*

another current is induced in a second coil a few feet away, even though there is no connection between the two coils of wire.

Trowbridge suggested that induction might be used for signalling between two ships by forming a large coil by stretching several wires from the masts and connecting these wires to a powerful battery. According to his theory a second ship would be able to receive the signals with a telephone connected to a coil formed by a similar series of wires on the masts. In theory Trowbridge had solved the problem of wireless communication, but the difficulties were too great to make the scheme practicable. To enable communication to take place over more than half a mile would have necessitated coils over 800 ft. in radius.

It may be mentioned, however, that Professor Graham Bell subsequently experimented with an improved method, similar in principle to that of Trowbridge, nd claimed that signals had passed between vessels over two miles distant.

NEXT INSTALMENT

DOLBEAR, WILLOUGHBY SMITH, EDISON and PREECE.

SOME FAMOUS COLLECTORS

IT appears to be human nature to collect and classify. Every boy collects something—birds' eggs, cigarette cards, coins, etc. Soon he collects Treasury notes, and later on, when he has sufficient of these he collects pictures, antiques, curios, or whatever objects may take his fancy.

The collecting of postage stamps is one form of collecting that attracts both young and old of all classes. No one is too young and no one is too old, to collect stamps. High and low, rich and poor, may share the enjoyments afforded by the hobby.

Unlike many hobbies, stamp collecting may be carried out at but little cost, or large sums may be spent on it. The schoolboy may get together as interesting a collection as the millionaire, and I am not at all sure that the rich enthusiast enjoys his hobby any more than does the collector whose resources are of a more modest nature.

The King's Stamp Party

H.M. the King may be considered to be one of the leading collectors of stamps in this country. His collection of stamps from British colonies is exceedingly fine and includes many rarities. The King recently received over a hundred stamp collectors (exhibitors and officials of the Stamp Exhibition being held in London) at Buckingham Palace. He showed them his wonderful collections, and afterwards entertained them to tea.

On receiving his guests the King entered keenly into a discussion regarding their collections and his own. The experts were astonished at his philatelic knowledge, and listened with great admiration to his comments on the Royal collection. To Mr. Arthur Hind, the millionaire owner of the famous £7,000 British Guiana Stamp, the King said "your wonderful stamp fills me with envy. But come along with me," he added, smiling, "and I will show you some that even you haven't got!" Amongst the stamps that the King showed with special pride was his extremely rare "Post-Office Mauritius" collection. "Aren't they beautiful?" he asked, and his guests admitted they had never seen any so fine.

The Prince Collects Stamps

The Prince of Wales is also a stamp enthusiast, and although the King confines his attention to British stamps, his son and heir goes further afield, and collects stamps of all countries. We can imagine how eagerly the Prince would seize the many opportunities afforded by his numerous tours of adding to his collection.

Amongst other royal stamp collectors may be mentioned the Queens of Italy, Belgium and Norway; the King of Spain and ex-King Manoel. Amongst peers, Viscount Burnham (the proprietor of the "*Daily Telegraph*") and Lord Birkenhead have each a particularly fine collection, and statesmen are represented amongst collectors by Sir Philip Lloyd-Greame, the President of the Board of Trade. Mark Hambourg, the great pianist, and Lady Auckland Geddes, wife of the British Ambassador at Washington, are two other well-known collectors.

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.

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.

M. Buring (Launceston, Tas.).—We are glad to see that after five years of model building you are as keen as ever on Meccano, and that in fact you are suffering from "Meccanoitis." The word "*bonza*" with which you describe the "*M.M.*" is new to us, but it sounds good!

H. Jacobsen (Johannesburg, S.A.).—Thanks for photos of yourself and Willie Cooper. We have not seen two such cheery faces for many a long day. We read with much interest your account of the swarm of locusts that devastated your neighbourhood.

S. E. Gardner (Feltham).—We are pleased to hear that "the neat Meccano Guild Badge" that you wear is attracting so much attention amongst your friends. We are sending you the Guild application forms, for which you asked, by separate post.

P. Gregory (Hull).—Your suggestion for an inventors' page is good, but we fear that we should have some difficulty in filling a page every month with contributions of this nature from our readers. This subject is already partly covered by the "Bright Ideas" column.

