

# Motor Cycling

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## & Motoring

### SOME MOTOR CYCLE HISTORY, AND SOME PERSONAL EXPERIENCES.

By ANTHONY WESTLAKE.

In the following first instalment of a most interesting article Mr. Anthony Westlake relates some motor bicycle history which goes to show that motor cycles were engaging the attention of inventors so far back as 1781. Mr. Westlake commenced his experiments with motor bicycles in 1892, and he has since made a very close study of every development of the subject. The completion of this article, in which the gradual growth of the motor bicycle will be traced, will appear next week.

In giving some experiences and descriptions of many motor cycles, my mind is inadvertently led back to reflect upon numerous men who essayed, even in bygone centuries, to make mechanical locomotion a practical thing; and now that this is with us in all its present force, the somewhat crude and cumbersome efforts of those anachronistic geniuses have a strange pathos about them.

To me they appeal strongly as my own early mechanical dreams were all in this direction, and I made many early efforts to realise them, which circumstance brings me to my first experience in motor matters, due to a fractured back, hub on my safety in 1891. A friendly engineer on a traction engine entered into consultation, and finally volunteered a lift to within a quarter of a mile of my destination. The acquaintance afterwards ripened, and my progression in the art of driving increased until one day I managed with some adroitness to place the machine partly on its side in a ditch. I will draw a veil over the sequel, for with a maximum speed of nearly five miles an hour, and the now nearly-universal wheel steering, it was a wild and thrilling time; and so now, with middle age coming upon me, and my 1902 racer (with a steady plod of fifty miles or so) in view, I settle down to a quiet and respectable view of life.

But *allons a nos moutons*, or perhaps more correctly *a nos velos*. My personal interest in motor power applied to bicycles was of even earlier birth. At the French Exhibition of 1878 there was exhibited a steam motor bicycle, the invention of a Swiss mechanic, whose name I quite forget and which I have been unable, for the present, to obtain. I give a rough drawing (No. 2) from memory of this machine. The wheels were of hickory, with iron tyres, which had been superseded by

the suspension wire-wheel in England some years before the date of which I speak. I have no knowledge of any records made on this machine, the boiler, according to my impression, being too small for any ride longer than 100 yards. In appearance it suggested a wild caricature of the Holden motor bicycle, which most of us I think know by sight.

The engine drove direct on to a pair of cranks attached to a small back wheel above which the boiler was placed, the rider sitting in the ordinary position common to the bicycles of those days. But a century previous to this masterpiece (1781), Murdock, Watts' foreman, had designed and constructed a small road carriage, or rather tricycle. See footnote. Small as the model was (I append sketch and dimensions), it proved however, from the mechanical point of view highly successful, for on one of its trials, made in the evening, on the road in front of Murdock's cottage, it literally ran away from its inventor, and charged down the street at twelve miles an hour, scattering fire cinders, steam, and the villagers in

all directions; the last-named fled shrieking that "Satan was unchained again. It ended its comet-like flight in the horse-pond, and its inventor nearly followed it. Murdock under Watts' persuasion, very reluctantly abandoned his motoring ideas.

*Apropos* of Watt, a warning to inventors. When first designed, his engine and its piston and mechanism for transforming rectilinear into circular motion by means of the crank (before then never used in conjunction with steam and so constituted a valuable patent) being much elated with his success he

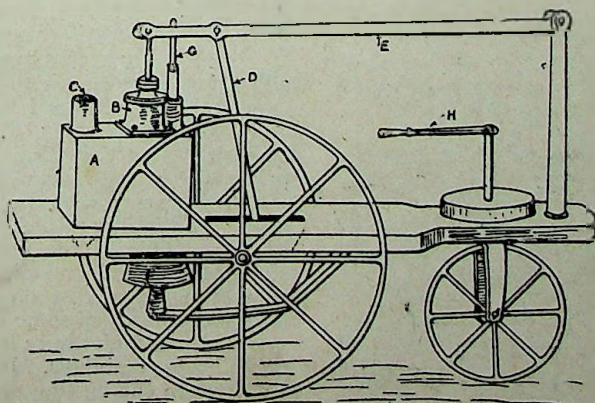


FIG. 1. MURDOCK'S MOTOR CYCLE 1781.

A Boiler. B Cylinder. C Chimney. D Connecting Rod.  
E Beam. F Furnace. G Valve Stem. H Steering.

The larger model had wheels of 20 inch and 9 inch respectively, and was some three or four feet over all.



WALKED DOWN TO THE VILLAGE INN, and there, in the presence of the *élite* of the place, proceeded to explain with accuracy his most recent idea, by the simple expedient of dipping his finger in his mug of beer, and tracing with this medium on the counter an outline of the invention before all beholders or beer-holders.

Amongst the company was a smart gentleman from London, named James Pickard, who, recognising the importance and value of the invention, immediately returned thereto, and filed the patent before poor Watt had a chance to do so.

This same person actually sued Watt for infringement and Royalty on what was really Watt's invention. However

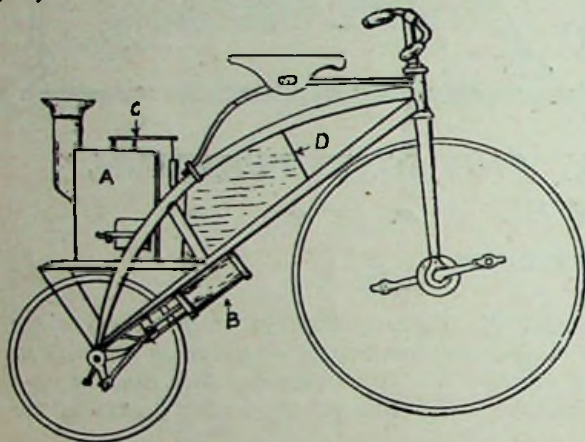


FIG. II. STEAM MOTOR BICYCLE, EXHIBITED AT THE PARIS EXHIBITION OF 1878.

A Boiler and Furnace. B Cylinder. C Safety Valve. D Fuel and Water Tank.

Watt immediately designed the sun and planet motion (geared facile movement) and thus evaded this imposition.

The foregoing, however apparently irrelevant to my subject, is in reality most pertinent, as the crank and piston are the common foundation of nearly all motors.

However, to continue to relate these almost forgotten incidents in connection with the subject would be to risk running into many volumes, so I will proceed at once to deal with the petrol motor, the advent of which heralded the first tangible progress in our movement.

In 1885, Herr Otto Daimler made his

NOW FAMOUS MOTOR-BICYCLE,

with which most of us are familiar. The object of this construction was not to supply a practical vehicle so much as to

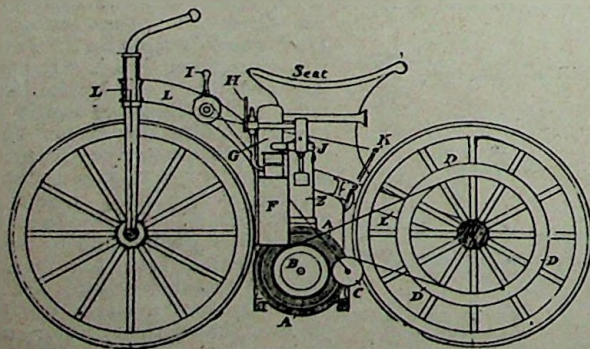


FIG. IV. DAIMLER MOTOR BICYCLE 1885.

A A Crank Case, B Engine Pulley, Driving Strap, and D D Driving Wheel Pulley. C Jockey Pulley for tightening Belt D. E Cylinder. F Petrol Tank. G Carburettor. H Mixture Valve and Lever for altering same. I Lever and Ratchet for tightening Jockey Pulley C. J Valves and Lamp. K Brake. LL P Frame.

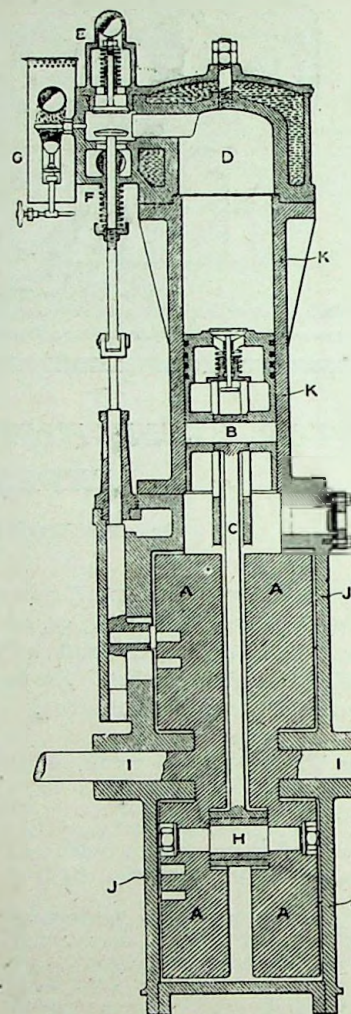


FIG. III. A SECTION OF ONE OF DAIMLER'S ENGINES 1880-5.

A A A Flywheels. B Piston and Wrist Pin. C Piston Connecting Rod. D Combustion Chamber. E Inlet Valve. F Exhaust Valve and Stem. G Ignition Tube and Lamps. H Crank Pin. I Axle Bearings. J J Crank and Fly Wheel Case. K K Cylinder.

provide a means of obtaining reliable data for the construction of other carriages. This machine (Fig. 4) of Daimler had a most important effect, however, as De Dion, a little subsequent to this period, had experimented with steam with such disappointing results that he abandoned hopes of success, but finally in 1893, or thereabouts, he practically took Daimler's engine *en masse* (see Fig. 3), and attached it to the back of a tricycle. I append a drawing of Daimler's early engine. The original drawing appears in a most valuable work on motors, "Petroleum and Benzine Motoren," by G. Lieckfeld, Munich, 1894, unfortunately published only in the German language.

On reference to the drawing of Daimler's engine, it will be seen that great resemblance between it and a sectional drawing of De Dion's motor, even down to the valve arrangements and the enclosed flywheels (afterwards abandoned by Daimler), the only difference being that De Dion's engine was entirely air cooled. However, this was a huge step in advance, for in the Paris Toulouse races in 1897, and many others, the tricycles easily beat the cars of that period. De Dion also constructed a motor bicycle about this time. He placed his tricycle engine

JUST BEHIND THE BOTTOM BRACKET, and drove from engine to back wheel by a train of pinions. One of these machines I know for certain came to England, and I believe that Mr. F. W. Baily, Hon. Secretary of the English Motor Car Club, had some amusement with it—principally in railway trains.

Contemporary with De Dion's invention was the Hildebrand-Wolffmüller bicycle (Fig. 5). This came into being in 1895. One in the hands of Mr. New was brought to England in 1896, and did some time tests and raced against a well-known cyclist on the C. P. track. This machine achieved a speed of some 27 miles an hour on level ground, but its great faults were its slipping propensities and its lack of ability to climb hills. It came to grief on the track, owing, I believe to the locking of the steering head, which caused it to charge the railings through which it passed in great style. It afterwards appeared at the great opening motor car run.

+ In '95 he showed a steam tricycle at Paris. This is still to be seen in his works.



to Brighton in November, 1896, but it did not cover much of the distance. I made its direct acquaintance in 1897, while on a visit to the continent. Our intimacy was not of long duration. Being placed carefully in the saddle, and having got the control by means of the throttle and mixture, I went off in grand form at about 20 miles an hour. I felt very imposing indeed but suddenly became aware that there was a crossing some ten yards in front, and a large railway van just turning the corner. There was little time for reflection. In a second I realised that I

COULD NOT GET THROUGH,

and in less time than it takes to relate pictured myself under the wheels of that van. My impulse was to swing the front wheel at right angles to the frame with the result that the machine and I came down at once—about four feet from the van—with a crash that resembled the discharge of a cartload of fire-irons. As I lay prostrate I saw my friend rushing up the road, swinging his arms about wildly and shouting "Put out the lamps! Put out the lamps!" As the machine was fitted with the tube ignition, the danger of the petrol firing can be understood. However, nothing happened in the way of an illumination, and I considered that I had got off cheaply with a cut knee and damaged

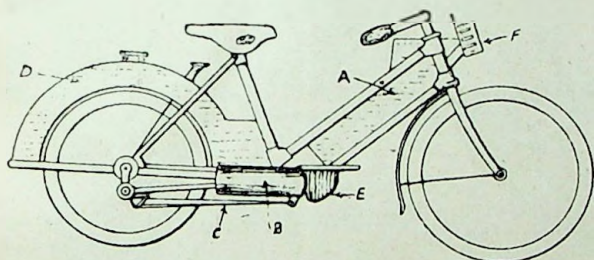


FIG. V. HILDEBRAND—WOLFFMULLER 1895.

A Carburettor and Petrol Tank. B Cylinder. C Rubber Straps. D Water Tank. E Case of the Ignition Lamps and Tubes. F Air Inlet and Mixture.

hand. These I immediately dressed with petrol—a useful tip in such cases. The machine was absolutely uninjured.

Apropos of the Wolffmuller bicycle, it is well to mention that this was perhaps the first practical motor-bicycle:

THE ENGINE WAS WATER-COOLED.

The water reservoir took the form of a mudguard for the back wheel, the tank and carburettor (surface type) being placed on the fore part of the frame, and the foot plates in the place usually occupied by the crank bracket. Pedal-gear there was none. The gear for valves was actuated by a small ball-bearing eccentric placed on the back axle. Large India rubber straps were attached to the big end of the connecting rod and cylinder to assist in overcoming the compression. As the outward stroke of the piston extended these, they, in returning, on the inward stroke exerted considerable force. A marked peculiarity of this machine was a funny tapping sound made by the carburettor. This was due to the two little non-return valves which served as air inlets. I have often wondered that this small feature has not been copied, for anybody who has placed his hand to the air intake of a carburettor when the engine is running will have felt the force of the "blow back," and will be able to appreciate the economy which such an arrangement, if efficient, will bring about.

Wolffmuller also constructed

A TANDEM WITH FOUR CYLINDERS,

arranged almost exactly as in the Holden engine, but it was not a success, chiefly owing to ignition troubles. In fact, for the first two years of its existence, the Wolffmuller bade fair to be a failure owing to this defect. I have a relic of the tandem in the shape of two of its cylinder covers fitted with two

separate insulated plugs in each head, their points converging to sparking distance. This machine was first fitted with the electrical ignition, but their system being faulty, lamps and tubes were substituted. These gave endless trouble, blowing out, going out, flaring, irregularly firing, etc., until, in 1895, I believe, Dr. Ganz, of Frankfurt, brought out his improved pressure-fed burner.

In 1897, Dr. Ganz employed an engineer named Baur to ride his Wolffmuller, so fitted in the Paris-Dieppe race (the first Gordon-Bennett). He duly competed, and would, in my opinion, have undoubtedly won this race, for the road suited the now vastly improved machine admirably, but unfortunately by an oversight Baur had forgotten to close the drain tap of the water tank before starting, and only became aware that something was radically wrong when his engine was nearly red hot. Not being able to speak a word of French, he had much trouble in explaining his wants to the peasants at the *auberge* at which he stopped in the anticipation of procuring the necessary water. At length he obtained what he required and resumed his journey. Presently ominous sounds from the engine betokened more trouble. Dismounting he

FOUND IT ONCE MORE ALMOST RED HOT,

and the water tank again empty. At this juncture he thought of looking at the drain cock, which, of course, he found wide open. A horse pond being handy, he filled up and started again, and all seemed right. But not for long. His engine began to lose power in a remarkable manner, and upon examining his lubricators he found them empty. He had used the lubricant too lavishly on the cylinders before finding out the true cause of their over-heated condition. Managing to obtain some salad oil, he filled up with it and essayed

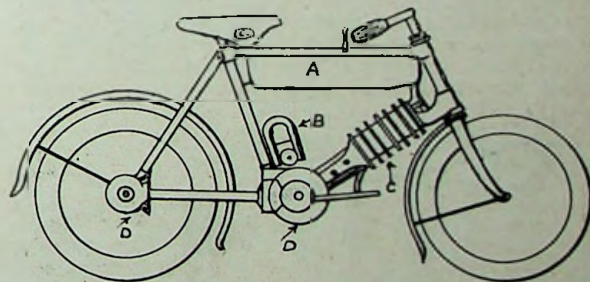


FIG. VI. HEIGEL—WEGUELIN 1896.

A Carburettor and Tank. B Magneto Dynamo. C Cylinder 4" x 4". D D Crank case and bevel gear. N.B.—No flywheel was fitted to this machine as first made, though one was added afterwards.

to continue. As one may imagine, salad oil did not prove to be a very good lubricating medium, and owing to continual back firing Baur eventually abandoned the contest at Amiens.

Another machine (see Fig. 6), I might say an attempt to rival the Wolffmuller, appeared during 1896, made by Heigel-Weguelin, also a Munich firm. This machine was fitted with

ONE LARGE AIR-COOLED CYLINDER,

which occupied the position of the down tube from the head to the bracket, and drove a bevel gear therein which was continued to the back hub. The cylinder was 4 in. bore and with a 4 in. stroke, and was furnished with magneto-dynamic ignition. This cylinder, which I have still, is another interesting relic. This last-mentioned machine never achieved great notoriety, although one was to be seen about the streets of London, a year or two ago. In common with the Wolffmuller machine it was a bad hill climber.

*In the next instalment of this article Mr. Westlake will deal with the advent of the practical motor bicycle, and the contribution, a really interesting chapter, will be fully illustrated by further striking diagrams.*



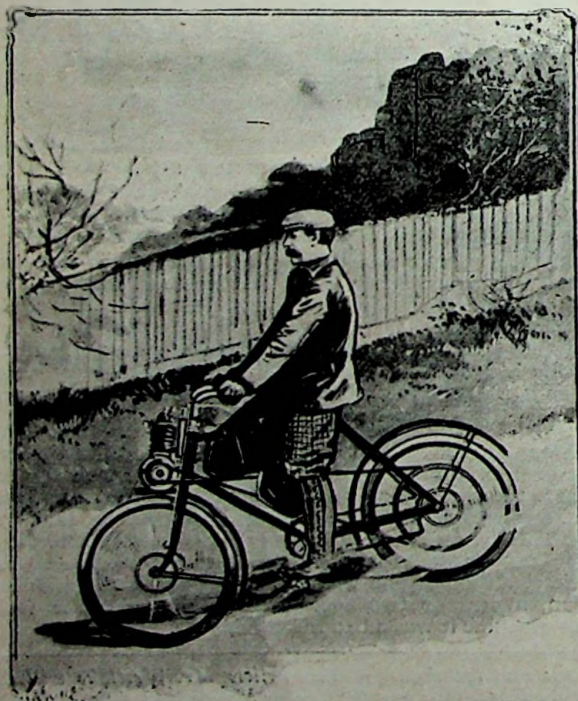
## ON THE DELIGHTS OF MOTOR CYCLING.

By ERNEST H. GODBOLD.

