

THE MOTOR CYCLE

No. I. Vol. I.

TUESDAY, MARCH 31st, 1903.

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Gear or Chain Driven. Simplest and Best.
(See page 19.)

THE RESULT OF EXPERIENCE.

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... MOTOCYCLETES
have stood the test of years.

(See pages 14-15.)

BICYCLE

SIMMS

(See page 3.)

MOTOR.

THE WORLD'S RECORD

for a flying Kilometre has AGAIN been beaten on a
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the Hon. C. S. Rolls reducing the time to twenty-seven
seconds, being at the rate of nearly eighty-three miles
an hour.

Equally good for Cycles, Carriages, and Motors. Write for Booklet
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(See page 18.)

ORMONDE KELECOM.

(See page 12.)

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Bat*

WHAT IS IT?

Page 23 will tell you

Peto & Radford,

LTD.,

55 & 57b, Hatton Garden.

(See page 21.)

DE DION-BOUTON MOTORS.

BEST
MADE.

MCST
EFFICIENT

1½ TO 10 H.P.

For bicycle motors see advertisement on page 19.

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MOTOR TYRES (BARTLETT'S PATENT).

Exactly the same in quality and construction as sold by MICHELIN & Co. in France.

All buyers can order and use, without risk, Clincher-Michelin Tyres purchased from us or from any of our warehouses and depots.

Reduce the Expense of Motoring.
Because of their Reliability and Durability.
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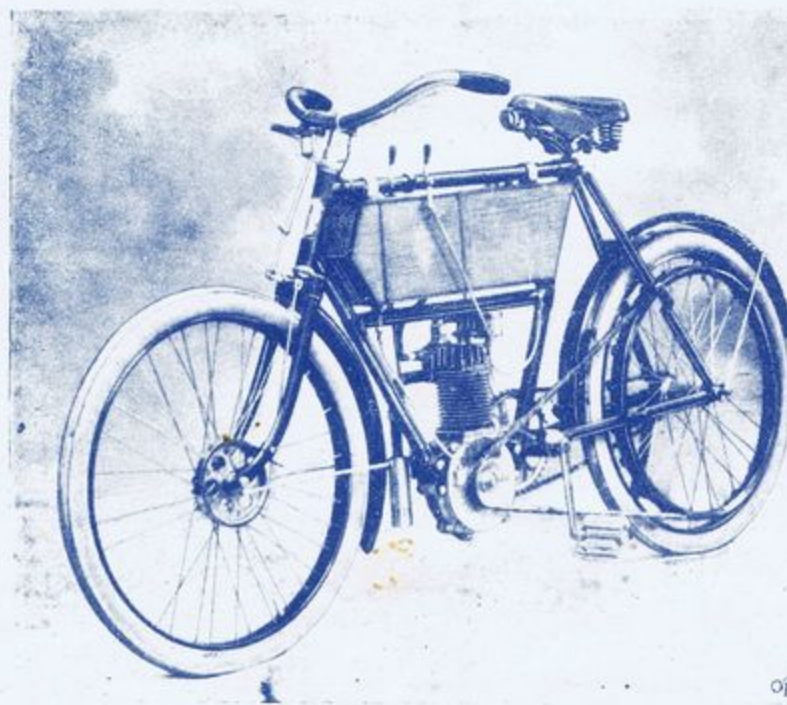
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Prices :

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Form an ideal car
with our
front attachment.
Simple as A B C
Right up-to-date in
all details.

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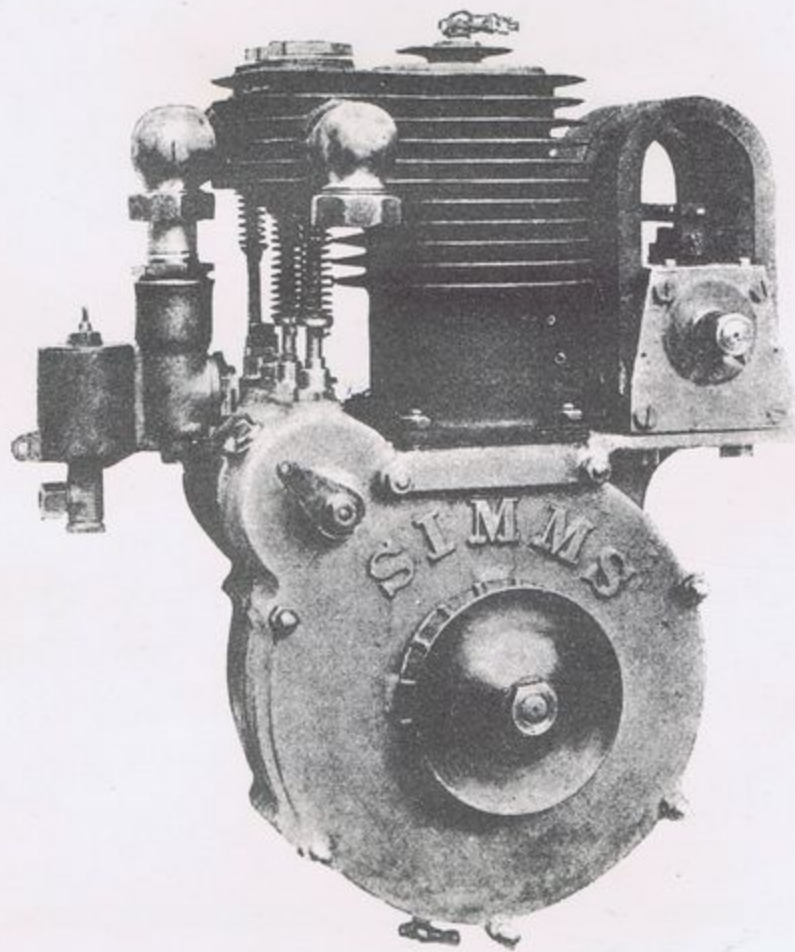
Imperial Motor Co., Brixton Hill, London, S.W.

1,000 MILES ASTRALÉ ACCUMULATORS.

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SIMMS BICYCLE MOTOR.



$2\frac{3}{4}$ b.h.p., mechanically operated inlet valve,
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It will thoroughly please you.

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TOUCH AND GO!

This is all that is required to start the

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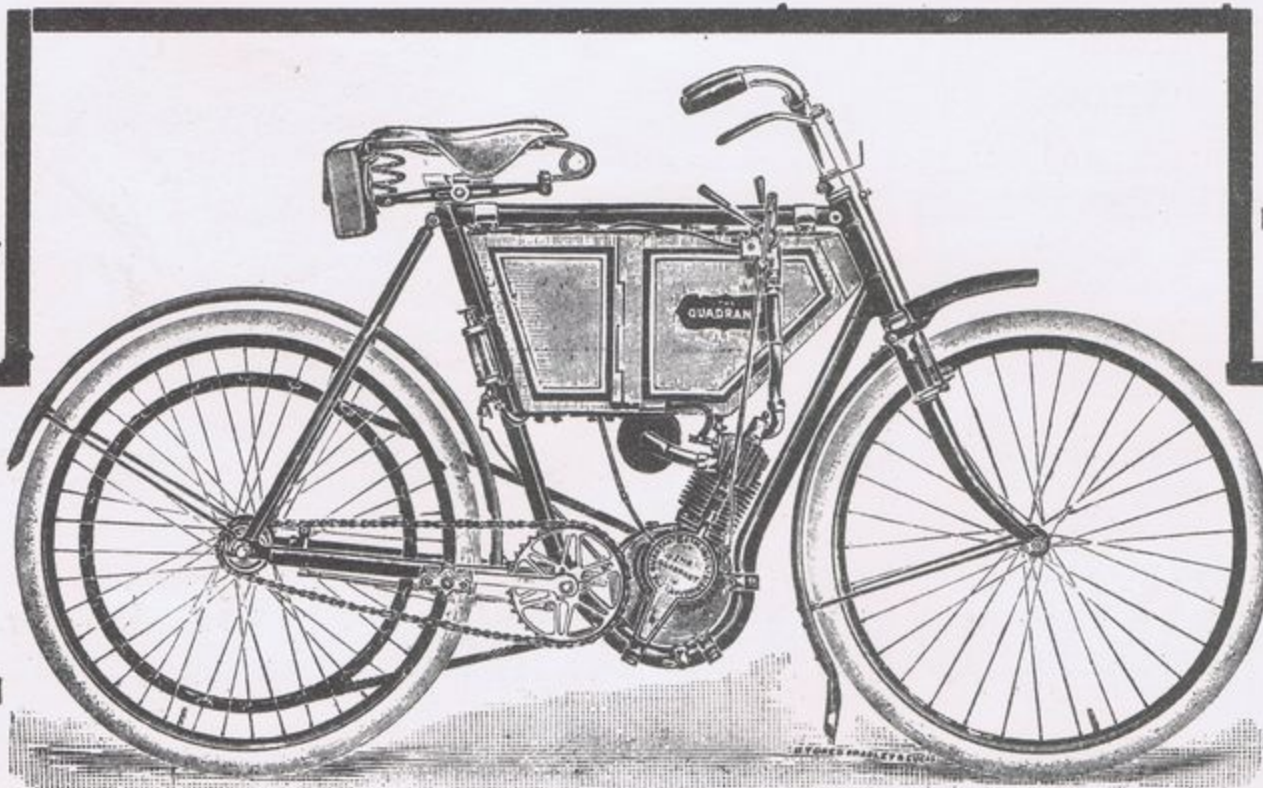
One touch of the Driving Lever and away you go. Any cyclist can ride a Quadrant straight away without any previous experience, thanks to the famous Driving Lever. It performs four distinct operations in perfect sequence, viz.: Switches on current, closes the exhaust valve, opens the gas valve, and advances the ignition.

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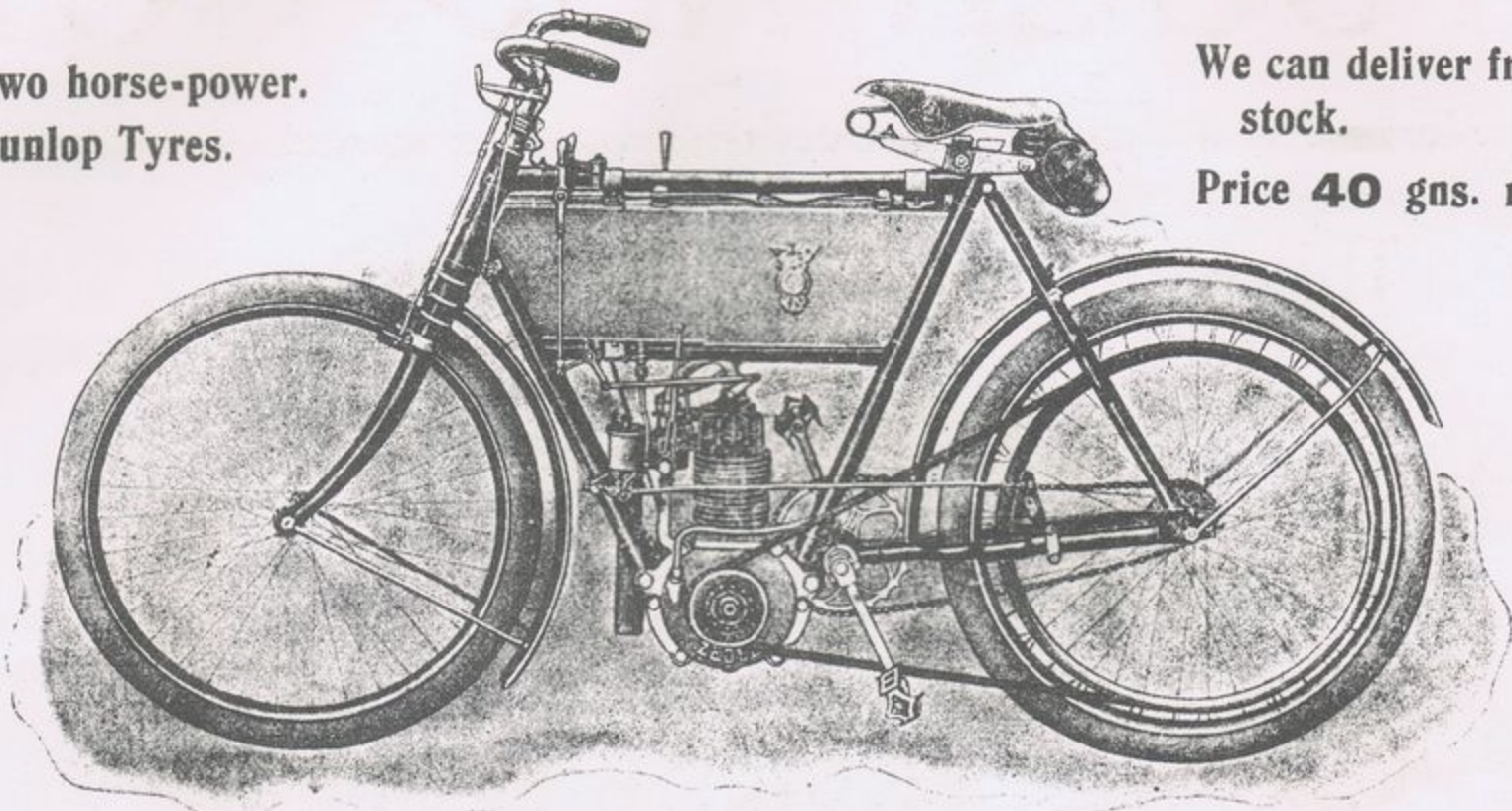
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EVERYWHERE.

We have secured the sole rights in the United Kingdom and Colonies for
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 Dunlop Tyres.

We can deliver from
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Price 40 gns. net.



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2½ HORSE-POWER.

Price = = = = 42 Guineas.

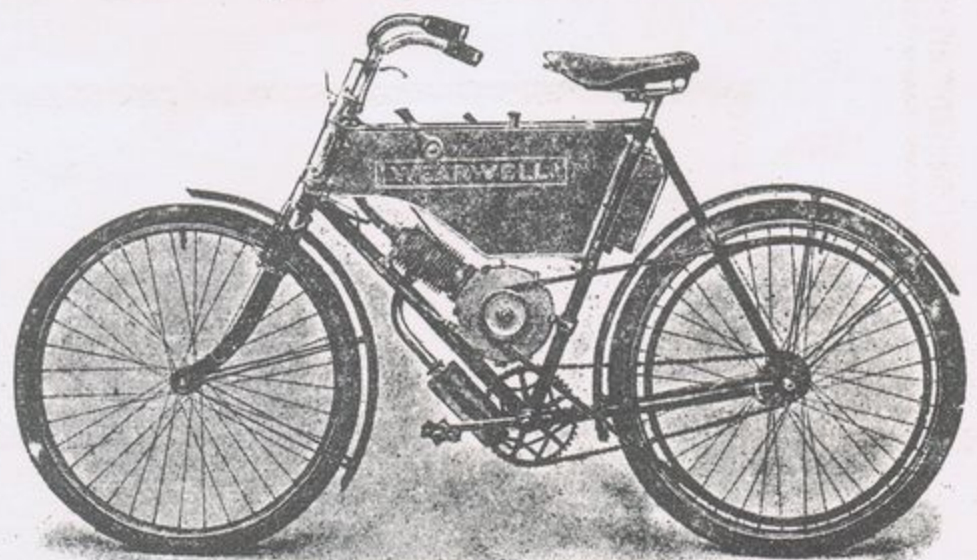
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Sight-feed lubricator.

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The engine, as well as the
 bicycle, is made entirely
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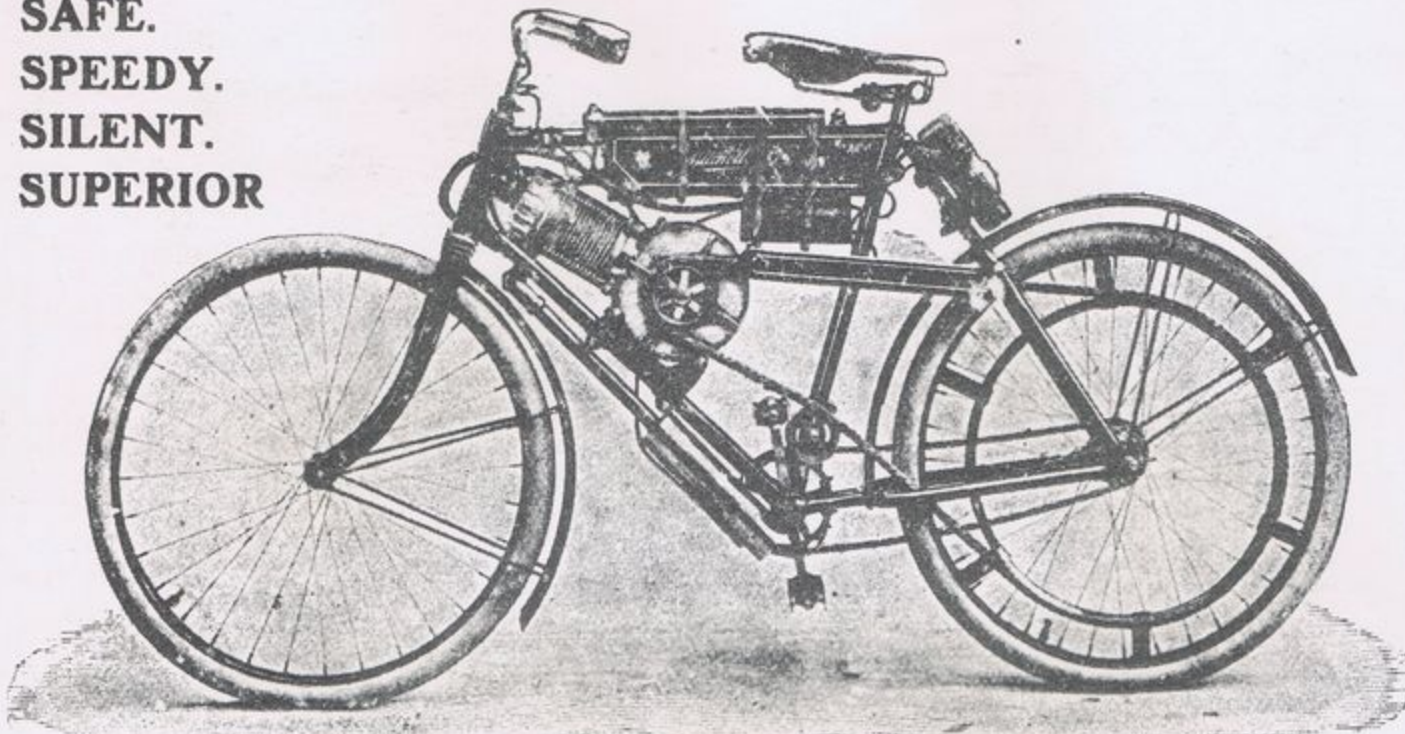
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London Agents: A. COX & CO., 62, Holborn Viaduct, London, E.C.

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**SAFE.
SPEEDY.
SILENT.
SUPERIOR**



**Special
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We have four Shop soiled Mitchells to be sold at £32 each, all in perfect condition.

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ONLY FOUR!**

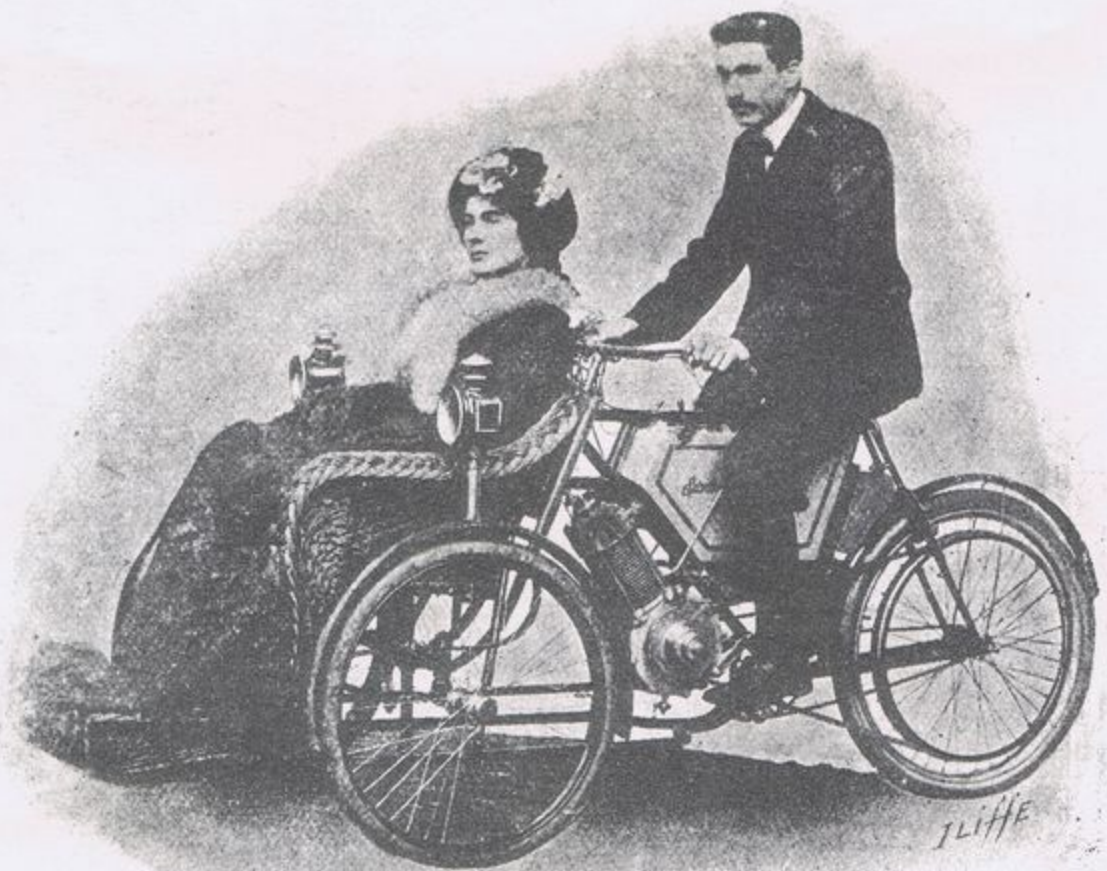
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If you do not wish

to be left without a FORECAR or TRAILER for the Easter Holidays, place your order at once, and do not wait; delays are dangerous.



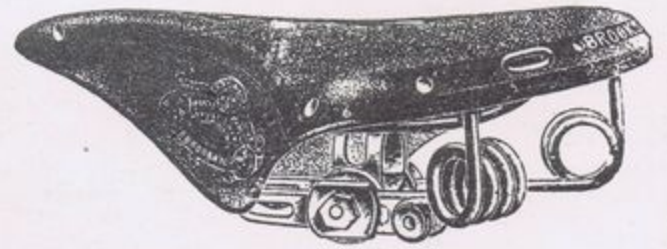
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THE "MILLFORD" FORECAR.

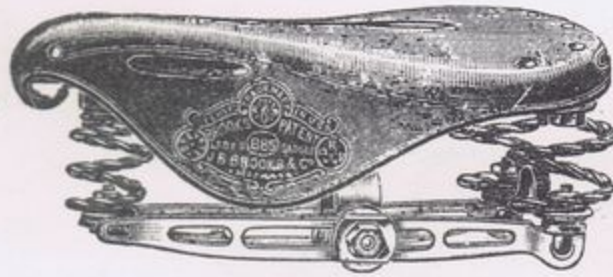
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B70/3. New Light Model.



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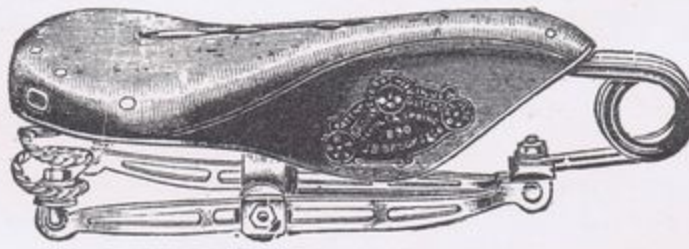
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unceasing experiment
and determination to
secure the very best
that experience, skill,
and money can procure.

