

## HOW I MANAGE MY 2 h.p. MINERVA MOTORCYCLE

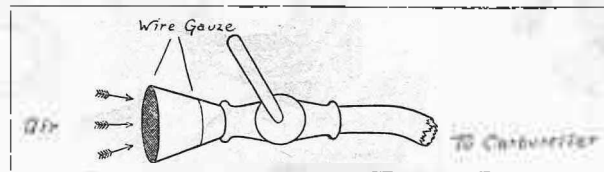
By "LUBRICO."

My machine is fitted with a 1903 2 h.p. Minerva engine and spray carburetter, and as there are so many of these motors on the road, perhaps my experiences, etc., may be useful to other riders and may induce them to give their experiences and those little hints and ideas which help to increase the efficiency of the machine. When my machine was delivered from the makers, I went thoroughly over it, tightening nuts, readjusting the wheel bearings, etc., before taking it on the road. The petrol capacity on some machines is an unknown quantity, makers saying "Petrol for so many miles," instead of so many gallons, quarts, etc., so I measured my tank by putting in one quart at a time and making a file mark on the float wire each time it rose: I have now only to unscrew the float wire cover and by counting the notches on the wire can see at a glance how much petrol is in the tank and how much I have used. By graduating the wire to smaller quantities, the rider can tell exactly how much petrol he has used for a given number of miles and thus see whether he is running his motor economically or not, whereas otherwise he would have to empty his tank (a messy job in the "Minerva," as the outlet is not a tap, as it should be, but only a nut) and measure the petrol that remains. The next detail that claimed attention was the float, which rattled from side to side in the tank; I remedied this by soldering to the top of the float tube a piece of brass wire projecting about  $\frac{1}{8}$  inch, and then when the cover is screwed on tight the float cannot rattle about. This, in my opinion, is better than passing a wire right down the tube, as it might in time perforate the float, which could not be remedied without opening out the tank.

The accumulator compartment was next lined with waterproof felt, thickly at the bottom and at the sides, and was stuck on with seccotine cement (obtainable at most chemists); then, to facilitate joining up the wires quickly, I marked the + wire with red paint on the insulation, so that I do not have to trace along the wires to tell which is which. This is more difficult than it seems, as in this make of machine both wires come through one hole in the top of compartment under the top bar of frame. The machine on first taking out on the road ran very satisfactorily, but after running it some time the power fell off considerably, and this I traced to overheating through using a too strong mixture. The extra air inlet in the carburetter (F.N. type) is only a small hole covered with a dust cap (which soon gets lost after using a few times) and is difficult to reach from the saddle; it must be closed to start with, to get a suction on the jet, and afterwards opened when the engine is well started.

After experimenting, I remedied the difficulty with very little trouble by enlarging this air inlet hole and taking a brass tube from same to top bar of the frame, over the tank, where I fitted an ordinary brass tap with a lengthened handle, and to which I screwed a small brass funnel with two thicknesses of wire gauze to exclude dust. The tap and funnel are fastened to the top tube of frame by a small strap and a piece of cork put between.

When starting the tap is closed, and as soon as the engine is running it is opened and kept as full open as possible; the draught through the funnel rushes through the tube to the carburetter, and I found that the petrol consumption was very considerably reduced and that the engine kept much cooler, which means an increase of power. It has been suggested to use pump tubing for this purpose, but I may say for the guidance of others that I used some early this year and found that the bore of the tube was not big enough, so I replaced it by 3-8th diameter brass tube, which I have had in use now for seven months. The belt, which was of twisted raw-hide, was very troublesome at first through slipping and stretching, so I gave it a liberal dressing of castor oil, and then hung it up for a few days with a weight of about 70 lbs. suspended from it, after which it gave very little trouble, but I keep the surface always well cleaned, and take care to dress it about once a week with castor oil. The belt



hooks I make from 1-8th in. thick silver steel, which costs 2s. per lb., or 2d. per length of one foot (for  $\frac{1}{4}$  lb. you get about five lengths); I make them as follows: heat wire red-hot and bend it to shape with the pliers; when cold, cut it off and smooth the ends with a file, then heat it at the end of a wire to a dull red and dip it into a little bath of paraffin oil, after which it is ready for use; I have never had one of these hooks break or pull straight. I might add that I make these fasteners a little longer than those sent out by the makers. I have noticed in this pattern of machine that if the spark plug wire is at all long, it hangs down and touches the hot combustion head and the insulation soon melts through, causing a short circuit; when this occurred to me I found it out by noticing a smell of burnt indiarubber, and so soon traced the fault. The prevention is obvious—either to see that the wire is not too slack, or to fasten it with a loop to the throttle-valve, so that it cannot touch the engine.

In conclusion, I may say that I have had no trouble at all with the tyres, having self-sealing air-tubes fitted, and so only have to look the treads over occasionally, pull out thorns, etc., and stop up any cuts with one of the preparations sold for the purpose.

## SOME TOURING NOTES.

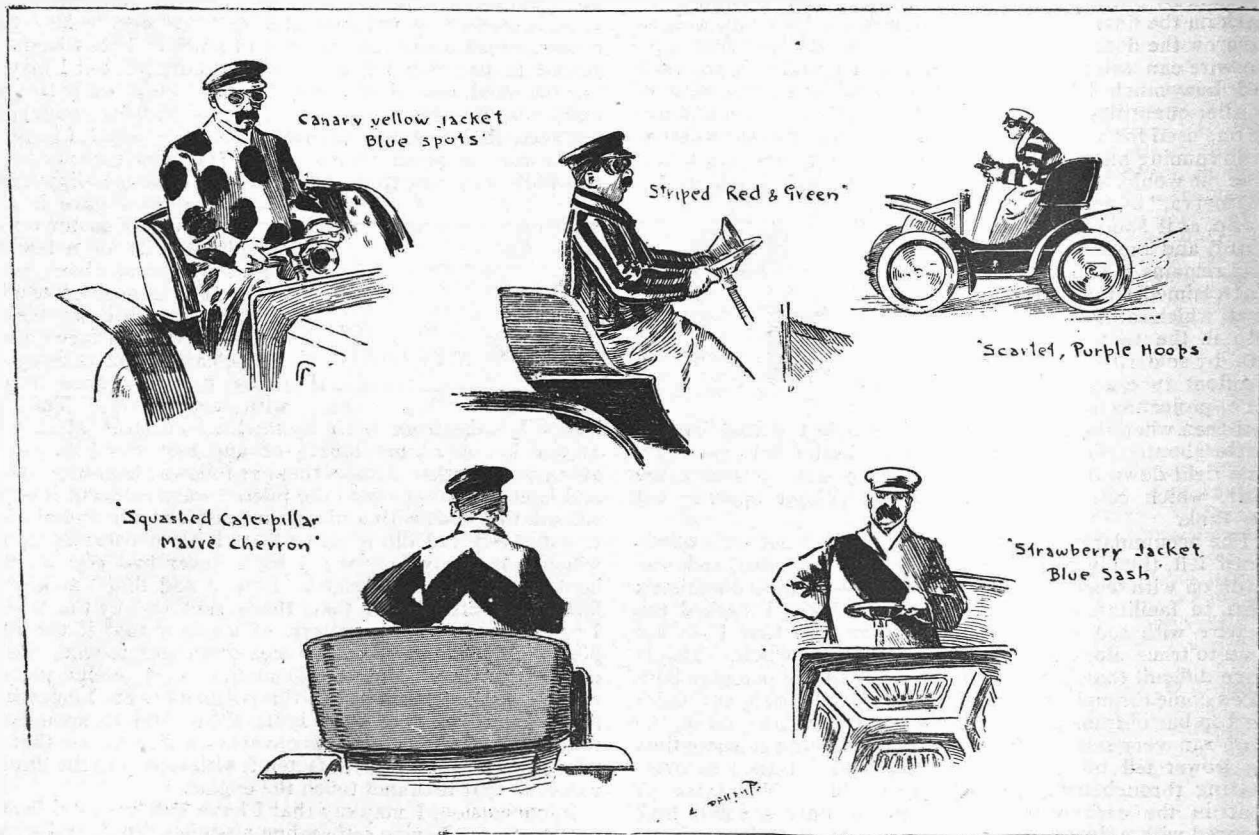
As the boat-train steamed out of Victoria and I was settling myself comfortably in the corner to peruse at leisure an issue of "THE MOTOR" some weeks back, my eye fell on Mr. J. Lucking's letter in "O.P.V.," in which he asks for information on motorcycle touring in Holland and Germany. Thinking that the subject merits more than a brief reply to an individual correspondent, and that it may assist the fraternity of motorcycling, more especially those who are contemplating a Continental tour, in choosing their venue, I venture to offer some of my impressions as a motorcyclist in both of these countries.