*In this article Mr. Ernest H. Godbold descants upon the pleasures of motor cycling under its best conditions, and points to the necessity for the motor cyclist to gain knowledge by experience. His efforts are ably seconded by our artist, George Moore.*

CANDIDLY speaking, motor cycling is the best kind of pastime I have struck yet. And I think at one time or another I have tried them all from Rugby football down to parlour tennis. It used to be claimed for golf that it was the ideal exercise for body and brain—but that was before motor cycling had been invented or become possible. To my mind there is nothing in the world to be compared with motor cycling under favourable conditions and no sense of enjoyment so keen as that to be obtained from travelling along a well surfaced road at anything between ten and twenty miles an hour, bathing in the fresh air and sunshine, with a proper appreciation of surrounding scenery and finding occupation all the time for one's mind in the working of the motor, trying to get the best result from it under all conditions and learning by sound and almost by instinct the way in which it is working and the best method in which to handle it with that end in view.

And then there is that spirit of competition which gives an added relish to our enjoyment; the gradual overtaking and eventual passing of others on the road, whether they be either drivers of horses or well developed and athletic young cyclists of the customary kind. Uphill and down the motor cyclist feels that black care has left his shoulders for ever, and the business worries of yesterday's workaday world have disappeared.



"DOWNHILL HE FLIES WITH EXHAUST VALVE OPEN."

### DOWNHILL HE FLIES WITH EXHAUST VALVE OPEN

and current switched off to cool the engine and prepare it for the next ascent, and this begun, he sets his legs to work, and with gentle pedalling assists it to the summit.

At the end of the run neither his appetite nor his sense of satisfaction is any less keen than they were wont to be ten



"THE GRADUAL OVERTAKING AND EVENTUAL PASSING OF OTHERS ON THE ROAD."

or twenty years ago after an hour and a half of exciting "scrums" on the football field, a ten mile spin across country at hare and hounds, or a thirty mile ride—or scorch—on bicycles with bootlace tyres of the solid sort and a hard ding-dong at the finish. Dusty he may be; he may have a sense of flies in his eyes and a taste of the same in his throat; but dust and flies are alike easily removed; and during the time in which he has been acquiring them, he has enjoyed every minute of his existence, and the cobwebs that during the week had gathered round his brain have all been blown away. He stables his machine with a feeling of pride, increased rather than diminished by the remarks of the on-lookers at its rarity and virtues; he eats his meal with a relish, and enjoys his subsequent pipe with even more than his customary gusto as he suns himself under the cathedral wall, lies prone in a sunlit meadow or watches the river glide by under the arches of the bridge in the old town to which he has made his pilgrimage.

And when shadows begin to lengthen he seeks once more his machine, carefully overlooks tyres, nuts, sparking and other vital parts, injects a drop or two of paraffin into the cylinder head and sets off in cool of the evening on his homeward way. Thereon the engine working well in the keener air, his way will probably be even pleasanter than before; the setting sun will be casting more mellow lights on trees and hills; the workers from the fields, having finished their round of toil, will be devoting the last few hours of the week to rendering their own gardens neat and trim, and will gaze with open-mouthed wonder and good humour at this new invention, the motor cycle.

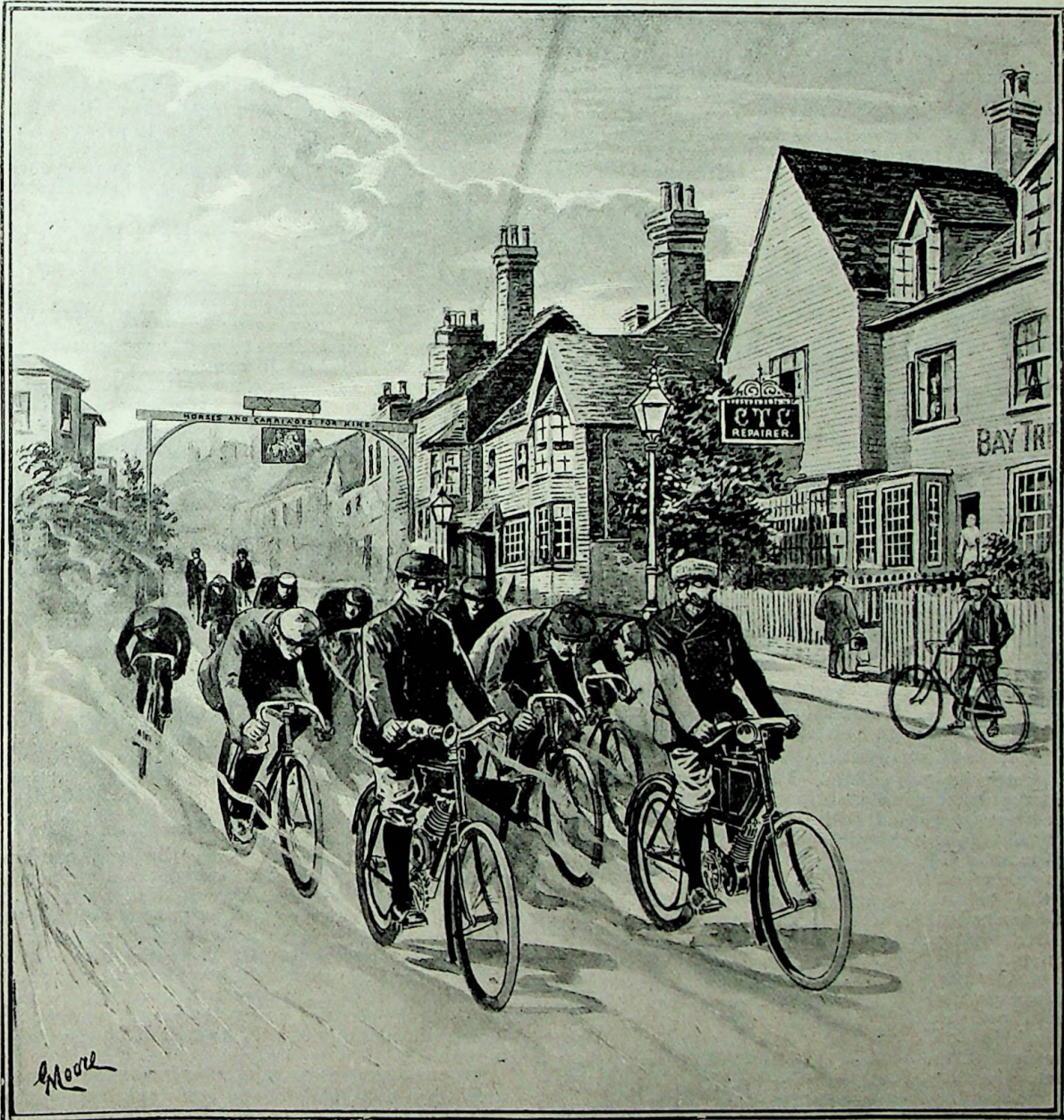
Of such are the delights of motor cycling under its best conditions and in its single form. The single machine, whether bicycle or tricycle, is a selfish instrument; but the



Quadricycle, at no great increase either in capital outlay or in cost of up-keep and motive power, permits the easy carrying of a partner to share with us our joys and sympathies and assist us when skies are unpropitious and breakdowns occur.

For it is not always plain sailing; roads are not always good, and the sun does not always shine. Now and again the inevitable sometimes, unfortunately, happens, which may necessitate an hour or two's work by the roadside, during which we chafe under the cynical comments

or kindly meant sympathy of those same rustics who so lately cheered us gaily as we sped along; the hour's work itself may be in vain, and we may be reduced to the ignoble position of having to call horse and cart to our aid to tow or carry ourselves and our unruly instrument to the nearest town or railway station; or may be recognising the fact that the only thing required to make it go is something we have not with us, we leave the machine to its fate in friendly hands and set off homewards on foot or on a borrowed bicycle.



#### HANGING ON.

*In this picture our artist gives a vivid and prophetic illustration of a return run from Brighton. The Motor Cyclists are passing through Crawley and are being held for the time by a little group of Speed Cyclists.*

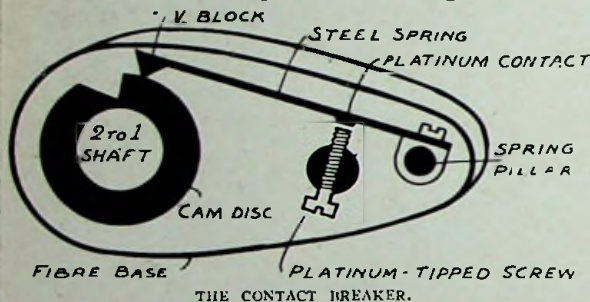


# THE ELECTRICAL DETAILS OF THE MOTOR BICYCLE.

## Part I.—What They Are, and How to Keep Them in Order.

In this article the reader will find a very complete and concise summary of the electrical system of the present day motor bicycle. In this part the component parts of the coil and battery system are explained and clearly illustrated. In Part II., which will appear next week, the following will be dealt with:—How the various parts of the system are connected. How to charge the accumulator at home. How to use the volt and ampere meters. The contact maker and how to adjust it. Defects in the coil. Defects in wires—how to join and repair them.

MOST of the troubles encountered in the running of a motor cycle may generally be traced to some defect in the electrical system adopted for firing the explosive mixture of gas and air in the motor cylinder. The early patterns of the motor bicycle, notably the "Werner," were fitted with "tube" ignition. This arrangement was very simple in principle, consisting briefly of a platinum tube kept at a bright red heat by a small spirit blast lamp. This tube was fixed in a chamber attached to the cylinder of the motor, and an arrangement of slides or valves allowed the explosive mixture to come in contact with the red hot tube at the right instant. This system was easily understood by the non technical rider and was found reliable and easily kept in order. Its great drawbacks

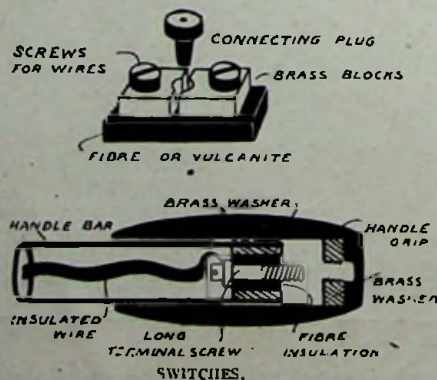


however were (1) the liability of the naked flame to come in contact with the petrol by any means (say in case of a fall) and thus cause an explosion in the carburettor or tank; (2) the limited range of speed and power obtainable. Both these defects are absent in the electrical system of ignition now used, its safety and efficiency indeed, being remarkable, but we are now using certain mysterious looking pieces of apparatus and their wire connections, the scientific principles of which the motor cycle novice has only the vaguest idea, consequently he is at a loss how to account for many of the difficulties and is thereby put to expense and inconvenience which could be avoided if he would learn at least

### THE FUNDAMENTAL PRINCIPLES

of the electric ignition system. The object of these articles will be to put these principles before the reader in the simplest possible language, so that, with the aid of diagrams, practical hints and directions, he may be able to keep this most important part of the motor bicycle in good order.

In this article will be described in detail the system used on motor bicycles of the two main types, viz., the "Minerva" and the "Werner." In fact, we may say that 90 per cent. of motor bicycle makers are employing the coil and battery system, in distinction to the few who use the dynamo system.



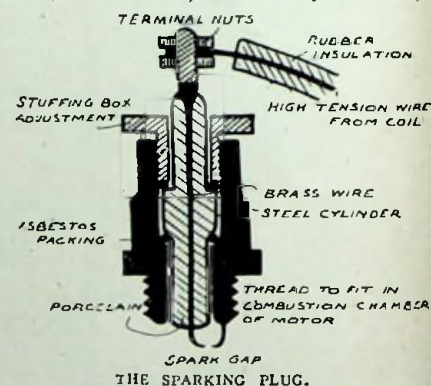
The component parts of the coil and battery system are:—

- (1) The battery which supplies the electrical energy.
- (2) The coil or transformer which increases the tension or pressure of the electrical energy.
- (3) The contact breaker or automatic switch which is worked by the motor and sends impulses of electrical energy through the coil.
- (4) The sparking plug which allows the high pressure electric impulse or current to produce a tiny spark or flame in the explosive mixture and thus ignite it.
- (5) The main switch on top by which the current is cut off at will by the hand for stopping and starting the motor.
- (6) The insulators or protected wires which conduct the electrical energy to the desired positions.
- (7) The "timing" lever attached to the automatic switch or contact breaker, which, to a large extent, regulates the speed and power of the motor.

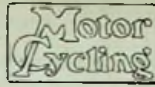
### THE BATTERY OR ACCUMULATOR.

The battery, sometimes termed the accumulator or storage cell is totally different in construction and principle to the "dry" battery in use on some patterns of tricycles and cars. The general type of storage cell met with consists of a celluloid or vulcanite box, divided into two watertight compartments in each of which are fitted 3 or 5 gridwork plates of lead. The spaces forming the grids are filled in with a paste containing oxide of lead (such a one, for instance, as ordinary red lead). These plates are immersed in a mixture consisting of sulphuric acid (oil of vitriol) and water of a certain strength or proportion. Now, when these plates are connected together in a certain way and a current of electricity from a generator, termed a dynamo, is sent through them when immersed in the acid, they extract certain gases composing the acid and accumulate them on their surfaces as it were; this is technically termed electrolysis or decomposition of acid. When the plates have absorbed as much of these gases as possible, the battery is said to be *charged*, but strictly speaking, not charged with electrical energy, but with chemical energy. The store of chemical energy, may, with great ease, be changed back into electricity. This is the operation known as *discharging*, and when all the chemical energy is used up, no more current can be obtained, therefore the operation of charging must be repeated.

THIS METHOD OF PRODUCING CURRENT FOR SPARKING may seem a roundabout one, and a much simpler method in fact is to obtain your current by the burning (in a chemical sense) of the metal zinc as adopted in the ordinary household electric bell system, but this method cannot compare with the accumulator system on the points of reliability and compactness combined with large storage capacity (a most important







point in a motor bicycle) and certainty of giving current of a uniform strength at all times.

#### THE INDUCTION COIL OR TRANSFORMER.

In outward appearance this consists of a closed cylindrical case of vulcanite, at the ends of which are fixed small brass fittings known as terminal screws. Inside the case would be found coils of insulated copper wire, wound over a central "core" or bar formed out of soft iron wires, while in addition there is a paper and tinfoil arrangement termed a "condenser," which serves an important function.

The exact purpose of the coil in the electric system of ignition is to increase the pressure or "tension" of the current, which is supplied by the accumulator, to such a degree that it

will be able to jump across a small air space in the form of a spark. Without the aid of the coil it would be necessary to use some hundreds of accumulators connected together to force a current across  $\frac{1}{8}$  inch even!

To understand exactly how the coil increases the pressure involves some considerable knowledge of electrical theory, but the non-technical reader might get an idea of the function of the coil by comparing it with the gearing system of an ordin-

metal but platinum will resist the burning and corrosive effect of this arcing to anything like the same extent.

This method of construction is adopted chiefly on motors of the "Werner" type, but a slightly modified form is used on the "Minerva" motor, inasmuch as the fibre base is replaced by a light metal one, the contact spring being fixed in metallic connection with it, and the platinum tipped screw is insulated from this base by means of a somewhat thin mica washer clipped under its support. Another distinguishing feature is that instead of the V-block or spring dropping into a slot in the cam disc, a projection on the disc strikes the block and presses the spring contact on to the screw, thus ensuring a perfect "make," the tension of the springs, of course, bringing the points out of contact. Both types of contact breakers are now provided with light metal covers for protection from oil and dust.

#### THE "TIMING" OR ADVANCE SPARKING LEVER.

This is an attachment to the contact breaker, and consists of a simple arrangement of hinges, rods, or levers for moving the contact breaker to various positions of the cam circle. It allows of the spark being produced in the explosive mixture at various phases of its compression, enabling the speed of the motor to be regulated by the operation of late or early joining. As an example, to obtain greatest power out of the motor the spark must take place the instant the piston has completed the compression stroke.

#### THE SPARKING PLUG.

This serves the purpose of conveying the high tension current into the combustion chamber of the motor and provides a minute air gap for it to jump across in the form of a spark. In construction it consists of a screwed metal socket into which

an insulating bush of porcelain or mica is tightly fitted. Through the centre of this bush passes a steel or brass wire ending in a platinum tip where it enters the combustion chamber; this tip almost touches the body of the plug, missing it by about 1-40 inch, and this space forms the sparking gap. The outside end of the plug is threaded and provided with nuts so that the high tension wire from the coil may be attached. Porcelain or mica are the most suitable materials for sparking plugs owing to their high insulating and

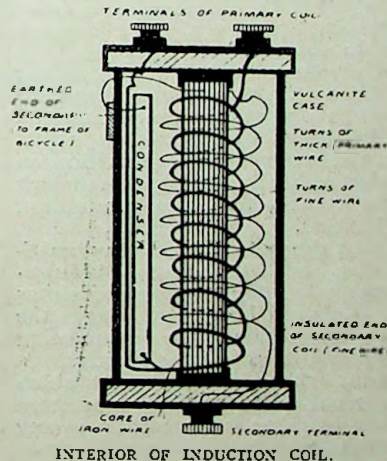
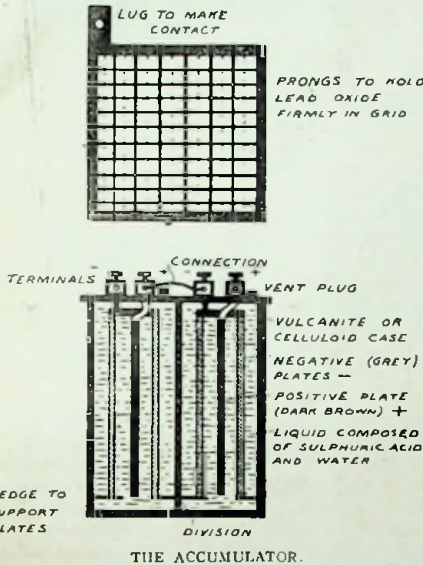
heat resisting properties, but glass has also to some extent been used.

#### THE MAIN SWITCH.

In most machines this is arranged in one of the handlebar grips, and may be regarded as a tap which controls the electric circuit. The principle of an electric switch is easy to understand, being simply some method of bridging a gap in circuit by a conductor and thus completing it and allowing the current to flow. In addition to the main switch there is generally a second or reserve switch fitted of the plug type (distinguishing it from the handle switch) and this consists of an arrangement for screwing two brass washers into contact.

#### THE INSULATED WIRES OR CONDUCTORS.

These are of stranded copper covered with indiarubber and prepared tape. The wire carrying the current from coil to plug is more heavily insulated than wires from battery to coil, as the increased pressure needs thicker rubber protection.



ary chain driven cycle. Here the power supplied by the rider's legs is converted into speed by the process of "gearing up," but there is no actual gain in mechanical energy, in fact power is to a slight extent lost owing to leakage and chain-friction, &c., so we may regard the coil as a "gearing up" system between battery and sparking plug. Part of the power supplied is here also lost by the "resistance" or friction of the wire coils through which the current passes. The process by which the transformation of the low pressure of the battery to the high pressure available at the sparking plug takes place, is that known as electro-magnetic induction and is described in good text books on electricity and magnetism.