G. S. Marsh (Thornton-le-Fylde).—We read your bright cheerful letter with interest, and were surprised to learn from the last paragraph that you have been an invalid all your life. Your mind and intelligence are vigorous and healthy enough, at all events! We are pleased to know that the fire-guard that your friend made from Meccano parts is so effective. Your radio queries have been replied to by post.

E. Borthwick (St. Albans, N.Z.).—Your letters are always interesting, and if you could send us photos of the exciting incidents about which you write, we should be very glad to publish them.

H. R. Wright (Mansfield).—

"There was a young girl in the choir,
Whose voice went up hoir and hoir,
Till one Sunday night,
It went right out of sight,
And next day was found on the sphoir."

Quite good if you composed it yourself, but it seems somehow to strike a responsive chord in our memory. You will find an announcement of the new Meccano note-paper on this page.

W. R. (Stepney).—We quite appreciate your point of view when you say you would rather the "*M.M.*" was devoted entirely to engineering. We are certainly giving more space in future to this subject, and to the delights of model building. At the same time there is a strong and insistent call for the new features which we have commenced in this issue. As we know that we can make them exceptionally interesting, we have decided to run them for a time at least. Many thanks for your intelligent and thoughtful criticism.

F. Memmory (Derby).—We fear that your suggestion for a column dealing with poultry would appeal only to a few of our readers, the great majority of whom, we imagine, are more interested in engineering structures.

F. D. Cawley (Hale).—We gather from your letter that you passed your examination and we congratulate you. It is gratifying to know that in the wireless essay you attribute your success to the knowledge gained through reading the articles in the "*M.M.*" Thanks for description of the Meccano change-over switch you have invented; we will give this careful examination.

L. King (Hyde).—Judging from the account, your double-decker motor bus, carrying 48 toy soldier passengers and electrically lighted, is a very fine accomplishment, and no doubt yourself and your chum get lots of fun playing with it. Thanks for drawing of the shock-absorbers used in your model, and for your promise to send photos of the complete model.

H. A. Rees (Birkenhead).—We are inclined to agree with you that an improvement in the "*M.M.*" might be effected "by leaving something out one month, and putting something else in its place." What we desire to know, however, is *what* shall we leave out and *what* new articles shall we put in!

H. P. Thompson (Winnipeg).—"What a wonderful bird the frog are. When he stand he sit, almost. When he hop he fly, almost. He ain't got no tail, hardly, either; when he sit, he sit on what he ain't got, almost." In writing this essay your little Norwegian friend certainly showed that he had closely observed the frog's activities! The last sentence is a masterpiece. We are glad to know that you think of us so often, and that Meccano is such a boon to you in the Winter.

Readers frequently write to me asking if I can recommend books that are both of interest and of use. In this column I hope to review books that I consider specially appeal to Meccano boys. I do not actually supply these books, which may be obtained either through any bookseller or direct from the publishers.

Carpentry for Beginners

(*Published by Evans Bros. Ltd., London. Price* 3/6).

With this book before him any boy will soon learn to make many useful articles for the house. The subjects dealt with include marking-out; gauging; the se of saws, planes, chisels, boring-bits nd the spoke-shave; filing, glass-papering and glueing. Among other interesting items, there are designs for light woodwork, working diagrams and instructions for making a wood-worker's bench.

The book is a clear and complete guide to carpentry, with practical examples, and is very suitable for those boys who are handy with their tools.

The Romance of Modern Railways

by Thos. Corbin

(*Published by Seeley Service Co., London. Price* 7/–).

At some time or other we all have an ambition to be an engine-driver. Though many of us never realise our ambitions, our interest in Locomotives and Railways does not diminish. All boys will be delighted with this recently-published book. Its pages include the history of railway pioneering and many other interesting subjects, such as the making of locomotives, how locomotives work, and also descriptions of the different types. Chapters are devoted to brakes, rail-making, signals, traffic control, fogs, nnels and bridges. In fact the book is ull of those subjects that delight boys particularly interested in everything appertaining to railways.

The Boy's Guide

by A. Williams

(*Published by Nelson's, Edinburgh. Price* 7/6).

This wonderful book will appeal to every boy, for it is filled with advice and information. The large number of carefully-chosen subjects are of interest to boys generally, and cover more particularly the recreational side. The book is a complete guide to such subjects as Athletics, Cricket, Riding, Rowing, Sailing and all outdoor sports. Chapters are also devoted to Guns, Gardening and Photography.

