

The Motor

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INCORPORATING **Motor Cycling** & **Motoring**

MY IDEAS OF PERFECTION IN THE MOTOR-BICYCLE.

By LEOPOLD CANNING.

One of the principal features that I should like to see improved in motor-bicycles is the starting. Makers are most indifferent to this, and hand you over a motor-bicycle to be started as best you may. Sometimes a valve lifter is fitted, and though this is generally of some use, it is by no means sufficient. I have known machines that have proved very hard to pedal, even with the exhaust valve raised. Practically no improvement has been made in the method of starting of the petrol engine since it was first invented. It was all very well in those days to have to strain oneself and get into a state of profuse perspiration, as that did not matter so long as one could get one's engine to go. Then one was a pioneer with an experimental machine, and heart strains and Turkish baths were a trifle if one could succeed in realising the glory of getting the motor to go. Those days have passed now, thank goodness; the motor is no longer to be considered in the light of an experiment, and one not only expects to mope, but one can surely hope to be able to mope now in comfort. The average $2\frac{1}{2}$ h.p. motor-bicycle, and many of even lesser power, are, in my opinion, often difficult to start; and if you meet your best friend, who hails you to stop, you have to pass him with a sickly smile, knowing what a stop means. I would suggest that bicycle engines above $2\frac{1}{2}$ h.p.

BE FITTED WITH A MONSTER COMPRESSION TAP

uncovering a hole the size of a sparking plug's diameter. This would be useful in other ways, besides making the starting quite easy: it would enable one to free the engine completely, at any time that one wanted it free. The engine could be very quickly cooled with this tap open running downhill; one would have a real free-wheel, and coast down grades twice as fast, because the usual tiny compression tap or a valve raiser still leave a lot of resistance to be overcome; also the speed in traffic, etc., could be varied by opening this compression valve more or less, and should pedalling be necessary at any time it would be comfortable and easy. I remember seeing a party of French motorists, on two quads and a tricycle, some years ago, about to negotiate a long continuous descent of many miles from the summit of a mountain pass, remove their sparking plugs, so as to have a grand free-wheel run down.

With respect to the fitting of a two-speed gear for a motor-bicycle, I am not at all in favour of it. One might as well fit a reverse gear. Change speed gears on motor-bicycles are, in my opinion, a poor attempt at just what is not wanted, viz., making a motor-bicycle into a two-wheeled motorcar. An average high grade motor-bicycle will climb every hill one is likely to meet, except, perhaps, one in a hundred, and for the sake of that one hill it is surely poor policy to saddle one's machine with the weight of a change of gear and afflict it with the other complications also entailed. It is a useless and unnecessary bag of tricks that would not be required up 99 per cent. of hills, and be worse

than an encumbrance on the level. For those who are keen to change the gear of their machines, I think Mr. Leonard Bell's suggestion is a good one, which is

TO HAVE A SPEED CONE ON THE DRIVING DRUM, and a corresponding one on the motor pulley. When reaching a hilly district, or a very level one, as the case might be, the belt could be instantly changed to a more suitable gear. As to engine position, I have no two opinions on that score. The engine should be attached or built into the frame, low, and as far back as possible. The position adopted in the Ormonde motor-bicycle as an example is, to my mind, ideal, and its success has been sufficiently proved. The Lamaudiere machine is another excellent example, and is a very satisfactory mount.

Exhaust valves should really be more easy to remove, and should be made with a detachable seating, which would not only facilitate their removal, but enable one to grind and examine them better. It is so easy to get at the inlet valve, and on taking it out one has the seating and everything in hand. Exhaust valves should be still easier to take out, since they require more frequent grinding than the inlet valves. Why could not some simple arrangement be made

BY WHICH THE EXHAUST VALVE WOULD BE ALWAYS TWISTING ROUND ON ITS SEATING

when working, and therefore automatically grinding itself into place?

For transmission I am of opinion that one cannot beat a soft, pliable, flexible V-shaped belt running in narrow V-sectioned pulleys. The belt drive does not wear out the back tyre anything like so quickly as a chain does, or give shocks and jars to the engine. The grip of a good belt in a good pulley is magnificent, and by having it loose it will just slip the least trifle at the starting of the engine, just at the very moment when a slight slip is wanted, so as not to jar the engine. Then, if it stretches when new, it is simplicity itself to cut a piece off, and the work of a few minutes. I know what it is to have a chain that has stretched and has become too loose, and if you take out a link you then probably find it is too tight. Also it is the matter of a moment to slip off the belt when wanted, whereas with a chain, it is a case of "j'y suis, j'y reste," or "here we are, and here we stay."

I don't think that Mr. Leonard Bell's suggestion of shutting off one cylinder on the level when you have a two-cylinder machine, and using the two together for hills, is a very good one. It would not be good for one cylinder to work alone, as it would not only have to drive the machine along by itself—for which it was never intended—but there would also be

THE DISADVANTAGE OF OVERCOMING THE COMPRESSION IN THE NON-WORKING CYLINDER,

and this I doubt whether it would do at all satisfactorily

I have run on one cylinder at quite a marvellous speed, but only after taking the sparking plugs out of the others. A "free exhaust at will" would be useful from another point besides those for which it has been already advocated. To be able to discharge straight into the air by opening a port would be found a salvation from the dog nuisance. On one of my motor-bicycles I found that by switching off and on sharply I could make a loud report in the exhaust box which was astonishingly effective in driving away any dogs that attacked me. I have also found this dodge most useful in getting people out of the way when they persisted in pretending they did not hear my horn. The effect has been like magic, and I got more room than I required.

Mr. Leonard Bell says that "handlebar control is a splendid thing, and if a few brains were set to work on this important point the motorcycling community would be bene-

fited thereby." Does he not know that the Gamage motor-bicycle is

WORKED ENTIRELY BY HANDLEBAR CONTROL?

Personally, I do not like handlebar control, but this is a matter of taste. Also the automatic sight feed lubricator which Mr. Bell desires is not only invented and in use, but is to be found placed "in front" of the Ormonde, the Phoenix, and other machines.

Motor-bicycles make far too much noise. Any shape of a metal box with a few holes knocked in it seems good enough to serve as a silencer on some makes of motor-bicycles. Those various patterns of silencers invented by Mr. Dunlop are all that one could wish for.

A luggage carrier that is at the same time a portable stand for machine, when required, is a great convenience, and should always be fitted.



THE REAL MOTIF OF THE BOADICEA STATUE.

There have been many surmises as to the meaning of the attitudes in the Boadicea group. Assuming that the eminent sculptor intended it to be prophetic, the meaning is now clear.

CYCLOMOT'S CAUSERIE.

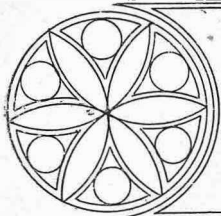
The Position of the Quad.

A fortnight ago an article on our editorial page dealt with the possible exclusion of the quadricycle from the category of motorcycles in connection with the forthcoming stipulations of the Local Government Board under the new Act. The arguments therein contained have, for some curious reason, been hopelessly distorted in a certain quarter and, although our Editor declines to discuss the matter further, I should like to have a few words on the subject because it is not easy to sit down under misrepresentation. Very few people know what an enormous amount of work has been done in a very few weeks on behalf of motorcyclists: it has all been performed by a certain little coterie which has taken every possible step that was at all practicable to explain the exact position of the motorcyclist under the new Act and to obtain the views and opinions of motorcyclists upon the proposals it put forward. First of all the matter was laid before the Committee of the Auto-Cycle Club, and without any hesitation the committee agreed to undertake the work, and after some hours of discussion a plan of campaign was formed and various proposals for meeting some of the difficulties were framed. Then a Conference with the National Cyclists' Union and the Cyclists' Touring Club was arranged and, prior to that, a sub-committee of two met and drafted the document which, in its final form, was recently issued, and this meant searching the new Act through and through with a microscope, looking up references, old Acts and Orders, until it was morally certain that every stipulation of the Local Government Board had been anticipated. A large number of copies of the proposals were then prepared, and then when the Conference met the document was discussed and approved, and was then issued broadcast to every motorcycling club, to all known individual motorcyclists and to the Press (and, by-the-by, the "quarter" referred to in the opening of this paragraph attached so little importance to the matter that the document was not given publicity until a week after it had appeared elsewhere!). Various forms of number tablet were devised and specimens were made, and whilst the "manifesto" was being considered by riders and their comments and criticisms were coming in, the Local Government Board was approached and it was found that any suggestions that motorcyclists might wish to put forward must be sent in without delay. Another meeting of the Conference was then called and the mass of correspondence which had been received was gone through and every point was carefully considered, and there is this to be said that, so thoroughly had the matter been thrashed out before it had been laid before the general body of riders, that the only amendments in the proposals were merely verbal ones put forward by members of the Conference. Then followed the appointment of a deputation and the drafting of the letter to the President of the Local Government Board, and as I write the deputation is ready to wait upon Mr. Long in case of need for explanations of the proposals. The whole thing has meant considerable thought, much organisation, the display of skilful tact and a whole volume of work for a coterie, every individual member of which already had his hands full with his own work.

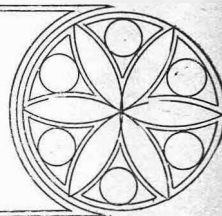
What the Motorcyclist is Doing.

Can it be wondered at that a certain amount of resentment has been noticeable throughout that little clique against the people who simply stand by and talk, and interrupt and say: "We can see the difference between a car and a quad, if you cannot," but never attempt for a single moment to help in the framing of the much needed and anxiously-sought definition? The time has gone by for vain-

glorious talking and self-praise: at the present moment workers are wanted, because the whole fate of motorcycling is hanging on a thread, and those who are unable to assist must stand completely on one side. On the other hand, suggestions have, as our readers know full well, been asked for and welcomed, but the mass of correspondence which I have been privileged to glance through has consisted mostly of letters agreeing with the document issued by the Conference, and, where they have referred to the quad, of letters urging the organisers to secure the inclusion of the four-wheeler amongst the other cycles. But singularly enough, not a single suggestion that has been sound and acceptable has come along, and so the letter which is now before the President of the L.G.B. contains, besides the suggested definition of a motorcycle, a very strong appeal on behalf of the quadricycle, advocating the inclusion of this vehicle amongst the motorcycle class, in spite of the difficulty of describing it. And, as I have had a small share in all this work, I think that the allegation that "THE MOTOR" is endeavouring to secure the abandonment of the quad, falls completely to the ground. The position is a very clear and simple one, and has been fully and fairly recognised all along: the quadricycle in its old form—and I may even say, its present form—is as heavy and expensive as a small car, with none of the advantages of the latter: its adherents are comparatively few, and not a single one of them has come forward to share in the fight or look after the interests of his class. Motorcyclists are working day and night to protect their own interests, and they are prepared to fight the battle of the quad at the same time, but they deliberately refuse to give it the preference. That is to say, they decline to ask for so much more than they are likely to get as to jeopardise the interests of motorcyclists. And that is the crux of the whole thing; the individual who is determined to prove that the motor-bicycle and the motor-quad are entitled to fall in the same category—that they are so greatly similar to each other that they may be classed equally as motorcycles—is jeopardising the chances of the motorcycle. And I do say this, that if once the idea is given to the Local Government Board that there is no difference between a two-wheeler and a four-wheeler, our chance has gone; one set of regulations applying to all motor vehicles will be issued, and then what will happen will be this: two large oblong number tablets will be issued with holes in each corner, and these must be fastened one in front and one at the back of the motorcycle; provision will have to be made for illuminating the numbers at night time; we shall be excluded from all narrow roads upon which the presence of cars may be prohibited; a cycle towing a trailer will have to be kept down to six miles per hour, and the name and address of the owner of the trailer must be painted in conspicuous letters on the vehicle, and even the pedalling of a motorcycle, with the engine not working, will not be permitted on the roads which are closed to motorcar traffic. To prevent all this is surely worth fighting for, and it is of the most extreme importance that no opportunity should be given to the Board of declaring that there is so little difference between the motorcycle and the motorcar that the one set of regulations would do for all classes of motor traffic. The difference is obvious to the eye but it can only be described in words by a reference to the number of wheels, and, with regard to the quad, which has the same number of wheels as a car, to the possibility of its being adapted to be propelled by pedals. The quad, in appearance and style, is more like a car than a cycle, and so the motorcyclist would only imperil his own future if he took the quad driver under his wing and refused to be parted from him.

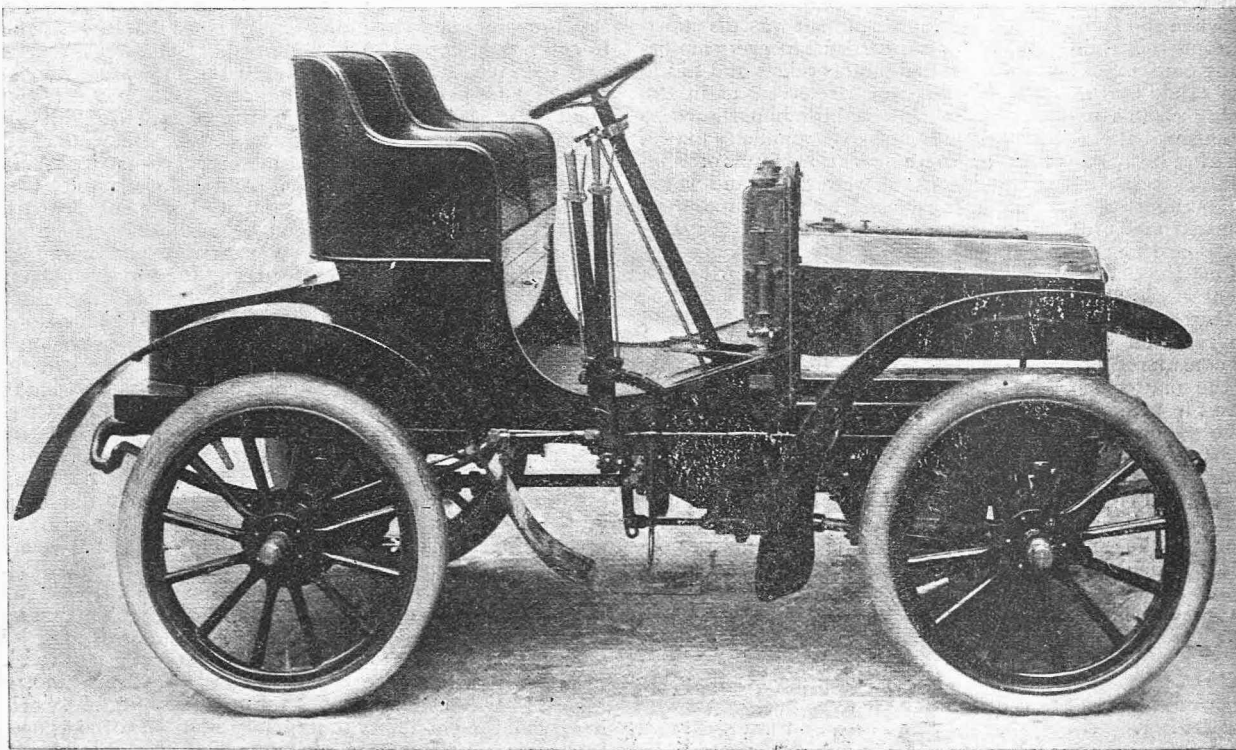


THE SPEEDWELL LIGHT CAR.



The latest light car to be placed on the market is the Speedwell, manufactured by a well-known French house specially for the Speedwell Motor and Engineering Co., Ltd., of 151, Knightsbridge, London, S.W. The early patterns of this car have been running in the country for some time, and have given great satisfaction, whilst the Speedwell car embodies all the improvements and alterations which the makers have been able to introduce. Not only has a very large output been provided for, but it is pleasant to be able to state that supplies are already here, or on the way over, and that prompt attention can be given to all orders. The Speedwell, as will be seen from the illustration, is a two-seated car designed on accepted lines. The engine is a genuine De Dion of 6 h.p. fed by a De Dion carburetter. The engine is most readily accessible, and although the bonnet covers the water-tank, which is fixed in front of the dashboard and also spans the radiator, yet so much space has been allowed that no part of the engine is in any way un-get-at-able. The drive is through a clutch and a gear of the Renault type, which provides two speeds forward, direct in each case, and a reverse. Thence the drive is by a flexible propeller shaft to the differential on the rear axle. A trembler coil and dry batteries, the latter having a life of from two to three thousand miles, are employed, being carried in the space under the seats. The cooling water is circulated by a friction-driven pump through a radiator of the Mercedes type. The framework of the chassis is

tubular, carefully designed for all possible strains, whilst the body has two bucket seats, below which is the space for coil and batteries and for tools and spare parts, whilst behind on the platform is another large compartment for luggage, so that the storage room is ample. A petrol tank of large capacity is carried behind the dashboard with the oil tank and oil pump. Control is effected through the inclined wheel steering pillar, to which the throttle mixture and ignition levers are brought, whilst on the driver's right hand are the change speed lever and the brake lever, and at his feet are the pedals for withdrawing the clutch and applying the brake on the propeller shaft. The brakes on the rear wheels are of the latest internal expanding type, and as all brakes are double-acting, the greatest possible brake efficiency is provided. The application of either brake withdraws the clutch. The wheels are of the artillery type, provided with Michelin tyres of large diameter, whilst it will be observed that the wheel base is very long. Coupled with the fact that the body is well sprung, this results in the car riding most comfortably and steering well. The wings are of ample width and, generally the comfort of the passengers has been fully considered. The Speedwell is a smart, well-finished car, the long bonnet and the Mercedes radiator adding to the appearance, and we feel assured that at the price—145 guineas—it will deservedly enjoy a ready sale. Full particulars of the car will be supplied on application to the company at the address given.



THE SPEEDWELL LIGHT CAR.

A PAGE OF NEW THINGS.

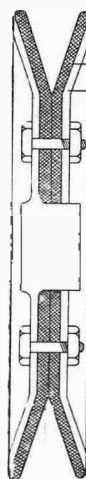
A New Coil and Brush Contact.

The Electric Ignition Company of Unity Works, Highgate Street, Birmingham, has sent along to our testing department one of their recently introduced motor-bicycle trembler coils and brush contact maker. The trembler is fitted with double screws for adjusting the make and break. This renders the action of the coil very certain at high speeds. There is a well balanced condenser fitted in the coil, and sparking at the platinum is reduced to vanishing point. The contact breaker is easily adaptable to De Dion motors, and is a thoroughly substantial piece of work.