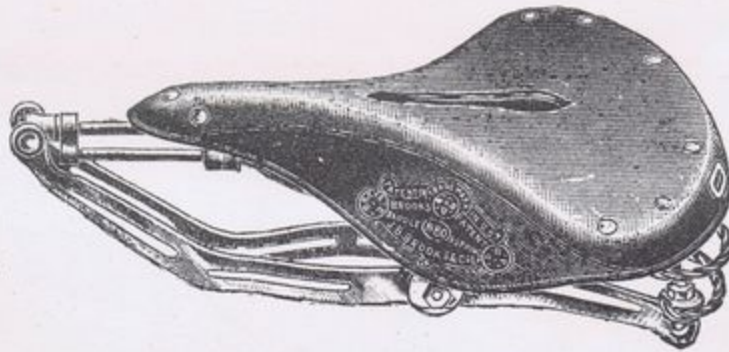
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specially dressed, specially
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SPRINGS.—An extra
superline grade of
steel wire, special-
ly drawn, and
every length
specially tested.

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high grade; our
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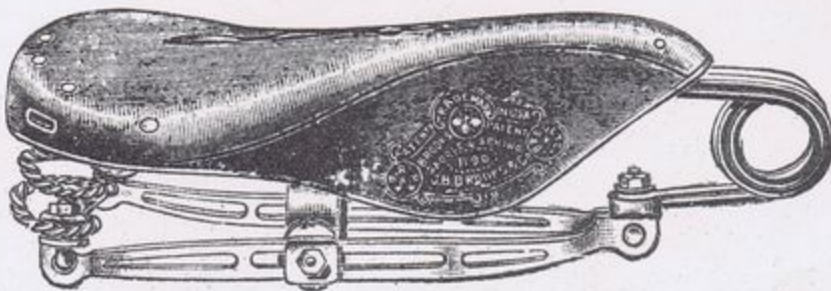
B90/3. A first-class saddle.



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For comfort
and for safety
on a motor, a

BROOKS SADDLE is a necessity.



B90/4. The KING of motor saddles.

INSIST UPON HAVING A BROOKS.

THERE IS NO OTHER MAKE TO BE COMPARED WITH IT.

1903 LIST, with full particulars of SADDLES, TOOLBAGS, etc., post free.

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ASSURANCE CORPORATION, LIMITED.

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The best accident policy in the world.
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Everything for Motor Cyclists.

Patent Puttie Knees for Breeches.

Motor Cycling Suit, in fine Angola, Cheviot, and Whipcord. Impervious to all weather.



Many special features.

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Waterproof Capes, Coats, and Overalls.



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Unsolicited: "A great acquisition."—E. W. Iliffe.
Price list, patterns, and sketches post free.

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A Journal Published in the
Interests of the Mechanically propelled Road Carriage.

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RUNS AND TOURS · ILLUSTRATED · DESCRIPTIONS
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Best for hill-climbing and all-round work.
Instantaneous starting.
Carburetter is economical and cannot get out of order.
Horse-power is $2\frac{1}{2}$, but it does the work of a $3\frac{1}{2}$ h.p. motor.
Reliable under all conditions and in all weathers.
One explosion at every revolution, which means **Power**.
No trouble, no complication, no valve grinding, **no over-heating**.
Exhaust gas fully expelled.

Moting is a pleasure, when riding a **Bichrone**.
Over lubrication does not affect the sparking plug.
The engines can be fitted to any ordinary motor frame.
Once found, mixture rarely requires alteration.
Remarkable for absence of vibration.
See that your motor bicycle is fitted with a **Bichrone**.

TRADE ONLY.

J. C. HENCKE, 41, SEETHING LANE, LONDON, E.C.

THE BICHRONE IS NOT A TOY.

All the experts who have tried it are unanimous in their opinion, that the problem of the two-cycle motor has been successfully solved by the inventor of the BICHRONE.

IT IS THE MOST RELIABLE MOTOR ON THE MARKET

and you save yourself much agony by having a Bichrone motor fitted to your bicycle.

THE COST OF RUNNING

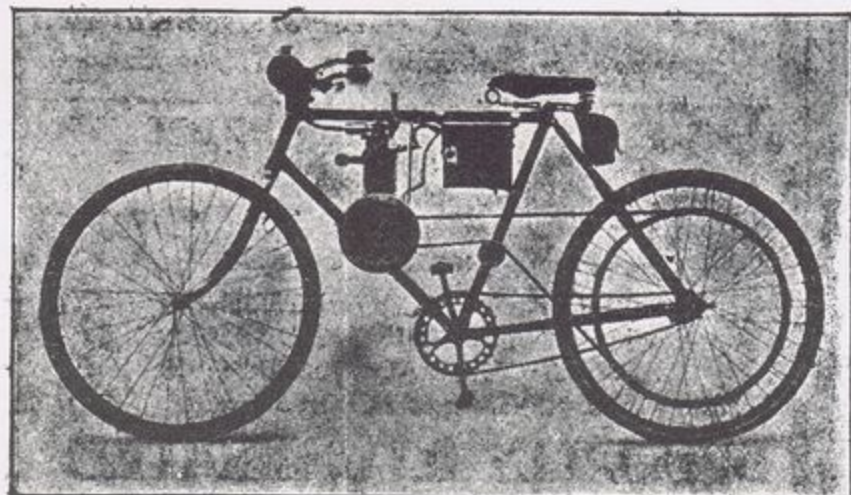
a BICHRONE compares favourably with that of any other engine of the four-cycle type, as the valves do not require replacing and there is no troublesome exhaust valve. The consumption of petrol, moreover, is not greater than that of the four-cycle engines.

Write for illustrated pamphlet.

Deliveries of sample sets during April.

The **BORD** "LIGHTWEIGHT" MOTOR CYCLE.

$1\frac{1}{2}$ B.H.P.



THE LIGHTEST (from 60 lbs.)—Consequently the HANDIEST.

THE SIMPLEST—Consequently the BEST.

THE MOST POWERFUL—Catford Hill Climbing Championship, Westerham, July 5th, 1902. The only motor cycle of its class to climb the hill.

THE CHEAPEST—£29 10s.

The BORD Detachable Motor Set. Ready to fit to a roadster bicycle. Complete with tank, accumulators, etc., £18 10s.

AGENTS WANTED WHERE NOT REPRESENTED.

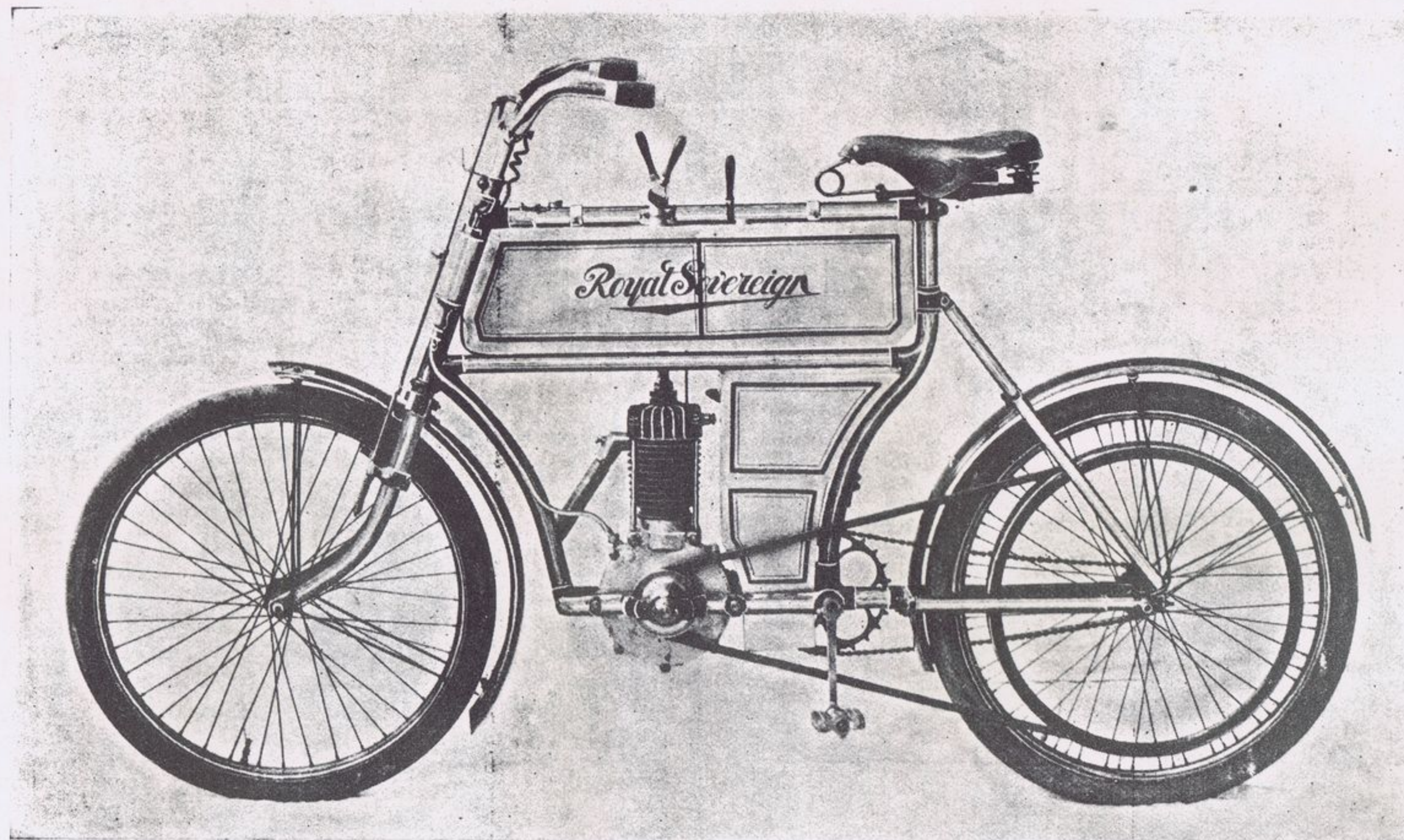
THE BORD MOTOR COMPANY,

The Arcade, 29, Finsbury Pavement, London, E.C.

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'ROYAL SOVEREIGN' MOTOR CYCLE. 33 Guineas.

Why pay £50?



2 $\frac{1}{4}$
h.p.

200
Miles
Petrol
Capacity

Excels all other Motor Bicycles for POWER, SPEED, RELIABILITY, AND SIMPLICITY.

Full Particulars—**LONDON MACHINISTS' CO., 119, High Street, Kingsland, N.**

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TO MOTOR CYCLISTS.

£100 ONE HUNDRED POUNDS will be paid by the General Accident Assurance Corporation, Ltd., to the person whom the Corporation shall decide to be the next of kin of any person killed by violent, accidental, external and visible means, through a collision with any cycle or other vehicle whilst riding a motor bicycle of any kind, or a motor tricycle or quadricycle started and assisted by pedals, on the public road, should death result within one calendar month after such accident.

And should he or she meet with an injury, caused by collision, whilst motor-cycling as above mentioned, which shall not prove fatal as aforesaid, but which shall absolutely and solely confine him or her to the house, then such person will be paid **£1 per week** during such confinement, for a period not exceeding five weeks from the date of the accident, provided that the holder of this Coupon was not under the influence of intoxicants, was not competing in a race, or riding on a Cycle Track when the accident occurred, and was not a professional rider.

It is a condition precedent to any claim being made that the usual signature of the holder of this Coupon was previously written in ink underneath, and that notice of death or injury be given to the Corporation at its Chief Offices in Perth **as soon as possible**, but within fourteen days thereof, and that medical certificates and other information be furnished by the person claiming upon request for same by the Corporation. This Insurance only applies to persons over 14 and under 60 years of age, is limited to one Coupon for each holder, and holds good for eight days, including the day printed upon this issue of "THE MOTOR CYCLE" and the seven days following.

Signature

Address

N.B.—This Insurance is not invalidated by any other Insurance with this or any other Accident Company, but is in addition thereto.

McCURD'S MOTOR CYCLE JACKS

Always on your machine.

McCURD'S MOTOR CYCLE JACKS

Are extremely light.

McCURD'S MOTOR CYCLE JACKS

Are unique devices.

McCURD'S MOTOR CYCLE JACKS

Are absolutely reliable.

McCURD'S MOTOR CYCLE JACKS

Are the only safe and satisfactory devices.

HAVE been consistently recommended by the proprietors of *The Motor Cycle* (in their other publications) ever since they were introduced eighteen months ago, and stand absolutely alone. They are devices intended to be **permanently fitted** to motor bicycles, tricycles, and quads, so that whenever the necessity arises on the road, or before leaving home, the engine can be tested, adjustments made, or tyres removed without trouble, the jacking up occupying no more than **five seconds**, and the device being light and unnoticeable when out of use. They are wholly and distinctly different to anything on the market alleged to answer the purpose, and are high class productions for high class machines.

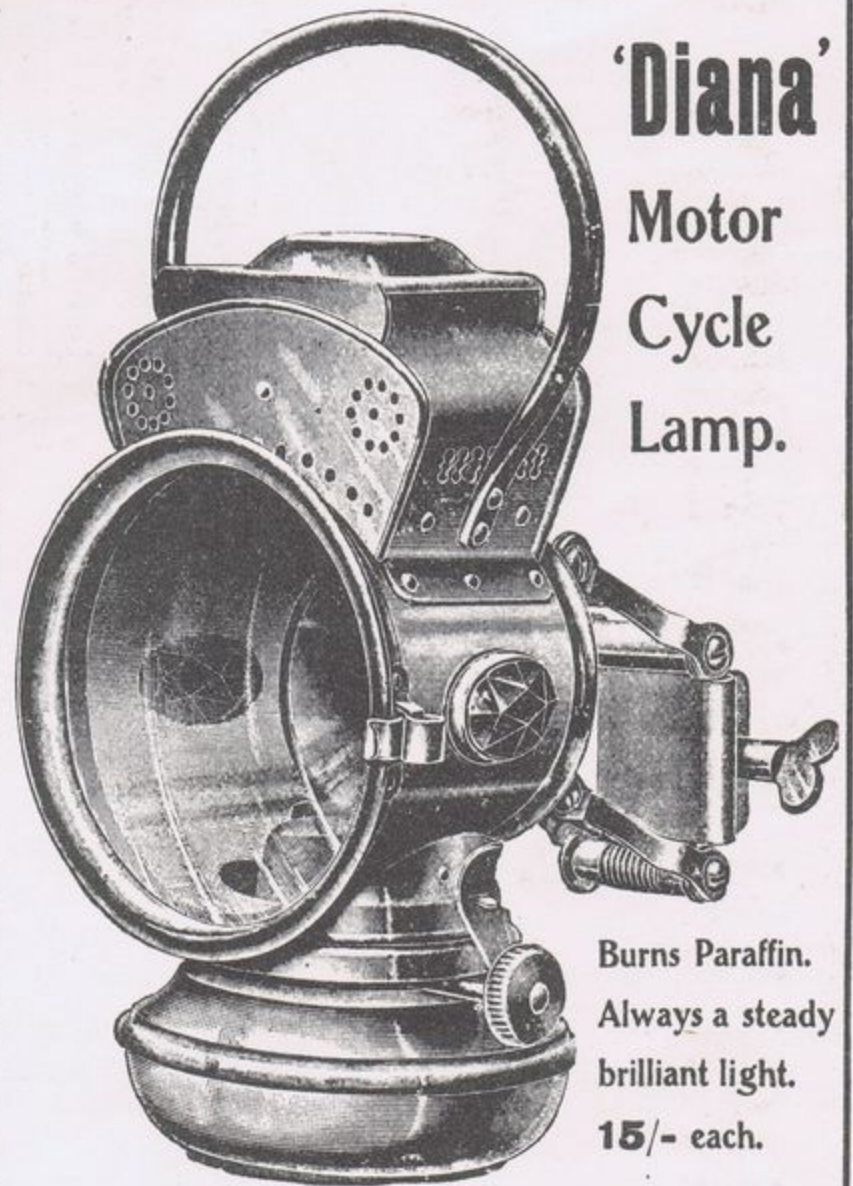
PRICE, for bicycles, tricycles, or quads, **30/-**

Luggage Carrier Attachment with the Bicycle Jack is supplied at **4/6 extra.**

Full particulars and illustrations post free upon application.

W. A. McCURD,

263, STANSTEAD ROAD, FOREST HILL, LONDON, S.E.



'Diana'
Motor
Cycle
Lamp.

Burns Paraffin.
Always a steady
brilliant light.
15/- each.

EUGEN BAEDERER,

17, Newcastle Street, Farringdon Street, London, E.C.

THE MOTOR CYCLE

No. 1. Vol. 1.

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TO THE READERS OF No. 1.

As a rule the first number of a new paper is accompanied by some sort of introductory explanation, we might almost say excuse, for its existence, but *The Motor Cycle* enjoys an exceptional advantage in this respect, as it has been established in response to a very widely-expressed desire. At the present time there is no journal which deals wholly and solely with the motor cycle and motor cycling, and this is the gap we have decided to fill in response to the general request to which we have just referred.

Motor cycling as a pastime is now firmly established, and its votaries are sufficiently numerous to claim a journal devoted entirely to the special subjects of interest to them. In its early days motor cycling was regarded either as a special branch of cycling or motorcaring; but it has developed so rapidly that it is impossible to deal with it adequately in a cycle or autocar publication, as there are many people within the ranks of motor cyclists who are not much interested in pedal cycles, and who are well aware that the motor car, even in its most inexpensive form, is entirely beyond their reach from a monetary point of view.

The main points of the policy of *The Motor Cycle* will be:

- (1.) To give practical and useful information to motor cyclists.
- (2.) To explain the working of the motor and every part of the machine in the clearest possible manner.
- (3.) To describe new inventions and improvements.
- (4.) To record all matters of interest in the motor cycle world.

- (5.) To promote the exchange of ideas and useful information between motor cyclists.
- (6.) To reply to queries. (*See page 19.*)
- (7.) To help the motor cyclist to get the utmost enjoyment from the pastime.
- (8.) To bear in mind that many motor cyclists are not in receipt of large incomes.
- (9.) To foster motor cycling in every possible way.

We say nothing about assisting in the development of the industry of motor cycle building, as it is agreed by all who understand the subject that the strengthening and fostering of the pastime must of necessity benefit the industry.

We do not believe in making great claims or promises, as we hope that *The Motor Cycle* and its policy, which we have attempted briefly to outline, will appeal at once to votaries of the pastime. It will not be our fault if this is not the case, and we shall always welcome suggestions from our readers. Whether they can be adopted or not, they will be none the less appreciated, and it will be our constant effort to improve and strengthen the paper in every possible way, so as to ensure its being more and more acceptable to its readers.

No. 1 necessarily lacks certain features which will characterise later issues; but we have determined to abstain from the objectionable practice too often followed of using "dummy" letters, queries, etc., so as to make a paper complete from No. 1. These features will develop naturally with the paper. They will not be simulated, but they will be heartily encouraged, as we believe them to be some of the most important sections of a medium devoted to the encouragement of a new pastime, and we feel sure we can depend on the cordial co-operation of our readers in these matters.

MOTOR CYCLE MONSTROSITIES.

By H. O. Duncan.

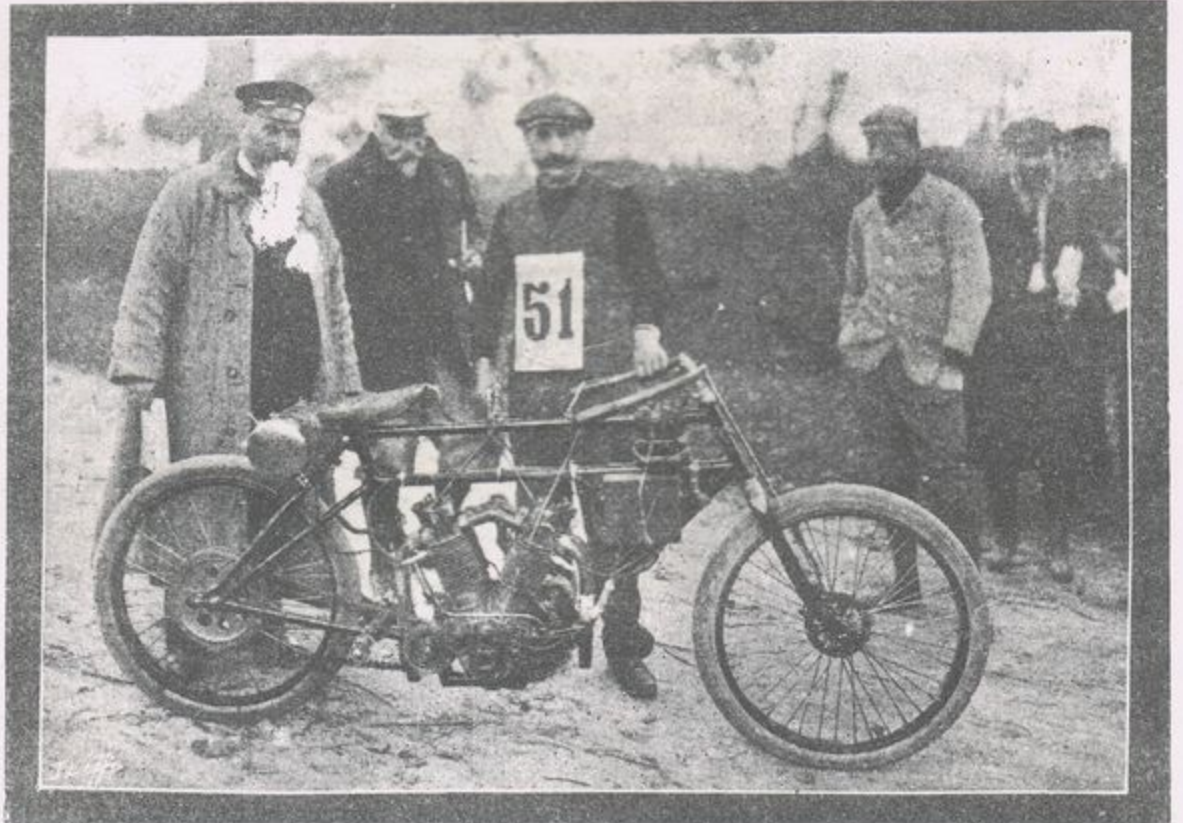
PICTURE to yourself a motor cycle fitted with four huge cylinders, long raking handle-bars, exaggerated petrol tanks, hideous silencers, etc., such as made its appearance to compete in the hill-climbing competition at Gaillon last season, not to speak of half a dozen other weird monsters of the same type and similar eccentricities, which also turned up on the same occasion.

No one who has even an elementary knowledge of what a motor cycle should be imagines for an instant that the construction of machines of the above kind will help on the evolution of motor cycles for practical use; but, supposing a machine of this description had managed to rush up the St. Barbe Hill in the quickest time on record, what flaming advertisements would appear in the Parisian dailies, puffing up the speedy nature of the brute, and very possibly referring to the supreme and excellent qualities of the construction, with a view to quietly foisting on the market an entirely different article.

The 1903 catalogue will include the list of competitions won on the "Bluff" machine, amongst which will appear, "First Prize—Gaillon Hill-climbing Contest, in record time, beating 40 h.p. motor cars."

The 1903 private purchaser will be in total ignorance of the monstrosity that in reality "did the trick," but the manufacturer has obtained his point in the way of utilising a freak machine, which no sensible man would ever purchase, to advertise his

wares! In all probability the standard $1\frac{3}{4}$ h.p. motor bicycle placed upon the market would not get halfway up the hill without the assistance of laborious pedalling, and in all probability would stick halfway. The owner would have to dismount and push, or, possibly, call in the assistance of the small boys, who for a few pence "represent extra



The four cylinder Clement; weight 2 cwt. 0 qr. 13 lbs.

