

# Motor Cycling

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## & Motoring

### THE LIGHT SIDE.

"Pushed by a pint of paraffin" is a sufficiently accurate, not to say alliterative, definition of the methods of motoring; but if it comes to sneering, two can play at that game, and when I want to get from one place to another comfortably and quickly I had as lief be pushed thither by a pint of paraffin as conveyed by a cartload of coal, or bundled along by a bag of bones.

#### ALCOHOLIC!

France is suffering from an over-production of wine and beetroots, and as both these commodities contain a large proportion of alcohol, French scientists are urging the substitution of alcohol for petrol in all automatic vehicles.

The motor of the future will doubtless, therefore, carry a supply of "vin ordinaire" and a few bushels of beets, and manufacture its own motive power "en beet-route," so to speak.

The scheme bristles with possibilities. A well-grown beet-root is a fine thing to throw at an inquisitive dog or at a too officious policeman. To kill Robert on his beat with your beet would be a triumph of "retribeetrootive" justice. Ha ha! Failing this, a quart bottle of Chateau St. Vinaigre might be resorted to with success.

One eminently desirable result would accrue from the universal adoption of this proposal—the reputation of the cyclometer would be rehabilitated. "In vino veritas."

The time-honoured excuse offered by the bibulous Benedict to his better half at 2.30 a.m. would take on a new meaning. "Just been f' a run wizh club, m'dear; four'een bo'les to the mile."

All motorcyclists would, of course, require to be licensed; a grocer's or a greengrocer's licence would do.

In the event of any misunderstanding with the police, the question of speed could be satisfactorily settled by expert evidence. Samples of the various brands might be handed

up to the judge, who could form an opinion as to their speed-producing capacities. "Experimentum in corpore vile."

As I invariably form my opinions of things in general, and of wheeling matters in particular, on what I read in the papers, I had come to the conclusion that the driver of a motorcar disputed with the rider of a bicycle for the honour of being the biggest ruffian on the road; and I was quite surprised to read a little time ago that a motorist, in endeavouring to avoid a recumbent dog, had dashed into a stone wall, with disastrous results to his car and its occupants. Even a motorman apparently forgets himself sometimes and practises humanity. No one will blame the dog for the obviously natural procedure of lying down in the middle of the road, but if the motorcar had kept a straight course and allowed the animal to look after itself, how many, think you, would have refrained from condemning the man for the much more obviously natural proceeding of preferring his own safety to that of another's?

Here's a tale, topsy-turvy, but only too true,  
Of two vessels; the weaker, I ween, of the two

(The dog) at defiance sets all.  
Whilst, strong in the power of more than a horse,  
The stronger departs from the ordin'ry course

Of procedure, and goes to the wall.



Ancient tablet depicting the Motorcyclo—Centaur, dug up somewhere in the neighbourhood of Coventry.

Ignorance of motorcycle internal arrangements on the part of purchasers is seriously affecting the poor salesman. One told us the other day that he had a bad quarter

of an hour with a probable buyer which completely prostrated him. The following conversation ensued:

"I want to see a motor vehicle—those with two wheels."

"Yes, sir." (Trots out special pattern.)

"Haw, what is that sticking out there?" (Pointing.)

"That is the sparking plug, sir."

"Oh, ah, yes, really. Of course it sparks. And what is that?" (Pointing to connecting plug.)

"The connecting plug."

"Ah! And what a lot of little things one must remember. Wouldn't it be deuced awkward to find, after riding some miles, that one has left this—er—connecting plug at home?"



## A PLEA FOR A LIGHTER MACHINE.

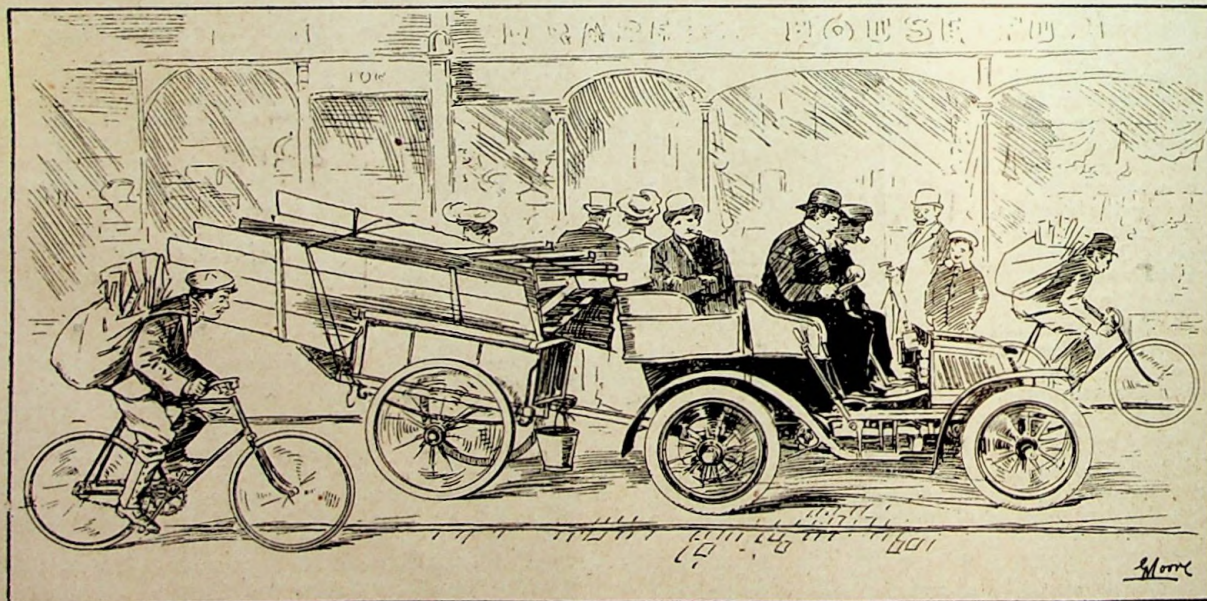
*How the Weight of the Motor-Bicycle might be Reduced.—PART II. (Concluded).*

Let us now consider the components of the motor-bicycle in detail, and see where it would be possible to save weight in them. In the first place let it be stated that perhaps the most important factor in helping us to cut down the weight will be the employment of aluminium, or one of its alloys, in place of iron, steel or brass wherever it can be done. Of late there have been wonderful strides made in the working of aluminium—no doubt many of our readers noticed the exhibits of castings, etc., at the recent Show; some of these were of intricate pattern and even in their rough condition were marvels of clean and accurate foundry work.

Starting with the motor itself we have the cylinder with its radiators, made, as a rule, from an iron casting; if this was made from a wrought steel tube and radiating flanges of aluminium fitted over, we should gain something here. Next take the piston and the connecting rod; at least one motor firm of note is making these extremely light, less metal being left in the piston, and with the connecting-rod made from an aluminium casting instead of from malleable iron or bronze. Crank cases, of course, are in every case made in aluminium now, but it is noteworthy that even here a great saving can be effected by adopting the outside fly wheel design, a very much smaller crank case being required than when internal fly wheels are used. Concerning the fly wheel, this might be more scientifically designed than at present is the case in some types of motors, getting better results for a given weight by concentrating it in the rim, and having the web as light as it can be safely made. The belt pulley is now often made of cast iron; a slight saving could be effected here by making it of steel. Then we have the silencer, made now of stout charcoal iron and often fitted with heavy brass flanges; there seems to be no reason why it should not be made complete in aluminium. The castings for spray carburettors might also with advantage be made in the same metal, and also certain of the controlling levers.

If it were not for the difficulty of soldering this metal it would be possible to use it for the supply tanks, etc. The accumulators at present employed are, in the majority of cases, of excessive weight in proportion to their capacity for holding a charge; light weight storage batteries for special purposes have been obtainable for years past—the writer remembers getting a "Lithanode" 4-volt battery of high capacity which was remarkably light in weight and did not appear to deteriorate in the least from hard work or vibration. If some such principle could be adopted for the sparking accumulator several pounds weight might be saved easily. Then with regard to the coil, can it be said that the weight of wire upon it is, as a rule, commensurate with the length of spark obtained? It is considered by firms who are famous for their coils—not specially for motors—but for scientific and experimental work generally that 1 lb. of secondary wire should give  $\frac{3}{4}$  inch spark in air. Many bicycle coils weigh 3 or 4 lbs. and only give  $\frac{1}{2}$  inch at their best; hence there seems to be a possibility of getting a specially light coil if the design is worked out on the best principle. In the build of the bicycle itself it is not easy to suggest where weight might be saved. The "factor of safety" must be ample, especially in the frame; but there would seem no reason why the pedal gear should not be of the usual light roadster pattern, the chain, chain wheels, cranks and pedals only having a very small amount of work to perform. The build of the front wheel might also be lighter than the rear. The tyre upon it especially need not be so heavy as the driver. Several of the tyre firms have seen this, and are now supplying special tyres for front and back wheels.

In conclusion, it would appear that there is considerable scope for experiment as to the best means to be adopted in producing the much to be desired "featherweight" motor-bicycle.



THE UTILITARIAN ASPECT OF THE MOTOR.

*The above was actually observed by our Artist in Upper Street, Islington.*



## THE F.N. MOTOR-BICYCLE.

The Fabrique Nationale Co. some years ago achieved a high reputation upon the Continent for the quality and workmanship of their bicycles, and in placing the F.N. motor-bicycle upon the market they have had in view the fact that a successful motor-bicycle must have the merits of simplicity and a compact and symmetrical appearance. To the cyclist in the "transition" stage the design of their machine will specially appeal. The lines of a standard pattern roadster

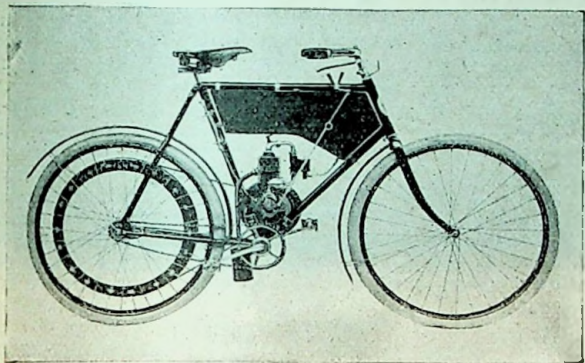


FIG. 1. GENERAL VIEW OF THE F.N. BICYCLE.

bicycle are fully retained, and the weight of the whole machine is kept at the minimum, consistent with strength and durability. In Fig. 1 we have a general view of the machine, and it will be admitted that there is something pleasing in its general outlines. Now for the component parts of the machine. Let us first deal with

### The Motor.

This, of course, works upon the standard principle of an internal combustion engine, but in the details we note several important departures from the conventional pattern. The feature that shows up most is the outside fly-wheel (Fig. 2). On the interior of this—and, in fact, as an actual part of it—is the driving pulley, transmitting the power by a  $\frac{3}{4}$ -inch flat belt to the large wooden driving rim which is mounted on the rear wheel. The cylinder and top half of the crank case—which, by the way, is remarkably neat—are in one piece. The lower half of the case carries the clips which attach the motor rigidly to the main and diagonal tubes of the machine. The motor is fixed quite vertical, and the

spark plug comes right in the centre of the combustion chamber. The design of the bearings has been carefully thought out, as also have the means of lubrication of the piston, crank, and bearings. It is claimed that the vibration is greatly lessened by the large fly-wheel, which, as a matter of fact, is not as heavy as the combined weight of those used on other systems; but the weight is put in the right place, namely, at the rim. The total weight of the motor—which develops  $1\frac{1}{2}$  actual brake horse-power—is probably as low as any motor in practical use.