It has two brushes pressing on a fibre disc with brass segment, which latter short circuits the brushes and puts the coil in action. We can recommend both these fittings.

Messrs. R. and J. Dick, Greenhead Works, Glasgow, have just introduced a V section belt made on their "Balata" principle. They claim that it is not affected in any way by atmospheric variations or water, does not stretch, and grips the pulley particularly well. It is moreover much cheaper than the ordinary leather belt.

A New Gripping Pulley.



The illustration shows a section of a pulley wheel for motors, the makers of which claim that it gives a positive and flexible drive in either a wet or dry condition. The pulley is made in two parts and the insides are lined with a specially prepared fabric which is capable of easy replacement when worn. The makers are Messrs. R. J. Maddock, Dimsdale View Port-hill.

A New Oil-proof Sparking Plug.

We have now under test a "Begie Oleo" spark plug, the special feature of which is the design of the porcelain core, which is recessed like a telegraph insulator, and consequently cannot be short circuited by soot or burnt oil. The makers are the Begbie Manufacturing Co., Cumberland Park, Willesden Junction, London, N.W. The price is 2s.

An Interesting Type of Motor-Bicycle.

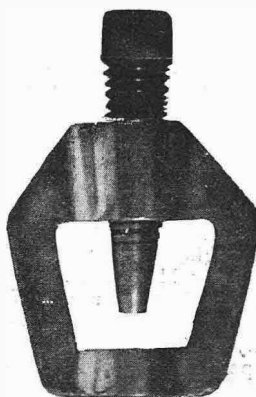
We have received from a valued correspondent the photograph reproduced on this page of a rather interesting type of motor-bicycle. It has a two-stroke motor fitted in a vertical position. The cylinder bore and stroke is only $2\frac{1}{2}$ inches, and the writer mentions that it is equal to driving the machine and a $10\frac{1}{2}$ stone rider at 20 miles per hour easily. The carburettor shown is of the wick pattern, but has been replaced by a spray. The bicycle it is attached to is an ordinary roadster, and has done good work over many hundreds of miles. The designer and patentee of this engine also has a two-cylinder one, same principle, very suitable for launch work. He is prepared to hear from anyone who would take up the ideas financially. We have his name and address in our possession.

The "Fisk" Detachable Motor-car Tyre.

We recently had an opportunity of examining a car tyre introduced into this country by the South British Trading Co., 6, Victoria Avenue, Bishopsgate, London, E.C. The tyre is made by the Fisk Rubber Co., Chicopee Falls, Mass., U.S.A. The construction is unique, the cover completely encloses the air tube, and the base of the cover is held on to the rim in a most secure manner by tapered steel rings, which clamp the edges of the cover. These rings are drawn up by a series of a simple form of bolt, which hold the cover firm on the rim, even if the tyre should become deflated. A valuable feature of the tyre is the ease with which it can be detached for repair. A novice could manage to do it, we might safely say, in ten minutes, as it is simply a question of removing the bolts and rings and taking the tyre completely off the rim. The only tool required is a key for the nuts. The whole of the air tube space is above the rim, so that the tyre has the advantage of the maximum resiliency being obtained.

The "Jehu" Belt Punch.

A useful little device, neat and very effective is the vest pocket belt punch now being placed upon the market by the Jehu Motor Cycle Co., Ltd., of Brooke Street, Holborn, E.C. The accompanying illustration depicts

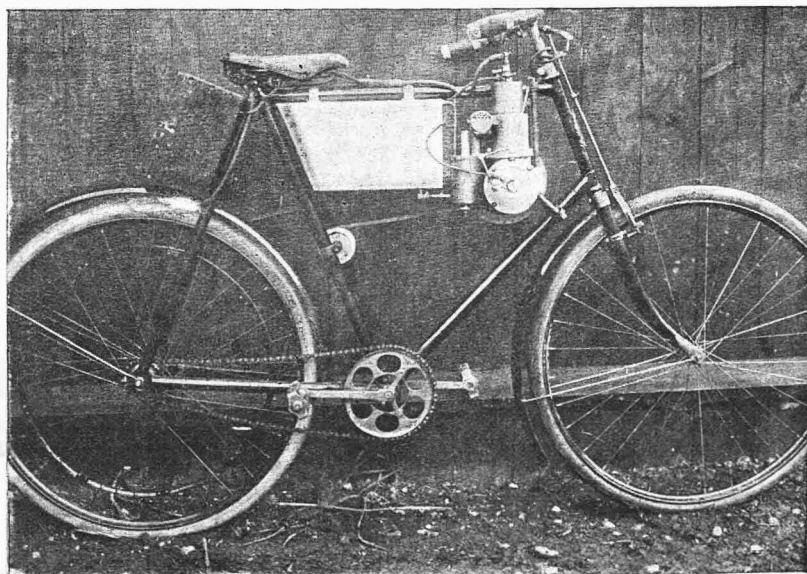


its actual size and the method of using same will at once be apparent, an ordinary spanner being used to grip the head nut. The screw cutter is made of specially hardened and tempered steel and will cut a clean round hole through the toughest of belts without

undue exertion. They are excellently finished, of great strength, and retail at 2s. each.

The P. and R. Charging Battery.

A most convenient form of primary battery for charging accumulators is the Peto and Radford, which, it may be said, is one of the most efficient ever placed on the market. It works on the "double fluid" principle, that is, the amalgam-zinc plates are acted upon by dilute sulphuric acid in a porous cell, and the depolarizing agent, consisting of chromic acid or a solution of bichromate of potash or soda and sulphuric acid, is contained in the outer vessel. Into this are placed a series of four carbon plates, offering a very large and effective depolarizing surface. The zincs are mounted on a simple raising and lowering frame, and to put the battery in action it is only necessary to lower the zincs into the solution. The battery has a pressure of 8 volts and gives a heavy current.

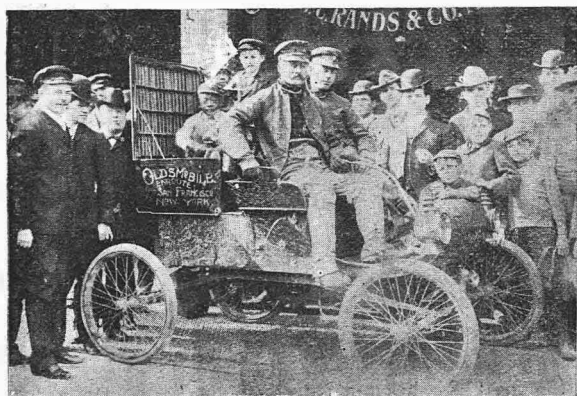


Interesting type of Motor-Bicycle described above.

AMERICAN TOPICS.

New York, September 30th, 1903.

After nine weeks' of the hardest kind of work, the roughest sort of travel, and incidents and adventures galore, Messrs. L. L. Whitman and E. Q. Hammond have reached New York from San Francisco on an Oldsmobile. Seventy-three weary days elapsed for the pair between July 6th, at 3 p.m. when they started from San Francisco, and September 17th, at about the same hour, when they arrived in New York City—wearied days of "plugging" up over the Sierra Nevada Mountains, over the Rocky Mountains, across the desert lands, through the unspeakable mud roads of Nebraska, and then on from Omaha. The part of the journey to Omaha was a succession of daily struggles against the elements and against bad roads. That portion of the journey took 53½ days of the 73.



Whitman and Hammond, who travelled on an Oldsmobile from San Francisco to New York in seventy-three days.

Nine days were spent in Omaha waiting for a chance to get through Iowa without repeating the experiences in Nebraska. That the wait was well advised is shown by the record time from Omaha: four days to Chicago, two days thence to Detroit, and five and a half days from Detroit to New York. Those 11½ days make a record breaking trip. In one day, from Des Moines to Cedar Rapids, Iowa, 170 miles were covered, and the average mileage per day was 150. West of Omaha any distance was a day's work—30 miles or 75 miles, according to road conditions.

* * *

Messrs. Whitman and Hammond tell an interesting story of their trip. Whitman is an automobile dealer in Pasadena, Cal., but originally hailed from Maine. He went out to California three years ago. Hammond was formerly a pace-maker for Frank Waller on the cycle track. He went west with Waller, was left in California when Waller went to Australia, and became a repairman. They speak interestingly of the many days spent on the little machine, climbing the seemingly insurmountable mountains, following the trail of Dr. Jackson and his Winton and of Fetch and Krarup in the Packard through the deserts, through mud, and then over the eastern roads to New York. Whitman says that he would not do it again for \$100 a day, while Hammond, being young and robust, would start back to-morrow.

* * *

As a record, the ride stands unique. As they lost three cyclometers en route, their actual mileage cannot be stated,

but it was more than 5,000 in the estimation of many who know the roads. While crossing the desert they covered their tyres with broad canvas treads laced on, and thus saved much trouble. Gasoline of poor quality was obtainable at 50 cents a gallon, but in the mountains they used 86 degree gasoline owing to the altitude, receiving other gasoline at points on the road to which they had shipped it. Water they found very precious and hoarded it jealously for the long trips on the desert. Rattlesnakes were plentiful and many were killed. The cowboys treated them kindly, and at one time threw a lasso around their dashboard and pulled them out of a deep rut into which they had fallen.

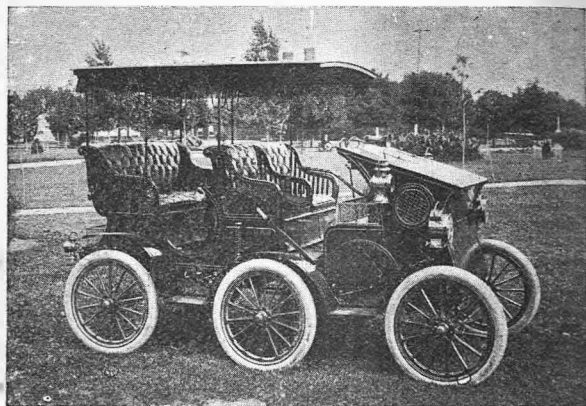
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To reduce the liability of side-slip, says "The Automobile" of America, and at the same time increasing the comfort of riding, the designer of the automobile shown in the accompanying engraving has departed from generally accepted lines in a marked degree. His car is fitted with six wheels, the front and rear pairs of which are connected and move together in steering, while the middle wheels are the drivers. The middle or driving axle forms a support for two sets of long semi-elliptic springs, the outer ends of which are held by the front and rear axles. To put it simply, these springs, which support the body on equalising lugs, form the frame of the car, assuring great flexibility and consequent easy riding. The wheel base is 96 inches, the tread is 62 inches, and the over-all length of the car is 10 feet 8 inches. The wood wheels are 32 inches in diameter, fitted with 3-inch double-tube tyres. The car is driven by a 20 h.p. double opposed cylinder motor, mounted in front within the vehicle body, and readily accessible after lifting the protecting hinged door forward. The transmission is of the planetary type, chain driving to the differential, which is mounted on the middle driving axle. The gasoline tank, of 13 gallons capacity, is placed under the front hood, and the water tank is under the middle seat.

* * *

The "Pullman" car, as the vehicle is called, is equipped with a number of novel conveniences, including storage spaces in the front and rear seats. A space is also provided under the body in which extra tyres can be carried, entirely out of sight. The curved sides of the rear seat are carried forward in the form of a scroll that terminates in a transverse pole for lap-ropes.

"WHEEL."



The six-wheel Bromell Pullman Motorcar.



The Circulation of "The Motor" exceeds that of ALL other motor papers combined.

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OPINION

The Future of Motor Speed Events in England.

Southport Corporation's experiment will, without a doubt, open up a new era for motor racing in this country, and those who look to it to provide sport and amusement and (to dive even deeper) to provide an incentive towards the continuous improvement of the touring car and cycle, will welcome the innovation because, up to the present, speed has had to be sternly repressed, and the value of it as a test has been lost. The use of the public highway has never been permitted, naturally, and we have a demonstration in the Gordon-Bennett event of all that is entailed if a section of the highway is to be closed for a day for the purpose of a speed contest. And so the only alternative, up to the present, has been the use of a private road. We know what a fiasco occurred at Bexhill, where the Lord of the Manor, in ignorance of his exact rights, permitted racing over a portion of the Marina—an experiment which has been prevented from repetition by an injunction granted to a householder whose premises fronted the course. The Duke of Portland has permitted speed runs upon one of the roads at Clipstone, within the confines of his Welbeck estate, but all who have seen that narrow road, suitable only for one car at a time, with but scanty accommodation for sightseers, even presuming that sightseers would go to such a comparatively out-of-the-way place to see speed alone without the single element of sport, will agree that it is quite useless to attempt to conduct motor racing there. But Southport's Corporation has come forward with a method and, with characteristic energy, has, instead of talking about it, set to work and put it into practice, and as a result, we, ten days ago, witnessed a meeting which, even if it fell short of the ideal, at any rate possessed all the necessary elements to enable it to rival the famous Continental meetings, such as those at Nice and Ostend. And, without a shadow of doubt, the success of the proposal to make the Southport fixture an annual event depends now upon two factors: the ability of the Automobile Club to recognise the importance of the opportunity, and the extent to which the organising committee may be willing to consider the public. After all, motor racing or speed work in strict privacy is quite aimless—Welbeck showed that—but if the public is to be allowed to witness the events (a *sine qua non* of success), then it must receive the first consideration, and the events must never again be run off as they were at Southport, when a line of spectators a mile long were in almost absolute ignorance of

what was taking place. The Bexhill meeting of 1902 roused the satire of both the Press and the public; the Southport gathering was better because of the opportunity afforded of issuing a programme midway, showing the survivors of the preliminary heats. Moreover, the secretary is a sportsman himself, and is therefore alive to the natural feelings of the public. His action in instituting a system of notice boards on which announcements were inscribed, and sending these up and down the track on cars, showed that he appreciated the need for keeping the public posted and, moreover, tried to meet that need. Not only do we commend Southport upon the enterprise which it has displayed, but we urge the Automobile Club to throw all the energy possible into the next event there, so that not only may the Lancashire town reap some benefit in return for its outlay and the sport and pastime gain as well, but that the fame of the Automobile Club and its status may be improved. With an attractive programme, which shall cater not only for motor vehicle racing on the Promenade, but for motor launch contests, both in the marine lake and in the bay, the Southport Trials of next year should at least equal in importance the big sporting gatherings on the Continent.

Road Reform and Rural District Councils.

In connection with the recent Departmental Commission on Highways, a Rural District Councils' Association sent out a sheet of questions to some hundreds of the Rural District Councils in England and Wales, with a view to ascertaining the feeling of these bodies in the matter of road reform. A glance at some of the results obtained will be of interest to motorists just now, when the question of road reform, including as it does the important point of road dimensions, is becoming vital. To the question "Do you consider that any change should be made in the authority controlling the repair and maintenance of main roads; and, if so, what?" 133 answers favouring a change were received. Of this number, six voted for "a new central authority"; six favoured "road administration by County Councils"; two preferred that the matter should be managed jointly "by the County and Rural District Councils"; and 119 went boldly for "administration of roads by Rural District Councils." In view of this solid expression of opinion by the Rural District Councils, that they wish to be bosses of their own roads, it becomes doubly interesting to the motorist to discover what the Rural District Councils road administration policy is likely to be. "Are you in favour of further powers," asks the Association, "to (a) effect improvements on roads at the cost of the frontagers; (b) to regulate the line of buildings in, and the width of, main roads?" In answer to (a) 58 say "Yes"; 151 say "No." . . . (b) 101 say "Yes"; 116 say "No." That is to say, that upon matters of such absolute and paramount importance as the building-line and the width of a main road, the majority of the Rural District Councils decline to be hampered with powers beyond the miserably inadequate powers which they at present enjoy. Put into plain English, this means that a considerable proportion of the roads in the country will be closed to the motorist for all time, assuming that motor legislation proceeds on the lines of the new Bill.

With the replies to one more question we shall conclude, having then sufficiently shown, we think, how far the motorist's interests are likely to be promoted if the road administration of the country is left in the hands of the Rural District Councils. "In your opinion are the roads in your district sufficient as to (a) width; (b) upkeep?"—"Yes," 217; "No," 68. We had no idea there were so many districts in Bonnie England and Wild Wales with broad, well-kept roads!

THE SHOWS.

The two Shows to be held in London in November many innovations in motorcycle construction may be expected to be on show. "THE MOTOR" will have first details of every new device. The dates of "THE MOTOR" Show Specials are

Nov. 10, 17, 24.

NEWS.

Something to look for at the Shows!

"THE MOTOR" "Hints and Wrinkles!"

The Southport Trials are admitted on all hands to have been very successful.

Members of the Auto-Cycle Club will be holding a dinner at the Automobile Club premises in November.

We have in preparation some rather striking announcements, and readers may find the first of these in the next issue.

The Hon. Leopold Canning contributes an interesting article to "THE MOTOR" this week on "Perfection in the Motor-bicycle."

The new American journal to which we referred in a recent issue is called "Motor." No. 1 has just reached us and is a fine production.

We are prepared to consider applications for the post of literary representative of "THE MOTOR" and kindred publications in the Midlands. Letters on the subject should be addressed to "Midlands," c/o Temple Press, Ltd., Rosebery Avenue, E.C.

"The Motor Manual" has run through five editions, and the sixth, now in preparation, will be more comprehensive than ever. No other motor publication has had such a sale as this, and it is noteworthy that the "Manual" has never been advertised outside the columns of "THE MOTOR."

A very simple means of preventing terminal heads shaking loose and dropping off the stems is to burr up the last thread by the aid of the pliers. This will allow the head to unscrew to the end but no further. If at any time it should be required to get the head right off the burr can easily be removed with a touch of a file.

The Auto Cycle Club's special committee appointed to frame the new racing standards met again on Monday, and considered a mass of correspondence which had arisen out of its alternative proposals. It is surprising how general is the opinion that moderate powers are quite sufficient for existing tracks. The deliberations of the committee will be made public at the earliest moment.

