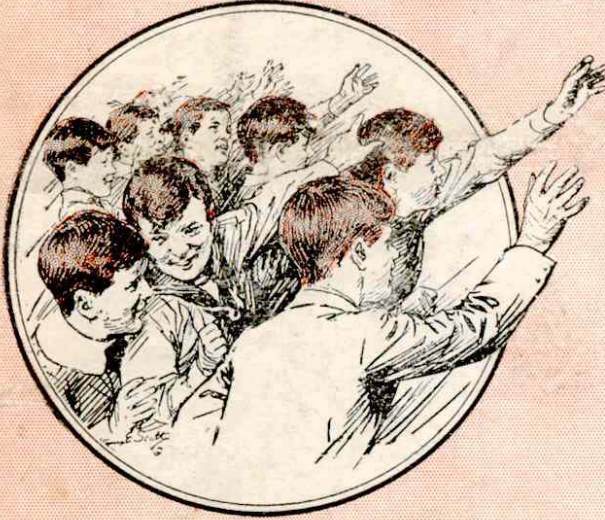


SEPTEMBER 1923

# MECCANO

## MAGAZINE

*Published in the interests of Boys*



PRICE

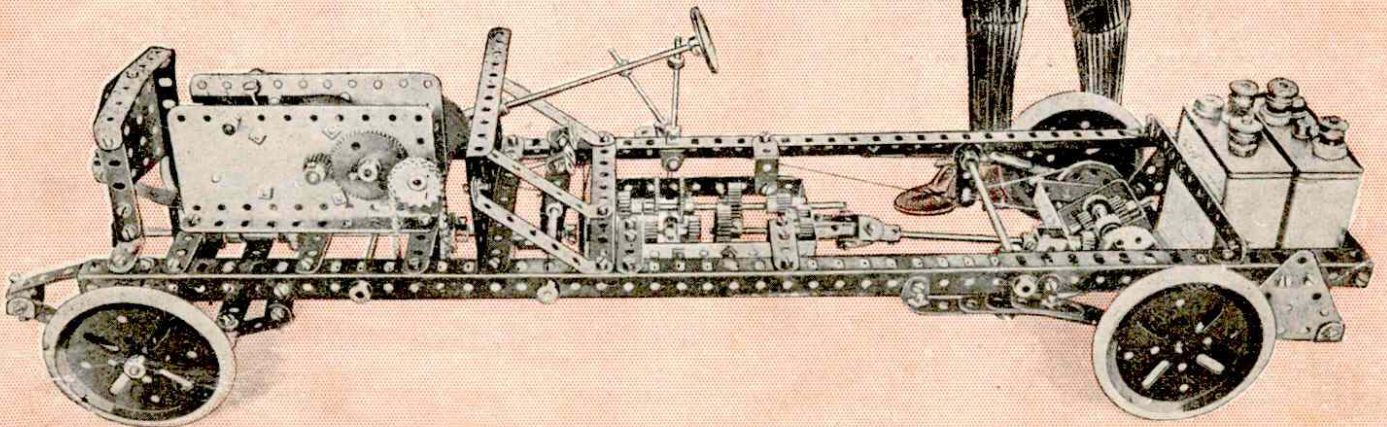
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VOL. VIII.

No. 9

The New  
**MECCANO CHASSIS**

SEE PAGE 106







# FRETWORK

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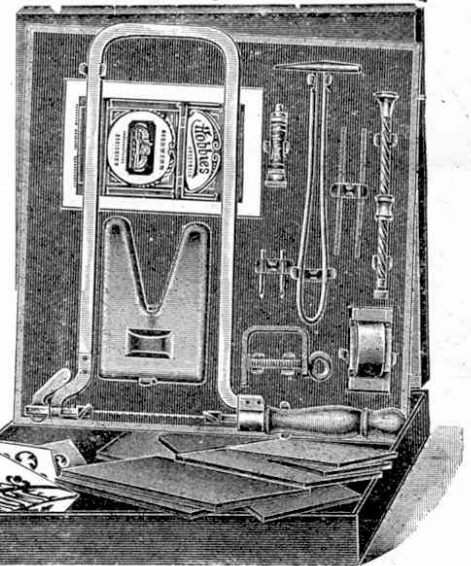
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# MECCANO



## MAGAZINE

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

### EDITORIAL



WHEN I was a boy I was very fond of reading Mark Twain's books, and to the boy who has not already sampled this master writer, I am sure that "Tom Sawyer," "Huckleberry Finn," "Life on the Mississippi," "The Prince and the Pauper," and a dozen others, will come as a revelation of excitement, adventure, and humour.

One of Mark Twain's stories made a strong impression on my young mind. It is an incident in the life of Tom Sawyer, the happy-go-lucky, generous, imaginative, work-dodging hero of one of this author's best books.

One day Tom had an appointment to play highway robbers with the boys, but his aunt told him that he must stay at home to whitewash the fence. This was a tragedy, deepened and made more harrowing by the fact that the fence to be whitewashed would be passed by all the boys on their way to the woods.

Tom surveyed the long stretch of fence with gloom and despair, and commenced work with a heavy heart. Presently a thought struck him, and he set to work with new energy and enthusiasm. When the first boy came along and suggested that it was rough luck on Tom having to work whilst all the other boys were playing, Tom replied that some people might call it work, but it suited him anyhow!

The boy stopped to watch for a while, and presently asked Tom if he might paint a little bit of the fence himself. Tom said he daren't let him, however, because his aunt was very particular how it was done, and wanted it to be first rate. In a little while the boy offered Tom all the treasures in his pocket if he might have just one little try, and Tom reluctantly allowed him to take a turn.

Other boys came along, commenced by stopping to watch, and remained to whitewash. Tom finished not only by becoming owner of everything that the boys possessed in the way of toys and other personal

### How to obtain the "M.M."

#### NEW SUBSCRIPTION RATES

THE *Meccano Magazine* may now be ordered from regular Meccano dealers, or from any newsagent or bookstall. It will be a convenience to us if as many of our readers as possible will place a regular order with their Meccano dealer or newsagent. There is a great amount of work entailed in wrapping, addressing, stamping and posting 40,000 copies of the "M.M." every month. By obtaining your copy from a Meccano dealer or newsagent you help to considerably reduce this work.

If you have any difficulty in obtaining the "M.M." regularly and promptly, write to the Editor, giving the name and address of your newsagent, and he will take the matter up on your behalf. When you place your order it may help your newsagent if you mention that the *Meccano Magazine* is now on the list of the following wholesalers:—

Messrs. Smith & Son Ltd. and Messrs. Wyman & Sons Ltd., of London, and Messrs. Menzies & Co. Ltd., Glasgow.

In many cases, of course, it will be necessary for subscribers to continue to have their Magazines sent from this office. On and after 31st October the subscription for mailing six copies will be 9d., and for twelve copies 1/6 post free. Until the 31st October we will accept subscriptions and renewals at the old rates of 6d. and 1/- for six and twelve mailed copies respectively. All subscriptions at present on our books will be executed at the price of 1d. per copy post free, until the subscription expires.

treasures, but also by having all the whitewashing of the fence done for him!

There is a point to this story which should appeal to every boy who reads it. I wonder how it strikes my readers? Here is an offer. I will give a

**A Prize Offered.** Meccano No. 1 Radio Crystal Receiving Set complete, value 40/-, to the boy who sends me

the most sensible comments on this Tom Sawyer story, before 30th October next (overseas readers, 31st December). Limit your remarks to not more than about 100 words, and please write clearly and on one side of the paper only.

### A Fine Loco

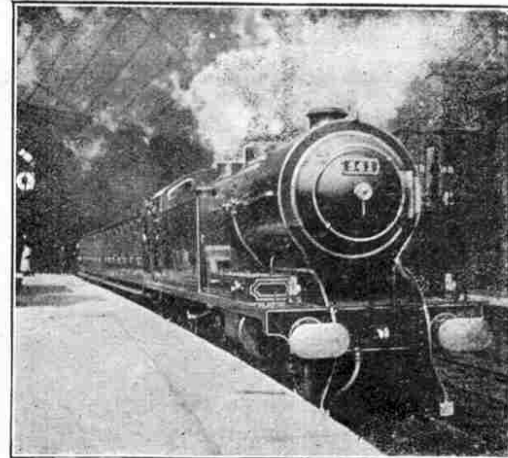


Photo by [G. H. Goarlay]  
The 4-6-4 Tank Engine No. 541 hauling the Stranraer Express from St. Enoch's Station, Glasgow

### Obtaining the "M.M." Overseas

IN future the Overseas edition of the *Meccano Magazine* will be discontinued. The English edition may be ordered by readers Overseas and in foreign countries, however, from regular Meccano dealers, or by subscribing direct to this office. The "M.M." is sold overseas at 1d. per copy, or it will be mailed (post free) direct from this office or from the Meccano Agencies, price 1/- for six issues, or 2/- for twelve issues. Orders at present on our books will be executed at the old rates until they expire.

#### IMPORTANT

Overseas readers are reminded that the prices shown throughout the "M.M." are those relating to the home market. Current Overseas Price-Lists will be mailed free on request to any of the following agencies:—

AUSTRALIA: Messrs. E. G. Page & Co.,  
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Messrs. Rawlinson & Ifwersen,  
P.O. Box 129, Auckland.

SOUTH AFRICA: Mr. A. E. Harris,  
P.O. Box 1199, Johannesburg.

CANADA: Meccano Ltd.,  
11, Colborne Street, Toronto.