### The Carburetter

is of the spray pattern, quite automatic in its action (Fig. 3) and does not require any adjustment whatever on the road. This is fed from the petrol tank through a small supply pipe, which can be shut off by a small tap. A float feed is fitted, and one clever device worth noting is the "intake" for the warm air from around the cylinder. The whole arrangement is of quite a small size, and appears to be strongly made.

### The Contact Breaker and Electrical Equipment.

We give a diagram of the contact breaker (Fig. 4), which is of novel design. There is a positive frictional contact between the platinum tips, which ensures certain sparking of the engine at high speeds, and the action of this device is not difficult to follow. We have the cam (on the half-speed shaft) depressing the pivoted ring, and giving the break. This ring is immediately pressed back by the spring, giving a good contact between the points. It will be noticed that a small hardened steel wheel takes off the friction of the cam, and renders the working very smooth. The contact screw can be adjusted quite easily, a small hole being provided in the cover to see

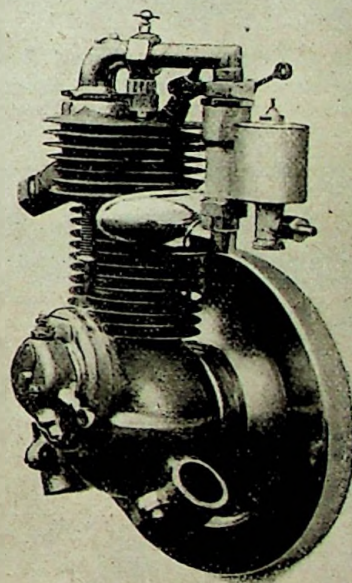


FIG. 3. GENERAL VIEW SHOWING CARBURETTER.

this. A strong metal case, which takes off with the device complete, is fitted; a half turn only is required to effect this. The advancing lever is pivoted to the case. Only a single wire goes to the make and break, and it will be seen that ample vulcanite insulation is provided for the contact screw. The coil is of square form, giving a strong spark, and is fitted neatly into a compartment in the petrol tank. An accumulator of 20 ampère hours' capacity is supplied, and this will spark the motor for 900 miles. All the connecting wires are heavily insulated with rubber—a commendable feature—and another

FIG. 2. SECTION OF MOTOR.



point we notice is the bushing of the openings in battery compartment to prevent abrasion of the insulation on wires by sharp metal edges; and there are also strong connection pieces fixed to both the battery and sparking-plug wires.

### **The Controlling Levers and Switch.**

These really only consist of two—the switch in the left hand grip, and the advance spark lever. We have also the compression tap—this and the advance lever being seen fixed forward of the petrol tank. The speed is controlled entirely by the spark advance lever, and it is remarkable how sensitive this regulation is. We should say that the speed could be adjusted from 5 to 25 miles per hour quite easily.

### **The Exhaust Box.**

This is carried well below the bracket so that no smell from the exhaust gas reaches the rider, the size and principle of construction being also such that the minimum amount of noise is heard from the exhaust.

### **The Driving Belt and Pulley.**

This consists of a  $\frac{3}{4}$  inch wide leather strap joined with an efficient fastener. The ratio of the diameters of pulleys are approximately as  $7\frac{1}{2}$  to 1. The large driving pulley is of hard wood, specially built up in sections and then turned dead true, this being attached rigidly to the spokes of the back wheel by metal clips; and it is found also that the belt gets an excellent grip of the pulley face.

### **The Wheels, Frame, and Brake Mechanism.**

Wheels are 26 inch or 28 inch diameter, fitted with 2 inch motor tyres of standard make. The frame is also of standard

pattern, and is made in 23 inch and 24 inch sizes. As to brakes, a powerful front rim brake is fitted, and for the rear wheel either a Bowden can be fitted, or the machine can be built up with a hub brake such as the New Departure. The motor itself also acts as a powerful brake, owing to its good compression.

### **Lubrication.**

At the rear of the machine—just behind the seat pillar—a sight-feed lubricator is fitted. This communicates with the motor crank chamber, and a few strokes of the lubricator handle every 25 miles only is required.

### **A Few Laboratory Tests of the Motor.**

We had an opportunity of putting the motor through a few tests, and found that with everything in good adjustment a single turn of the fly wheel would start up the motor, the carburettor acting quite regularly in supplying the gas. Running the motor up to a speed of 1,800 per minute no misfiring was apparent, showing the efficiency of contact breaker and electrical equipment generally. Next we made a test for the horse power, and this came out exactly 1.4, the speed being 1,600 revolutions per minute. The method applied was the band brake test described in a former number of "MOTOR CYCLING." As the motor was running quite free, vibration was, of course, considerable, but this would quite disappear with the resistance of the belt in an actual run. The finish of the machine is good all round, the tanks being finished off in bronze, and the bicycle parts in the usual black enamel and nickel.

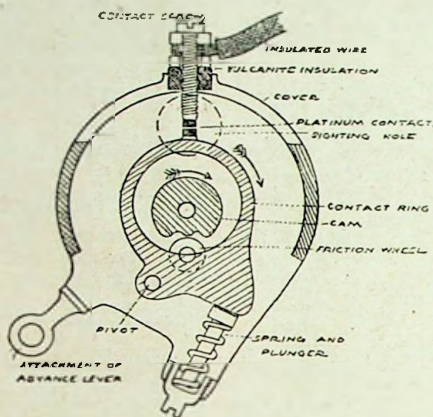
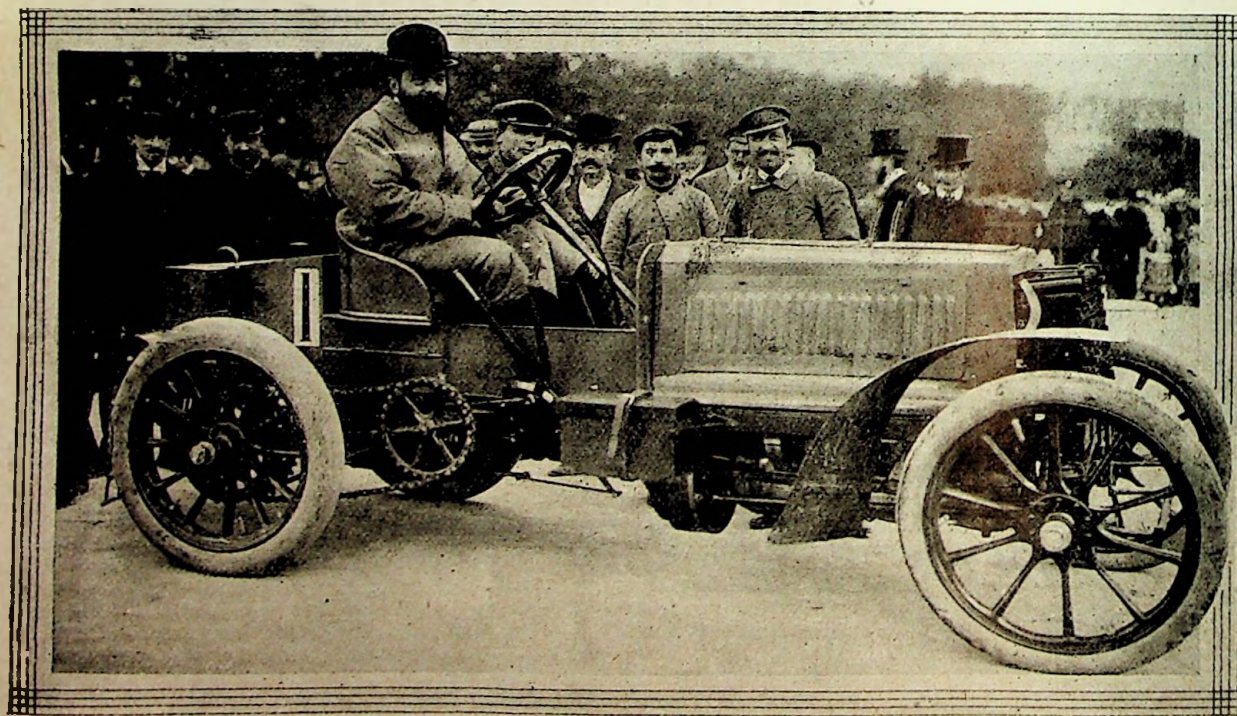


FIG. 4. DIAGRAM ILLUSTRATING WORKING OF CONTACT BREAKER.



The Chevalier Rene de Knyff on the 75 h.p. racing Panhard, which started in the recent Alcohol trials in France, but which was incapacitated during the contest.

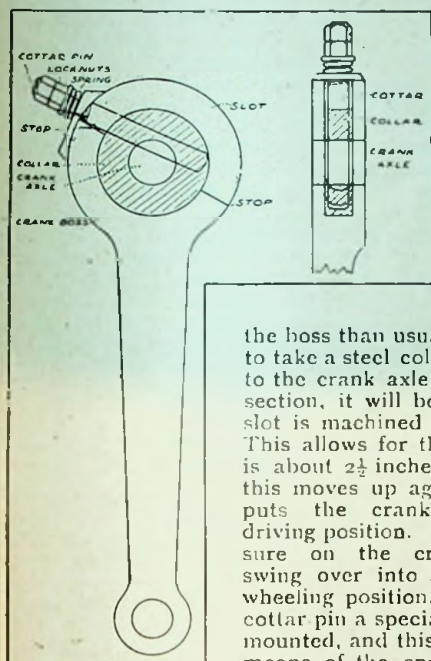


## INVENTION.

*The latest improvements in motors, motorcycles, and accessories.*

### A Swinging Crank for Motor-bicycles.

We have to hand a sample crank, so constructed that it can be readily swung round parallel with the other, and thus give a more comfortable position for resting the feet when motor-bicycling.



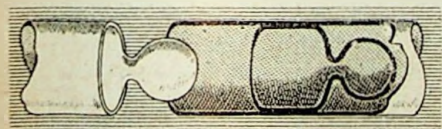
The idea is a simple and effective one, and there is nothing about it likely to get out of order. We show two diagrams, one in plan and the other in section, which will give a general idea of the arrangement.

The crank is made larger at the boss than usual, and is bored out to take a steel collar, which is pinned to the crank axle. Referring to the section, it will be seen that a deep slot is machined across the boss. This allows for the cottar-pin, which is about  $2\frac{1}{2}$  inches long, to work in; this moves up against the stop and puts the crank into the normal driving position. Reversing the pressure on the crank causes it to swing over into a comfortable free-wheeling position. At the end of the cottar pin a special-shaped washer is mounted, and this can be adjusted by means of the spring and lock nuts shown so that any backlash or wear

can be taken up. The makers are W. H. Johnson and Sons, King's Lynn.