Indoor pastimes are catered for by the inclusion of Poker-work, Stencilling, Tools —how to choose and how to use them, Workshop Hints, Lathes, Soldering, etc. A considerable amount of useful information is also included in the book, such as abbreviations, foreign expressions and phrases, legal points, and a chapter entitled "What shall I be?" may help boys in choosing a career. Altogether the volume will prove a mine of information to Meccano boys.

Catalogues Received

A tempting price list comes from Messrs. Kodak Ltd., Kingsway, London, W.C. The Kodak catalogue always convinces us that life without snapshots would be a blank. Cameras of all sizes and prices are shown, and everything is made easy and pleasant.

* * *

Messrs. A. W. Gamage Ltd., Holborn, London, E.C., send us a catalogue that seems to contain everything necessary to make a boy happy. Camping-out gear, cycles, cameras, neat school and sports suits, etc. A house famous for good value, courteous, and generous treatment of customers.

Have You Sharp Eyes?

The number of entries for this Competition has been overwhelming. The results will be announced in next month's "*M.M.*"

Bulmer's Father (*continued from p.* 77)

or two scratch games of football were organised amongst a number of the boys, whilst the rest found outlet for their energies in various forms of "ragging." Soon even this became monotonous, and Lawson and company conceived the idea of carrying out "stunts" of a torturesome nature upon the persons of certain small boys who had gained their disapproval.

It was while one of these "stunts" was in progress that young Bulmer arrived upon the scene of activity. Standing upon the outskirts of the crowd of boys, and unaware of what was going on in its midst, he suddenly heard a yell of sharp distress. Without a moment's hesitation he elbowed his way through the crowd where, in an open space in the centre, he beheld the doings of Lawson, who was cruelly twisting the arm of a small and terrified boy. Disregarding the hostile looks of those around him, Bulmer strode up to the bully, and with a quick motion knocked his hand away from the tortured boy.

(*To be continued*)

Magazine Binder

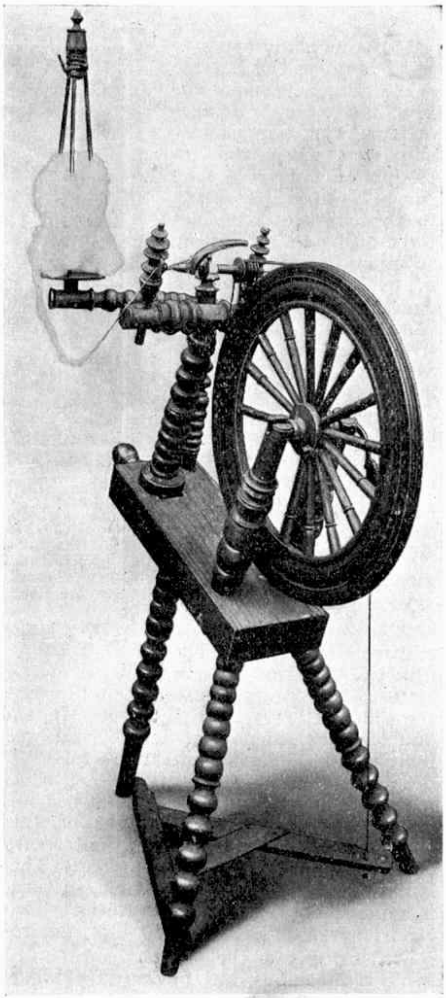
In response to numerous requests we have introduced a spring-back binder for *Meccano Magazines*. The binder has a strong stiff back, covered with imitation leather, tastefully tooled. It takes a large number of copies and keeps them neat and clean. In black, lettered gold. Price 3/– each, post free.

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.

Spinning and Weaving (*continued from p.* 76)

these raw materials can be changed so that in their finished form they bear not the slightest resemblance to their original state.

Cotton comes from the pods of the cotton plant, and in this state its appearance resembles cotton wool. It is picked



An Early Spinning Wheel

in the fields and packed into great bales, large quantities being pressed into small compass by hydraulic presses. Any of you boys who have visited Liverpool will have seen heavy loads of these cotton bales passing through the streets from the docks to the warehouse.