Local colour is certainly not lacking; I am penning these lines in the South German express, which is tearing through Holland at a steady bat of forty miles an hour or so, and there seems more than a possibility that it will have passed the frontier before I have finished. So our worthy Editor will growl when these lines reach him, for forty miles an hour is certainly not conducive to legible writing.

We have stopped for an instant at Bostel, and the singularly unprepossessing women who sell refreshments at the stations have come aboard with little cardboard trays of the most delicious fresh strawberries one can imagine. Off again! the country losing a little of its previous monotony, as it becomes more wooded, although still as flat as ever. But now it is time for me to tell how to get to Holland.

The roads all over Holland being very much alike as regards quality, this consideration need not affect the choice of the port of entry. There are two well-beaten tracks—Flushing, and The Hook of Holland—leading through Hol-

land to the Continent generally, and more especially to Germany. A line having many advantages for the motorcyclist is the Batavier, which runs steamers direct from Blackwall to Rotterdam in fourteen hours or so. I recently made use of this line when taking my motor-bicycle for a short tour in Holland, and find that it has many advantages for the motorcyclist. To begin with, the first-class return fare from London to Rotterdam and back is only £1 6s., and the charge for the machine is 4s. return, while there is plenty of room on board to stow it away safely, which is more than can be said for the mail boat. I speak feelingly, for the way in which my own machine was knocked about coming over last year still rankles in my memory. Well, first and foremost the tourist who intends visiting the Continent should join the Cyclists' Touring Club: the advantages it offers are too well-known to need recapitulation. Assuming our friend to have arrived at one of the three chief ports of entry into Holland—be it Flushing, The Hook, or Rotterdam—he will have to pass the Customs. The duty on motorcycles is 5 per cent. ad valorem: this would, of course, be returned when the machine is re-exported, but—and it is a very big but—if the Customs officials be clearly given to understand that our friend is a bona-fide tourist, if their attention be drawn to the used condition of the machine, and if the C.T.C. ticket be produced, this duty will hardly ever be insisted on. It would be distinctly inconvenient for the motorcyclist who intended leaving the Continent by a French or German port to obtain repayment of the duty paid into the Dutch Customs. He will therefore



### IDENTIFICATION.

Just another word: How about colours issued to car owners, as issued to jockeys, Australian cyclists, etc.? It would lend a charming touch of colour to the road, and would effectually banish the too serious number.



**CIRCUMSTANCES ALTER CASES (1).**  
*He was of undaunted courage. Fiercest beasts of three continents had fallen to his prowess.*

be well advised to take pains to explain clearly that he is a bona-fide tourist and indicate his destination. This took me half an hour or so on the occasion to which I have referred, but the ultimate result was satisfactory, and I got through scot free. If the tourist speaks a little German so much the better, as the Dutch officials often understand this language better than they do English.

All my experience of Continental touring goes to show that the few necessities required should be carried on the machine, preferably on a combined stand and carrier.

I may mention that as The Hook of Holland is near the mouth of the Maas, and Rotterdam is some way up the same river, the tourist will only have to ride up stream along not very good or pretty roads if he goes to the former. Consequently everything points to either Flushing or Rotterdam as the best choice for the entry into Holland. Now, speaking in the light of recent experiences and present prospects (I am writing this in Holland, remember), I do not advise that more time should be spent in Holland than is necessary. It is possible to cross Holland in one day, if desired, and as the country is absolutely flat, with a most depressing flatness, and as there is really very little to see outside a few large towns except endless fields, canals, and cattle, I for my part do not fancy it as an ideal touring ground for the motorcyclist. After all, mounted on a machine to which hills make no difference, the motorcyclist can seek out the picturesque; and without hills, ravines, and valleys scenery in the true sense of the word has no existence. (N.B.—We have just passed Gennep). The harbour at Rotterdam, with its countless swarms of barges, lighters, and its mercantile marine from all parts of the world, is certainly worth seeing, and if our friend be of an engineering turn of mind he will not fail to be interested in the dry docks and ship-building yards which abound on either bank of the river. But he will be well advised to spend not more than a couple of days in reaching the German frontier.

The guard has just popped his head into our compartment and announced in a variety of languages that at the next station is the German frontier with its obligatory Customs examination. As I pen these words another obliging guard volunteers—for a consideration, of course—to carry my bag; very nice of him, to be sure: I decline with thanks. After all, one does not need much for a three days' journey, and I always manage to reduce my luggage to a minimum!

All these interruptions combine to make me wander from the point which is to give our friend such information as may

be useful to him, but here we are at Goch, and I must break off and attend before the "Herren Beamten." The examination of my solitary bag is over: it did not take a minute, of course; but I couldn't escape that porter, he would insist on carrying my bag—seized it from me, in fact, wouldn't hear of my carrying it myself, and has just gone away supremely delighted with the princely "douceur" of twenty pfennigs, about 2½d. to be exact, which I gave him. We have been exactly three hours in crossing Holland, so it will be easily seen that two days means easy running for the motorcyclist. It is time to set our watches one hour forward: Dutch time goes by Greenwich, German by Mid-European. The North German train, which left Flushing ten minutes later than ours, has just come in, and we pull out: we are in Germany now.