### A Detachable Inner Tube.

We illustrate an inner tube with a method of joining which has been protected by the inventor, Mr. W. M. Savours, Woodlands, St. Martin's Road, Caerphilly. Tubes detachable for removal from rims without removing wheel are by no means new, and they have long ago been tried for cycle tyres. The object of this device is to allow



the inner tube to be removed in case of puncture and a spare tube inserted without the trouble of taking off either wheel. The tube is not permanently joined together, but a nozzle is attached to each end, and they fit one in the other, and when the air is pumped into the tube they lock one another and form a complete circle. We find that when the tube is coupled up, the air can be pumped in as in any other tube. To separate the nozzles we let the air out and pull the ends apart. To unite the ends, first the air is let out, the overlapping end of tube turned back, and the other nozzle inserted (which contains a small piece of wood to assist the insertion), then the overlapping end is returned and the tube inflated.

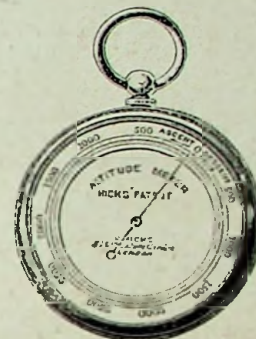
### An Electric Motorcycle.

The latest pattern of motorcycle described in a Continental contemporary has electric accumulators, which are made of metal, only the case being of thin sheeting. The accumulators of the motorcycle weigh only 40 lbs., have a

capacity of 1,600 Watt hours, and suffice for 11 hours when going at a speed of 15 miles an hour. The motor is very small, and rests in a small case on the back of the frame. The complete machine weighs 68 lbs. It would be interesting to see the machine described in "Die Radwelt."

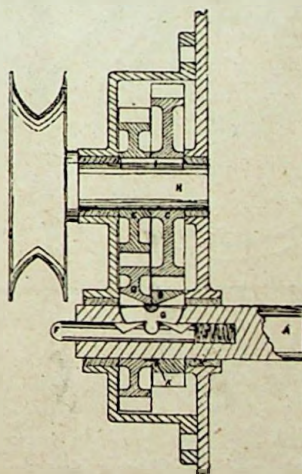
### A New Altitude Meter.

What they call in the States a gradometer has been invented over here by Mr. J. J. Hicks, of Hatton Garden. By merely turning the zero, or O, of the revolving dial round to where the indicating hand may happen to be at the time, one may, in a few moments, learn whether one is ascending or descending, and to what extent, even though it may be only a few feet. To everyone this information would at all times be interesting, but to the motorist, who may be uncertain if his storage of motive force is sufficient to finish his journey, it should be exceptionally welcome. When the day's work is over one can also, by setting the zero over the indicating hand, see what the weather itself is likely to prove before setting out again on the morrow—an obvious advantage.



### Another Two-speed and Free-engine Gear for Motor-bicycles.

A. E. Nute, Kensington, Liverpool, has sent us particulars of a two-speed gear with free engine he has designed and provisionally protected. Referring to the sectional diagram, it will be noticed that there is a system of pinions enclosed in a gear box on the pulley side of the motor crank case; the



pulley itself is keyed to a counter shaft H, to which the gear wheels C E are also fixed by the key I. On the motor shaft and intermeshing with C E are the pinions B D. Either of these can be made to engage with the motor shaft by means of a rocking key, G. This rocking key is actuated by means of a plunger rod of steel, F, moving in the motor axle. A spring, J, is made to force the rod out, slightly rocking the key G, causing the left side to rise and engage the key way of D, and thus drive the pulley the same speed as the motor. When half-speed is required, the rod, F, is forced into the shaft rocking the key G, so as to engage B and drive the pulley through C. The

rod is operated by a lever not shown, and this could be arranged differently to suit the particular position of motor on machine. The key G is kept in position in the slot by a shaped pin and ring of steel, K. The engine runs free when the rocking key is kept freed from the gears. The gear wheels could be substituted by sprocket wheels and chain drive by putting the shaft centres a greater distance apart.

Readers having ideas for Inventions can obtain free advice and particulars as to the best way to protect a patent, by communicating with this Journal. All letters should be addressed "Patent," care of "MOTOR CYCLING."



## SOME INTERESTING FEATURES OF AMERICAN MOTOR-BICYCLE DESIGN.

*As the interest in Motorcycles made over in the States is gradually increasing, we start a series of articles describing the more prominent patterns upon the American Market.*

Over in the States the motor-bicycle has undoubtedly "caught on," and there would appear to be something of a boom in them just now. The making of these small motors and their accessories is just that class of light mechanical work that offers a wide field for the application of that inventiveness and ready resource for which the American engineer is so famed. The days of the invasion by the American bicycle of the English market is still fresh in the memory of most people connected with cycling, and, although the American machine failed to achieve popularity, mainly owing to its not conforming to our ideas regarding tyres and equipment—and to produce such an article meant breaking away from standard lines, and putting down special plant. This did not pay, so, with a few exceptions, the standard pattern American bicycle has disappeared from the trade.

At the same time, many cyclists will readily admit that there were many points to be admired in such machines, for instance, as the Columbia, Sterling, Rambler, Cleveland, and others. Machines of these makes were found to be bristling with all sorts of

### INGENIOUS DEVICES

about the bearings, pedals, adjustments, and so on. With regard to tyres, opinion has largely veered round to the double tube detachable on metal rims, and for motorcycle work these are being fitted.

Most of the American motor-bicycles are possessed of a striking individuality; each maker seems to have struck out on a line of his own in design and equipment; there is no following a set pattern such as we are familiar with here. Like their bicycles, the motorcycle of the States is full of novel points, and, although we might reasonably question the utility of some of them, still it is very instructive and interesting to study a few of these features. The perfecting of the motor-bicycle will prove to be now mainly a question of detail, so that anything likely to possess merit is worthy of consideration as assisting towards the attainment of the perfect machine—if such a thing be possible.

### The Orient.

This machine is put on the market by the Waltham Manufacturing Co., Mass., and they were one of the first firms in the country to take up the motor-bicycle. It is probably the largest and most powerful machine in use, consequently it does not claim to be a light machine. Its appearance also is somewhat bulky. The frame is of special design, and the motor—which is  $2\frac{1}{2}$  h.p.—is mounted in the forward part of the frame in a slightly inclined position. It drives by a belt, and the special tightening gear should be observed. The petrol tank is fixed over the rear wheel, and the coil and battery are carried in a case supported from the top tube. The spray carburettor will be found just over the bottom bracket. As this pattern is now represented in this country, we shall give a separate description and illustration of it in an early number.

### The Marsh.

Marsh Bros., of Brocton, Mass., build a machine of light weight and taking appearance. The motor will give  $1\frac{1}{4}$  h.p. on the brake, and the total weight comes out at 90 lbs. It will be noticed that the motor forms an integral part of the frame, forming as it were the diagonal tube. A spray carburettor is fitted, and the petrol tank, of a very compact design, is fixed along the top tube. The inlet and exhaust valves are placed on the front of the cylinder, to reduce the width and also to obtain the maximum cooling effect. The fly-wheel and shaft are in one piece, thereby doing away with nuts and keys, which tend to widen the construction. A special feature about this motor is the width of the bearings, those on the pulley side being two inches long; cylinder dimensions are  $2\frac{3}{8}$  inch by  $2\frac{3}{4}$  inch, and the weight 28 lbs.; a rather bulky-looking case containing dry batteries on the rear stays supplies the sparking current. Driving is by means of a leather belt, tightened with a jockey pulley, and it will be noticed that the fork crown of the machine is a specially strong one.

### The Auto-bi No. 5

Is a very distinctive machine with a chain drive. The motor is of  $2\frac{1}{2}$  h.p., built into the frame and serving as the seat pillar. The gearing is a double reduction one, first on to the bracket chain wheel, and thence on to the rear sprocket. In the construction of the motor, one-piece fly-wheels and shaft are used, the wheels are of large diameter, and the maximum weight of metal is retained at the periphery to attain greater efficiency.

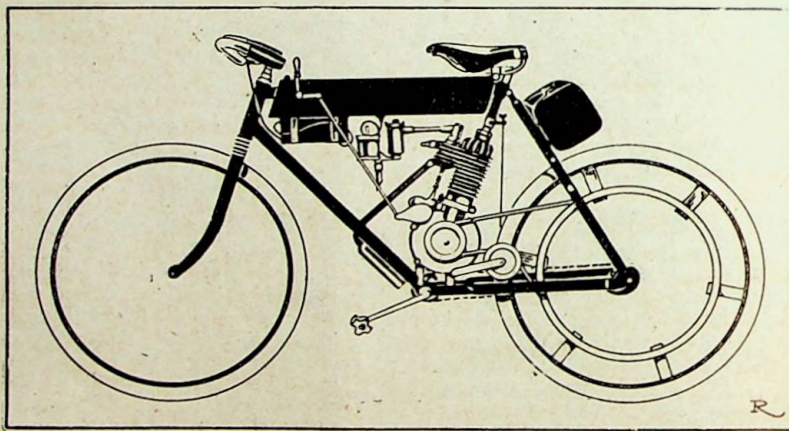
The exhaust box has a cut-out for speeding up and hill climbing, and is easily taken to pieces for cleaning; the exhaust valve lifter is combined with the spark controller and switch, thus doing away with all levers. In the belt-driven machines the driving pulley contains a chamber packed with

wool to absorb the oil and prevent it being splashed on the rider. We illustrated this pattern on page 167 of "MOTOR CYCLING."

### The American Cycle Manufacturing Co.'s Machine.

The front frame of this is of the ordinary diamond pattern, but the rear frame is lengthened and a loop made just between the bottom bracket and the rear wheel at the junction; a strengthening strut runs up to the back forks; the motor is of large size, and develops  $2\frac{1}{2}$  h.p. The controlling of the speed has been carefully thought out, the supply of petrol and air being regulated by indexed levers just behind the head, whilst the spark is timed by the front wheel brake lever—depressed as far as possible the engine runs at full speed; raising it to its upper limits shuts off the power and applies the brake. The petrol tank is mounted behind the saddle pillar, and carries petrol to run 100 miles. Speed on the level about 27 miles per hour, and the total weight comes out at 115 lbs. This was also illustrated in No. 10, page 167.

(To be continued.)



THE "MARSH," DESCRIBED IN THE TEXT.



## IN TRANSIT.

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

### *Where the Motorcycle Scores.*

The trials organised by the Automobile Club, and carried out on Dashwood Hill and at Bexhill, demonstrated for the first time the speed and reliability of the motorcycle as compared with the car; and those of us who were, perhaps, wont to regard ourselves as the small fry of the motor world have lately been lifting our heads and have even gone so far as to turn a pitying glance at the man at the wheel. After all, he too, has not had such a lot to boast about. He must needs go in for very high-powered engines if he wants to carry an extra passenger or two at a pace equal to that which we can easily attain; he must suffer all the added worries and troubles of water-cooling for the cylinder of his big-powered engine; his expenditure on petrol and lubricant is about six times that necessary for the cycle engine; he must go in for a stable and a mechanic, and moreover, if he gets a breakdown he must get the repair done on the spot, either by commissioning a local engineer to effect it at an exorbitant charge, or must send a man down to do it. There is no slipping off of the belt or throwing out the clutch and pedalling home for him, poor man!