Spinning and Weaving

Before it is possible to use the raw cotton and wool they must be converted into thread, or "yarn" as it is called. This is accomplished by a spinning machine, of which there are several types. The yarn is then supplied to the weaver who, with the aid of a loom, weaves it into cloth. This must then be bleached and sized, and dyed and finished, before ready for delivery to the shops where we buy it by the yard.

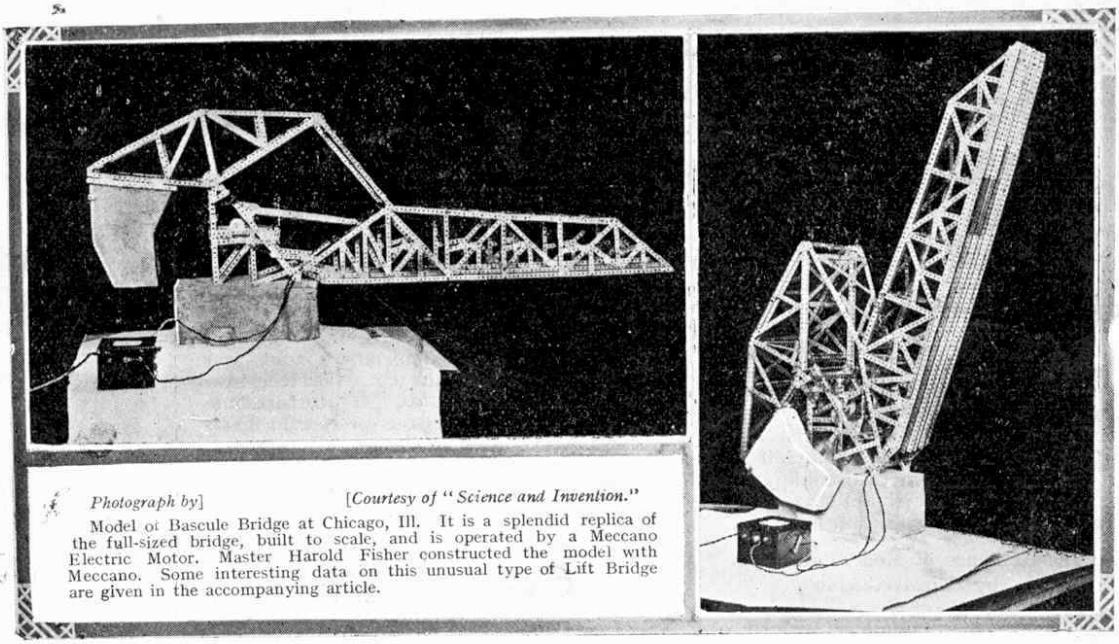
Cotton grows in all tropical countries, and is obtained largely from Egypt and other parts of Africa, from certain parts of Central and Southern America, and from India and China. In these countries the climate is particularly suitable for its growth.

(*To be continued*)

Famous Bridges : I.

THE WORLD'S LONGEST BASCULE BRIDGE

ACCURATELY REPRODUCED IN MINIATURE WITH MECCANO



Photograph by] [Courtesy of "Science and Invention."

Model of Bascule Bridge at Chicago, Ill. It is a splendid replica of the full-sized bridge, built to scale, and is operated by a Meccano Electric Motor. Master Harold Fisher constructed the model with Meccano. Some interesting data on this unusual type of Lift Bridge are given in the accompanying article.

OF the many types of bridges the Bascule Bridge is one of the most interesting. Bridges of this type are usually employed when the introduction of a swing bridge is impossible, owing to the width of the river to be bridged not allowing sufficient space for the bridge to open. In America bridges of the bascule type are extensively used and are known as "Jack Knife" bridges, because the leaf, or moveable portion, resembles the blade of a jack-knife.

This splendid scale model of the Bascule Bridge at Chicago was built by Harold Fisher (17 years of age). The model is operated by a Meccano Electric Motor and rises and falls in a realistic manner. The Chicago Bridge is the largest of its kind in existence, and crosses the Chicago River at 16th Street. It is a double track, single leaf bridge, and was built for the Illinois Central Railroad.

The moving leaf is 260 ft. in length, as measured from centre to centre of bearing points. To balance the weight of this enormous mass of steel, a counterpoise of over 2,000,000 lbs. is required. This is built upon a rocker arm which, in turn, is supported by a triangular tower. Two electric motors, each of 150 h.p., are required to operate the bridge.