#### THE CONTACT BREAKER OR TREMBLER

This is a most important detail of the ignition system and forms a part of the motor mechanism. Its function is to cause the current to circulate through the coil and stop instantaneously at the exact instant that the explosive mixture in the cylinder is at maximum compression; simultaneously with the stopping of current the spark takes place in the explosive mixture and fires it. The construction of the contact breaker is very simple and efficient in action, and is practically the same arrangement as used by De Dion. On the cam or 2 to 1 shaft of the motor is fixed a base plate of vulcanized fibre. On this is supported a brass pillar and flat steel spring, a V-shaped metal block is fixed to the free end of the spring and engages in a notch on the revolving cam. On the fibre plate is also fixed a brass pillar carrying a screw which is tipped with a tiny bit of the rare metal *platinum*; this platinum tip presses against a similar one fixed to the lower side of the spring.

The reason platinum is used for the "contacts," is because every time the tips separate a small electric arc or flame takes place between them when the motor is working; no other



## THE SIMPLIFICATION OF THE MOTOR BICYCLE.

*The writer of the following important article, one of the leading authorities in the Cycle Trade, makes some very practical suggestions in regard to the simplification of the motor bicycle, and we shall be pleased if his views, so ably expressed below, lead to a discussion amongst our readers. It cannot be denied that there are many ways in which the motor bicycle can be simplified, and there can still further be no doubt that the simpler the motor bicycle the more popular will it become.*

THE first question the enquirer asks in regard to the possibilities of the motor bicycle relates to the knowledge necessary to ride and operate same. It consequently follows that the first aim of designers must of necessity be towards the simplification of the machine as a whole—granted that this is carried out upon mechanical lines we shall also arrive at a higher mechanical efficiency.

If the motor bicycle is to take its correct place in the field of self-propelled vehicles, it must be lighter than at present; capable of climbing ordinary hills, either without or with but slight assistance from the rider, and much less liable to accident either from arrangements of parts or failure of principle. It must also be a more cleanly machine to manage.

It must be understood that by the simplification of the motor bicycle it is not necessarily implied that the number of the parts are to be reduced, or that any radical alteration is made in the essential principles of either the motor or the vehicle, but that the mechanical efficiency of the machine will be raised and that its operation will be less liable to derangement through failure of the parts themselves or by error on the part of the driver.

In order to eliminate the factor of personal error, it of course follows that the actuating levers, etc., must be more handy and, if possible, fewer in number than at present.

As indicated above, it is proposed to deduce suggestions from machines which are in daily use at present rather than to suggest wholesale changes in regard to arrangement and disposition of parts. For the sake of clearness the points which most readily suggest the desirability of simplification will be grouped into three classes, the first being those which affect the engine itself, its construction and lubrication, also the vaporiser and the ignition.

The writer is of opinion that the motor should be automatically lubricated while in motion, and that the supply of lubricant should cease automatically on the stoppage of either motor or machine. Bearings should be oil retaining; the presence of lubricating oil on the outside of the engine being a serious handicap to the general use of motor bicycles. It would also appear desirable for arrangements to exist which would allow superfluous or spent oil to be discharged from the crank chamber while the machine is in motion; in any case a more cleanly means than the removal of thumb screws.

Valves and working parts should be more accessible than at present; in fact, it is probable that some success will be achieved by the designers who first attempt to introduce practice and design which have not been so entirely influenced by the experience obtained on engines of greater power used for different work.

The foregoing remark applies equally well to the carburetter; it would appear to make for simplicity if the latter, which need be of but small size, were attached directly to the engine, instead of to the frame as in the majority of current designs. The writer has seen a development, of considerable promise, embodying this principle. The direct gain would be the increased room for petrol and the more self-contained character of the motor.

Ignition under present practice entails the most unsightly and cumbersome attachments; it is consequently fair to assume that a mechanical generator will ultimately supersede these; in the meantime, however, while the electrical engineer is contriving something of this kind, our designers have

an ample field for the improvement of present terminal connections.

The second group which it appears easy to simplify, are the devices for controlling the supply of petrol and air, the timing arrangement and the brakes.

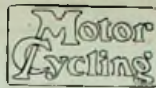
An American designer has produced a high powered car in which all of the above, with the exception of brakes, are operated by one handle, so that in view of the fact that it is comparatively easy to devise two brakes actuated by one hand, we may safely expect our designers to place us in a position to obtain a perfect control without removing our hands from the grips. This consummation, in conjunction with the automatic lubricator referred to in a former paragraph, presents, in the writer's opinion, the most pressing alteration required, and would, he believes, contribute largely to the early adoption of the motor bicycle by the outside public. The present necessity of removing the hands from the handle bar in order to control the motor must, of necessity, deter any but the skilful and intrepid rider from adopting what promises to be the most widely used of any motor-propelled vehicle.

The remaining suggestions are associated with the much discussed question of gearing. In this respect, developments will probably be extremely rapid. The belt is simple in appearance only, it is wasteful as a transmitter, dirty, and requires frequent adjustment and repair. A simple drive in the strict sense of the word must be highly efficient, durable, and possess mechanical means for adjustment. It is also desirable that the engine and at least a portion of the transmitting mechanism should be at rest while the machine is running down hill.

It would be unfair, after criticising existing conditions, if some remarks were not made indicating the optimism of the writer in regard to the future. It may be questioned whether any machine has been at once so comparatively successful as the one in the interests of which this paper is published. This in itself is an indication of what may be expected in the future. Up to the time of writing, practically no English engineer has specialised himself upon the designs for the production of the motor bicycle. In view of the increasing demand for the machine it is obvious that in the near future more than one competent mind will be at work on the subject, in which case the points enumerated above will cover only a fraction of the ground which presents itself. Existing machines, within certain limits, do good work. It may therefore, with confidence, be expected that within a few months we shall have machines in which, apart from unavoidable frictional losses, all the power given out by the motor will be conveyed to the driving wheel—machines which will be operated without removing the hands from the handle-bar, in which all working or delicate parts will be protected from injury by falls, or from contact with oil, where the latter is detrimental to machine or rider; machines in which the electrical equipment will be of a more simple and mechanical character.

If this forecast is only partially true, we are on the eve of the opening of an industry as large as the original bicycle business, which, at the time of writing, is one of the most important, not only as regards capital and men employed but also in relation to the economic conditions of the country and the dispositions of its population.





## THE SMALL MAN'S OPPORTUNITY.

*The following will be found to be of special interest to those engaged in a comparatively small way in the cycle trade.*

THE motor cycle should receive the particular attention of the small manufacturer, agent, and dealer. It is his great opportunity.

IN the British Isles alone there are not less than ten thousand cycle agents, repairers, and small makers whose mainstay in life depends upon the popularity of the bicycle, and who, of recent years, have experienced a tough time, despite the fact that the majority are skilled mechanics who have devoted years to learning their trade, and who are not mere loafers dependent upon the ebb and flow of fortune.

Frequently, when travelling about the country per cycle or motor we have called upon and chatted with the "local repairer," and almost as frequently have we found him a man possessed of intelligence and ability, which contrasts strongly with the old-time surroundings and inaction of his locality. True he has not always been strong in the matter of business method, nor

### SMARTNESS OF SHOP DISPLAY.

but one feels upon entering his little establishment that it must be a bad smash indeed that he cannot in some way make good for the time being.

It is hard lines, therefore, that such men should struggle along year in and out, with but little prospect of improvement in their condition and surroundings, and to such the motor is coming rapidly along to their assistance. But

### THE MOTOR TAKES SOME LEARNING.

One cannot always get the chance of performing a post mortem upon a more or less successful car, and temporary stoppages for petrol or oddments are insufficient for the purpose of knowledge. What then should be done?

To our mind the best course to adopt is to purchase, by some means or another, the cheapest form of motor-propelled vehicle obtainable—in other words, the petrol-driven bicycle.

For forty-five pounds, or thereabouts, such a machine can now be purchased, and to the tyro there is no better means of initiation into the motor world. A few years ago the idea of such a means of locomotion being possible would have been laughed to scorn. To think that one can be driven at the rate of thirty or forty miles an hour by an engine which could be carried in a hand-bag, and that surface, weather, and distance can be alike disregarded. It must surely be admitted that of all motor vehicles the petrol bicycle is not only the cheapest, but the most wonderful.

To the man in search of knowledge, however, its comparative simplicity and "getatability" will particularly appeal. In a few minutes he can get all over it, and have the thing in pieces on the floor. He can make himself quickly acquainted with the many principles involved in its construction, *then he can settle down and think how money can be made out of it.*

If we are not mistaken, he will quickly realise that amongst his ordinary connection will be found quite a number of enthusiasts to whom

### THE MYSTERIES OF THE PETROL ENGINE

will prove a fascination. To possess one's own locomotive for forty or fifty pounds! The thing seems absurd, and it will be found that it is only necessary to once arouse the interest of the ingenious for the motor world to be certain of recruits—providing the necessary cash is available.

What has induced us more than anything else to place faith in the future of the motor bicycle is the difficulty we find in discovering any single instance of a man having once possessed such a machine, and afterwards having discarded it in disgust. It is unreasonable to assume that no such individual exists, but we can only assert that although we are acquainted with a large number of motor cyclists, nothing but enthusiasm

is apparent. This being so it is surely time to regard the movement seriously; we, therefore, think it none too soon for those whose destinies are with the cycle trade to give the matter their closest attention.

The motor bicycle is in every way

### THE SMALL MAN'S OPPORTUNITY.

He will jump into his stride long before the big manufacturers, to whom such an entirely new and startling problem is a thing for grave deliberation. The small man can give his personal attention to the matter; he can buy his parts according to his fancy, select his motor, and above all, use his brains to such advantage that every succeeding machine which leaves his premises will be a bit more clever than the last.

To the more ambitious, the perfection of the machine will appeal to such an extent that we look to such men for the bulk of the ideas and inventions which in years to come are to control construction. To the more ambitious still, it will be at once apparent that familiarity with the motor cycle and its principles need be but the stepping-stone to greater things. Already it is possible to point to men who, but a little while ago, were cycle makers or dealers in a small way of business, and who are now heads of large and successful businesses. These will find a place in later issues.

### IGNITION.

DESIGNERS of small petrol engines fitted with either form of electric ignition (high tension or magneto, or low tension make and break with simple primary induction coil) appear sometimes to overlook the fact that the intensity of heat and length of spark depend chiefly upon the rapidity with which the contact is broken. Of course a firm contact is absolutely necessary, but whether contact is made quickly or slowly is immaterial, as there is no spark on making, only what is known as a "sine curve" being indicated. Of course the best theoretical result is obtained (also greatest economy) if the make and break could occur together simultaneously. Many attempts have been made to attain this end, but none yet have achieved success. The good results obtained by the De Dion form of contact breaker are no doubt largely owing to the big diameter of the cam employed. This ensures a very rapid break, for although the trembling action is a moot point at high speeds, there is no doubt that it occurs at starting, ensuring at this all important time a fine big spark, and of course at this point a simple make and break is at its worst. We noticed on nearly all the make and break systems shown on machines at the late Stanley Show that the cam was much too small to ensure an instantaneous break; in one case a flat was filed on to the two, to one shaft, which did not exceed  $\frac{1}{4}$  inch in diameter. It is perhaps fair to mention that in this particular machine the spring was arranged as in a De Dion, so that when the cam was truning slowly a trembling action could take place.

Perhaps the success of the trembler on coil is due to its easy adjustment and "fool proof" qualities, though of course a trembler on coil does not cause so strong an induced current in secondary as when a separate contact breaker is used, owing to induced reverse magnetic currents in iron core on approach of the armature. Tesla used a separate mechanical breaker on his large coils (6 ft. spark) capable of giving 20,000 makes and breaks per min. He also had a contact breaker insulated by and working in water. By the way, pure water is a non-conductor under certain circumstances, but a drop of acid makes all the difference one way or the other.

### Likely Troubles and How to Remedy Them.

IN the next issue of "MOTOR CYCLING" we hope to give a complete list of the troubles likely to be encountered by the beginner, together with the easiest remedies to be adopted to overcome them. This list, we venture to think, will be of the greatest utility to the motor cyclist and the prospective motor cyclist.



## NEWS.

*In this column will be found every week the latest motor news from all quarters in concise form. The leading events will always be illustrated.*

CYCLISTS will always find "MOTOR CYCLING" full of interesting facts.

DURING the active season all motor speed events will be fully illustrated in "MOTOR CYCLING."

MANY interesting articles, written specially for this issue, are unavoidably held over till next week.

THE Swiss Government has decided to replace the old-fashioned mail coaches by some 12 h.p. cars between Neuchâtel and Châumont.

THE judges in the Liverpool motor trial runs last week were Professor Hele-Shaw and Mr. Shrapnell Smith. They were mounted upon a De Dion and Ariel tricycle respectively.

A FEATURE of the forthcoming Crystal Palace Show will be the free trials of motor cycles in the grounds. We hear that the Excelsior, Humber, Chapelle, Derby and others can be tried every day in the commodious grounds.

A COMICAL incident occurred during the Liverpool trial run. The only motorcar disabled contained the Hon. Secretary, Mr. C. Herbert Bishop. Standing on the axle of Mr. Shrapnell Smith's "Ariel," he was taken along in this novel position for over 30 miles.

THE Dutch Automobile Club has abandoned its projected tour through Holland for this year. Scheltema-Beduin, the old Catford C.C. racing man, is a very keen motorist nowadays, and has added a motor department to his cycle businesses in Haarlem and elsewhere.

AUGUST LEHR, at one time the holder of an English cycling championship, will pilot a 20 h.p. racing car in the race from Paris to Vienna. The finish will, as in the Paris-Berlin race, take place at the track hitherto reserved for horse racing, near the Prater, the Hyde Park of Vienna.

AMERICAN motorists will be even worse off than their English brethren if the proposals of Senator Cocks become law. He wishes to have the maximum speed fixed at 7 miles an hour, with a fine of 25 dollars for the first infraction of this law, and 50 dollars, or imprisonment, for the second.

THE present shape of the motorcar is not pleasing to the artistic eyes of some of the members of the French Automobile Club, who have enlisted the services of M. Binet, the architect of the famous Porte Monumentale at the Exhibition of 1900, in designing something less likely to be displeasing to the æsthetic tastes of his clients. The result of his efforts is to be published shortly.

### The Mikado a Motorist.

THE Mikado of Japan is one of the most recent converts to the pleasures of motoring. His Imperial Majesty Mitsu-Hito was introduced to the sport by the Marquis Ito, whose visit to England will no doubt be fresh in the minds of our readers. A race for motors is to be one of the chief features of the fetes to be given at Yokohama in celebration of the anniversary of the ruler of Japan, who is expected to be present at the finish of the race.

### The Cycle Engineers' Institute.

CONSIDERABLE importance attaches to the doings of the Cycle Engineers' Institute now-a-days, and it is interesting to know that the cycle trade generally are giving due attention to the motor bicycle movement. In another part of this issue we give a summary of the thoughtful paper that was read by Mr. Alexander Craig before the Institute at Birmingham on Thursday last. The meeting was well attended, and Mr. Craig's paper was listened to with the keenest interest.

### The Non-Stop Ride.

MR. J. VAN HOODYDONK has arranged to have the Crystal Palace track on Wednesday the 19th for his 200 mile non-stop attempt, and make a start at 10 a.m. Next week we shall give all the final arrangements for this interesting ride. Given a fairly decent day, the Phoenix man should put up an excellent ride. It should prove a good object lesson to the crowd on the art of ease in motor cycling, as Hillier might say. The photo elsewhere depicts Hoodydonk as he will appear on the track.

### Jeames the Chauffeur.

["A number of the aristocracy are teaching their coachmen to drive motors."—*Daily Paper*]

Tell me, oh tell me, immaculate Jeames,

Can it be true you have fallen so low?

Driving a motor-car! Surely it seems

Somehow you're changed from the days long ago.

You, at that time (I remember it well),

Looked on a motor with lofty disdain,

Scorning its noise, its vibration, its smell!

Say, don't you long for those old days again?

Days when you sat with the ribbons in hand,

One, as it were, with your thoroughbred greys.

Stern, supercilious, lofty, and grand!

Worthy the street-arab's reverent gaze!

Now, what a change! With a motor-car glare

Grasping the tiller with desperate grip;

Swooping along with a juggernaut air;

Clearing the streets with your frantic "Pip, pip!"

Weren't you contemptuous when, twelve months ago,

Somebody prophesied how it would be?

Didn't you squash him with one simple "No!!!"

Yet you were wrong, but a true prophet he.

Science advances, a fact that we know;

So, as it's happened as he had foreseen.

Who knows? Perhaps in 2002

You will be driving a flying-machine!

SYDNEY J. TAYLOR.

### When in doubt.

CYCLISTS who have leanings towards the new pastime of motor cycling are requested to address the editor on any subject about which they are in doubt. It is the mission of this journal to make cyclists converts to a fascinating recreation, and we place our columns and our services at the disposal of any waverers who need advice. Let your motto be, "When in doubt, consult 'MOTOR CYCLING.'"

### Speed Machines.

WE know of at least four speed machines being made by racing enthusiasts, with cylinders having diameters of 80 mm bore and 80 mm stroke, and larger. How about those "monstrosities" that it was suggested would be absent from motor-bikeraces and destroyed most bicycling racing, according to one authority? If well designed, such machines should be capable of at least 45 to 50 miles an hour on the track. The sport of motor-bike racing promises interest and excitement. Racing men, take note.

### Ought to be Speedy.

BERTIN, the French chauffeur, who did such a fine motorcycle ride in the South of France recently, has now turned his attention to motorcars, and the latest rumour is that he will have a wonderful new vehicle for the Nice-Abbazia event. The striking feature of this car is that the motor is to be an 8 cylinder one, with two plug ignition, and an impulse at each revolution. It is claimed that this new car, which will weigh about 400 kilos (900 lbs.) can attain a speed of 80 miles an hour on the level, and over 100 on declines. Its appearance is naturally awaited with great interest.

### A Hot-air Engine.

AN eminent continental engineer connected for many years with the development of the petrol motor-bicycle, is turning his attention now to a hot air engine for the same purpose. He expects to have his experimental machine finished and running this season. This is certainly an interesting development, and we shall watch its progress with great interest. As regards efficiency, i.e. heat units transformed into work units: the hot air engine is capable of giving results midway between steam and petrol or internal combustion engines, that is to say, an efficiency of from 12 to 18 per cent. Steam runs from 8 to 15 per cent. and petrol from 16 to 30; the latter figure for the Diesel & Banki type of high compression engine.

### A Cosmopolitan Motor Bicycle.

THE latest addition to our list of motor bicycles is the Clement-Garrard, a full description of which we trust to give in next week's issue. It is interesting, however, to note that all the foundry work will be done at Mezieres in the Ardennes, as also will be the work on the crank chamber, &c.; the machinery for making crank chambers comes from the Gisholt Co., U.S.A.; detail work will be done at the Garrard Co.'s factory in Birmingham; the tools for making all the screw threads come from Ludw. Loewe & Co., Berlin; the grinders from Brown & Sharp, Rhode Island, U.S.A.; and some of the limit gauges used to verify the work are being made by the Wolsley Co., Birmingham. As so many countries are providing their best work, something smart in motor bicycles should be produced.