Now, none of these things are necessary in our case. We have a thoroughly efficient motor vehicle in a form that is the essence of compactness, and if a "serious breakdown" should occur to the motor we can get out of the difficulty with ease because we instantly revert to the human power which the motor was intended to supersede. As a hill climber the cycle shines as one of the bright stars of the motor firmament. The way in which it romped up Dashwood Hill at five miles an hour faster than any motor vehicle (except racing cars of twenty or thirty times its power, whilst only carrying twice the number of passengers) was literally an eye dilator to all thinking sightseers. And at Bexhill there was genuine surprise on the part of the public at the speed shown by the cycles, whilst their freedom from side-slip on a course that was sufficiently sodden, to at least suggest it, was pleasurable to behold.

### *Reform Required.*

I consider, from an impartial survey of the Dashwood and Bexhill fixtures, that a large amount of good has been done to the pastime of motor-cycling by the displays of the Excelsior, the Humber, the Phoenix, the Ormonde, the Soncin, and other motorcycles. And, because of the good that they did, I think it a great pity that the Automobile Club should treat motor-cycling in so offhand a manner. If the club is to control that branch of the sport and pastime, it will have to instantly reform its methods by establishing a special committee composed of men who are interested in the sport and know its requirements, with power to arrange fixtures entirely confined to the single-track vehicle; otherwise, we must set to work ourselves to establish our own governing body, seceding entirely from all other associations. We want motorcycling to be fostered and encouraged, catered for and protected, not for it to be played with and treated with a certain amount of scornful contempt. Why, for instance, should the same entrance fee for a hill-climb be demanded from a motorcycle, carrying one passenger, as from a big car carrying half a dozen? Yet a fee of a guinea was levied all round on entrants for the Dashwood contest! It will not do for a moment, and the sooner the Automobile Club recognises this the better for all concerned. At the present moment the club fixtures only attract makers and those in the trade; what we want to see promoted are events that will attract the private owner, and this can only be done by attracting him by means of reasonable fees. And he should be given every attention, for undoubtedly he is the backbone of the sport and consequently the one upon whom the trade will have to rely, in part, for custom in the future.

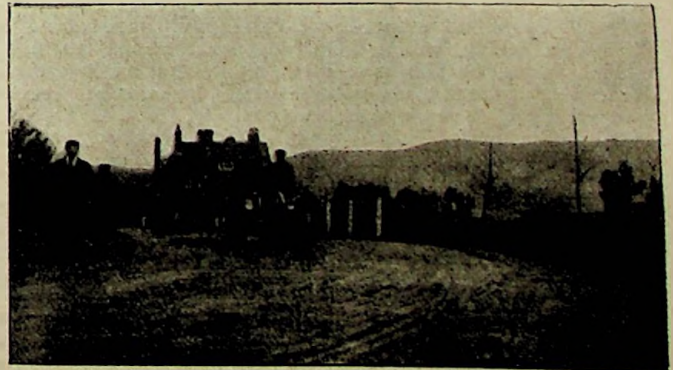
### *A Seeming Paradox.*

Writing me on the subject of valve lifters and other matters, a correspondent asks me to explain why the motor should slow up when the exhaust valve is opened during the period when the motor is not working. The same thing happens, as observant riders will have noticed, when the compression tap is opened. Thus, if the current be switched off, the motor will run and offer little resistance to the driving wheel, but directly the compression is reduced by the opening of either the compression tap or the exhaust valve, the engine will act as an obstruction and as a brake. The action, as I understand it, is very simple, and I have carefully studied it whilst pedalling the motor on a stand. After the engine has been got on the move (with current switched off) it will run much more easily when the orifices are closed, whilst harder work is entailed in the pedalling when one or other is open. I put this action down to the fact that, as pressure in the crank chamber is avoided by the small ball valve, which, however, does not permit of the ingress of air, there is consequently a partial vacuum in the crank chamber. This tends to draw the piston downwards at every revolution. Moreover, every charge of gas or air is compressed, and this then exerts a slight propulsive force on the piston, and the two forces are sufficient to keep the engine running light when the rider pedals. But on the compression tap being opened the compression is spoiled, and instead, air has to be alternately sucked in and expelled through a comparatively small orifice, and, as a consequence, much greater force is needed to drive the engine. In the case of my own machine, lifting the exhaust valve distinctly eases the labour of pedalling as compared with opening the compression tap only, but I am told that this is not the case with every engine. If my explanation of the action be inaccurate, I should like to hear from readers with other views on the subject.

### *Petrol or Motor Spirit?*

To those readers who have written me upon the vexed question of Petrol or Motor Spirit, I must tender my thanks, and offer apologies for not inserting their letters. As has already been said, the conclusions arrived at by my correspondents are so entirely contradictory that they can only be put down to one of two causes: either there is no material difference between the two spirits, or the preference shown for one or the other is merely the outcome of continued use and created confidence. This is one of the instances where practical results are not decisive, so it may turn out that theory, in the shape of chemical analysis, may help us, and I have arranged for something of the kind to take place.

CYCLOMOT.



*Breasting the Slope at Cramer.*





Conducted by

EDMUND DANGERFIELD  
and WALTER GROVES.

Manager :

ERNEST PERMAN.

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TEMPLE PRESS, LIMITED,  
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## OPINION.

### *The Question of Speed.*

It is acknowledged, upon all hands, that the exhibition of speed at Bexhill has given the public—and, perhaps, also the police—a far more accurate impression of pace than has hitherto been possible. By means of comparison, the fact has been brought home to them that 40 and 50 miles an hour represents something a little different to the speed so glibly mentioned by the rural police in furious riding cases as having been attained by a small-powered car. It is evident the present speed restriction will have to be removed, and that before very long. The trials undertaken by the Automobile Club some few months ago showed clearly that the motorcar of to-day is thoroughly under control, and can be stopped in a remarkably short space, when travelling at a fair pace. Fortunately for the sport the motorcar has powerful supporters, both in and out of Parliament, while the Press are eminently favourable, and it may safely be predicted that the maximum speed regulation of 12 miles an hour, imposed at a time when the amazing development of speed and reliability had been undreamt of by our legislators, will be swept away before very long. The motorcycle will also reap the benefit of a fossilised law, and maintain, legally, a speed which is at once safe and satisfactory to the rider.

### *A Quick-stop Trial.*

It would be interesting if the Motor Cycling Club, or some other organisation, would promote during the season a competition which would demonstrate how quickly the motor-bicycle could be stopped. Incidentally, data would be provided which would help the motorcyclist to judge which would be the best mode of pulling up in cases of emergency. Such a competition would be of much service, we are sure, to motorcyclists generally. The Automobile Club of America have just carried out a series of comparative brake tests, but the motorcycle was not included, the types being motorcars, horse-drawn vehicles, and ordinary bicycles. The tests were made to show the absurdity of the present speed limit in New York—eight miles an hour, to wit. Deductions showed that the motorcar can be stopped in half the distance a vehicle can, and in two-thirds the distance required to stop a bicycle. It was shown that a motor could be stopped in 6 feet going at 8 miles an hour, in 30 feet at 15 miles, in 50 feet at 20 miles, and in 100 feet going at full speed. It was a significant fact that the spectators repeatedly judged the slow speeds too low and the high speeds too high.

### *The Meaning of Various "Horse-Power" Terms.*

Some doubt exists amongst motorists generally as to the exact relation between certain terms bearing upon the subject of horse power. For the benefit of our readers we propose to explain these as clearly as possible, so that there may be no misunderstanding upon the various points involved. The terms referred to are:—(1) *Brake Horse-power*: This is the unit of most practical importance in motor work, and it denotes the power available at the pulley of the motor—the method of measuring it was fully explained in a special article recently. (2) *Indicated Horse-power* means the power actually produced in the cylinder and exerted upon the piston by the ignition of the charge, and without friction being taken into account. This is shown by making a test known as taking an indicator diagram: the pressure in lbs. per square inch created by the explosion is thereby found. (3) *Actual Horse-power* we might state as being the mean between that shown by the indicator diagram and the brake test. (4) *Nominal Horse-power* is really of no importance as a mechanical term, and is chiefly of the nature of a rough guess as to what maximum power could be obtained out of the motor, having as fixed data the area of the piston, length of stroke, etc. The pressure exerted by the driving agent is left out of the calculation altogether, so it will be evident that "nominal" horse-power may mean anything.

### *A Curious Experience on a Wet Run.*

On a recent wet Friday one of ours had a rather curious and unusual experience on a Minerva motor-bicycle. A non-stop run of just on 20 miles in blinding pouring rain, with a fairly strong head wind, had been negotiated at a stiff pace, when a stop for shelter was deemed advisable, as the downpour increased.

After an interval of half an hour, when the rain abated somewhat, an effort was made for another start on the last three miles for home, but no amount of coaxing would induce the engine to start—a state of affairs which, under the circumstances, was hardly surprising, for both machine and rider were literally "flooded out."

On arrival at home it was found that water had found its way along the top of the carburettor tank through the holes for the induction coil wires in one direction, and through the gauze screen of the mixing valve into the carburettor itself; a voltmeter test of the accumulator disclosed a fall from  $4\frac{1}{2}$  to barely 4 volts on a 40-mile run, and the sparking-plug was already rusting and loaded with water on the terminal surface.

What had really happened was this: the accumulator had been packed tight by a cotton duster which had absorbed the rain entering through the wire outlets in the outer casing; the duster was so placed as to cause a short circuit across from the positive terminal to the carburettor casing, and a light grey powder was observed to have been deposited around that corner of the casing, the circuit having been completed by way of the machine frame to the negative terminal, which was not in contact with the wet duster.

A rubber block, acting as a wedge, now maintains the accumulator tightly in position, and does not come in contact with either terminal. The two holes in the carburettor case are corked with slots filed in the corks for the passage of the wires, and the whole sealed up watertight with a little melted gutta-percha. The occasion was exceptional, but the experience is another proof of the importance of attending to small details in the matter of insulation.

*We are always glad to receive from our readers contributions of a literary or artistic character. At holiday times, especially, opportunities readily present themselves for picking up interesting "snaps" and experiences which are worthy of appearing in print. Incidents on the road, snapshots of general interest to motorists, and sketches may be submitted.*



## HINTS AND WRINKLES.

Do not forget to carry a small paraffin oil can. A few drops to loosen the piston pins in starting saves temper, time, and trouble. A few drops in the free-wheel clutch at the end of a day's run is beneficial, but do not forget to oil up again before starting. A few drops on the screw of your adjustable wrench will facilitate tinkering.