By the way, I notice that the Dutch locomotives are made by a Manchester firm, another triumph for British engineering. The Dutch roads can hardly be described as first-class: they are better than the Belgian, worse than the German. For the most part the roads in Holland are composed of small bricks laid transversely; but owing to lack of attention these, in time, get out of alignment, the rider of a motor-bicycle with the tyres pumped up hard experiencing a succession of mild shocks on striking a badly-kept stretch. On the other hand, this peculiar method of road-making affords a hard unyielding surface which is distinctly advantageous in wet weather; and the risk of puncture on roads made of brick is naturally minimised. A stone of any description is a rarity in Holland. In Amersfoort I was shown a block of granite, weighing perhaps a ton, which is supposed to have been brought there by some glacial upheaval, and now occupies the centre of the market-place. I have already alluded to the flatness of the country. Dutch makers of motor-cycles gear their machines far higher than we do in England, as there is no hill-climbing work to be done.

A further reason for cutting a stay in Holland as short as possible is the absurdly high price charged for food and accommodation. It is a common saying that a florin (about 1s. 8d.) in Holland only goes as far as a mark (1s.) in Germany, and I find from experience that this is perfectly true. Moreover, except in the large towns, the accommodation is bad, and the food worse. I lived mostly on Dutch cheese. The only cheap things are the cigars!—and the gin!

(To be continued).



**CIRCUMSTANCES ALTER CASES (2).**  
*Alas! but the veriest cur in town would reduce him to a paroxysm of abject fear.*

## CYCLOMOT'S CAUSERIE.

### On Variable Gears.

The two-speed gear is, without a doubt, the next development in the motorcycle, although, in my own opinion, the need for it will not prove so pronounced in the motor-bicycle as it will in the motor for two persons. But it must not be overlooked that the tendency towards the two-seater will become more and more pronounced every year. The motor-bicycle is really not a sociable vehicle. The bicycle was not ideal by any means, but it was a king to the motor-bicycle. Should the machines have any great difference of power or should one rider be of much lighter weight than his companion, a couple of friends can have little hope of keeping together throughout a ride. And yet a greater factor is the virtual impossibility of feminine companionship with motor-bicycles. Not one woman in a hundred thousand could be a success on a motor-bicycle; and so the best way, if separate machines are desired, is for the lady to have a free-wheel cycle and consent to be pushed by her male motor-propelled escort. But, at the best, it is an arm-aching job for the latter. Man being a gregarious animal, he will, as soon as the novelty of motor traction has worn off and as soon as he has had a few stoppages on the road and has learnt how to avoid them in future, always commence to sigh for companionship—preferably feminine, and this has accounted for the introduction of the trailer. The fore-carriage goes one better, and this is the machine which can conveniently do with a free engine, a clutch and a two-speed gear. In the case of a car, we should never dream of designing it with one gear so that, when the clutch was let in, the engine had to start the car on its top gear. And yet this is what we are asking of the fore-carriage to-day, the only difference being that the driver can run alongside and get a certain amount of momentum on his machine before vaulting into the saddle, but, all said and done, it is an undignified proceeding and one calculated to create a bad impression if the engine cannot be persuaded to start readily. With my Humber, I can see that, if there were a lower gear for starting purposes, I should have practically a little single-seated car, and the pedals and chain could be discarded, for I find very little need for them. The machine whips me up anything in the nature of hills that I have encountered so far, and I feel more and more convinced that my old prophecy about the overthrow of pedals is rapidly coming true. When, as in traffic for instance, the need arises for shutting off the power, I simply have to throw the clutch out and thus disengage the engine from the road wheel, but leave the engine running. Thus for restarting there is no need for pedalling; all that one has to do being to quietly let the clutch in again just as on a car.

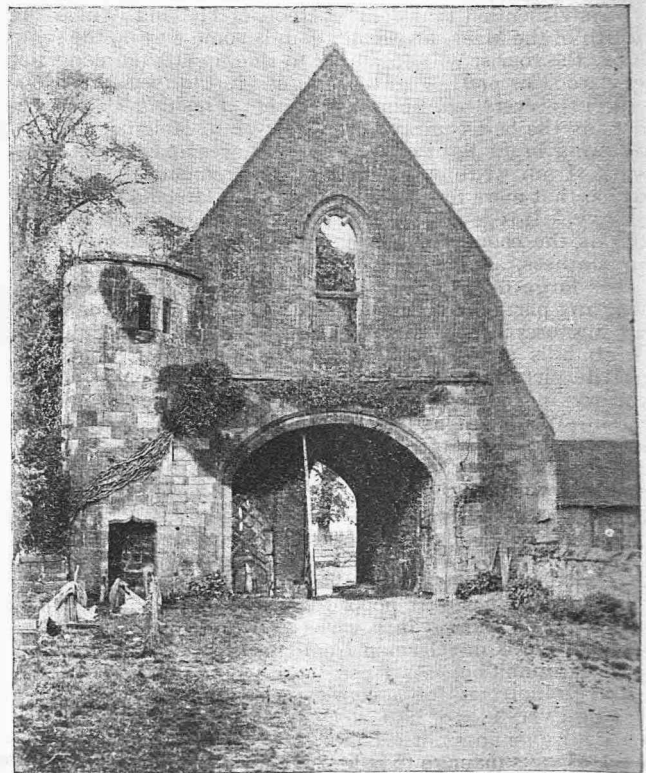
### Reliability Attained.

The only possible use for pedals is in case of a breakdown; but the rider must learn to avoid such things or to be able to put matters right in the case of a stoppage on the road just as if he were handling a car. That one can reach this stage of proficiency is shown (although I hate anything which may savour of boastfulness) by the fact that, starting with the motor-bicycle last January twelvemonth, I had finished my troubles before the following Whitsun, when I was hung up with a broken exhaust tappet. Since that time—about eighteen months—I have never once been stranded! Such stoppages as I had last year on my Minerva were for belt hooks pulling through and for one or two fractured electrical connections, all of which were quickly rectified. This year, on one occasion, I got a piece of dirt into my petrol supply pipe on the Humber and had to stop to remove it, when I found the engine losing power. Beyond this, the Humber has never compelled me to dismount, and I consider that a striking testimony to the excellence and reliability of the modern machine. There may have been some luck with my tyres, but a lot can be done by keeping the tyres well

inflated, watching where one is going and by careful inspection after each ride, followed by the cleaning and stopping of any bad cut or hole.