A NEW motor tricycle is being experimented with in Berlin for the use of the Postal authorities in the delivery of letters. The Minister, Count Crailsheim, is very favourably impressed with the machine, the motive power of which is electricity.

### Why "Motoring"?

ANTICIPATING that some enquiring mind may want to know why "Motoring" is added as the sub-title of this journal, we will give briefly our reasons for registering our paper as "Motor Cycling and Motoring." In the first place, "Moting" has been used for some years now as part registered title of "Cycling," and it was deemed advisable to register "Motoring" in connection with this journal with the view of avoiding possible future confusion. Amongst other reasons we may mention that, having in mind the probable evolution of the motor cycle, it is not altogether a remote possibility that it may become the habit to talk of "going moting, or motoring," instead of motor cycling.

### Motor Bicycle Competitions.

The Motor Cycling Club has been busy lately, in spite of the fact that little publicity has been given to its doings just recently. Routine work incidental to the forming of a limited liability club has been gone through, and the club now makes a bold bid for popularity. On February 22nd, the closing day of the Crystal Palace Show, a series of speed competitions will be held on the Crystal Palace track and grounds.

The events on the track consist of five miles scratch races, divided into three divisions. The first will be for motor bicycles with h.p. up to  $1\frac{1}{2}$ , the next, over  $1\frac{1}{2}$  h.p., but not exceeding 2 h.p.; and the last, over 2 h.p. It must be borne in mind that

#### THE HORSE-POWER ACCEPTED

is that given in the catalogues of makers. These track events, which will be run under N.C.U. Rules, would, in the ordinary way, be confined to members only or to licensed riders, but, having in view the early time of the year, the fact that few riders have so far applied for their licenses, and the novelty of these events, application has been made, under one of the N.C.U. regulations for a special permit, allowing licensed and unlicensed riders to compete together. Unless this is obtained, the events will be confined to members. All those who wish to compete, may therefore send in their application for an entry form at all events.

Great interest is attached to the contests in the grounds, which are

#### OPEN TO THE WORLD.

These will take the form of time tests over a specially selected circular course, with a miniature hill climb en route, covering altogether a distance of about three-quarters of a mile. The same divisions and number of events as on the track will be run. The entrance fee is 2/6 for one machine entered, and 2/- for each additional machine. Any competitor can enter any number of machines he desires for any of the events, provided he pays entry fees on all, but he cannot compete more than once in any of the classes for which he enters. And he must race on one of the machines which he has declared and paid his entry fee for. By this arrangement, absolute fairness is ensured.

Three medals will be given for each event, and all particulars (entry forms, etc.) can be obtained from the Competition's Hon. Sec., A. Lloyd Owen, 40, Oseney Crescent, London, N.W.

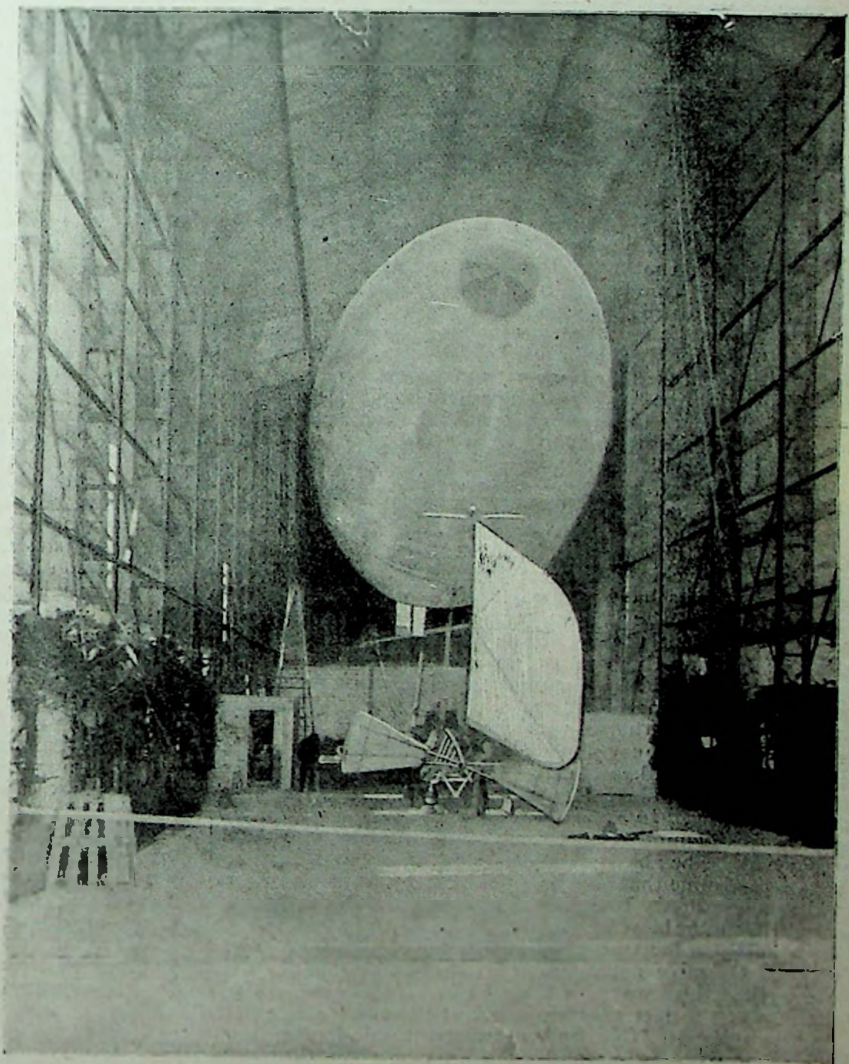
### Motor Trials at the Liverpool Show.

Motors proved an exceptional attraction this year at the Liverpool Show. This is accounted for by the fact that the local section of the Automobile Club (the Liverpool Self-Propelled Traffic Association) lent its powerful aid, and so that department was excellently represented. The Show was opened at the St. George's Hall on Tuesday last, and remained open until the end of the week. Of course, nearly every cycle maker exhibited one or more motor bicycles of standard types. The Hon. Arthur Stanley, M.P., attended at the early part of the opening, but having to leave for London, the formal opening was undertaken by Mr. G. H. Cox. Professor Hele-Shaw, who presided, alluded especially to motor cycles, the interest in which had developed so largely, and thus indicating that at the present time

the automobile was within the reach of everyone. On Wednesday an interesting series of trials in connection with the Show were run off. There were trial runs to Blackburn and back, a distance of 80 miles. The competing cars comprised a dozen heavy vehicles, two light cars, a quad, and three motor bicycles. The motor cycles, we understand, did very well, and the awards will be announced shortly.

### A Consumption Trial.

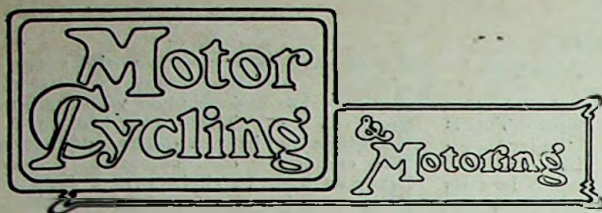
A NOVEL contest took place near Paris last Thursday in the shape of consumption trials, the idea being to see how little petrol or alcohol could be used over a distance of 62 miles. Among other smart performances, a motor bicycle was taken over the whole distance on a little more than half a pint of petrol. We hope to see such contests over here this season.



### SANTOS DUMONT'S LATEST AIR SHIP.

This Photo shows the newest air ship, upon which M. Santos Dumont has been recently making trial trips in the South of France. It is shown at rest in the Aerodrome at Monte Carlo.





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## OPINION.

### The Argument.

In discussing the many details of a new paper the primary point is, or should be, a serious and lengthy consideration of the problem—Is it wanted? This all important question has duly received the most careful attention of those who are responsible for the production of No. 1 of "Motor Cycling," and we are firmly convinced that this, the first attempt at a journal specially devoted to motor cycling, is fully warranted by present conditions and future prospects. To ensure success for a new paper, there must be good reasons for starting it. The reasons for starting "Motor Cycling" are many. In the first place, great interest is being taken in the new movement by the public. This is proved by the fact that the readers of "Cycling" placed the motor bicycle at the head of a list of desirable innovations and gave it a good majority. At the two bicycle shows, the interest in motor bicycles thoroughly justified the voice of "Cycling's" readers, and since the shows the public interest in motor bicycles has been daily increasing. It is not necessary to go far in search of a reason for this interest. In the motor bicycle we have the cheapest, handiest, lightest and simplest power-propelled vehicle that has yet been introduced. The majority of cyclists have followed the motor movement from its inception, and wherever motor events take place one will always find present the inevitable little crowd of interested cyclists. To many thousands of riders of cycles the luxurious motor car is a forbidden pleasure on account of its prime cost, and the expense of maintenance. But in the motor bicycle the cyclist has a vehicle that particularly appeals to his fancy, and his pocket. It is a machine he can ride and drive at once; it is a vehicle he can keep in the house like an ordinary safety bicycle, and he can always get home on it should anything by chance go wrong. In a word, the motor bicycle will introduce the pleasures of moting to thousands of cyclists who would never otherwise be able to participate in the new pastime; and it is safe to assume that at the present time some thousands of riders of ordinary bicycles will be interested in the development of the motor bicycle.

With all these facts in mind it was not difficult to foresee a very considerable development in the motor cycle and in motor cycling, and we were brought face to face with a full realisation of the fact that we could not possibly devote the necessary space in "Cycling" in which to deal adequately with such an important and such an expansive subject as motor cycling, without a considerable, and, in our opinion, an unjustifiable encroachment upon space that should be rightfully devoted to other purposes in the interests of the cyclist.

E2

A full consideration of all these points decided us that if the subject was worth dealing with at all, it was worth dealing with thoroughly. If this movement is capable of such rapid development as we firmly believe it to be, some steps should be immediately taken to provide for its immediate and future expansion, and we unhesitatingly decided to provide such means at the outset by launching this journal, the principal objects of which will be:

- To closely watch the interests of motor cyclists.
- To encourage motor cycling as a pastime.
- To be first out with illustrated motor cycling news.
- To describe and boldly illustrate the latest new inventions in connection with the motor cycle.
- To further the motor cycling movement by every means in our power.
- To advance the interests of the motor cycling industry:

To these objects we shall devote ourselves assiduously, and with the co-operation of our readers, which we cordially solicit, we hope to make "Motor Cycling" thoroughly useful, entertaining and consistently interesting. There is one point we must particularly emphasise—that "Motor Cycling" will be absolutely unfettered in its opinion and in its policy. We shall not hesitate to speak out when speaking out is necessary in the interests of sport, pastime, or trade, and the cause of the motor cyclist will always be our first consideration.

### The Prologue.

SIX short weeks ago the first announcement concerning this publication made its appearance. It has been a busy time, but there were several reasons why briskness was necessary, not the least of which was the impending opening of the Crystal Palace Exhibition and the importance of dealing with the exhibits in an adequate manner in the early issues of a journal devoted specially to the new pastime.

"MOTOR CYCLING" now awaits the result of our readers' careful scrutiny and candid criticism. Is its existence justified? At the outset we stated that the subject of motor cycling could not be adequately dealt with except by means of a special publication, and we venture to assert that the matter appearing in this issue is in itself proof of our assertion; indeed, our difficulty has not been one of finding sufficient "copy," but of finding sufficient room. Even at this early stage our pigeon-holes are well occupied by a great variety of striking articles, for which it is quite impossible to find space in this issue. It has been our endeavour to obtain the views and opinions of not only the best known authorities upon our particular subject, but also to bring to the front talent which we felt confident was hiding its light under a bushel and which would be fresh and welcome to us all. It is our intention to give every encouragement to expressions of opinion from every possible quarter, for, dealing as we are with a subject comparatively strange to all, we feel that a common expression of views and ideas will be the quickest and soundest manner in which the movement can be advanced. The motor cycle is in its infancy, but we are sure that when the cycle mechanics and amateur enthusiasts of this country settle down to the subject, improvements will be rapid and new ideas plentiful.

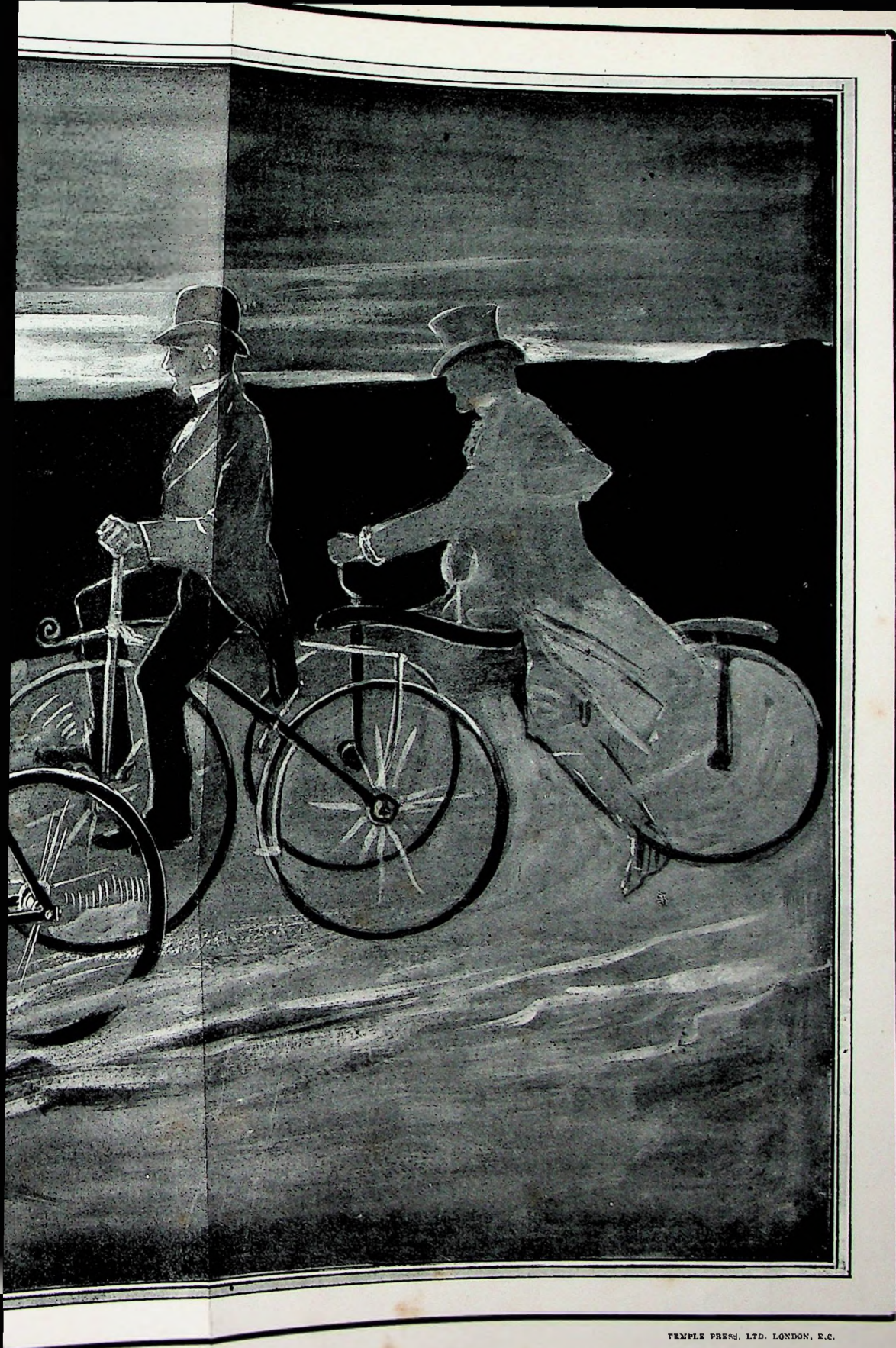
We think it will be admitted that our advertisements give ample evidence that such an industry is already established; had there been more time at our disposal this evidence would have been considerably stronger, but when we state that no single announcement has been received upon any other terms than those of strict business character, the amount of work involved will perhaps be appreciated.

We wish to state plainly that the existence of this publication will not be dependent upon charitable or even friendly support in its advertisement department, but, like its predecessor, will rely entirely upon its merits, and the prospect of being able to bring sound business results to those whom it will always be a pleasure to call our clients, but with whom business relationship will be one of mutual advantage. We are now content to leave the diagnosis of our case in the hands of our friends, many of whom have already rendered us valuable assistance, and to whom we accord our heartiest thanks.



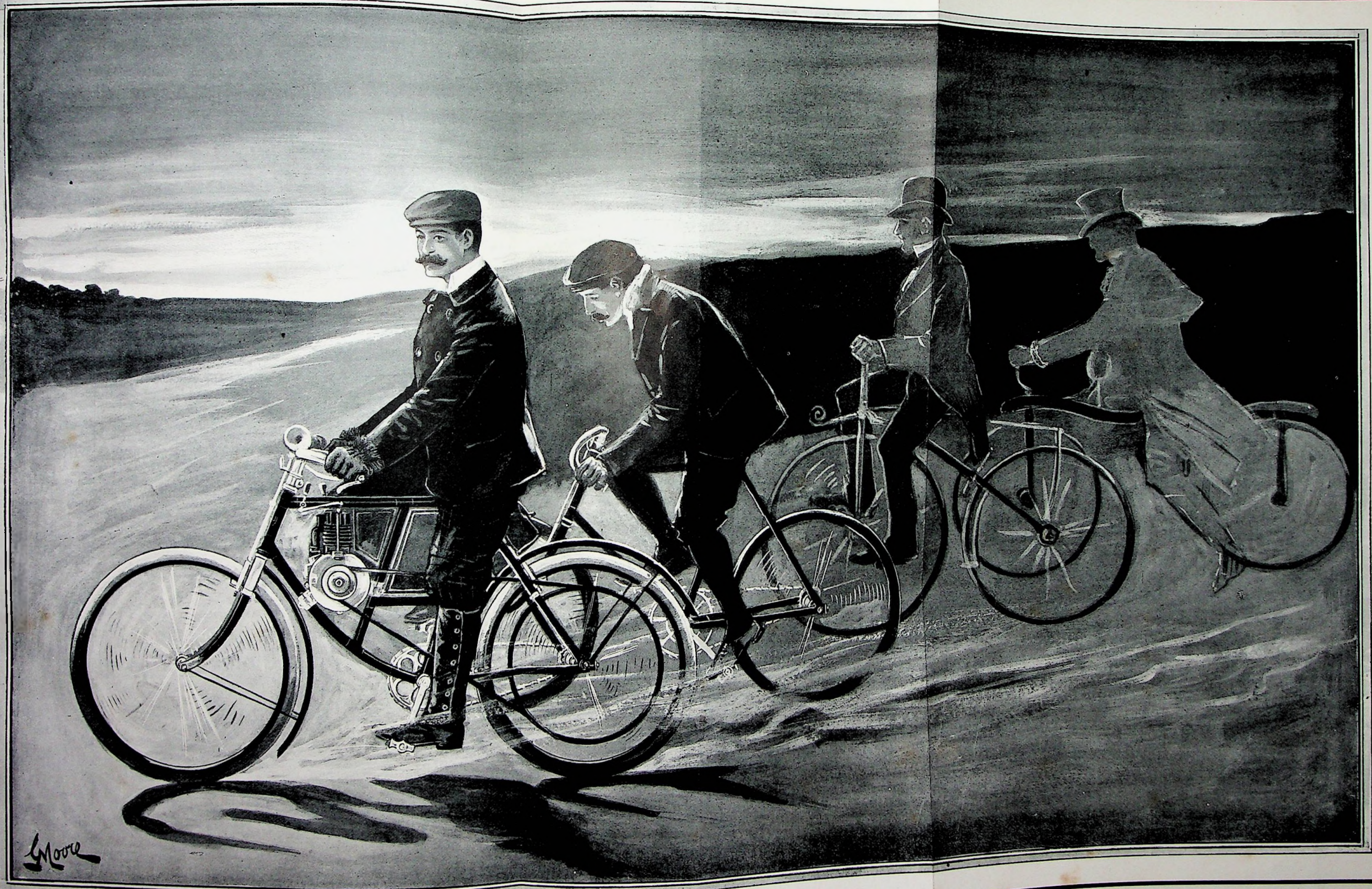






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EVOLUTION.