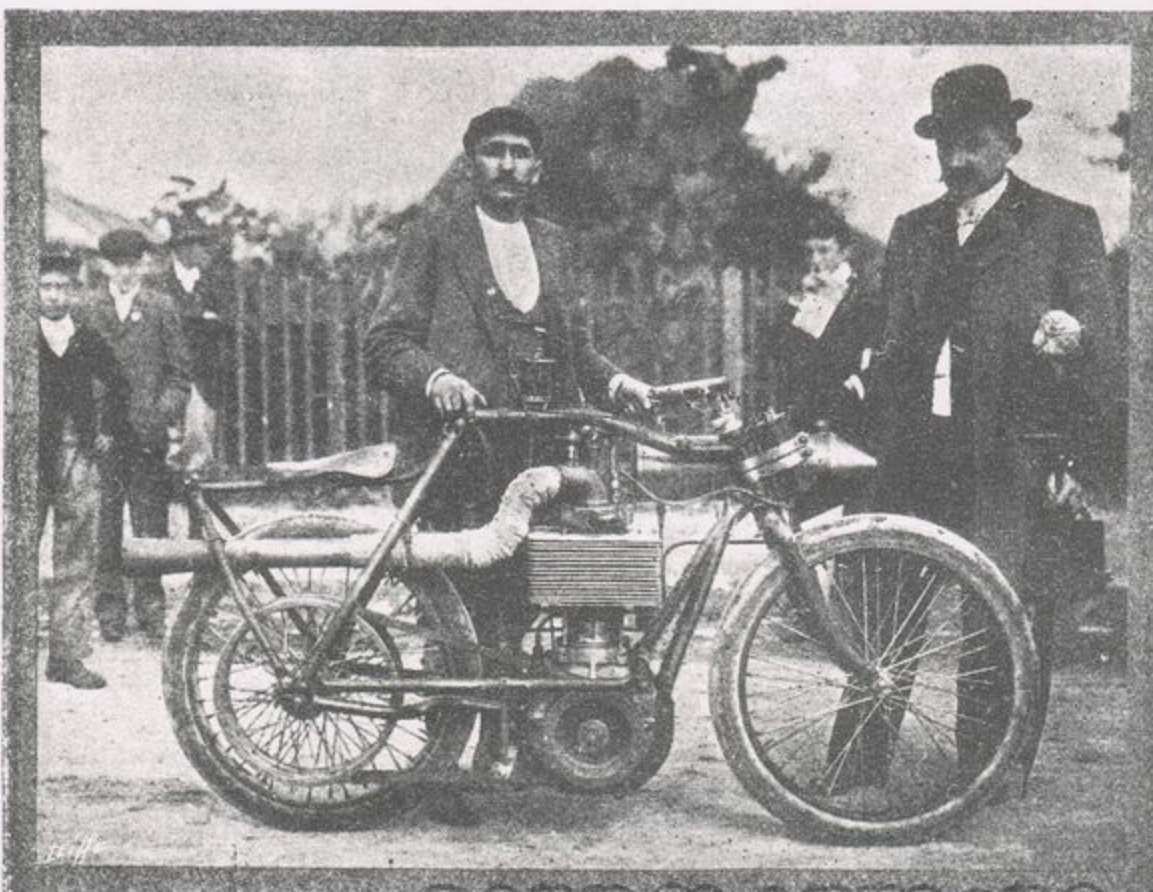
horse-power for weak motists" on Sundays and fête days!

Taking another view of the situation, what mechanical or commercial value can be placed upon these monstrosities, used as they are upon a straight mile or kilometre, or, what is an even worse test of their efficiency, upon the cemented racing paths.

They certainly do harm to the sport, and even more to the pastime, from the mere fact that the spectators, seeing a motor bicycle, perchance for the first time, get quite a wrong impression as to what the ideal machine should in reality be for daily use and for touring purposes. The non-spectators or likely purchasers are apt to be led astray by the "fictitious advertisements" which are often the outcome of these competitions.

Such machines may produce a "new sport," but no one can say such monstrosities used in competition do good to the industry in finding out "weak points" in the motor or in the machine, in order that the manufacturers may rectify the defects before the standard model is manufactured.

We all admit the beneficial results of the experience gained from the big long-distance races—Paris-Bordeaux,



The Gamet; the motor develops 16 h.p., and the total weight is 2 cwt. 3 qrs.

Paris-Marseilles, Paris-Berlin, or Paris-Vienna. These celebrated contests made the motor car what it is to-day—a practical touring vehicle—as all kinds of defects, such as bad material, wrong designs, and inventive fads, were brought to light or remained *en panne* by the roadside, for the ingenious to ponder over their errors or to mature ideas and inventions for alterations and improvements.

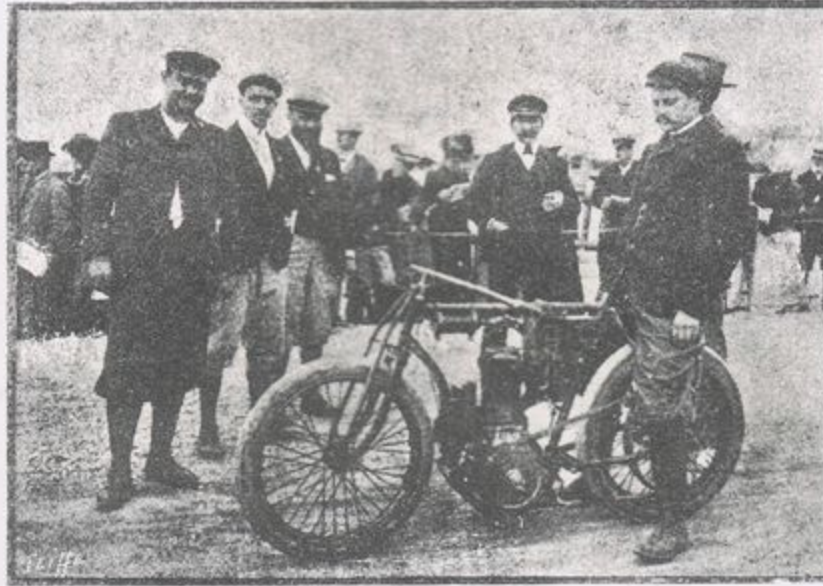
These are well-known facts, which must appeal to all practical minds, and the importance of them is realised throughout the industry. It appears to me that the practical and businesslike way in which most motor car races, contests, or competitions are usually carried out should not be made an excuse for the absurdities of the motor cycle monstrosities.

The cycle industry has been in existence for a great number of years, and from time to time important improvements have been introduced. until to-day a

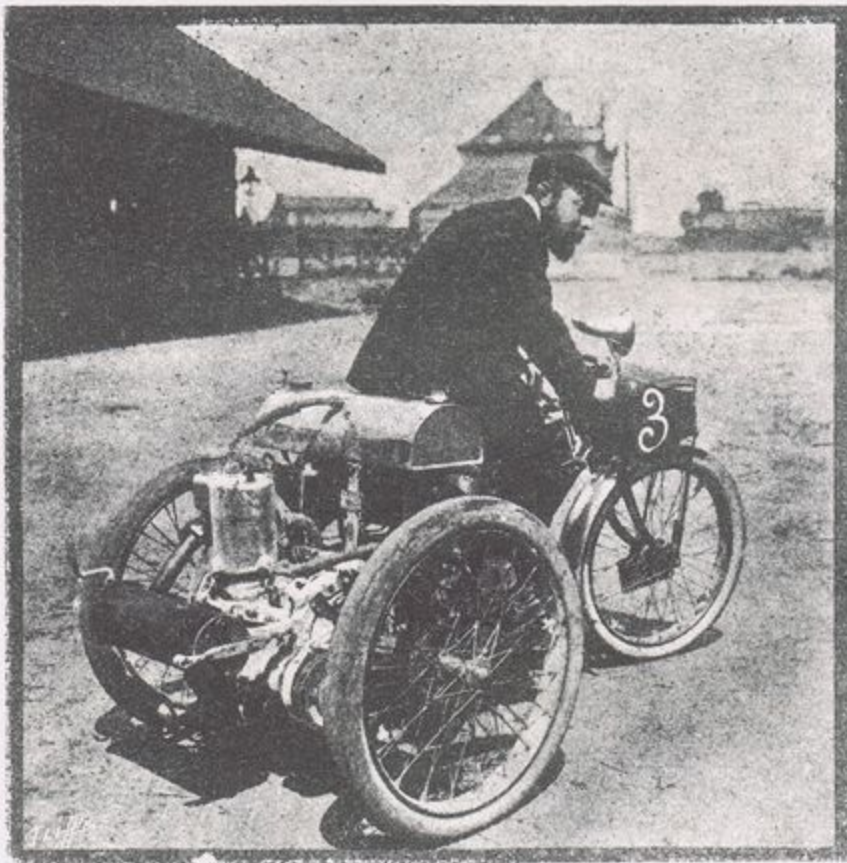
posed to vary between 1½ h.p. to 3 h.p.; consequently it is quite unreasonable to find firms turning out racing monstrosities of the description named in this article, which do a considerable amount of harm to the sport, pastime, and industry. As previously mentioned, the public are led astray by fictitious advertisements, by false announcements in catalogues, and the motor freaks in question create a wrong impression generally upon spectators at race meetings or competitions, exactly like the tricycle

within these last few years, which has been almost “killed” in France by over-powered motors.

About eighteen months ago, it will be remembered, a certain inventor appeared at Gaillon for the hill-climbing contest with a terrible elongated-looking vehicle fitted with an enormous motor, and did fast times up the hill, beating legitimate racing cars and other competitors. The “inventor” responsible for this awful fad was led astray by the publicity



The Demester monster.



The Korn tricycle.



A racing Lamaudiere.

pedal bicycle or tricycle is an instrument thoroughly well known and appreciated in every little detail. The bicycle of to-day has undergone many modifications, and is the outcome of many years' experience gained not only in the drawing-office and workshop, but from races and competitions on the path, road, and hill-climbing contests. Numberless fads, inventions, and also monstrosities have seen their day and disappeared, but the accepted design of bicycle has always proved its superiority upon the racing path and road.

My point is, we all know what a bicycle is, and we also know that the horse-power of motors must attain a *standard marketable limit*, which is generally sup-

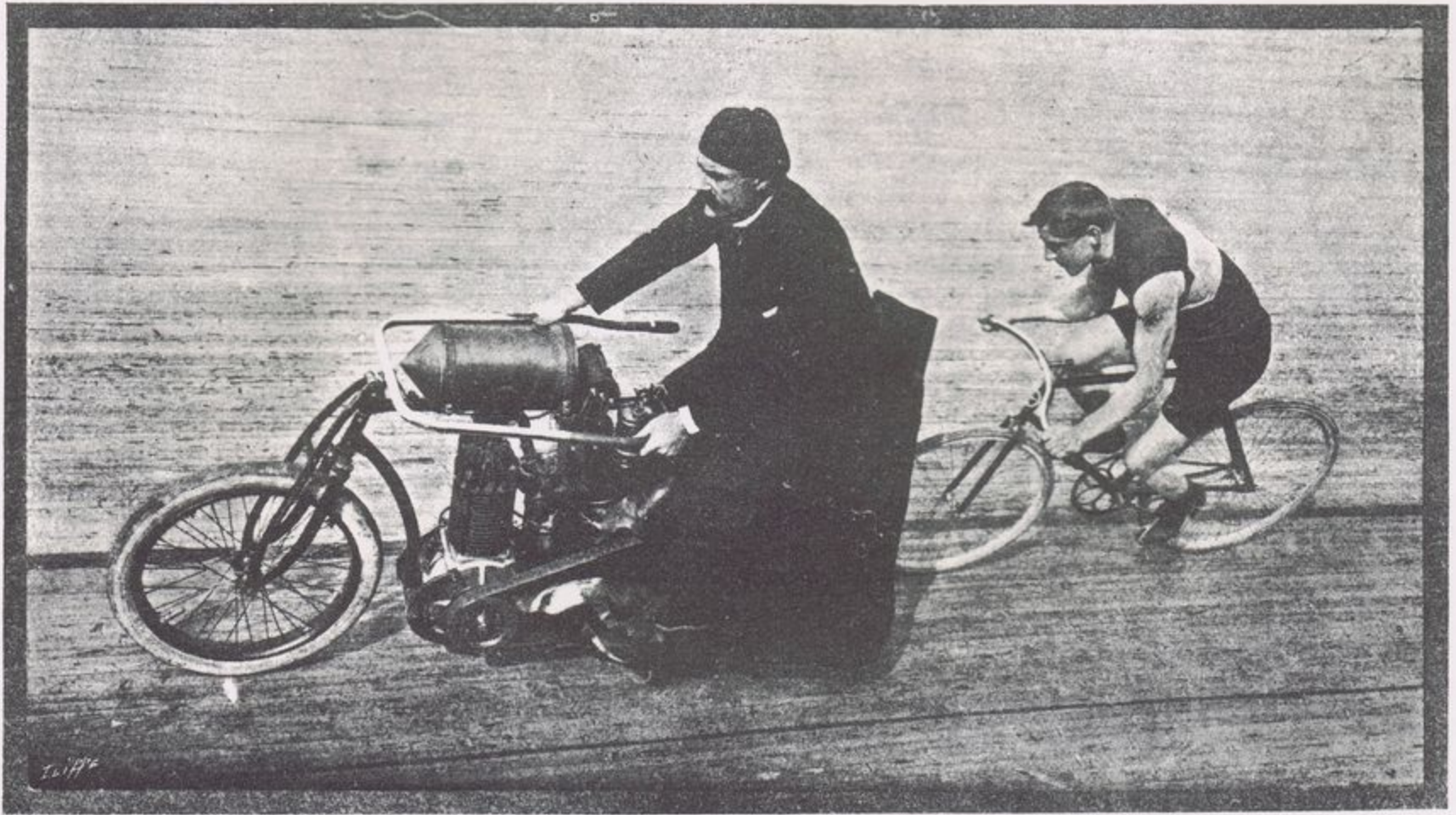
given at the time to such an extent, in fact, that he called upon me at my office. To my great surprise, the object of his visit was to ask me in all seriousness if I considered it worth my while to sell the patents (?) to an English syndicate. Never was I so astounded, as it did not say much for the inventor's idea of British commonsense. A racing man recently appeared at Dourdan upon a 32 h.p. monster tricycle to attempt to beat the world's records, as an advertisement for a certain make of motor; but for all practical purposes, what would such records prove?

If photographs could be secured of all of these machines—we only give a few—and reproduced,

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it would give the public a good idea of how some firms obtain these so-called "records" with the aid of these "unsightly brutes." In other words, it would prove that widely-advertised records have been secured by machines upon which no sensible man would care to risk his neck, and the Paris-Vienna race showed monstrosities were not necessary.

It would be a good thing if the automobile clubs would resolutely refuse to time officially all monstrosities, and to discourage the use of such machines, and, in fact, disqualify them from taking part in any official competition. Their presence upon any occasion is absurd and ridiculous, and, personally, I should blush to have to manipulate them.



An 8 h.p. pacing motor bicycle with wind shield.

A Word for the Tricycle.

THE original form of tricycle as first introduced by the De Dion-Bouton Co. seems almost entirely obsolete. The first machines, fitted as they were with a straight front fork, were certainly somewhat nerve-shattering; but the later designs were far more comfortable, and it is difficult to understand the decadence of the tricycle. It had many points in its favour—absolute immunity from sideslip, a direct spur gearing which transmitted a very large percentage of power; in fact, with a little $1\frac{3}{4}$ h.p. De Dion tricycle we have covered some thousands of miles with satisfaction and pleasure, and have never been "hung up" on the road by any fault of the machine. Detail derangements have stopped the engine occasionally, but they have always been trivial matters which with a little practical thought were easily and quickly rectified. The only repairs have been a new spur wheel and a new pinion, an exhaust valve and springs, and small etceteras; no vital part has ever broken. The tyres—65 mm. x 650 mm. Clipper-Michelin—are still good; but we attribute this partly to the fact that the side wheels have from the first been fitted with Smith's bands, and also that the tyres have been occasionally removed for examination and the air tubes rubbed over with French chalk, and the inner surface of covers treated in the same way. All cuts were also cleaned from grit

and treated once a month with solution, and pressed together as soon as tacky, making a sound joint, thus preventing damp penetrating to the fabric. To the Longuemare carburetter we fitted is also partly to be attributed the excellent results obtained from so small a powered engine, which over a give and take course has averaged easily from eighteen to twenty miles an hour, and only required pedal assistance on very exceptional gradients. It is an experience that certainly speaks volumes for the excellence of the De Dion workmanship, even in the earlier days. The tricycle is not dead by a long way, as its stability must tell with all-the-year-round riders; but the modern three-wheeler is a much lighter and more handy machine than the French tricycle ever was.

A MUD SPLASH.

With the exposed plug on the motor cycle, a puzzling short circuit may sometimes occur on the sparking plug surface, owing to a "blob" of mud thrown up by the wheels sticking to the porcelain and thus forming a conductor for the high tension current, which, instead of jumping the points inside the combustion chamber shorts to earth through the mud. It is a very good plan to take a piece of ordinary rubber gas tubing and slip this over the plug, protecting it from mud and rain.

CARBURETTERS : SURFACE AND SPRAY.

THE name carburetter is really of French origin, the French word being "carbureteur," meaning a mixer. There are two well-known types, viz., the surface and spray, with innumerable modifications. We will deal first with the surface type, and it is the purpose of these articles to treat principally with a full description of the working parts of each, with illustrated drawings. No attempt will be made to deal scientifically with the matter, our wish being first of all to acquaint our readers with the little troubles and faults they may find in the existing patterns on all types of machines.

The first thing that strikes the beginner on seeing this mixer and storage tank combined (for that is what it really is) is its peculiar shape. This has nothing to do with carburation, and is simply a matter of convenience to the designer of the machine. It will be noticed, on reference to the sketch, that the outline follows the diamond of the rear part of the tubular frame of a motor tricycle.

The vaporising in this form of carburetter is as follows: The tank is first filled with spirit to a point level with its greatest area, which amount generally lasts for about sixty miles on a 1 3/4 h.p. tricycle; if only required for a short run, a proportionate smaller amount can be used, the baffle plate B, to which is connected the air intake chimney or tube C, being lowered close to the surface of the spirit, the correct distance being found by the height of the wire attached to the float D. When this wire protrudes about 1/2 in., the plate is quite close; when the wire is about 1/2 in. below the top of the tube, the plate is a corresponding distance from the surface of the spirit. It will be found that on a cold day the plate requires to be nearer the surface, to enable the current of air drawn over the spirit to take with it a greater quantity of the vapour thrown off by the spirit.

In warm weather, the spirit will throw off more vapour than in cold, and consequently the air current can be further above the surface.

On the suction stroke of the engine, a partial vacuum is created in the space above the spirit, and to replace this air rushes in by the chimney or tube, is deflected by the baffle plate all over the surface of the spirit, and gas is formed by the mixture. This mixture is not always explosive, and to make it so the chamber E comes into play. It will be noticed that F is a valve communicating with the atmosphere, and also with the interior of the tank or case. It consists of a small tube with two holes opposite each other, drilled at right angles to the main hole in the tube. The outer barrel has two corresponding holes drilled in it, and the interior being caused to rotate closes more or less the two holes in the outer barrel. For example, if the hole communicating with

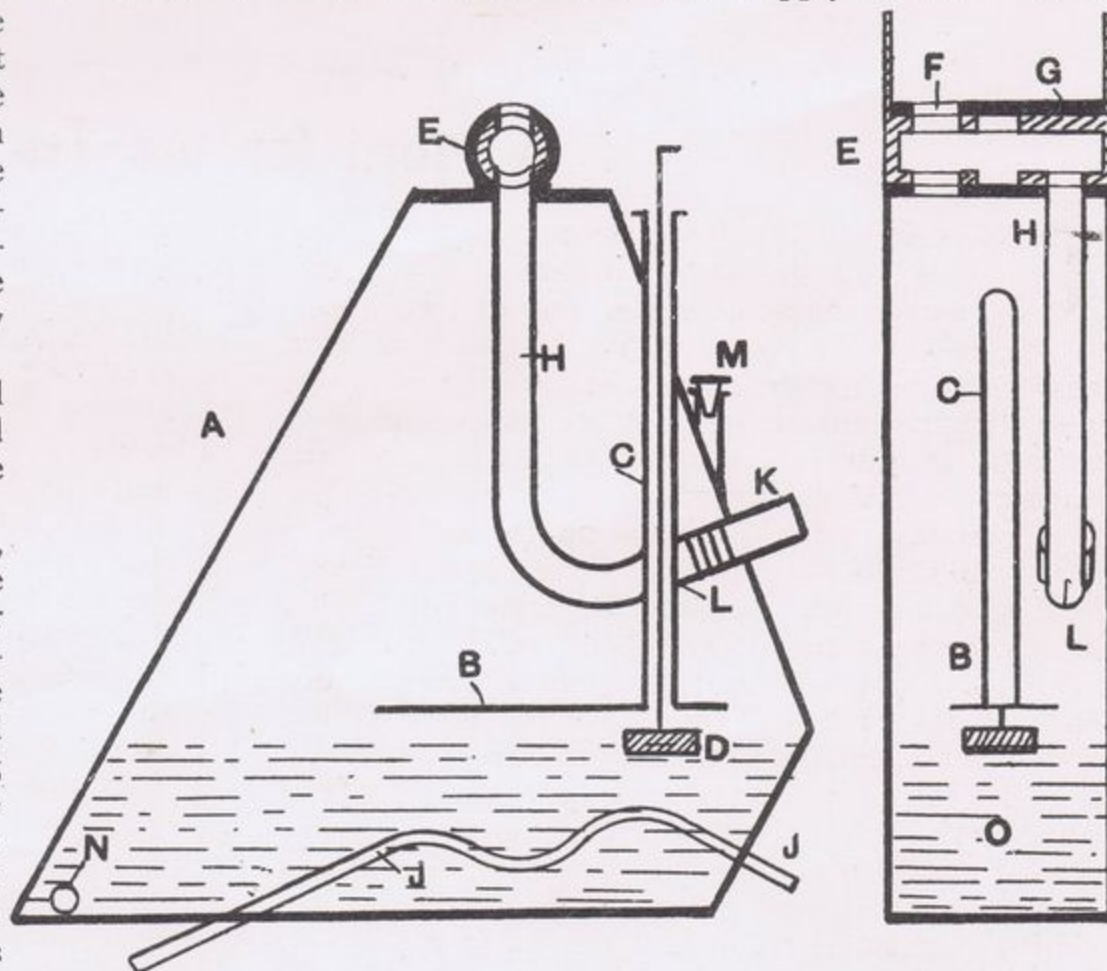
the atmosphere is entirely open, pure air will be drawn in, the hole to the tank being closed. Now adjust the tube so that it is half open, and the hole to the tank will be also half open. The result is that the mixture on its way to the engine is impregnated with a sufficient quantity of pure air to render it explosive. This explosive mixture passes across E and down G, where the volume is controlled by a tube having one hole only, which tube being rotated covers more or less the top of pipe H, where it issues from the tank.

The advantages of this type are simplicity, strength, and few parts to get out of order. The disadvantages are bulk, weight, and the necessity of a constant adjustment of E to keep the explosive mixture constant.

By careful use, the spirit can be used right up, particularly in warm weather; but the following hints are useful to the beginner:

Use the best spirit obtainable. Always cork up the chimney when not running (and remember to take out cork before starting). On a cold day, before starting, push the chimney right down, and agitate the float wire up and down. This stirs up the spirit and makes it give out more vapour.

Most machines fitted with this type of mixer have a spare tank fixed to the stays, and communicating with it by means of a pipe and stop valve. When so fitted, the tank should not be filled up to the level shown in sketch, but a fresh supply can be let in from



The De Dion Carburetter.