THE

# MECCANO MOTOR CHASSIS

Full Instructions for Building this Interesting Model

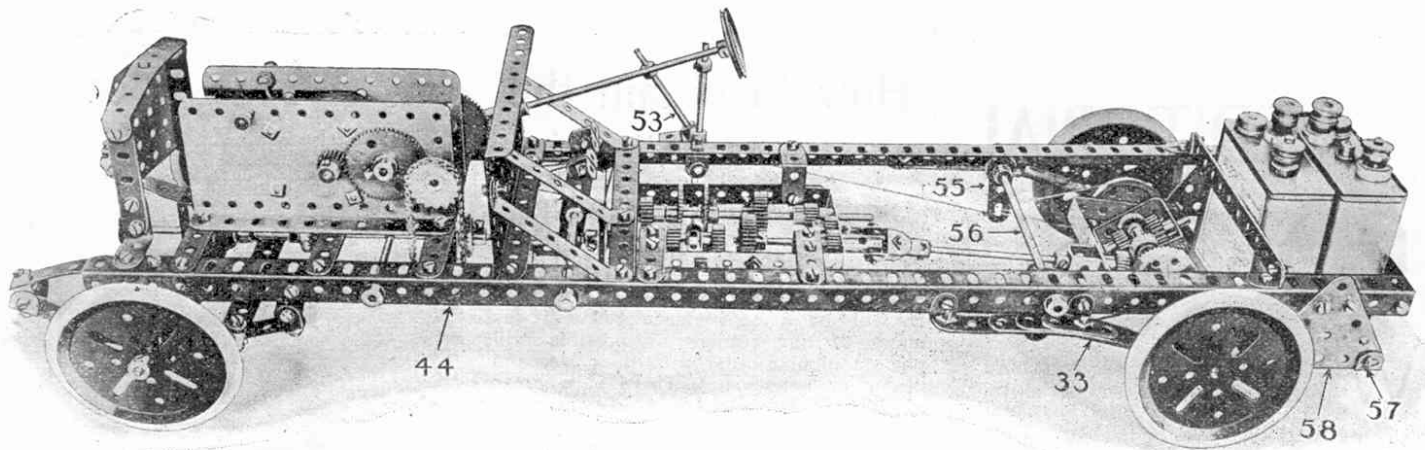


Fig. A. The Complete Chassis

IN printing these full instructions for building the Meccano Motor Chassis we hope that many of our readers will be induced to construct this splendid model, which we consider to be a triumph in model making. When exhibited at the British Industries Fair the Chassis claimed the attention of His Majesty the King, and was also the centre of marked attention from thousands of other visitors to the Fair. It is an accurate reproduction of "the real thing," as are all Meccano models, and so perfectly does it demonstrate the main mechanical features of a modern motor-car that it is in use at several schools of motoring for teaching purposes.

**A Real Gear-Box**

The Chassis frame is made of 24" angle girders connected by 5½" strips, the overall length being 26" and breadth 7¾". It is driven by a Meccano Electric Motor, mounted in the position occupied by the engine in real automobile practice. The current is obtained from a 4-volt accumulator, mounted at the rear of the Chassis. The drive is through a two-speed, sliding-pinion gear-box and universal-jointed propeller shaft to a gear-driven back axle, on which is situated the built-up differential. Direct drive is obtained on top gear and the change-speed gear is actuated by a cross shaft connected to the gear lever, the gears sliding into position by successive backward or forward movements of the lever.

The universal joint of the propeller shaft is a combination of the cross-pin and sliding types, and operates in exactly the same manner as on a real Chassis. The steering, which is on the Ackermann principle, also follows actual car practice. Worm and pinion is used, and the shaft is connected by rods and strips to the steering swivels. The Chassis, which is under-slung—resting on built-up cantilever elliptical-springs—is fitted with a gear-box having two forward speeds and reverse.

**Begin by Building the Frame**

The Meccano Chassis is not difficult to build, and a great amount of fun and practical instruction may be obtained when the model is completed. It is very realistic to see this chassis running around under its own power, or to set it to run up a steep incline and drop into low gear by flicking the change-speed lever with the finger, when the gradient causes the speed to fall off.

As in building a motor-car it is best to begin to build this model by making up the Chassis frame, the sides (1 Fig. C), of which are 24½" angle girders connected by 5½" strips (2). The front steering axles (3) and their springs (4) may then be built on to the frame as shewn.

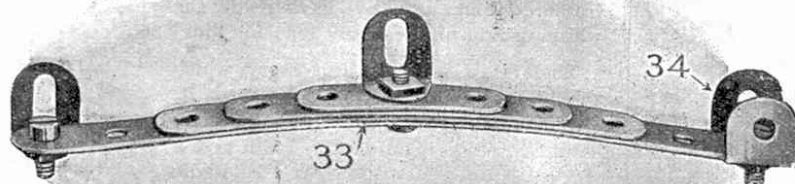


Fig. B. Rear Leaf-Spring

The stub axles (3) are fitted into the couplings (5) and swivel in 1" reversed angle brackets (6) which are bolted to two overlapped 5½" strips in order to give a projecting end hole on each side to form a bearing



Meccano Motor Chassis—(cont.)

for the couplings (5). These 5½" strips also support the springs (4). The couplings (5) are moved to steer the car by means of a 1" rod which is gripped in the lower part of the coupling 5A and fitted with a crank (7) connected by a strip (8) to another 1½" strip secured to a crank (9) on the rod of a gear wheel (10) which is rotated by a worm (11) on the steering wheel (12). The strip 8 is connected to the crank 9 extension by an angle bracket lock-nutted to give free pivotal movement.

The wheels are caused to turn together by nipping the 2" threaded rods (14) into the couplings 5 and 5A by screws, the outer ends of the two threaded rods screwing into threaded bosses (13) connected to the outer ends of 5½" and 2½" strips overlapped three holes. The bosses are coupled to the strips by screws (15) threaded into the bosses with washers beneath.

The brake lever (53) and change speed lever (54 Fig. D) are bolted to the side frame. The brake lever (53 Fig. A) is connected by a cord to a crank (55) nipped on an axle rod (56) which carries a similar crank on the near side. From the ends of these cranks the brake cords are carried round the brake drums. The change speed lever (54 Fig. D) is fitted at the lower end with a

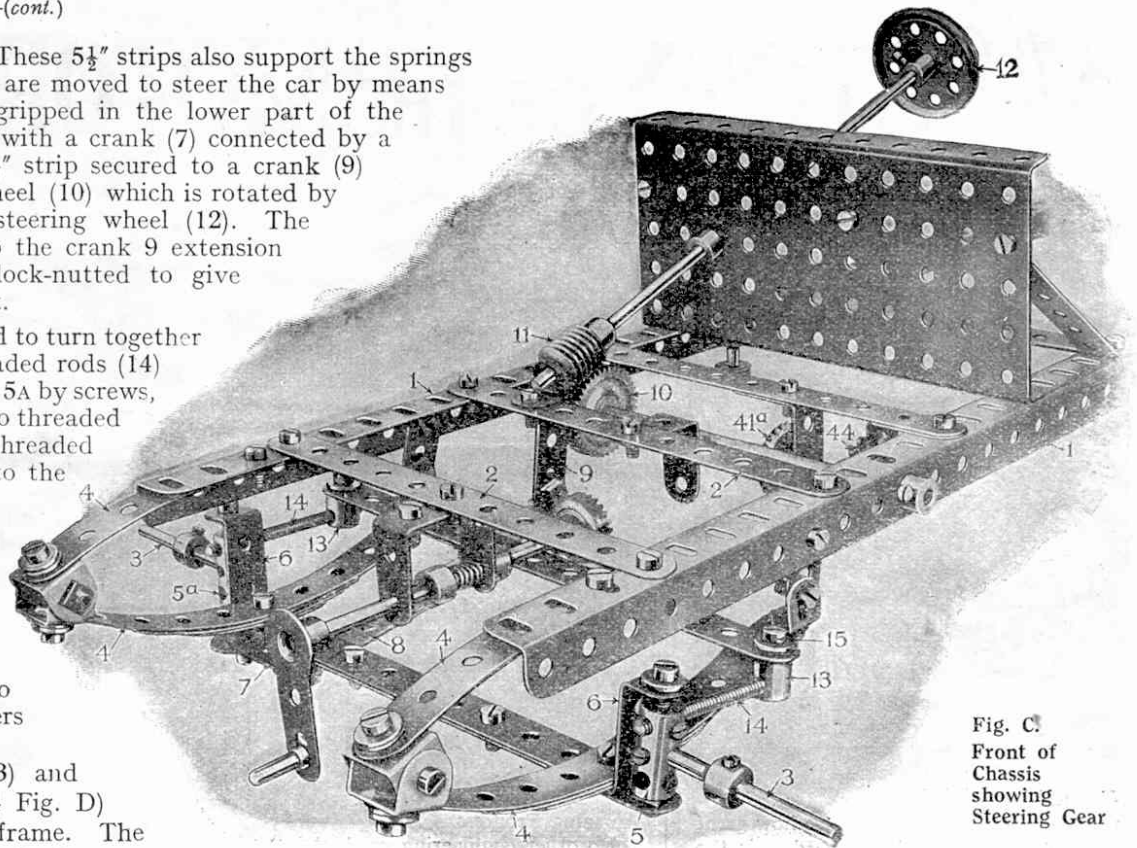


Fig. C. Front of Chassis showing Steering Gear

coupling (55) carrying a 2" rod on which is a collar (55A) which engages between the gear wheels, as will be described later.

The concluding instalment of this article will appear in next month's issue and will deal with the construction of the gear-box and differential.

Parts required to Build the Meccano Chassis

12 5½" Perforated Strips	2 ½" Pulley Wheels	1 5½" × 2½" Flanged Plate
3 4½" " "	(fast)	
7 3½" " "	1 Bush Wheel	1 3½" × 2½" " "
3 3" " "	6 ¾" Pinion Wheels	24 Collars
7 2½" " "	4 ½" " "	5 Cranks
2 2" " "	4 50 Toothed Gear Wheels	8 Couplings
6 1½" " "		2 Threaded Bosses
2 24½" Angle Girders	1 56 " " "	2 2½" Triangular Plates
3 Flat Brackets	3 1" Gear Wheels	2 2" Screwed Rods
10 Double "	1 1½" Contrate Wheel	2 1" " "
18 Angle "	4 ¾" " "	2 1" Sprocket Wheels
11 1" Angle "	2 Bevel Gear Wheels	2 ¾" Bolts
2 8" Axle Rods	1 Worm Wheel	1 Threaded Pin
4 6" " "	12 Nuts	2 Pivot Bolts
1 5" " "	90 " and Bolts	29 Washers
1 4½" " "	1 2" Spring	4 3" × ¼" Rubber Rings
2 3½" " "	1 Double Bent Strip	2 1" Reversed Angle Brackets
5 2½" " "	2 1½" × ½" Double Angle Strips	1 Hank of Cord
3 2" " "		9" Sprocket Chain
5 1" " "	1 3½" × ½" " "	
1 Flanged Wheel	3 5½" × ½" " "	
4 3" Pulley Wheels	3 2½" × 1" " "	
4 1½" " " (fast)	1 3" × 1½" " "	

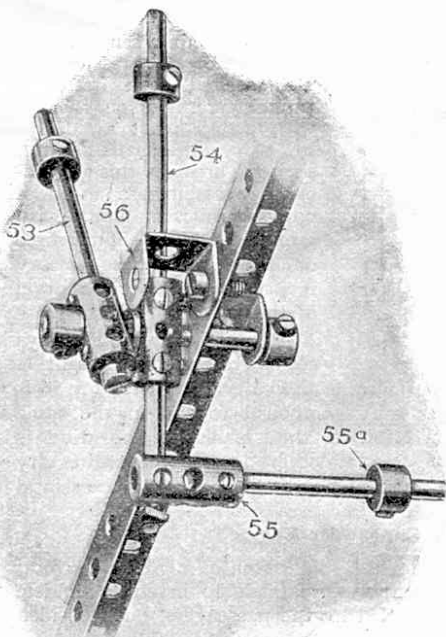


Fig. D. Brake and Change Speed Levers

(This article will be concluded in our next issue.)