When a motorcar speed exceeding 80 miles an hour was reached and reported in the daily Press, we gasped—at the reports, not the speed. But when the "Telegraph" requisitions such terms as "maddening flight," "whirlpool of cinders and snowy dust," "roar of a Niagara," "its metal parts giving forth an instantaneous crude crash of melody," "a hazy and indistinguishable, confusing, shimmering vision of wood, glass, brass and dust," in announcing 125 miles an hour on the Berlin electric railway, we can only hope the limit of speed has been touched. We tremble at thought of the hazy, shimmering, indistinguishable, crude crash of confusion that would descend upon the reporter at 125 miles. Seriously, we wish the "D.T." reporter had got incapacitated.

D2

Coming Events.

- Oct. 15. Automobile Club House Dinner, at which biograph views of the Gordon Bennett Race will be shown.
- „ 22. Automobile Club House Dinner and Paper on the "Governing of Gas and Petrol Engines," by Mr. Dugald Clerk.
- „ 22. Mile and Kilometre Speed Trials at Dourdan (France).
- Nov. 5. House Dinner and Paper on "Heavy Motor Traffic," by Mr. E. Shrapnell Smith.

Charles Jarrott has been elected a member of the Representatives Committee of the German Automobile Club.

Jenatzky will drive a car in the motorcar races at Berlin on October 18th. Poege (Chemnitz) and Hieronymus are also due to start.

A writer in the "Daily Mail" is responsible for the statement that Mr. Chamberlain "hates motors with an exceeding bitter hatred."

We have received the following by wireless telegraphy:—"Will exchange my 24 h.p. Regina motorcycle for a free-wheel Hummer safety (fitted with variable speed gear): have carefully measured all roads leading to my house, and find I shall not be able to get within four miles of it on motor vehicle after Jan. 1st next.—Bill."

The conference between the three bodies which have taken so active a part in connection with the new Act and its bearing on motorcyclists met again last week and completed the first stage of its work, and the President of the Local Government Board is now in possession of the views and suggestions of motorcyclists.

We expect to make an important announcement of a striking character next week.

Many illustrations of historical interest will be contained in "THE MOTOR" Show specials.

"THE MOTOR" Show specials will be found to contain many innovations, and the first news of new features will be found in their columns.

The Roads Improvement Association has scored a notable success in the result of the deliberations of the Departmental Committee of the Local Government Board on highway reform.

The Motor Manufacturing Co. write with reference to our table of light car performances, pointing out that since the original return the M.M.C. was adjudged to have made a non-stop run on the Eastbourne journey.

The following are the runs of the Wolverhampton Motor Cycling Club for the remainder of October:—17th and 18th, Rhyl ("Marlborough Hotel"); 24th, Stafford ("Swan Hotel"); 25th, Kidderminster ("Bell Hotel"); 31st, Wellington ("C.T.C. Hotel").

The government of the German Colony in East Africa has offered a considerable money prize to the manufacturer or firm who first, from now till April, 1905, establishes a service of motorcars for the transport of merchandise. The conditions are that the motor waggon shall be capable of carrying a minimum load of 1,000 kilogrammes (about one ton), and that the motive power shall be paraffin or alcohol. The steamship companies refuse to ship petrol so long as paraffin and alcohol can be obtained freely in the colony.



Rowse's detachable side-saddle seat to accommodate a lady on a motor-bicycle.

The German Motor Club and the Speed of Motors.

At a recent sitting of the representative committee of the German Motor Club, held under the presidency of General Becker, Dr. Levin-Stoelpling put in for discussion a motion to call a conference of international motor clubs with the view of considering in what way the dangerously high rates of speed can be avoided. In harmony with this motion the technical committee of the club will be entrusted with the drawing up of proposals. In any case the conference would not be convened prior to the race for the Gordon-Bennett Cup.

Marriage of the Rev. J. M. Bacon.

The Rev. John M. Bacon was married last Wednesday (October 7) to Miss Stella Valentine, daughter of the late Captain Valentine, of Goodwood. Mr. Bacon is one of the keenest and most experienced aeronauts of the day, and is well-known to cyclists as the originator and demonstrator of cycle-balloon chases, whereby the comparative values of balloon and cycle in warfare can be tested. The reverend scientist stints no time or money in the cause of progressive locomotion, and to show his sympathy with present-day methods, as against those of an older fashion, he submitted to be driven away on his honeymoon tour in a motorcar by his newly-made bride. He has also been up in Mr. Spencer's famous airship on the Palace to St. Paul's trip. Our readers will, we feel sure, join us in wishing the newly-married couple every happiness.

The Dust Problem.

During the recent sittings of the Departmental Committee on Highways an interesting paper on the oiling of macadam roads was handed in by Mr. J. A. Brodie, city engineer of Liverpool. This paper was practically a condensed report of certain experiments carried out on roads in and adjoining Liverpool during the summers of 1902 and 1903. Nine materials were tried, viz., hot creosote oil, cold creosote oil, creosote oil and pitch, creosote oil and resin, creosote oil and tallow, hot coal tar, cheap waste oil from coal tar, common petroleum, crude Texas petroleum. All these materials laid dust satisfactorily, rendered the road less liable to "pick-up," and substantially reduced the cost of scavenging. Crude Texas petroleum gave the most lasting, coal tar waste the most economical, creosote mixed with resin the cleanest-looking, and creosote mixed with tallow the least odorous results. The average duration of one application (1 gallon to 8 superficial yards) was three weeks, with a tendency to increased duration as the road became impregnated with the material. Comparing the cost of these oils with that of water the experiments showed the relative cost per superficial yard for one sprinkling to be—oil, .46d.; water, .70d. The cost of watering, however, will, of course, be reduced in most years by rain on wet days; and, on the other hand, as a set-off against this, the cost of oiling would be substantially reduced when larger areas were treated and oil purchased in larger quantities. Similar experiments on one of the wood-paved streets in the city showed that, whereas with the water-cart four waterings a day failed to keep down the dust, one sprinkling of oil gave complete satisfaction in dry weather for three weeks.

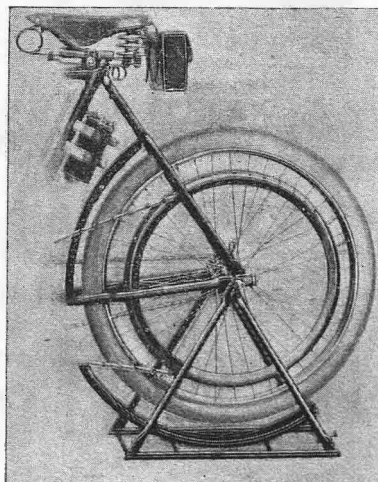
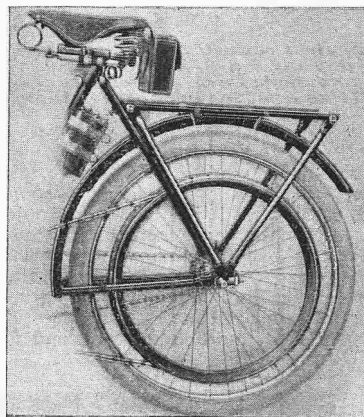
"THE MOTOR" is making the most complete arrangements for dealing with the Shows, and readers will find the reports and illustrations novel and interesting.

Motor Mountaineering.

Captain Deasy, a well-known traveller, claims to have driven a motorcar up the cog-wheel railway from Caux to Rochers de Naye, near Montreux, on Lake Geneva. If this be true, it beats Mr. Lettis' recent climb up the Crystal Palace steps with a 5 h.p. Oldsmobile. Captain Deasy's car was a 14 h.p. Martini touring car.

The Garrard Combination Stand and Carrier.

The illustrations depict the latest invention from the Garrard Manufacturing Company's works. It consists of a light, yet strong, attachment to fit on the back axle of a motor-bicycle and forms a convenient stand, so arranged that the rear portion of the mudguard comes away with it and thus the tyre is gettable for inspection or easy repair. When folded up in its normal position a capacious luggage carrier is formed. It is held securely in position by a clip to the back stays. There is no doubt that the mudguard on a motor-bicycle becomes a nuisance at times when the rider wishes to remove the cover of the tyre quickly, and the idea of making it in two sections and securing the rear part to the carrier is a capital one, and will doubtless be much appreciated.



The Garrard Combination Stand and Carrier, shown in both capacities.

The Dourdan Speed Trials.

Supplementary to our announcement of the above trials in our issue of October 7th, we now learn that the classification of cylinder capacity will be divided into seven, viz., from cylinders of a quarter of a litre (approx. $\frac{1}{4}$ pint) capacity up to those of eleven litres (20 pints). The Peugeot and Griffon motorcycles, which did so well in the Chateau-Thierry hill-climb, are expected to compete, as also is the Georges-Richard light car, and the two 100 h.p. Gobron-Brillie racing cars have definitely entered.

Speed Regulations in Belgium.

The correspondent of "Le Monde Sportif" reports that by a recent regulation of the Municipal Council of Menin (a town on the southern frontier of Flanders) the speed of motor vehicles must not exceed that of the average trotting speed of a horse, and in certain narrow streets and at cross-roads must be reduced to that of a horse's walk: moreover, the police are empowered to reduce the speed of all motor vehicles and cycles whenever they may think it necessary to double that of a pedestrian; say seven miles.

Motor Launch Racing in France.

The "Coupe de la Marne," a challenge cup for motor launches, was won on October 4th by Mons. A. Tellier's La Rapee II. The course was one of 30 kilometres (18 miles) on the Marne river, and the winner, driven by a 24 h.p. Panhard et Levassor motor, covered the distance in 35 seconds under the hour. A race for motor cruisers (the equivalent, we presume, of a touring car) over the same course was won by Mons. Perrin's Claudius (6 h.p. Aster) in 2 hrs. 8 mins. 20 secs. La Rapee II. is entered for the forthcoming race from Paris to the sea.

Old-time Cyclists.

It is not surprising, perhaps, to find that the old-time cyclist should take up the newer hobby of motorcycle or car—it is in the natural evolution of things that this should be, although we know a number who still keep their faithful old "push-bike" in the stable for occasional rides. In any case, the present-day motorist who once bestrode a bicycle—perhaps the G.O.O.—has a warm place in his heart for the pastime, and he will have many old memories re-awakened when he peruses the Club Number of "Cycling," which will be published on the 28th. It will deal with the clubs that were, but more especially with the clubs that are now so full of strenuous life.

Worn Motor Pulley Groove causes Belt-slip.

Many riders of motorcycles complain about their belts giving trouble whilst all the time it is the pulley at fault. It has been conclusively proved that to get an effective grip of the belt the pulley groove must be of a sharp V section. This is especially important in the case of a round section belt. In time it is found that even a hard steel pulley tends to lose its V section groove due to the grinding action of the particles of grit which become embedded in the leather. The groove wears to a U shape, and there is thus little or no wedging action on the belt. The remedy is simply to buy a new pulley and replace the old one with it. It is safe to assume that if the engine races even with a very tight belt it is the pulley at fault.



VALETUDINARIAN (to crony): "By Jove, sir, I regard the Motor Bill as simply iniquitous—a gross miscarriage of justice, sir! Only the other day my 6 h.p. bathchair was delivered, with which I proposed to do a comfortable 35 miles an hour, and here I am reduced to a miserable crawl of 20! Egad, sir, I can't trust myself to speak!—!! (Has another dreadful attack, and is carried to the nearest doctor's.)"

We have received a sample of the well known "N" oil, for air-cooled motors, from the Vacuum Oil Co., Ltd., and are proceeding to give it an extended trial.

The Iris Motorcycle.

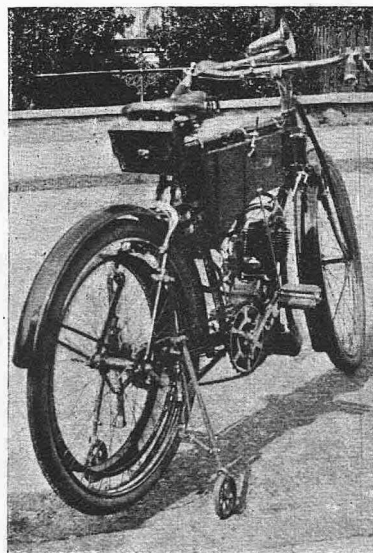
We are asked by the Iris Motor Company to make clear the following fact with regard to their motor-bicycle described and illustrated in our last issue. The special feature about the machine is the free engine clutch and hand starter. This combination allows the motor to be readily started with the bicycle at a standstill, and when the rider requires to start he takes his seat and simply releases the clutch and the machine starts off in the same way as a car; thus there is no necessity to run alongside the machine to start.

The Latest Birmingham Garage.

John Bright Street, Birmingham, is rapidly becoming the motor viaduct of the Midlands. A notable addition has just been added to the already numerous garages. This is the Mobile Motor and Engineering Company's new premises in Rosebery Buildings. On the front there is a very fine window with doorway to admit the largest type of car, while the goods entrance and repair department is at the back. The garage is 85 feet square, and is fitted with the most modern appliances for undertaking every kind of motor work. The firm makes a speciality of 6 h.p. and 9 h.p. De Dion cars, and will cater for the light form of motoring in every respect. They hold the agency for the Quadrant amongst other well-known makes of motorcycles.

A Large Stud.

So many wealthy people have taken to motoring and developed into absolute enthusiasts that it is difficult to know who is really the most enthusiastic automobilist in Great Britain. If the magnitude of a man's motor stud is any criterion, we think Lord Wimborne is entitled to the honour. His lordship is said to possess no less than 15 cars, and to employ five mechanics.



Empire B.P. Motor-Bicycle support.

Empire B.P. Support.

Considerable interest was aroused during the Reliability Trials by the Empire B.P. Support and Non-Skidding Device. We give an illustration of it as fitted to a Kerry motor-bicycle, and this will convey a better idea of the invention than is possible by a description in words. One of our staff recently put its claims to a practical test on the road, and can state with assurance that by its use side-slip was absolutely prevented. When grease is approached, the two small wheels are moved downwards and outwards by back pedalling. Then should the back wheel slip, one of the small wheels instantly grips the road and the slip is stopped before it has gone far enough to be serious. The device is supplied also as a support or jack only. For this purpose it is invaluable, because it adapts itself to any shape of road. Few roads are flat, but in spite of this with the usual pattern stand a flat surface must be found or it is useless. On the crown of a road or in the gutter the Empire Support will hold up the bicycle to which it is attached. It can be operated instantly, does not interfere with luggage, and the bicycle can be wheeled backwards or forwards as desired. After having had it in use for a period, and discovered its many advantages the writer felt quite at a loss when riding a motor-cycle without the attachment. The price as a jack only is £1 is., or complete with back pedalling device, £2 10s., and the makers are The Empire Motor Cycle Co., 7, 9, and 11, Bulwer Street, Shepherd's Bush, W., who will supply any further details required.

It is worthy of note that the M.M.C. car performed a non-stop run on every day of the recent Reliability Trials.

Gordon-Bennett Race—Latest from Austria.

Professor Georg Goebel, of the State Trade School at Vienna, and Captain Robert Wolf, member of the Military Technical Committee, have undertaken to overlook the construction of the three cars entered by the Austrian Motor Club for the Gordon-Bennett Race. As is well known, all the parts of these cars will have to be produced in Austria, in accordance with the rules. The Wiener-Neustaedter Daimler Fabrik has them in hand. Braun and Werner will probably drive two, and the American, Mr. Warden, the third.

Destined to be Popular.

A light car which made an excellent impression at Southport was the two-seated Wolseley, made by the Wolseley Tool and Motor Co. for the Siddeley Autocar Co., of Coventry. Those built for the latter company will differ in some details from the standard pattern, but full information on this subject is not yet available. The little Wolseley, as we foreshadowed as early as April last, and fully described in June, is provided with a single-cylindrical engine placed horizontally below the foot-board. The drive is through a central chain from the gear-box. The framework is a particularly clever piece of stamping, and we noticed that the car was most silent in the running, was very easily handled, and that every consideration had been paid to the comfort of the passengers. The car was roomy and well-sprung, whilst the long wheel base added considerably to the smoothness of running. The body was well-upholstered, and the side wings were real splash preventers. The general opinion was that the car was cheap at £175. We are waiting for some photographs to come through, and then we shall give illustrations of the new aspirant for public favour.



The Herefordshire A.C. Meet and Hill-Climb. Group at bottom of Dinmore Hill, after the competition.

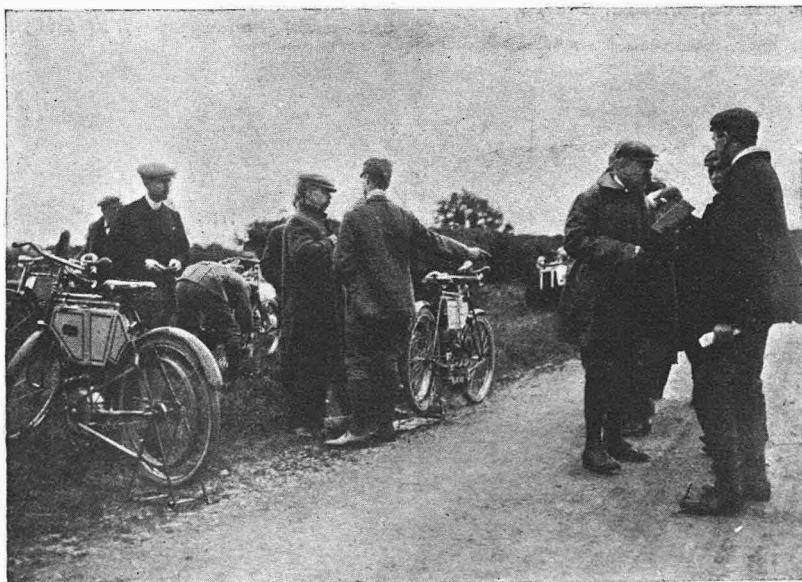
Motor Cycling Club: 100 Miles Passenger Contest: Arnott Prize.

The distribution of the awards in this event are as follows:—Wright, on Ormonde tandem, and Hacking, on Ormonde and side-carriage, divide the main award, both these competitors having completed the distance without a stop, and within the limit of the speed provided by the regulations. Messrs. Lord, Johns and Hooydonk will also receive a medal, or some other award, from the funds of the Club. Each of these three competitors completed the distance as a non-stop, but they slightly exceeded the limit of pace. The maximum pace allowed by the rules was 17 miles per hour, and the approximate time to run the distance at this

pace would be 5 hrs. 53 mins. The times taken by the five successful competitors were as follows: Wright, 5 hrs. 53 mins. 49 secs.; Ormonde tandem; Hacking, 5 hrs. 58 mins.; Ormonde bicycle and side-carriage; Hooydonk, 5 hrs. 48 mins. 22 secs.; Phoenix Trimco; Johns, 5 hrs. 49 mins. 35 secs.; Humber and trailer; Lord, 5 hrs. 43 mins.; Ormonde tandem.