### A Three-speed Gear Desirable.

I thus come back to what is practically the only need (if we assume that means will be adopted to check the vibration)—a two-speed gear. Now there are two grounds on which a change of gear would be useful: in starting and for hill work. In starting a fully loaded machine from rest it is obviously essential that the gear should be fairly low, say one to give a speed of five miles an hour. But when climbing hills I believe that it is only necessary that the reduction from the direct drive should be small, so that, assuming that the top speed is 25 miles an hour, the second speed should be 20 miles an hour; and this reduction would be enough to just take the rough edge off the work, and it would have this advantage—that the reduction in vehicle speed would not be so great, with a constant engine speed, as to cause overheating. In the case of the low starting gear, it would only be in use for a few moments, for, when the driver had got under weigh, he would change as quickly as he could to his next gear. We thus inevitably come to this point—that the real need is not for a two-speed gear but a three-speed, and this is what I hope the trade will set themselves to provide us with in the case of the two-seated cycle. The solution of the problem will be found in the Crypto epicyclic gear, and in the fact that there is plenty of room in which to work in the case of the fore-carriage or any other like machine, and that it is not essential that the weight of the device should be reduced to a few ounces.



Otford Church (St. Bartholomew's). Date on old oak panel 1637, but church is very much older.

## MOTORS AT THE RECENT MILITARY MANŒUVRES.

The Motor Volunteer Corps were mobilised on Saturday, September 12th, to join the Regular forces for the actual fighting for the manœuvre period. They mustered between 120 to 160 strong, both cars and cycles, the latter being in a distinct minority. The headquarters of the corps were at Marlborough, where they remained throughout the week. The broad main street of the town offered a fine parade ground for the motors, and on one occasion no less than fifty-three cars could be counted aligned in a most military fashion down the road. A detachment of cars and cycles were told off to the umpire staff of each Army Corps, but the bulk remained at the disposal of Lord Roberts and the managing staff. It thus came about that not a single Motor Volunteer was employed as a combatant, and this fact alone deprives the Motor Corps of all claim to be regarded as a serious military organisation. It is not the fault of the corps at all; yet it still remains ridiculous to talk of their great value in the warfare of the future, when they are not given any opportunity of doing any real military work at peace manœuvres.

The motorcyclists naturally stand on a different footing, and their work was distinctly more soldier-like.

### THEIR DUTIES CONSISTED IN CARRYING MESSAGES OR DESPATCHES,

as they proudly called them, from various parts of the manœuvre area to the umpire headquarters. This part of the motorists' work was thoroughly well done, and the machines came—with a few exceptions—well out of the ordeal. But it is not too much to say that they hardly had the roughest jobs, and that their task was not so hard as it might have been, had they been attached to a combatant general's staff. For the most part, they had good roads to traverse, they had fixed points to steer for and, generally, they could travel by a route clear of a column of troops.

The motorists attached to the staffs of the combatant generals were very few in number—half a dozen cars, the private property of members of the staff, one or two cycles, completed the muster. From the doings of these few (and they were scarcely treated seriously by anybody except by their chauffeurs) it is hardly possible to draw any decisive conclusions as to the military value of the motor. The little that was obtained from these all went to show that their lot, in the words of the librettist, was extremely hard.

### THE MACHINES WERE LEFT OUT TO THE WEATHER ALL NIGHT

to begin with. Then, as often as not, the headquarters were anything up to a distance of two miles from a decent road, which, in the case of the cycles at any rate, practically entailed an agonising tramp over soft turf cut up by artillery wheels and heavy baggage waggons, or else leaving the machine in some friendly hedge all alone and uncared for.

Besides these few exceptions, there were a few motorcars run by the Army Service Corps and Royal Engineers, which unfortunately were not called upon for any work. The R.E. had a few cars of a brougham shape with a small electric search-light on top, which could be immediately set to work by transferring the power of the engine from the driving wheels on to the dynamo. The same car was provided with enough material to set up a small electric light system in camp. The Army Service Corps cars were robust vehicles of some carrying capacity, geared somewhat low, that seemed capable of good work. There were also some Thorneycroft steam lorries, but they never seemed to be used to any extent. Mechanical transport, in spite of all that has been said and written since the South African war, was painfully neglected. The entire motor material present at these manœuvres, as far as can be gathered, worked well. Punctuality was the rule, and

### ABSOLUTE BREAKDOWNS WERE FEW AND FAR BETWEEN.

Minor mishaps were, however, more frequent.

There must, however, be three important features of improved organisation introduced, in the writer's opinion, before the Motor Corps can take its place in the Army as a thoroughly serviceable unit. There must, in the first place,

be some general scheme of organisation. Let a given number of cars and cycles be formed into a section, and then so many sections be assigned to each brigade or division, each section to have a depot car, carrying a skilled mechanic with tools and a reserve of petrol. An officer of the Motor Corps should command a section. The duties of cars and cycles must be discriminated and arranged. There is too much variety at present. A little Mabley car, for instance, cannot be considered the equal of a Paris-Madrid Wolseley racer, and should not be required to do the same work. As the Motor Corps expands, more sections could be formed of cyclists for scouting and reconnoitring. There is here, alone, an immense opening for motorists, an opening where the highest military qualities could find free scope. Secondly, the Motor Corps must not be considered to be a convenience for umpires and a toy for high officials.

### THIRDLY, CIVILIAN-OWNED CARS MUST BE EXCLUDED FROM THE LINE OF MARCH,

and in close neighbourhood of the troops. It was perfectly exasperating for the troops on a dusty road or in a narrow lane to be perpetually pushed into a ditch or hedge by the peremptory hoot of a car forcing its way past them. On one occasion two batteries of artillery, ordered to advance at all speed, found their only road blocked by six civilian motors, all watching the battle.

The manœuvres have not been, in the writer's opinion, a serious military test of the motor, but they have, nevertheless, shown clearly that the motor could become a fighting machine of the first importance. Cars and cycles were seen going over grass, over the roughest and stoniest of roads, without mishap; they kept going for a whole week without any but the most trifling repairs. That is enough to show that it requires but care and experience to make the Motor Corps into a first-rate fighting machine.

H. DE WATTEVILLE, Lieut. R.A.

## WITH THE MOTORCYCLISTS.

BY A MEMBER OF THE CORPS.

Thirty-seven motorcyclist members of the Motor Volunteer Corps mustered at Marlborough for inspection. Lord Roberts laid especial emphasis on the useful work done by the motorcyclists. He expressed a hope that some means of overcoming the puncture difficulty would be found, in view of the abnormal wear to which the tyres of the machines were subjected. The roads, with the exception of the main Bath road, were in a condition which beggars description. At the best of times they are only country lanes, but under the constant passing and repassing of thousands of infantry, cavalry and artillery, all the loose metal was distributed over the surface. For miles the motorcycles were compelled to pass over what were practically newly metalled roads, but in place of granite, which is comparatively harmless to tyres, sharp flints abounded. Passing the troops under these conditions was no joke, especially when the horses of the cavalry were restive. It was noticeable, however, that towards the end of the manœuvres the horses were less inclined to take alarm at the motors. None but machines of the highest quality could ever have survived the ordeal, and it is a matter of congratulation for our leading makers, both British and foreign, that their machines performed so well.