# The STORY OF THE MOTOR CAR

## The Wonderful Progress of the Petrol Engine



Photograph by permission]

[of the Editor "The Motor"

It is not easy for us to realise how great a change has taken place during the past twenty years in the traffic of our streets. Twenty years ago the motor car was almost unheard of, and the appearance of a self-propelled vehicle in the streets was the occasion of so much curiosity that great crowds collected wherever one was seen. The change-over, from horse-drawn traffic to motor cars, has been of such a gradual nature that it has not generally been noticed.

### After Twenty Years

In this connection there is an interesting story of a well-known criminal, who was brought to London on his release from one of our large prisons. He had been serving a "life" sentence, and had therefore been cut off from all knowledge of the outer world for many years. When he was sentenced, the traffic in the London streets was all horse-drawn, and the old horse 'buses were the most convenient means of getting from one part of the city to the other.

On arriving at London, once again a free man, this discharged prisoner saw at a glance the full effect of the changes that had taken place gradually during the twenty years or so that he had been in prison. Instead of the cabs and hansom, he saw hundreds of taxis. Instead of the carriages-and-pairs and the broughams of society, he saw Daimlers and Rolls-Royce limousines. Instead of the old horse 'buses he saw the familiar motor 'buses. The unending streams of self-propelled traffic, moving without the assistance of horses, so terrified him that he collapsed from sheer fright!

### Amazing Progress

No other engineering product has made so rapid an advance as the petrol engine, whether applied to land, sea, or air. Even within the last few years there has been extraordinary progress, and of this we have read—more particularly in regard to aero engines—in recent articles in these pages.

Less than twenty years ago Brooklands, the great racing track, was unknown, but a visitor to the track to-day would scarcely credit this statement. Here, giant racing cars attain record speeds of

mounted on four wooden wheels and climbing into it, pushed it along the road by means of a long pole, somewhat after the manner of a punter!

In the fifteenth century the famous Italian, Leonardo da Vinci, conceived the idea of a wonderful auto-car and made some drawings of it. His idea seems to have been impracticable, however, for his auto-car was never actually constructed.

Two centuries later, Simon Stevin, a Dutch mathematician, attracted a great deal of attention by the invention of his

"wind-carriage," which to a certain extent resembled the ice-yacht of the present day. It consisted of a frame of timber mounted on wheels, with a tall mast amidships to carry the sails. In a strong breeze this wind-carriage attained a speed of over 20 miles an hour, with a load of twenty-eight people on board. Needless to say it was considered the marvel of the time!

A wind-carriage always seems to me to present a considerable difficulty, however, for it is generally compelled to sail in the same direction as that in which the wind is blowing, and there is always the difficulty of getting home again, against the wind!

### A Gunpowder Engine

In the seventeenth century several attempts were made to invent a vehicle propelled by the passengers, but this idea was abandoned as being unsatisfactory. Engineers then turned their attention to vehicles that were propelled by mechanical means.

It is a remarkable fact that although the first practical motor car was built over 160 years ago, it was not until the commencement of the present century that motor cars came into general use. It is interesting to compare illustrations of early motor cars with a modern car, for by so doing we are better able to understand the extensive progress that has been made in a comparatively short space of time. This article describes the various developments that have led to the motor car of to-day—a veritable triumph of engineering.

100 miles and over per hour, and motorcycles and light cars flash past with a rattle and a roar, at speeds only slightly below those of their large brothers. It seems almost inconceivable to think that all these machines have been invented, evolved, and perfected within so short a space of time as twenty years, but the fact remains.

### Harnessing the Wind

For several centuries engineers and mechanics had been endeavouring to invent and perfect a self-propelled vehicle. As early as the beginning of the eighth century a Chinaman first conceived the idea of moving a vehicle without a bullock or a horse. He built a small wagon



**The Story of the Motor Car (cont.)**

One of the earliest attempts, and incidentally one that was also a near approach to the petrol engine, was made in 1680, when a vehicle was invented in which the engine was worked by gunpowder. Neither the name of the inventor nor the history of his machine is known—perhaps because the inventor and invention met with a sudden and speedy end!

On the introduction of the steam engine, thoroughly established by Watt's invention of the separate condenser, several engineers attempted to make steam carriages for use on the highway. The roads were in such a bad condition, however, that no mechanically-propelled vehicle could travel very far, and soon the work was abandoned and attention turned to locomotives that ran on a specially prepared "road" of metal rails. Thereafter the greater importance of the locomotive overshadowed, for the time being, the development of the self-propelled vehicle for use on the roads.

**First Practical Horseless Vehicle**

In 1769 a Frenchman named Cugnot brought out a locomotive steam lorry, a model of which is to be seen in the South Kensington Museum. Cugnot's vehicle included an engine and a cumbersome boiler with a furnace inside it. It had two single-acting brass cylinders, the pistons of which acted alternately, through cranks, on the single driving wheel. The vehicle, steered through suitable gearing, attained a speed of 2½ miles per hour with four passengers. The supply of steam lasted only ten or fifteen minutes, however, when it was necessary for the passengers to dismount and wait until steam was again raised!

Cugnot's steam lorry opened up wonderful possibilities of locomotive traction, but unfortunately it did not meet with the success it deserved. After several exciting trials in the streets of Paris it was considered a danger to the public safety, and was locked up in the Arsenal to prevent further mischief! It is now exhibited in the Museum of Arts and Crafts, Paris.

**The Old Road Laws**

When the railways were introduced they met with considerable opposition from interested parties. These included owners of canals, horse-keepers, and landlords of inns, all of whom thought their businesses would suffer if railways became established.

This opposition was repeated subsequently when steam-driven motor cars were suggested, and additions were made to our Highway Laws in order to deal a crushing blow to the pioneers of motoring. To a large extent the additional clauses were introduced by those who had money invested in horses and horse-haulage. These people thought that they would suffer financially if motors gained a place on the highway, because it seemed to them that all horse traffic would be eliminated.

Among many absurdities, the Highway Law included the provisions that (1) a motor car must be driven by not less than three persons; (2) a man must walk in front of every motor with a red flag;

(3) the speed of the motor was at no time to exceed four miles per hour, and (4) no vehicle was to blow off steam on the highway! No industry could possibly flourish under these ridiculous restrictions, and for the time being the people interested in horse-haulage came out "top dog." Little was heard of the

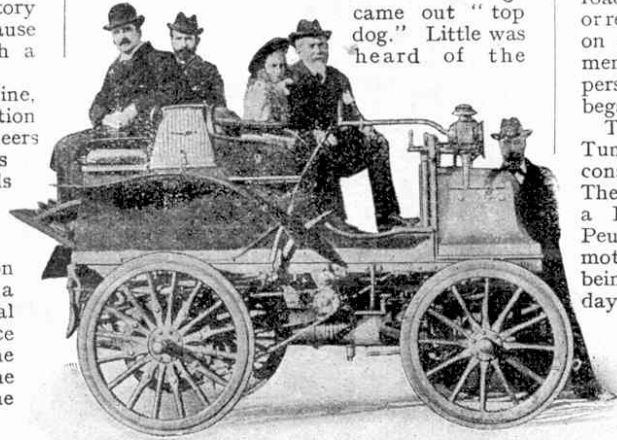


Photo by permission [Board of Education] One of the first Motor Cars in this Country

motor-car for the next twenty years, but engineers were at work in the attempt to evolve a satisfactory self-propelled vehicle. Step by step this was becoming more practicable.

**The Internal-Combustion Engine**

In 1794 experiments were made with the explosion of gases as a source of power, but not until 1860 was the first successful gas engine produced by Lenoir. The propelling power was obtained from explosion of gas in the cylinder itself, thus eliminating the heavy boiler and furnace of the steam engine. This invention marked one of the greatest forward steps in the history of the motor car and was followed by the introduction, by Gottlieb Daimler in 1884, of a light high-speed petrol motor. This resembled the gas engine in many respects, the main difference being that vaporised petrol was used as fuel instead of some explosive gas obtained from other sources. This enabled the engine to be moved about whilst working, a necessity in a motor car that had been impracticable of accomplishment when coal-gas was used as the source of power.

Daimler improved his first model so considerably that a well-known firm of engineers, Messrs. Panhard and Levassor, obtained the right to build cars equipped with his engine. The year following

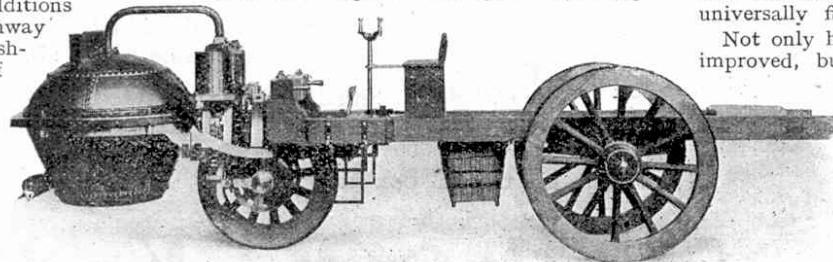


Photo by permission [Board of Education] The First Practical Motor Car: Cugnot's Steam Lorry

the granting of this concession over 100 motor cars were manufactured. It is interesting to learn that the engines of these cars were of about the same horse power as a modern motor-cycle!

**The First Motor Show**

The next step forward in the story of the Motor Car, was marked by a reform of the Highway Laws, and the much-needed Light Locomotives Act was passed. This measure repealed the former unjust road laws and also abolished the toll bars, or reduced the taxes imposed upon travellers on the highway. British engineers commenced to construct motor-cars, and by perseverance and skill the industry soon began to make headway in this country.

The first Motor Show was held at Tunbridge Wells in 1885 and created a considerable interest all over the country. The cars on view at this Exhibition included a Panhard with a Daimler engine, a Peugeot petrol-driven car, a de Dion steam motor car and a petrol bicycle, the latter being the "ancestor" of our present-day motor cycle. It is interesting to know that the firms who exhibited at this first show are to be found among the famous names in the motor industry to-day.