The Herefordshire A.C.

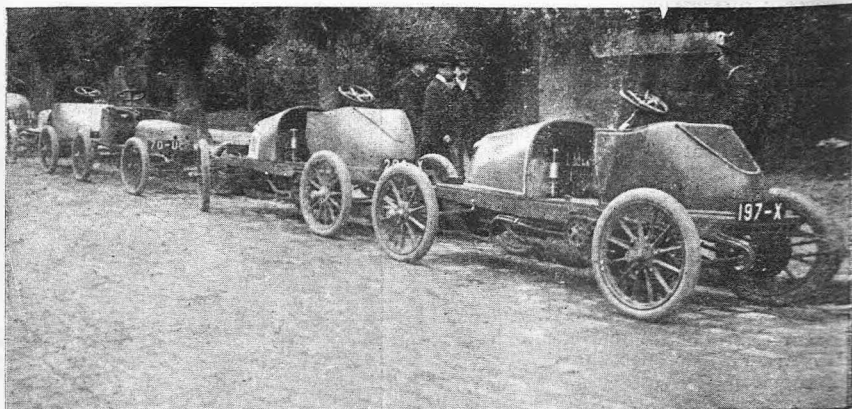
A hill-climbing contest was held on Friday last on Dinmore Hill, which is 1½ miles long, with an average gradient of 1 in 12. It was open only to the motor-cycling members of the club. The time was taken from a flying start, and the timing was done by Messrs. Margrett (start) and Townsend (finish). No pedalling was allowed, and observers were posted to take the number of any competitor who broke this rule. Owing to the unsettled weather, there were not so many present as there might have been, and only 10 competitors attempted the climb. All managed to get up without pedalling, though it was thought doubtful if all would negotiate the nasty corner half-way up without slackening, especially as the road was greasy. The cars present were of the following makes:—Napier, Lanchester, Benz, Oldsmobile, Abeille, and Regal. Hall, Quadrant (Quadrant engine, 3 h.p.), 2 mins. 46 secs.; Marriott, Marriott (De Dion engine, 2½ h.p.), 2 mins. 52 secs.; Ekins, Minton (Minerva engine, 2 h.p.), 2 mins. 57 secs.; Groom, Excelsior (M.M.C. engine, 2½ h.p.), 2 mins. 58 secs.; Simpson, Triumph (Minerva engine, 2 h.p.), 3 mins. 6 secs.; Godwin, Coventry Eagle (3½ h.p.), 3 mins. 19 secs.; Langford, Rex (Rex engine, 3 h.p.), 3 mins. 28 secs.; Passey, Victor (Minerva engine, 2 h.p.), 3 mins. 41 secs.; Weale, Ariel (Minerva engine, 2 h.p.), 3 mins. 53 secs.; Chave, Excelsior (M.M.C. engine, 2½ h.p.), 3 mins. 59 secs. It is only fair to Mr. Chave to say that he entered the contest unprepared, and upon examination his contact breaker was found very dirty.



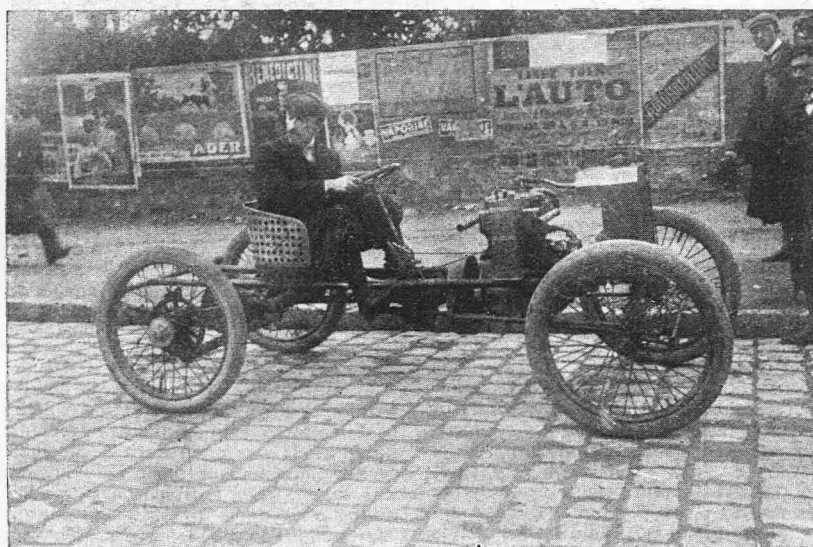
The Herefordshire A.C. Meet and Hill-Climb. Group of competitors and officials at the top of the hill.

Hill-climb at Chateau-Thierry.

The second annual hill-climbing competition at Chateau-Thierry, near Soissons, in the department of Aine, N.E. France, was held on October the 14th. This year a standing start was decided on, as it was found on the previous occasion that cars could not, with a flying start, negotiate a nasty curve at the top of the hill without reducing speed prematurely. The course this year was arranged so as to avoid this curve. A Mors chronometrical apparatus recorded automatically the times of starting and finishing. Five seconds were allowed, after a given signal, in which to cross the starting line: if, at the end of that time, the car had not started, the tape was broken by the timekeeper and the car was considered to have started. A straight kilometre was marked out on the Chesneaux hill between Chateau-Thierry and Soissons, the surface being macadam, in excellent condition.



Curious "Richard-Brazier" motorcars which competed in the Chateau-Thierry trials.



Showing how weight is cut down in the Continental Racers.

Saturday, October the 3rd, was devoted to the weighing of the competing cars, the entry list including no less than 113 competitors, made up as follows:—Racing vehicles—A, motorcycles (110 lbs. and under), 20; B, voiturettes (550 lbs. to 880 lbs.), 8; light cars, 14; C, heavy cars, 11. Touring vehicles—D, motorcycles (4 litre cylinder capacity), 15; E, cars of the value of £160 or less, 6; F, £160 to £320, 10; G, £320 to £480, 8; H, £480 to £720, 11; J, £720 to £1,000, 6; K, over £1,000, 5; L, omnibus to seat 15, 1.

TOURING MOTORCYCLES

were allowed to start either by pedalling or by a push and a run; cylinder capacity alone was taken into consideration as a qualification for entry, weight of machine or rider being disregarded; mudguards were obligatory.

In the touring car class only bona-fide touring cars properly fitted up for the road, with mudguards, steps, cushions, and carrying the full complement of passengers, were eligible. This year's track was, as already indicated, free from sharp turns, but a narrow bridge crossing the railway required careful driving; a short stretch of "pave" leading out from the vil-

lage of Chesneaux had to be traversed at the start, the gradient here being 1 in 25, rising rapidly to 1 in 10, at which it remains constant for the rest of the course.

After the ceremony of weighing the cars and sealing up the motorcycle cylinders, Saturday afternoon was devoted to a series of preliminary canter up the hill: rain had made the surface greasy, and side-slips were numerous. Champoiseau, one of the heroes of the recent "Quart de Litre" trials, is reported to have collided with a tree when going at between 40 and 50 miles an hour, but to have escaped without injury either to himself or his machine. Maurice Fournier, of Paris-Madrid fame, arrived with a four-cylinder 22 h.p. motorcycle; he was not entered for the trials, but was bent on record breaking; as events turned out, however, a protest was raised against this unofficial proceeding by some of the competitors, and Fournier had perforce to play the part of a spectator.

Owing to the wet weather on Sunday the trials were much interfered with, and some of them had to be postponed till Monday. Some very good performances were done, nevertheless, especially by the light touring motorcycles; in this class



The scene at the start of the Chateau-Thierry motor speed trials.

the Peugeot machine scored a triumph, securing the first three places, the fastest of the three machines (ridden by Collomb) covering the kilometre climb in 1 min. 11½ secs. which works out at 31 miles per hour, not a bad performance for a touring machine up a slope of 1 in 10 from a standing start. An equally meritorious performance was accomplished by the Griffon machine in the racing motorcycle class, the three first places again falling to one machine, the fastest time being that of Lamberjack—55½ secs. (40 miles per hour). The fastest climb of the day was done by a Darracq voiturette (driven by Baras)—50½ secs. (43 m.p.h.). The approximate times of the fastest cars in the other classes were: E, 10 m.p.h.; F, 15 m.p.h.; G, 28 m.p.h.; H, 38 m.p.h.; J, 24 m.p.h.; K, 38 m.p.h. (this was a big Mors touring car, driven by Gabriel, of Gordon-Bennett fame).

THE POSTPONED TRIALS

were run off on Monday morning. The fine performances recorded on Sunday were beaten in two classes, Danjean on a Richard-Brasier light car, and Rigolly on a Gobron-Brillie heavy car: this latter performance provided the sensation of the meeting; after an abortive attempt, during which he ran over a dog and slightly damaged his steering gear, Rigolly covered the kilometre in 45½ secs. (just under 50 miles an hour); Duray, on a similar car, had just previously done 45½ secs. Danjean's time was 50½ secs. (45 m.p.h.).

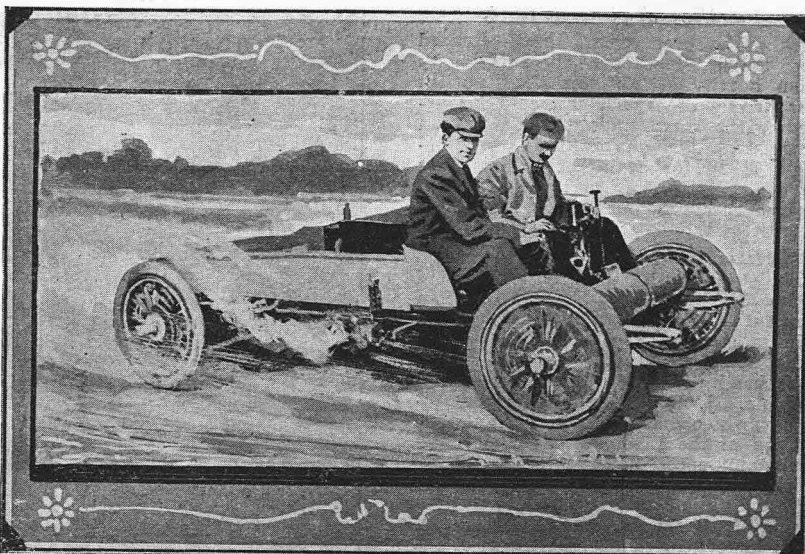
At the close of the official trials Maurice Fournier was allowed to try for record on his four-cylinder Clement motorcycle: a bad start in which he is estimated to have lost 15 secs. destroyed his chance, but he eventually finished in 55½ secs., passing the finishing line at an estimated speed of 60 miles an hour.

Heath, on a big Panhard-Levassor racer, did a very fast trial, which the timing apparatus refused to record.

Of the heavy cars, the Gobron-Brillie racers confirmed their reputation as splendid hill-climbers: the Gardner-Serpollet,

though slow at starting, showed equally good climbing capacity. The Gobron-Brillies were driven on alcohol, which many French motorists consider superior to petrol for hill-climbing. The performances of the Peugeot touring motorcycles and the Griffon racing cycles prove that this class of machine can hold its own with any but the leviathan racing cars. Belt drives were the order of the day, although, in view of the success of some of the chain-driven and gear-driven machines in the "Quart de Litre" trials, one might have expected to see a little rivalry in this respect at Chateau-Thierry.

Paris has not been long in following London's example: motor cabs similar to those plying here were announced for the streets of Paris last week; they are to be driven by De Dion-Bouton motors, the London cab being fitted with a Panhard.



Curious new type of American racing car. This is the Cannon steam racer which has been winning races on the other side.

On October 28th "Cycling" is bringing out a special Club Number, which should be of particular interest to those motorists who have migrated from the cycling ranks.

Electric Car Trials in France.

Reliability trials, on the lines of those recently held by our Automobile Club, are announced for the middle of November over French roads: they will be confined, however, to cars driven by electricity. The programme is as follows:—November 19th, Paris to Rouen (85 miles); November 20th, Rouen to Abbeville (75 miles); November 21st, Abbeville to Creil (85 miles); November 22nd, Creil to Paris (56 miles).

Austrian Notes.

The Austrian Motor Club has formally issued a challenge to the German Motor Club for the Gordon-Bennett trophy. This will involve the participation of Austria in the coming race. The Austrian Motor Club is entering three cars for it, which are to be made in Wiener-Neustadt. Next spring the club will most likely organise a great race meeting over the trotting course at Presburg (within a few miles of Vienna). The length of the course is a mile, and the banking raised sufficiently to take a speed of 75 miles an hour, a pace presumably fast enough to satisfy the most ambitious chauffeur. Eustacchio, the well-known specialist, constructed the track. Up to the present, motorists have been left pretty nearly to their own devices in Austria, but there are signs of a sharper control immediately ahead. The authorities are now considering the advisability of making it obligatory upon car owners to fix a numbered plate to their car, and see that the plate is lighted up after dusk. In addition to the number, which would be about four inches high and have a downstroke one inch across, it is proposed that the plate shall bear a letter showing the district where the owner resides. Cars coming across the frontier would also be provided with plates (at the owner's cost) and a special letter. Motorcycles will in all probability come under the same regulations.



Mr. Edward G. Taylor sends us this interesting snap of a Wolseley car travelling on the main road from Bettws-y-Coed to Corwen, during the recent floods.

Further Adjournment.

Although seven weeks have elapsed since the first hearing of the summonses taken out by Mr. Moffat Ford against four drivers of electric tramcars for exceeding the speed limit of ten miles an hour, Mr. Muir, on behalf of the company, asked for a further adjournment for the completion of certain trails, and the magistrate adjourned the case till October 31st.

Hill-climbing in Liverpool.

The steepest street in Liverpool is said to be Havelock Street, Everton, with a gradient of 1 in 5.75. It is surfaced with cobbles, and has a right-angled turn at the bottom, so that riding up on a motor-cycle has hitherto been thought to be impossible. J. Edge, the well-known Anfielder, who owns a Bat motorcycle, and is captain of the Liverpool Motor Cycling Club, announced his intention of trying his luck on the hill at 2 p.m. on Saturday, and quite a crowd gathered in anticipation of a great struggle against failure. As it happened, rain fell for most of the morning, and this made the turn at the bottom extra bad. At his first attempt Edge came along well, and then essayed the turn, but his machine skidded away, and he had to come off. The next attempt resulted in the same fate; but "third time lucky," and the corner was negotiated somewhat trickily but successfully, and then, increasing pace, the machine went up between the pillars about half way up the hill, and then to the top in fine style. Edge is thus the first motorcyclist to surmount this steep little pitch.

A Light American Motor-Bicycle.

The power to control any motive vehicle is an element which cannot be underestimated. It must be simple and positive, especially when upon a machine intended to thread its way in and about heavily travelled streets where loss of control would be fatal. To control the Indian motorcycle, but one lever is used. It is termed the speed lever. It is easily reached without removing the hand from the handlebar. To the beginner it is a marvel of simplicity because, with but one lever to think of, accidents are impossible, as one cannot become confused over several levers of which they do not know even the functions. The speed lever starts the machine, increases the speed, and stops the machine. It also lifts the exhaust valve, so that the machine can be handled without compression in the cylinder. This enables one to start without compression, and without touching any relief lever or pet-cock. To start: pedal, throw speed lever over a quarter of an inch, which drops the exhaust valve, and engine starts. The further the lever is thrown over the faster the speed. The time of the spark is governed by this lever throwing the contact breaker forward. This lever will give all possible speed required for road work, and will take the machine up 10 and 12 per cent grades. When heavier grades are met the gas lever is used. This simply gives a heavier charge to the engine, thus increasing the power. The flow of gasoline—the known quantity—is fixed and does not require regulating. The air—unknown and variable quantity—is regulated and adjusted by the air regulator. The machine can be stopped instantly also by turning the left grip to the left, which breaks the electric circuit.

D10



THE INDIAN MOTOR-BICYCLE.

A compact light bicycle of American design. The rider is Oscar Hedstrom, the inventor and designer of the Indian bicycle, the Hedstrom motor and Hedstrom carburetter.

Irish Motorcycle Union.

INTER-CENTRE CONTEST.

The Motor Cycle Union of Ireland successfully carried out an inter-branch contest between the Ulster and Dublin centres of the Union on Saturday last. The contest took the form of a reliability run between Belfast and Dublin, and the three best performers in each team scored for the respective centres. The Dublin centre had not as strong a numerical representation as the Ulster centre, the day previous to the contest being so wet that many of those who entered did not travel to Belfast. The regulations of the competition provided for a minimum pace of 15 miles an hour and a maximum pace of 20 miles an hour, and those who exceeded the maximum pace, or were below the minimum, lost five marks per minute for every minute so lost or gained. Of the 17 starters 11 went through the ride of 98 miles, and as all of them were within the time limits, the contest was decided on the points lost for involuntary stoppages. Three marks were deducted for a puncture and five for any other stoppage. Two men went through without any stoppage, one lost three marks, five lost five marks each, and of the other finishers only one lost more than ten marks. The placings, times and marks lost were as follows:—R. W. Ireton (Riley), 4 hrs. 59 mins. 50 secs., lost no marks; C. B. Franklin (F.N.), 4 hrs. 59 mins. 50 secs., lost no marks; T. Ireland (Humber), 5 hrs. 3 mins. 50 secs., lost five marks; A. Summers (Triumph), 5

hrs. 10 mins. 50 secs., lost five marks; J. Stewart (Centaur), 5 hrs. 16 mins. 20 secs., lost five marks; T. E. Denby (Excelsior), 5 hrs. 17 mins. 50 secs., lost five marks; P. S. Brady (Centaur), 5 hrs. 18 mins. 50 secs., lost five marks; T. Mallon (Quadrant), 5 hrs. 18 mins. 50 secs., lost three marks; H. A. Evans and T. W. Murphy (Singer tandem trike), 5 hrs. 28 mins. 10 secs., lost ten marks; J. Holden (Meteor Rover), 5 hrs. 30 mins. 15 secs., lost ten marks; J. McKee (Werner), 6 hrs. 18 mins. 50 secs., lost 15 marks; also competed C. G. Grey, H. S. Huet, W. J. Forsythe, H. Strain, A. J. Thompson and Bell. The placings in the team contest were as under:—Ulster Centre lost eight marks, first. Ireton 0; Mallon lost three; Ireland lost five. Dublin Centre lost 15 marks, second. Franklin 0; Summers lost five marks; Evans and Murphy lost ten marks. Mr. A. Williamson and Mr. H. J. Shimmins acted as timekeepers at Belfast, and Mr. F. J. J. Glynn at Dublin.