## MOTOR BICYCLES DISCUSSED.

*A Moting Engineer Lectures to the Engineers' Institute on Motor Cycling.*

If it were necessary to prove the widespread interest which is being taken in the development of the motor cycle, such proof would be found in the attentive assembly of members of the Cycle Engineers' Institute who met at the Grand Hotel, Birmingham, on Thursday night last to hear and discuss Mr. A. Craig's lecture on Motor Bicycles.

The lecturer divided his subject into two essential parts, the first being descriptive of the machines at present on the market, the second concerning the general laws and principles which govern the design and construction of the machine.

A marked indication of the scope of the industry was afforded by the fact that seventeen machines were referred to in the first part of the paper. Of these the Werner was given the pride of place as the most representative of the front driven type, although the new Enfield was referred to as retaining in a marked degree the advantages of the first-named machine.

The Singer machine, with its compact mechanism, was in the lecturer's opinion the most notable example of gear-driven motor bicycles; it was also referred to as representative of English design and workmanship. The full list of machines described were as follows: the Werner, front and rear driven, the Minerva, the Derby, the Brown, the Mitchell, the Enfield, the Progress, the Chapelle, the Singer, the Holden, the Werner and Phoenix tandems, and the Humber, and a new type, the combined work of Messrs. Accles, De Veulle, and Starley. Particular interest was attached to the two last-named machines, both by the author of the paper and by participants in the discussion.

### SIDESLIP CONCLUSIVELY CONSIDERED.

The first thing referred to in the second part of the paper was that of stability. Mr. Craig advanced convincing arguments in favour of the centre of gravity being low, although he admitted that machines with the engine placed high had proved commercially successful. His argument, or rather a portion, was as follows:

"Neglecting the forward movement of the bicycle, let us imagine the rider sitting on the machine, which is being held up for him on a greasy road. If the support be withdrawn he will commence to fall sideways, and so soon as he gets to a slight angle the machine will skid laterally from under him, while he, or rather his centre of gravity, will come down vertically. In passing from the original position to the final one, the movement of the rider and machine as a whole has been two-fold, namely, a fall vertically and a rotation about a horizontal axis of a quarter of a circle, which is explained by the fact that the final position is at ninety degrees to the original position. These movements we may consider separately. If the motor is in the high position, with its weight near the horizontal line of the centre of gravity of the machine and rider, a given disturbing force will rotate the whole through the quarter of the circle in less time than will be the case if the motor is located far away from the centre of gravity—that is to say, near the ground. The comparison is the same as when two fly-wheels of equal weight but different diameter are considered."

The gyroscopic action was, it is believed rightly, dismissed as being a negligible quantity.

An interesting point was raised by the suggestion that water cooling would possibly be resorted to if the size of the engine is increased much beyond present dimensions, the Holden machine being cited as an example where this practice is already resorted to.

### WEIGHT REDUCTION POSSIBLE.

The reduction of weight was given due consideration and the belief expressed that fly-wheels might be made lighter than is common; the argument being that this portion of the engine need not be heavier than is necessary to obtain the initial impulses, it being obvious that the weight which is sufficient for low speeds will be ample when the engine is running at normal speed. A very important suggestion was that cylinders might be made of drawn steel with light copper radiators, as in the Aster engines.

Additional interest was given to the question of weight reduction by the statement of a participant in the discussion to the effect that he had ridden to the venue of the meeting on a motor bicycle weighing complete only 56lbs.

### SPRAY CARBURETTERS PREFERRED.

No doubt could remain in the minds of the audience as to the speaker's preference for the spray type of carburetter, in which opinion he was fully justified by the experience of the other speakers. One of the latter stated he had found it difficult to start with this form of vapouriser; the lecturer's opinion was that this defect was due to bad adjustment, or of too strong a spring to the suction valve.

### GEAR TRANSMISSION ADVOCATED.

the question of transmission naturally involved a large share of Mr. Craig's attention and of his critics. The belt was given full justice as being a useful and obvious means of transmission, the general consensus of opinion being

however, to the effect that it would eventually give way to chain or spur gearing, in conjunction with some form of clutch which would allow an elastic medium between the motor and the driver.

In connection with transmission the advisability of a free engine on down grades was considered although not mentioned at the meeting. It should be observed that with a drive such as the Humber, or the proposed Accles-De Veulle-Starley machine, this is afforded by throttling the engine when the machine will overrun the free wheel clutch by which the power is transmitted.

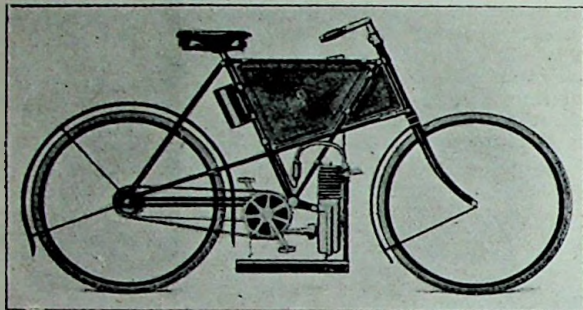
In Mr. Craig's opinion chain transmission will probably become the most popular in all cases where the engine is not sufficiently near the road wheel to admit of spur gearing being used. Its efficiency is undoubtedly higher than that of the belt, and, as the author had remarked, it can be made as smooth in its action. If the reduction from the engine to the road wheel be attempted in one step, a very large and unsightly sprocket wheel or belt pulley must be fixed to the driving wheel. With the high efficiency obtainable on a chain drive it may be worth while to make the reduction in two steps, in which case the drive would appear less clumsy, and a suitable gear-case could be easily fitted. Chains were used at the earliest stages of motor bicycle construction, and had the initial development of business taken place in this country instead of abroad, most probably the chain drive would be



Photo. MR. ALEXANDER CRAIG. Maule & Co.



as common as the belt drive is at the present day. Worm drive is exemplified in the Accles, De Veuille and Starley motor bicycle illustrated on this page. By the use of worm gear the necessary reduction between the engine and the road wheel can be effected in a very small space, and although the worm is certainly less efficient than spur gearing, yet if well designed and properly made it is doubtless more efficient than the belt drive commonly used.



THE ACCLES, DE VEUILLE AND STARLEY MOTOR BICYCLE.

The worm drive on the last-named machine elicited a very practical speech from one of the designers of the machine, who was, however, careful to inform the hearers that the bicycle in question was of an experimental nature. He produced however, data from past experience which would appear to indicate that his claims for a relatively high efficiency for his system were fully justified.

Dealing with the future possibilities of the motor bicycle Mr. Craig remarked:—

"There is a very wide field for the designer of motor bicycles, as tandems and spring frames have yet to be dealt with.

"If water-cooling be adopted, there should be no difficulty in enclosing the motor and accessories in one portion of the frame and concealing it with a panel on each side. By this means a very neat result could be obtained.

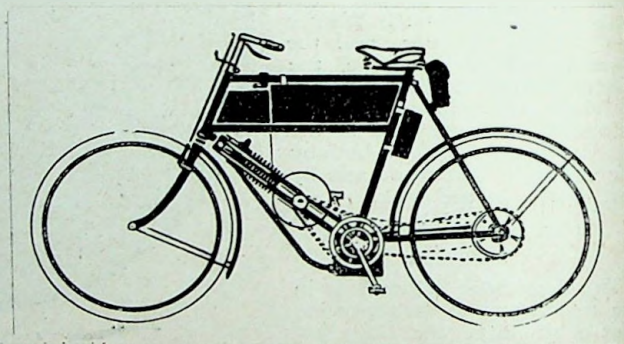
"Details cannot have too much attention, as the efficiency of the machine as a whole largely depends upon them. A weak rod to the compression tap or contact breaker, for instance, would be an endless source of annoyance, and the lubricating

arrangements must have very careful attention. The motor bicycle is the simplest, and consequently the least expensive, form of motor vehicle which can be made. The fact that it has proved practicable in actual use insures its popularity in the future; indeed, the trade has already assumed much greater proportions than is generally known. The subject is, therefore, worthy of the most careful consideration on the part of cycle engineers, and they will find that it is not lacking in interest.

#### DISCUSSION RAISES A VALUABLE POINT.

The paper throughout was of the most thoughtful and practical nature, and fully deserved the attention it received from one of the largest audiences that has ever attended a meeting of the Cycle Engineers' Institute. Good as the paper was, it did not equal Mr. Craig's address at the close of the discussion, when he dealt exhaustively with the points raised by the other speakers. The discussion raised one point of distinctive interest—namely, the almost unanimous desire on the part of riders for some means of supporting the bicycle when at rest. Mr. Craig, in recognising the value of the suggestion, hinted that to be of full value the rest should also afford means of raising the rear wheel from the ground:

[It is somewhat of a coincidence, and probably an augury for the vast future the motor cycle possesses, that the first number of this journal should report the deliberations of the section of the engineering trade which most probably will influence in the greatest degree the future of the trade and sport.]

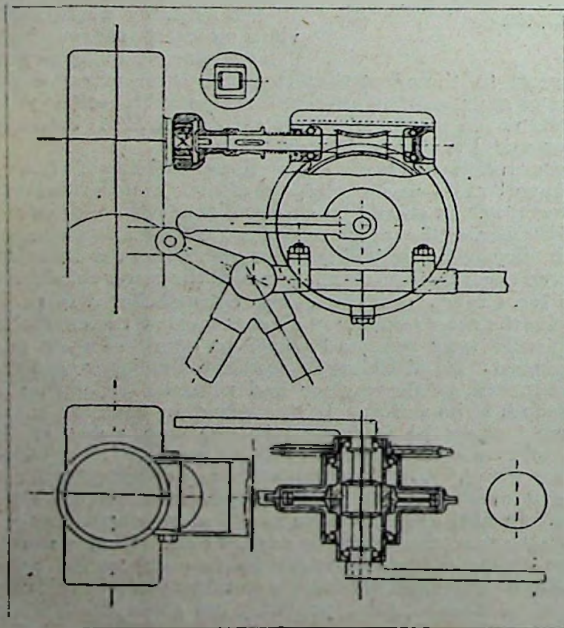


THE HUMBER MOTOR BICYCLE.

#### PERSONAL.

MR. ALEXANDER CRAIG, whose paper on "Motor Cycles" is summarised here, is a mild spoken young man, rather under the average height, and of a quiet disposition. He appears to be more of a "book-worm" than a practical mechanic, which only proves that appearances are often deceptive. He was educated at Masons College, Birmingham, and went from there to the locomotive works at Crewe, where he served his time as an engineer. From there he migrated to Denny's, the ship builders at Dumbarton, and there his attention was occupied in the electrical lighting and ventilating of ships. In 1896, he joined Humbers', Ltd., was under-works manager to Mr. Walter Phillips at the Coventry works, and laid out and organised their motor department. Mr. Craig is still consulting engineer to the Humber Co., but he has recently commenced business on his own account as a consulting mechanical expert. He is at present laying out the motor works at Parkside (part of the old Beeston Cycle Company's premises) for the Maudslay Motor Company, and is designing a car of about 20 horse power which he thinks will embody some new features.

It may interest our readers to know that Mr. Craig is responsible for many patents in connection with the motor industry, notably a special spray carburetter, and other useful improvements for the motorist.



THE ACCLES, DE VEUILLE AND STARLEY DRIVING GEAR.



## THE CRYSTAL PALACE MOTOR SHOW.

*What some of the leading Exhibitors will have on view.*

A GLANCE at the list of exhibitors at the forthcoming Crystal Palace Motor Show is sufficient to prove that it will be a representative one; and from the interest evinced upon all hands, we are certain the public will support it very strongly. The Show opens on the 14th, and closes on the 22nd. In big cars there will be exhibited the latest productions of the most famous makers of the world. For the first time, we believe, in England, a special motor cycle section has been arranged, and this promises to be one of the most interesting and representative collections under one roof ever seen. Here the well-known Ariel, Excelsior, Minerva, Quadrant, Mitchell, Derby, Chapelle, New Hudson, Phoenix, Humber, Werner, new type Werner, and several other types will be on view, and on trial for the most part, in the grounds.

A stand will be set aside for famous racing cars, and several historic monsters have been promised for this section.

The famous Paris-Berlin race depicted by the Cinematograph, which created such interest at the Paris Show, has been brought over, and will be worked every day during the Show.

Messrs. Soncin will have a 125 h.p. motor on view, which should make the *chauffeur's* mouth water. We can imagine it would cause one's car to reach the maximum speed allowed in England!

There are over fifty firms exhibiting motor cars, accessories and appurtenances.

A very large number of awards are offered to exhibitors for all types shown on their stands. Mr. Henry Sturmev will judge the cars, and Mr. A. J. Wilson, assisted by Messrs. F. T. Bidlake and G. Douglas Leechman, will have the motor cycle section in hand.

Perhaps the most interesting feature to many visitors will be the trials in the grounds. Trips on cars and cycles will be the order of the day, and probably some organized trials will be arranged. On Wednesday, the 19th, J. van Hooydonk goes for a 200 mile non-stop trial on the track upon his Phoenix bicycle, starting at 10 a.m., and the Motor Cycling Club are arranging races and trial tests for Saturday afternoon, the 22nd.

### **Quadrant Cycle Co., Ltd., Birmingham.**

OUR readers should make a point of examining a decided novelty, which the Quadrant Co. will show for the first time at the forthcoming Crystal Palace Show. The "Quadrant" motor bicycle is fitted with the "Minerva" engine, and it is in the working of it that the main improvements we have alluded to will be found. One lever does the work of four—that will sum up the whole thing—and simplicity is gained at one stroke. This lever controls the switch, the gas supply, the sparking, and the exhaust. Those who have done any traffic riding on a motor will quickly grasp, metaphorically speaking, the great boon which the above will confer upon the motor cyclist. The "Quadrant" back-peddalling band brake and front rim brake will be fitted.

The "Quadrant" tricycle is identically on the same lines as the bicycle, with the exception of the fore part. But instead of the usual front fork, the front consists of two wheels mounted with special patented steering gear, giving the highest possible degree of safety at high speeds and in rounding corners.

### **Werner Motors, Ltd., London.**

WILL exhibit seven machines of the now well-known "New Werner" brand. The 1½ h.p. engine is vertical, being built into the frame in that position taken up by the crank bracket in the ordinary bicycle. The pedalling gear is situated just behind the engine. The drive is by means of a wide, flat belt to the back wheel: carburetter is a new pattern, of the pulverising type, automatic in action, lubrication can be effected while the machine is running, and sufficient oil for about 200 miles can be carried, while the petrol reservoir holds sufficient for about 100 miles. The "New Werner" is built on clean lines, and should be closely studied by show visitors.

### **United Motor Industries, Ltd., London.**

THE Universal Motor Providers, as the above company is aptly termed, will devote a large amount of their space to motor bicycles. There will be the "Chapelle" with two-speed gear and without that fitting, now fitted with 1½ h.p. motor in place of the old 1½ h.p.

"Castle" motors for fitting to ordinary bicycles; also the "Werner" motor bicycle, and a "Werner" motor with all the necessary parts to convert an ordinary bicycle into a "Werner." Spare reservoir tanks, coils, accumulators, wiring, switches, levers, driving rims, bands, inlet and exhaust valves for Chapelles and Werners, pistons, cylinders, piston rings, contact breakers, and in fact all the various replacements can be seen at this representative stand. It may be said that every requisite imaginable for the motor cyclist will be on view.

### **Bayliss, Thomas & Co., Coventry.**

PROBABLY the largest show of motor bicycles at the show will consist of "Excelsiors," of which the company will exhibit a dozen patterns divided into four classes. In class No. 1 will be the standard pattern, fitted with 1½ h.p. engine below the frame, 24in. frame, 28in. wheels, 2in. Clincher A1 tyres, patent driving rim attachment, spring head, valve lifter, automatic oiling arrangements, and other improvements. Special tanks for petrol and oil supplies can be had if desired.

Class 2 will consist of the (small size) "Coh" pattern, with practically the same points as the above, but with smaller wheels and shorter cranks.

Class 3 will have specially-built machines for heavy riders, and all the fittings have been carefully selected to this end.

Class 4—Ladies' motor bicycle. This has a 1½ h.p. engine fixed to the bottom down tube, 21in. frame, 26in. wheels, extra wide mudguards. In this the carburetter is carried between the top and bottom tubes behind the head, with coil and accumulator behind the saddle attached to seat pillar of frame. It will be gathered from the above particulars that every class of rider will be catered for. The company will repeat their successful innovation at the National Cycle Show by giving free trials in the grounds each day, and this will give the prospective buyer the opportunity of gaining by a practical spin some idea of the fascination which motor cycling wields over its votaries.

### **Ariel Motor Co., Ltd., Birmingham.**

WILL show a 3 h.p. quad, fitted with two-speed gear, water cooled head, etc., a 2½ h.p. tricycle, and a 1½ h.p. motor bicycle, in addition to their fine 10 h.p. car. The "Ariel" tricycle is prominent among the best manufactured at home. The engine is fixed in front of the axle, has a remarkably neat appearance, and is made to withstand any amount of hard work. Oil for lubricating is carried for 150 miles, and petrol supply for 100 miles. The quad has the tricycle as a foundation, so to write, with an extra seat attachment, the body being carried upon a set of most comfortable tee and elliptical springs. Attention will naturally be given to the bicycle, the frame of which is specially built for the purpose. The latest pattern "Minerva" engine is fitted; two brakes, viz., back-peddalling two-point rim and a Crabbe from rim; gear 62in.; and the machine is finished black, with carburetter aluminium with black lines. Altogether this should make a very strong and reliable machine.