- A. The tank of case containing the spirit.
- B. The baffle plate.
- C. The chimney or air intake.
- D. The float to indicate height of petrol.
- E. The mixing valve.
- F. Additional air intake, controlled from top tube.
- G. Throttle valve controlled from top tube.
- H. Gas pipe passing right through the case or tank.
- J. Tube connecting to exhaust pipe to keep spirit warm during cold weather.
- K. Union connecting gas pipe to inlet valve of engine.
- L. The safety gauze to prevent backfires igniting the vapour in the tank.
- M. Filler or connection to spare tank.
- N. The waste outlet.
- O. Needle valve for supplying carburetter on Minerva.

time to time, so keeping the spirit fresh. The roadside troubles likely to take place are few. The writer has had the following awkward incidents take place: Valve chamber E screwed on wrong way about, *i.e.*, throttle where mixer should be, and *vice versa*. Remedy—Change it.

Baffle plate B come off tube. This is bad, as the case has to be unsoldered to get at it.

Heating tube J spring a leak; also bad, as the case has to undergo the same operation.

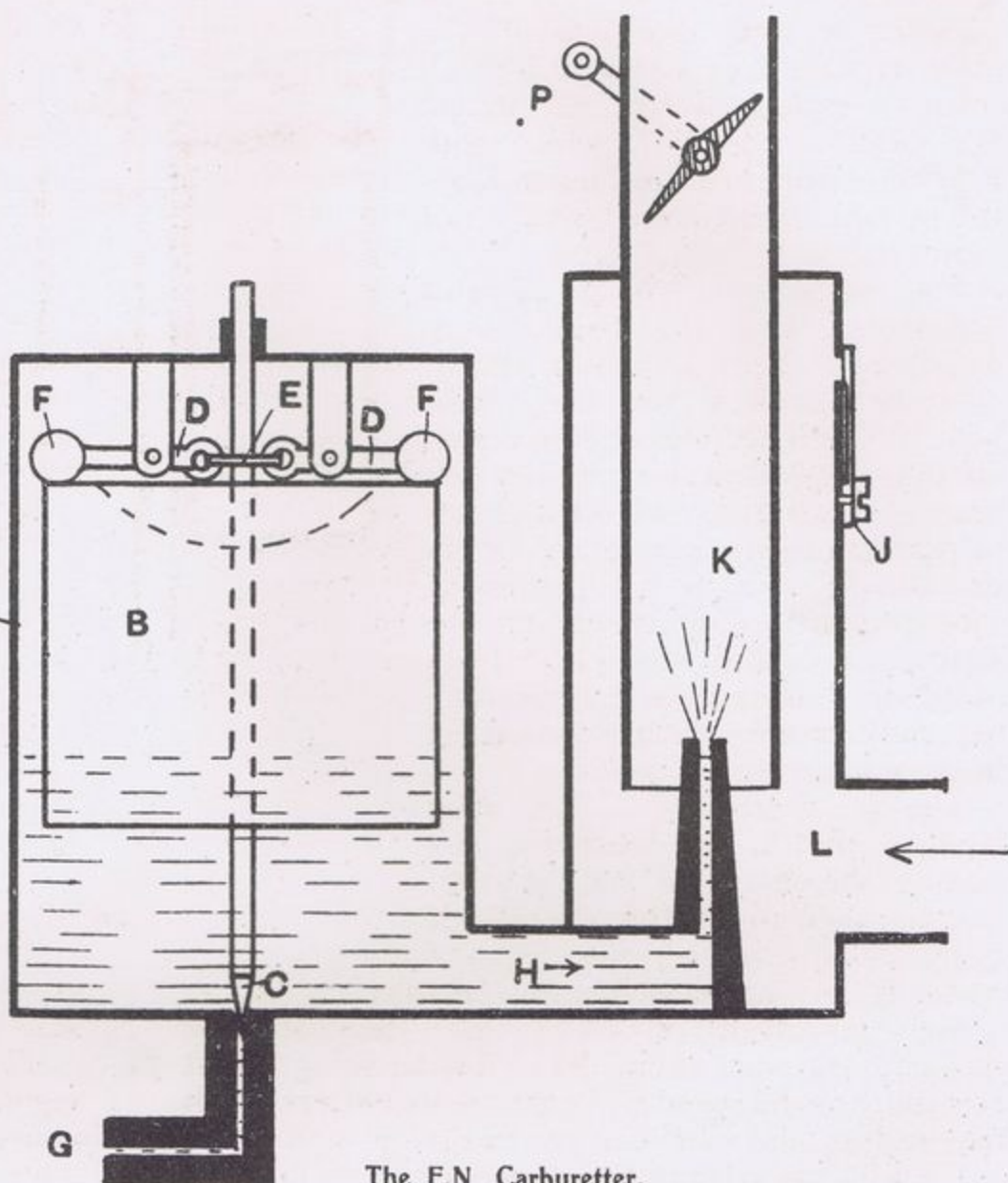
Safety gauze in gaspipe stopped up with fine particles of verdegris. Remedy—Unscrew union K and screw out plug containing layers of gauze, and wash it in petrol.

Flooding through leaving feed valve M of spare tank undone. This is caused by forgetfulness, or by the locking-screw coming undone from vibration. The spirit can be drawn off at the waste tap N and poured back into the spare tank.

The Minerva Surface Carburetter.

This is practically the same as the De Dion, and only differs in one point, *i.e.*, the air, instead of being drawn over the surface of the spirit, is drawn down and through it, as indicated by the bent arrows shown in sketch.

The mixing valve is to all intents and purposes the same, but the warming pipe from exhaust is omitted by the makers, and as a substitute the silencer is fitted close under



The F.N. Carburetter.

that part of the tank forming the carburetter.

There is no doubt that the above forms of carburetter have given every satisfaction to hundreds of users, but owing to various reasons the spray or atomising type is very much more generally used on the latest types of motor cycles.

Test of the Two Systems.

We do not propose to enter into a lengthy discussion on the merits of any one type, but we think we may do worse than give the following particulars of tests recently made on the brake with two of the leading types of surface and spray carburetters.

The motor used was a 2 1/4 h.p. air-cooled De Dion made by De Dion-Bouton and Co., Paris.

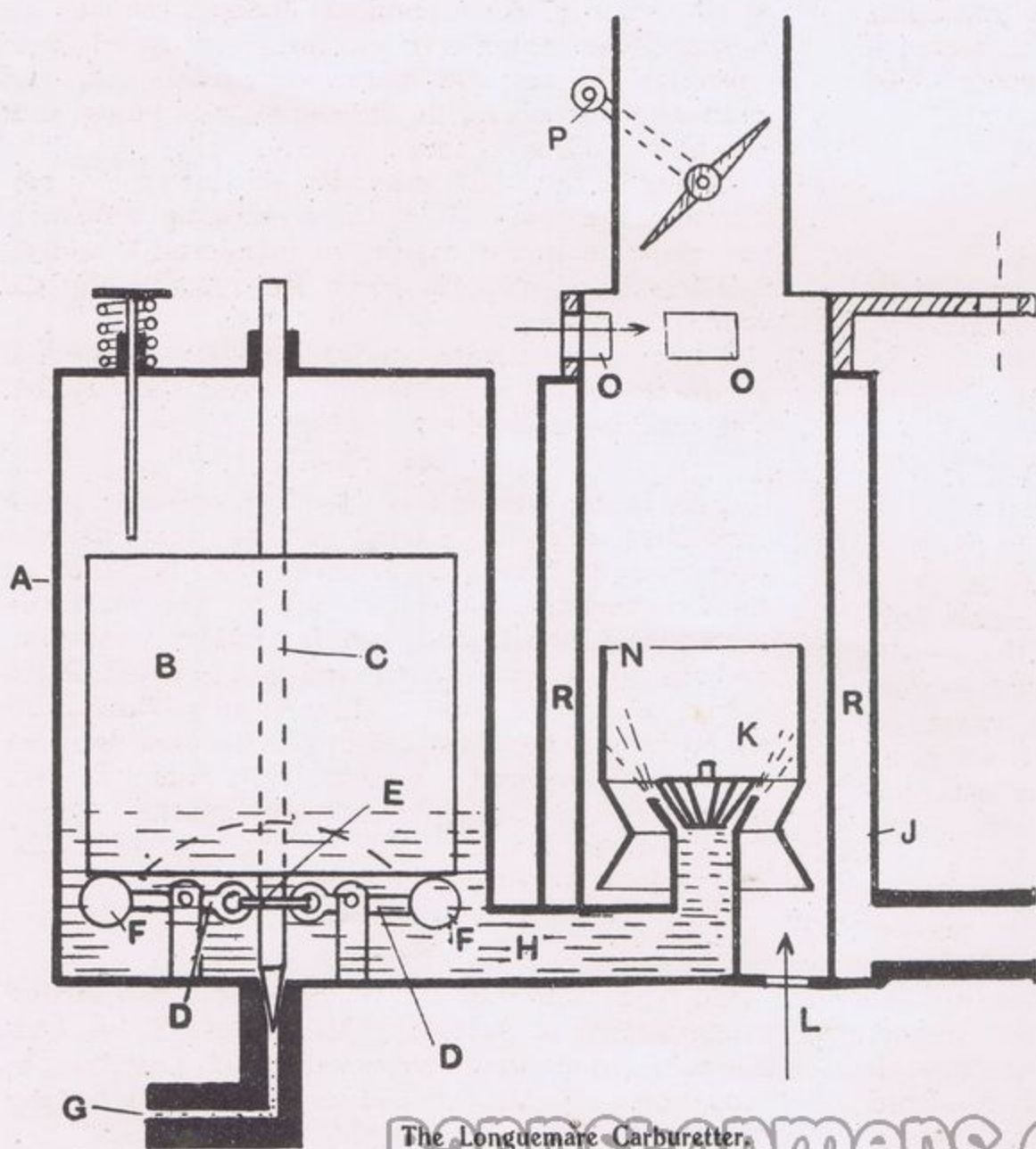
Surface Carburetter.

In four trials at an average speed of 1,500 revolutions, the actual horse-power developed was 1.56.

Float Feed Spray Carburetter.

In four trials at an average speed of 1,500 revolutions, the actual horse-power developed was 1.95.

The names of spray carburetters or atomisers are now legion, and various are the devices for ensuring a steady and constant flow to the spray hole, holes, or nozzle. The progenitor, so to speak, of all these types is the Phoenix Daimler single spray, con-



trolled by a float feed. It is interesting to note that one of the most popular types now sold is to all intents a replica of this old design. We speak of the F.N., which with only the slightest alterations is fitted to several well-known makes of motor cycles.

We include a drawing of this carburetter, also the Longuemare, and one of the best known spring-controlled devices, viz., the "Roubeau." There are also various screw-controlled needle valve devices, but none of them give the same results in practice, unless controlled by an expert, and, owing to the liability of the springs to lose the exact tension at which they are set, the flow of spirit is likely to be greater than necessary, or not sufficient, according to circumstances.

The great advantage of a float feed is that it is automatic, and whether the engine is making 1,000 or 2,000 revolutions, the amount of spirit drawn through the spraying nozzle is only just sufficient for the speed.

Many experts will remark Ho! ho! when they read this, and ask what about the air intake being varied according to the speed? There are vaporisers which require this, and there are others that do not.

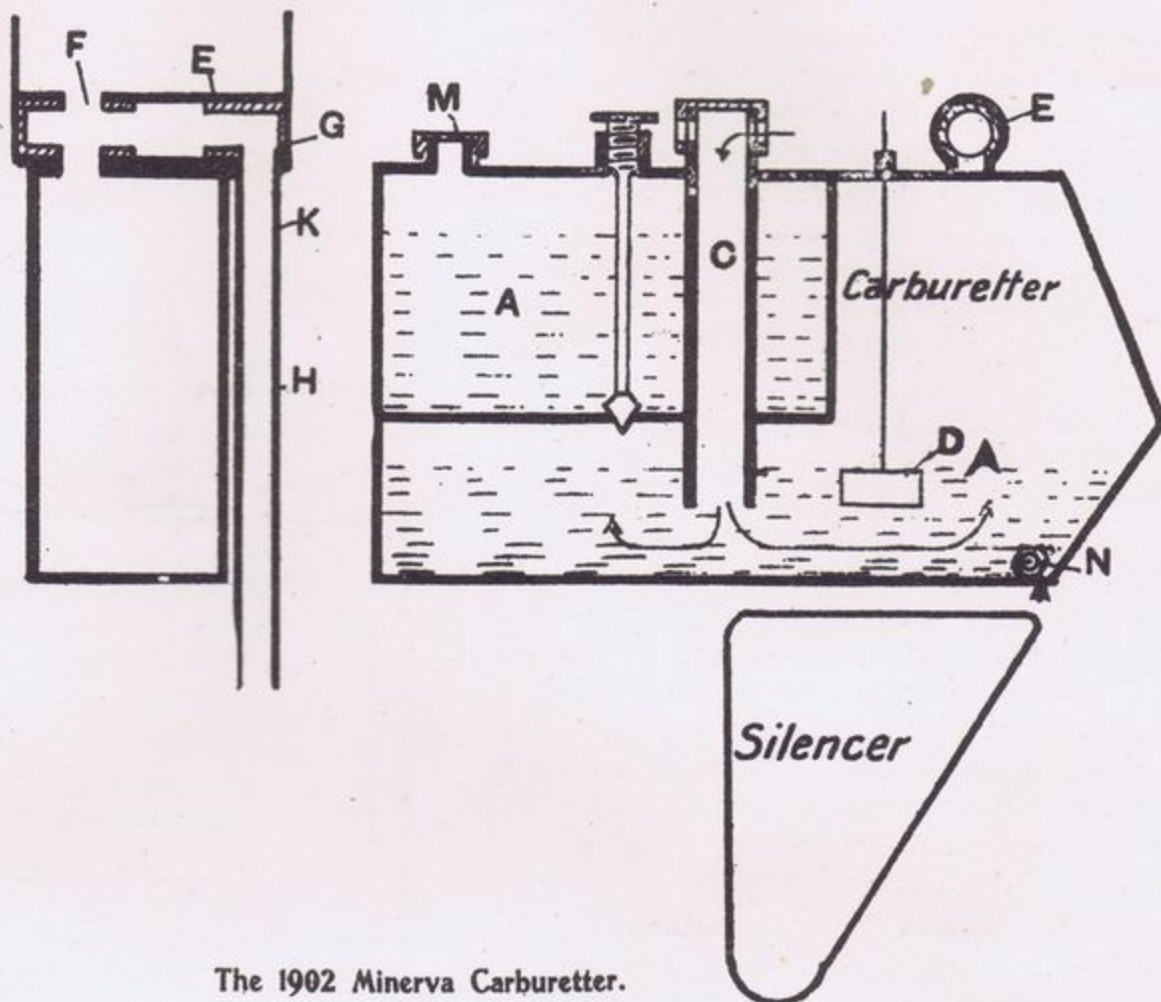
We will now refer to the sketches of the Longuemare and F.N. The Longuemare, like its parent the Phoenix, consists of two vessels, one containing the float and needle valve, the other an atomising chamber. The chambers are castings in brass; if made in iron the spirit would rust the interior. The float chamber consists of the following parts:

- A. The body.
- B. The float (a hollow brass box).
- C. The needle (made of nickel steel).
- D. The levers or arms on which the float rests.
- E. The collar on needle on which the levers work.
- F. The balance weights at the ends of the levers D.
- G. The brifice through which the spirit flows when the needle rises and permits it.
- H. The orifice through which the spirit flows to the vaporiser.

The vaporising chamber consists of—

- J. The body.
- K. The sprayer or nozzle.
- L. The air inlet hole or holes.
- N. A copper tube surrounding the nozzle for the purpose of contracting the air intake.
- O. Slots in the body above the nozzle, adjustable at will.
- P. A throttle valve in the gas pipe
- R. Heating jacket, warmed by a branch pipe from exhaust.

The action is as follows: Spirit feeds to G by gravity; when A is empty the balance weights hold the float B down, and spirit flows past the needle valve G until the body is full to a point slightly below the level of nozzle in body J of the vaporiser. The float is now raised, and when the above point is reached the float acting on the arms attached to the needle depresses this latter and shuts off the spirit. Immediately the spirit sinks below the proper level in the nozzle at which it can be drawn from the hole, the float descends, lifts the needle, and more spirit flows into A and correspondingly to J and K. The moment the spirit issues from K, whence it is drawn by suction from the engine, it is met by a current of air rushing up through holes L and between N and K. It becomes mixed with this air, and is whirled up pipe to O. Here it



The 1902 Minerva Carburetter.

is met by more or less fresh air drawn in through slots O, and passes to engine in the form of gas.

The slots O really form a double purpose: They regulate the amount of fresh air supply drawn in above the spray, and they also, when full open, reduce the rush of spirit at high speed, and when closed increase it for slow speed. The air intake below the spray will always induce a greater rush of spirit than a corresponding opening above it; hence, if the engine is to start at a slow speed, these openings O must be closed, or partly so, and gradually opened up as the engine gets going until the best position is found.

Owing to the rapid induction on this type of carburetter, the body J requires warming, otherwise the moisture in the air drawn in around O and L will freeze and stop the spirit from giving off the required vapour.

Various-sized nozzles and tubes N are supplied by the makers to suit different cylinder capacity, but this is a matter for the assembler.

The F.N.

This mixer consists of the same parts, which have been lettered the same, but the nozzle has one hole instead of five, six, or seven finer holes, as in the Longuemare, and the spirit impinges on an inverted cone (not shown). The air intake is constant, and the pipe conveying it is led to a hot part of the engine or exhaust pipe. There is an additional air supply above the spray, but in practice this does not seem to be required. It is probably useful in very hot weather or at exceptionally high speeds. Owing to its position, it would require setting before mounting, as it is not accessible from the saddle.

(To be continued.)

On April 27th Mr. W. W. Beaumont will lecture at the Society of Arts on "Mechanical Road Carriages." Admission is by ticket, which can be obtained on application to the secretary of the Society of Arts, Duke Street, Adelphi, W.C.

SPARKLETS.

Good roads and good weather for Easter are all the motor cyclist asks.

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A tame genius of our acquaintance proposes to charge his accumulators by surreptitiously obtaining current from an electric tram wire.

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Horses in the past two or three years have become exceedingly docile, as regards the motor. In a ride of a hundred miles last week-end not one animal—and a very large number were passed—took the slightest notice of the rhythmical beat of our engine. The nervous motor cyclist need have no fear, therefore, of the risks of accident from startled horses, as was the case a year or so back.

+ + + +

To those who propose mounting a motor bicycle for the first time, we offer one most important piece of advice, "Go slowly round the corners"—as one of our staff has a most vivid recollection of only escaping a dive through a large plate glass window by allowing his motor bicycle literally to jump on to the side walk, and of then finding himself running on for some fifty yards or so with his handlebar almost grazing the fronts of the houses. The old and experienced cyclist, accustomed as he is to riding a machine weighing from 30 lbs. downwards, realises, perhaps, even less than a novice, the immense amount of dynamic energy stored up in a motor bicycle with its additional weight of from 70 lbs. to 80 lbs.

REPAIRING TYRES.

Even those old cyclists who are thoroughly practised at repairing the pneumatic cycle tyre are somewhat non-plussed when dealing with the motor cycle type for the first time. Owing to the petrol, accumulator and lubricating oil, to say nothing of the weight, the machine cannot be turned upside down. In lieu of having portable jacks fitted, such as McCurd's arrangement, a good length of stout wire should always be carried, and with this the cycle can be slung up to some handy projection such as a branch of a tree or gateway, when the repair can be made. Many motor cyclists, however, consider it is quicker and far less trouble to detach the wheel entirely from the frame.

CARBURETTER RELIABILITY.

That the Longuemare carburetter is most reliable, and can be depended upon to carburise almost any density of petrol, is evident from the experience of one of our staff. The carburetter in question is one of the old form of Longuemare fitted to a tricycle. This had been standing for some six weeks, and the main petrol tank shut off. A small amount of petrol remained in the float chamber, and without allowing any fresh petrol to flow in from the tank, the tricycle fired straight away at the first thrust of the pedals. The impression at first created was that there must at least be a leak from the main tank to carburetter, but this proved to have a perfectly petrol-tight cock. By the way, the manipulation of this old form of Longuemare's two levers required a good deal of learning—one lever for gas, the other for air, no throttle—to get the best results, but once mastered it is surprising what it will do, and the tricycle in question, only 1½ h.p., simply romps up anything up to one in ten, if not too long, where in the old surface type it would not look at anything stiffer than one in twenty.

THE POSITION OF THE MOTOR CYCLE.

By George Lacy Hillier.

THE student of the history of the sport of cycling is cognisant of the fact that almost every novelty when introduced has had a certain amount of opposition to encounter, has been criticised unfavourably, and, as a last resource, has been referred to as possibly resulting in the annihilation of one or other of the popular forms of cycle. The reason for these arguments is clear. The expert with a certain apparatus, possessing no knowledge of the new apparatus, without doubt does best on the former, and his attitude is useful. Take, for example, the introduction of the safety bicycle. The best that could be done upon the earlier samples was not equal to the best that could be done on the perfected high bicycle. The fact is indisputable. The faults of the crude safety were patent and obvious—the sensitiveness of the steering, for example; but the criticism of the users of the high machine, and the demands of the users of the safety for improvement, soon produced the desired development, and the safety was improved in this and many other points until it finally ousted the high bicycle. What made the safety a final success, of course, was the introduction of the pneumatic tyre; but the pneumatic tyre was also criticised, and with good reason. Punctures and bursts were serious matters when the tyre was first introduced. The unrolling of its wrappings, the cutting and subsequent sewing of the canvas cover, were complicated and troublesome tasks; and the users of the cycle in those days for the most part preferred the certainty and safety of the solid tyre to the uncertainty and danger of the air tyre. This fact pointed to the necessity of improvement, and in due season improvement came. The machine has arrived at a point where any revolutionary departure seems impossible. It is dangerous to say so, because we were all convinced that the acme of perfection had been reached the day before the pneumatic tyre was introduced; nevertheless, except for detail improvements, the safety cycle of to-day appears as nearly as possible perfect in its main lines, and inventive genius is turning its attention to motor developments.

The motor cycle is going through the same series of changes. It has the immense advantage of starting where the man-propelled cycle left off. The experience of years in the building up of the ordinary cycle is at the service of the motor cycle maker, and with the modifications necessary to secure the provision of the required strength, the motor cycle is based upon well-known and tested lines. As usual, there are criticisms—the motor cycle is going to revolutionise cycling, to wipe out the man-propelled vehicle, to make the latter as rare an object on our highways as a high bicycle; all of which statements are simply nonsense. A large number of old-time cyclists are taking to the motor bicycle undoubtedly, and in their cases the motor bicycle is merely a stage on the road to a car; but a vast number of new recruits are taking to the ordinary safety, and that type of vehicle will not be superseded by the motor bicycle in the manner that the high bicycle was wiped out by the safety.

It is rather a matter for surprise that the motor tricycle has not had a longer run. Of course, the earlier specimens were crude, and gave a good deal of trouble; but the element of stability and the comparative absence of sideslipping dangers should have given the type a longer life, and it is not at all impossible that a revival may take place in this direction, for undoubtedly the sideslipping danger does exist, especially for those who are not very expert in the art of riding. The notable absence of motor cycles from the roads when the conditions are at all unfavourable is a proof that the danger is recognised, and it may

The Position of the Motor Cycle.

presently be met by the manufacture of motor bicycles with appliances for fitting two wheels in place of the single front wheel for use in bad weather.