Soon after this Show, the Richmond Hill speed trials were held by the recently-formed Automobile Club. In these trials the winning car was an 8 h.p. Panhard which, when hill climbing, attained the wonderful speed of 8 miles per hour! We wonder what the proud driver of that Panhard would think were he offered a seat in a modern racing car capable of tearing around the track at 90 or 100 miles an hour!

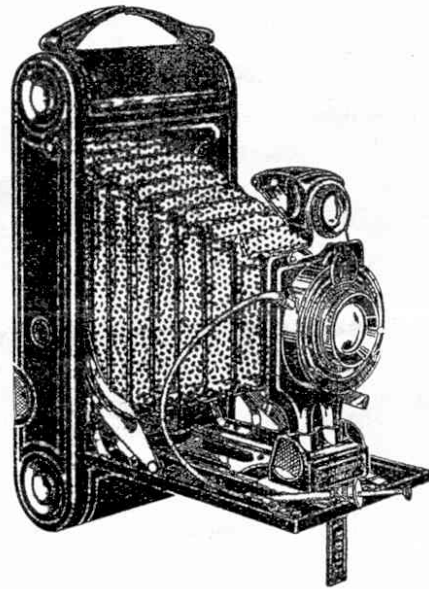
**Heavier and More Powerful Cars**

Since its invention some thirty years ago, the principle of the internal combustion engine has not changed in any way, a fact that shows the first invention to have been on sound lines. After the first cars were sold, heavier cars were called for, and manufacturers soon found that more power was required. There were two alternatives to choose from; the first was to increase the size of the cylinder and the second to increase the number of cylinders. The latter alternative has been generally adopted and to-day we sometimes find motor-cars with as many as twelve cylinders. Petrol consumption has been improved and, with increased experience, better engines have been designed. The result is that greater speed and more power have become available every year.

The development of the motor car engine was accompanied by many other refinements, such as better springing for the chassis, wire wheels with pneumatic tyres, and more efficient gear boxes. More recently, magnetos and dynamo lighting and self-starting appliances have been universally fitted.

Not only have mechanical details been improved, but the body work and the design of the chassis in general has been very considerably altered. The seats in the early motor-cars were high up, almost like a dog-cart, but year by year the cars have been built lower and lower. Cars are now often built "underslung," which arrangement allows a very much lower position for the body of the car, thus decreasing wind resistance, an important consideration, particularly in racing cars.

(To be continued)



### *Here's a capital "Kodak" for the holidays*

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THREE SPLENDID COMPETITIONS

**Holiday Essay Competition**

It is very interesting to look through snapshots taken during your holidays, and to be reminded of many happy hours by some little photograph. The photograph on this page is so realistic that we can almost imagine we are standing in the pine-woods on the edge of the sea-shore. Such photographs are refreshing to everyone, and are filled with happy memories for the photographer.

In order to encourage Meccano boys to use their cameras, we have announced photographic competitions from time to time. Last year we announced, in addition, the Holiday Essay Competition, and as this Competition was so successful we are repeating it again this year. Intending

entrants should write a description of some interesting holiday event and illustrate

same with their cameras. The photographs may be either sent separately or mounted in position in the essay. Although the exposure must be made by the competitor, the photographs need not necessarily be developed or printed by him, although this point should be mentioned when submitting entries.

Photographs may be of any size or finish and there are no restrictions and no age limit, although the age of the competitor will be taken into consideration in judging the entries. The first prize will be Meccano goods to the value of £1 1s. 0d., and the second prize Meccano goods to the value of 10/- to be chosen by the winners from our catalogue. Closing date

30th October (Overseas: 30th December).



Photo by]

[Master L. Almeras

The above photograph shows a view of the French coast taken during the holidays this Summer

**For those without Cameras**

As announced in our issue last month, there will be a section of the above-mentioned Holiday Essay Competition for unillustrated essays. This section will be divided into two classes.

- (A) Boys under 14 years of age, and
- (B) Boys over 14 years of age.

In this section two Hawk-Eye cameras, taking pictures  $2\frac{1}{4} \times 3\frac{1}{4}$ ", and made by the Kodak Company, will be awarded. The winners will thus be able to enter the Photographic Competitions that will be announced from time to time in future issues of the "M.M."

All essays should be neatly written on one side of the paper only, and the full name and address should appear on the back of each sheet. Essays may be of any length but should be of about 500 words. There are many subjects to choose from, such as a visit to some beauty spot or a ruined castle; some thrilling adventure or some new experience gained on holiday.

This competition closes on the 30th October for the United Kingdom, and the 30th December for competitors abroad. The winning essays will be published in the "M.M."

**Fifth  
 Photographic Competition**

JUDGING from the number of entries received for the Fourth Photographic Competition it would appear that there is no end to the popularity of these competitions. The work submitted continues to maintain a very high standard and many excellent pictures are included in the entries.

It has been decided to hold a Fifth Photographic Competition, on similar lines to those previously held. Competitors must themselves take the photographs, but may obtain assistance in the developing and printing if desired. The name and address must be clearly written on the back of each photograph submitted, which may be of any size and either mounted or unmounted, as these points will not be taken into consideration when judging. It should be stated whether the photograph has been developed and printed by the entrant, as this will, of course, be taken into consideration. The competition will be divided into two sections as usual:—

- (A) Boys of 14 years of age and under.
- (B) Boys over 14 years of age.

The subjects this time are to be either

- (1) A FAMILY GROUP,
- (2) AN ANIMAL STUDY, or
- (3) MISCELLANEOUS SECTION.

The first prize in each section will be a Hawk-Eye Camera, made by the Kodak Company, and it is hoped to publish the winning photographs in the "M.M."

The closing date for entries from the United Kingdom is the 30th November, and for entries Overseas, 29th February, 1924.

**Interesting Paragraphs**

Two prospectors in the White Creek District, British Columbia, recently shot a huge grizzly bear, which weighed 1,800 lbs. The skin alone weighed 100 lbs., and was 12 ft. in length and 9 ft. in width. When standing erect the grizzly measured 15 ft. in height and its footprints were 18 ins. in length and 9 ins. in width. The bear put up a fierce fight, and it took five bullets to kill it.

A demonstration has recently been given at the Middlesex Hospital, London, of a new form of cinematography in which paper films are used instead of the usual celluloid, thus greatly reducing the risk of fire. Instead of showing the picture by projecting direct light through the film, the new system reflects the light.

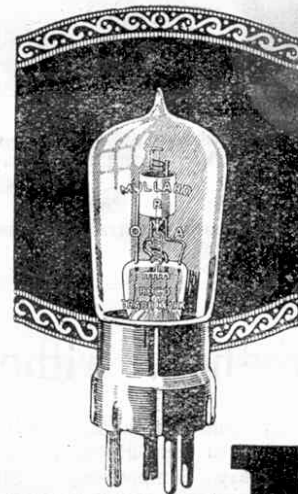
Sir Keith Smith, brother to the late Sir Ross Smith, whose flight to Australia was recently described in these columns, proposes to attempt the round-the-world flight, planned by his brother. Sir Keith has recently arrived in England after travelling through Australia, China, Japan, Siberia, Canada and America. In each of these countries he has been making arrangements for his projected flight, which it is anticipated will begin very shortly.



PS  
40

After Rodin

**P**ROBLEMS arise in every phase of life, and the power of concentration does not always solve them, but when the problem is one of wireless valves you can see The Thinker straightening his heavy back and smiling because there is only one solution—



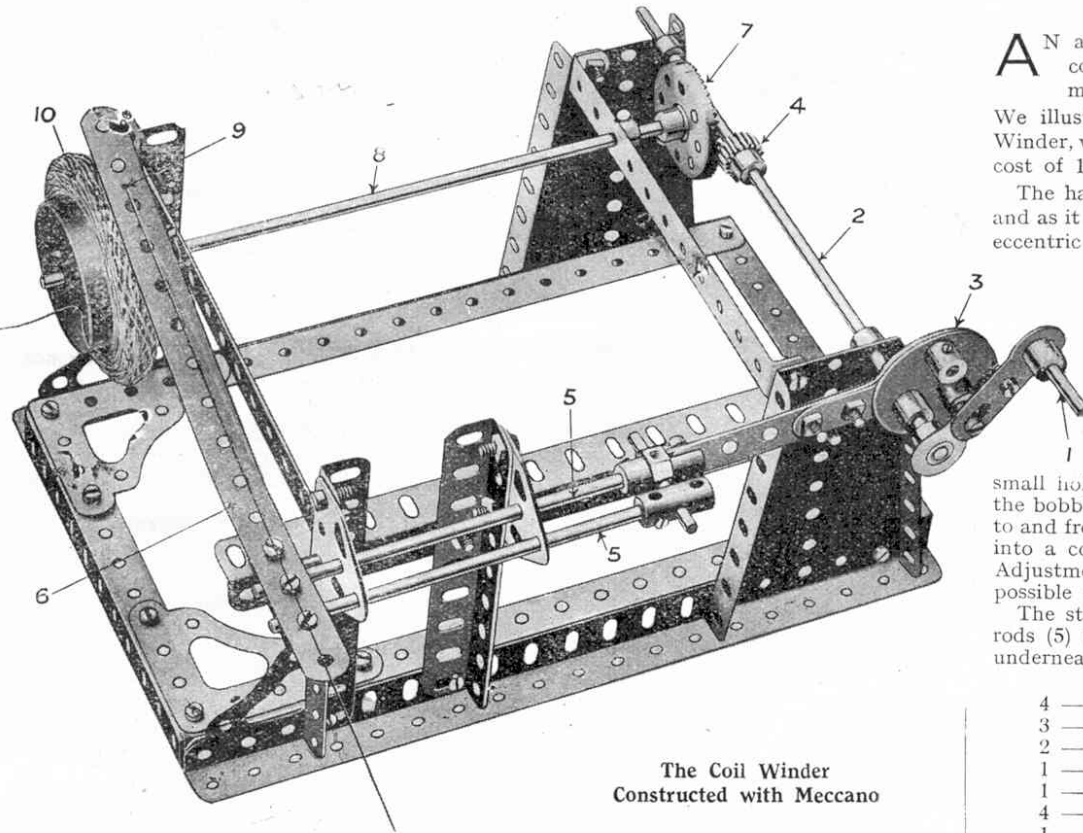
# Mullard

Obtainable from the Leading Electricians, Wireless Dealers, etc.