Very ingenious air buffers are incorporated in order to gradually check the movement as the leaf approaches the fully-open position, at which it stands at an angle of 83 degrees. These buffers, which are provided in addition to the regulation air-brakes, also take up the shock when the bridge closes.

This fine bridge has been quite an inspiration to Meccano boys in the Chicago district, and many different models of the structure have been entered in the big model building competition that we hold in America.

One ingenious competitor conceived the idea of making his dry batteries not only operate the motor, but also act as the counter-weight. Probably our readers can discover many other ways of improving the model.

This is the first of a splendid series of articles that will briefly describe famous bridges of the world. These articles will appear in the "*M.M.*" from time to time as space permits.

In the near future we hope to publish an illustrated article describing another Chicago bridge of a similar type, but with two leaves, and in subsequent issues we shall deal with the Brooklyn Suspension Bridge, the Britannia Tubular Bridge, the Arch Bridge across the Zambesi Gorge, and other similar famous engineering structures.

BRIGHT IDEAS

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

Reginald Hayward (Eye, Sussex).—Our 2" pulley wheel gives an excellent representation of a motor steering wheel, especially if a rubber ring is placed in the groove.

Ronald Peace (Ovenden).—We are engaged at the moment on a suitable sliding action.

John Hickman (Chorlton-on-Medlock).—(1) We are introducing a 5½" flanged disc that might serve the same purpose of your suggested 4½" wheel. (2) For what do you consider curved braced girders might be useful?

A. W. Hammonds (Bristol).—As an alternative to your suggestion for clamping your model to the table, why not obtain a piece of board, stained mahogany or oak, and secure your model to this? This board has the dual advantage of showing-off your model and at the same time allowing it to be moved about.

Thomas S. Peters (Forfar).—Our threaded coupling No. 63c will serve the purpose of your idea.

Elen Atkin (Glasgow).—We have overcome the difficulty of the sleeve-piece. We hope to publish details of our clock in the "*M.M.*" for November next.

D. M. Rankin (Pelaw-on-Tyne).—We are interested in your sketch of a free wheel action, but for what do you suggest it could be used?

R. S. Sanderson, Jr. (Edinburgh).—(1) We use a flanged architrave in our Crystal Receiving Set, and it is quite possible we may incorporate it in the Meccano system. (2) There would be no point in introducing a special accessory outfit containing plates. Many plates are already in the regular outfits and duplication would obviously follow.

P. Reid (Ryde, I.O.M.).—We shall have a selection of signals on the market very shortly.

D. J. Davies (Tottenham, N.).—Regarding your idea for a flange on the 3½" side of the 3½" × 2½" plate we would point out that you can always obtain this formation by attaching a 3½" girder.

D. Ackerley (Manchester).—Your suggestion for lock-nutting is already covered by the collar and set screw.

Horace Parsons (Little Dean).—We hope shortly to introduce a toothed wheel larger than the 1½" gear wheel. 1" pinions are already listed (No. 31).

P. A. Greenhill (S. Woodford).—We suggest you enter your model electric loco in our next competition.

J. Wilkinson (Barnsley).—We have in mind the suggested T and L pieces.

F. Cooper (Leighton Buzzard).—Your suggestions for piercing a hole in the centre latticing of the braced girder was dealt with in the "*Meccano Magazine*" of December last.

E. Shipley (Walsall).—(1) We quite realise that the existing radii of our lines does not lend itself to the formation of a double track. At present we regret we are not able to make any modification in the direction you mention. (2) We shall probably introduce larger rolling stock as time goes on. (3) We shall go into the idea for a universal joint as a complete unit.

Douglas Murison (Buenos Aires).—We are considering the question of forming the five-holed side of the architrave into a flange.

Noel Batham (Farnworth).—We are at the moment manufacturing a boiler truck or well wagon and supplies will be available very shortly.

A. Benedictus (Brussels).—We have come to the conclusion that helical gears do not offer any great scope in the Meccano system. They only duplicate the functions of existing wheels in almost every case.