### **Dan Albion, Biggleswade.**

THIS old-established cycle maker has naturally drifted into the motor-car trade, and now makes a grand little "Ivel" brand of motor bicycle. He will show one for the stern male, and a practical pattern for ladies. As "Smiling Dan" practically introduced the lady's ordinary bicycle, he has followed suit now that the move in favour of motor bicycles has become so pronounced. In the "Ivel" lady's, the usual drop frame pattern is retained, and the engine is placed in the usual manner below the down tube. In the absence of the top tube, as found in the diamond frame, petrol tank, battery, coil and lubrication tank, are fitted behind the seat pillar tube, and the silencer fits snugly within the looped frame. An efficient belt guard is fitted. The machine has two powerful rim brakes, gear case and a valve lifter. In the gent's pattern the latest 1½ h.p. "Minerva" engine and fittings, with all improvements (not forgetting a valve lifter) is utilized upon a specially constructed frame, and, like the lady's, has two powerful rim brakes and gear case.

### **Birmingham Motor Manufacturing and Supply Co., Ltd.**

THE above Company introduced their motor bicycles to the London public at the last National Cycle Show. They will show three 1½ h.p. "Rex" bicycles, with the engine placed on the upper side of the down tube. All the fittings, with the exception of the coil, are in a tank on top tube. A new pattern, which we shall fully describe in next issue is promised for the show. By the way, the "Rex" is entirely of home manufacture.



**Charles R. Base, London.**

Shows a selection of "metalloring" wear in cloth and leather—among others is "footsacks," which have proved a big success since their introduction, will be examined with interest by motor men.

**F. F. Wellington, Ltd., 36, St. George's Square, N.W.**

Will show the well-known "Wellington" sparking plug, which the maker claims to be indestructible. Prizes will be awarded for a competition held during show week for the motorist who runs one of these plugs for the greatest distance. Three prizes are offered.

**E. M. Bowden's Patents' Syndicate, London.**

The chain driving motor cycle with patent clutch hub giving free engine will be shown, also the large variety of methods in which the Bowden wire can be utilized for motors.

**General Electric Battery Mfg. Co., Brixton.**

Accumulators for motor cycles and cars. There will be a line which fits the "Minerva" bicycle case, and runs for 300 miles with one charge. Other batteries for the De Dion case, etc., all of which appear to be carefully made for withstanding vibration and wear will be shown.

**Ed. De Poorter & Co., Ltd., London.**

The "Derby" free engine motor bicycle is now an established type over here. Interest will be centred in the Company's new Model C, which is belt driven, but, it is claimed, no belt troubles exist. This can be tightened by moving a lever forward without dismounting, while a free engine is obtained by bringing the lever back, the belt being allowed to slip. The "Derby" bicycles can be ridden in the grounds.

**Princepts Autocar Company, Northampton.**

Considerable interest is being evinced in the "Princepts" motor bicycle, which will make its bow, metaphorically speaking, to the London public at the Show. It will be fitted with 1½ H.P. engine, with chain drive, and progressive chain arrangement. Several other novel features are promised in this machine. Another new line will be the "Princepts" Bijou Voiturette. It will have a 4 H.P. Aster engine, two speed gear, inclined wheel steering, pedal and lever brakes, and will accommodate two.

**E. J. Coles & Co., London.**

MR. E. J. COLES, the motor expert, who has had considerable experience with cars is now in partnership with Mr. Kaufmann, late works foreman for Beuz & Co., Mannheim. They are introducing a smart car at the show, called the "Belle" Tonneau car. It has a 6 h.p. engine in front, running at 800 revolutions a minute. The water-cooled cylinder is cast in one piece, so there are no water joints to give trouble; valves and seating detachable by removing two nuts, gear transmission, three speeds and reverse, water-cooled brake on countershaft, large band brakes on rear wheels, and inclined wheel steering. The car is most reasonably priced at £255.

**The "Minerva" Motors.**

The largely adopted "Minerva" motor and fittings, with all improvements, will be shown fitted to bicycles for ladies and gents together with separate motors, and all the different parts which go to make the complete article. It is only when the motor is taken apart, that one can fully realise the large number of "pieces" in the engine alone. It is an object lesson to the novice. It is expected that a novelty in the shape of a new carburettor will be shown, if samples can be got over in time. The "Minerva" motor is so much in evidence, that a lengthy description of it is unnecessary. The engine fits below the down tube, and the surface carburettor, petrol tank, accumulator, and coil are contained in a case fitting within the diamond frame of a bicycle specially strengthened to take the added strain of a motor. At the end of last season a new pattern engine was introduced of 1½ h.p., although this gives on the brake double the power of the old 1½ h.p. of 1901. Inlet and exhaust valves have been enlarged, a new compression valve introduced; automatic oiling arrangement, improved trembler, and an entirely new sparking plug are included in the new features which mark the "Minerva" for 1902.

**H. W. van Raden & Co., Coventry.**

This company make a speciality of all appliances in connection with the electric ignition of motors, such as accumulators, sparking plugs, tremblers, volt meters, etc.

**De Dion Bouton Ltd., 28, Brook Street, W.**

ARE not showing motor bicycles or engines. It is improbable that they will show any motor tricycles, but the famous De Dion engines or tricycles will be on view.

**Smith & Son, 9, Strand, W.C.**

THIS well-known firm of Watchmakers and Jewellers will show motorcar clocks, watches and other special articles applicable for the use of motorists.

**Humber, Ltd., Coventry.**

THIS celebrated company will have a very large show of motor bicycles; sixteen machines in all. These will comprise two 1½ h.p. Beeston Humpers, with band drive and engine below the down tube; eight Standard Humpers with similar engine and drive, and six 3 h.p. Humpers with chain drive.

**New Hudson Cycle Co., Birmingham.**

THE New Hudson Co. have adopted the Minerva engine as their pattern, and the latest 1902 improvements will be found upon the couple of machines shown. A special feature of the "New Hudson" is the care bestowed upon the frame and component parts of the machine.

**Davis, Allen & Co., London.**

THE principal display will consist of the "Mitchell" motor bicycles. On this machine the motor develops 2 actual h.p., the bore being 3 inch and stroke 3½ inch, giving speeds from 10 to 35 miles an hour on the level, but is capable, we understand, of climbing hills having a gradient of 1 in 7. The "Mitchell" is fitted with the "Goodyear" vulcanised motor bicycle tire, which has proved itself exceedingly reliable. The "Indian" motor bicycle of 2 h.p., which made such a favourable impression at the last Stanley Show, will be on view. It exhibits some very striking departures in motor bicycle construction.

**J. van Hooydonk, Holloway Road, London, N.**

SHOWS motor bicycles for ladies and gents, also a combination tandem. Beside the many new features already introduced by the maker of the "Phoenix," such as the auxiliary tanks for petrol, special lubricating device, combined current-breaker and valve lift, a new thing in two-speed gear and free engine will be shown. This is noiseless, and does not detract from the appearance of the machine. The reducing gear is contained in the back hub, therefore the gear is only running at the same speed as the road wheel. Instead of fixing the driving pulley to spokes or rim it is fixed on a reducing gear operating inside the hub. The changes are made by means of a lever on the top tube. All the machines will be fitted with extra long handles to mixture and quantity levers, thereby facilitating adjustment—practically amounting to a fine-adjustment valve. The lady's machine will have the engine effectually guarded, and a new type of carburettor will be fitted. We hear that the lady's pattern will be very taking.

**Motor Traction Co., Ltd., London.**

OF decided interest to motor cyclists will be the exhibition of the Holden and the F.N. motor bicycle by this company. In the F.N. an unusually small and neat motor is used and fixed in a vertical position. The carburettor is of a special design, of the floating type, being absolutely automatic in action. No trembler is fitted, the contact being of the positive kind, securing a quick-frictioned contact. The drive is by a flat band. There are only two levers, one for compression and the other for advancing or retarding the sparking. Automatic lubrication is provided.

The "Holden" of British manufacture will also be shown. This unique pattern is of 3 h.p., water cooled, direct driving, four cylindered machine, built on the frame of the bantam type of bicycle. It is claimed that the "Holden" running at 500 revolutions attains the same speed as that reached by smaller power motors running at from 1500 to 2000 revolutions. Both the "F.N." and the "Holden" have recently been put to the test on the road by Messrs. J. H. Adams and Harry Parsons.



## IN TRANSIT.

*Some Feelings and Experiences of a Cyclist in the Transition Stage.*

### *Transition, or only a Phase?*

It is something more than an assumption, it is getting pretty close to a certainty, that the readers of these columns are cyclists who have either taken up the motor cycle or who contemplate such a step. As a cyclist, I have taken that step, and I observe, not without a qualm or two, that changes, unpremeditated, unexpected even, but relentless all the same, are taking place in my cycle stable. The thin bodyless oil with which the cycle was wont to be lubricated has been deposed from a certain handy spot and in its place there stands a can, a much bigger can, of lubricant which always irresistibly reminds me of the treacle of my youthful days. Small wallets, small saddles, little lamps and liliputian repair outfits are all pushed up into the corners of the shelves, their places being usurped by the more bloated and wealthier-looking articles that appertain to the motor cycle. The two-gallon tins of petrol appear as strangers in a strange land; even the motor bicycle itself stands out in the centre evidently scorning the light rack wherein the cycles rest.

What one is led to wonder, as one notes the changes that are taking place, is whether a transition is going on or whether it is a mere passing phase. Much the same sort of thoughts must have worried the lover of the "good old ordinary" when the first safety came home; much the same thoughts will give us pause when our first flying machine is purchased. To my way of thinking, keen lover of the bicycle though I be, I must say that the motor cycle strikes me as something more promising than a mere phase. For any person to contend, to-day, that the motorcar was a thing of the moment, a passing craze, would be equivalent to a proclamation of self-insanity. And it is certainly reasonable to argue that the success of the car in its particular sphere must, in the natural order of things, be repeated in the sphere of the motor cycle. And it would equally be safe to assume that the history of improvement in design and construction and growth in popularity which characterised the bicycle will find its reflex in the career of the motor cycle—on a smaller scale, admittedly.

Then, again, the fifty pounds outlay necessitated by the purchase of a motor cycle is within the capacity of the pockets of a very large section of the public and, as a further reason, the man who has once "smelt petrol," and felt below him the pulse of an engine obedient to his every wish, is not likely to forego the pleasures of moting if he can help it. If this be so, and my arguments be not fallacious, the movement is going to result in a pretty complete transition for some of us.

### *A too Hasty Conclusion.*

A CONCLUSION recently forced upon me is the folly of jumping at conclusions. And yet the temptation to accept that which is so seemingly obvious is almost irresistible—in fact, 'twere not far wrong to say that it is ingrained in man. But the lesson in conclusion-jumping has taught me to search before taking such leaps. It came about like this. I had a brand new motor bicycle built for me, and it had not gone sixty miles before it quitted work, and I had perforce to pedal it a couple of miles home. And, by-the-way, this was not such a task as I had imagined, although it necessitated climbing a long hill which I fully anticipated having to walk, but which was surmounted with what seemed like absurd ease—a point in favour of the easily-removed belt. Well, for a whole fortnight I pottered round that machine, testing this and testing that without locating the trouble. I could get a spark at the plug and at the contact breaker, though the latter was somewhat irregular. At last, in sheer despair, I pulled out the accumulator which had travelled a bare sixty miles and, therefore, ought to be fully charged. It was first tried on an electric bell and gave an indication of its weakness by the mere tinkle which it produced. A friend's voltmeter was then requisitioned and the cause of the trouble found at once. The accumulator had a pressure of but three volts! It was

recharged, and away went the motor at once. Of course, I fully admit that one ought to test one's battery or accumulator amongst the very first things, but, really, one can be excused for expecting better things from a brand new accumulator.

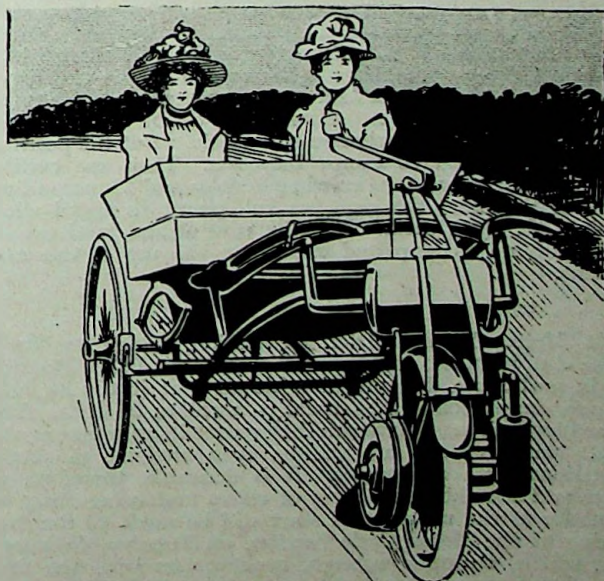
### *Sparking Plug Troubles.*

ANOTHER cause of trouble lately has been a defective sparking plug. To all appearances the plug is sound and in good condition, but it was noticed that a misfire would occur every now and again, whilst misfires became frequent on going up hill. It appears (so I am told) that in the case of a new pattern plug recently introduced the porcelain is of a defective quality. Not only is it porous, but there may be a certain quantity of metal granules in it. The consequence is that when the motor has any hard work to do the current will short-circuit through the porcelain. A genuine De Dion plug fitted to the engine overcame all misfires. As a matter of fact, there is a very great amount of leakage of current in and around the plug, and this leakage is only reduced to a minimum in the best plugs. It can further be reduced by clothing the upper part in rubber—a piece of rubber tubing to cover from the body of the plug, over the terminal and a little way along the insulation of the wire, effects an improvement in a very simple way.

### *Superfluous Wiring.*

WITH motor bicycles a fairly large quantity of insulated wire is usually supplied. Some firms, instead of shortening this to a minimum, festoon it in quaint (but not graceful) ways about the machine. The purchaser does not care to shorten the wires in case it might become necessary to cut off a frayed end. Moreover, the wires running to and from the coil require to be of ample length in order to avoid their fracture when the coil is withdrawn for inspection. Consequently one gets rather an untidy state of affairs along the top of the case. But riders can effect a considerable improvement in the appearance of their machines by carrying the wires straight along the top tube, strapping them thereto by the metal clips used for the Bowden brake, or by means of insulated tape, all superfluous wire being drawn into the case and carefully stowed away to the side and above the coil.

CYCLOMOT



*Will the Motor adapted to any kind of carriage become a feature of the future? The above idea shows Lawson's Gyroscope hitched on, and drawing a carriage along, instead of the horse propelling it in the orthodox fashion.*



## THE C.T.C. AND MOTOR BICYCLING.

*The Programme of the Metropolitan District Association.—By W. Rees Jeffreys.*

THE application of mechanical power to the bicycle is a development the consequences of which it is impossible to foresee. At the Crystal Palace Show this year was to be seen one of the original Rover Safeties. It looked crude and ugly enough, yet, from it, cycling took a fresh start and spread to its present dimensions. Not more ugly and imperfect than J. K. Starley's first safety is the motor bicycle of 1902, yet, who knows but that it too will "set the fashion to the world" and inaugurate a new era in the history of cycling.

### HOW TO GET A PERFECT BICYCLE.

MOTOR bicycles are, at present, in the experimental stage. Accordingly, it behoves all those interested in cycling to work together to complete and perfect the new invention. Co-operation is the only road to perfection. Manufacturer and rider, newspaper and club, each may contribute towards the development of the new machine. And a good start has been made. Enterprising manufacturers are investing capital in the premises and machinery necessary to the construction of efficient motor bicycles. The cycling press, as represented by the go-a-head management of "Cycling," are putting money and brains into a journal which is to be the means of intercourse between those interested in the new machine. In this brief article, I propose, as a representative of an important cycling organisation, to say what it proposes to do, in co-operation with the manufacturers and the press, to help forward the new movement.

### AN UNFORTUNATE MISAPPREHENSION.

THE feeling has got abroad that the C.T.C. does not look with favour upon motoring. This is probably due to the attitude—the unfortunate attitude—of a general meeting to a proposal to apply to the courts to sanction an alteration in the club's Memorandum of Association which would enable it to spend money on automobilists as such. Some members of the club took alarm. They felt that wealthy automobilists wanted to capture the club and use its organisations, and spend its hoarded funds, in their own interests. This was far from being the case. The situation was quite misapprehended. As a matter of fact, it is not the automobilists who want to join the club, but it is the club that wants the automobilists. Many of its members no longer feel that enthusiasm for cycling that they did twenty years ago. They are no longer prepared to make those sacrifices for the pastime as they were when it was unpopular. It would put fresh life and energy into the club if the automobilists, who are full of the energy of pioneers and the enthusiasm of persecuted folk, were to become associated with it. However, I doubt not that two or three years will see a change of attitude. But the position is different as regards motor bicyclists. They are cyclists within the meaning of the existing Articles and Memorandum of Association, and the club has full power to spend what it thinks fit upon them. Both its central and local organisations intend to help and encourage the use of the new machine.

### WHAT THE LONDON C.T.C.-ITES ARE DOING.

THE Metropolitan District Association, which embraces all the club members within the Metropolitan Police District, has, in particular, determined to do all that it can to help the new movement. And there is much to be done. The motor bicycle is, as I have said, at present in an experimental stage. Manufacturers are willing, even anxious, to obtain suggestions from all sources. It is desirable, therefore, to collect and sift the experiences of riders and bring them to the notice of the makers. A start will be made at the first meeting of the Motor Cycle Section, on Tuesday, February 11th, which, curiously enough, synchronises with the first issue of this paper. Part of the evening will be devoted to a free exchange of experiences and opinions as regards the various types of motor bicycles.

### THE RAILWAY COMPANIES AND MOTORS.

OVER and above the construction of the machine there are a number of other questions which should be tackled as soon as possible. Arrangements should be made with the railway companies to secure that no irritating restrictions are placed upon the conveyance of motors, and that a scale of charges, somewhat less than those at present imposed be agreed upon.

### THE MOTOR AS AN INTERNATIONAL MACHINE.

THE motor cycle must also be made an easy means of international travel. It is desirable, accordingly, to prevent any unnecessary restrictions upon its free movements across the boundaries of States. I am myself considering the possibility of a run across the Pyrenees this year on a motor cycle. I have visions of landing at St. Malo, journeying through central France, and then cycling over one of the passes of the Pyrenees into Spain. But if the regulations which the French Government are now enforcing upon automobilists are also enforced upon motor bicyclists, international touring on a motor bicycle will be somewhat of a difficulty. However, the Foreign Touring Arrangements Committee of the C.T.C. has quietly set the machinery which it has at its disposal at work for the purpose of smoothing over or preventing difficulties in connection with international touring.

### THAT UNFORTUNATE TAX.

THERE is another and not unimportant point upon which the Motor Cycle Section of the Metropolitan District Association or the Rights and Privileges Committee of the club will also have to take action. By one of those unfortunate legislative bumbles which our unbusiness-like House of Commons is continually making, motor bicyclists are now liable to an annual tax of 15/-. That tax immediate steps should be taken to remove or reduce. The Chancellor of the Exchequer should be influentially approached with a view to securing a clause in the Finance Bill of the present Session for abolishing the present tax or reducing it to a nominal amount. In this movement the cycle manufacturers will do well to give effective aid, for the tax will tend more than anything else to prevent the development and the sale of motor bicycles. The fact that he will be required to pay an annual charge of 15/- to the state may induce many a waverer not to invest in a mechanically propelled machine.