The motor bicycle, though it will draw many recruits, of course, from the ranks of cyclists, will also create a class of its own. Primarily, the cost is beyond the means of many, both as regard the initial purchase and the upkeep and cost of use. Then there is the question of stabling; and, bearing in mind the fact that the storage of a petrol-driven motor in a dwelling house invalidates a policy of fire insurance, this will also somewhat limit its use. There remains, besides, a large class of persons who cycle for the exercise it affords—and albeit motor cycles on occasion afford a vast amount of exercise, when the machinery fails—and this class prefer the old and, at present, the more reliable mount. Despite the relatively short time the motor bicycle has been in use, it has developed with gigantic strides. It has in some forms become cheaper, whilst in other forms the cost has increased by reason of the improved and novel fittings which have been designed for it. This development has been relatively much more rapid than was that of the safety bicycle; but, as already pointed out, the makers have had a vast amount of detail work done for them by the cycle makers.

The tendency to increase the power of the engines fitted to motor bicycles is possibly to be deplored. High-powered engines call for more weight in the frame; and, after all, the ideal motor cycle should be a light vehicle, comparatively speaking. In fact, if it is wise to forecast the future, it seems probable that eventually more attention will be paid to keeping down the weight than to adding more horse-power to the propulsive engine; for, unless the vehicle is comparatively light and handy, its owner would be better suited with a light car, if he can afford it.

Throughout the whole history of cycling there has always been a desire expressed for some auxiliary power, and many more or less ingenious inventors have tried to supply the want. Now we have it supplied by the motor; but the added weight is too great to allow us to assert that it fills the oft-repeated requirements. If, however, motor cycle users will be content to accept a motor as an auxiliary—that is to say, will be content with a limited amount of power—there is no doubt that they will then be able to purchase a satisfactory machine at a comparatively low price which will not be over heavy, and which can be easily handled.

The fitting of motors to tandems is yet in its infancy. Very few have up to now been seen upon the road; but this arrangement will make a vast difference to many users of tandems who have hitherto been condemned to ride with a "passenger" instead of a working partner.

The position of the motor bicycle to-day, therefore, may be said to be pretty clearly defined: it is a vehicle which will tempt a certain number of old cyclists off the ordinary safety, a certain number of old cyclists back to the sport, and a certain number of new men into the sport; it will create a permanent class of cyclists, and will also form a channel through which a large number of people will pass to the autocar; it will not seriously affect a very large class of riders of the ordinary cycle, but it will do very useful work in experimenting with and developing parts and fittings for motor engines. The development of the cycle was brought about in this way: A man riding a cycle becomes of necessity observant, and the motor cyclist will develop a similar talent for recognising what he likes and what he does not like. He will demand what he wants from the motor cycle maker, and the maker will in due time supply it.

Improvements and developments are coming thick and fast. It will, I am told, be the programme of this paper to keep its readers informed of all such developments and to assist in every way in furthering the progress of yet another branch of sport, in the same way as *The Cyclist* has done good work for cycling, and *The Autocar* for the larger vehicle in the motor world.

Sparklets.—

Never attempt to test the accumulator with an ampère meter, unless through a resistance such as a four-volt lamp. Testing with an ampère meter on an open circuit will short circuit the cells, and in many cases irretrievably damage the accumulator by buckling the plates, owing to the rapid discharge.

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One of the great drawbacks to the accumulator is the risk of short circuiting. This can be easily and cheaply prevented by fixing an inch or two of fuse wire between one of the battery terminals and the wire in connection with it. The fusing of the wire and consequent break in the circuit demonstrate at once what has occurred. A length of this wire, which need not be more than a few inches in length, can be bought at any electric light shop for a few pence. Ask for wire that will fuse at from three to four ampères. It is also advisable to carry a few inches in reserve.

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Letters to the Editor should be addressed The Editor, *The Motor Cycle*, 3, St. Bride Street, Ludgate Circus, E.C.

CARRY A HALF-ROUND FILE.

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A most useful addition to the motor cyclist's valise is a small half-round file and a few pieces of thin sheet steel about 1-16in. in thickness. It is surprising how handy the file will be found at times, while the pieces of steel make useful cotters, wedges, etc., such as are required in the exhaust valve stem, below the spring and washer, etc. It is always as well to cut one of the small cotters as a spare ready for use, as there is considerable wear on this little piece of metal, and it is not pleasant to be "hung up" for such a trivial detail.

WEIGHTS AND MEASURES.

If British measurements, weights, etc., are puzzling to the foreigner, how much more so are the Continental terms of millimetre, kilometre, kilogramme, etc., distracting to the British motor cyclist, although once the foreign method is mastered, it is far handier, and will no doubt convert the motor cyclist to the metric system. A millimetre, it should be noted, is the one-thousandth part of a metre, which in British measurement represents 39.37 inches. That is, as nearly as possible, one millimetre represents 1-25th part of an inch. A kilometre is 1,000 metres, or in British, six-tenths of a mile. A kilogramme represents 2.2 pounds weight, and a litre 1.76 pints.

HOW TO REPAIR A BURST TYRE.

The worst form of injury to the motor or motor cycle pneumatic tyre is undoubtedly the burst. To the uninitiated this may appear an irretrievable disaster, as it is useless setting about the repair in the ordinary way by patching the outer cover and repairing the air tube. These two things, of course, have to be done, but owing to the weight the outer cover will not stand the air pressure at the weak spot, and a second burst is inevitable. There is only one way to make a good wayside repair to a burst tyre, that is, after repairing the outer cover by means of a supporting layer of canvas in the usual way, repair the air tube, and then inflate the air tube to the normal size it would be when inside the cover, take a length of prepared canvas, of which every motor cyclist should carry a roll, and wrap this carefully, solutioned side downwards, three or fourfold, round the injured portion of the tube. This method of repair will be found effectively to prevent a repetition of the burst, and the tyre will carry the motor cyclist hundreds of miles, if necessary.

Sparklets.—

One can keep the finger nails clean by just scraping them across a piece of common soap. It prevents dirt and grease getting under the nails when repairing or cleaning the motor cycle.

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We were shown last week by Mr. W. R. Thomas, of the Imperial Motor Co., Brixton Hill, S.W., a neat arrangement for controlling the speed of engine by regulating the exhaust valve lift. By means of a rod from the top tube connected up to an eccentric cam, or the two to one shaft, the valve lift is so controlled that more or less of the exhaust gases are retained in the cylinder, thus reducing the induction power of the piston.

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A WORD FOR DRY BATTERIES.

The old form of dry cell has been almost completely ousted by the accumulator, and it is very seldom it is found in use, except as a stand-by. The accumulator has, of course, smallness of bulk in its favour, besides having the reputation of giving a hotter spark; but we have had some excellent results from sets of dry cells on a motor tricycle, and they have one point distinctly in their favour—a maximum rate of discharge—so that the rapid short circuit is not fatal in an instant as with the accumulator.

SAND OR EARTH.

Remember that, however safe petrol may be with ordinary care, there is always the risk of fire from some unfortunate oversight, such as the unconscious throwing down of a match. Consequently, it is always policy to have a heap of sand, earth, or any equivalent, kept close to the motor cycle house. Water thrown on burning petrol will not extinguish it, but only add to the danger by floating the burning liquid. Always, therefore, smother petrol by means of sand or earth, or, in lieu of anything else, rugs or cloths.

TEST THE ACCUMULATOR.

It is always a good point to test the accumulator thoroughly on every occasion before going for a ride. Never take it for granted that, because since recharging you have only run a few miles, it is necessarily fully charged, as there may have been a leak. It is very little trouble to put a four-volt test lamp across from insulated screw on contact breaker to blade, taking care, of course, to place *touche* or interrupter plug in position, and switch on. The lamp glowing brilliantly, not dull, is a proof that accumulator and circuit are right.

A NEW PLUG.

The United Motor Industries have a very neat little plug specially adapted for use in motor bicycle engines, and which is known as the "Castle Durable."



The insulating matter of this plug is made of specially compressed mica, which, as is well known, is a heat resisting and high insulating material. The special feature about this, however, which will appeal to motor cyclists, is that the mica insulation is practically indestructible,

and the trouble arising from cracked porcelain from machine falling, or from its naturally giving way under high temperature, is overcome. The plug is particularly well made, and retails at a very moderate price.

MOTOR CYCLES AS A CLASS.

By A. J. Wilson.

THE opinion recently expressed by the chairman of the Automobile Club, to the effect that he anticipates that motor bicycles will exceed eventually in number any other kind of vehicle on the roads, is one which coming from such an authoritative source, should give encouragement to those bicycle makers who are vacillating in doubt as to the permanency of the pastime of motor cycle riding. It cannot be said that the motor cycle has hitherto received much encouragement from the moneyed classes represented by Mr. Roger Wallace, K.C., so that it must be taken as a proof of the inherent merit of the machine that it has forced its way into such popularity as to meet with such emphatic recognition in high quarters. The enthusiastic, yet well-reasoned, advocacy of such a gentleman as Mr. Mervin O'Gorman must go a long way towards removing the prejudice which has undoubtedly existed among a large number of automobilists who were prone to evince a feeling akin to intolerance of "the small fry of automobilism"; but it is to the increasing trustworthiness of the first-class motor bicycles that are now being turned out in such great numbers in this country that must be attributed the "boom" which has undoubtedly set in already, this present season.

It is strange to observe the efforts that are being made in some quarters to argue that directly a cyclist takes to a motor bicycle he ceases to be a cyclist, and becomes a motor man, taking no further interest in cycling and cyclists, but suddenly acquiring an absorbing interest in motor cars. We have heard it advanced in several quarters that the mere fact of a cyclist having a motor on his machine converts him into an engine-driver; with the same sybaritic tendencies as the driver of a luxuriously upholstered motor car. To bolster up this contention, the doctrine of "no pedals" is introduced, and prognostications are indulged in that before long motor bicycles will become so trustworthy as never to need the assistance of pedals. The lack-logic of this prediction is manifest when it is pointed out that the first motor bicycles ever made were made without pedals, and their few riders soon got so tired of the violently athletic pursuit of starting them with a running mount that motor bicycling made no headway at all—until pedals were added. We do not say that it is beyond the bounds of possibility for pedalless bicycles to become popular; but we do contend that up to the present there is a very large balance of argument in favour of the use of pedals, not only for starting purposes, but for use in traffic riding as well as hill-climbing. But, after all, even if pedalless bicycles were to predominate—even if they were to become universal—the art of riding a motor bicycle must always partake more of the nature of riding a bicycle than of driving a car. The rider of a motor bicycle must first learn to ride and manage a pedal bicycle; but the driver of a motor car need never have touched a bicycle in his life. *Ergo*, none but cyclists can become motor cyclists. This obvious truism is emphasised by the circumstance that practically every cycling club now has in its ranks some members who ride motor cycles. There is nothing incongruous in the sight of a club of bicyclists—some of them propelling their bicycles by muscular power at all times, except when free-wheeling downhill, while others adopt the artificial assistance of a motor which propels them most of the time—but directly a motor car is introduced, no matter how small, the incongruity is at once manifest.

The pecuniary phase of the problem is one which tells most in favour of the contention that the class of motor cyclists will always approximate more closely to the class of pedalling cyclists than to that of motor car drivers, because if we take the cost of

Motor Cycles as a Class.

a motor bicycle at, roughly, £40 to £50, the expense is a great deal closer to the cost of pedal bicycling than the expense of buying and using the smallest motor cars. Advocates of the "engine-driver" theory talk glibly about the small motor car of the future costing as little as £100 when made in large quantities; but we think that anyone who is acquainted with the quantity of material and workmanship required for the construction of the wheels, the chassis, the engine, and the body of even such a small motor car as will carry but two persons, must realise that when a fairly satisfactory car can be built for £100, an equally satisfactory motor bicycle will be built for less than £40 or £50. In other words, no matter what is the actual price of the machine, the smallest car must always cost double or treble the price of the bicycle, and even then the bicycle will be the faster vehicle, as well as the more convenient, for the people who cannot find accommodation for the bulkier vehicle. It is impossible at the present time to point to a single motor car on our market costing as little as £150, which can be regarded as on the same plane of excellence as the average motor bicycle; in other words, a small car may be said to cost from three to four times as much as a motor bicycle with trailer or forecarriage complete. And just as we have heard for a great many years past ignorant people predict the time when a first-class bicycle should be bought for a five-pound note, so we regard it as futile to expect anything like a satisfactory motor car to be marketed—at any rate, for many years to come—for less than £150. The disparity between the cost of the two, therefore, is obvious. It is not merely a question of a man able easily to afford a motor bicycle "screwing" a little more so as to buy a small car instead; the line of demarcation is too broad to permit of any such choice, except on the part of the minority of people of the class able to incur the expense comfortably. The case is on all fours with that of residences. Leaving out of consideration the class that may be termed "poor," we have an immense number of people in all our large towns who inhabit houses rented at from £30 to £50 per annum; but the higher we go above that limit, the fewer become the residences. It would be as sensible to argue that everyone who could afford to live in a house rented at £50 per annum could equally afford a house costing £150 per annum, as it is to contend that any appreciably large proportion of motor bicyclists can afford to drive cars.

But whilst the pecuniary consideration is the main one in such an argument, there is also the minor consideration that a great many motor cyclists are such from choice. There is an appreciable number of motor cyclists who can afford to possess—and a great many of them actually do possess—motor cars as well as motor cycles; they ride motor cycles just as the plutocratic owners of high-powered big motor cars also keep low-powered small cars for run-about purposes; they like the semi-athleticism of motor bicycling; they appreciate the charm of it; and there are many others also who even prefer the pleasures of motor bicycling to those of car driving, just in the same way as there are many people who prefer horse riding to carriage driving, or who prefer rowing on the water to driving steam launches or sailing small "raters" to steering large yachts managed for them by crews of paid hands. Perhaps the most applicable of our similes is that of horse riding. Just as the wealthiest people enjoy the semi-athletic exercise of horse riding, either on the roads or on the hunting field, so there are many people who enjoy the sensation of motor bicycling in preference to that of driving a bulky car.

Then, again, there are many people who, while determined to have a self-propelled machine, are more or less opposed to the idea of a complicated vehicle, such as they regard a car to be, and when compared with a motor bicycle, the simplest car is indeed a complex vehicle. Only a few years ago, it would have been almost hopeless to have introduced motors for cycles, as mechanics were so little understood; now people are beginning to see that mechanics and mystery are not synonymous terms.

Sparklets.—

It is as well as note that, under the Local Government Regulations, it is necessary to have two effective brakes, which may be applied both to the front wheel or both to the rear wheel, or one to each wheel, as desired, provided that the wheel shall be effectually prevented from revolving.

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In the design of several foreign motor cycles it is surprising to note that no oil cock is provided at the bottom of crank case, for draining off waste oil. It is in little details such as this that the English designs score, as in most instances the engines used have a waste oil cock inserted.

THE DENSITY OF PETROL.

At 60° Fahrenheit, petrol in good condition should show .680° specific gravity when tested with the densimeter. From this point the specific gravity varies one degree for every two degrees Fahrenheit upwards. Deduct one for density or specific gravity for every two degrees Fahrenheit downwards, and *vice versa* add one for every two degrees rise in temperature; thus the thermometer registering 80° F. the densimeter should show petrol at .670, or at 30° F. .695. With the advent of the general use of spray carburetters, however, troubles traceable to petrol density have become less frequent, a well made spray effectively carburating petrol at any reasonable density.

TESTING PLATINUM.

It is highly important that pure platinum should be used in replacing worn contact points in contact breaker, insulated screw, and blade. Owing to its great rarity and consequent value, inferior alloys of silver, nickel, and platinum are often sold as the real article. Where the impure article is fitted it quickly oxidises, chars, and fuses, with consequent trouble, so that the motor cyclist who purchases platinum for fitting himself should make sure by testing that he is buying the pure metal. This can easily be done by obtaining a small test tube, purchasable at any chemist's. Procure also a small quantity of strong nitric acid. Then place in test tube some filings of the platinum, and pour into tube a little nitric acid, boiling the same over a forced gas flame of Bunsen burner type. The platinum being genuine will not be affected by the heat, but if adulterated, the heat will dissolve the metal and give the acid a green colour.

JOIN A CLUB.

Although possibly well read in motor cycle knowledge, the motor cyclist when purchasing his first machine, or second for that matter, should not rely solely on his book knowledge, but should listen attentively to the explanations and tips, and what may at first sight seem the fads, of others, as to the so-called mysterious behaviour of carburetters, sparking plugs, low tension and high tension wiring under differing conditions. The membership of a motor cycle club should immediately be consulted, and if there be no club in the particular locality, the society of other motor cyclists should be sought. Acquaintanceship is soon made on the road by a little friendly advance on either side, as the motor cycle often acts as an introducer to other owners of petrol cycles, and the nucleus of a club is soon established, which in every instance will benefit the members individually and the pastime generally. It was much the same in the early days of cycling, but with the motor cycle there is far more to learn from the individual experience than there ever was in the case of the cycle.

Sparklets.—

The motor cycle industry in Coventry just now is very brisk, and machines are being turned out in large numbers by the firms making a speciality of this type of vehicle.

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When continued misfiring occurs, and is yet untraceable to any of the usual causes, i.e., short circuiting, exhausted accumulator, sooted plug, stale petrol, etc., the coil is probably at fault. Borrow another coil, if you can, just for testing, and if on a different coil the results are good, the faulty coil should be replaced. It is useless trying to repair it; it is better to return it to the maker, requesting an examination and repair, if possible.

In the forthcoming Paris-Madrid race Mr. E. H. Arnott, captain of the Motor Cycle Club, has secured the eighty-fourth position, which, considering there are 250 entries, is fairly satisfactory. Mr. S. F. Edge, it is interesting to note, starts from eighty-ninth place, but Jarrott will have best part of the crowd in front of him, as he does not start until 170th. There will be two minutes' interval between each starter, and the last man off should certainly have an exciting, if entertaining, time, in the endeavour to overhaul the leaders and steer clear of derelicts.

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THE THROTTLE VALVE FOR ECONOMY.

Considering the great economy of the throttle valve, it is surprising that in many of the smaller forms of spray carburetters, as fitted to motor cycles, no provision is made for throttling the induction of gas. Although these little carburetters are fairly reliable from sea level to snow line, even a lever for air adjustment would make a slight improvement, but this can fairly well be dispensed with. It is otherwise with the throttle, however, and most makers have now recognised this, and are accordingly fitting it to the induction pipe, so that control is obtained either by throttle or ignition, thus economising petrol where the going is easy, and also keeping the engine far cooler than when stuffing every atom of gas into the cylinder, as is the case minus throttle.

THE IRISH AUTOMOBILE FORTNIGHT.

The preliminary announcement of the arrangements that are being made for carrying out the Gordon-Bennett race affords striking testimony to the fact that the officials of the Automobile Club recognise the utility of the motor cycle. It is proposed to exclude all motor cars, except those of the competitors, and the pilot car, from the course, from one hour before the start until after the finish; but a large number of road stewards are to be appointed to patrol the course and carry messages between the stewards in charge of the various sections and the head officers. Members of the clubs and others who own motor cycles, and who would be willing to act in this capacity, are invited to send in their names to the club as soon as possible.

On the day after the race it is proposed to hold a gymkhana in the Phoenix Park, and a torchlight procession to the Castle at night. On the following day speed trials will be held in Phoenix Park, for which motor cycles will be eligible. During the following week there will be a tour to Newcastle and Belfast. A four miles speed test is to be held on a straight road near Belfast, for which, however, it is not stated whether there will be a motor cycle class. At Cork there will be a speed or hill-climbing trial, then a tour to Killarney, and on the last day a hill trial on the road between Killorglin and Tralee.

EASY CONTROL.

By T. H. Holding.

THE outsider—by which designation I simply mean “the man in the street,” who has never been astride a motor cycle—imagines that it is a “dreadfully dangerous thing.” I once heard it stated by a man who had never gone further in this the coming new branch of cycling than to decline an invitation to mount one and try, say, “I am a married man, and you do not suppose I would risk my life by being run away with by a thing like that which I could not control.” The common idea is that you must “go,” bar hills, at top speed, and that you cannot help it, so to say.

Now, the “cannot help it” idea cannot be too drastically disposed of as a fallacy. The promoters, the developers, and designers generally of power-driven cycles, like power-driven anything, surely are not so insane as to place an excess power beneath a man or in front of him to take him to perdition, or anywhere else, without every possible and adequate means being placed within the rider's or driver's grasp of controlling and checking at will. This is precisely what can be done on the motor cycle.

Speaking in round numbers, I say that, though the design, base, power, the position of engine, etc., may differ—and, indeed, do differ—mainly, the same principle and much the same system of mechanism are applicable to all motor cycles, and, therefore, the remarks above made have just this value, inasmuch that I am convinced that many of my readers, be they owners of an “Excelsior,” a “F.N.,” or a “Phoenix,” will corroborate what I am about to say, namely, that the power of controlling is complete, and therein lies the safety. I shall deal in another place with the general principle of safety of a motor cycle as against the ordinary cycle; meanwhile, we will confine our attention to the controlling element, the importance of which none can question.

Complete Control.

As to general pace, it can be regulated to a very considerable degree, and it is important that it should be; but then, whilst the pace can be regulated by mixture and by the sparking lever, it can also be instantly checked in emergencies by brake power. The average machine of the best stamp is fitted with a rim brake on the front wheel, and also by a rim or band brake on the rear wheel, whilst the latter is operated either by back-pedal motion on the inevitable and essential free-wheel, or by a lever from the handle-bar through a Bowden wire. Two brakes are essential only or mainly for one reason, or, to put it plainly, for “eventualities.” What are these eventualities? An instant pull-up when obstructions of a dangerous character present themselves suddenly—and there are plenty of them to be encountered in town traffic, and a few on the country roads.

Now, I am not proposing to write in a technical sense at all. I am rather wishing to assure the novice, who hesitates because of the danger element in regard to his purchase of a motor cycle. I want to assure him that there is no machine, so far as I know, that is so safe as a motor cycle.