The Secretary's Notes

One of the things that pleases me most is the fact that there do not appear to be any idle Guild members. All members seem to be industrious, and have the same splendid enthusiasm for their Clubs, their Sports and their School work. Every day I receive letters from my young friends who have passed examinations, won various scholarships or competitions, or who have achieved some other success. I am interested in the doings of every Guild member, and I like to hear of a cricket match that has been won—or lost! I delight in receiving letters telling me of pets and hobbies; of Radio Sets; of new Meccano models, and of the thousand and one other things in which boys delight. Write to me whenever you can, and remember that I am here to help you.

Welcome Letters

I am sure that all Guild members will be interested in the Stamp Collectors' Column that appears for the first time in this issue. Stamp-collectors should note that the Guild Correspondence Club brings members who are interested in stamp-collecting into communication with other members, similarly interested. Particulars of the Correspondence Club will be sent on application.

Guild Stamp Collectors

The booklet "*Suggestions for Club Secretaries,*" is undergoing revision, but I expect the revised edition to be available by the time that these lines are in print. This booklet contains full particulars concerning the formation and running of a Meccano Club. Any member who is contemplating establishing a Club should not fail to send for a copy, if he has not already received one. If the booklet is not ready when his application is received, his name will be listed and the publication sent to him as soon as it is received from the printers.

A Helpful Booklet

I frequently receive letters from boys who do not possess Meccano Outfits but who wish to join the Guild. I regret that it is impossible to enrol these applicants, for a boy without an Outfit is not a Meccano boy. I would mention, however, that where the Leader of a Club agrees, boys without Outfits may become associates of Meccano Clubs. The general rule is, of course, that every full member of a Meccano Club must be a member of the Guild.

Joining the Guild

CLUB NOTES

Triangle (Coventry) M.C.—A Sports Programme arranged for the Summer months, includes an outing to Marton in August. Indoor work is not neglected, and a model of the Meccano Motor Chassis was recently loaned from Headquarters for demonstration purposes. At present there are 180 members, and Mr. W. F. Spragg has accepted the position of Assistant Club Leader. *Secretary:* Master R. Mayell, "Zola," Crescent Avenue, Coventry.

Knutsford M.C.—Continues to make good progress. Gymnastics are very popular among the members. Master W. Osborne has been awarded a Special Merit Medallion for his good work during the last Session. *Secretary:* Master L. J. Shepherd, Grove Lodge, Knutsford.

Leckhampton M.C.—A recent picnic to the Cotswold Hills was greatly enjoyed by all the members. The Cricket Club plays matches every Saturday afternoon. The members are considering the possibility of running a magazine in connection with the Club. *Secretary:* Master B. Rhodes, Cotswold View, Charlton Lane, Leckhampton.

St. Mary with St. Gabriel (London) M.C.—Small Competitions have been held at the majority of meetings and these have proved very popular. Wireless and Electricity Sections have been organised in connection with the Club, under the supervision of Mr. G. Dowsett, the Secretary of the late "Herne Hill Meccano Club." Twelve additional members have joined the Club during the last month. Several interesting visits have been paid to local notable places such as the Science Museum, Tower of London, London Docks, and London Electric Light Works. The Club Magazine has now entered its second volume and the circulation is steadily increasing. *Secretary:* Mr. C. Curle, 37, Pullen's Buildings, Peacock Street, London, S.E.

Meccano Club Leaders

No. 4. Mr. DANIEL E. STRETTON

Mr. Daniel E. Stretton is the Assistant Club Leader of the "Holy Trinity Meccano Club," the leader of which was featured in this column in the last issue of the "*M.M.*" Mr. Stretton was the Secretary of the Club from 1918 until the middle of 1922, when he undertook the greater responsibility of the position he now holds.

The activities of this Club are very varied and include, in addition to Model-building and Lectures, Fretwork, Stamp-collecting, Photography and Radio. Mr. Stretton is an "all-round man" at those hobbies in which boys delight. His services in connection with the Club have been invaluable.

Meads M.C.—A Cricket Team has been organised for the Summer months, and fixtures are being arranged with local teams. *Secretary:* Master F. Coombe, Fire Station, 44, Meads Street, Eastbourne.

St. John the Baptist's (Liverpool) M.C.—It is clear that the members of this Club are keen cricketers, for out of seven matches, six have been won and the seventh drawn. The Cricket Team are naturally very proud of their achievements. Indoor Club-work has been temporarily suspended. *Leader:* Mr. J. S. Lewis, 46, Durning Road, Liverpool.