### THE SOCIAL SIDE.

FINALLY, the Metropolitan District Association is anxious to develop the social side—a somewhat neglected feature of C.T.C. life. By introducing motor bicyclists one to another, by arranging from time to time club runs, and by organising for the free and full exchange of opinions and experiences, much can be done in this direction.

Other branches of activity could be suggested, but even from this brief outline it will be seen that the Motor Cycle Section of the M.D.A. has plenty of work before it. And the future is with it. "The minute a man takes up a motor car or motor cycle," says Mr. Pennell in the current "Contemporary," "he ceases any longer to care for the ordinary machine." Many will think this is an exaggeration, but there is a large element of truth in it. Even in the present stage of development the motor cycle is a fascinating machine. When one has once whizzed through the air at 20 miles an hour without exertion, when head-winds have ceased to trouble, and hills have given no cause for anxiety, one is not satisfied until the experience has been repeated.

In due course I doubt not a motor bicycle absolutely trustworthy for touring purposes will be produced. To bring that day quickly is one of the objects of "Motor Cycling" and the Motor Cycle Section of the C.T.C. May their joint efforts be soon crowned with success.



## HINTS AND WRINKLES.

*Little things of great importance for Motor Cyclists to keep in mind.*

*Under the Heading of "Hints and Wrinkles" we shall give, week by week, a series of useful and often homely tips for overcoming minor motor troubles, and other information regarding the motor which should be borne in mind. In every case the hint or wrinkle given will be prompted by practical experience, and we shall always be pleased to hear from readers of "Motor Cycling" who are able to offer a tip for the benefit of their fellow motor cyclists.*

REMEMBER to draw the ignition lever back on restarting.

USE as little gas as possible—it keeps the engine cool and economises fuel.

WELLINGTON'S knife polish, mixed with lubricating oil, is very good for valve grinding.

EXHAUST valves frequently burn off, and it is advisable to carry a spare one which has already been fitted and ground in.

SHORT circuit troubles are greatly lessened by arranging the induced (sparking plug) wire so that it does not touch any metal by suspending with rubber tape.

THE centre wire of De Dion plugs is very weak and occasionally turns off altogether. This can be faked by firmly pressing an ordinary pin down the centre hole in the china, then carefully cutting the head off, and curving the protruding end to the other point, and regular firing will result.

### **Take up Wear and Tear.**

ALWAYS take up all the wear and tear in the bearings of the working parts. All the points of explosion, compression, and exhaust are timed, and undue slackness in the parts operating these movements will affect the power developed. These adjustments may take a little time, but they will well repay the rider for it.

### **Don't Try Experiments.**

Do not try experiments with the engine unless you are prepared to pay a goodish sized bill for putting it in order by the experienced mechanic. Of course many riders are expert with the engines, but before the year is out we shall have a number of motors running in the hands of inexperienced riders, and it is to them that our remarks apply.

### **Keep your Engine Clean.**

KEEP the whole of the internal parts of the engine which are subjected to the explosion as clean as possible. It will well repay the rider the trouble entailed upon him, as deposits rapidly form within the explosion chamber, especially near the exhaust valve-outlet. The presence of these deposits near the sparking plug will quickly develop short circuiting, and the engine will not work.

### **Know your Motor.**

EVERY rider should learn as quickly as possible the manner in which the motor works, how taken to pieces for cleaning, and how to do the necessary adjustment. This is not difficult to learn, but care and accuracy are necessary. If the parts are not numbered, they should be carefully marked piece to piece, either with a small centre punch or small type figures, so that if the whole of the parts were well mixed they could be speedily sorted out again.

IN wet weather keep your belt well oiled with castor oil.

REMEMBER that when the roads are greasy the tip is to "steer straight."

A WEAK exhaust valve spring will cause your motor to be sluggish.

SURFACE carburetters always require attention to the air lever to get best results.

A WEAK solution of sulphuric acid poured in the vent hole will put fresh life in dry batteries. Always watch such battery carefully and don't rely for long distances on it.

MAKE and break contact blades should be adjusted so that a visiting card can be inserted between the points when not in contact.

WHATEVER you do, do thoroughly, seeing that you properly tighten bolts and nuts without overstraining them by using long spanners; those sent with the engine are long enough, and many frequently break bolts by using too great a leverage.

### **Look to your Trembler.**

SEE that the trembler and contact screw are in good condition, and the points of contact bright. You must recollect that contact is made some 700 times a minute, and this will in a very short time reduce the power of the spring, and a spare trembler should be carried. Care should also be had to know how to fit it properly.

### **Make Sure of your Batteries.**

ALL contacts in the electric installation should be examined from time to time and kept clean and free from anything being attached to them which might produce short circuiting. Never run any risk with either batteries or accumulators when you are at all doubtful about them; rather err on the right side than on the chance side, for the latter may land you in the country with a nice walk before you.

### **Lubrication Tips.**

SEE that your lubrication is ample but not lavish. The principal moving parts work in an oil-tight case, and if sufficient oil is placed in the bottom of the chamber to allow the crank brasses to dip sufficiently far into it, so that with the rapid revolution of the cranks the oil is thrown well about, as it falls it finds its way through the oil holes into the bearings. The waste has only to be made up, and this quantity will depend materially upon the proper adjustment of the bearings and also upon the quality of the oil used. About half a pint per hundred miles ought to be ample for all circumstances, and some care should be exercised by the rider to find out the right amount. The oil requires to be drawn off occasionally to see that there is no dirt amongst it, and when filtered it can be used again if clean; but if at all cloudy from dirt or other causes, throw it away; do not run the risk of a seizure of a bearing.

ALWAYS carry two spare plugs in good order.

To avoid short circuit in wet weather, all terminals and naked wires should be bound with rubber tape.

SEE your accumulators are both fully charged; 4.5 volts is the lowest working pressure which can be depended on.

INTERMITTENT firing is frequently caused by the plug points being too far apart. A piece of notepaper should just go between them.

MOTORS with surface carburetters frequently have a difficulty in restarting in cold weather, owing to the petrol not vaporizing. A little hot water poured on the exterior will enable an easy start to be made.

### **Let the Petrol be Fresh.**

SEE that the petrol tank contains fresh spirit for each run, for unless petrol is stored in an air-tight case it speedily loses its effectiveness. Far better to empty the tank at the end of each run, and then you know the true state of things, having to fill an empty chamber. You may be landed with bad spirit just at the time you wish to start, and have a considerable delay in emptying and then refilling.

### **Side-Slip.**

A VERY good tip in winter to those who are not "flutterbyes," and who use machines belt-driven, more especially if fitted with a jockey pulley, is to adjust the belt rather on the slack side. A member of the staff, who rides fairly consistently right through the year, has not had a side-slip this winter or autumn, and he attributes it to always easing the jockey pulley off a "wee bit" directly he strikes a patch of grease. Side-slips are often induced by the driving wheel having a tendency to revolve without propelling the machine forward, thus destroying the initial "bite of terra firma" necessary to the upright position.

### **Sparking Troubles.**

A RIDER may find that the engine wont spark after running a few miles. The trouble is generally put down to the sparking plug, but it may eventually be found in the coil case. The hinge holding on the lid has caused the trouble in at least a few instances. The hinge was somewhat close to the high-tension terminal, and when the compression of the engine was perfect the spark would not jump the points of the plug, but jumped from terminal to hinge and then to frame. To discover if this is the trouble, make and break contact by hand, listen at tank of machine for clicking noise, which may be distinctly heard if there is a jump taking place inside. By the way, makers should be careful to isolate hinges, &c., on coil boxes and other places likely to lead the sparking into wrong channels.



## SEVEN THOUSAND MILES ON A MOTOR BICYCLE.

*How I Started, with some of the Incidents that occurred.—By J. van Hooydonk.*

*The writer of this article has just accomplished his seventh thousandth mile on a motor bicycle, and the recountal of some of his experiences will, without doubt, interest the reader, especially in view of the fact that Mr. van Hooydonk will attempt a 200 mile non-stop ride on the Crystal Palace track next week.*

MANY a boy, when asked as to the occupation he would like to adopt upon reaching manhood, will quickly reply, "Why, become an engine-driver." Strange but true it is that the fact of being an engine-driver possesses a great fascination, and no doubt but that to this trait must be attributed the great enthusiasm displayed by persons of all dispositions when once they take to motoring.

Now, motoring, we know, is an expensive, if pleasant, hobby, and it is the motor bicycle we have to thank for enabling many of us to participate in

### THE EXHILARATING PASTIME

without encroaching too far upon our financial resources.

I have ridden cycles of all descriptions for a good many years, enjoyed long tours, taken part in a good many races with just sufficient success to make the sport interesting, and really thought there was nothing in creation to touch cycling.

When I first had dealings with a motor bicycle, I candidly confess that I did not like the look of the beast, and certainly did not think much of it. It all came about through

### A LAZY BROTHER,

who would persist in the statement that as long as he could get about the country without quite so much hard work, he would be just as happy. A motor "bike" was made to his order, and when all was ready, I started him off on his journey up the North Road, while I would follow on my trike (of which I was the motive power) in case he should require towing home! My surprise was great when the motor went straight out of sight, and after my going "all out" (and I was fairly fit) finding the lazy one at Barnet waiting for me, cool as the proverbial cucumber and smiling pleasantly, while I was hot and perspiring, not to say annoyed at being dropped by "a thing that goes with oil." Still we must bow to the inevitable, and this I did. Promising the owner of the, to me, still infernal machine not to go too far I trusted myself to its tender mercies. Since then I have ridden about 7,000 miles, ten of which were done on an ordinary bicycle.

I well recollect this first ride straight up the Hatfield Road as far as the "cutting," where on fine Sunday mornings the *habitués* of the road sit on the bank watching the many finishes of the crowds coming up the hill, or perhaps enjoying the innocent fun of one of the party going down the hill to find a "bite," as they

have it in the classics. On many occasions has the motor rider caused an unwary cyclist (who thought that motors would not go up hill) to get half-way up the slope only to then turn on full speed, and leave the pedal pusher struggling, while the little crowd would look on, smile and perhaps encourage the man by saying, "Go on, sir. You're going well!"

While I found the motor a pleasant means of getting about the country, I found, also, that my chances of taking part in any cycle races would be small indeed—as I did no ordinary riding I soon became very unfit. Competition is always a great stimulant, and, as there were no motor cycle races, it occurred to me the only way to have a little excitement was to go for

THE LAND'S END TO JOHN O' GROATS RECORD, a performance which was stated to have been accomplished in a certain time. If I failed, it would at least be an experience worth having.

An experience, it was!

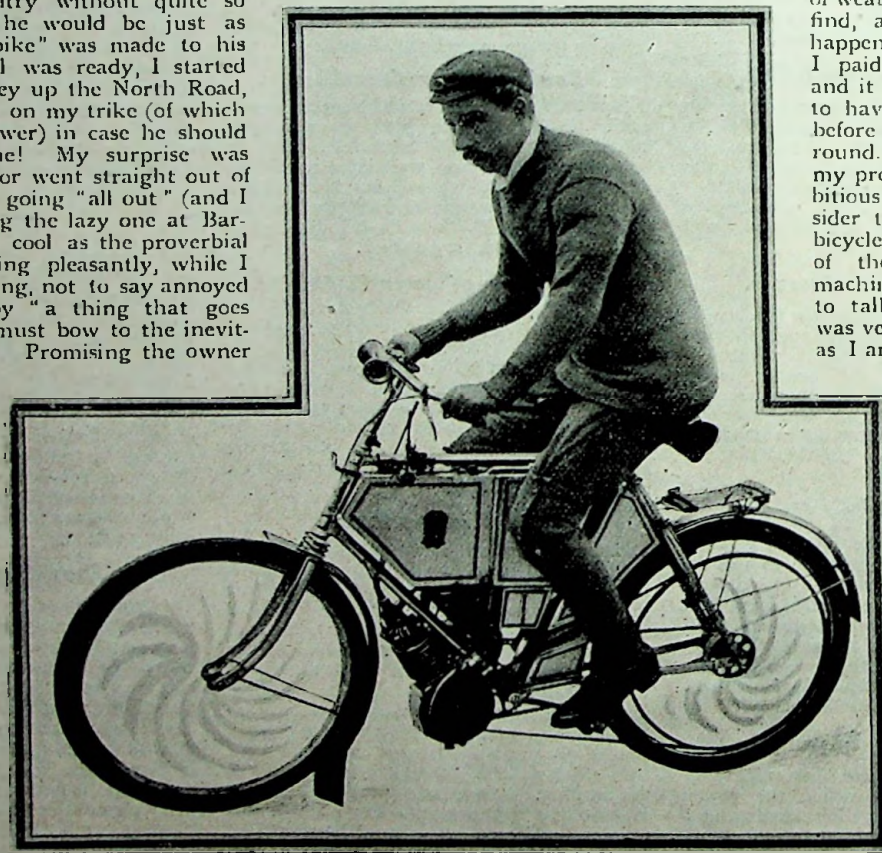
John o' Groats is a long way from Land's End!

Although I only covered about two-fifths of the journey I learnt a lot, and it really is astonishing how many varieties

of weather and roads one can find, and how much can happen in a day and a half. I paid for my experience and it is my firm intention to have my money's worth before another winter comes round. It has been said that my programme was too ambitious, but even now I consider that unless the motor bicycle can beat the time of the human propelled machine, there is not much to talk about. One thing was very clear to me as soon as I arrived at Land's End and that was that great respect everyone about the place has for G. F. Mills. When covering part of the journey it made me think still more of the rider and his marvellous performances.

Yet thirsting for another experience and a longish journey, I made arrangements for checking and feeding to enable me to accomplish the journey from London to York without a stop.

Many of my readers will, I doubt, recollect the first foggy day I had early in November, when the country was



J. VAN HOOYDONK.

*Specially photographed for "Motor Cycling." Mr. van Hooydonk is depicted rigged out and with his motor bicycle in trim for the 200 mile non-stop run on the Crystal Palace track during the Motor Show. Some further details of the ride will be found under the heading of "News."*



enveloped in semi-darkness. This was the day that fell to my lot; and, not to mention the unpleasant look of things, it was, in places, very difficult to see the way.

About five miles from Selby, a river crosses the road on an angle, a bridge being built over it and crossing it perfectly square, thus making a sharp bend in the road. On this occasion the bridge looked like a slope and the wall appeared, in the damp darkness, like a continuation of the slope. Tackling the hill at "25 an hour," and keeping straight on, the wall was just grazed by my front wheel, when, suddenly observing the obstruction, I, by the merest slice of luck, just managed to escape either

#### A NASTY SMASH

against a stone wall or a cold bath in the stream. For a second I could feel myself being hurled to—somewhere, and all the feelings of a smash I had some years ago, when I was taken in an unconscious state to a friendly farm, came back to me in the most realistic manner. However, all went well until about two miles beyond Selby, when, with a loud report my back tyre burst, and after covering 187 miles in 8½ hours, first covered in ice and then mud, I came to the conclusion that luck was against me, so walked back to Selby, where, after a bath, and a square meal, I realised that again I had

#### PAID FOR EXPERIENCE,

but vowed at the same time that I would have value for money before long. By the way, my Biggleswade checker (sent out by an old friend—Dan Albone) seeing me covered with ice, through travelling at a high speed, shouted out, wishing to know if I was training for an "arctic exploration!"

Not always, however, have my trips resulted in disappointment, for the motor bicycle has contributed the lion's share towards many a pleasant holiday. In the summer of last year, when my family were holiday-making in a rural village in Essex, it enabled me to run over the 60 odd miles on week-ends in a quicker and far more pleasant manner than I could have done in any other way. Naturally, the machine attracted a considerable amount of attention in the villages, and the ideas of the locals were both strange and entertaining. Sitting in the smoke room of a hotel, one party asked me whether I had ever seen "one o' those motor bicycles," and on my replying that I had, he volunteered the statement that one came through the village that morning at quite 40 miles an hour. When, finally, the wife came back to town, the motor bike again came in very useful, for while my "better half" was riding an ordinary free-wheeled machine the engine

#### DID THE WORK FOR BOTH,

we riding side by side. The journey from Colchester to London was accomplished inside three hours, which was not by any means bad travelling.

On another occasion, a friend was going for a 24-hours' time trial, when, by the way, he was fortunate enough to break record. I promised to look after him, and being able to cover 25 miles in an hour against his 17 or 18 I was enabled to be always there, or thereabouts, without feeling any fatigue, and at the same time making a nice outing of a generally wearisome job. Between Friday evening and Sunday,

#### ABOUT 450 MILES

were covered, and not once did the rider feel that the miles were unduly long; and where one would have felt the exertion for some days under usual circumstances, it merely left a healthy recollection of a pleasant holiday.

Knowing that the club of which I am a member was not in favour of motors, it rather occurred to me at first that my company would have been objected to when riding the "Puffing Billy," but far from it, as the machine is almost noiseless, and throws no dust; consequently the men are only too glad to "hang on" and get the shelter.

The most pleasant rides I have experienced have been in the summer days, when, after working hard, I found it was a most exhilarating sensation to leave home in the cool of the evenings and ride about 40 or 50 miles, getting all the

benefit of the fresh air without having to undergo any exertion. However, when the nights are dark, it is necessary to carry a powerful lamp—acetylene for preference, for, travelling at a fairly good rate, one must be able to see a good distance ahead.

A journey to Coventry is memorable to me on that score. Having been delayed, my start was later than I anticipated it would have been, and I found a bare four hours were left to me to cover the 90 miles to the midland town. When the darkness came on in earnest

#### THE FAINT LIGHT OF THE LAMP

I was then carrying, not acetylene, seemed to conjure up all sorts of obstacles, and after peering into the darkness, and straining my eyes to their utmost, I would suddenly pull up, only to find that there was nothing whatever in the way. This having occurred several times, I seemed to become used to the surroundings and was beginning to think that it only required practice after all, when suddenly a lumbering cart carrying no light whatever, was only missed by the nearest shave. This was, I fancy,

#### THE NARROWEST ESCAPE

I have had up to the present. Naturally, through travelling at a much higher speed, one is on an obstacle before one observes it, very little time, as a rule, being left to alter one's course.

The run to Southsea with the Automobile Club proved a very enjoyable outing, only the regulation of having to keep to 12 miles an hour on a machine that is capable of travelling at double the speed becomes monotonous, so I found some amusement in running up and snapping the cars as they came along. The run home on the Sunday was rather more exciting, for being no longer under the well-meant restriction of the club, there was nothing to prevent cars and bicycles

#### TRYING "CONCLUSIONS"

on the lovely stretches of the Portsmouth road. Stopping for a bit to admire the grand scenery on the top of Hind Head Hill, well known as the Devil's Punch Bowl, it was my good fortune to fall in with another machine of my class, and also a motor tandem bike. Appearances indicated a little excitement, but first the tandem and then the single hoisted the white flag, and declared the battle off.