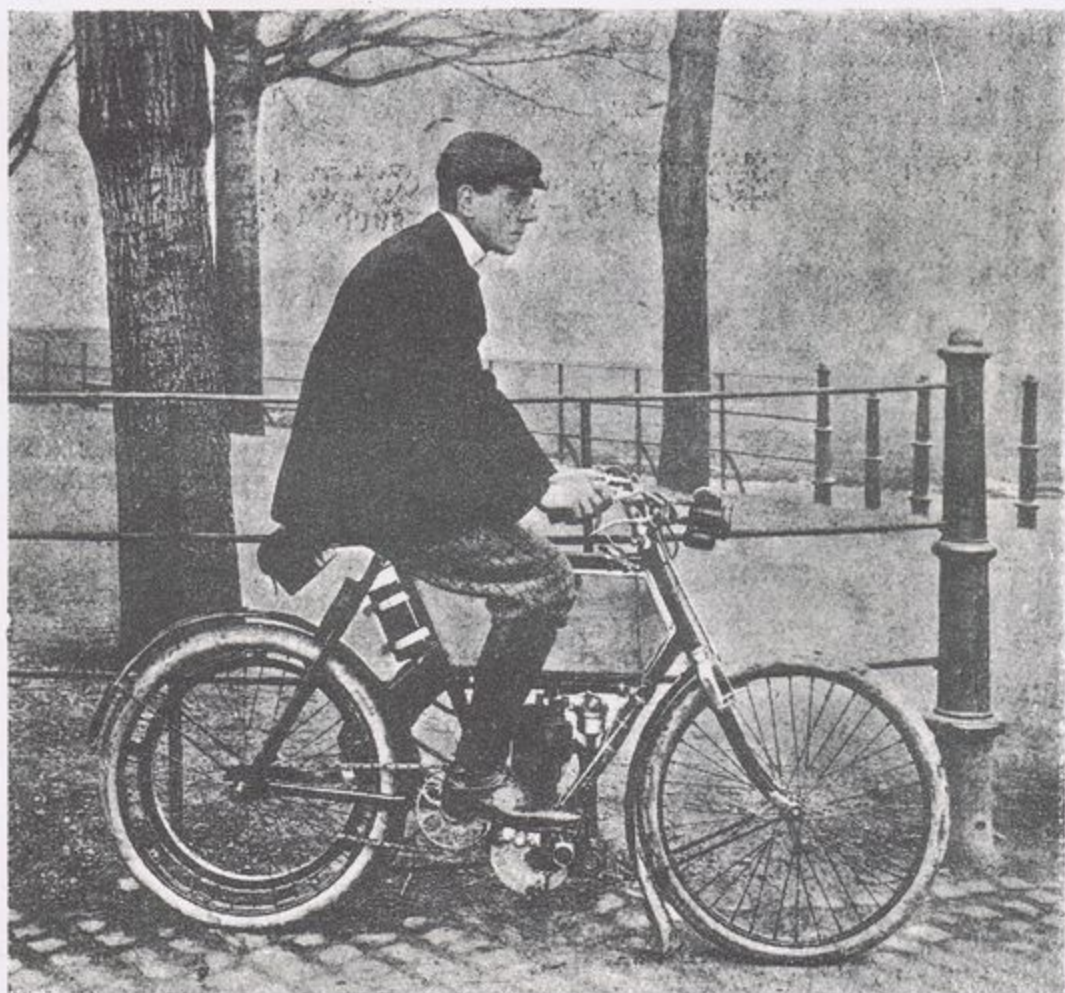
Perhaps I cannot enforce this statement better than by relating an experience which happened to me quite recently. I will describe precisely what happened, not as an expert who has had a very wide experience, but as one who managed to save a serious accident whilst on a motor cycle, and which it is questionable if I could have prevented had I been on my ordinary machine. There is a house which stands on the Kingston road—indeed, in that ancient borough—so to say, by itself. I think it is a publichouse. Behind it is a narrow nine-foot way, and carts sometimes shoot through, and cycles constantly. At the end of the house, bisecting this little road, is a road with a slight decline, which leads into the main road not more than 30ft. Beyond it—in fact, the depth of the house. Without warning—

Easy Control.

the crack of a whip or any signal whatever—a cart, or rather a trap, was furiously driven from the back of this house right on to the side of the road, which I was descending at about a ten-mile pace, to the main road for town. It was a case, as it seemed to me, of a cannon of a violent character, but within the space of ten yards I had to do the following: Switch off the sparking, apply the hand and foot brake in an instant, and so bring the machine up dead, if possible. I did this, but the handle and front wheel were under the horse's belly. All this had to be done almost simultaneously in about the space of two seconds; but then it was done, and there was no smash. The man apologised, which was the last thing I expected him to do, for the cyclist never finds anyone in the wrong but himself—at least, that is the result of my many years' cycling experience.

Ease of Steering.

I want to deal now with another matter regarding the motor cycle, but which is allied to the same problem—that is, of its ease in control. I had an idea at the beginning of my motor cycling career—and I cannot even now persuade other people who still hold the same opinion that they are in error—namely, that it takes a fearful amount of steering. I have thought this out and have come to this conclusion—that the motor bicycle, as compared with the modern safety, is as much more easy to steer as was the obsolete "Bantam" compared with an average well-constructed machine of the present day. A rider, who speaks of having covered some two or three thousand miles recently, says that he can steer his motor without the hands. I can quite believe it, but at the same time I shall never try to emulate him in this feat. In fact, I do not wish to particularly. But my surprise was to find how easily the motor cycle steers. Whether it be weight or motion or any other cause, I simply state my own experience. There is a steady "go" and a swing on a motor bicycle which are apparent to everyone who notices a man riding. The track is usually straight; the rider appears to be one with his machine. He holds the handles, of course, but there is a sort of steady progression or union of motion and movement which I think will be one of the elements in helping its popularity.



Mr. Ernest H. Arnott, the Captain of the Motor Cycling Club

Sparklets.—

During the Easter vacation the Motor Cycle Club intend touring in Wiltshire, making Salisbury their centre. The honorary secretary of the club will be pleased, we have no doubt, to forward particulars to any motor cyclist who would like to participate.

The Cyclists' Touring Club has arranged the following motor cycle fixture for April: Thursday, April 9th, meet at Marble Arch at 1.45 p.m. for Salisbury, *via* Basingstoke and Andover, headquarters for night Red Lion Hotel; Friday, April 10th, leave Red Lion Hotel at 9 a.m. for Exeter, *via* Dorchester (luncheon at King's Arms Hotel), Blandford, and Bridport (an alternative route for those who prefer it will be *via* Shaftesbury, Yeovil, and Honiton, headquarters for night Half Moon Hotel); Saturday, April 11th, leave Half Moon Hotel at 11 a.m. for Bristol *via* Taunton, Bridgwater, and Cross, headquarters for night Royal Hotel; Sunday, April 12th, leave Royal Hotel at 10 a.m. for Worcester *via* Gloucester, headquarters for the night Crown Hotel; Monday, April 13th, leave Crown Hotel at 9 a.m. for London *via* Evesham and Oxford. An alternative route for those who prefer it from Oxford will be *via* Tisbury, Beaconsfield, and Uxbridge.

Do not delay taking out a license. You may get stopped some day, and then, in addition to the usual reckless driving charge, will be added another for owning a carriage without a license—maximum penalty £20. It is not worth risking for the sake of 15s.

EXHAUST SPRING WASHER.

A frequent and puzzling cause of loss of power is the wearing of the washer supporting the exhaust valve spring, owing to its continual contact with the cotter underneath. This washer, on becoming worn, drops over the supporting cotter, and thus reduces the tension of the exhaust spring, which consequently fails to close the exhaust rapidly and tightly, with resultant loss in compression and power. This washer should therefore have occasional examination, and it is always as well to carry a spare washer in the valise.

A TIP FOR HANDLE SWITCHES.

The switch handle is one of those little items which, although neat in appearance and effective while the thread of the insulation block remains intact, seldom lasts more than a few months without giving trouble, and occasionally coming off in the rider's hand. It is a detail which the practical motor cyclist soon sets about improving, according to his own light and learning. While we thoroughly believe in the current breaker that is now usually arranged to cut out automatically, with the exhaust valve lift, still the necessity of the handle-bar cut-out is there, and the switch should not be dispensed with, as, in case of accident, the natural tendency of the hand from custom is to cut-out, and unless this is done with a positive switch which retains its position after the release of the hand, the results in case of a fall are likely to be somewhat unpleasant, as it is quite bad enough to come over, without having the engine racing away on its top speed. A neat arrangement for replacement of the handle switch we have noted on several machines is the attachment by means of a clamp and screw to handle-bar of a little two-way telephone switch on a wood insulation block. To this is attached the wire or lead, which is otherwise fixed to insulated plug inside handle-bar, the switch being wired or earthed to handle-bar

MY FIRST MOTOR BICYCLE RIDE.

MY FEELINGS AND IMPRESSIONS.

By an old Cyclist.

I REMEMBER my first motor bicycle ride quite well—and I have reason to. My initial experience took place on a fine afternoon in June last, when, at the invitation of a kind friend, I borrowed his machine—a brand-new imported mount bearing a good reputation (*vide* advertisements) for reliability and speed powers. It was with a beating heart and a joyous and expectant mind that I started. There was no doubt about it: learning to ride a motor bicycle was as easy as rolling off a log; it was mere child's play, in fact, and as I dashed along I laughed sarcastically and said rude things about those strange individuals who were so fond of writing to the papers about the troubles of an embryo motor bicyclist.

My friend had given me most elaborate and particular instructions as to the manipulation of the various levers and taps before I set out. Said he: "You have only to do this and that, and you will be all right; in fact, there is nothing easier under the sun than sitting on a motor bicycle and letting the engine do all the work." I agreed most heartily as I sped onwards, and I whistled merrily to myself, and the busy little engine, as it throbbed away, seemed to beat time with the melody.

First Sensations.

I must admit—to be candid—that I did not possess a particular liking for the nasty swerve I gave when turning a corner just before leaving the town—somehow or other the kerb seemed to move—and I felt a nasty, uncomfortable tug at my heart (I suppose it attempted to jump into my mouth) as I scraped by, but perilously near to, the wheel of a waggon which some dunderhead was allowing to meander about the road. These overbearing fellows really want taking down a peg or two, but a 30 cwt. car is better for this than a motor bicycle. However, these little incidents were mere trifles, although I felt a little chagrined when I nearly ran into a boy—boys are so stupid—through pushing the ignition lever forward instead of pulling it back.

I comforted myself with the reflection that such oversights as these were the natural outcome of want of experience. One cannot enter into any new walk of life without encountering pitfalls; thus I philosophised, as I throbbed on my way.

Once clear of the town, however, all went as well as the oft-quoted marriage-bell. The sun was shining brilliantly, the roads were in splendid condition (but I *did not* like the dust which a speedy quad kicked up as it whirled past me), the birds were carolling sweetly, and everything (including myself) seemed to combine into one harmonious whole, with the pulsating motor as its centre. Yes, life *was* worth living. Said I: "Out upon those scurvy knaves who pretend they can find no joy on earth. But a panacea is at hand even for them. They must motor cycle. It is the finest, best, and most glorious invention —." Great heavens! What was that? The healthy throb of the engine

had suddenly ceased, and in its place there came fitful sobs. Confound it! The machine was actually stopping. This would never do, so I commenced pedalling (and I flatter myself I *can* pedal, for I once won a club championship, although, be it said in parentheses, the club for want of funds is still owing me the medal); but pedal as I did, as if for dear life, the engine would not start again. This was annoying, not to say aggravating, and after trying the effect of retarding and advancing the spark several times, and then having a tug at the compression lever, and finally experimenting with both levers at the same time, I thought it advisable and expedient to switch off the current, dismount, and cast my critical eye over the machine.

I Diagnose the Case.

I flattered myself that I was generally able to find my way out of a difficulty, and the obstinacy of a mere motor bicycle would present no terrors to me. I simply paused to wipe the sweat from my honest brow—honesty and perspiration are inseparables—and then set to work. I believe I impressed a country lout with the expert attitude I assumed, although he gave an idiotic grin as I uttered an exclamation through scorching my fingers by placing them too near the radiators on the cylinder. Of course, it was an accident, and the idle spectator need not have enlarged the abnormal size of his mouth by such an expansive grin. What's more, I told him so. I have it, I thought. The engine is not being sufficiently lubricated, otherwise it would not be so hot. I examined the lubricating tap. Lo! and behold! I *was* right, and the first time, too. The tap was shut off. I immediately put this right, and to make sure that I had plenty of oil I looked into the lubricating oil department. Yes, there was plenty in the tank, and I gave a sigh of relief. Just to show my country friend that I was perfectly accustomed to such trifles as this, I calmly lighted my pipe and took a seat on a mossy bank that was handy, and passed a few minutes in calm reflection. I congratulated myself on my resource, for I knew my rest by the wayside would allow the engine to cool. Besides, that wretched bit of pedalling had occasioned an unusual stiffness in my legs. There was no doubt about it whatever—pedalling a motor bicycle was not like pedalling an ordinary machine.

Eventually I began to think it was time to move, and I nimbly jumped upon my motor and tried to get going. Hang it, why do people break down on hills? I found I had to ascend a bit of a rise, and pedal as I would and manœuvre the levers as I might, I could not make the engine puff. There was nothing for it but to get off and push the wretched thing up the hill. I struggled manfully with it, and finally I arrived at the summit, uncomfortably hot, and with mingled feelings—very mingled feelings, I may say. Already, with my Sherlock-Holmes powers of divining things, I had deduced the fact that even a motor bicycle could be

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A well-known Motor Cycle Expert writes:

"Improvements in accumulators are still being made, and I certainly think that the new form of grid introduced in the Castle accumulators, sold by the United Motor Industries, is a great advance. The paste looks as if it were but loosely held, as it presents a larger surface to the acid; but it will be seen that in reality it is gripped very securely, as the bars of the grid alternate on



Trade Mark.

each side, and thus hold the paste in either direction, while still exposing a great amount of surface on one side. The condition of the plates can thus be better ascertained, while the active surface being so much larger, an increased capacity is obtained, in comparison with that usually found in accumulators of the same size."—*Automobile Review*, February 10th.

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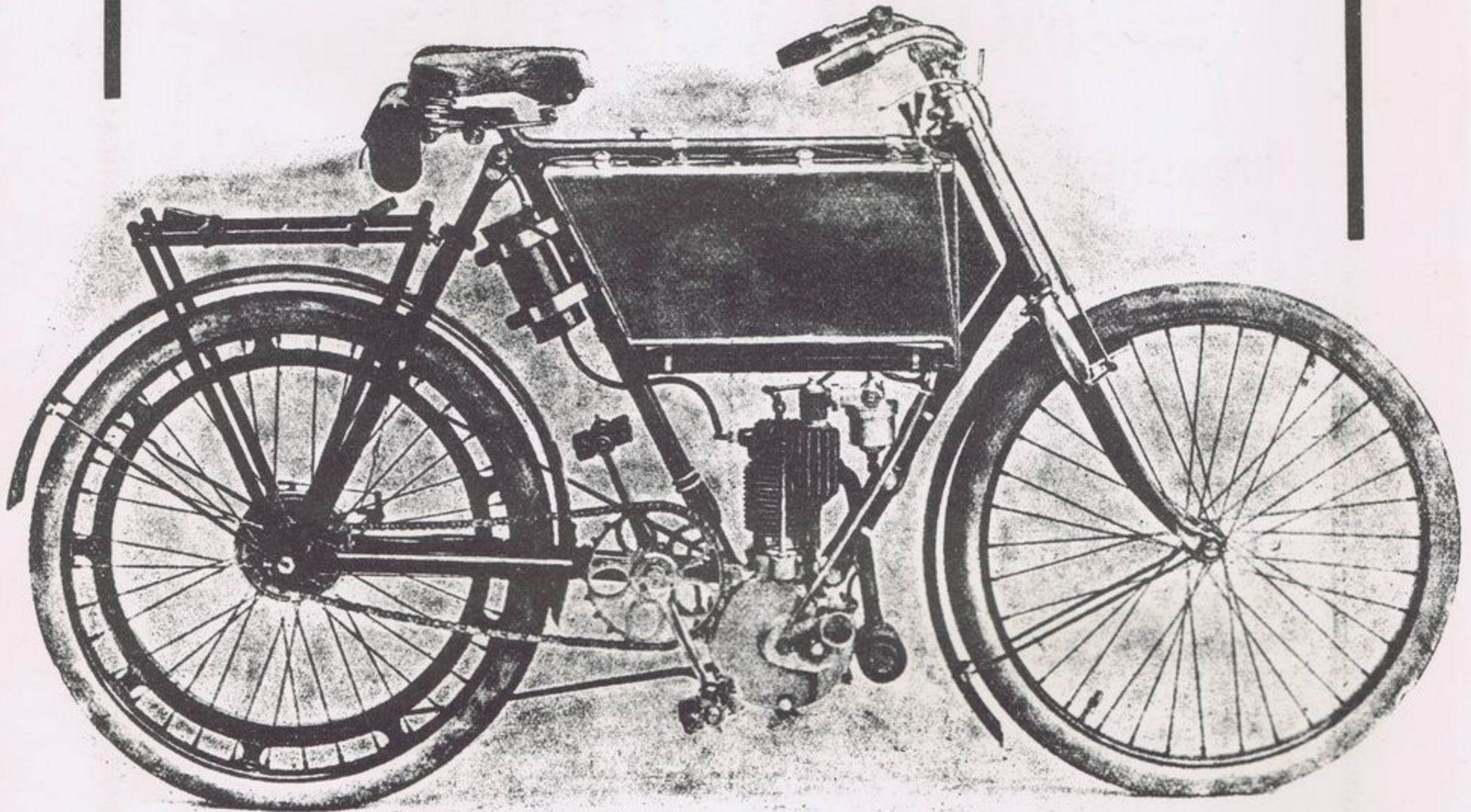
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Have won every important international competition held on the road.

Are, in proportion to their power, the lightest motor bicycles in the world.

Are built for use on all roads and in all weathers.

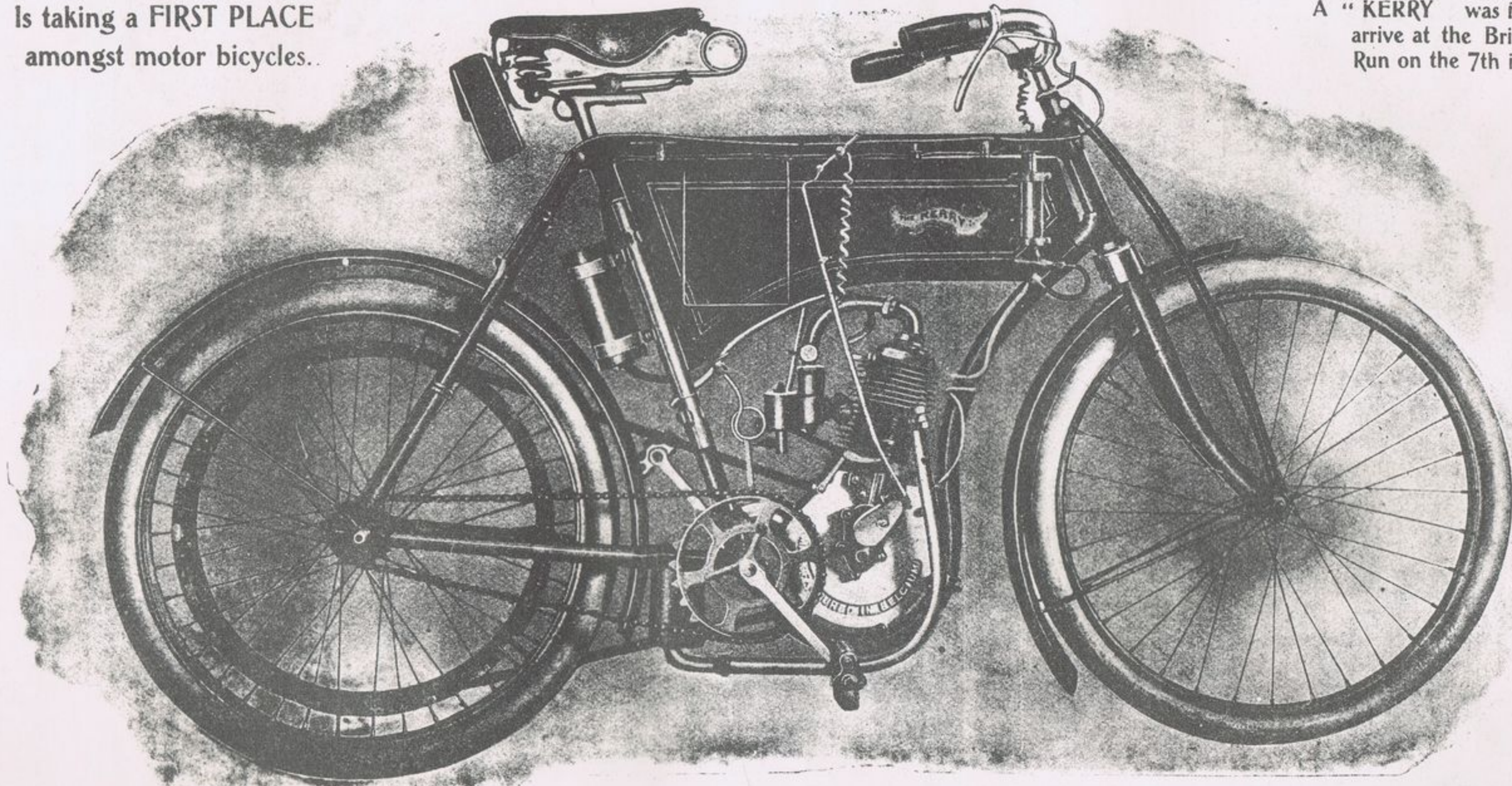
Have proved themselves, in open competition, to be the most reliable. They are also the most simple to understand and to keep in order.

THE "KERRY" MOTOR BICYCLE . .

With latest improvements 39 guineas.

Is taking a FIRST PLACE
amongst motor bicycles.

A "KERRY" was first to
arrive at the Brighton
Run on the 7th inst.



On view at **Stand 167, Gallery, AGRICULTURAL HALL**, this week.

EAST LONDON RUBBER CO., 211, Shoreditch, and 2, 4, & 8, Gt. Eastern St., LONDON.



a bit of a nuisance. However, there was a nice little down-grade facing me, and I comforted myself with the thought that all would be well now. After a brief spell, I made a dash for it, and away I sailed. A feeling of ecstasy passed over me as I heard the engine throb; but, alas and alack! the effort was soon spent, and at the bottom of the hill I found my machine was no longer motor-driven. It had resolved itself into a common pedal-pusher, and a heavy one at that. What could be the matter. I examined the contact-breaker and the fat spark told me that my trouble was not due to faulty ignition. I do not know how it came about—there are some things which one cannot explain—but the world did not seem quite so joyous and peaceful as it did half an hour before. I felt depressed in spirits, and even the singing of the birds—how they did chirp away, to be sure!—irritated and vexed me. Moreover, I had a suspicion—a very slight one, mark you—that my estimation of motor bicycling was undergoing a change.

An Inspiration.

Suddenly a happy thought occurred to me. Such things come to the dullest of us. I wonder if my petrol supply is all right. Of course, even a motor

bicycle will not go without spirit. Why on earth had I not thought of this before. With feverish haste and with trembling fingers, I unscrewed the milled stopper at the top of the petrol tank and gazed into it. Then my feeling of happiness gave way to one of despair. The tank was as dry as a bone. *I had used all my petrol.* If words could have hurt the person who had lent me his machine his death would have been painfully sudden. He should have told me that the supply of petrol would not carry me far. Here was a pretty pass. I was perfectly stranded and quite two miles from the nearest shop at which spirit could be obtained. Confound it. I wish I had never seen the blessed machine. After all, there was something in the wailings of those fellows who wrote to the papers. Such were my thoughts.

I philosophically told myself it was no use crying over spilt milk—who except the cat ever does?—and so I started on the return journey. It was all right riding downhill, but along the level I did not find it a particularly charming pastime, whilst uphill—no words can express my feelings. I eventually got my tank replenished, and feeling confident that my troubles were now all over, I again set



The first run of the spring season of the Motor Cycling Club was to Brighton on the 7th of March. The roads and weather were wretched, but quite a good muster was secured. This illustration and the one above were taken at Purley, where the members gathered just before the start for Brighton was made.

forth. What a change, and how beautifully the machine went along. It could not be denied, I told myself, that *if* only a motor bicycle could be depended upon, the pastime was unequalled.

Motor Bicycle Delirium.

I soon got into the country once more. My spirits had risen above their normal pitch, and the soft breezes cooled my burning cheeks. Gradually a feeling of exhilaration seized me, and I even burst forth into song. On, on, and on I went, and in my wild excitement I extended the accelerator to its furthest limit and got up top speed. A policeman looked at me, but, fearing the exertion of running after me, he did not impede my progress. What cared I in my perfect abandon for the speed regulations? Everyone—even Chaplin their framer—knew they were simply absurd and ridiculous, and why should I bow to the stupid law. I would not do such a thing on principle. I passed several cyclists. Poor chaps, I felt quite sorry for them. I simply romped by them along the level, and whilst they struggled uphill I flew up without the slightest muscular effort. One fellow I noticed particularly, and he gave me a sort of sickly and envious smile as I passed him. He appeared to be a sturdy rider, but I felt sure he would never find real enjoyment on wheels till he participated in the new and most delightful of pastimes. The pleasure of rushing through the beautiful and green country lanes without effort, the music of the air as it whistles by your ears, the healthful feeling of exhilaration—a feeling that must be akin to that experienced by a bird as it indulges in its heavenly flights—what can surpass these? Bang!

Something Wrong Again.