Reading Automobile Club.

On Saturday last, on Palmer Park cycle track, under the auspices of this club, Messrs. Starley and Co., of Coventry, gave a practical demonstration of their motor-bicycle, fitted with worm drive and two-speed gear. There was a large assembly of interested spectators, and the motorcyclists present were very favourably impressed with this very clever machine. A number of well-known motorcyclists took the opportunity of trying the track with their machines.

A System of Signals.

They have a good wheeze on the Uxbridge Road, just beyond Southall: the road is up for about a hundred yards for new drains to be laid, a narrow passage being left on one side for a single line of vehicles. When a carriage enters this passage a man works a signal arm on an upright pole, which can be seen from the other end, and while the signal is against the up traffic this has to wait. We drove that way on a car the other day, and were impressed with the activity displayed by the signalman, who happened to be having his tea; but he left his succulent kipper and pulled the signal rope just in time to prevent a carriage entering the narrow road from the other end. But for his promptness, the carriage would have met our car half-way through the passage.

Charred Oil Deposits in Cylinder cause Overheating.

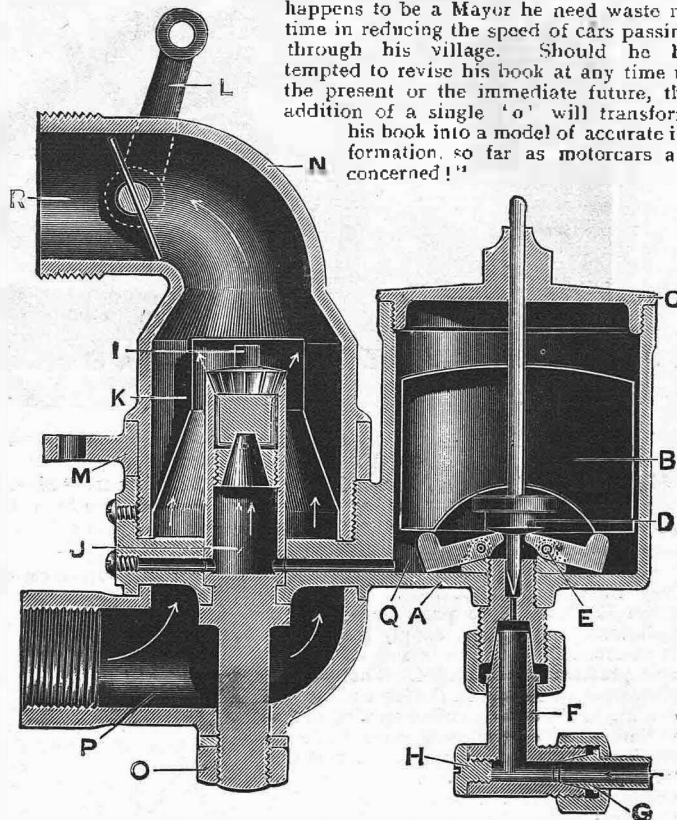
An inspection of the inside of the combustion chamber of a small motor that has been in use for a considerable period will show that a more or less thick deposit of burnt up lubricating oil has formed on the cylinder walls and the interior of the combustion head. It may not be generally known that this deposit directly affects the efficient running of the motor, inasmuch as it tends to cause overheating, especially in cases where the motor is mounted in rather a sheltered position on the frame. This lining of charred oil is a perfect non-conductor of heat and prevents a certain amount of heat—that it is important to get rid of—from being carried to the radiators. It is one advantage of having a detachable combustion head, that it is an easy matter to clear away this deposit. Although it is of a hard cement-like nature, a fairly sharp pean-knife will remove it by careful scraping. The head of the piston also gets encrusted, but to clean this properly the cylinder must be taken off. If an abnormal amount of charred oil is found in the combustion chamber it will show that oil gets past the piston freely, and that the rings want renewing.

The Motorcycle Trades Association, Ltd.

At the first meeting of the above since registration under the Companies Acts, held on Thursday last at its offices, 27, Chancery Lane, W.C., Mr. James A. Jackson (Bradbury and Co., Ltd.) was elected chairman. Another appointment was that of Mr. Henry T. Arnott (Werner Motors, Ltd.) to the committee in succession to Mr. Ernest H. Arnott. It was decided that the first financial year end with September, 1904, and that the annual meetings be held on the second Fridays of Cycle Show weeks. The first general meeting will be held on November 27th at 4 p.m., when the question of railway rates on motorcycles will form part of the agenda. Much discussion took place on the subject of racing cycles and the proposals of the Auto-Cycle Club. Ultimately it was unanimously agreed to approve of the proposal that the maximum cubic capacity be equivalent to 76 x 76. The Motor Act was discussed and a course of action agreed upon which will be made public shortly. The secretary reported the receipt of upwards of 30 letters from manufacturers agreeing not to exhibit motorcycles at more than one show between October 1st, 1903 and June 1st, 1904, within a radius of 50 miles of London.

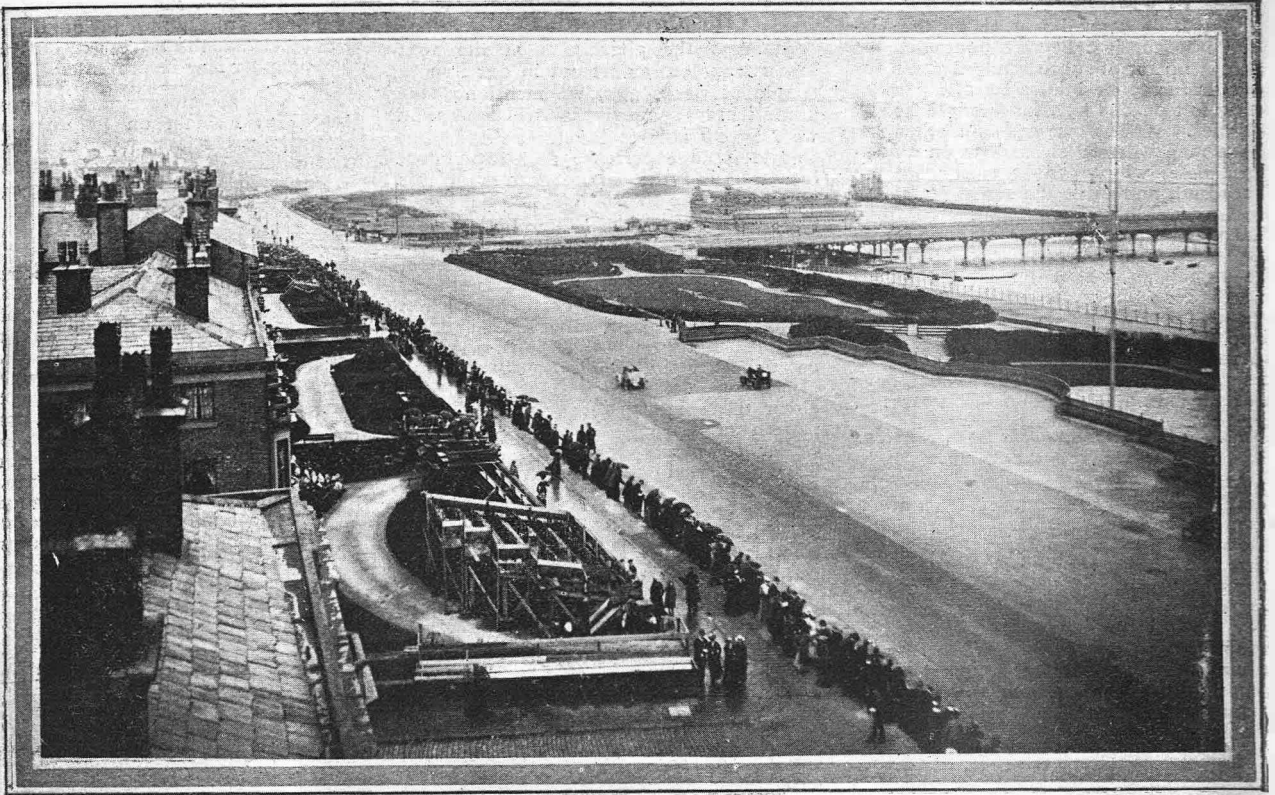
The Minerva-Longuemare Carburetter.

Amongst the alterations in the 1904 Minerva motors as set out in our issue a couple of weeks ago, we mentioned the new Minerva-Longuemare carburetter, and we are now able to illustrate the device. Considerable experience and experiment have induced the manufacturers of this popular engine to adopt the Longuemare principle, but it was found that certain modifications can be introduced so that it may work well with the Minerva engine, and in order to introduce these alterations arrangements have been entered into whereby the carburetter will be made at Antwerp under license. But it will only be supplied in connection with the Minerva engine, either the 1904 pattern or the earlier forms. The external shape of the carburetter is new, as will be seen from the illustration, the chief alteration being in the air passages. Petrol is conveyed from the storage tank through the union piece F and G, the screw cap H serving to close an orifice for cleaning purposes. The spirit enters the float chamber A, Q, the float B operating the levers E, and thus causing them to lift the valve spindle D. The rising of the float to a certain level permits the valve spindle to drop and so shut off the ingress of petrol. Thus the petrol is always kept at a constant level, and it passes through J to the nipple I, exuding through the jets. Warm air is drawn from around the engine through the tube P, and passes through orifices at the base of the mixing chamber, thence up the funnel absorbing the petrol as it exudes from the jets and thence on to the engine through the pipe R, the lever L opening or closing the diaphragm which serves as a throttle valve. The sleeve M regulates extra air inlets to permit of the adjustment of the mixture. The whole of the working parts are rendered accessible by the cap C to the float chamber, the nut O supporting the air inlet pipe and the induction pipe N, which unscrewing exposes the jets. In the tube F wire gauze serves as a filter for the petrol. From this description it will be apparent that the main air supply is taken from the warm atmosphere round the engine and is passed direct through the atomising chamber, only a small amount of extra air being occasionally needed. It seems to us to be a very simple and efficient device,



Sand versus Grease.

Last week we tried a new idea for the prevention of side-slip. On each side of the car, under the rear wings, was tied a small canvas bag containing fine sand: in the bottom of the bag a hole was torn, so that the contents could escape, and, trickling out, would fall on the top of the tyre. For the first few miles the contrivance answered admirably, the car taking sharp corners at a good speed, without the clutch being withdrawn, and with no suspicion of a skid, in spite of the very greasy condition of the roads. Soon, however, the water and mud thrown by the tyre so saturated the sand that it would not leave the bag. We are going to try again with a more permanent receptacle for the sand, and a hole which can be opened or closed by the driver at will, as to regulate the quantity of sand falling on the tyre. This is an idea with which any amateur can experiment. Not only is it simple, but it promises to overcome a great bugbear.



A general view at Southport during the recent motor speed trials.

Metallic Paint for Motor Parts.

A new preparation that should be welcomed by motorists who are troubled with parts of their engines getting rusty is "Silverskin" just introduced by Messrs. Kay Bros., Ltd., Stockport. It gives a silver-like coating to parts such as the radiators, crank cases, supply pipes, etc. It is claimed to be water and oil proof, and practically heat proof. The makers state that it does not in the least affect the cooling of the cylinder when applied to the radiators, as careful tests were made to see if this was so. It was found that the "Silverskin" had the same conductivity as the metal itself. It is useful for coating electric wires and cables, forming an excellent protective coating. We have a sample of this preparation now undergoing a test.

Next Year's Gordon-Bennett.

"Le Velo" is responsible for the following information about the Gordon-Bennett race of 1904. Count Sierpstorff, vice-president of the Deutscher Automobil Club, has been in Paris recently talking the matter over with some of the crack French chauffeurs: the Count has confirmed the announcement that the race will positively be held in Germany, although it was not without considerable difficulty that the Emperor's permission was obtained. The Count shares with Herr von Marx, the Mayor of Homburg, the credit of having won over his Majesty. The Deutscher A.C., under the circumstances, think they are entitled to insist that the race shall be held in the neighbourhood of Homburg, more especially as the town has already signified its intention of voting a substantial grant towards expenses.

The schooner "Sirra" arrived recently at Dundee from St. Petersburg with a full cargo: she was driven by a 50 h.p. paraffin motor made in Rotterdam.

Gordon-Bennett Race.

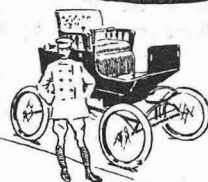
The proposed route in the neighbourhood of Homburg, which the officials of the German Automobile Club will personally inspect within the next few days, is 140 kilometres in length (approximately 87 miles) and will have to be covered three times. The starting point will be near Oberursel, and the route will touch Koenigstein, Glashuetten, Esch, Idstein, Neuhoef, Kirberg, Limburg, Obertiefenbach, Weilburg, Graevenwiesbach, Usingen, Wehrheim—passing the Saalburg, and winding back to Oberursel via Dornholzhausen. The Saalburg (Roman Castle in course of restoration) will in all probability constitute the winning point. The Cannstatt Daimler Works have placed a 60 h.p. "Mercedes" at the disposal of General Becker and Count Sierpstorff for surveying the course, and Werner is to drive the car. An entrance fee of 3,000 francs (£120) has been paid to the Duke of Ratibor as president of the German Automobile Club on the part of the Austrian Automobile Club, which (as stated elsewhere) will be represented by three cars. Austria's participation is now officially published. According to regulations, start numbers are then:—(No. 1) Germany; (No. 2) England; (No. 3) Austria. The cars which Austria is to run will be of the most up-to-date type: four-cylinder upright motors, bee-hive coolers, long-built chassis, four-speeds, etc. They will be every bit as powerful as the best English, French or German racers.

In connection with the recent French hill-climbing trial at Chateau-Thierry, the management of the local theatre admitted competitors at two-thirds of the ordinary prices. Metropolitan managers, please copy!

Record Tour on a Quadrant Machine.

In the window of the Quadrant Cycle Company's London Depot in Newgate Street is shown a 3 h.p. Quadrant machine that has just been through a tour of 2,172 miles in one month. The rider was the Rev. R. Oakley, of High Wycombe. He commenced his tour on August 25th and made for Oxford, Gloucester and Chesham and thence to Cardiff, Swansea and Carmarthen, 205 miles, reaching here 24 hours after the start. Next day was to Malvern via the Herefordshire Beacon, Kidderminster, Shrewsbury, Chester, Warrington, Preston and right through the Lake District to Selkirk. He then turned south for Twickenham near London, going via Moffatt and over the Kirkstone Pass. He ran into a ford at night in this district, but did not injure the machine. He reached Twickenham, but not without a smash through running into a wall in the dark, breaking a pedal and lamp. After having these details repaired he ran on to Andover, Salisbury to Exeter, and made this town a centre for local runs. The return was via Crediton, Tiverton and Wellington, Southampton, Chichester, Brighton, London and home to High Wycombe. There were four separate day runs of over 200 miles each, the longest being from Grasmere to Watford, 264 miles. The machine alone weighed 133lbs., luggage, etc., 94lbs., rider 13 stone 10lbs., totalling 419lbs.

OTHER PEOPLE'S VIEWS.



NOTE.—These columns are set apart for the discussion of motor topics by bona-fide readers of "THE MOTOR," and trade letters containing veiled advertisements are not admitted.

The Editor invites correspondence on any motor subject, but owing to the very large number of letters received he directs attention to the following rules:

1. Plain Writing. Type-writing for preference.
2. All letters to be written on one side of the paper.
3. Letters to be kept as brief as possible.
4. For the purpose of illustrating any letter, rough diagrams may be sent, which will be worked up by one of our artists.

The Editor is not responsible for opinions expressed by correspondents in this section.

A Throttle Query.

Sir,—If A. W. Spicer, whose query appeared in "Bureau," September 16th, would buy a complete new inlet valve, I believe he would get over his difficulty. I had identically the same trouble, the valve stem wearing slightly, and allowing too much play, with the result that the valve would not shut properly at high speeds.—Yours faithfully, ROBERT PARKE.

Faulty Detail Work.

Sir,—I should be glad if Mr. G. A. Bromage, who wrote in a recent issue, would send me the name of the maker of his motor, as when I get a new one I don't wish to have to go through the same trouble as I had with present one. I think the motorcycling public should be protected from shoddy makers who literally throw their machines together. In the first place, my present machine has no method of admitting paraffin to start, so I put a tap on inlet pipe and inject petrol, which usually works after a little time. It takes about ten minutes to get the accumulators out of the case, so I have had to cut the bottom open. The oiler was in front of the machine with a supply pipe to the engine, and it naturally leaked at every joint; this I have now put next to the coil. But the greatest trouble is to get any spare parts. It took three weeks to get a new inlet valve, and a very rough looking affair it was when it arrived. I don't mention such details as leaky engine, nuts in places where you can't get at them, "Lightum" mudguards which always come loose and break when touching a wall. A friend of mine had a similar new machine. No compression, fly wheels out of truth, and taps all going to pieces. He sent one tap back to get a new one, and in return got one three sizes too big. Those who are uninitiated and are going in for motorcycles cannot be too careful of shoddy work.—Yours faithfully, "PERAK."

The Motor Launch.

Sir,—Allow me to support the plea of "Thames" that a corner of "THE MOTOR" be allotted to motor launch topics. We are far behind out transatlantic cousins in this respect, as a glance at any number of "The Rudder" will show. There are a large number of makers of marine motors (two and four-cycle) in the States who have done considerable business on this side through their agents. The two-cycle motor seems eminently suitable for this work for small power (say to 7 h.p.) as it is so extremely simple and reliable. I have been running my launch almost daily during the last six months, and have never had a breakdown or stoppage through any fault of the engine or spark. My boat is 17ft. by 4ft. 4in., 1½ h.p., two-cycle. She is beautifully built of cedar and mahogany by W. Hudson, of Rhyl; and to show how inexpensive a pleasure it is, she cost only £45 complete. She makes about six to seven miles per hour. If I go in for another I think I shall double the power.—Yours faithfully, "SEVERN."