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



# The Meccano Coil Winder



The Coil Winder  
Constructed with Meccano

**A**N apparatus that will wind honey-comb coils for receiving sets may be constructed with Meccano.

We illustrate herewith the Meccano Coil Winder, which may be made at a total cost of 10/6, as follows:—

The handle (1) is formed of two cranks, and as it is turned, the rod (2) carrying the eccentric (3) reciprocates, the rods (5) carrying the strip (6). A pinion (4) on the rod (2) engages and drives a contrate wheel (7) on the rod (8) on the other end of which is fixed any suitable bobbin or former for the coil of wire. The wire to be coiled is passed through a specially drilled small hole (9) in the strip (6), and while the bobbin is being rotated the strip slides to and fro and causes the wire to be wound into a coil (10) of honey-comb formation. Adjustment of the eccentric (3) makes possible variations in the windings.

The strip (6) is held in position on the rods (5) by a clamp action of a 1½" strip underneath.

**PARTS REQUIRED.**

4 — 9½" girders	(8a)
3 — 4½" "	(9a)
2 — sector plates	(54)
1 — 7½" strip	(1b)
1 — 2½" "	(5)
4 — architraves	(108)
1 — 1½" strip	(6a)
2 — flat trunnions	(126a)
1 — eccentric	(130)
2 — 5½" x ½" double angle strips	(9)
2 — 5½" girders	(19)
2 — cranks	(28)
1 — 1½" contrate wheel	(24)
1 — bush wheel	(26)
1 — ½" pinion	(13a)
2 — 8" rods	(15a)
2 — 4½" "	(17)
1 — 2" rod	(18b)
1 — 1" "	(63a)
1 — octagonal coupling	(63)
1 — coupling	(59)
3 — collars	(37)
34 — nuts and bolts	(38)
2 — washers	



**James A. Lamb (Selby).**—The question of the introduction of a Meccano valve set is at the moment in abeyance.

**R. Kirkwood (Darlington).**—(1) As you are approximately 30 miles from Newcastle and situated in an ideal position you will probably be able to receive broadcast with a Meccano Crystal Receiver. I know of instances in which telephony is regularly received with our Crystal Set up to distances of 33 miles. (2) Your best plan will be to erect your aerial on the top of the house at the height you mention.

**R. Smith (Wool).**—Unfortunately you are too far from London to receive messages broadcast from Marconi House. If you acquire a knowledge of the Morse code you will be able to spend many happy hours receiving telegraphic messages transmitted from ships in the English Channel. The subscription to the "M.M." enclosed with your letter, has been passed to the Editor.

**H. A. Hall (Cape Town).**—I am glad to know that you have not entirely forgotten me. The Radio Instruction Leaflet may be obtained from Mr. A. E. Harris, P.O. Box 1199, Johannesburg, and I advise you to write for a copy.

**H. G. T. Harris (Sandy).**—The variometer you illustrate and describe is already well known, and I have no doubt that in actual practice it is a very excellent instrument. Your order for the "M.M." has been passed to the Editor.

**Peter Cecil Previte (Turvey).**—Before you can obtain an experimental licence it will be necessary for you to write the Postmaster General for an application form, which must be filled in and approved before such a licence is granted. It is hoped that a new licence will shortly be issued for those who desire to construct their own receivers.

**P. Parrett (Brighton).**—You will not be able to receive at Brighton broadcast from Marconi House with a crystal receiver.



The Marconi Company and its associated companies are to spend about £6,000,000 in erecting wireless stations at home and abroad. The greater part of the material will be supplied from Great Britain.

It is rumoured that stations for the relay of broadcasting will shortly be established in several large towns throughout the country.

Recent statistics show that about 1,500,000 radio sets are being regularly used in the United States of America.

In one of the big London hotels, the page-boy's duty of calling out the names of guests for whom enquiries are made, is now performed by loud-speakers installed in each room. The name required is transmitted from the hotel enquiry office, constituting a decided improvement on the old method.

An interesting experiment is being carried out in Paris, where lectures given at the College de France are to be broadcast. It is hoped in the future to broadcast courses on technical and specialised subjects, but at first the lectures will be confined to topics of general interest.

## Build your own Radio Receiver

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

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

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

OUR NEW SERIAL

# Bulmer's Father

## A Stirring Story of School Life

By Arthur Hutchinson

### SYNOPSIS.

Jack Bulmer, a new boy at St. Winifred's, runs foul of Lawson, one of the bullies, on his first day at the school. Later, he finds Lawson bullying a young boy and offers to fight him. Bulmer fights with skill, and the bully is beaten. After the fight Brailsford tells the boys that Bulmer's father is a professional boxer, and that he is expected to visit St. Winifred's to watch the forthcoming match.

### VII.

ON the following Saturday afternoon, just before the school match was to take place, three figures were observed strolling across the ground in the direction of the pavilion. Two were recognised at once as Brailsford and Jack Bulmer. The third, a man well past middle age, attracted special comment and observation. He was powerfully built and of medium height, and his features, although perhaps a little coarse and irregular, wore an expression of kindness and good humour. There was nothing about him to indicate

the traditional appearance of the boxer or prize-fighter. And yet, this kindly-looking man walking across the green-sward with an arm linked through that of his son, was none other than Stephen Bulmer, at one time light-weight boxing champion of Great Britain and the most popular boxer of his day.

The three figures drew near the pavilion, and one or two boys greeted young Bulmer with a friendly smile as they passed. This fact brought a happy look into the eyes of his father, and a proud comment to his lips.

"They seem to like you here, Jack," he said in a voice tinged with a faint shadow of relief, as he squeezed his boy's arm. "I'm so glad. I thought perhaps . . ." He broke off abruptly, and

Brailsford looked across at Jack with a twinkle in his eyes.

"Of course they like him, Mr. Bulmer," he said promptly. "Why shouldn't they? Besides, he's your son, and . . . well, they're proud to think it."

"Proud!" Stephen Bulmer spoke the word almost immediately. "Proud! Well, well!"

Jack looked up at his father and smiled.

his keen eyes as he sat taking note, not only of the many thrilling episodes of the match itself, but also of every detail of his surroundings. Now and then he would look round and gaze with solemn awe upon all those things that constitute the outer glory of St. Winifred's. The wide playing fields, their setting of giant oaks, and, above all, the historical school buildings.

It was all very wonderful, he thought,

and his simple heart rejoiced to think that the hard-won fruits of his many victories enabled him to give his son that which had been denied him.

### IX.

When the match was over, Brailsford found Stephen Bulmer surrounded by a number of enthusiastic boys, including Lawson. He approached with a smile, for he guessed only too well what was happening. He knew that the old boxer was once again going over the Homeric battles of the past, and that the boys were eagerly

drinking-in every word, and feeling their young manhood stirred by the old boxer's vivid descriptions of the ring.

"Yes, boys," Mr. Bulmer was saying, "It's a great life for those who like it, and can endure it. But it's a mighty hard life, and although I've taught Jack all there is to know of the art, I wouldn't for the world have him be a professional boxer." Here he paused, but after a moment continued, "Do you know I'm—I'm so glad Jack's able to be here at St. Winifred's amongst you all. I thought . . . well, you know, I'm naturally a bit rough and tumble myself, and you're all so smart that I thought maybe . . ."

Here Brailsford broke in with:

"Maybe you thought, Mr. Bulmer," he said, with a significant glance round,



" . . . The wide playing fields, their setting of giant oaks, and the historical school buildings . . . "

"Why, Dad," he said, "you're one of the best—by jove you are."

### VIII.

Together the three entered the pavilion, where Brailsford introduced Mr. Bulmer to several of the boys. With feelings that he could not describe, the old boxer found himself the centre of a crowd of youngsters, whose words and actions clearly indicated the respect and admiration they felt towards him. Somehow it all seemed very overwhelming, but the secret joy that filled his heart was boundless.

Soon the match commenced, and for the first time in his life, Stephen Bulmer found himself initiated into the mysteries of a public school Rugby match. His interest was immense, and nothing escaped



**Bulmer's Father—(cont.)**

"that we'd be a bit of a stuck-up lot, eh?"

Stephen Bulmer turned in his direction. "Well, Mr. Brailsford, I won't exactly say that. I've imagined so much you see without actually seeing for myself. But of one thing I'm certain, and that is that you're 'white,' every one of you—through and through!"

At these words, uttered with such genuine enthusiasm, something seemed to stir the hearts of the listening boys. Suddenly a voice full of excitement cried:

"Three cheers for Bulmer's father!"

As if that very thought had been uppermost in the minds of one and all, there broke out such a cheer as had seldom been heard

within the precincts of St. Winifred's! Amidst it all Mr. Bulmer sat back in his chair, utterly carried away by an emotion that touched his heart to the core.

"Thanks, lads. Thanks!" he said huskily, as the cheers died away, "And . . . God bless you all!"

Then he rose to his feet, and said, "That's the most wonderful thing that's occurred to me . . ."

" . . . Since you won the light-weight championship, eh, Mr. Bulmer?" interjected Brailsford.

Stephen Bulmer looked the Rugby captain straight in the face.

"No, Sir! In all my life!" he said quietly.

THE END.



"Three figures were observed strolling across the ground"



**Stamp Collectors under Suspicion**

IN 1840 Great Britain led the world by being the first country to issue postage stamps. Since then her lead has been followed by various nations, one after another, until to-day it is difficult to find a country that does not possess distinctive stamps of its own.

Even before postage stamps were a year old, and while Great Britain was yet the only country issuing them, the stamp collector had appeared. At first, the authorities looked with a certain amount of suspicion upon those who valued the little scraps of coloured paper, for they could not understand why anyone should collect used postage stamps for any other purpose than to clean them surreptitiously, so that they might be used to prepay postage a second time! Even now non-collectors class stamp-collectors with those who save tram tickets, cigarette cards and the like!

**A Bishop's Ignorance**

George Robey, the famous comedian, is an assiduous stamp collector, and recently gave a paper at the Philatelic Conference. He mentioned that among those who found pleasure and recreation in stamp collecting naturally had the desire to help others to collect, and, apart from his own collection, nothing had given him greater pleasure than persuading his young friends to take up the hobby. In Mr. Robey's opinion, there are few lines of

human occupation and interest that are not reflected in some way, directly or indirectly, in a stamp album. "Stamps themselves," he said, "give a broader view of life, which is a great asset to all classes. It is not very long ago," continued Mr. Robey, "that the Bishop of a great colonial diocese ordered a clergyman to take the morning service one day in Mauritius and the evening service in Seychelles. Had the Bishop collected stamps he would have known a little more about the diocese, and would have realised that the two Colonies, so near on a small map, are, in reality, a very long distance apart!"