### **Blacklead or Graphite as a Motor Lubricant.**

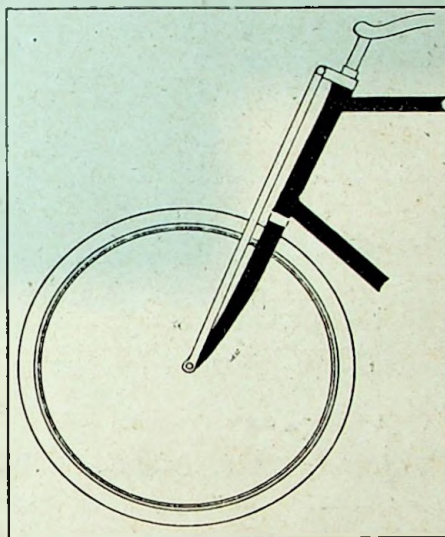
There is, undoubtedly, a big future before this material, if some satisfactory method of applying it to the various parts of a motor can be discovered. An American expert on lubrication claims to have solved the problem of how to apply it by grinding it up in certain oils so that it remains in a state of suspension permanently, and in a very finely divided state; it can thus pass through the tubes of a feed lubricator. For the cylinder of a petrol motor, graphite lubrication should prove highly efficient, the surfaces working with the minimum of friction, and at the same time it stands the heat far better than oil.

### **Experience Teaches.**

'Apropos of the hint in a recent issue re chimney to surface carburetter, one of ours, who is a particularly careful man, is in the habit of carrying a cork which he inserts in the top of the chimney whenever he expects to leave his quad. standing for any length of time. This prevents the petrol in the carburetter becoming stale. After a stoppage at a friend's house recently, he noticed that the engine was running badly, and an examination revealed the fact that the cork which his carefulness had prompted him to insert was still in its place, and, consequently, the carburetter was not getting its proper supply of air. The same man had a somewhat similar trouble, which was very easily located: the pipe leading from the tank enters the carburetter through a cork, and this cork had got broken by vibration, and instead of an air-tight join, air was getting into the carburetter through the broken cork.

### **How to Relieve the Strain on the Front Forks.**

A letter to hand from a correspondent tells us of a bad smash up he had with his motor-bicycle through absolutely no cause except either inherent weakness of, or the existence of a flaw in, the front forks. He advises our readers to safeguard themselves against such a thing happening—as it is practically impossible to prove the existence of a flaw at this



most vital part of the frame—by adopting the simple method of running two light gauge small diameter tubes from the ends of the front axle up to the handlebar clip. The tubes are flattened out and drilled, and the handlebar clip must be turned round so that the upper ends of the tubes can be passed over the bolt.

### **Attend to the Compression of your Motor.**

The importance of keeping the compression of the motor quite perfect cannot be too strongly impressed upon the motorist; especially is this in the case of small motors, used for bicycle work. It is remarkable what a difference in the power given out is noticed when even a slight leak develops. To those riders who are troubled with an unaccountable lack of power in their motors, we suggest that they thoroughly test the compression. One of the principal causes of loss is the exhaust valve requiring regrinding. Get this up perfect with emery powder, and then finish off with crocus powder. The compression release tap sometimes gives a lot of trouble through the faces getting "burnt." These require grinding fairly often. The best thing to do in this case is to plug up the compression and fit an exhaust lifter. Then, of course, there are the joints at the exhaust and inlet valves; these should be tested with a touch of soap solution smeared around; the slightest leak will soon show itself by making bubbles at the place. Either fit a new washer or try turning the old one round to a different position. Occasionally, it will be found that a plain asbestos washer is more gastight than the copper and asbestos ones. Should the compression still seem weak, the fault must lie in the fit of the piston. It should be remembered, however, that a brand-new motor does not, as a rule, have strong compression; it is necessary for the piston rings to "face," or wear themselves up to a surface with a good run, but it may be that the rings have not been properly fitted, i.e., their slots may come in line. With three rings, the slots should be at three equal spaces apart; to put this right is, however, a job for the motor mechanic, as it necessitates taking the motor apart. If the compression is perfect, it should be almost impossible to push the machine along with the compression tap or exhaust lifter closed, thus the full force of explosion will be exerted on piston



THE FASTEST CAR AT BEXHILL.

The Serpollet steam car carrying Messrs. Serpollet (driving), and Alfrea C. Harmsworth (on left).





"We had a gale and a half on the Wednesday, making riding almost impossible for me with a 96 gear; the way the motors scudded past us, right in the teeth of the wind, impressed us so much that we are now taking a lively interest in the motor-bike, with a view to, etc., etc., etc."—Extract from a correspondent's letter.



## NEWS.

### The "Motor Cycling Manual."

Now in active preparation. It will be the most complete publication of its kind.

The Automobile Club of America are holding a hundred miles non-stop run on Friday, Decoration Day.

W. R. McTaggart, 102, Grafton Street, are the Dublin agents of the F.N. and Holden motor-bicycles.

The man in the street at Bexhill was anxious to see the "Chassis" car he had heard so much about at the Automobile Show. We wonder if he found it!

We noticed a neat little electric van on Whit-Monday in Clerkenwell which the G.P.O. are using for carrying mails from Mount Pleasant to Waterloo Station.

The British and Foreign Motorcar Co., 27, Islington, Liverpool, have had brought to them a three-measure lubricator for a motor-cycle, which they will be glad to return to the owner. It was found on the main road to Warrington and Manchester.

### Signs of the Times.

There is an enterprising publican in Newark who evidently wishes to cater for motorists as well as to continue to please his old customers of the horse persuasion. His inn goes by the comprehensive name of "The Horse and Gears," thus appealing to both the old and the new locomotion. In the future we may expect to see such happy combinations as "The Lamb and Clutch," or "The Lion and First Speed."

### Detail Causes Much Trouble.

A reader of "MOTOR CYCLING" had sent us a letter recording a painful tale of trouble with his motor-bicycle. Of late he has been unable to get the motor to fire properly, and went to the trouble of overhauling every part of it, even getting a new accumulator and sparking plug. All his connections were quite sound, and a good spark appeared at the points of the plug; still it was impossible to get the machine to run for more than half a minute, and the case was getting desperate. However, a day or so after, he wrote us saying he had made another overhaul and had found that the platinum on his trembler was pitted. He filed this down; readjusted the screw, and he got the motor to work as well as ever again.

### Exercise Whilst Motor Cycling.

A correspondent sends up a suggestion to the effect that a small dynamo might be geared up to the pedal chain wheel and fixed in such a manner that it could be thrown into gear as soon as the motor was under way. Of course, the coil and battery would still be required for starting, but the rider could manage to keep the battery fully charged by pedalling for a mile or two now and again. The amount of energy required would be very small indeed, and this would supply agreeable exercise to the rider, keeping up his circulation, and inspiring him with a certain feeling of safety, as in the advent of danger ahead he would instinctively cease pedalling. This would stop the current, and might automatically apply the brake.

### The "MOTOR CYCLING" Cup.

H. Martin has been awarded the trophy.

F. W. Chase actually won it, but has been disqualified.

"The Cycle and Automobile Trade Journal" of America makes kindly mention of our paper in its current number.

The Turin Exhibition of motors and cycles was opened on the 10th. It is hoped the King of Italy will be able to spare time to visit it.

According to consular reports, a low-priced motorcar, holding one person, to take the place of the jinrikisha, would find a ready sale in Japan.

A 200 miles endurance test for motor-bicycles will be held in the States next September. Cannot such a contest be organised over here?

It is highly probable that the success and freedom from accidents of the recent alcohol trials in France will clear the way for holding the big classic road events over there this season.

### Our Numerous Shows.

Now that the split has occurred in regard to the show arrangements of the Automobile Club, the Stanley Automobile Exhibition for 1903 is an assured fact. The venue is Earl's Court, and the date from January 16th to January 24th, both days included. Altogether, we are promised no less than five shows, entirely or partly connected with motors, next season.



Policemen were to be seen along the road from Bexhill hiding in hedges, watches in hand, ready to spring out upon any unsuspecting motorists who, according to their watches, were exceeding legal limit. Several captures were made by these lion-hearted amateur timekeepers.



### A Magistrate on Motor Bicycles.

Herbert Sharpe was summoned last week for furiously driving a motor-bicycle between Horfield and Filton on the 11th inst. Evidence was given that defendant's speed was quite 25 miles an hour, and he was fined 20s. and costs. The Chairman, in giving the decision of the Court, is reported to have said, "You gentlemen who ride motor-bicycles think you can fly about the country as you please."

### To Keep Down Dust.

Apropos of the note in our last issue, the long-looked-for day when the roads will be made so that the average motorist may be able to take a ride outside towns without being liable to return home looking more like a flourishing miller than anything else, we read in the official organ of the Society of Italian Engineers and Architects that a provincial engineer has successfully used gas-tar in combating the dust fiend. Despite very dry weather, the road so treated has kept in excellent order, the surface becoming so hard and compact that it has been very difficult to break it up. No dust has been seen, the rain does not penetrate, and there is no mud. Needless to say, the colour of the road is a deep black. The expense of the process is stated to be much less than that of a similar experiment in the States, where, it will be remembered, petrol has been successfully used.

### Regulating Speed in New York.

The Cocks Bill for the regulation of speed in New York State has become law. It provides a limit of eight miles an hour in cities, and a limit of twenty miles an hour outside of incorporated towns and cities. Fines for disregarding these rules make the chauffeur liable to fine of £10 for the first offence, and six months' imprisonment or £10 fine, or both, for a second offence.

### The De Dion Voiturette.

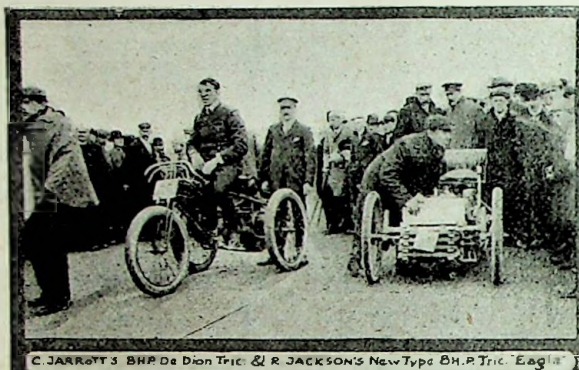
A new edition of "The De Dion Voiturette: Its Mechanism, and How to Drive it," by Mr. R. J. McCreedy, has just been published. The booklet deals in simple and untechnical language with the whole workings of this standard pattern, and gives some excellent hints, which will be of use to every motorist, based, as they are, on actual experience. The work has been brought up to date with the addition of a chapter on the latest pattern De Dion. The price, post free, is 1s. 9d., and the publishers, R. J. McCreedy and Co., 2 Dame Court, Dame Street, Dublin.

### Motor Racing at Coventry.

The motorcycle events at the Butts, Coventry, on Whit Monday, were admitted to be the most interesting item in the programme. The conditions were that each competitor should ride a mile against the watch, and the two fastest performers should contest a five miles' race. The preliminary trials showed that S. H. Sharp, on a Blizzard, and S. Wright, on an Excelsior, were the two to ride for the vase. Wright led for two-thirds of the distance, but Sharp went to the front and won in 10 minutes 59 secs.