It was noticeable that the lighter machines, which could more easily be handled and wheeled, were especially successful. Hard work was the order of the day in most cases. One motorcyclist reported that he had done 48 hours' despatch carrying with only five hours' sleep, and had ridden all through the night. The most satisfactory combination was undoubtedly when a car and a cycle were attached to a camp. The car served for the transport of officers, when necessary, while the motorcycle was always available for the work of bearing messages and reports to other camps. A motorcyclist was attached to each umpire's camp, for the purpose of carrying the report at the end of each day's operations to the senior umpire's (Lord Grenfell) camp.



**THE MILITARY MANŒUVRES.**

**LORD ROBERTS INSPECTS THE MOTORCARS AND MOTORCYCLES ENGAGED WITH THE FORCES.**

*Lord Roberts is to be seen in the group of four immediately behind the car which is in the centre of the foreground. The cycles are drawn up at the rear to the right of the picture,*



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

*Conducted by*

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## OPINION

### *Conclusion of the Car Trials.*

The trials are over, and nobody will be greater relieved than the drivers and the overworked officials. They have been splendidly managed, and we have noticed, this year, for the first time, that careful anticipation of doubts and difficulties and that skilful attention to extremely minute detail which shows that there is a master mind at the back of the scheme, able to foresee events and to provide for them. The Automobile Club has, in the past, been most severely criticised for its futile attempts to conduct big affairs; in fact, it is not too much to say that the average cycling club secretary whose yearly experiences may be limited to running a race meeting and a few road handicaps, would have laughed at some of the past efforts of the Club. But the Reliability Trials have altered all this, and their scheme of organisation and the methods by which they have been run have been admirably complete, and we hope that the Club will set them up as a standard to be jealously guarded and vigorously maintained in all future events. The value of the trials to the trade is debatable; to the public, however, it is of some moment, because information of a reliable character is furnished by the result, and to that information there will turn the careful buyer who desires something more for his money than external paint and varnish. So far, our report has practically been confined to the daily doings of the cars. To attempt to forecast the results from what we have observed would be futile and probably misleading, so nothing of the kind has been attempted. But, directly the judges have concluded their labours, the results will be announced in detail in our columns, and then the buying public will be in a position to place its orders for the coming season.

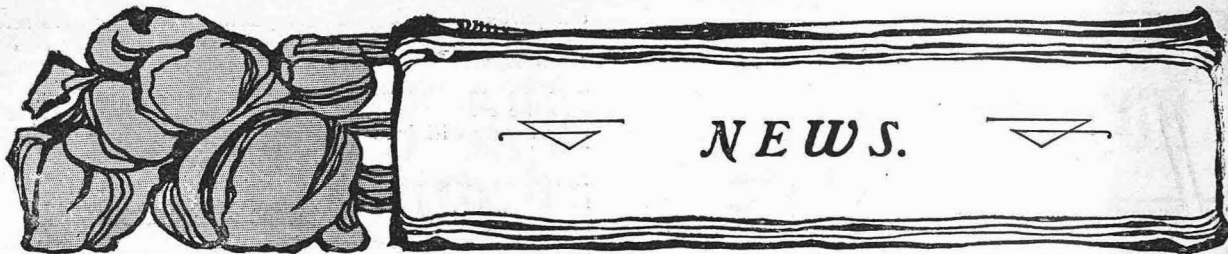
### *An Echo from the Motorcycle Trials.*

In connection with the motorcycle Reliability Trials held last August, we were, at the time, the recipients of letters from one quarter and another, all of which practically amounted to a general complaint against the advertisement of a well-known firm of manufacturers, who sought to pooh-pooh the trials and to depreciate their value. We carefully weighed up the circumstances, and decided that the wording of such an advertisement was merely the outcome of bad taste, and that the bark was worse than the bite, and that, therefore, it was to the interests of neither the trade nor the public that the matter should be continued in the vein of the letters which had reached us. However, this action on

our part in declining to give publicity to the letters referred to has not pleased their authors, and the writer of one of them has returned to the fray. Candidly, we think the better course is to allow the matter to drop. The firm referred to had the error of their ways pointed out to them, and they very wisely withdrew their advertisement. The public is the best judge in these matters, and we feel sure that it has fully recognised the extreme value of the trials and has read between the lines of the offensive advertisement and bethought itself of the old fable of "sour grapes." The advertisement has therefore had the opposite effect on the public to what was intended, and we do think that letters containing challenges to the firm, to match the challenger's machines against theirs, are equally disliked by the public, because, as a rule, the challenged firm never come up to the scratch, and a lot of talk comes to naught. And, moreover, a bad impression of quarrelling and bickering is created and the public turns away in disgust from the wares of both concerns, just as it would leave the vicinity of a pair of quarrelling shopkeepers. No, we think that to suppress the retorts to the advertisement, the challenges and what-not, and to leave the scheme and the results of the trials to speak for themselves, is the right and proper course for us to take.

### *The Exclusion of the Quadricycle.*

Letters which have reached us during the past few days contain expressions of regret that the manifesto of the three bodies which possess a motor cycling membership should deal in so half-hearted a way with the quadricycle. Until these letters came to hand we did not know that there were so many quad users or lovers as there would seem to be, neither should we now think that there are many quads in use in comparison with the number of bicycles and tricycles and, candidly, we cannot see that there is likely to be any increase in their number. There is as much work in building a quad as there would be in erecting a light car, and the cost is quite as much. In these circumstances, the vast difference in comfort of driver and passenger, the improvement of the sociable position over the tandem, and the removal of the passenger to a seat which he or she does not associate with being "jammed into the traffic," and the better appearance entirely of the later vehicle, all go to show that the light car has completely displaced the quad, and we very much doubt whether the latter will ever be re-introduced. But if it should, it would necessarily have to be in a much lighter and cheaper form than has so far obtained. There is the unlikely possibility that the motor vehicle, in the Trimmo form, might be developed so as to have two driving wheels instead of one. In that case the regulations which the Local Government Board are likely to make will tell hardly upon the lightest of four-wheeled motor vehicles, but at present the evil is small and, such as it is, it is created entirely by the difficulty of describing, in words and phrases, the exact difference between the quad and the car. It is useless to take tubular frames, suspension wheels, or any similar feature in the quad, because they are equally found in the car. Handlebar steering will not do, because wheel steering is sometimes used on quads. To take the saddle or the pedals is of doubtful value, because there is no reason why the saddle on a quad should not be replaced with a really comfortable seat, whilst with the growing popularity of the free engine, the starting handle and the clutch, pedals will become obsolete. But there is the possibility that some distinction can be drawn from the fact that the quad is a vehicle within a certain weight which is capable of being adapted to be propelled by the power of the rider, which of course is impossible in the case of the car. However, although this fact has been prepared for the Board, it is, after all, a very fleeting distinction, and if the Board should decide to include the quad amongst cars, the decision would be a sensible one, even if, in a measure, it should be regrettable. The one point which will probably tell in favour of such a decision will be the fact that the quad is practically as bulky as the light car, and therefore its presence upon narrow prohibited roads would constitute as great a danger (such as it is) as if the vehicle were a car.