Gulgong (Australia) M.C. — Many interesting lectures have been given during the past Session on such subjects as "The North Sydney Suspension Bridge," "The Electric Bell," "The Telephone," "Evolution of a Bicycle," "Railway Signalling," etc. A Reading Circle has been organised and this has proved very popular. *Secretary:* Master N. Wallis, "Yarrawin," Gulgong, New South Wales, Australia.

White Notley M.C.—Was first organised at the beginning of the year and affiliated last month, this Club has every prospect of becoming successful. *Secretary:* Master F. W. Fox, c/o Mrs. Lewsey, The Green, White Notley, nr. Witham.

Clubs Recently Affiliated.

Davenport M.C.—Established under the direction of Mr. T. Main, this Club has made rapid progress. Interesting visits have been paid to the Manchester Gas Works, John Horne's Toffee Works and the L.M. & S.R. Engine Sheds and Repair Shops. The members hope to be able to arrange to come to Liverpool and visit the Meccano Factory in the near future. *Secretary:* Master A. D. Stoker, 124, Bramhall Road, Stockport.

White Notley M.C.—Although only small in number, the members of this Club are all keen and enthusiastic, and good progress has been made. The Meccano Lecture "*The Story of our Ships,*" was greatly enjoyed by all the members. *Secretary:* Master F. W. Fox, c/o Mrs. Lewsey, The Green, White Notley, nr. Witham.

Alassio (Italy) M.C.—This is the first Meccano Club in Italy to become affiliated with the Guild. It has been established under the direction of Prof. A. D. Zampetti, who has kindly placed at the disposal of the Club a suitable Club-room, books for the Club Library, etc. The Club has already made considerable progress and became affiliated with the Guild early in June. *Secretary:* Master Furio Zampetti, Villa Merlina, 114, Alassio (Geneva), Italy.

Clubs not yet Affiliated

Theddlethorpe M.C.—It is hoped to establish this Club in the near future. In the meantime any boys living in Theddlethorpe who would like to join should communicate with Master Norman Parrish, Ashleigh Farm, Theddlethorpe, Louth.

Westmount (Canada) M.C.—Has recently secured a Club-room in the Mechanics Institute through the kindness of Mr. Pemberton Smith. It is hoped that it will become affiliated with the Guild very shortly. *Secretary:* Mr. W. A. Slater, 79, Selby Street, Westmount, P. Quebec, Canada.

Lahore (India) M.C.—All the members are keen and enthusiastic, and as soon as the Club comes under the direction of an adult Club Leader, affiliation will be granted. A Dramatic Section, organised in addition to the regular Club work, is proving very popular. *Secretary:* Master H. C. Manchanda, 29 "Ramour," Mozang Road, Lahore, India.

Holt M.C.—A Club has been formed in Holt, Norfolk, and a Stamp-collecting Section has been introduced, as all the members are ardent collectors. *Secretary:* Master J. D. T. Pickering, Valley Farm House, Holt, Norfolk.

Albion Field (London, S.E. 13) M.C.—Any Guild members living in Lewisham or Catford who are anxious to join a Club should communicate with Master L. Jones, 39, Wellmeadon Road, Lewisham, London, S.E. 13.

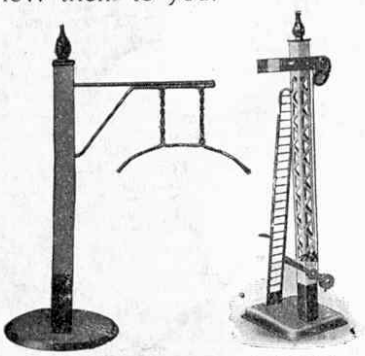
Byker (Newcastle-on-Tyne) M.C.—A Club has been opened at Byker and the Secretary is anxious to get into communication with any Meccano boys who are interested. The Club has good prospects, and I hope that all Guild members in that district will communicate with the Secretary without delay. *Secretary:* Mr. B. Gilbey, 46, Raby Street, Byker, Newcastle-on-Tyne.

Blackford (Cannock) M.C.—This Club has been formed recently by a number of enthusiastic boys in Blackford, and new members will be welcome. *Secretary:* Master Wilson K. Butler, 49, Heath Gap Road, Blackford, Cannock, Staffordshire.