### Motor Pacing.

The new regulations of the Union Vélocipédique de France do not forbid wind shields on pacing motors, a fact which both Linton and Robl, in their recent record rides, took advantage of. Linton's distance for the hour on an ordinary safety is as near as possible 45½ miles. Even this almost phenomenal distance may be beaten before these lines appear in print, as an hour's race is (at the time of writing) to be held on Sunday next at the Buffalo track, the promoters of which will spare neither time nor money to wrest the hour record from the rival track at the Parc des Princes.



### AT BEXHILL



The American Automobile Association has taken over the control of racing in that country.

We have received full particulars of the big automobile battle of flowers which will be held at Earl's Court on June 13, in aid of the French charities. Entry forms can be obtained from the hon. sec., Mons. N. Chereau, 27, Alfred Place, Bedford Square, W.C.

### Plymouth Caters for Speedmen.

The Plymouth Cycling Club has determined to cater largely for all motorcyclists on the track, and are running a two-days meet at the Coronation holidays, June 26 and 27, for which valuable prizes will be offered. The events will be run off on the Argyle A.C. track, four laps to the mile, which is safe for any speed. We trust those of our readers who are track racers will encourage Plymouth's enterprise by supporting the fixture. The hon. sec. is Mr. Clarence Spooner, 54, Beerford Street, Plymouth. London riders can obtain particulars from Mr. S. H. Pearce, "Polpers," Lyncroft Gardens, Hampstead, N.W.

The Royal Enfield motor-bicycle has we note had several important additions made to it since the beginning of the year, and the price has been increased to 50 guineas, net cash.

### America's First Motorcycle Club.

Probably the first motorcycle club in America has been named, appropriately enough, the Alpha. The club has adopted as its uniform a leather cap and coat, with leather leggings for lengthy spins. The club monogram and membership number will be on the left and right sleeve respectively, and the colours are cavalry yellow. Weekly and special runs are carried out, and the club have entered for the endurance run from Boston to New York on July 4th and 5th.

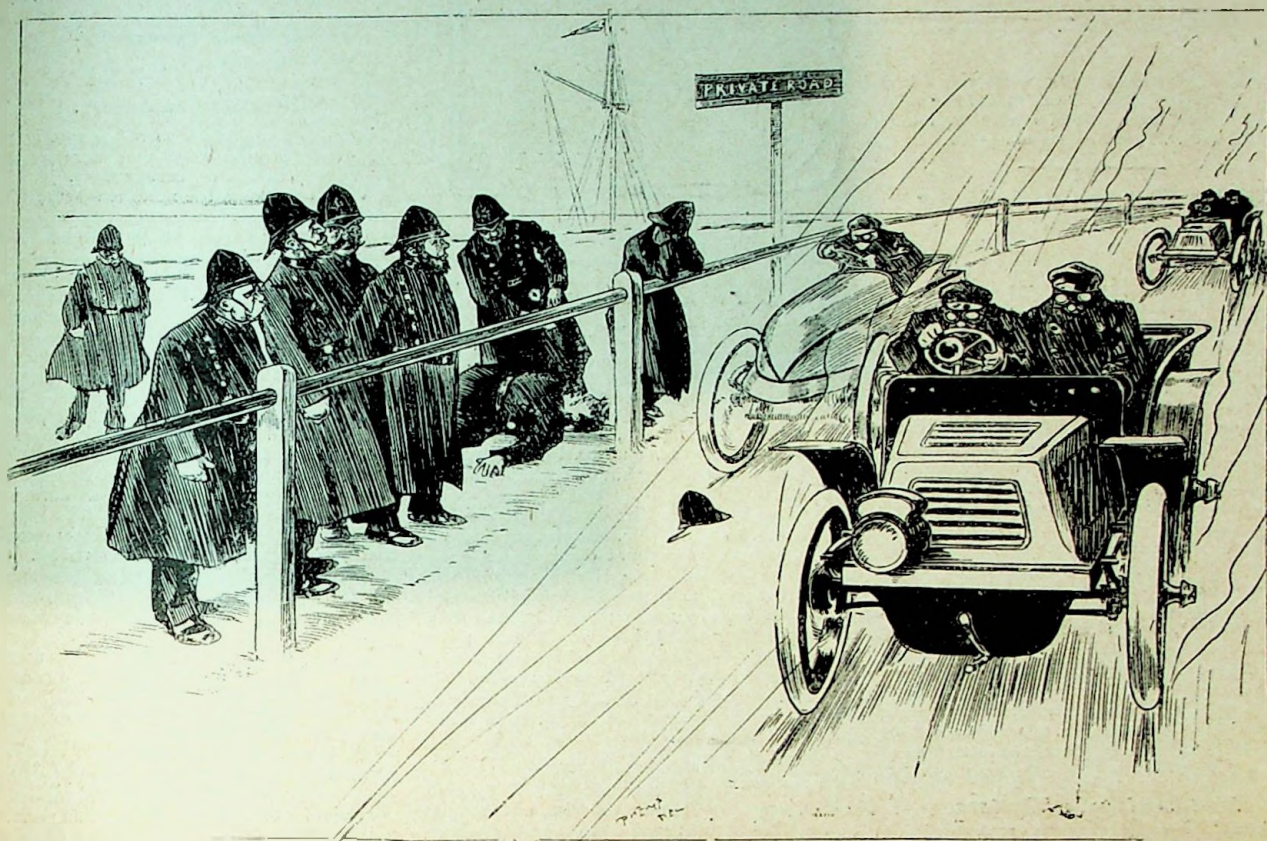
### A Bristol Visitor.

One of our visitors last week was Mr. Chas. Franklin, of Bristol, whose forcible connection with a gate at Saverne Forest has just been mentioned by us. Mr. Franklin was riding the identical machine, a 2½ h.p. Shaw, which charged the gate at 30 miles an hour. A specialty on this machine is the plain chain drive, already described in our columns. This is a broad pattern of chain, running on a flat leather-covered drum on back wheel. The chain has done over 6,000 miles, and looks none the worse. We understand that an alteration in the design of chain is being made, and further particulars will be given shortly. Mr. Franklin's address is Westley Place, Horselair, Bristol.

### The Pace that Does "Not" Kill.

Standing outside West Croydon Station the other day we had a forcible example of the controllability of the motor. Prejudiced people are prone to neglect the great advantage which a self-propelled vehicle has over the horse-drawn variety in the matter of steering and stopping. The roadway by the station at West Croydon is narrow, and the tramway monopolises a third of it, leaving a strip on either side for general traffic. At the time under notice two cars were drawn up in the middle of the road, a tradesman's cart stood by the left-hand kerb, and a big van had just lumbered down from a side street and was crawling through the narrow gap left between the tram car and the grocer's cart. Now comes a motor bicycle with a trailer attached in which sits a lady with a fur cloak and a placid expression. Twenty miles an hour is the apparent 10 or 12 the real pace of the combination. "How frightfully dangerous!" exclaims a spectator. "Where are the police? They'll smash up for a certainty: serve 'em right, too!" Ten short yards lie between them and inevitable catastrophe: steering, however adroit, will avail nothing here: there is nothing to steer into except plate-glass: but the resources of modern science, as exemplified in the bicycle of 1902, do not begin and end with getting out of a difficulty; they realise the importance at times of not getting into one. In other words, before the spectator could shut his eyes to the impending smash, that motor-bicycle with its trailer attachment came to a dead stop two yards short of everything.





### BEXHILL-ON-SEA, WHIT-MONDAY.

*A purely imaginary Sketch depicting to the life the despair of the energetic constabulary, who, viewing the speed deeds of the racing cars, realise with abject dejection their own impotence.*

Four motorists were fined at Brentwood on Thursday week for exceeding the legal speed between Brentwood and Romford.

#### Waiting.

"Ave yer broke down, mister?" queried the passer-by of young Dyeon de Boot, as he sat patiently waiting till the spirit moved him. "What makes you think that, my friend?" was the reply of the sad-eyed motist, who had been a mark for popular scorn for the last twenty minutes. "What makes you think that? I'm merely waiting here to see how many tomfool questions I'll get asked inside of the hour: yours is the 92nd, and the whistle hasn't gone for half-time yet. Next!"

#### A Motorcycle Club for Lincolnshire.

At a meeting held at the Albion Hotel, Lincoln, last Wednesday, it was decided to form a motorcycle club, under the title of "The Lincolnshire Motorcycle Club," the headquarters to be at the Albion Hotel, Lincoln. The subscription has been fixed at 10s. 6d. A further meeting to draft rules, etc., will be held on Friday of this week. The hon. sec. pro tem. is Mr. F. H. Sharman. We think that a move in the right direction has been made in forming such a club, especially for motorcyclists, as motorcycles and cars do not go very well together. The club, energetically pushed, should have an excellent future, and we wish it every success.

Mr. Bailly writes pointing out that the Automobile Club itself states that the Club's exhibition for 1903 will be held at the Crystal Palace, and that it is no claim of his.

#### The Manufacture of Aluminium.

In view of the many uses to which this remarkable metal is being adapted in motor construction, it may prove interesting to give a few facts concerning its manufacture. It is not many years ago since the price of the metal was quite prohibitive, owing to the difficulty experienced in reducing it from its ores. The field for its use was also very restricted, but the purely chemical process for preparing it was soon to be replaced by an electric one. This brilliant discovery enables the metal to be obtained from certain minerals at a very low cost in the actual working, with the result that the price of aluminium has now come down to a figure which enables it to be widely adopted in mechanical work. The minerals from which it is obtained are named bauxite and cryolite. These consist mainly of aluminium oxide and iron oxide; and are reduced in an electric furnace having poles, or "electrodes," of carbon. A very high temperature is attained, and the oxygen is released from the aluminium, which comes off at the "negative" pole, the oxygen combining with the carbon at the "positive" pole. To drive the dynamos which supply current to the furnaces, engines of several thousands of horse power are used.

#### Their New Premises.

The Motor Power Co., Ltd., have at last had possession of their new premises at 14, New Burlington Street, Regent Street, where they will transact all business in connection with Napier and Gladiator cars, and Daimler lorries. Adjoining the back portion the company will have a large garage, where they can put up at least 150 cars. Repairs of all kinds will be undertaken for any make of car.

#### Motorcycles and the Tax.

Last week we received two letters of enquiry from readers upon the moot question—Was there any necessity to pay the tax on motorcycles before the Inland Revenue officer called or due notice was given? The question is best answered, perhaps, by the case which was tried the other day at the North London Court. Mr. Cecil Yates was summoned for keeping a carriage without the necessary licence, the carriage being a motor-tricycle. The prosecution was instigated by the Board of Inland Revenue. The defendant pointed out that he had not long had the machine, and was not aware that it was liable to taxation. He had, in the meantime, taken out a licence. Mr. Kennedy stated that the motor-tricycle was in the same category as a carriage, and the penalty for not taking out a licence was £20. Defendant was fined 10/- with 2/- costs. It is evident that the Inland Revenue officer is now on the alert for the motorcycle owner so it behoves one to be on the safe side and get the licence.