**Learning from Stamps**

Stamp collecting not only teaches us Geography, but from the pictures on the stamps in our albums we gain a very good idea of History. The discoveries of Columbus, depicted on the U. S. A. stamps, and the different Kings and Queens of the world are but two instances of this. Then again, stamps help us to learn more about a host of other subjects—not the least of which is Natural History. Bears, orang-outangs, tapirs, giraffes, lyre-birds, and a host of other animals are depicted on the beautiful stamps of Labuan, North Borneo, Nyassaland and New Zealand. No matter in what direction our fancy leads us, we are certain to find something of interest and of educational value in a stamp album.

**How to Begin**

In this column next month we shall commence a series of articles dealing with stamp collecting for beginners. Many of our readers are already collectors, but even so we think that they will find these articles of considerable interest. We shall deal with such subjects as what stamps to collect; how to classify your stamps; the best album to buy; how to mount the stamps, and so on. We wish every reader of the "M.M." to possess a representative collection, the acquisition of which will afford him pleasure and instruction, and our articles will be written with this object in view.

**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.

**B. S. Faulks (Brighton).**—Thank you for your congratulations on the enlarged "M.M." We were sorry that the Stamp Collecting Column was crowded out of our last issue. The sentiment you express in Latin ("Meccanus bonus est") is perfectly accurate and reminds us of our school days, when we spent much time wrestling with the first book of Cæsar and other interesting works by his countrymen!

**F. Bowen (Carroge).**—The saving in using a cheaper quality paper for the printing of the "M.M." would not be considerable, and it would make it impossible to print the beautiful illustrations that now appear in its pages.

**R. Moses (Calcutta).**—We are pleased to hear from you, Ralph, and to note that in your opinion the "Sharp Eyes" type of competition is best because "everyone starts on the same level." We assure you that this will not be the last competition of this kind, and that "more drawings of different subjects with mistakes" will appear in our future numbers.

**M. Yates (Ashstead).**—You are quite right, and we wonder how many other boys noticed the mistake on page 77. We are pleased that you wrote to us about it, for it shows that you really have "sharp eyes," and know how to use them.

**G. Kottovkir (Barnes).**—An autobiography of the Editor would, no doubt, interest many readers, but we fear the Editor would not have time to write it!

**M. Vaccro (Milan).**—We shall certainly bear in mind your suggestion for articles on the different processes of manufacture, such as boots, bicycles and motor cars.

**A. W. Heyes (York).**—We hope to publish something about "the secrets of the moon, stars and planets" in one of our future issues. We are particularly interested in this subject.

**Alan McNaughton (Invercargie).**—  
"Meccano's the toy which the brainy boy,  
With mechanical turn of mind,  
May a motor 'bus make, a bridge, or a brake,  
A model of every kind.  
With screws and clips, and plates and strips,  
And girders strong and true,  
He may fashion and frame, like men who win fame,  
A miniature airship, too."

We like your verse, Alan, and no one can say that your statements are incorrect!

**L. Beyloos (Crouch End, London, N. 8.).**—As soon as the opportunity occurs, we shall publish a manual showing a selection of models that have won prizes in our annual competitions. In the meantime, new Meccano models will be published in the pages of the "M.M." from time to time.

**M. F. Prout (Plymouth).**—We do not quite understand your request that we should include in the "M.M." "conjuring tricks about ships like the Majestic." It would certainly have to be a very big hat from which such a ship could be produced by any conjuror!

**W. King (Darwen).**—Our £250 Model Building Competition already covers your suggestion.

**J. Earwaker (Tokonui).**—  
"Meccano is what I got one day,  
The best of toys in every way,  
I invent with it some wonderful things,  
Meccano is fit for sons of kings,  
I use my mind, and reason so,  
Turn quickly Meccano to I-can-Oh."

We have pleasure in printing your verse, John, feeling sure that many of our readers will agree with you.

**S. C. Smith (Whitehaven).**—We fear your suggestion for a list of questions and marks for correct answers each month, sounds too much like school to be acceptable to most of our readers.

**M. Hoyle (Lynn).**—The objection to giving a Jigsaw Puzzle to be cut out of the Magazine is that many of our readers keep their Magazines, and do not wish to mutilate the pages by cutting anything out.

**A. J. Spear (Launceston).**—We have in mind a series of articles on "When I Leave School," dealing with the various positions open to boys.

**L. S. Herney (Brighton).**—Your suggestion to include new items in the Magazine is one that is not practicable, as most of our readers are able to obtain this information from the daily papers.

**W. Johnson (Huddersfield).**—We hope to print an account of Dick's Visit to the Meccano Factory some time in the future.

PHOTOGRAPHING A SPARROW-HAWK ON ITS NEST

# An Adventure in the Tree-Tops

by Master C. Moore-Hills

It was about the middle of May, 1921, when we first discovered the Sparrow-Hawk's nest in Saling Grove, Essex. The nest itself was an old one, probably a Jay's or a Magpie's, the Sparrow-Hawk having taken possession.

The birds soon began to re-build the nest with twigs, and by the end of May it was of quite respectable size. About this time the hen-bird laid the first egg. This particular hen was a young bird, and the question was whether she would allow us to build a "hut," or hiding-place, in the tree from which to photograph her, or whether she would desert the nest when we commenced operations.

When she had laid the fourth egg we started preparations to build the hut. When we commenced work the hen-bird was at first very frightened and flew round the nest in a perfect frenzy. After a few days, however, she calmed down and we found that we should certainly be able to photograph her.

The nest was situated in an oak tree about 25 ft. up, and to make a place for

the hut we had to build a wooden platform on one of the boughs. On this platform we erected four corner poles, around which we hung old sacks, with a flap in the front to enter the hut.

There are few hobbies so interesting, or more worthy of study, than that of the new form of bird-nesting. In the old days this hobby consisted of finding as many nests as possible, robbing, and then destroying them. It is much more interesting, however, to locate the nests and to leave them untouched, and by returning at short intervals, to watch the progress of the rearing of a brood of young. It is delightful to be able to photograph the nest with the hen-bird sitting, and, later on, when the young chicks hatch out. This work entails a great deal of patience, however, as those of our readers will discover should they try to emulate Master Moore-Hills' very creditable example.

Soon after we finished building the hut, the hen threw one of the eggs out, because it was addled. About the 12th of June she began sitting, and then we brought the cameras into the hut. To begin with, the hen was very frightened at the click of the camera. She left the nest on one or two occasions, but at last she became accustomed to the unfamiliar noise. It is interesting to note that during the latter part of the time the hen bird

would let us climb the tree and enter the hut without her leaving the nest, which was only about nine feet from the hut.

Up to that time we had seen nothing of the cock-bird, but he now became very attentive and brought dainty morsels to his sitting mate. He used to fly low, behind some hedge adjacent to the wood, and drop on some unsuspecting small bird, such as a linnnet. He then came down-wind to the wood and perched at the edge, calling to his mate. If she did not answer him he repeated the process a little nearer the nest. If he still remained unanswered, he came to the tree and sat on a bough near the nest, calling all the time. After this the hen would generally leave the nest and help him to devour the prey, but if

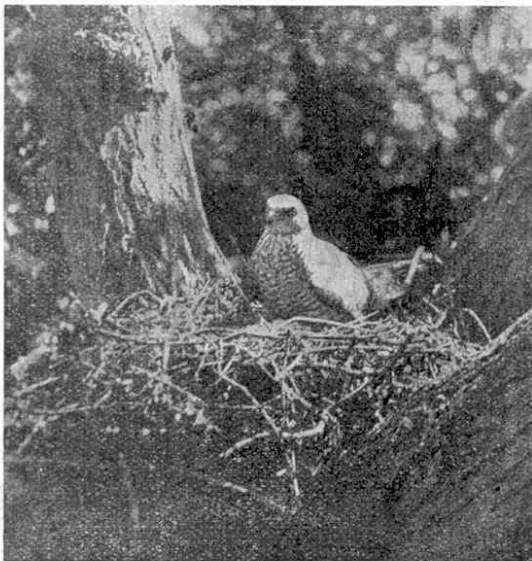
she did not, he would drop the food on the nest and depart, returning later with another victim. He often came as many as seven times a day.

It was rather a remarkable thing that only once during the two months that I watched this pair of Sparrow-Hawks did I see the cock and the hen bird both on the nest at once. Then it was for such a short time that I was not able to photograph them.

About the 8th of July the eggs were chipped, and two days later the young birds emerged. The cock-bird now had a very busy time, be-

cause for the next six days the hen did not leave the nest. The food he now brought were very tender morsels, each of which was feathered, beheaded, and properly dressed. They were very carefully torn up and distributed by the hen-bird, who kept the legs and bones for herself, only allowing the young ones the tenderest portions.

About this time the weather was very hot, and the hen had to keep the young sheltered from the sun by spreading her wings and tail over them, with her back



Hen bird sitting on her eggs



Hen bird feeding young Sparrow-Hawks. Notice the food in the bird's mouth



An Adventure in the Tree Tops—(cont.)

to the sun. The young grew rapidly, and in about ten days were able to start tearing up food for themselves. At this stage the chief food was young starlings, and I have seen as many as four dressed starlings on the nest at once. Sometimes mice were brought, and other small mammals.



The Female Sparrow Hawk sheltering her young from the fierce rays of the Summer sun

The young birds grew very quickly and were soon able to fly. Even then they used to return to the nest to feed, however, and the cock-bird placed food there for them and also for the hen. If two of the young birds returned to feed at the same time, a fight generally ensued, and always resulted in one of them retiring without his meal. At last the time came when

they felt they could cut themselves adrift from their "mother's apron strings," and one fine day, when I last visited the nest, it was deserted. Altogether, however, I thoroughly enjoyed my opportunity of studying the birds at such close quarters, and look forward to repeating the experience with other birds in the future.

Railway Changes

by Master H. R. Smith

Now that the grouping of railways has taken place, a number of changes have been brought about. Four N.B. "Atlantics" were recently seen at Leicester travelling up to Marylebone, and the day after one of the new Great Northern "Pacifics" (4-6-2) went up. It is quite probable that some "Great Central" engines have gone up on to the Great Northern, North Eastern and North British lines.