Sir,—It may be of interest to your readers to learn that when petrol motors first came to be thought of service for launches, several 1½ and 3½ h.p. air-cooled motors were fitted into launches with success. These had a small fan placed near the ribs, and were driven by means of a belt from the fly-wheel, and were running without giving any trouble. The motors were cased over with a wooden case, having a cowl to catch the wind, and we believe these also worked satisfactorily. The New Orleans Co. had one of their air-cooled motors fitted to a very nice hull, and it could often be seen running up and down the Thames. The usual practice now is to fit water-cooled motors, as the water-cooling arrangements are so very simple, the water being pumped in direct from the river, through the cylinder water jacket, and out again through an overflow pipe in the river or sea. In reply to "Thames," we should think from his description of the trouble he had with his engine it points to choking of petrol inlet of carburetter. We should suggest his

thoroughly cleaning out the carburetter and making a fresh start. Carless's or Bowley's petrol is the best spirit we have used in either launches or cars, but, at the same time, a certain amount of sediment always accumulates in the bottom of the tank, and this in time runs down the pipe and chokes up the carburetter nozzle.—Yours faithfully,

THE MOTOR CAR AND LAUNCH CO.
17, Holborn, E.C.

Sir,—In answer to "Thames," it would be a difficult matter to locate the cause of his launch motor slowing up without more particulars; any one of the following causes might account for it:—Weeds round the propeller; motor overheating through water circulating pump not working properly; suction pipe on same being choked; incorrect mixture—a mixture that will work perfectly in the heat of the day can often be greatly improved by using less air in the cool of the evening; the motor may be imperfectly lubricated; or compression may be at fault; as in the four-cycle type, exhaust valve stem will sometimes overheat and jam. Of course, these are only haphazard suggestions, as no particular type or make of motor was mentioned. I should also like to endorse what the Motorcar and Launch Co. say as regards the speed of a small launch, 14ft. by 4ft. 8in.; seven or eight knots per hour is a great speed for such a small boat, and I should think the boat that did it was helped by the tide. I think a good many owners of fast launches, if they were to try them, as I have done, backwards and forwards on the measured mile, would be surprised. To get a fast boat you want power, length and fine lines.—Yours faithfully, "ENGINEER."

A Reason for Motor Overheating.

Sir,—I see that a large number of correspondents have written lately to "THE MOTOR" about their motor overheating troubles. May I give my experience, which I think will be of assistance to some of them? A short time since I had the same mysterious symptoms, which could not be traced to richness of mixture or any other of the usual causes. After careful investigation I discovered the reason: the cam on the secondary shaft, which raises the exhaust valve tappet, had become worn, with the result that the exhaust valve did not open 'till some time later than it should have done, and also shut too soon; so that in my case hardly half the waste gases had a chance to escape. When this defect had been remedied the engine worked beautifully, and I have not had any such trouble since.—Yours faithfully,

REV. A. J. MCKINNEY.
DIS.

November 10th.

November 17th.

November 24th.

THREE
SHOW SPECIALS
of "The Motor."
Note the Dates!



In Favour of the Two-stroke Motor.

Sir,—I have often seen in your valuable paper correspondence concerning two-cycle motors. Might I suggest that a discussion in "O.P.V." as to the possibilities and difficulties of a one-cycle engine (i.e., an engine having an explosion to every stroke) should be opened? I feel sure that such a discussion would be beneficial to the makers and interesting to the owners of cars. I, personally, am looking forward to the time when a perfect one-cycle engine will be made, and feel sure that it will supersede every other form of traction. If simple and reliable, it would have all the advantages of a steam engine without any of its disadvantages; change speed gear could be dispensed with and a car could be built really suitable for a man of moderate means.—Yours faithfully,
"PROGRESS."

Collodion for Repairing Celluloid Accumulator Case.

Sir,—I had the misfortune recently to drop a celluloid accumulator on to a petrol can, which cut a hole clean through the corner of the accumulator. A friend who was by at the time suggested placing it on the scrap heap, but I was loth to part with it without an attempt at salvage. It occurred to me that flexible collodion might do to stop the leak. I therefore placed some in sulphuric acid of the same strength as the electrolyte; as the collodion was unaltered in half an hour, I proceeded to make the repair. I carefully dried the accumulator, and then plugged the hole with a piece of thick collodion, which I allowed to dry. I then painted on several layers of collodion with a camel hair brush, allowing each layer to dry. The result was a complete success. The accumulator has been well banged about on my tricycle since, and is as good as ever. I believe my idea is original, and hope it may be useful to your readers.—Yours faithfully,
C. COURTENAY LORD.

F.N. Carburettor Experiences.

Sir,—I was much interested to read the letter from "W. Legge" (Banbury) in your issue of the 23rd September headed "Carburettor Troubles." I had exactly the same difficulty with my F.N. carburettor, but as it was not convenient to take it to pieces and have it repaired at the time I managed to ride by continually shutting off the petrol tap; I first turned on the petrol and as soon as the float chamber was quite full and petrol bubbling over, I turned off the petrol altogether. I had to do this about every 500 yards, but as the tap was easily reached this did not inconvenience me at all. In this way I covered about 500 miles, as I was touring through Wales, but when I returned I took the carburettor to pieces and noticed that so far from the needle wanting re-grinding it had been ground too much and was too short to be at all effective in preventing the petrol coming into the float chamber. To remedy this I took the needle to a clockmaker and got him to move the shoulders on the needle, on which the governing balls rest, up about one thirty-second part of an inch. I now find the carburettor works as well as it did when I first had the machine, and I have not had the slightest difficulty with it since. Thanking you for many hints.—Yours faithfully,
FRED POTTS.

D16.

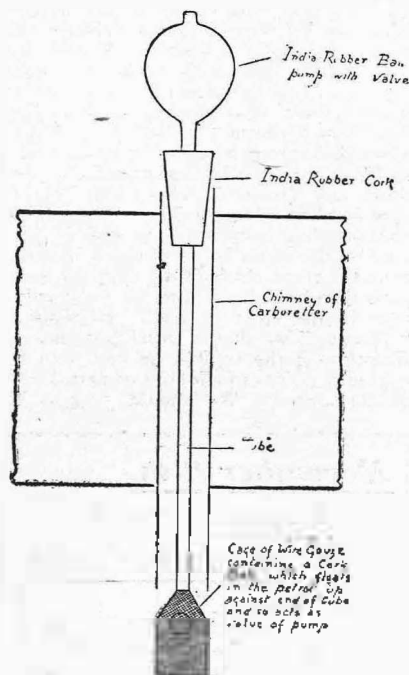
Motor Spirit in India, etc.

Sir,—In reply to "Beginner" (Montrose), who writes in issue of September 2nd, I am trying to find out for certain the capabilities of the "Trusty" carburettor, and if he writes to my address I may later on be able to help him. The Standard Oil Co. of New York, 8, Dalhousie Square East, Calcutta, supply petrol spirit, and it can also be got at other places. The railway companies will carry same in imperial 8-gallon drums, selling now in Calcutta at Rs. 12.8 per drum, including cost of drum. The railway companies carry same when packed in wooden box. A license is necessary for storing petrol, which is easily obtainable. In Rawal Pindi the heat ought to give no trouble, at least for nine months in the year. I trust this will be of value also to any other enquirers.—Yours faithfully,
A. G. W. LAWRIE.

39, Cheyney Road, Chester.

How to Start with Stale Petrol in a Surface Carburettor.

Sir,—I found by a few simple experiments that the difficulty in starting with stale petrol in a surface carburettor is chiefly due to the fact that after the machine has been standing still for some time the air space in the carburettor is not full of petrol vapour but of air. Hence firing cannot occur till all this air has been pumped out by the rotation of the engine. If a few bubbles of ordinary illuminating gas are passed down the chimney of the carburettor the engine will start with the first turn of the pedals. A simpler plan to get easy starting is to blow air down the carburettor chimney. A more convenient plan is to arrange an ordinary india-rubber ball pump, which remains permanently attached to the top of the chimney. A few compressions of the ball are ample to fill the air space in the carburettor with explosive vapour and ensure easy starting. The enclosed diagram shows the details of the arrangement.—Yours faithfully,
Agra, India. E. H. HANKIN.



Illustrating letter from E. H. Hankin.

Concerning "Police Trap Notices."

Sir,—In reply to "North Road," who wrote in "THE MOTOR," of September 16th, "to say that police trap notices are a mistake is utterly absurd," I should like some proof as to the absurdity. I have given my reason for objecting to them. There is no "if" about my having ridden 4,688 miles (now 5,132), and why "North Road" should doubt it I am unable to see. I would ask him to do me the honour to believe me when I tell him that I have never yet seen a police trap in either England, Scotland, or Ireland; nor has an officer ever spoken to me about my speed. I have always found the police most reasonable with regard to speed, and only a short time ago a superintendent told me he could see no harm in any speed which was not a danger to the public. Anyone going down a slope at more than 12 miles an hour, in my opinion either requires to be shut up, as not being able to take care of himself, or, if sane, fined. With regard to motor cads and law breakers, I may say that, fortunately, the former are not very common, and belong almost entirely to a few of the car users; but the latter to car and cycle users, and comprise nearly all not included in the former.—Yours faithfully,
ALFRED MEIGH.

The Best Size of Tyres.

Sir,—In reply to Mr. Swain's letter inviting correspondence about the desirability or otherwise of the 2in. motorcycle tyres now in vogue, may I put in a plea for the general fitting of a more sensible size? Two-inch tyres, even on a spring frame machine, are not by any means the acme of comfort. With the tyre inflated to the highest pressure that is safe, it still gets flattened out to such an extent that if you pass over an extra large pebble you very often find it jar against the rim, and it does not conduce to comfort to have to be always on the look-out for this. As regards their wearing properties, of course, quality is an important factor; but, judging by the way the back tyre on my 190lb. machine is wearing, it will last just about a year. Surely this leaves room for improvement? My opinion as to the most suitable sizes is that, as far as reliability goes, the 2in. is enough for a very light machine (such as the 1½ h.p. Clement-Garrard), but for machines from 80 to 130 lbs., 2½in. should be fitted; while, for a heavy bicycle like my own, a diameter of 2½in. should not be too much, especially if a fore-carriage is ever used. These remarks apply chiefly to the back tyre, as my experience is that the 2in. tyre has not given the slightest trouble on the front wheel. A short time ago I had the unpleasant experience of three punctures in 4½ miles, and a burst just as I reached home. Of course, the burst was my own fault in nipping the inner tube, but two hours' grovelling in the ditch mending punctures does not tend to increase one's patience. I know the objections can be raised that it will reduce the speed and cost more to start with; but it should increase the average speed on the whole, as you are pretty sure not to have to stop for tyre troubles, and the extra ten or fifteen shillings ought to be amply repaid by the increased life of the tyre and by the absence of repair bills. At any rate, I do not think many will disagree with me when I say that a 2in. tyre on the back wheel of a heavy and fast motorcycle is an absurdity.—Yours faithfully,
H. E. CARROLL.

Trembler Difficulties.

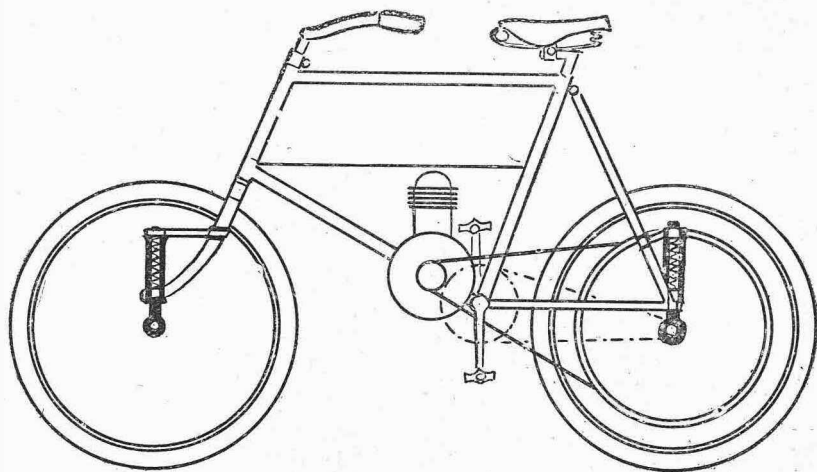
Sir,—Having read in your "Information Bureau" the difficulty Mr. H. N. Spindler experienced with his trembler, I beg to say that I had the same difficulty with an old Werner F.D. machine. On inserting an ammeter between the contacts I found that my coil consumed about seven or eight amperes of current. As the insertion of a German silver wire was of no use, the spark becoming too weak, I decided to make a new coil myself, with the result that it only takes about three amperes, and my difficulties have entirely disappeared. I should advise Mr. S. to test his current with an ammeter (for a very short period), and, if too strong, say, more than five amperes, to adopt another coil. Yours faithfully,

J. H. DUNVIS.

Spray Carburettors and Waste of Petrol.

Sir,—Probably one of the chief causes of wastefulness of spray carburettors is due to what is called the "blowing out" of petrol, which occurs more or less in every carburettor, according to the particular design, and which is a defect almost entirely preventable. I will state my views:—On the piston descending at the beginning of the suction stroke the pressure of the atmosphere opens the inlet valve, and causes a flow of air through the induction pipe, with at first an increasing and then a decreasing velocity; and the total time of this suction stroke is from about 1-20th to 1-60th of a second, according as the engine is running at 600 to 1,800 revolutions per minute. The petrol is drawn in with and by the air, but it is reasonable to suppose that the petrol, being relatively more sluggish than air, does not mix with the first breath of air, but mixes with the latter part, and this latter portion of the air is far more richly carburated than the first; we may further suppose that on the inlet valve closing this mixture is, by way of remaining in the induction pipe, to be mixed with the next incoming charge of mixture; the likelihood of this theory is borne out by the fact that the first and second charges on starting rarely ignite, and the mixture is only strong enough on the third or fourth stroke. Now, the so-called gradual closing of the inlet valve, which in reality will be seen to occupy less than 1-40th to 1-20th of a second, suddenly arrests a column of mixture (the strongest part of the mixture, as I have already shown), and creates a rebound, according to the theory of organ builders, which will blow this mixture back and out of any supplementary hot air or other inlet within reach; and this is quite independent of weak inlet valve springs. The old Daimler motors had a good big chamber, from which the carburettor drew all its air, and into which (whether designedly or by accident) the blown out mixture collected, and was subsequently used instead of being wasted, as it now is so often. Why not return to this very good practice? I feel sure that it would save in some cases as much as 15 per cent. of petrol used. Another point, in view of the scarcity of light petrol, is to have a very short inlet pipe, and heat all air by the exhaust to counteract the intense cold of vaporisation.—Yours faithfully,

GEORGE F. SQUIRE.



Illustrating letter from Mr. H. W. Turner.

The Brittain Pulley.

Sir,—Having read Mr. D. Herbert's enquiries about Brittain's duplex pulley, in issue of September 16th, I have tested one of these pulleys and find there is no belt slip whatever, and the belt hooks do not pull through. In my opinion, the device has all the points the patentee claims for it. Being the owner of a small car, I have not ridden it long journeys, but a friend of mine who has used it tells me he should never go back to V belts again, as he can run 70 or 80 miles without any adjustments to his, and, when necessary, it only needs just one twist of the belt to put it all right again.—Yours faithfully,

H. BUCHANAN.

Various Interesting Motorcycle Items.

Sir,—In many motorcycles it is a job requiring considerable time and patience to detach the back wheel to change tyres, etc. It has occurred to me that this could be considerably facilitated by fixing the wheel in vertical slots instead of horizontal ones, and by having a separate box to carry the step and Main-Hilton stand; an eccentric crank bearing being provided for the chain adjustment. It would then only be necessary to place the machine on the stand, loosen two nuts, and the wheel would drop out and could be replaced as easily. At present, just when the stand is most wanted, it cannot be made use of. With reference to "Mr. Burrows'" letter in your issue of September 16th he may be interested to hear that I am now running with an exhaust valve that has not been ground in for 2,500 miles, and the compression is still practically perfect. I wish to thank your correspondents who recommended Dicks' belting for flat pulleys. I ride a 2½ h.p. Werner machine with non-slipping pulley. The longest run I ever made without taking up a leather belt was 150 miles. I ran a new "Dicks'" belt 450 miles without shortening. With leather belts the cost of belts and leather rings for pulley was 14 pence per mile; with Dicks' belts this has been reduced to something less than .05 pence per mile. Re Mr. Swain's letter, I think that fitting larger tyres securely clipped to the rims is the improvement most urgently needed in the present day high-powered cycles.—Yours faithfully,

H. B. JOHNSON.

The Vibration on Motorcycles.

Sir,—In the September 23rd issue of "THE MOTOR" an article on the subject of vibration and its remedies by "Cyclo-mot" strikes a responsive wave-thought which vibrates in tune to his vibrations on the subject. It seems very strange to me that from the days of the old bone-shaker up to the present time no one has successfully produced a spring attachment fitted where it is most needed, viz., at the axles, to insulate them from the frame. Spring seat pillar makers do not seem to realise that when the rear wheel of a cycle rides over an obstruction or drops into a cavity the direction of motion which the rider experiences is more than 45 degrees to the angle at which the seat pillar plays up and down, so that a binding effect is produced, robbing the rider of the full benefit of the springs. The spring handlebars, on the contrary, are fixed in a plane parallel to the up and down motion of the front wheel (throttle your engine and ride behind the other fellow and watch him shiver, and you will be convinced). If the makers of spring seat pillars want to confer a boon on jolted humanity, let them apply their spring pillar to the axle and frame in an inverted position to both wheels, as per sketch. This idea properly carried out would convert every cycle, whether pedal or motor propelled, into a comfortable machine, besides doing much by taking the severe strain off the tyres to prolong their life. This would perhaps lead the way to lighter machines, as the severe racking that the frame has to withstand at present would be lessened; also the practice of fitting motor sets to roadster cycles would receive an impetus. I am looking forward to see this idea carried into practice and illustrated at the motor Shows this year. I have lately tried that scheme of "Magnetos," which I read about in "THE MOTOR" some time past, of using the exhaust gases for cooling the engine on my California, and think it is an excellent suggestion, for I obtain far more power, though perhaps part of this may be due to the lessened throttling effect of an enlarged escape. I hope soon that we shall have all motor control effected from the handles, and when the perfect two-speed and free engine pulley at a reasonable price appears I hope the makers will exhibit it at the Shows.—Yours faithfully,

H. W. TURNER.

Dimensions of De Dion Engine.