Clockwork Train Accessories

We have pleasure in illustrating two further types of clockwork train accessories, the addition of which will greatly enhance the appearance of any model railway.

These accessories are now available. Ask your dealer to show them to you.



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Our illustration shows a type of screwdriver useful for reaching bolts in inaccessible places on models. For this reason the blade has been made so that it may be passed through the standard Meccano hole to reach bolts so placed. We are disposing of these screwdrivers whilst our **stock lasts, at the special price of 10d. each,** post free.

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.

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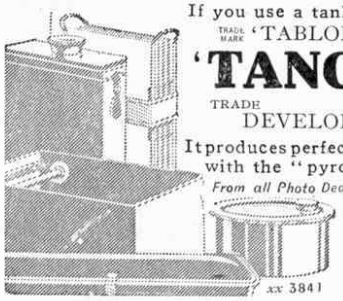

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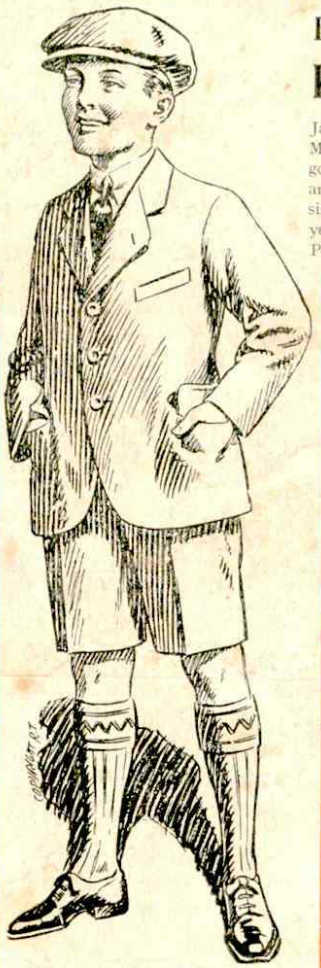

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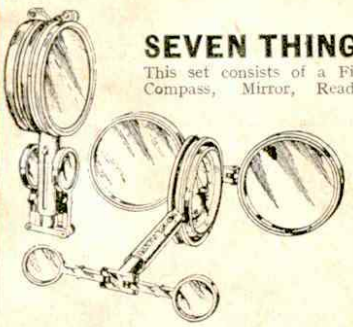

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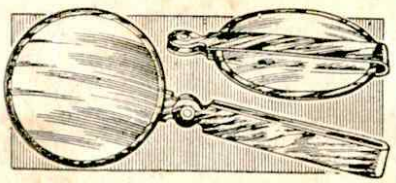

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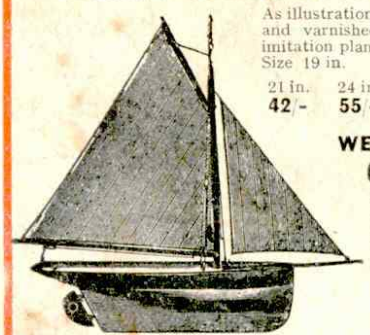

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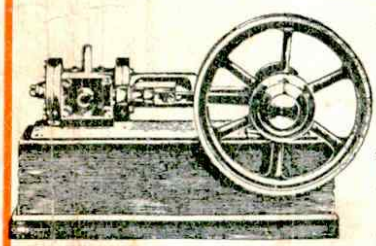

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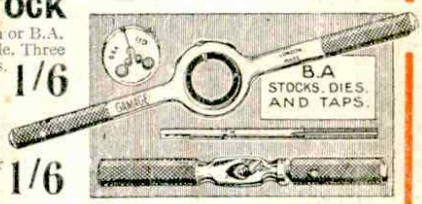

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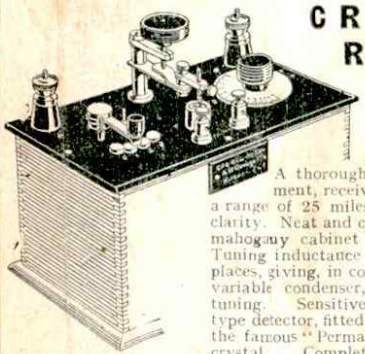

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