All the engines that went up to Marylebone had the letters L. & N.E.R. (London and North Eastern Railway) inscribed on their tenders. One of the 4-6-0 engines of the late Lancashire and Yorkshire Railway was seen the other day with the letters L.M. & S.R. (London Midland and Scottish Railway) on its tender.

Boys who are interested in railways should look out for exchange working of locomotives, as a number of interesting changes will no doubt take place.

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, with a Meccano dealer, a newsagent, or direct with us.



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.

**W. H. Buckler** (Grantham).—Why not introduce in the transmission between your Clockwork motor and your model, a clutch action consisting of toothed wheels to be thrown out of gear by means of a lever strip? This method will give you the desired effect and will obviate the use of the free-wheel action you suggest.

**S. Sergio** (Ancona).—Bronze gives a pleasant ringing tone. It would, of course, be impossible to incorporate this agent in our steel strips and plates.

**J. H. Kettle** (Loughboro').—We do not quite see the point in your suggested gear wheels with a limited number of teeth. Will you demonstrate their application a little more clearly?

**G. R. Offer** (Catford, S.E.).—(1) We do not stock rubber rings as an accessory on account of their perishable nature. (2) The 2" pulley makes an admirable steering wheel for an automobile.

**A. Timms** (Birmingham).—(1) What advantages do you consider a 2 1/4" x 2 1/4" flanged plate possesses? (2) We have in mind the introduction of single angle strips (or angle brackets as you term them) and shall consider carefully your suggestion for a 1 1/4" x 1/4" double angle strip.

**Jim Stapley** (Maidstone).—In suggesting new parts it is always helpful if an instance of their use is quoted. Have you found any general uses for your suggested ratchet wheel?

**A. Farnie** (Girton).—(1) We refer you to Model 307 (Oscillating Steam Engine) for examples of cylinders with pistons. (2) The piston rod is journalled in the two flanged wheels that form the cylinder ends, thus ensuring an easy action.

**Percy Levermore** (Barnet).—A ratchet screwdriver is certainly useful, if perhaps a little costly, and we shall consider the idea.

Bright Ideas (cont.)

**[Robt. A. Miller** (Lincoln).—We have in mind the introduction of channel sections.

**Stanley Wilkinson** (Skegness).—By lapping the cord two or three times around the crank handle, and knotting with two ordinary half hitches, a firm fastening is obtained.

**Jack Jennings** (Dublin).—(1) Your suggestion for the issue of "Cigarette Cards" has already received consideration, and we hope shortly to make an interesting announcement in this connection. (2) The perforation of the sector plate is already under consideration.

**V. J. Kitson** (Ingeniero Blanco, Argentina).—We realise that a Meccano boat would be attractive, but the caulking of the joints would present difficulties. However, we shall examine the possibilities.

**W. G. F. Thorley** (Wellingboro').—We could not undertake the manufacture of the type of rail you suggest, and the manufacture of large size buffers is too costly.

**Harold Javer** (Wolverhampton).—We have recently added a flanged architrave R. and L. (Nos. 139 and 139a).

**Cyril H. Shepherd** (Bedford Park, W.).—We do not think that there is any advantage in the type of tooth you suggest. We have found the present type of toothed wheel quite efficient for every degree of Meccano practice.

HELLO! BOYS  
A LOUD SPEAKER

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120 OHMS or 2000 OHMS



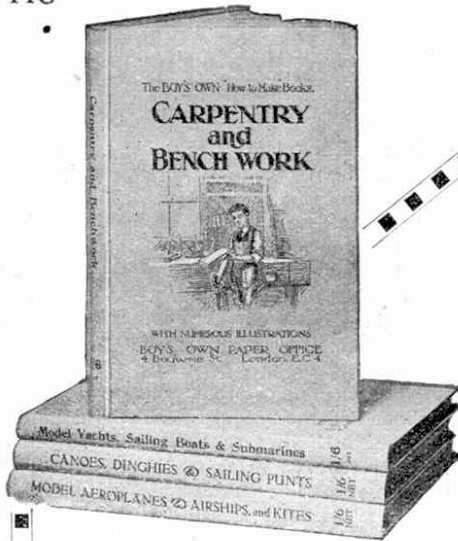
We have been able to secure only a few hundred of these and consequently can only accept orders with cash. Delivery will be made in strict rotation and as quickly as possible.

This Loud Speaker is a reliable instrument and gives excellent results.

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We have a small quantity of HEADPHONES (120 ohms, 2000 ohms and 4000 ohms), for sale at 18/- each, cash with order. These Headphones are thoroughly efficient and guaranteed. Money returned if not satisfied.

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## What is the first principle of building construction?

IT does not matter how carefully a building is planned or how beautifully it is built; the skill of the finest craftsmen in the world may be lavished on it—all will be in vain unless the *foundations are sound*.

All over the world there are splendid buildings, which are cracking and collapsing because the foundations are giving way.

You yourself are rather like a building—it does not matter how clever you are with your brains or your hands. It does not matter how strongly you feel you will be able to do great things when you are grown up, unless your foundations are sound, unless you have *good health*, you will collapse.

Now the very foundation of good health is good teeth—you cannot be really fit and well unless you have sound teeth. Sound teeth are *clean teeth*.

It is a simple and pleasant matter to keep the teeth in perfect condition by the twice daily use of Gibbs' Dentifrice. It cleans and brightens the teeth by removing the greasy food deposits and polishing the millions of tiny waves and facets into which the enamel of a normal tooth is divided.

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Gibbs' Dentifrice is most convenient—a solid cake, protected by an aluminium case—it cannot spill or squeeze out.

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**The Secretary's Notes**

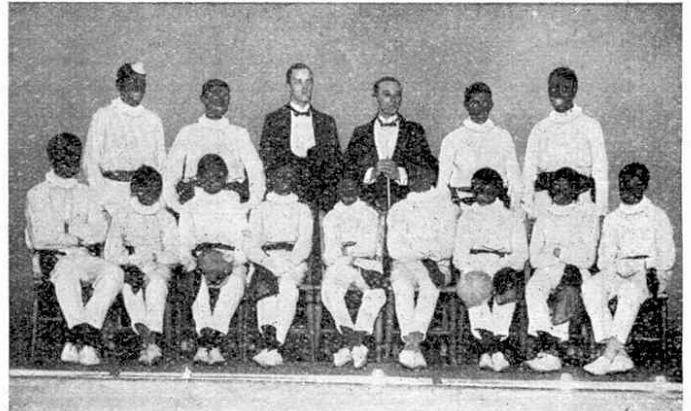
By the end of this month the light evenings will be considerably shorter and the Summer Sessions, which have proved most enjoyable and successful, will very soon give place to the busy indoor Sessions. Club Leaders and Secretaries are now drawing up attractive programmes on the lines that they know will be most popular amongst their members. In many cases new quarters are being sought, in order to accommodate the ever-increasing number of Club members. From several Secretaries I hear that members are exceptionally keen and enthusiastic at the prospect of the Winter Sessions.

I often receive letters from boys who have made happy friendships in connection with the Correspondence Club, and I would announce that the Club is open to every Guild member whether he be a member of a Club or not. I have at present quite a number of Canadian boys who require English correspondents, and any boy who is interested should write to me without delay. Those members who wish to correspond with boys in other countries may be placed in communication with members in almost any country in the world, from Iceland to Australia! Full particulars, and enrolment form, will be mailed free on application.

The Meccano Lectures met with a great reception last Winter, and I am arranging to extend the series by adding some additional subjects to the list. These Lectures are compiled specially for Leaders to read to the Clubs. Many Leaders have not time to prepare suitable papers for Club nights, and the Meccano Lectures help them to overcome the difficulty. Sometimes, too, arrangements break down, and what would otherwise be a blank evening is filled by the Leader reading a Meccano Lecture. Very often an interesting discussion follows, and the time passes merrily enough. An innovation this Winter will be the introduction of short stories, the reading of which affords a pleasant change from model building and Club routine.

**Successful Meccano Minstrels**

All Guild members will be interested to see this flashlight photograph of the Leamington Meccano Minstrels. The photograph was taken on the stage in the Jephson Gardens, where the Minstrels recently gave a very successful performance in conjunction with a Cantata. The Minstrels who, at the request of Lady Ilkestone, have performed for charity in the grounds of Warwick Castle, wear black nigger wigs, white shoes and gloves, red sashes, and pie-dish frills. I am sure that all Meccano boys will agree that they look a very capable troupe, and by working in harmony they give an excellent performance. Our photograph also shows Mr. Guy Hare, the energetic secretary of the



Leamington Meccano Club, and on the right (with baton) Mr. F. Reade, to whom, as Conductor, the Minstrels owe a great deal of their success. The Members of the Leamington Meccano Club are very proud of their Minstrel Troupe, as also is the Club Leader, Mr. F. W. Bull.

**Meccano Club Leaders**

No. 6. Mr. V. HAMMOND



The "New Malden Meccano Club," of which Mr. Hammond is the Leader, was formed in November 1920. The membership has steadily increased until to-day it stands at 50. Mr. Hammond found this membership too large to handle satisfactorily as a whole, and the Club was divided into two sections, Junior and Senior. This has proved a highly successful innovation. In the opinion of Mr. Hammond the finest Club work accomplished has been the Lectures delivered by the members to audiences consisting of members and adult friends. Lectures have been given on such subjects as "Radio," "Electric Motors," "The 'Great Eastern,'" etc., and many of the visitors have often expressed their appreciation. Mr. Hammond is undoubtedly doing a good work in encouraging the Club members to lecture in this interesting manner.



**CLUB NOTES**

**West View (Nottingham) M.C.**—The Club Leader informs me that the members of this Club are all sportsmen, whether they are at work or play, and that as a consequence he greatly enjoys all his work in connection with the Club. I have noticed that his programme always caters for both the educational and social sides of Club life, and from what I hear it certainly seems that the next Session will be the most successful and interesting yet held. **Leader:** Mr. H. W. R. Cousins, 494, Mansfield Road, Sherwood, Nottingham.

**Claygate Juvenile Club.**—Considerable progress has been made in connection with this Club, which, incidentally, has a very successful section for girls. At a recent sports gathering the programme included Marathon races of four and seven miles. A Fancy Dress Parade attracted nearly 60 competitors, whose costumes ranged from the sublime to the ridiculous. There was also an Old English Fair, including numerous side-shows, and the whole programme was greatly enjoyed by both spectators and participants. **Leader:** Mr. J. W. Haynes, "Fontmell," Covers Road, Claygate.