Sir,—I think that if the London Auto-Car Co., Ltd., will refer to Messrs. De Dion et Bouton, they will find that the 1½ h.p. engine is 66 × 70 mm.; and the 2½ h.p., 74 × 76 mm.—Yours faithfully,
CLAUDE A. P. TRUMAN.

Belt Drive Experiences.

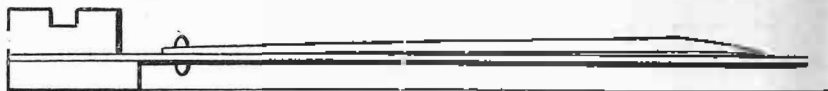
Sir,—I note that in "D. Herbert's" letter in "O.P.V." he mentions Brittain's Duplex pulley, and wants to know if a round belt would run on a V driving wheel pulley. I should think it would; but what induces me to write is his desire to know if the pulley is any good. I got one the other day and have run 30 miles with it. From so short a run, of course, I cannot say much, but during that ride it showed no signs of slipping with the power full on. I had some doubts about the belt stopping on when going up hills, but it did not show the slightest sign of jumping off and ran smoothly and well, and seems to be rather better than worse for having oil on the belt: in fixing I simply took off the old pulley and put on the new with no further readjustment. My machine is a Minerva 1903 2 h.p.—Yours faithfully,

W. R. GAUDIE.

Trembler versus Plain Coil.

Sir,—A question that has been much discussed is whether a trembler coil and wipe contact breaker is superior in its working to a plain coil used in conjunction with a make and break. The use of coils with magneto tremblers has been very much criticised. There is no doubt that the first types brought out proved generally irregular in their working and difficult of adjustment, and vibrating with insufficient speed, were, to a great extent, affected by the jolting on the road. These tremblers were usually of the plain hammer type, and it is unusual to have these fitted to the high speed coils of the present day. The blade we finally adopted was a very simple one, as will be seen by reference to the illustration, but one which has proved itself highly efficient. It is made up of two steel blades, one riveted on the top of the other; each is of a different temper, as, while the bottom one is comparatively slow in its working, the top one vibrates at very high speeds. It follows, then, that while the bottom blade is being depressed to give the ultimate break at the end of its run, the top one has given several breaks, and so produced a "stream spark," a spark that is much more certain to fire the mixture than a single flash, as produced by a make and break and plain coil. The quantity of electric current strictly necessary for the ignition of petrol engines is comparatively very small; but in many cases the quantity consumed is higher than it need be, owing to the contact breaker not having been specially made to work in conjunction with the coil it is used with. It will be evident that a coil having a feeble electrical resistance requires only a short duration of the contact to obtain the necessary ignition, but on the other hand if the contact is of a longer duration the coil should have a proportionate resistance to avoid unnecessary waste of current. We prefer the latter combination.—Yours faithfully,

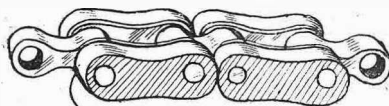
J. LACOSTE AND CO.,
Paris and London.



Illustrating letter from J. Lacoste and Co.

A Satisfactory Combined Belt and Chain Drive.

Sir,—From the queries in your valuable "Information Bureau" I have noticed that many motorcyclists have experienced the same troubles as I have with various belt drives, and it may interest many to know how I eventually coped with them. Coming to the conclusion that the slipping, which was my bane, was due entirely to the fact that the necessarily small circumference of the motor pulley was too small even to permit of a satisfactory belt drive, and yet aware of the objections to an entirely positive chain drive, I devised a compromise between chain and belt drive, which retained (as compromises rarely do) the advantages of each system. I fitted an ordinary sprocket wheel to the motor, but left the pulley on the back wheel as it was originally designed for a flat belt drive; I then had a chain constructed with leather blocks riveted outside each plate, the blocks being slightly larger than the plates so as to provide the necessary frictional grip on the back wheel pulley. I am sending a specimen link for your inspection. With the one chain I have, therefore, a chain drive on the engine and a friction drive similar to a belt drive on my back wheel. From the rough model I experimented with a very serviceable chain made for me by Messrs. Brampton Bros., of Birmingham, the well-known bicycle



Leather

chain makers. I fitted this drive to my F.N. motor-bicycle; the first week I had a little stretch which I had no trouble in adjusting in the same way as an ordinary pedal driven chain is adjusted by pulling out the back wheel a fraction of an inch, and I have since ridden it for some five months in all weathers and on all sorts of roads without the least attention and without its giving me a moment's trouble: this I am told is a unique experience with a belt drive. A by no means unimportant advantage of this system is that the gearing of the motor to the back wheel can be altered to suit the work for which the machine is used by merely fitting a different sized sprocket wheel to the engine. An extraordinary amount of power can be got out of a small engine by having a very small sprocket wheel on the engine and as large a pulley as possible on the driving wheel. (By the bye, this latter is always an advantage even if to increase speed a corresponding increase is necessary in the size of the motor pulley or sprocket wheel as the case may be). Being desirous of having a machine that would tackle hills, head winds, muddy roads, etc., I geared down as low as possible. At first I had a little trouble through the engine overheating, owing to the relative speed of the motor compared to the rate at which the machine was travelling not giving sufficient draught to keep it cool.

This difficulty I got over by fitting a small copper wind catcher or cowl in the shape of a funnel. This machine was only a so-called 1½ h.p. I am now getting a more highly powered machine, 2½ h.p., on which this gearing down will not be a necessity. May I, in conclusion, compliment you on the enterprise and thoroughness of your very useful paper? There is certainly no sport so zealously and amply served by its "organ" as is motorcycling.—Yours faithfully,
"A READER."

Larger Tyres for Motor-Bicycles.

Sir,—I should like to add my word of praise for the larger tyres. I began as a motorcyclist in June, '99. In my first machine, one of the direct driving type, the back wheel was driven by two large horizontal cylinders. This machine played havoc with the tyres. After that I rode machines fitted with so-called 2in. tandem tyres, as no special motorcycle tyres were then made: these tyres, on a small powered machine, I found lasted fairly well. Eighteen months ago I decided to go in for a new machine, and being fully convinced that much of the pleasure of motoring depended upon the tyres, I stipulated for 2½in. tyres, and nothing less. The local cycle makers tried two of the largest tyre makers, but with no success; they could not supply them. The "Scottish Tyre" people were then approached. "Yes; they could make anything that was required." So the order was given for a pair of 2½in. full, but when they arrived, although splendid tyres, they were not quite 2½in., and were therefore returned as not being to order, and the makers given to understand that nothing less than 2½in. would satisfy. They then sent on a new pair of 2½in. full, with a plain compressed band as running tread. The cycle makers had to make special fork crown and back forks, as no makers at that time made the crowns to take so large a tyre. These tyres were and are a perfect delight to ride. I have not spared them in any way. At the commencement of this summer I had a saddle fitted on the strong carrier to accommodate a passenger: the machine in this form has run 1,500 miles (my passenger weighing over 8 stone and I scaling over 15 stone), and up to the time of writing I have not taken out the tyres to do any repairs beyond three double punctures caused by nails. I have not yet seen the tyres I would exchange mine for. The "Scottish Tyre" people know nothing about my writing this letter, nor has there been any communication with them since they sent the tyres. I am writing for the sole benefit of riders. In my opinion larger tyres are essential both for pleasure and economy.—Yours faithfully,

F. CLARKE.

* * A large number of interesting letters on a variety of subjects have been held over through lack of space, and the Editor desires to inform those correspondents whose letters have not yet been published that they will appear as soon as possible. In consequence of the mass of correspondence it has been found necessary to limit the number of letters on any one subject.—ED. "THE MOTOR."

OUR INFORMATION BUREAU.

SPECIAL NOTICE.

The Editor is at all times pleased to answer any queries put to him by the readers, or to receive correspondence from readers upon any motor topic. In consequence of the large number of letters received, however, he must insist upon the following simple rules being strictly adhered to:—

1. Plain writing. Type writing for preference.

2. All letters to be written on one side of the paper only.

3. Questions to be clear, terse, and to the point, without tedious preamble or needless flattery.

4. Should an immediate reply be required, an envelope must be enclosed bearing a penny stamp, and the name and full address of the sender. NOT a stamped undirected envelope.

E. E. Carver (Walsall).—The idea of the wheels being so placed is to facilitate the steering action.

C. J. Lewis Keeble would be glad if any reader could inform him of the address of makers of a small motorcar named the "Petite Bergère." It is a small two-seater, of French design.

C. W. (Nunhead).—To give you the information re building three-cylinder motor of type you mention would mean an article of several pages. There is a good series on the actual construction of a motor running in the "English Mechanic." Laverne's book on the "Automobile" has some good diagrams that would help you.

G. Benson (Peterboro') writes:—I have a Sherwell motorcar, Benz type of engine, 12 h.p., two cylinders. One cylinder has no compression, and will not explode. I have carefully examined and can find no leakage. If you can give me any information I should be greatly obliged.—There must be a loss of compression at the piston rings if you are certain about the valves and seatings. You should have no difficulty in locating the fault, as it is a straightforward piece of work. Remove cylinder and inspect rings for traces of leakage.

5 h.p. Quadrant Motor Query.

B. D. (Arundel) writes:—My 3 h.p. Quadrant 1903 pattern machine misfires at a medium speed: when the lever is far advanced and at the slowest speed firing is regular. I have rubbed the platinum points with emery paper, and the sparking plug and battery are all right. Can you give me any help?—Not enough detail to give accurate opinion. Should suspect any of the following:—Accumulator run down; contacts not close enough together; inlet valve sticking; or not enough gas coming off from carburetter. You might try a lighter grade of petrol as it is a surface carburetter, say some of Carless' 680 sp. gr.

R. Milligan (Hawick).—The connections you require are the following:—C1 and C2 on coil to a separate contact screw respectively; P to positive of accumulator, and negative of accumulator to switch. The spark-plug terminals are those marked B1 and B2.

J. Tinniswood (Workington).—(1) Why not try the "Simplex" belt fastener, made by Herwin and Co., 158, Sandy Hill Road, Plumstead? (2) The P. and R. accumulator would suit. (3) There is the "Diana" lamp (see recent "Bureau"), and a special one made by Salisbury and Co., Long Acre, London. (4) If you fancy a bell get one of Lucas's 3½ in. dome.

Governor and Ignition Details.

W. J. Kennedy (Delgany).—(1) The governor prevents the engine from racing when there is a light load or no load on it. The governor can be cut out of action either by a pedal or hand lever. (2) It is possible to use a plain make and break with a trembler coil, but it is not so satisfactory as a brush pattern contact. (3) The success of the idea depends to a large extent on the fact that one never gets the whole space left by the descending piston full of gas owing to the inertia of the inlet valve and also that of the charge when the engine is running fast. (4) The car you enquire about is moderate grade: if anything it is underpowered for its full complement of passengers for hills of any severe gradient.

Carburetter and Belt Queries.

R. B. (Southall) writes:—(1) Would a surface carburetter, with a surface 15 by 4½ inches, and 180 cubic inches gas space, be large enough for a 4½ h.p. engine, 87 mm. bore, stroke 500 minimum and 1,800 maximum revolutions per minute? (2) Would a 4 to 1 engine gear, with a 4½ h.p. engine as above, be suitable to take a gradient of 1 in 6 without pedalling? (3) Would a flat belt (Dicks' cotton and rubber) on a large pulley be less liable to slip than a V-shape leather one? Also, what width would be suitable? Would two flat belts, one over the other, prevent slipping?—(1) We believe the evaporating surface would be ample if you have the arrangement somewhat on the lines of the old De Dion, with an adjustable air deflection plate, and a warming tube to assist vaporisation of heavy petrol. (2) Yes, if engine really developed power you state by a brake test. Of course, a lot would depend on the length of the hill. If it was a mile long, for instance, and 1 in 6 all the way, it is most probable overheating would result if motor was air-cooled. It could not maintain the power. (3) We hear good accounts of the Dicks' belt, and rather fancy they drive better than a V belt, but it is entirely a matter of opinion as to the merits. For transmitting big powers, however, the flat belt undoubtedly is the most favoured. Should not advise a double belt, if one would prove strong enough, owing to the flexibility being impaired, and consequently the grip.

Melrose (Barnsbury).—You must have about a dozen very small holes (1-64th) drilled in the valve disc, and then carburetter should give good results. Do not invest in the goods you enquire about, the quality is worthless.

"Lacrosse" (Barnet) would be obliged if "Hewbenz" or "Benzite" would tell him if there is any simple device by which the motor could be started from the seat. He finds it very awkward to get at the engine fly-wheel when the back seat is in position.

Carburetter Query.

G. F. Guthrie (Liverpool) writes:—Would it be possible to have a spray carburetter fitted to my 3 h.p. "Rex" motorcycle? What kind would you advise, and can you say what the cost would be? Would it be possible to have spray and surface interchangeable?—An F.N. or Longuemare with throttle and air regulator would suit you. Quite possible to use either spray or surface with a two-way tap arrangement, cost from 30s. to £2.

Benz Ignition.

C. Holman (Streatham) writes:—My Benz car runs with two 2 volt batteries; these are connected up in series (+ to -). Occasionally when insufficient current is evident I want to connect up one or both of spare batteries. Should this be done in series or parallel and is there any danger?—What you really require to do is to arrange the spare cells so that they can be switched on to the circuit and the exhausted ones switched off. You can do this with a two-way switch. Diagrams were given in back issues on several occasions. Placing more cells in series is not good for the coil, tending, as it does, to break down the insulation.

Another Case of Overheating.

J. Harrison (Ledbury) writes:—I have an Excelsior motor-bicycle, 2½ h.p., which I have been using for three months with little trouble until recently. When starting in the morning, after oiling, injecting paraffin, etc., it goes off well for about a minute and then slows down and stops. It takes about a quarter of an hour's hard pedalling to start again, when it goes all right. If I stop for more than ten minutes during a run the same trouble takes place. It will only run up hill slowly on a weak charge of petrol: if more is given it will stop. The compression is all right and so is the electrical apparatus. Can you give any suggestion as to fault?—We believe your engine is overheating through a defect in the carburetter. This appears to be so from the fact that if the motor is given more gas it stops. We do not know if you have a surface or spray carburetter, but should suspect flooding in either case. A leaking needle valve in the case of a surface carburetter, or leaking float valve or too large a jet if a spray, may be the cause. The reason the motor starts after pedalling for some time is probably because it has had time to cool down.

G. F. Waller (Borrisokane).—The motor you refer to has proved fairly good for light work. We should recommend a belt drive in preference to a friction drive on the tyre.

L.F. (Lewisham) writes to ask if any reader who has had experience with the 1 h.p. Ariel machine would send along a few notes on its management for publication in "O.P.V."

"Colonist" (Rhodesia).—From the fact you mention about the plates of one cell being covered with a white fur, it is clear that sulphating has occurred: this greatly reduces the capacity. Best to give the defective cell an extra long charging; the addition of a very small amount of carbonate of soda (washing soda) is sometimes recommended as a remedy. It has probably come about through one cell being left in a practically discharged state for some time.

No Power on the Road.

H. R. Williams (London) writes:—My motor goes very well on the stand, but runs very slowly on the road, then stops, but starts again when pedalled. I have tried shutting off air when starting, but to no effect. My spray jet has seven holes, and have tried six and five, but the engine refuses to work.—A very usual reason for a motor having no power when tried on the road is because the exhaust valve has not been properly timed. (See the article on "Timing," issue 73.) Before doing anything with this, however, see that your carburetter is not flooding; this would cause overheating. The compression should also be seen to.

Differential Gear Trouble.

Buzvine (South Norwood).—(1) Should not advise you to take differential to pieces. It is a job for a good motor mechanic. It is not possible for us to say the reason for the grinding sound on such meagre details. (2) It is advisable to try a finer grade of emery for the valves if you find that the kind you are using scores the seating. The surfaces should be ground quite smooth. (3) Use a fair amount of oil with the emery. (4) If you have the brush contact correctly placed on the shaft it should not reduce the speed in the least. In fact, it is generally found that more revolutions can be obtained when the spark is a powerful one produced by a trembler coil.

Converting Mechanical Break to High Tension.

J. Rennie (Chelsea) writes:—My 1½ h.p. launch motor makes a considerable noise, a great deal coming from the make and break lever, when the spindle falls down sharply on cam. I propose doing away with rocking lever altogether, and in its place putting an ordinary sparking plug. The terminal would also be done away with I presume. In place of cam I would put a wipe contact and use a trembler coil. I could then advance and retard, which I cannot do now. Before I do so I should be pleased if you would let me know what you think of this method or if you could suggest a better.—The method suggested will answer perfectly well: mechanical breaks are always noisy. Be careful to arrange cam in right place on shaft to fire just when piston reaches end of stroke. Then allow rocker equal amount of movement each side for advancing and retarding spark.



Groups of competing cars at Southport.

F. Reed (Bayswater).—The registration fee will be in addition to the 15s. license.

S. A. Blankharm (London, S.E.).—The "Kerry" 1 h.p. is the best value for money of the three makes you refer to. It is sure to turn out satisfactory.

J.D. (Southbourne).—We consider the "Ariel" machine has better workmanship than the other you mention; although there is not much between them as far as general reliability is concerned. The engine of the Ariel is slightly more powerful. Write our publishing department for the back issues: we question, however, if they can supply all you ask for.

An Ignition Query.

C. H. Champness (Walton-on-Thames) writes:—I was much interested in your reply to the query of "H. N. Spindler" in your issue of 16th ult. (page 144), as I have been troubled with exactly the same difficulty, and on a similar machine. At the same time I am not able quite to understand your answer. You say "Take a wire from contact breaker plate to bolt on motor." This I have done and the sparking appears to be much improved, presumably because a better connection is thus made to the battery, and the resistance to the passage of the current reduced. But, you further advise that a length of german silver wire (should this be insulated?) be inserted in the circuit, to increase the resistance. Is not this inconsistent with the earlier part of your reply? I should be very much obliged if you would explain the matter to me.—The idea of inserting a short length of german silver wire in circuit is because some coils are not well designed, and allow too great a rush of current through and consequent heavy sparking. As a rule this current can be safely reduced by the german silver wire, especially if you place your spark plug points very close together. You have to find out by experiment how much wire to use. It must be insulated. There is all the difference in the world between having a good metallic circuit with a certain steady resistance in it and a bad contact resulting from a loose contact plate. This creates a great resistance and now and again breaks the circuit altogether.