The circulation of "THE MOTOR" has steadily increased through September.

The trials are now over and the judges are engaged in the heavy task of compiling results.

The arrangements for the trials were far and away better in every department than they have ever been in previous years.

Light cars have done admirably. They have shown reliability, have resisted the strains imposed upon them, have climbed some severe hills and have earned many friends.

The big Napier car used by Mr. S. F. Edge in the Gordon-Bennett race showed up well in a recent hill climb at Nottingham, and will probably compete in the races at Southport this week.

The Lanchester cars competing in the Reliability Trials were fitted with a new type of disc brake on the rear axle. The disc is gripped by a powerful pair of jaws, and from all accounts the device is acting very satisfactorily.

#### The Midland Automobile Club Hill Climb.

The M.A.C. held their official hill climb on Saturday, September 12th, in the presence of a large crowd of spectators. Owing to police activity the course had to be shortened to 1,750 feet, with a rise of 190 feet. The results were as follow:—J. A. Holder, 2 1/2 h.p. Panhard, 1 min. 9 4/5 secs.; H. A. Holder, 16 h.p. De Dietrich, 1 min. 11 secs.; C. W. Dixon, 10 h.p. Lanchester, 1 min. 55 1/5 secs.; M. A. Lawrence, 10 h.p. Lanchester, 2 mins. 2 secs.; E. J. Hartenfeld, 10 h.p. Lanchester, 2 mins. 1 2/5 secs.; H. Luff Smith, 10 h.p. Wolseley, 1 min. 27 2/5 secs.; A. E. Crowdy, 20 h.p. Wolseley, 1 min. 16 secs.; Harvey du Cros, 12 h.p. Ariel, 1 min. 22 4/5 secs. The committee will announce results of handicap shortly.

#### The 1904 Minerva Motors.

The plans for the new Minervas are now available and we are privileged to announce them thus early. There will be three sizes of engine: the 2 h.p. (69 x 70), the 2 1/2 h.p. (76 x 76) and a new 3 1/2 h.p. (82 x 82) for fore-carriages. The mechanically operated valve will be used exclusively, its success having been greater than was anticipated. The carburetter is a new one of the Longuemare type, or a surface will be provided at option. The engine can be had for either vertical or inclined position, and two registered designs of frame have been prepared for these positions. A V belt, twin accumulators, a mica plug, tank with rounded corners, long levers, a very effective silencer are amongst the many improvements introduced into the accessories. Full particulars can be obtained of Minerva Motors, Ltd., 40, Holborn Viaduct, London, E.C.

#### Coming Events.

- Oct. 2 and 3. Speed Trials for Motorcars and Cycles at Southport.
- " 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.

The Automobile Club's social season opens in October with a display by the biograph of the Gordon-Bennett race. Papers on various subjects are down for discussion. We hope that the light car will be arranged for: it should provide an interesting evening.

One of "ours" has reason to be obliged to Mr. Bright, motorcycle maker, Crown Street, Brentwood. On a recent Sunday night at nine o'clock he cheerfully opened his shop and took off his coat to tackle a repair that could not be performed at the roadside without tools and in darkness.

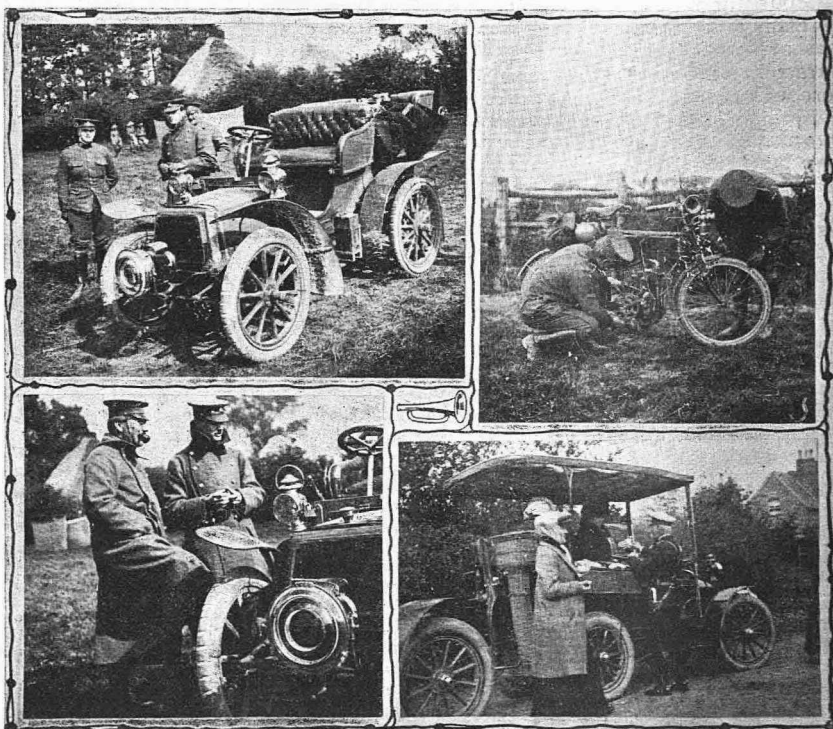
The Ladies' Automobile Club will hold its first meeting at the new premises at Hans Crescent Hotel, London, S.W., on Thursday, October 1st, when a large attendance is expected.

A motor garage for 25 cars has recently been opened by the Watson's Motor and Cycle Co., Bishopton Lane, Stockton-on-Tees. A good stock of accessories and petrol is kept. The garage and stores are open day and night including Sundays.

Last week's London and provincial Press made universal reference to the question which we have been dealing with in recent Editorials—the definition of and legislation for motorcycles. The more influential papers are disposed to treat the matter in a broad spirit and not to cripple the smaller vehicle with disabilities which were clearly meant only for *bona fide* cars.

#### Gloves for Motor Work.

A good line in waterproof gloves we should like to draw our readers attention to is the "Quorn" glove made by M. Mackintosh, 89, New Street, Birmingham. The special claims made for the glove are that it is easy fitting, handsewn, strong and quite waterproof. The price is also very low (2s. 10d. a pair) considering the quality.

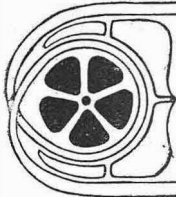


#### SNAPPED AT THE MILITARY MANŒUVRES

The Hon. C. S. Rolls and Earl Russell in two positions. Lord Russell is smoking a pipe.

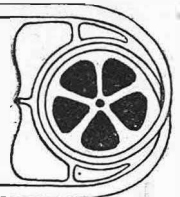
Two motorcyclist volunteers; Lord and Lady Roberts snatch a bright lunch.