Correspondents are asked to write their views in a brief and concise form. We have been obliged to hold over several interesting letters this week owing to pressure on our space.

### Engine Position and Frame Design.

Sir,—From various discussions being carried on in your interesting paper, as to the position of the engine, etc., might I, as a novice, say a few words regarding the present design used for motor-bicycles. All our leading manufacturers, with about half-a-dozen exceptions, stick to the ordinary diamond frame. A few days ago, when in Rhyl, I saw an ordinary safety built very much after the style of the Holden motor-bicycle, made by the Motor Traction Co., Ltd.; this machine to which I refer had two small back wheels.

Could not a design like this be well adapted for a motor-bicycle, as it would give much more room for the motor, which could be placed in any position, also allowing plenty of space that might be required for speed tanks? My vague idea would be to carry the driving belt, which could be round or flat—in fact, any shape—on to a driving wheel attached to the axle supporting the two small back wheels.

One great advantage for such a machine would be that it would stand alone, an item which I am sure would be a great advantage against the present day heavy motorcycle.—Yours faithfully,  
C. H. MAYNE.

### Motor-Bicycle Matters.

Sir,—On many occasions when reading "MOTOR CYCLING," and while wondering at the mass of useful information it contains, I have been prompted to write to you, as some of the matter was, in some cases, contrary to what my experience makes me think to be correct. At other times ideas are put forth as "new" which have been tried before, some with good and some with inferior results.

It is only the fact of being a manufacturer that has prevented me writing, for, naturally, the first idea to the reading public would be that I would be likely to disapprove of anything not embodied in the machine as manufactured by my firm.

The first thing that struck me recently was that the Minerva silencer was inaccurately depicted. This has a series of baffle plates running across the box, with a series of holes drilled at opposite ends, so that the gases have to pass backwards and forwards through the holes and between the plates, making the Minerva, with this pattern of silencer fitted, one of the most silent machines on the road.

### TWO-SPEED GEAR.

The two-speed gear illustrated on page 190, while being no doubt a step in the right direction, does not appear practical on account of the small width of the belt, which is  $\frac{1}{2}$  inch only. Nothing less than a  $1\frac{1}{2}$  inch belt will convey the power from a  $1\frac{1}{2}$  h.p. motor satisfactorily, and to have this would mean a driving rim 24 inches wide on the back wheel, which appears rather out of the question; and also this very large overhang would be very detrimental to the motor power.

### PROTECTOR FOR SPARKING PLUG.

The rubber sleeve plug protector, while being efficient, cannot be termed new, for it was about February that a paragraph explain-

ing this appeared in the pages of "MOTOR CYCLING," and this was inserted as the result of my personal experience during the very wet weather we had in the winter.

### SPRING FRAMES, ETC.

The editorial opinion, page 196, is in favour of an insulated frame. To my mind, anything tending to upset the rigidity of a frame which is subject to the great strain a motor-bicycle is put to, makes it not only uncomfortable to hold up on bad roads, but likely to upset the stability of the whole as regards wear.

Springs in frames I have tried, and did not like them, but I do like, and am continually using, a good spring seat pillar, and a good spring handlebar. This, while giving all the comfort that one may wish for, allows the frame to remain stiff and strong, and free from the wear which is certain to take place should the latter be joined by hinges in a way such as are associated with spring frames.

I may add that at first I considered the spring bar and pillar a luxury; now they appear a necessity.

### POSITION OF ENGINE.

As to the ever-discussed point of position of engine, I will not theorise, but simply state that I can point to engines which have been running from 10,000 miles upwards, and are still as tight in the piston as the day they were made, or even better. Naturally exhaust valves have had to be ground in and replaced, but this has to be done periodically on all small motors, and the fact that I have personally travelled over 1,500 miles without touching the valves shows that the attention required in this direction is not a great deal. I would not think of stating that a vertical engine is not as good as a horizontal or inclined one, but simply there is nothing in it. Yet, when I have observed two machines running side by side, one with the motor inclined, the other vertical, it appeared to me that there was a certain amount of vertical vibration in the one machine which was entirely absent in the other.

### THE DRIVING PULLEY.

In the description of the Phoenix, given the other week, one item has been omitted, and that is that for the last ten months the driving pulley has been built on to the rim by means of nipples and spokes just like a wheel, which, while being at least as good as the method of clamping it to the spokes, looks much neater and more mechanical.

### SINGLE AND MULTI-CONTROL.

Just one word with regard to the controversy of the single versus many-levered machine. The single lever no doubt is handy for the novice, but my experience is that the novice has no difficulty in manipulating two or three levers as long as they act. It is when the pulling of the levers (be they single or quadruple) will not make the engine "puff," that is when the novice is in trouble.

—Yours faithfully, J. VAN HOOYDONK.

### On Carburettors.

Sir,—I was pleased to see a note in your last issue stating that you were about to publish an article on carburettors.

Why I welcome the news is because I have had experience of a carburettor which was a delusion and a snare—it was one of the pulverising type, French made, and so flimsy that it could not be relied on for two minutes.

Some time ago the F.N. bicycle came under my notice, and, on asking where the mixture lever was, I was told that there was none, the carburettor was absolutely automatic. It is set to the engine when sent from the factory, and remains constant and without adjustment as long as the engine itself lasts.

To me, the desirability of dispensing with the mixture lever entirely is so great that I am in a chronic state of wonderment why such an improvement is not universally adopted.

I went to the great Autocar Show recently, and was much struck with two things. One was the stand of the Singer Co. The attendant, in describing the beautiful Singer machine, made a great point of an improvement lately introduced. This was the application of a lever to enable one to adjust the mixture while riding. It appears that in the earlier Singer motors this was not possible. With the knowledge that a carburettor existed which worked without any mixture lever at all, I confess I did not see any need for this improvement. In my opinion, it would have been far better and tending to the simplification of motor-bicycles if they had promptly adopted the F.N. carburettor. I pointed this out to the attendant, but he merely looked at me incredulously.

Finally, I wish, in this connection, to ask yourself or your readers their experience of the second thing which attracted my notice. It was a carburettor for which claims are made which are nothing short of revolutionary. I inspected the device, which was about two inches long and  $1\frac{1}{2}$  inches in diameter, and very substantially made. It was called the Carlton combined Inlet Valve and Carburettor. The inventor said it had been in actual use over three years. It was absolutely automatic, and when set to the engine, in factory, it was as much a part of the engine as the crank case, and required no more attention. It worked equally well with petrol, alcohol, or ordinary paraffin oil, and required no adjustment when changing liquids. The latter claim was the one which astonished me more than anything, because it opens out greater possibilities, than ever for motors.

The carburettor is described as one which "atomises" instead of vaporising, and the following comment is made on the present system:—The system in common use of cooking or vaporising the liquid (whereby the liquid loses much of its virtue) does not allow the engine to give off its best results. In the device in question, the liquid loses no virtue, and all the explosive properties of the liquid are utilised—giving 10 per cent. more power.

I think you will admit that the claims are extraordinary, and I hope you will give some publicity to this letter in the hope of getting the experiences of any of your readers who have used one.—Yours faithfully,

ARTHUR GUEST.



## MOTOR MEN OF MARK.

## Captains the Motor Cycling Club.

Ernest H. Arnott, the captain of the Motor Cycling Club, is a son of H. T. Arnott, of the Bath Road, Catford, and other clubs. We button-holed Arnott the other day, and got the following particulars from him:

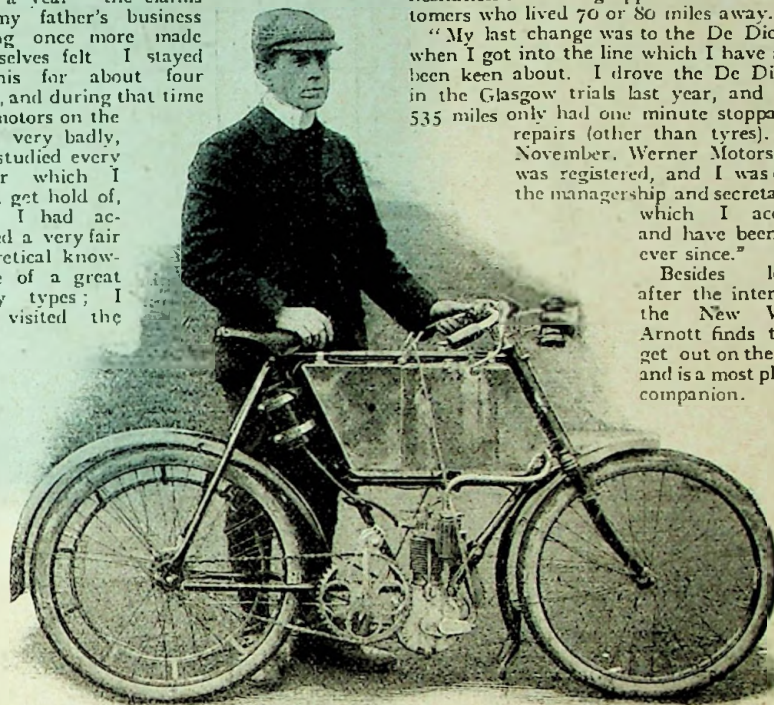
"My worthy parent is a firm believer in athletics, and, in order to stir me up, he offered to buy me a bicycle if I secured a first prize in the half-mile handicap at the school sports. I didn't win, but I got the bicycle; but I did win the long jump. He excused me winning the half-mile, for, when the handicap came out, there was a field of 54 entries, I was the youngest on the ground, and I was on scratch. I wanted the bicycle. I finished fourth, not ten yards behind the winner. I was then just 14 years old.

"Having got my bicycle, I gave it plenty of work, and about two years later, when I was just 16, I took to cycle racing on the path, and was a member of the Putney club. The most noticeable feature of my racing was the regularity with which I won my heats, but failed to get even a third place in the finals, owing, no doubt, to the fact that I did not train or take the racing seriously, and, consequently, "shot my bolt" in my heat. Since then I have done a good deal of riding, but very little racing, as for several years I was either travelling or living at a place where no track was available.

"The bicycle mentioned above was the first bicycle really my own, but I really started riding when I was about ten or eleven, on an invincible tandem with my father, and I also managed to do a good deal on old machines of his. I can remember one little tour which I went on by myself when I was 14, and covered 600 miles in one week, the actual riding days being six. My last day's run was from Leicester to London, which I accomplished in eight and a quarter hours with only one dismount.