P. G. Hall (Belfast).—The following parts will give you satisfaction: Longuemare carburetter, Bassce Michel coil, and "Castle" accumulator from United Motor Industries, 45, Great Marlborough Street, London, W.; either a Dunlop or Bransom and Kent silencer (see advertisements), and Clincher A Won motorcycle tyres.

W. G. Williams (Cork).—The little motor you enquire about is not at all an inefficient one considering the price. We believe it is made by a leading Belgian firm. The other part of the equipment, however, is of very poor quality. Why not have a Clement machine if you want something as like an ordinary cycle as possible?

Light Car Details.

F.S.M. (Limavady) writes:—I intend to design and have built for me a small light car for two passengers. (1) If I make the working drawings, where and how can I get them registered or provisionally protected, and what will be the cost of so doing? (2) I intend using 2½ h.p. air-cooled engines: in order to give as much elasticity to the system as possible, I think of adding to each of these an external heavy flywheel of large diameter, somewhat after the Oldsmobile principle. Will this addition have the effect of altering the normal running speed of the engines? and, if so, will it slow their speed to any appreciable extent? (3) What are the principles on which the normal speed at which a gas or oil engine is to run are determined? For instance, why should one engine run at 1,000 revolutions per minute, and another of similar power run at 2,000? (4) In a belt-driven car, would the principle of slackening the belt somewhat, so as to let it slip to a certain extent on the driven pulley, assist the car materially in climbing hills without changing gear?—(1) Apply Somerset House, London, or nearest G.P.O. (2) Flywheel will not affect speed, except as dead weight on car. (3) The capacity of cylinder, length of stroke, and degree of compression determine speed: the larger the cylinder the lower the speed. (4) The idea is successful in practice, to some extent, as it allows the motor to keep up above its critical speed when hill-climbing. Better to manage without it if possible by having extra power or a suitable change gear.

THE Mission of "The Motor Manual" is a teaching mission. . . Is.

W. O. Loeds.—Neither of the motor sets you mention are worth having; they are decidedly of the cheap and nasty order. Write again, stating requirements more clearly, and we will try and help you.

"No Name" (Godalming).—(1) 1½ h.p. (2) Belt drive V type. (3) Ordinary inlet valve. (4) High tension ignition. (5) Machines in following order of merit: 3, 2, 4, 5, 1. (6) tyres 2in. (7) £40 to £50.

Charging Queries.

G.H.B. (London) writes:—I should be very glad if you would help me with your advice on the following: I wished to charge my 4 volt 20 ampere battery from the lighting current in my house which is 240 volts. I put a 16 c.p. lamp in circuit and connected up + to + and - to -, but after having it on for two hours the battery would not register at all on the voltmeter. After standing a day it registered 3.50 volts. I tried it again another day, and as I kept it on longer it has not recovered as it did before and is now .75. The water is rather milky looking.—Very probably you are deceived about your current, and it is alternating and no use for charging—see "Motor Manual." If direct current you require at least a 32 c.p. lamp in circuit. Also are you certain about connections being right?

Humber Difficulty.

W. T. Maddison (Bristol) writes:—Can you give me any hint as to what is wrong with my Humber motor-bicycle? The engine starts well, but in spite of my adjustments of the levers, the explosions become feebler and feebler and the engine stops in a minute or two, and has to be restarted again and again. The compression is good, the carburetter is clean, the accumulators are freshly charged and there is a good spark at the plug.—We think the trouble is due either to a block in the carburetter supply, or the inlet valve has gone wrong. Of course, there is just the possibility that your carburetter floods. If this was so it would mean that you get too rich a mixture and engine gets overheated and then when it cools it will start up again and so on. Let us know how you get on.

An Accumulator Repair.

P. S. Lewer (Cardiff) writes:—The negative terminal on my Dinin accumulator has been loose for some time past without any ill effect until just recently, when the spark suddenly gave out, and as I could not find out what was the matter on the roadside I had to pedal the machine home, where I found that in all positions, except one, of this terminal no spark is given, but by pressing the terminal a certain way the accumulator is shown to be well up to voltage. I find it impossible to fix the terminal securely in this position, and shall be glad to know what you advise me to do. It is a splendid accumulator, and, although it has not been charged for a month and has taken me about 400 miles since, it still shows well. I presume the plates must be touching. If so, can I get it repaired, and at what probable cost?—It all depends whether it is merely the shank of the terminal loose in the lug, or whether the lug is broken inside the cell: most probably the former. You should unscrew the terminal right out, clean the surface of the lug, screw in again, and then very carefully solder round the lug and lower part

of terminal. If you cannot make a job of it, take it to a local firm of electricians, or get a tinsmith to do it to your instructions.

Carburetter Difficulty.

J. Thorburn (Newport) writes:—I have a 2 h.p. F.N. motor-bicycle. My troubles are these: (1) At any speed above 15 miles an hour the engine overheats and almost stops. Can this be avoided? (2) The belt, a flat one of very good leather, begins to slip at the end of about every 14 miles, and I have to get off and put castor oil on it. Is there any way to avoid this slipping? Is there any dressing for belts better than castor oil?—(1) Most probably you have not enough air to prevent mixture being too strong. Have 3in. hole drilled in supply pipe and sliding clip over it so as to allow of more air at full speed. (2) Nothing better than castor oil. Try the "Dicks'" belt, they are cheap, about 1s. 6d., and grip well, or you can have a leather face on motor pulley (riveted on).

Difficulty in Starting a Benz.

H. Jackson (Hornsey) writes:—I have a 4½ h.p. "Star" Benz car which I have great difficulty in starting, sometimes taking more than half an hour before doing so. The compression is good, and timing and spark are perfect, so I do not think it can be attributed to those causes. It has a spray carburetter with throttle (Star Company's own pattern) with an adjustable cone above the jet: I have tried the cone at all distances from the jet, but the only effect it seems to have is to scot the sparking plug when adjusted any distance away from the jet. Do you think that if I were to enlarge the hole in the jet a shade it would effect an improvement?—It seems clear to us that you do not get a mixture, owing to defective carburetter: you may have too much air at starting. Doubtless jet would do with enlarging just a shade; make sure there is no obstruction in the petrol supply first, and see that the inlet valve is working freely.

Ignition Query.

J. Normand (Arbroath) writes:—I have a 2½ h.p. Brown motorcycle and Liberty side trailer, and, as it takes the full power to run, it is important that everything be in good order. I have had some trouble with misfiring, and the platinum points at contact breaker burning out: the former I have cured by fixing a wire from contact spring to frame; but the burning out of platinum points is still very annoying, and I can get them to spark with oil on them. (1) Would you recommend an auto-trembler? If so, what would it cost, can it be easily adjusted, and where can one be got? (2) In adapting an auto-trembler would my present Bassee and Michel coil be any use? Or have I to use two coils with an auto-trembler? (3) My present gearing, 4½ to 1, is weak on hills: what gear would you suggest?—Are you sure the contacts are platinum? If genuine, then it can only be that you get too much current through the coil. The oft-recommended dodge of a foot length or so of No. 18 german silver wire in the current frequently effects a remedy; only set your plug points a shade closer together. (1) Auto-tremblers are all right, but it will pay you to see why you do not get good results with present system. Auto-tremblers can be obtained from Peto and Radford's, Gamage's, and other accessory firms. (2) Same coil would do. (3) 4 to 1 gear would be better for hill climbing.

"Enquirer" (Streatham).—Specification you send is in the main a good one. Gear is rather high, make it 1 to 6. Have "Castle" spare cell in addition to other make, and also go in for an "Elswick" belt and N.A.B. spring seat pillar. Price £40 if locally built.

W. R. Potts (London, N.)—There is nothing very extensive to be said about the surface carburetter, as the thing is so simple in construction and action. If you will look up back issues you will find an article specially on the various forms, and numerous hints have appeared from time to time.

Belt Driven Motor Difficulty.

C.A.W. (Epsom) writes:—I have a belt driven motorcar, the belt of which is full of grease, and it is evidently not properly prepared, and as soon as it gets hot it simply slips round on the pulley, and I can hardly get up any sort of hill. I have soaked it in paraffin, and washed and scraped it without any improvement. Is there anything I can do to make it useable? The machine is a 9 h.p. Delehay car.—Why not give "Plaxine" a trial? It is considered a good remedy for slipping belts and clutches. Gamage's supply it.

Various Motor Details.

J. (Manchester) enquires:—(1) Does resin do any harm to a V Lincona belt if used to prevent slipping, and is paraffin oil injurious if used to remove grease from belt? (2) My motorcycle is fitted with a De Dion-Bouton engine supposed to develop 2 h.p.; what is the actual horsepower of this machine? (3) The engine is fitted with a 3in. V pulley measured over all; will it lower the hill climbing power much if I fit a 4in. pulley? (4) Should oil escape through the engine case? if not, how can I prevent it? (5) The carburetter is a single chamber Longmore pattern; could I improve the machine if I fitted another? if so, please recommend one.—(1) Resin is injurious, also paraffin; use petrol sparingly. (2) These motors do not give a h.p. on the brake test; about 1½ actual. (3) Yes, inadvisable to fit larger pulley. (4) Using too much oil. (5) See the new F.N. with throttle and air lever. advertisement in "THE MOTOR," by Bernstein's.

Overheating and Accumulator Repairs.

P. H. Mills (London) writes:—(1) Could you suggest a reason for my 2 h.p. motor-bicycle overheating? I throttle down the gas to a minimum, also keep the petrol tap nearly turned off and the F.N. carburetter air vent open, and yet, after running about five miles, the cylinder head gets terribly hot. Can you tell me what it is caused by? (2) I was unfortunate enough to drop my accumulator off my bicycle, with the result that I broke two of the terminals off. Is there any way I can fix them on again? and, if so, would the accumulator charge up again all right?—(1) We believe you require another air inlet in supply pipe; your mixture is certainly too strong, and this causes the overheating. (2) Very difficult to refix terminals if lugs do not project outside case; if they do, a good tinsmith might solder them on. If not, you must get a new battery. The battery may be none the worse if the terminals have not been injured or knocked out of position.

"Free Engine" (Wolverhampton).—Write up for particulars of the Clement-Garrard two-speed machine. This is probably the one that will come nearest your requirements. The Humber machines can be supplied with a free engine and hand starter. Starley Bros., of Coventry, have recently introduced a two-speed machine fitted with worm gear drive.

"New Hand" (Sheffield).—You can do better in the specification, thus: have Chater Lea or Eadie fittings, Lycett's "La Grande" saddle and N.A.B. spring seat pillar; pneumatic saddles are not the acme of comfort for long rides. Failure of ignition is most to be guarded against. See that your coil and accumulator are the best possible, and always carry a well-charged spare cell, either a "Castle" or P. and R.

"Motor Student" (London, W.).—The difference between hardened steel and case-hardened steel is this: Tool steel is what is known as a high carbon steel and can be hardened throughout its thickness by heating to redness and plunging into water, whereas case hardened steel is of a lower grade known as "mild" steel, and can only be surface hardened by a special treatment known as carbonising. The interior remains in a tough unhardened condition which is an advantage for many purposes as it is not easily broken.

"Constant Reader" (Doncaster).—The battery you speak of is what is known as a single fluid bichromate type. It can be used for charging up a 4 volt accumulator, but not so conveniently as with the double fluid Fuller type. The best solution you can use is 6 ozs. crystallised chromic acid in each jar, then fill up three-fourths with water and add 3 ozs. strong sulphuric acid to each jar of solution; you will probably have to use a wire resistance in the circuit as this type of cell gives too big a rush of current for charging a small accumulator.

Speed Gear, Dynamo and Tyre Queries.

"Gear" (Willesden) writes:—It seems strange that no makers of motor-bicycles have attempted to utilise the half-speed shaft of the four-stroke motor to provide a lower gear when required for hill climbing. Please explain what is the reason for this. (2) Is a spark gap applicable to a magneto (Simms) motor? (3) Can a smaller sized tyre (1½ in.) be used for the front wheel of a Minerva motor-bicycle without serious disadvantage?—"Gear" may be quite sure that inventors have taken the fact that the half-speed shaft might be used into full consideration: One firm in fact uses this shaft to transmit the power to the rear wheel of machine, and gain, inasmuch as they can use a large pulley to reduce belt slipping; but it has only been used as a single speed so far. The same detail difficulties would arise in design as though gearing down from the main shaft. (2) No, it is quite impossible to use a spark gap on a "Magneto," for the simple fact that it would permanently break the circuit, and the dynamo could not generate any current. (3) We should not care to recommend the use of a smaller tyre from a comfortable riding point of view, although it would not affect the actual running of the machine: the tendency nowadays is to increase the size of the tyres to lessen vibration.

F.S. (Bayswater).—(1) You could choose between an F.N. with throttle valve and a Longuemare; they are both good. (2) At the price you mention you could get a very good machine built for you by a local man. The 2 h.p. Minerva motor would prove as good as any. (3) The ignition gear (Eisemann) you speak of we have heard good accounts of. It would not be a difficult matter to adopt it. (4) You can get a Dunlop silencer made to suit either a 2½ or 2½ h.p. motor. (5) Yes, it is a good precaution to cover air intake of carburetter with gauze to keep grit and dust from being drawn into the cylinder.

Strength Value of Springs.

M.M. (Southsea).—No hard and fast rule can be given as to the most suitable tension for valve springs. A very strong spring on the exhaust has both advantages and disadvantages, the latter being the greater. It will shut quickly, but puts a strain on the 2 to 1 gear and wears the cam. Again it is more likely for the valve head to pull off when the stem gets burnt to some extent. It is entirely a matter for experiment to find the most suitable strength of spring. As a rule exhaust valve springs are on the strong side, and in many cases a slightly weaker spring could be used without affecting the power. Inlet springs require to be very carefully selected as a slight difference in tension makes a considerable difference in the power given by motor.

Missing Fire at Slow Speeds.

C. J. Cowie (London) writes:—My motor-bicycle is giving me trouble, the cause of which I cannot determine. At anything over 15 miles per hour it fires well, very rarely missing: below that it fails at almost every three or four revolutions. The compression seems good, and the sparking perfect. I have a Longuemare carburetter, with additional air lever. It was cleaned out and run 150-200 miles since, and I am using Pratt's A fresh motor spirit. The inlet valve spring has been renewed, with no improvement. In order to run I have to use what seems a strong mixture, and engine overheats; at least, I cannot put my hand on it, although it does not get red hot. When the engine is warm I find it almost impossible to go slow, but at a good pace it romps up hills with half throttle.—If the motor fires well at high speed it is hardly likely that the sparking is at fault. Should be inclined to suspect carburetter. It is rather troublesome to get it to suit some motors well. The cause of your trouble appears to be that, owing to an unsuitable size sprayer, too much petrol gets through, and only at high speeds can you get anything like enough air to give an explosive mixture: even then it is too strong, from the fact that the motor overheats. The remedy is to use more air or less petrol. The fitting of a smaller jet will effect the

latter; that is, a jet with fewer slits. Another plan is to drill several small (¼ in.) holes in the base of the carburetter, and fix a regulating diaphragm over it.

ANSWERS BY POST.

In addition to answers appearing on these four pages the following correspondents have been replied to through the post:—

Thursday, October 1st.—J. W. Gadsby (Birmingham), J. D. Higgin (London), C. H. Reynolds (Godalming), A. Smith (Withernsea), A. K. Brandreth (Crewe), A. A. Rupprecht (Hounslow), H. Strange (Heywood), E. Watson (Ashford), S. B. Lodge (Bexley), T. Andrews (London), J. McKernow (Cumnock), T. Crook (Preston), W. H. Ball (Newcastle, Staffs.).

Friday, October 2nd.—R. J. Jones (Abergele), C. M. Hill (Wembdon), S. Wellby (Petersfield), J. Harwood (Blackburn), C. J. Still (Tavistock), F. G. Brighturst (Margate), C. E. Jenkins (Cardiff), H. W. Barnhard (St. Hampstead), F. Sowden (Clayton), J. S. Mayne (Aylesbury), E. R. Webb (Worthing), J. W. England (London), H. G. Brenan (Cirencester).

Saturday, October 3rd.—T. W. Greaves (Newbury), J. H. Baxter (Bristol), Snodgrass and Brown (Paisley), H. Pollard (Frome), P. T. Blackhall (London), F. Stanbrough (Peckham), W. French (Brighton), D. W. Holway (Hammersmith), W. H. Littleport (Ely), R. A. Lever (Manchester), J. Hancox (Doncaster), M. Metzger (Marylebone), H. Newton (Newcastle-on-Tyne), W. F. Copeland (Stoke-on-Trent), J. A. McBean (Johannesburg).

Monday, October 5th.—J. Tassell (Woolwich), E. J. Harding (Cardiff), H. Burden (Coventry), A. Roby (London, N.), F. Williamson (Burton), D. S. Fraser (London), A. R. Mac (London), B. H. Brunton (Mercia, Spain), F. Chester Master (Highworth), M. A. Prickett (Sandy), A. Cox (Keinton, Mandeville), H. Collier (Abertillery), J. Foggo and Sons (Edinburgh).

Tuesday, October 6th.—J. W. Scott (Penzance), N. F. Osborne (Portsmouth), C. B. Penniford (Brighton), F. Morgan (Chilwell), A. M. Bellan (Christchurch), H. Thomas (Salford), E. Watson (Ashford), G. A. White (Chippenham), A. Scott (Leeds), F. W. Higginbotham (Dublin), Alb. Hunt and Fourmy (Berkhamstead).

Wednesday, October 7th.—E. A. Robert (Winchcombe), H. Barnes (Petersfield), B. Silvester (Brixton), A. Caffin (Ham Street), W. Carter (London, S.E.), A. B. Wood (London, S.W.), A. Wilson (St. Andrew's), J. Lloy (Bootle), C. E. Peebles (Putney), J. Brown (Well Hall), H. Robert (Deanshanger), Crabtree Bros. (Lancaster), N. Pearce King (Monmouth).

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