## THE RELIABILITY TRIALS.

*The work of the Second and Last Week during Variable Weather.  
How the Cars behaved on the Hills. Good Performances  
by the Light Cars.*



After an off-day on Sunday the cars, reduced in number now to 84, began to line up on the Palace Parade at seven o'clock for Monday's run to Worthing and back. The Sabbath Day's rest probably appreciated more by drivers and observers than by the cars themselves, since these latter were debarred from indulging in the luxury of a much-needed wash, except at the sacrifice of valuable marks. Godly they might feel on the Monday morning after their seventh day abstinence from work, but cleanly some of them certainly did not look; others, however, had borne the brunt of two dusty days well, and almost presented a smart appearance, a description which applied to none with more force than to the big 24 h.p. four-cylindered De Dietrich driven by Charles Jarrott, in which a seat had courteously been reserved for us. We got aboard outside the storage tent soon after seven, and ran up to our post, 57th in the line, outside, where we found as our neighbours the 9 h.p. Darracq in front and the 10 h.p. Gladiator behind. The morning was the best, and, as it subsequently turned out, the last of the series of bright autumn days which mid-September brought in. At the word "Go!" we started, and, after shedding a crocodile tear over the 20 h.p. Winton, which, like its Gordon-Bennett namesake, had stuck at the start, we executed a graceful turn opposite the Rockhills entrance, and proceeded briskly along the entire length of the dustless

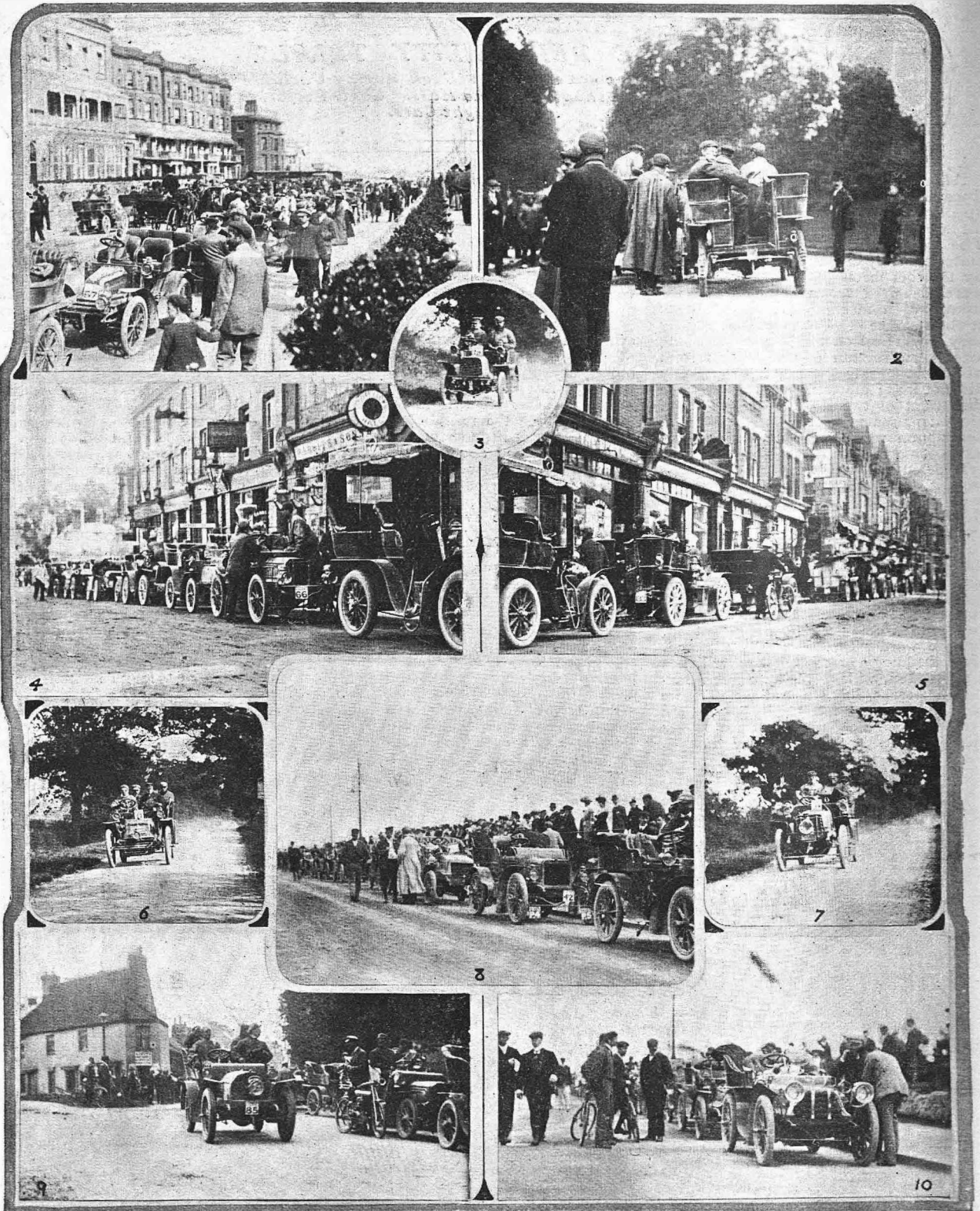
Parade, and then via Church Street for South Norwood Hill. Half-way down this we noted the 6 h.p. Elswick at a standstill, and subsequently learned that this car, which retired from Saturday's Eastbourne run through ignition troubles, had started on sufferance, and was no longer being officially observed.

A MORE INTERESTING OBJECT, overtaken a little further on, was the little 6½ h.p. Cadillac, which had a wheel broken on Saturday, under circumstances reported in the last issue of "THE MOTOR." Our vis-a-vis in the tonneau (no other than the redoubtable Bianchi, Jarrott's plucky little chauffeur, who was so badly knocked about in the Gordon-Bennett accident near to Stradbally) gave us a graphic description of the car lying in a ditch as they passed. Soon after leaving Sutton we overhauled the Baby Peugeot in momentary difficulties. Small groups of interested villagers began to gather as the morning went on. At about 8.30 we ran through Lipsom, and between here and the next village we had one or two good bursts of speed, which gave us a taste of the Dietrich's powers of smooth and comfortable running. After a smart spin down from Leatherhead to Mickleham, during which we passed and re-passed the 9 h.p. Darracq we arrived within sight of Dorking and slowed down to keep within our time limit. As Dorking was a compulsory stop of 15

minutes, the long street of the old village, bordered by its picturesque variety of domestic architecture, soon began to assume a busy aspect. As car after car came in and lined up the natives made audible comments on the varied appearance in size, shape, colour, and design of the vehicles, and the still more varied aspect of the mass of drivers, observers, and passengers who congregated along the pathway and crowded the little inn entrances in search of a morning nip. Starting off from Dorking just before half-past nine, nothing of special interest beyond the pretty scenery attracted our notice until we overhauled the 5 h.p. Oldsmobile, a little car which had been doing remarkably well in the trials. Almost directly Jarrott treated us to a most delightful "switch-backy" run of a couple of miles or so at a pace more pleasant perhaps than politic, but the system of police traps which we were to meet further on had luckily not extended so far north. Near to Slinfold we were treated to a practical demonstration of the common-sense method of looking at the motorcar. An enterprising groom had brought out a young horse, and was breaking him in to the sound, sight, and smell of his rival. Approaching the next control at Five Oaks, our driver found himself ahead of the clock, and whilst we descended slowly with engines off he munched an apple and read Saturday's report in the "Daily Telegraph." Shortly after passing Billings-