#### DO THOSE THINGS OFTEN GO WRONG, SIR?

is the question one is asked at almost every stopping place. Well, occasionally, like all good things, they do go wrong, but at the same time, in 7,000 miles or more of hard road riding, I have not once been left with the "crock" disabled; and since the Southsea tour in November, have had no occasion to do anything whatever to the machine or its mechanism. Yet riding every week end during the very wet winter we have had should prove that, for any slight trouble one might experience there is quite sufficient pleasure to make the balance very much in favour of the motor bicycle.



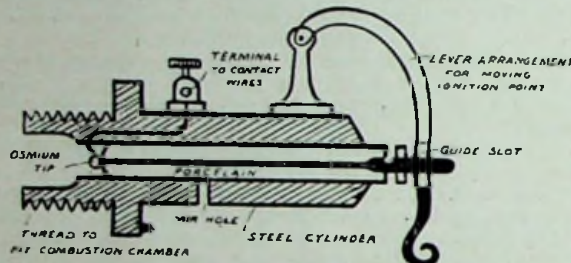


## INVENTION.

In this column we shall describe and illustrate the very latest improvements in Motors and Motor Cycles.

### A REMARKABLE IGNITION IMPROVEMENT.

WHAT promises to create a stir in the motor world is the invention of the "Catalytic ignition plug" by Monsieur Wydts, a French electrician. The principle upon which it acts is a most interesting one, and is that known as "catalytic action" or the property which certain rare metals of the platinum group possess of becoming incandescent or white hot when brought into the presence of gases rich in hydrogen—such as the hydro carbon mixture that drives the petrol motor—it is necessary that the metal be in a state of extremely fine division, or, as it is termed, in the "spongy" state, for this action to take place. The name of the metal used is osmium a silvery metal of great rarity.



THE CATALYTIC IGNITION PLUG

This has been applied in a practical form and extensive experiments by the inventor have proved its success under the most adverse conditions; the aid of an electric current, however, is required as part of the system just to give, as it were, an initial or momentary heating to the small pellet of osmium; this only requires a very small dry battery and a simple circuit of one wire and a switch. The details of the plug are shown in the diagram, in which we have a steel cylinder which screws into the combustion chamber; this cylinder contains a porcelain insulator carrying a wire, at the end being the osmium pellet. This insulating sleeve is arranged to slide in the cylinder, to allow of the ignition being advanced or retarded; the electric circuit is made by a small contact inside the plug; switching the current on raises the temperature of the osmium to 50 deg. C., on coming in contact with the gas it immediately becomes white hot and fires the gases; the ignition is stopped by drawing the osmium past a small hole and admitting the air to it.

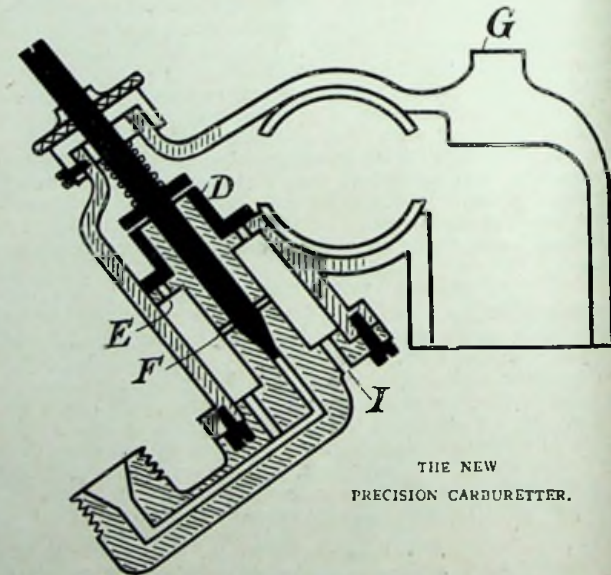
### A BRITISH MADE MACHINE.

THE Whirlwind Motor Cycle is a good example of a British made machine throughout, and is manufactured by the Dorman Engineering Co. of Northampton, with a cylinder 2½ in. x 2½ in., and guaranteed sufficiently powerful to carry a 12-stone rider up any hill. In the details of its construction we note several good points, such as the making of the fly-wheel in one piece with its axle and crank, the latter being made by male and female tapers accurately turned, the whole being coupled together by ½ in. bolts and nut, this arrangement permitting the gear wheels to be closely stowed away, and thereby reducing width of the case. The carburetter is of the spray type and works automatically, the ignition being done by accumulators fitted in the usual manner within a case with the petrol tank, the induction coil being strapped on to the front of this case. A clamping bridge and dome fitted over the valves, with a pinching pin for holding it in position, affords a ready means for the removal and cleaning of the valves. The arrangement for regulation is by a switch attached to the left handle and an exhaust lifter attached to the right, an arrangement which gives complete and immediate control over the machine.

The price quoted is £40, the frames being stocked at 24 in. and 26 in., but can be made to suit the requirements of riders. The Company also supply the motor specially designed to suit B.S.A. motor fittings, or any cycle with a 54 in. tread.

### A SIMPLE CARBURETTER.

WE have lately made an examination of the belt-driven motor cycle made by the Precision Motor Co. of Northampton, the whole of which has been made in England and which appeals to us forcibly as being a very neat and serviceable machine. The engine, which is of the diagonal type, is fitted within two parallel down tubes forming the diagonals of the frame, the upper of which runs from the top of the head to the bottom bracket, and the lower terminates about two-thirds of the way down into a crutch which receives the case of the engine. A lug is fixed to the underside of the bottom bracket and affords a further steadiment to the engine, so that with the removal of two bolts, the engine can be taken away for repairs. There are many special points in the construction design and the carrying out of the details, and amongst them the following are worthy of note—Each flywheel is of cast steel with its own axle, and one has the crank pin also cast on it, and turning this to a taper, it fits into the other wheel and is secured to it by nut in the usual way, thus holding the whole very rigid. The gear wheels for the valve motion are also cast solid and the teeth machine cut, thus ensuring strength with lightness. The case of aluminium, the two halves being spigotted together, no strain being thrown on the bolts, and the alignment of the bearings assured whenever the case is separated for cleaning, etc. Phosphor bronze is used throughout in the bearings, all of which are ample length. The sparking is by means of accumulators contained in a combined tank fastened to the top rail of the machine, at which has enclosed within the same case, petrol tank, tool box and lubricating oil, the induction coil being snugly packed away under the saddle. The carburetter is of the pulverising type, and is



THE NEW  
PRECISION CARBURETTER.

simple construction. Air, which has been warmed by contact with the exhaust box, passes through the holes marked I in the illustration, and with the suction effort of the engine lifts the diaphragm, D, which in turn raises the needle valve, admitting petrol, which passing through some small holes F in the case, is sprayed into the outer chamber, and meeting the warm air mixes with it, and passes through the holes E, covered by the diaphragm, into the cylinder. By uncoupling the petrol supply pipe and a pinching pin at G the whole box can be removed for cleaning the valves.

The controlling is all done with one hand, by twisting one of the handles on the handle bar. An exhaust lifter is fitted for wheel the machine, a sight feeder lubricator, Morrow free-wheel and a redalling brake, front rim brake, complete a handy and machine.



## OTHER PEOPLE'S VIEWS.

*Under this heading we shall print the opinions of our readers on all matters concerning Motors and Motoring, and we cordially solicit their co-operation in making this page a medium for interesting and profitable discussion.*

### SIDE SLIP.

SIR.—The side slip of motor bicycles appears to be a subject of considerable interest. I find that a bicycle with motor placed between the wheels is not more liable to side slip than a motorless bicycle, and this refers to motors of moderate power, as I have not ridden one of high power. I rode a motor bicycle with the motor in the back wheel, and afterwards free wheeled several times on a bicycle without a motor, placing my body right behind the saddle and low down, in order that the centre of gravity would, as near as possible, be in the same position as that of the former; and I found the former much more liable to side slip. Over fourteen years ago I rode the first pneumatic tyred bicycle, which was higher than other safeties. Since that time I have ridden very constantly bicycles of varying heights, and I have always been of opinion that the higher the centre of gravity the more easily is a bicycle steered. I don't know that my theory is correct, but I believe the reason why a bicycle with the motor placed in the hind wheel, or over the front wheel, is more liable to slide slip than one with the motor placed between the wheels, is that when the motor is placed between the wheels it is nearer the centre of gravity of the machine and rider, and consequently more of the bumping of the motor (which has a tendency to cause the tyres to leave the ground) is absorbed by the machine and rider than would be the case with the engine in or over one of the wheels. When the motor is placed over the front wheel its inertia affects the steering on account of its being placed considerably in advance of the steering centre.

Yours faithfully,

J. B. DUNLOP, JUNR.

### IS BELT DRIVING SUPERIOR TO CHAIN DRIVING?

SIR.—I SAY most emphatically that it is not only not superior, but that it is decidedly inferior if the chain transmission is fitted with a gradually engaging clutch. Anyone who has been riding a belt-driven bicycle about the wet roads this winter must have been disgusted with the wet, flabby, dirty state the belt has got into from the drippings on to it of the mud from the top of the driving-wheel. The consequence is, that the belt stretches and slips, and frequent stoppages are necessary to tighten the filthy thing, to make it grip even moderately well. The result is the same, no matter whether V-section or round twisted belts are employed. It is not much use loading up your machine with piles of petrol and oil tanks and lubricators, which, the capacity to carry some makers seem to think, is the chief qualification of a motor bicycle, when the system of drive generally adopted tends to produce the very disadvantage the cart-load of luggage is stated to prevent. After every ride under such conditions, it is a very unpleasant but necessary duty to thoroughly clean the belt, as, in the process of drying, it becomes more or less hard and inflexible, and to apply an oily belt dressing to render it sufficiently supple for use again. Several machines I have tried are fitted with such small and ill-shaped driving pulleys, that

to obtain a drive even in dry weather, the belt must be tensioned so severely as to produce an appreciable amount of binding in the bearings of both motor and back hub, with the further consequence of increased liability to belt breakage. Then again, the loss of power in belt-driving any machinery in consequence of the inevitable slip of even well adjusted belts under varying loads has been estimated and expressed in formula by engineering experts and in respect to motor bicycles. I am convinced from personal experience that a 1½-h.p. motor with a chain transmission gives a more powerful effective force of propulsion than a 1½ h.p. motor with belt transmission. Belts have been all but discarded on even the lightest voiturettes in favour of direct drive, and I have no doubt that after trial during the coming season they will be discarded on motor bicycles also. I have seen from time to time theoretical objections advanced against chain transmission for motor bicycles, but they are not borne out in the practical experience I have had on the chain and clutch transmission machine I am now riding."

Yours truly,

"DIRECT DRIVE."

### MOTOR BICYCLE EXPERIENCES.

SIR.—I have been a bicyclist for over thirty years, having commenced with a bone-shaker, the greater part of which I made myself. Next, I went in for the high machines, manufactured by the Coventry Machinists' Co., then for safeties made by different firms—home and foreign—then settled down to the Humber machines, which I have been riding for many years, and last season purchased one of Bayliss, Thomas & Co.'s Excelsior motor bicycles, and upon this machine I have done over 2,000 miles, experiencing the following breakdowns and minor troubles:—

1st breakdown.—Key which holds pulley on crank shaft gave way, and whether I would or no, the engine became a free one, and I had to pedal home.

2nd.—Long screw which passes through edge of flywheel, and holds same to crank-pin, cut out, and flywheels went adrift in crank chamber.

3rd.—Porcelain of sparking-plug blew out, and unfortunately not having a spare one with me, had to pedal home.

4th.—Free-wheel clutch broke when assisting the engine uphill, and as sprocket jammed, had to pedal home. Remedied by replacing broken clutch with an Eadie one, which is all right.

The following are some of the minor troubles I have experienced:—

1st.—Float in carburetter became detached from wire before I had done 100 miles. Since then I have to take "soundings" to find depth of petrol. I now always take the precaution before starting to see that tank is full, and that there is a small quantity of petrol in carburetter, leaving valve between tank and carburetter slightly open, which allows petrol to drop into carburetter, and when running with valve in that position, get very good results—far better than when following the directions given by the makers.

2nd.—Sagging of tank and carburetter in consequence of defective arrangement for holding same to top tube of frame.

3rd.—Belt constantly coming off. Remedied this by putting guard over it.

4th.—Groove in engine pulley wearing smooth, and, as a consequence, belt slipping. To prevent this roughed groove out twice.

5th.—Lubricating oil leaking from crank chamber at each end of crank shaft, worse at pulley end; there the oil comes out at bearing, gets on to pulley, thence to belt and clothes, causing slipping of belt and damage to clothes.

6th.—Carburetter leaking at wash-out plug; could not stop this till I soldered in old plug, and drilled a small hole in its centre and put smaller plug therein.

Find rim brakes a great nuisance and very much in the way when trying to mend tubes, or covers, and in cases of puncture, of which I have had five in back wheel.

There is very little vibration in this machine; can ride it easily "hands off"—not as liable to slip as an ordinary bicycle. Have had no trouble whatever with electrical parts. One pint of petrol is sufficient for a run of 18 to 20 miles. Could get speed of 20 miles an hour on a good road.

Have had some experience of a Werner (1901 pattern). A fast machine with a very good engine and plenty of power, but found there was too much vibration for my fancy.

Also have had experience of the Singer motor bicycle, which is a well made and reliable machine throughout, and will climb almost any hill.

I certainly would not have the fly-wheel outside the crank chamber, unless I wished to be anointed; for even in the very best make of engine, which class of engine is very scarce, the lubricant will in time find its way out at the bearing of the crank shaft and when it reaches the circumference of the large fly-wheel will be thrown off on to your clothes. The oil will also get on to the belt and cause slipping.

With regard to price I don't think a really good sound bicycle, with a motor which would run for three or four seasons without repairing, could be purchased for less than £45.

The following are some of the points which I will look out for in my next motor bicycle:—

1st. The bearing for the crank shaft at the pulley wheel side of engine must not be less than 1½ inches wide. Such a bearing as was in the older pattern Werner engine, in the Aster engine, or in the engine exhibited by the Enfield Coy., and by a very few other makers at the late Stanley and National Shows.

2nd. Horse power not to be less than one and a half or more than two.

3rd. An Eadie, or similar, efficient triple head and front fork with hand brake, and hand brake for back wheel.

4th. Driving pulley to be secured to rim of back wheel.

5th. Belt to be round, twisted (the best belt for taking in slack), but to be about twice as thick as those now generally used, so as to give a better grip on the small part of the circumference of the engine pulley available, and pulley wheels to suit such a belt.

6th. Valve lifter and automatic lubricator.

7th. Engine to be low, under frame as in Excelsior pattern.



8th. Wide tread, to leave room for wider bearing of engine.

Two-inch tandem tyres. My experience of ordinary bicycles is that the small smooth tyres pumped hard are the non-slipping, best wearing and cleaner tyres, and that the so-called non-slipping ones are really the slipping, short lived and dirty tyres.

Yours, &c.,

H. L. MEADOWS.

### SOME SUGGESTED IMPROVEMENTS.

Now that motor cycling has come to stay, and that probably in a year or two motor cycles will be as plentiful as the ordinary cycle is to-day, it may not be out of place to say where improvements may be made that will be beneficial to your readers and all those who motor-cycle.

There are several points to consider, viz.:

- (a) **EQUALIZATION** of weight over the whole machine when in use, so that unnecessary strains may be avoided, and consequently breakdowns.
- (b) **COMPACTNESS** of all parts controlling the mechanism of the motor, carburetter, air supply, &c.
- (c) **SIMPLICITY**—This should be one of the greatest features of a motor cycle because all riders are not mechanics.
- (d) **INTERCHANGEABLE** and perfectly fitting parts are an absolute necessity; although free in working, there should not be the slightest shake or rattle.
- (e) **ADJUSTABILITY** is another important matter. Sufficient room should always be left to enable the user to adjust or take up the slack. This applies to all chains, belts, gears, bearings or journals &c. In all cases, sufficient space should be left so that a spanner or screw-driver may be used without the painful necessity of (in all probability) damaging your knuckles during the operation.

In places where bolts and nuts are necessary, a standardized pitch should always be used. I don't mean a pitch that was known as a "bastard" or odd some twenty years ago in the cycle trade, for at that time every maker of cycles appeared to think it was the correct thing, but a greater mistake was never made, as bolts and nuts on the machine made by A, would not fit that made by B or C, and D was also quite different and the result to the unfortunate rider was, that, in case of accident, he had to apply to the makers of the machine for some trivial detail, wait till he could get it, and have the pleasure of paying a fancy price for it; possibly six or seven times the value. This must never occur in motor cycles or cars, because inflated prices are objected to by the public.

The weight 65 to 70 lbs. with 1½ front and 2-inch back tyres for a motor cycle, is a good all-round one. This includes the machine, motor (which should be 1½ actual h.p.), petrol supply, carburetter, electric ignition, set aside all else to make it complete.

It is a peculiar fact, but nevertheless a true one, that English makers give but slight attention to weight saving. Foreign motors are lighter, neater, and quite as substantial as those made at home, giving in many cases more power.

Motors on cycles being air cooled with outside radiators, should also be placed in the most prominent position to catch the air

during propulsion. A cool cylinder surface is necessary; if it gets too hot it may fire; the enormous rate of action of the piston causes spontaneous combustion and consequently the oil used for lubrication catches fire, and often before it can be attended to has done more harm than anticipated.

The electric sparking also requires looking to now and then, proper connections, proper insulation and cleanliness are the most essential points. The electric spark inside the combustion chamber should be a *short fat one*, for all that is required is just sparking sufficient to ignite the compressed gasses and so causing the propelling explosion.

The carburetter is another part of the machine requiring very careful attention. The gas is formed in this (before its admission to the combustion chamber) and the admission of air requires gently dealing with; for example, the brighter and better the day, the more volatile the petrol is, hence a tremendous and powerful explosion. On the contrary, a dull, damp, depressing day is bad for the mixture; atmospheric conditions being heavy it affects the explosion mixture very considerably. Until the combustion chamber gets a little warm the gas-air mixture is not nearly so strong as it might be.

Yours truly,

J. F. R.

[Several letters are crowded out.—ED.]

### OUR INFORMATION BUREAU.

Answers to general queries will appear under this heading in future issues. Information on all subjects pertaining to Motors, Motor Cycles, and Motoring generally, will be given to readers who seek such information or advice. Any reader who desires to ask a question with the view of ascertaining the views of other riders based upon actual experience should send his query which will be inserted, and replies to such questions will duly appear.

Here is the first query received:—

If you have a Query Column in "Motor Cycling" please insert this one:

Which is the most reliable for a Motor Safety, a pulverizer or surface carburetter?  
W.W.E.

### EDITORIAL NOTE.

The Editor of "Motor Cycling" desires to express his hearty thanks to a number of correspondents who have written congratulatory letters on the initiation of this journal, and he is also extremely grateful for the many good wishes for the success of "Motor Cycling" which many of these contain. No. 1 is now in the reader's hands, and if he has perused it line by line, and is now reaching that part of the paper where "Finis" must be inevitably written, he is in a position to judge of the merits or demerits of our initial production. With a certain amount of confidence we hope his verdict will be favourable, and with even greater confidence we venture to assure him that in future issues it will be our endeavour to improve upon this, the first issue of "Motor Cycling."



ON THE RIPLEY ROAD.  
Passing "The Bear" at Esher.