My train of happy thoughts came to a sudden stop—so did my engine. Dash these motors; why are they so fickle in their behaviour? Bang again. The motor was giving strange and uncanny explosions. Presently these ceased, and, despite the exertions of my legs, which indulged in a wild endeavour to get the motor working again, I could make no impression on the obdurate thing. I sighed as I jumped off and looked at the machine. What on earth *could* be wrong now? Surely it could not be the petrol this time. No, the tank was nearly full, and the lubrication appeared satisfactory. Outside, the thing looked as right as ninepence. But then, one never can get at the inside of these mysterious creations. Perhaps the ignition had gone wrong, I thought. Said I: "I will see if I can get another 'fat spark.'" I lingered on the words "fat spark" lovingly, for I am fond of technical expressions, and the owner of the refractory machine had fully impressed upon me the advantages of such a phenomenon and the particular corpulency of his spark. With eager hands I took the cover off the contact-breaker and started playing with the switch on the handle-bar. Ye gods! I could get no spark at all—not even a thin one. The perspiration on my forehead turned to an icy dampness—a cold shiver ran down my back, and my teeth almost chattered. What was I to do now? I was no electrician, and did not know anything at all about the wires. I could not even distinguish a high tension from a low tension wire. They were as mysterious to me as the wires on a telegraph pole. The accu-

mulator, I knew, had not run down, for my friend had only just had it recharged.

Stranded.

I gave another despairing glance at the contact-breaker. Then I groaned, for lying on the ground was a small piece of spring steel blade with a platinum point on it. *The trembler blade had snapped* and there was not a spare one in the saddle-bag. Here was a pretty how-d'ye-do. What could I do now? I really believe I swore. Never again, I raved, would I get astride a motor bicycle. It was the devil's own invention, and was merely sent to try the patience of poor suffering mankind.

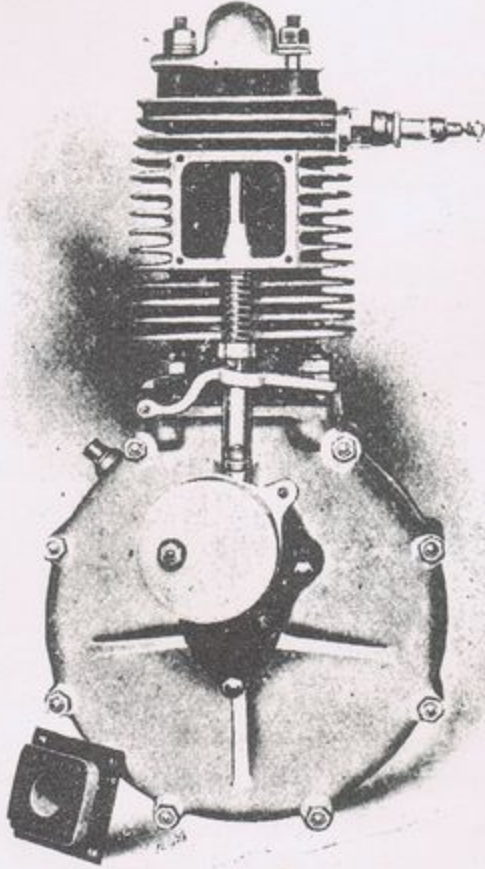
I pushed the machine into a ditch and sat down by the side of the road and ruminated upon the situation. I was some miles away from home, and there was not even a house in sight. My heart was wrung with anguish. I felt done. Presently a dim figure could be seen in the distance. A sigh of relief escaped me, for perhaps help was at hand. Gradually it drew nearer, and I saw that it was a bicyclist. Near and nearer he came, and as he drew level I recognised the sturdy cyclist whom I had passed on the road. Oh! the humiliation of the situation. My triumph had changed into disaster. He still wore his sickly smile—the brute—but he paused (he really was not a bad chap at heart), and enquired if anything was the matter. Never, I thought to myself, should it be said that I had accepted assistance from a mere cyclist, and in response to his enquiry I told him that I felt as right as ninepence; in fact, never better in my life. With that, he glided away out of sight for ever, still grinning that sickly irritating grin. Even now that expression haunts me. Moral—Do not feel too magnificent when you rush by an ordinary cyclist on a motor bicycle for the first time. He *may* pass you further along the road, and probably you will never catch him again. It is the old story over again of the race between the hedgehog and the rabbit.

The prospect of taking root alongside the road did not appear to be particularly inviting, and so I determined to turn back and endeavour to make progress towards home. I knew it would be a painfully slow operation, but I told myself to pluck up, as I might be in a worse predicament some day. I could not realise the possibility of such a contingency, but it was a consolation to think so. I thought sadly of my friend, who had, just previously to loaning his machine to me, enthusiastically eulogised motor bicycles in general and his own in particular. "My boy," he said, "there is nothing to compare with it. It is *the* machine of the future, and it has come to stop." I now frankly admitted that there *was* nothing to compare with the thing, and there was no doubt about it stopping. Stop! Good heavens, was there ever—

Nemesis.

I kicked myself to change the subject, and called myself a fool. That is a dual privilege allowed to no other man. I threw off my coat, and then took off the driving belt. I had made up my mind to pedal the thing home. I was soon on my way, and I made progress; but it was slow—very slow. But my troubles were not all over, for in pedalling as *hard* as I could—and it was hard—over a rough piece of road I managed to kick the left pedal out of the

Why the REX is strong.



3 H.P. MOTOR.

Firstly, because of the Rex Patent Baffle Plate Silencer which gives power owing to the immediate expulsion of all exhaust gases. There is no back pressure. Motor keeps cool.

Secondly, because the motor is in the ONLY correct position — rigidly secured in its registered cradle.

Thirdly, because of the true mechanical design of the frame, which resists all strains.

Fourthly, because the weight of motor and rider is uniformly distributed—overcoming all vibration and tendency to side-slip.

This outline is known to denote "class." There are three classes of motor bicycles—the cheap class selling at £30 or thereabouts, the better class costing some £10 more, and the

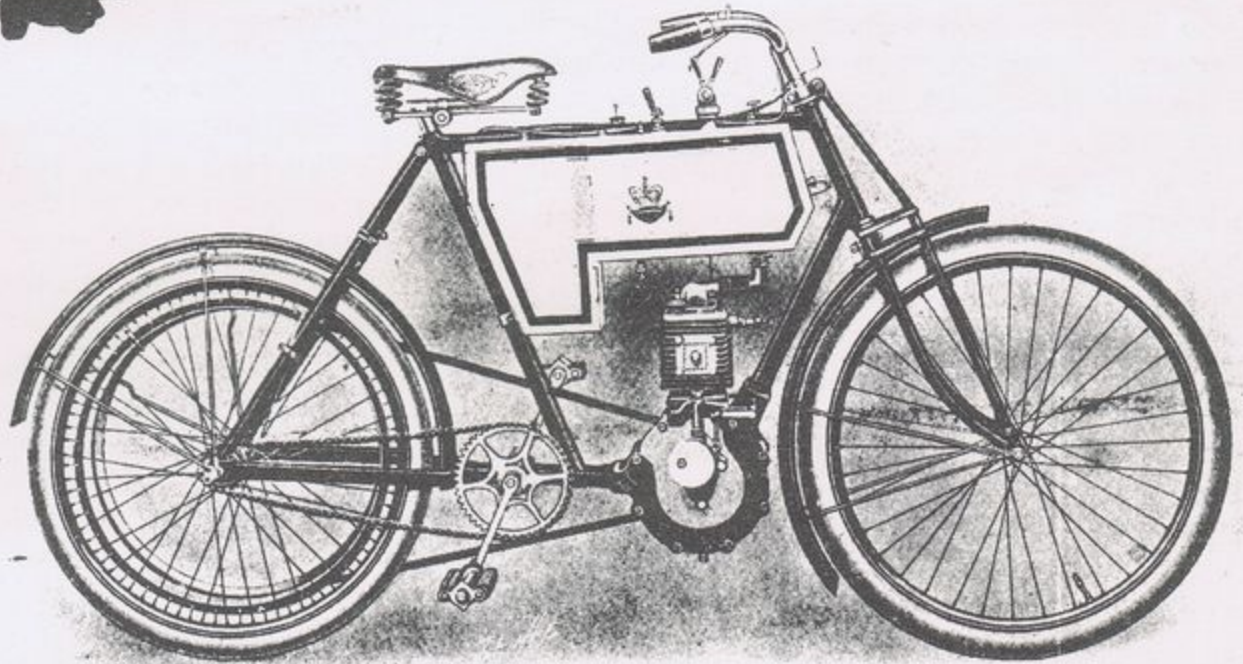
"Rex" Class

3 h p. at 50 Guineas (with Dunlop Tyres).

Other kinds may be excellent each in its way, e.g.: Speedy on the level, slow uphill; good when started, bad to start; steady when at slow pace, full of vibration as pace increases; safe on dry roads, dangerous on wet.

THE REX, KING OF MOTOR BICYCLES, combines an all-round efficiency for silence, speed, hill-climbing, absence of vibration, steadiness on greasy roads, and ease of control.

ON WAR-OFFICE LIST.



THE REX MOTOR MFG. CO., LD., COVENTRY.

Largest combined output of CARS and MOTOR BICYCLES in Great Britain.

REXSHOPPERS.CO.UK

crank, and as the thread on it was worn almost smooth I could not replace it. Perdition seize motor bicycles.

Was there ever such an unlucky fellow as myself? Surely all the fates in the universe were conspiring together to undo me. With a feeling of disgust, I flung the machine against a bank. This gave me very little satisfaction, and the act damaged the motor horn. Time was getting on, and I was feeling abominably hungry, whilst the quenching of my thirst would have meant at that moment a small fortune to the proprietor of a fully-licensed house.

I would sit and wait for a cart. Surely one would soon come along and carry the infernal machine and my fatigued self homewards. But I sat and sat—and sat. Anyone would imagine I was on a desert island. I fumed until I nearly frothed at the mouth, and then I tried the pleasant occupation of pushing a hundred and forty pounds of tired steel. And it was uphill, too. I toiled and struggled gamely. Every muscle in my body was aching, my hands were in blisters, and my tongue was swollen and as hard as a brick. In a fearfully exhausted condition I managed at length to reach the top, and, panting, I sank down by the side of a ditch and closed my eyes. I mentally vowed never to ride a motor bicycle again, and I declared that I would never move from the spot again—even if my hair turned grey with age through waiting—until help came to hand.

Saved!

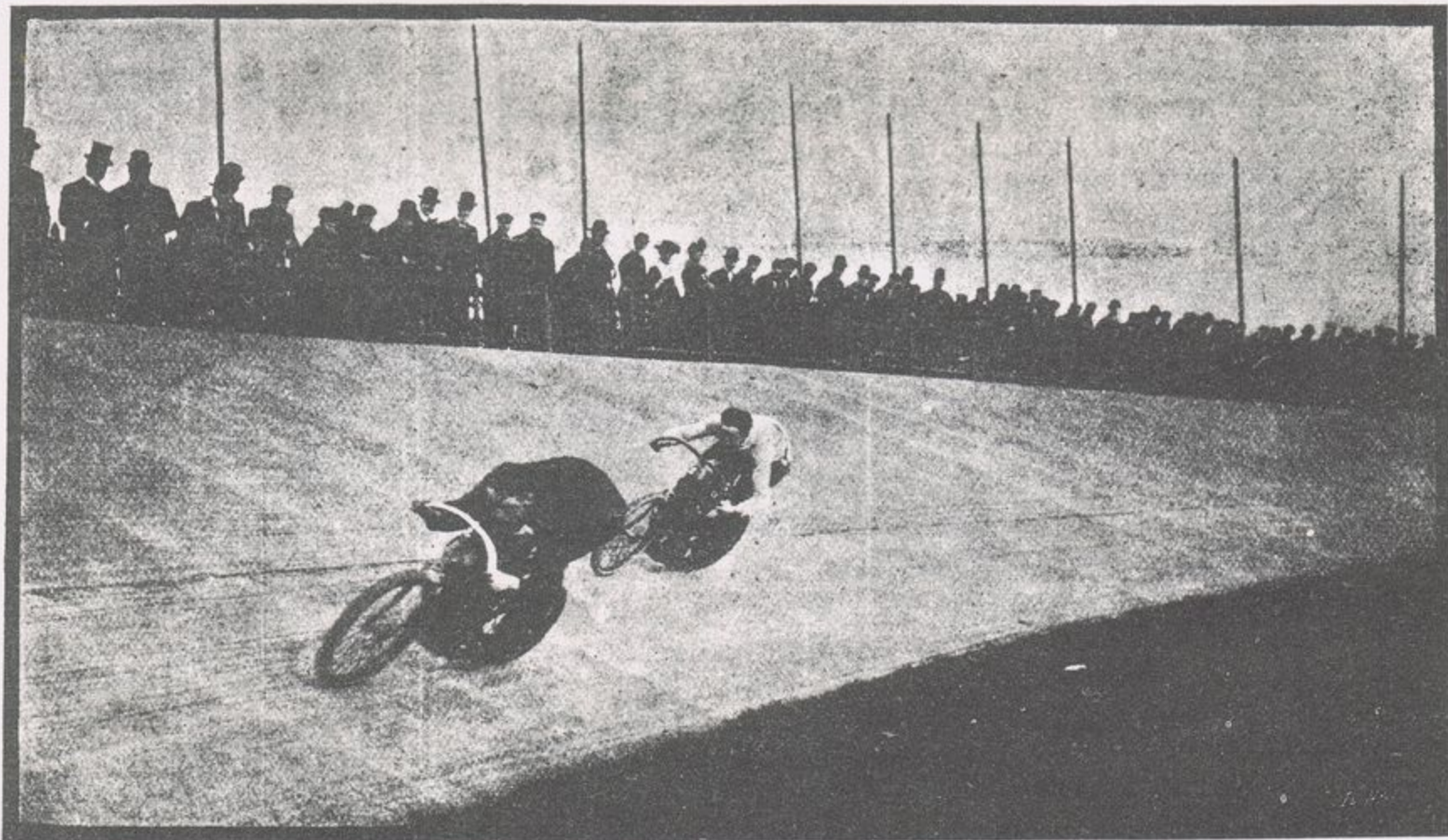
I fancy I must have nearly dozed off, for I finally came to my senses by hearing the rumble of a cart. The joy of that moment! A shipwrecked sailor on a raft out at sea never experienced such an exquisite feeling of thankfulness as I did at that

moment. The cart slowly drew near, and I saw it was driven by a venerable man, who had behind him some cans of paraffin and other wares, from which he had been serving some country customers. I appealed to him and implored him to help me. Unfortunately, there was no room for the machine on board, and I felt almost sick. Was I never going to get out of my difficulty? Then a brilliant idea—the conception of which I flatter myself was a real stroke of genius—struck me. I would mount my machine—no, my friend's; I would not own it—hang on to the tail of the cart, and get the old fellow to tow me home. This he agreed to do, and although at times I felt as if my arms were leaving my shoulders, I managed, as the dusk was beginning to fall, to reach home eventually. How I blessed that good-hearted old man!

* * *

Did I give up motor bicycling? Of course not. I am now the proud possessor of a machine made by a well-known manufacturer, and would not desert the pastime for untold wealth. It is the king of pastimes, although I have more than a sneaking regard for my well-worn pedal-propelled "Beeston-Humber," upon which I am often to be found pottering along the quiet country lanes.

I have since my first motor ride initiated several friends into the apparent mysteries of the motor bicycle, but I have never had the temerity to loan my machine to any one of them and expect him to work out his own destruction. I have always carefully explained to the novice the action of the motor and the functions of each tap and lever, and before sending him out on his initial ride I have given him a thorough drilling with the machine mounted on its McCurd stand.



Campbell & Gray, Photo., Cheapside, E.C.

The motor cycle, besides affording the most pleasurable of pastimes, also provides a very exciting sport. The above is an illustration of Barden (England) and Fournier (France) engaged in a series of races for a stake of £1000. The venue was the Canning Town Cycle Track. The conditions were to contest the best of five races, and the Frenchman winning the first three in a decisive manner he secured an easy victory. Barden, in the illustration, is seen leading.



18,000 MILES

on a motor bicycle fitted with one pair
of

DUNLOP TYRES

Gentlemen :

I am sending to you for inspection a pair of your motor cycle covers supplied to me at the National Show, 1901. They have been in constant use ever since, during which time they have been over 18,000 miles with only three punctures. In the last nine months they have carried a rider of 13 stones. I think they have worn wonderfully.

Yours faithfully,

WALLACE BATCHELOR.

Kingston-on-Thames.

DUNLOP MOTOR TYRES were awarded the **FIRST PRIZE** by the Automobile Club, not only for speed, reliability, resilience, or facility of detachment, but for **ALL ROUND EXCELLENCE.**

—See Automobile Club Judges' Report.

DUNLOP PNEUMATIC TYRE Co., Ltd., Aston, Birmingham;
and 14, Regent Street, London, S.W.

Motor Cycles at the Agricultural Hall Show.

The last of the cycle and motor exhibitions has now been held, Messrs. Cordingley's show at the Agricultural Hall concluding the series of five exhibitions at which motor cycles have been displayed in London during the past winter. It has always been the case that motor cycles were in an insignificant minority at this show on account of the Agricultural Hall Co.'s agreement with the Stanley Cycling Club precluding the display of more than a very limited number of cycles at any but the annual Stanley Show.

THE only new-comer is the "Weller" motor bicycle, which, although not quite completed, contains some meritorious features. The engine is of $1\frac{3}{4}$ h.p. or $2\frac{1}{4}$ h.p., set in a vertical position in front of the crank bracket, and bolted to the two members of a duplicate front tube of D section, forming a loop something like the fram of the "F.N." The cooling ribs of the cylinder are formed of steel stampings of right-angle section shrunk on to a cast-iron cylinder, and the sparking plug is placed centrally on the top of the cylinder. A patented silencing box is set vertically in front of the crank case, and bolted in close contact with it. The inlet valve is situated in the usual position of the ordinary suction valve on the top of the valve box, but is actuated by means of a right-angled rod which descends to the cam box. The exhaust valve is opened when the contact breaker is pulled back to retard the spark. The carburetter is the F.N., and the belt the Lincona.

Forecarriages Numerous.

The "Excelsior" motor bicycles are almost too well known to need description. Messrs. Bayliss, Thomas, and Co., were amongst the first English bicycle makers to turn their attention seriously to the motor. In its latest form the "Excelsior" is made with a $2\frac{3}{4}$ h.p. M.M.C. engine, and with either surface or spray carburetter. Handle-bar control is secured by the use of the Bowden wire, which opens the exhaust valve by means of a spring trigger lever placed conveniently to the rider's right hand. Forecarriages are shown in two styles, having respectively cane and upholstered wooden bodies, the latter being of most comfortable dimensions; and all three wheels are braked, the side-wheel brakes being actuated by one lever through the medium of Bowden wires.

Another bicycle converted to a tricycle is the "Coventry Eagle," the forecarriage of which is the well-known Phoenix Trimco, made under licence. Ordinary trailers are also exhibited, as well as a trailer with a reversible body to enable the passenger to sit facing either forward or backward, the body being detachable from the frame by the removal of four winged nuts, so that it can be turned round and refixed.

The "Kerry" motor bicycle is one that has earned considerable approbation from visitors to the prior shows. Its engine is carried slightly out of the vertical position in a frame curved down underneath the crank chamber, and the equipment is in all respects thoroughly up to date, with a float feed spray carburetter having an independent throttle. The exhaust is carried behind the crank bracket, and

the whole construction and finish are highly creditable to the East London Rubber Co.

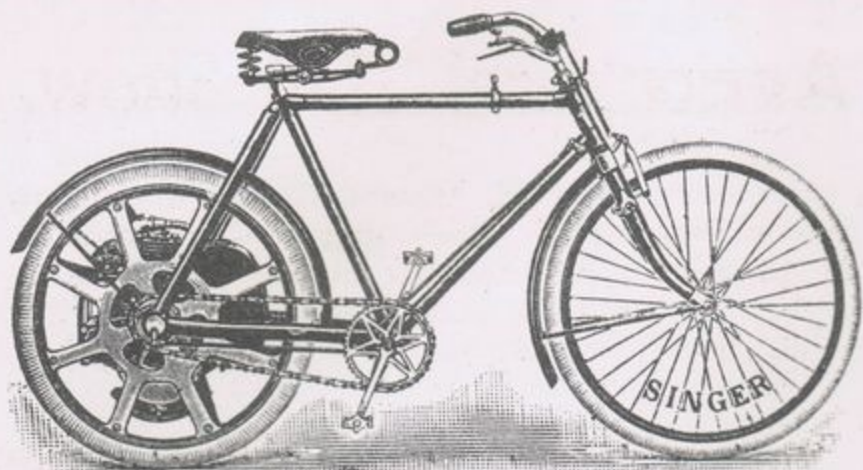
The newest De Dion motor bicycle engine is adopted upon the latest pattern of the "New Hudson" bicycles. The main point that has been aimed at in this engine is to keep the crank case narrow by placing the contact-breaker and the valve box in front and behind the cylinder respectively, instead of at the sides of the crank case. Float feed carburetters can be had of either De Dion or Longuemare type, the latter being considered to be the more economical of petrol. What looks like an ordinary glass-barrelled lubricating pump is fixed on the right-hand side of the saddle tube, but it has no plunger, consisting of a measure-regulating reservoir into which oil flows from the tank. By the movement of a lever on the top rail, the inflow is closed and an outlet pipe is opened through which oil descends to the crank case. A suitable air vent is provided to facilitate the inflow and outflow of the oil by gravity.

Some Featherweights.

Featherweight motor bicycles are represented in the "Clément-Garrard," the compact engine of which is set high up on the front tube behind the head, with an external flywheel. It is made also in twin-cylinder forms, both for racing and for driving a lady-back tandem, and in single-cylinder 2 h.p. form for touring, with either belt or chain drive, as may be preferred. The featherweight single-cylinder can also be had with two-speed chain drive. A four-cylinder engine exemplifies the speed class, a kilometre having been ridden upon it at the rate of sixty-eight miles an hour. All these motors are fitted with Garrard-Maxfield ignition, which is designed to ensure a very quick break in the contact-breaker.

Among other machines with which the public have previously been familiar were the "Clarendon," the "Vinco," the "Hewetson" with magneto ignition, the "Gamage" of Belgian make, the "Rex" with its powerful engine and rectangular radiating plates, the chain-driven "Humber," and Brown Bros.' bicycle.

The parts and accessories makers showed a few novelties, such as Peto and Radford's new accumulator for motor bicycles, containing no liquid but a jelly-like substance which will not spill even when the accumulator is held upside down and shaken. External sparking gap appliances were in abundance and of all imaginable patterns, one of the simplest and neatest being that of Brown Bros., formed of a glass tube protected inside a barrel of red fibre, with a hole cut on one side through which the spark can be inspected; it is well made in a manner that, unlike some such appliances, seems proof against accidental loosening of the screws.



SINGER

MOTOR CYCLES.

GEAR OR CHAIN DRIVEN.

Singer Motors are controlled by one lever without releasing the handles. Their strong points are simplicity, reliability, power at hills, and freedom from electrical and transmission troubles. The engine is the finest work put into any motor cycle extant.

- BICYCLES for lady and gent.
- TRICYCLES for lady and gent.
- TANDEM for lady and gent, or two ladies.
- TRI-VOITURETTES controlled either by lady or gent.
- SINGER GOVERNESS CAR for motor cycling *en famille*.

Singer Cycle Co., Ltd.
COVENTRY.

Catalogues post free. Free trials at works and depots.

London Depots—17, Holborn Viaduct and 10, Brompton Road, S.W.
Dublin Depot—114, Stephen's Green, W.

De Dion-Bouton

GENUINE LICENSED

BICYCLE MOTORS.

1½ h.p. equal to other so-called 2 h.p.

This is a specially designed light motor intended to be made up into a light and handy bicycle. The half-time shaft (P) is set at right angles to the motor axle and driven by a worm on one of the flywheels. By these means a crank case of 2½ in. in width, and an axle of 4 in. in length are provided, thus allowing a standard bottom bracket giving a 5½ in. tread to be used.

A bicycle fitted with this motor will carry a rider of average weight up any ordinary hill without pedalling, and will attain a speed of thirty miles an hour.