"I started business in the cycle trade with the now defunct John Griffiths Corporation, when they started, and, after being with them

some time, left to take up a position in my father's business in Lancashire. Later on I again came into the cycle trade, and joined Mr. J. W. Stocks, in the Ariel Co., London, only to leave again in less than a year — the claims of my father's business having once more made themselves felt. I stayed in this for about four years, and during that time got motors on the brain very badly, and studied every motor which I could get hold of, until I had acquired a very fair theoretical knowledge of a great many types; I also visited the



E. H. Arnott and the Werner.

local motor agent frequently and studied his repair jobs, then purchased an Ariel motor trike and quad (convertible), and in about a year managed to do about 12,000 miles on it. I handed it over to my brother

about a year ago, and I suppose it must have done another 8,000 miles by now. Of course, I had the usual little troubles to begin with, but in a very short time it was as nearly reliable as a L.N.W. express, and I had no hesitation in making appointments with customers who lived 70 or 80 miles away.

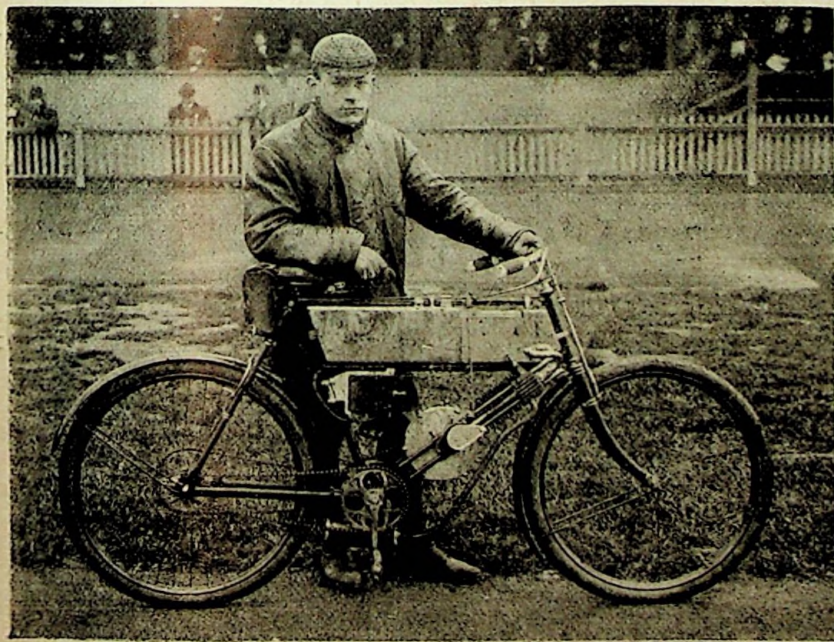
"My last change was to the De Dion Co., when I got into the line which I have always been keen about. I drove the De Dion car in the Glasgow trials last year, and in the 535 miles only had one minute stoppage for repairs (other than tyres). Last November, Werner Motors, Ltd., was registered, and I was offered the managership and secretaryship which I accepted, and have been there ever since."

Besides looking after the interests of the New Werner Arnott finds time to get out on the roads, and is a most pleasant companion.

## A Long Experience of Motor-cycles.

Bert Yates, whose name has been so often bracketed a winner with the Humber chain-driven motor-bicycle, has had a lengthy experience. His first introduction to a motor-bicycle was in 1895. This was a machine invented by Pennington, and his impressions at that time were anything but favourable towards the new sport. His second was a motorcycle designed by H. J. Lawson. On this he won the first amateur motorcycle race, he believes, ever run in England, that is to say, when each competitor held a licence under the N.C.U. Since then, he has ridden the Werner, Minerva, Derby, Chapelle, Mitchell, and several others, his latest being, of course, the Humber. He is very pleased with its hill-climbing powers, and doubts if a machine of the same horse power can equal it, and very few with a greater horse power to beat it. Yates had hard luck in the Crystal Palace trials, but his performances so far this season have shown that rider and machine are in the first class.

As stated last week, the impression left upon our representative at the Dashwood Hill trials was that the Humber with Yates "up" had singled itself out both for hill-climbing powers and speed. He went up on the seven occasions without pedalling, averaged 19.55 miles an hour on the hills, and covered the seventy odd miles on nine-tenths of a gallon of petrol. At Bexhill, Yates beat E. H. Arnott in the final heat of the Tourist Cycles class, winning by about 20 yards.



Bert Yates and the Humber.



## OUR INFORMATION BUREAU.

A large number of replies have been dealt with through the post. Information on all subjects pertaining to Motors, Motorcycles, and Motoring generally, will be given to readers who seek such information or advice. Any reader who desires to ask a question with a 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, if of general interest; if not, a reply will be sent by post; a stamp, therefore, must always be enclosed.

E. E. (Aberdeen) renewing his subscription says:—"I look forward to the arrival of your paper with pleasure every week."

C. E. F. (Manchester), in renewing his subscription to "MOTOR CYCLING," writes: "I congratulate you on the success of your paper, and must say it is much more valuable than I thought it would continue to be."

### Ignition.

W. R. B. O. (Derby) wants to fit a certain ignition to his cycle motor, and asks what battery we alluded to in connection with the device; also our correspondent requires particulars of amount of primary and secondary wire for coils. We should recommend him to wait till this appliance is better known, it may be in the experimental stage yet. There should not be a battery required; it is evidently a slip in translation; the principle of the appliance is practically the same as a dynamo.

### Engine Tyres and Brakes.

E. A. S. (Colne, Lanes.)—Yes, we should say with the forks strengthened you could fit a 1½ h.p. engine. A 2-inch tyre is an advantage, but not absolutely necessary; if you strengthen cover of existing one it would serve. A band brake or single rim brake in conjunction with hub or coaster brake would be advisable. You will not be able to fit a high-powered motor, so you must gear low. Try Calvert's motor—see "MOTOR CYCLING" columns—he makes a specialty of fitting to existing machines.

### A Hand-Started Device.

T. B. (Hurstpierpoint) is an invalid, having lost the use of his right leg, and so is almost entirely dependent for locomotion on a hand rotary tricycle. Now, his difficulty with an ordinary petrol motor is that he cannot pedal to start it, so he asks:—(1) Is there a machine that can be started without this? In addition to petrol, steam and liquid air have been recommended. (2) Which of these three agents do you advise, taking into account weight, ease of control, and liability to get out of order? (3) Do you know of any existing machine which meets the need of one who, like myself, would be placed at a disadvantage in case of an ordinary accident or impediment met with en route?—(1) We do not know of a tricycle that would meet his requirements exactly, but we are pretty certain a hand-starting arrangement could be adopted by a smart motor engineer. Doubtless he will get some information on the matter from some of our correspondents shortly. (2) Probably steam is the simplest motive power to control and give least trouble in management, but on the score of weight and power ratio petrol is by far the best agent for running a tricycle or bicycle. (3) Liquid air is not in sufficient general use to offer an opinion at present.

M. L. (Oldham).—(1) On the score of simplicity and efficiency we should prefer the Bowden. (2) Get Lucas's largest size bell.

C.B. (Exmouth) requires the address of the makers of the "Shaw" motor-bicycles. Messrs. Shaw and Sons, Crawley, will find them.

L. C. (London, S.W.) writes in praise of the "Castle" Knife and Tool Set which is advertised in our columns. He says: "I have had one now for several months, and have found it most useful in many ways, the tools being strong and well turned out."

### H.P. of Machines.

A.V. (King's Lynn).—We believe you would be well suited with the Royal Eagle. The Townend Co. fit a high-powered motor to their machines, 2½ h.p., we believe. We cannot say if any firms are fitting genuine De Dion 2½ h.p. engines. With the higher power you must be prepared for heavier weight to manage. You must have a properly strengthened frame, of course. The same size coil and battery will do for a large motor. The Excelsior can be, as you say, fitted with a special motor. Vibration rather more with higher powers, but not objectionable.

### An Idea for Motor Position.

Unightly (Melton Mowbray) suggests the following:—"How would it be to put the petrol motor inside the large tank that fills up the centre of bicycle? You could have large fly-wheels inside, and a water-cooled head; it would not be at all unsightly, the only thing on the outside being the driving pulley; everything else being cased in, a door on the side admitting inspection of crank, etc., also a magneto machine might be put inside for the ignition." This idea is fairly possible on paper, but to put it into practice would be a difficult matter; first, the water-cooling arrangement would occupy by far the most of the space, and, again, the motor must be capable of being readily got at for adjustments which would be awkward if it was boxed in.

## THE MOTOR CYCLING MANUAL.

Look out for this interesting and valuable publication, which is now in active preparation. It will contain all that is necessary for the intending motist to know upon every point pertaining to the subject of motoring. Every cyclist and motorcyclist will be interested in this most exhaustive work, which will be fully illustrated throughout with useful diagrams.

PRICE 1/-

R. C. L. (Maidstone).—You would find the booklet on "Petrol," which is published and sent out gratis by Carless, Capel and Leonard, very useful to you. It contains a list of agents stocking petrol in various parts of the country.

W. E. W. (Ulverston) is going in for a motor-bicycle, and, like many others, is rather undecided as to what make to have. He has had the offer of one or two makes. We advise him to go in for the "New Werner," of 1½ h.p. This would be a more manageable machine than the other he names. The "New Werner" will take any hill in reason up to 1 in 12, say, without pedalling.

### Converting Existing Bicycle to Motor.

H. G. T. (London, W.) wants to fit a motor to an existing bicycle, and asks if Mr. Calvert can safely be tried for this, and, also, if we can inform him whether any firm put a cheap reliable set on the market, which is not too heavy for an ordinary existing machine. Yes, we can recommend Calvert with confidence: nothing less than 1½ h.p. is made now. He might get the Clement-Garrard set recently described in "MOTOR CYCLING." Address, Garrard Manufacturing Co., Ryland Street, Birmingham.

### Carburation and other Matters.

"Queerfellow" (Bristol).—(1) The spray gives more uniform results on average roads. (2) We are inclined to think you get better control with a surface carburettor. (3) Practically the same speed in each case above a certain limit. (4) Yes, a throttle valve is quite easily fitted, several described in former issues. (5) You can slow down to six or seven miles per hour as a general rule. (6) Difficult to say exactly, the claims for both types being conflicting. (7) Large quantities of the Precision motors are being sold, and we have not heard of any legal difficulties concerning them so far. (8) No, a round belt is perfectly safe in the pulleys, and will not come off unless, of course, it is too large for them; have not heard of any accident with them. (9) In class A we put 1, 2, 4, 3; in B we should place 7, 6; and would class 3 and 5 with 8, 9, 10. The difference consists chiefly in equipment.

### Charging Accumulators.

R. D. (Reading) has successfully made the Fuller battery recommended in an early number of "MOTOR CYCLING." It has charged his accumulator effectively; then he asks:—(1) I should like to know if the liquids deteriorate by leaving the porous pot containing diluted oil of vitriol in the outer jar. (2) If coating zincs with mercury should keep them from being eaten away, as mine show the effects of the acid with the first charging. (3) What is meant by polarisation. I have read that nearly all primary batteries polarise and lose efficiency.—(1) Yes, the liquids gradually mix, so it is advisable to remove inner porous pot. (2) The zincs are bound to wear away—it is from the zinc you get the energy—put place a little mercury in each porous pot, and see the plates are thoroughly coated. (3) Polarisation is a term implying the fact that the plates become coated with hydrogen gas which generates a reverse current, and prevents battery working; the Fuller is free from this defect, however.