**Malvern (S. Africa) M.C.**—Continues to make good progress. The attendance has been excellent and the Session very successful. Many interesting papers have been given, and Master W. Sims has been awarded a Special Merit Medallion in this connection. Master E. Workman was awarded a Medallion for good work. Successful sports were held, for the members are very keen on Cross-Country Runs and other outdoor exercise. **Secretary:** Master E. Sykes, c/o T. Henderson, P.O. Cleveland, Transvaal, South Africa.

**Gulgong (Australia) M.C.**—When first organised this Club held its regular meetings during school hours, but meetings are now held on Monday evenings. Model building is very popular with the members, and some of the members' work was recently exhibited at a local show. Lectures have been given from time to time, and these have been followed by interesting discussions. **Secretary:** Master N. Wallis, "Yarrawin," Gulgong, New South Wales, Australia.

**Chard M.C.**—This Club is most successful and the members are keen and enthusiastic in regard to the coming Winter Sessions. Unfortunately, the Club Secretary has recently been very ill, but he is now well on the way to recovery and will be able to take part in the Club's activities in the near future. **Secretary:** Master Frank Macey, 17, Ashfield, Chard.

**Den Haag (Holland) M.C.**—It is with regret that I have to announce that this recently-formed Club has been bereaved of its Club Leader. Mr. Regoort, the Treasurer's father, has kindly undertaken the Leadership temporarily. **Secretary:** Mr. H. G. van der Sluis, 108, Stadhoudersplein, Den Haag, Holland.

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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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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.

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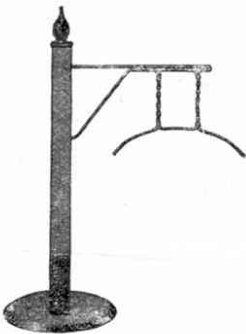
**HARBUTTS' PLASTICINE LTD.,**  
**99, Bathampton, Bath.**

### CUT THIS OUT

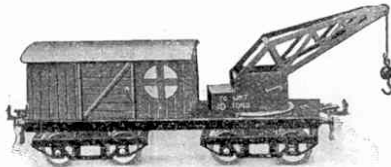
"Meccano" Pen Coupon. Value 3d.  
Send 5 of these coupons with only 2/9 direct to the **Fleet Pen Co., 119, Fleet Street, E.C. 4.**  
You will receive by return a splendid British 14-ct. Gold Nibbed Fleet Fountain Pen value 10/6 (Fine, Medium, or Broad Nib). If only 1 coupon is sent, the price is 3/9. 3d. less for each extra coupon up to 4 (Pocket Clip 4d.). Satisfaction guaranteed. Your own name gilt letters, either pen 1/- extra.  
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BREAKDOWN VANS AND CRANES  
Excellent finish in steel-grey. Suitable for 2 ft. radius rails only ... each 7/-



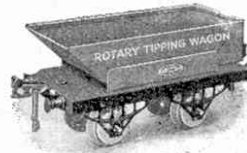
SIGNALS  
each 2/6



COLMAN'S MUSTARD VANS  
Finished in colour ... each 4/6



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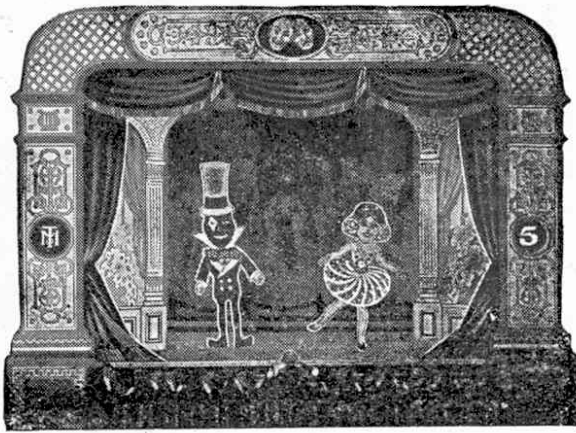
No. 2 LUMBER WAGONS  
Provided with bolsters and stanchions for log transport. Suitable for 2 ft. radius rails only ... each 5/6



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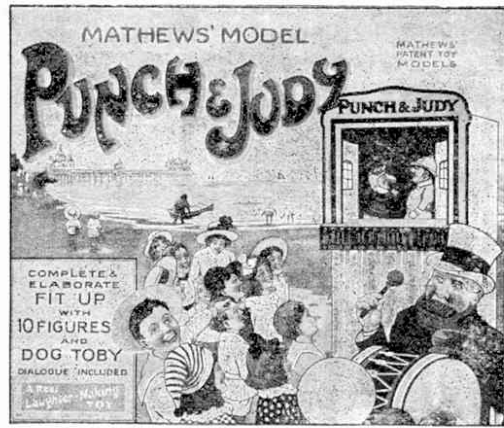




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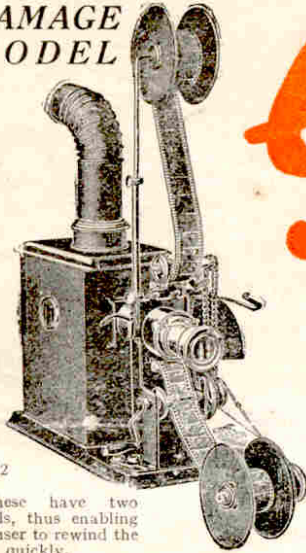
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P 422

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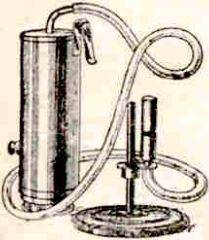
These are very large and of superior quality

35/- 45/- 70/- 84/-

Also, but fitted for Electric Light, with lamp holder, wire flex, and plug to attach to any ordinary electric lamp.

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P 419 For the Juvenile Magic Lanterns and Cinematographs.

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Including generator, container, rubber tubing, gas arm and adjustments, complete. Carr. 6d.

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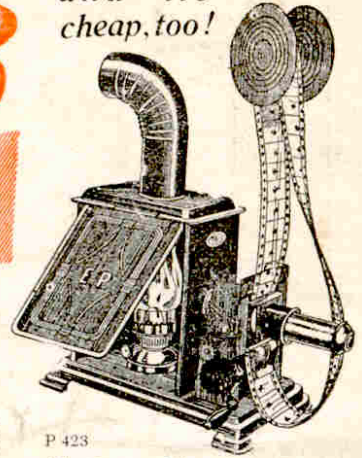
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You know these "nothing-to-do" nights, boys!—When it's raining hard, you can't go out, and you're tired of reading! Just think how splendid it would be to give a "picture-show" to your family and friends!—the fun you could have as the operator! Get a Gamage Cinematograph—You'll find "Home Movies" the best thing ever.

Width of Slide	Gamages Price	LONG SLIDES FOR JUVENILE LANTERNS	Width of Slide	Gamages Price
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Cinematograph—  
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cheap, too!



P 423

All are complete with oil lamp, film and lantern slides. These can be used also as magic lanterns. 5 6 7 6 12 6 21/- Carriage extra Electric Light Fittings ... 3/6 extra

Write for Illustrated List of Magic Lanterns, Cinematographs, etc.—  
POST FREE ON REQUEST.

## Superior Quality Lanterns

Constructed on the lines of full size Magic Lanterns. These are of an elegant shape with polished Russian Iron Body, Paraffin Lamp and 12 fine Glass Slides, packed in separate specially grooved box. All complete in elegant cardboard box.

Slides 1 1/2 in. wide, lens 1 9/16 in. diam. Price ... 12/6  
Slides 2 in. wide, lens 1 1/4 in. diam. Price ... 21/-

## Continuous Cinematograph Films

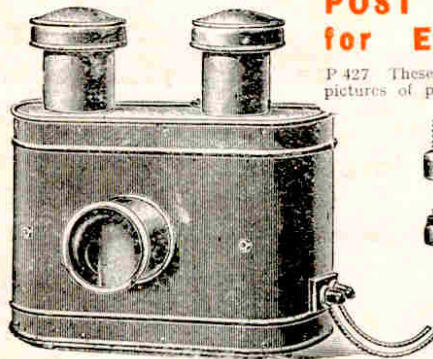
P 420 (As shown in Machine Illustrated above) Suitable for juvenile machines. These are specially made, being very transparent, and giving good pictures with oil lamp where the ordinary film is not always a success.

1. Long coloured films ... 1/6 each  
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Short Lengths of film (ordinary) suitable for machines. In boxes. Per box of approximately 18 ft., 6d.; 36 ft., 1/-; 72 ft., 2/-; 144 ft., 4/-; etc., to 10/- for 360 ft. Post extra.

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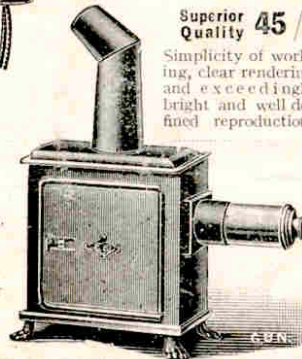
P 427 These lanterns give very large and beautiful pictures of postcards and other opaque objects by reflection. Size of picture at 12 ft. distance 8 ft. by 5 ft. 2 in.

The projector is of a superior type and gives remarkably clear definition. Size of Lantern 12 by 10 1/2 by 9 in. Price 35/-



Superior Quality 45/-

Simplicity of working, clear rendering and exceedingly bright and well defined reproduction.



P 241

## JUVENILE MAGIC LANTERNS

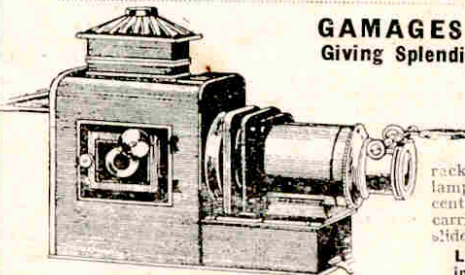
All metal bodies, objection fitted with good lenses, complete with oil lamp and glass and 6 slides.

Packed in cardboard boxes.

Approximate dimensions:

Height with Chimney	Size of Slides	Price	Extra Slides, per box of 1 doz.
10 in.	1 x 4 in.	2/9	9d.
13 in.	1 x 4 in.	5/6	9d.

## GAMAGES OPTICAL LANTERN Giving Splendid Results and Complete with 1 Dozen Slides



No. 1. Full-sized japanned body lantern, similar to sketch, fitted with best 4 in. Plano Convex condensers and double combination front lens, with rack-work focus, petroleum three-wick lamp, or incandescent gas outfit, slide carrier, and 1 doz. slides ... Complete

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Lantern without lighting, but including carrier and tray ... 42/6

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