The set includes equally compact float-feed carburetter, accumulator, induction coil, and efficient silencer.

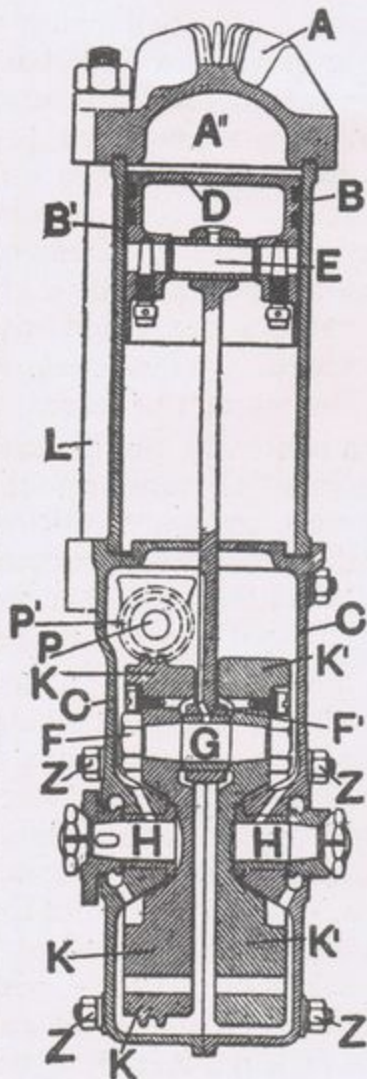
2¾ H.P. AIR-COOLED STANDARD PATTERN

supplied for higher speeds, or for drawing trailers, etc.

PRICES ON APPLICATION.

De Dion-Bouton, Limited,
28, Brook Street, Bond Street, W.

Branch Depot: 59, Albert Gate Mansions, Knightsbridge, London, S.W.





QUESTIONS AND REPLIES.

Under the above heading we propose to insert queries from our readers on various matters which are of interest to motor cyclists, particularly those which deal with the working of the motor and any little defects which may occur in connection with it.

ALL queries will be inserted as soon as possible after they are received, and when they deal with matters which our more experienced readers feel themselves competent to answer, we shall be glad to receive their replies, which will be published a week later. In all cases where no reply, or only a partial answer, is received from a reader, we shall deal with the matter ourselves. When questions not of general interest are asked, they will be replied to by post. We shall be glad if the following conditions are observed:

1. Each question should be asked separately, so that two subjects are not introduced into one query; but any number of questions may be asked in one letter.
2. The querist should write on one side of the paper only.
3. A stamped addressed envelope should be enclosed.
4. All letters should be addressed to The Editor, "The Motor Cycle," 3, St. Bride Street, E.C.

We invite the co-operation of our readers in sending in replies to questions, because we fully recognise the fact that the more experienced motor cyclists are as anxious as we are to help those who have not had the same advantages. Not only so, but there are well over a hundred different makes of motor bicycles, and while we claim to have had great practical riding experience with a very large number of these machines, it is, of course, impos-

sible for us to have subjected them all to a lengthy and severe trial. Therefore, we consider that the owner of a make which we have not had an opportunity of testing over a long period is qualified to offer most valuable advice with regard to its adjustment and general management from the rider's point of view. There are, we know, those who pose as infallible authorities on every make of motor cycle; but the practical motor cyclist is well aware that such knowledge is impossible, and as we want to give our readers the best advice on all subjects, we do not hesitate to ask motor cyclists at large to assist us in making this section one of the most helpful and interesting in the paper.

We have an expert staff, who are specialists on:

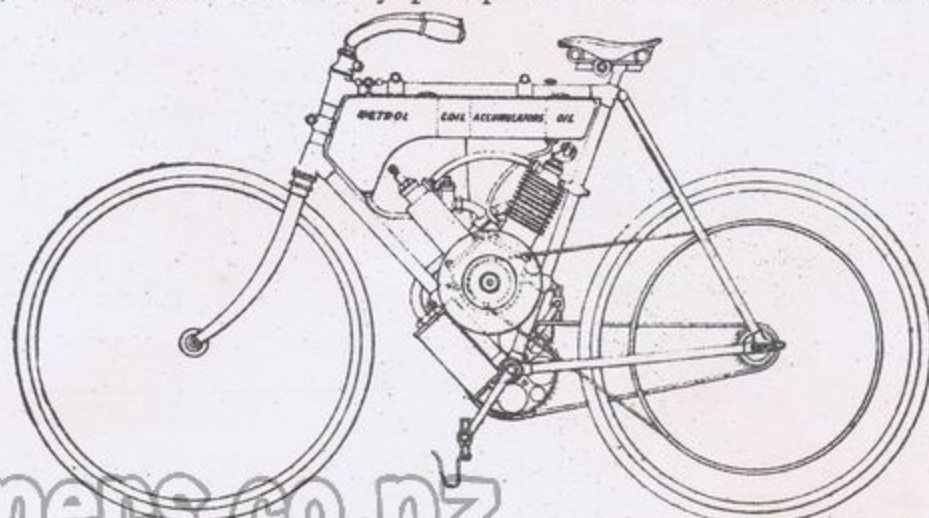
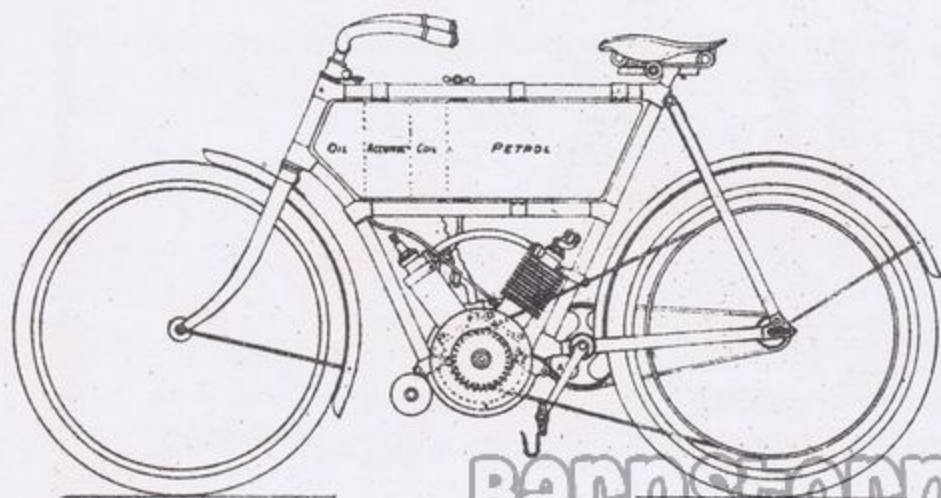
- The internal combustion (or petrol) motor.
- The ignition and electrical problems generally.
- The transmission—belts, chains, and variable gears.
- The pneumatic tyre—its upkeep and repair.
- The motor cycle as a whole, its use, adjustment, and maintenance.

As this is the case, readers may be assured that no query will be unanswered, and that the most practical and useful advice will always be cheerfully given. When necessary, drawings will be made to illustrate our meaning in such a manner that the veriest novice will be easily able to understand and profit by the reply.

The Bichrone Bicycle Motor.

RECENTLY a demonstration of the excellent hill-climbing capabilities of this ingenious form of two-cycle motor was given before several press representatives in the neighbourhood of Highgate Hill. A suburban road running parallel to the Archway road was selected, which, from rough measurements taken at the time, we estimate to have afforded about 300 yards of a gradient of one in sixteen. This ascent the bicycle, fitted with a 2 h.p. Bichrone motor, climbed several times in excellent style, its best performance being the conveyance of the writer's fourteen stones from the foot to the summit without a falter. As can be seen from the accompanying diagrams the engine looks like a two-cylinder motor; but the forward

plain cylinder is in reality a mixture pump driven off a second crank on the crankshaft within the crank chamber. This pump serves to draw mixture from the carburetter and to deliver it through an automatic valve and the curved length of pipe shown to the engine cylinder proper. The gas obtains ingress to the latter through an automatic valve in the crown of the combustion chamber. Between the pump and the carburetter is another non-return valve. The exhaust port is formed in the wall of the engine cylinder, and is uncovered by the piston at the bottom of its stroke, the exhaust products passing through this port to the silencer without the intervention of any valve. The crank working the mixture delivery pump is so set with relation to



THE . . .

TRIUMPH.

2 H.P. MOTOR CYCLE IS SUPERIOR TO ALL OTHERS.

Mechanically Operated Valves.
Resilient Duplex Forks.
Lincona Belt.

Spray Carburetter.
One Lever Control.
Long Wheelbase.

Motor Bicycle Catalogue, with all particulars, gratis, on application.

TRIUMPH CYCLE CO., LTD., COVENTRY.

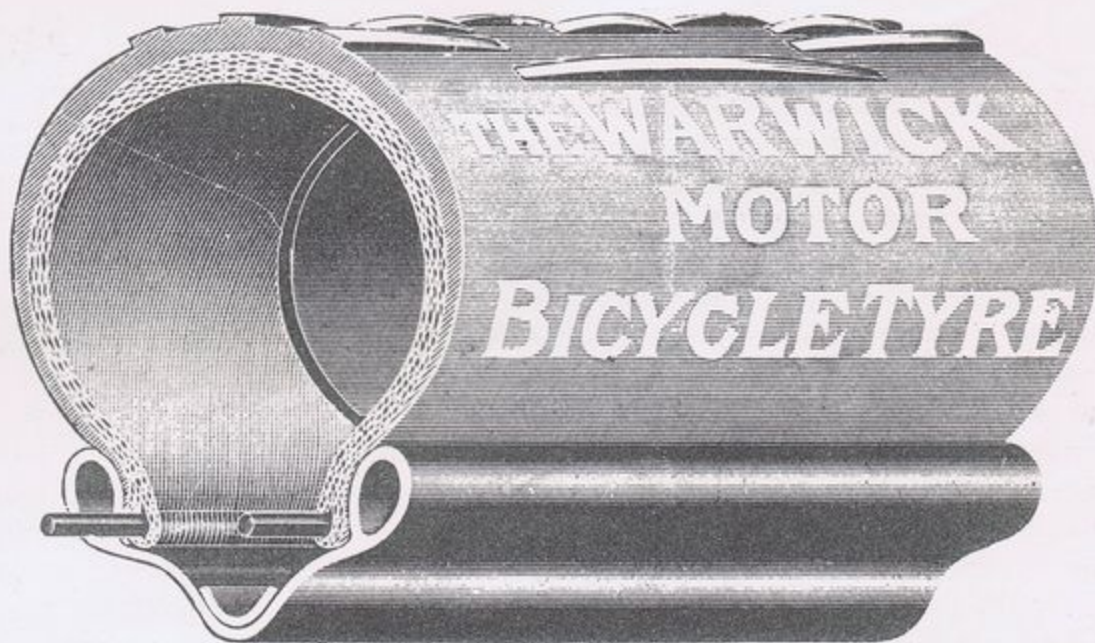
4 & 5, Holborn Viaduct, London, E.C. 30, Deansgate Arcade, Manchester.
4, King Edward Street, Leeds.

“This Tyre

has been ridden by me
about 3,000 miles and
has been no trouble at
all.”

Extract from letter received
from Mr. S. Hubert, Sidwell
Cycle Works, 102, Church Street,
Croydon.

FOR . . .
MOTOR CYCLES
A BETTER TYRE THAN THE



STEERING WHEEL TYRE



WARWICK . . .

is outside the range of practical tyre manufacture.

Specially constructed to withstand hard wear and tear.
Equipped with the safest and best non-slipping device.

Sections and full particulars post free.

THE WARWICK TYRE CO., LTD., Cambridge Street Works, Birmingham.

DUBLIN—34, Westland Row.

GLASGOW—61, Bath Street.

NOTTINGHAM—3a, Lower Talbot Street.

MANCHESTER—21, Northern Buildings, Deansgate.

COVENTRY—Raglan Street.

BARNSTONMERS.CO.NZ

the engine crank that the pump plunger begins its upward or delivering stroke just before the engine piston uncovers the exhaust port. The result of this is that the incoming charge of fresh mixture chases the exhaust out of the engine cylinder, and the pump continues to deliver gas to the cylinder until the upward movement of the piston has compressed the new charge sufficiently to close the feed valve against the pump, and goes on to perform the further and final compression of the charge in the combustion chamber. So soon as the piston has reached the point of its highest travel, and compressed the charge to the uttermost, the latter is

ignited, and the working stroke immediately follows. It will thus be seen that a working stroke of the piston is obtained for every revolution of the crankshaft, in lieu of every other revolution, as with the four-cycle type of engine. Whether this makes for efficiency or otherwise can only be determined by careful tests; but the fact that so small an engine—it weighs only 28 lbs.—could propel our weight up the steep hill in the manner it did speaks volumes in its favour. Mr. J. C. Hencke, of 41, Seething Lane, who has this engine in hand, has signified his intention of allowing us to test these two points for ourselves by actual practice.



NEW PATENTS.

By Douglas Leechman, M.C.E.I., Chartered Patent Agent.

AMONG the inventions which have been published recently, one of the most interesting is Mr. C. T. Crowden's

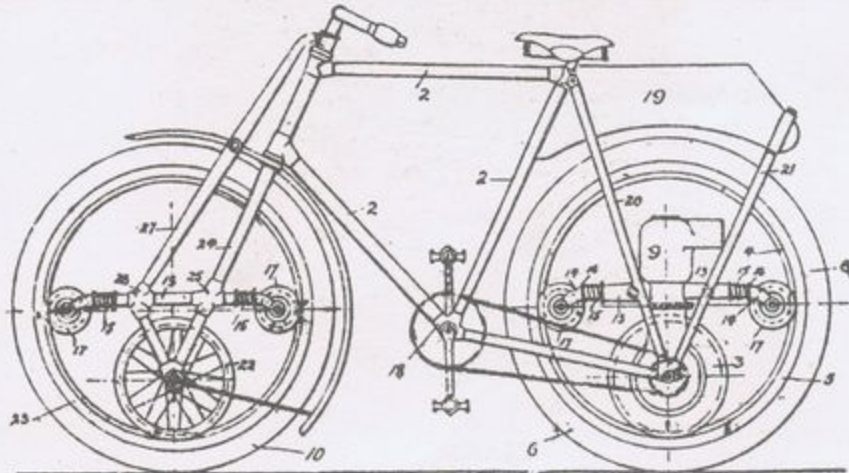
Ring Rail Motor Bicycle.

Constructed with two motors it has a common flywheel arranged between them. This flywheel 3 and the small spoked wheel 22 form, in a sense, the back and front wheels of the bicycle, as the rims and tyres 5, 6, 23, and 10, really serve as ring rails for these small wheels to run on. The wheel 3 is formed with a groove which engages a rib 4 on the interior of the back rim 5. The frame 2 of the machine is fixed to the motors, so that the weight of the frame and rider rests upon the wheel 3, and causes it to grip the rim 5 with sufficient friction for driving purposes. Guides 13 are fixed to the framework of the machine, and carry rollers 17. These rollers are forced into contact with the interiors of

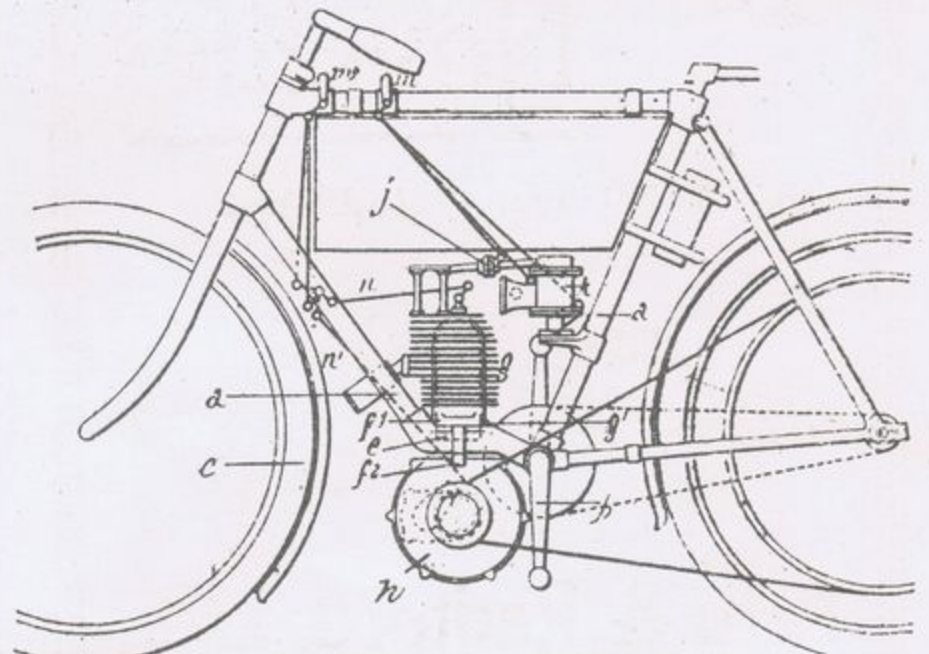
duced. The pedal gear acts upon the friction wheel 3, and means may be provided for lifting this wheel out of contact with the rim to facilitate starting. In another form Mr. Crowden dispenses with pedals, the construction being more on the lines of the old Wolfmuller; indeed, he has converted a Wolfmuller to his new system, and the results are very promising.

A New Frame.

The Werner type of machine is as popular in France as in this country, and two gentlemen of the name of Palmantier seek protection for the idea of making the framework continuous by introducing a member *e* of ring-like formation between the bottom bracket and the bottom tube. The cylinder



the rims by springs 15. Hence when the machine is ridden over an obstacle, the front springs give way, and the small wheels begin to climb up in the rims; and as the obstacle is passed, the springs gradually return the parts to their normal positions, and in this manner vibration is considerably re-



and crank chamber are bolted to this ring by ears $f^1 f^2$. A regulator consisting of a cock or stop, or, in plain language, a throttle *j*, is introduced between the carburettor *k* and the motor; but where the novelty lies in this device it is difficult to discover.

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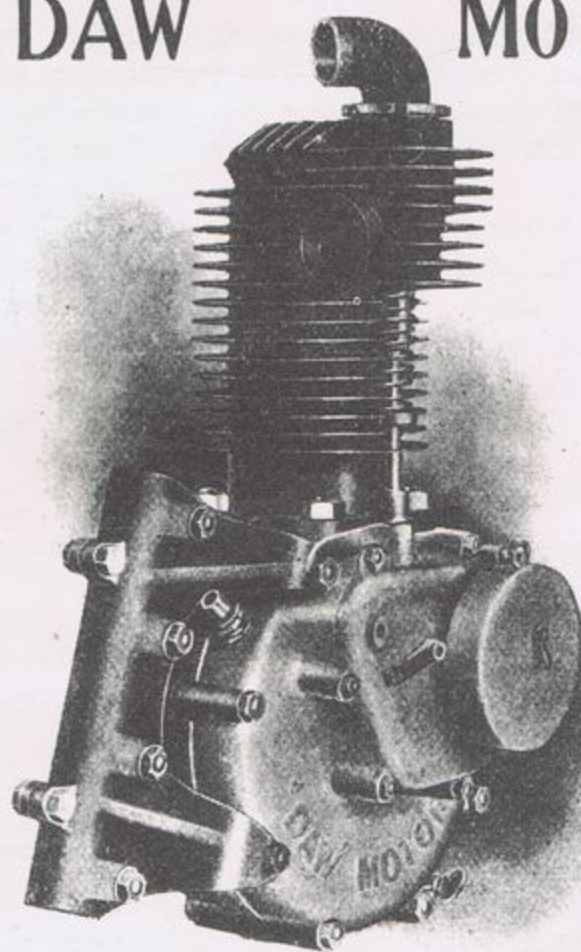
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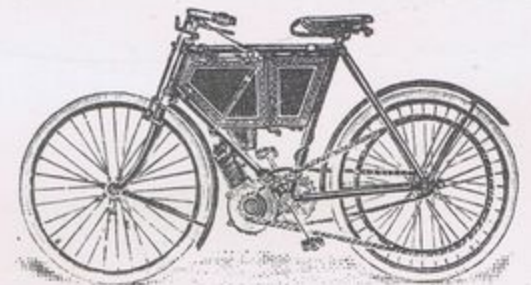
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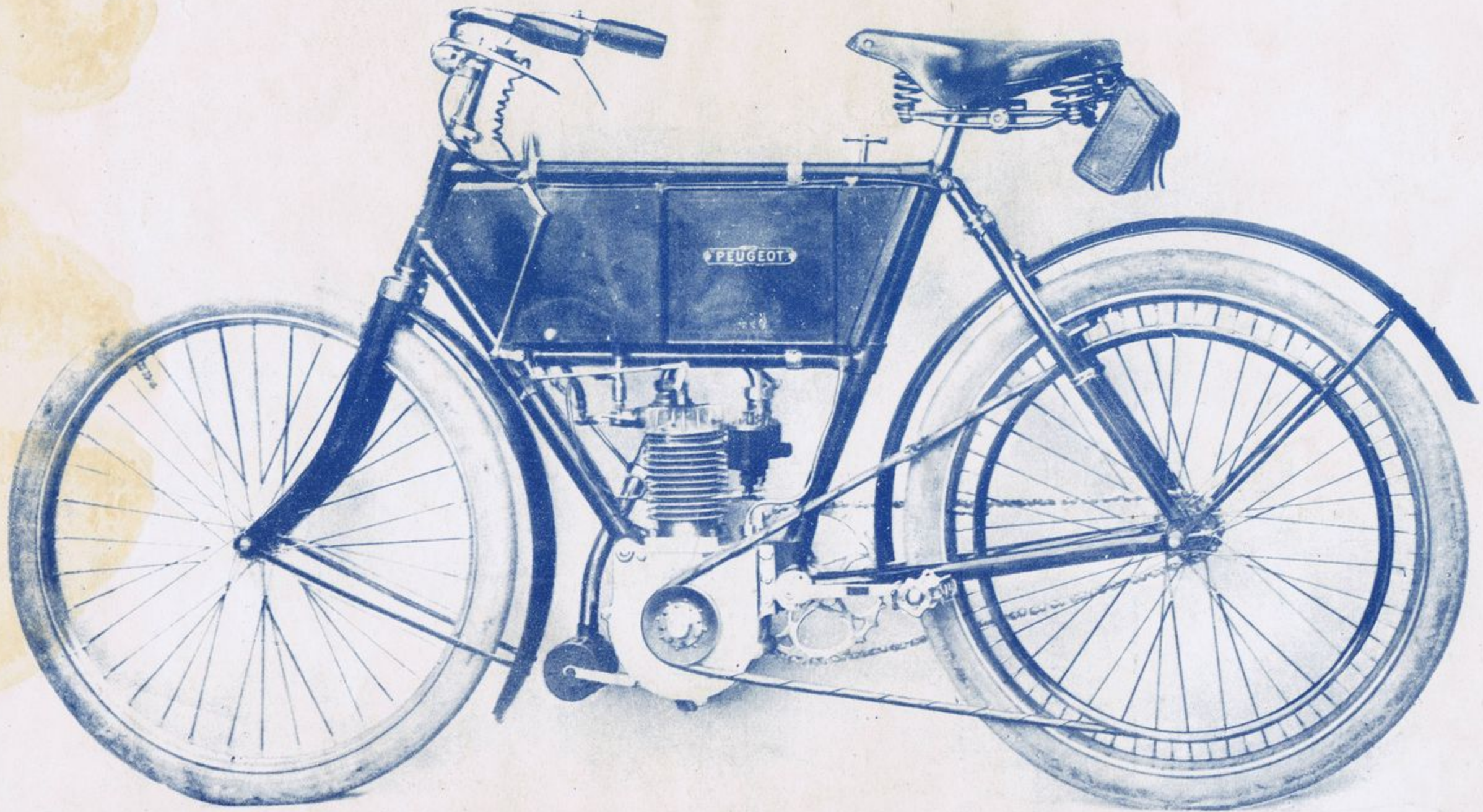
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