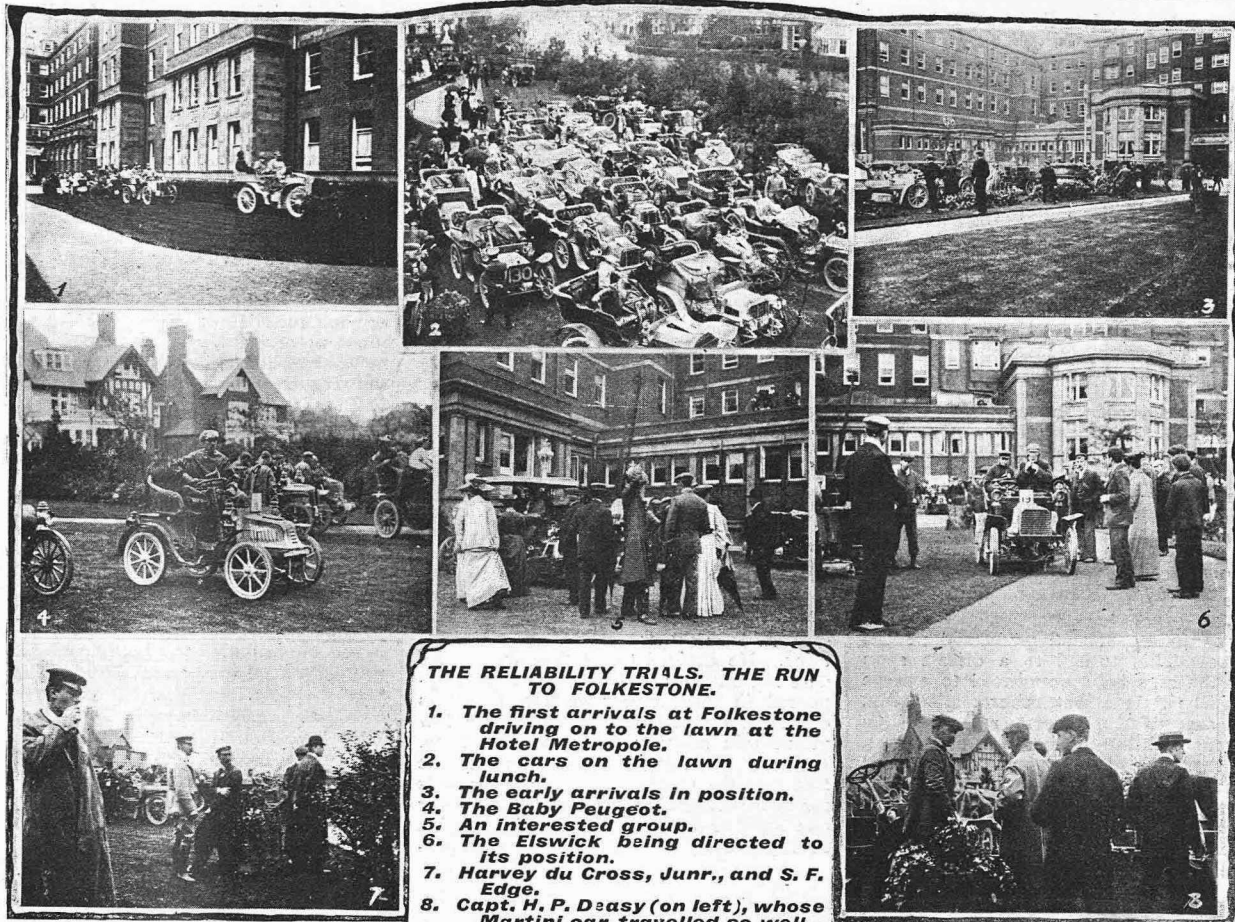


**THE RELIABILITY TRIALS.**  
*The Cars drawn up on Eastbourne Parade during the Lunch in the Grand Hotel.*



**THE RELIABILITY TRIALS. SOME INCIDENTS ON THE RUN TO WORTHING.**

- 1. The cars on the Parade at Worthing.
- 2. At Horsham on the return journey: a pair of wheels locked.
- 3. The 6 h.p. Elswick, near Horsham.
- 4 and 5. The lunch interval at Dorking.
- 6. The James and Browne on the outward journey.
- 7. The 20 h.p. Thornycroft.
- 8. The cars attracting a big crowd at Worthing.
- 9. Starting away on the return journey.
- 10. Edge and Astell (on the right of the picture) engaged in an engrossing discussion on Club matters.



**THE RELIABILITY TRIALS. THE RUN TO FOLKESTONE.**

1. The first arrivals at Folkestone driving on to the lawn at the Hotel Metropole.
2. The cars on the lawn during lunch.
3. The early arrivals in position.
4. The Baby Peugeot.
5. An interested group.
6. The Elswick being directed to its position.
7. Harvey du Cross, Junr., and S. F. Edge.
8. Capt. H. P. Deasy (on left), whose Martini car travelled so well.

hurst we overtook the 12 h.p. Wilson and Pilcher, laid up with a puncture: on board of this car was the "D.T." representative, Mr. Ellerthorpe. At the top of Codmore Hill the square tower of Pulborough Church caught the eye: a nasty hill into the village was carefully negotiated, a watchful eye being kept on a cantankerous cow, who evinced a desire to obstruct our progress *vi et cornu*. A quaint village is Pulborough, its old-fashioned red-tiled cottages clustering close to the roadway in artistic disorder. We believe "Cyclomot" knows every nook and cranny of the place and district, and that he comes here with cameras and fishing rods, and other weird instruments—including motors.

On reaching the foot of Bury Hill we found that a different arrangement had been made since Saturday. All cars were stopped here, and started at 20 seconds' intervals. As a test of hill climbing it is good, though by no means severe: its length is about 1,200 yards, and its gradient a very steady one, averaging 1 in 11.74. The big Dietrich bounded up in the liveliest style imaginable, emphasizing the hardness of the luck which she experienced in being stopped on Westersham Hill when going strong. Spectators, afoot, in cars, and on cycles were thick all up the hill: the scenery is delightful here. On through picturesque Arundel we proceeded cautiously, and a little way beyond we sighted a sergeant, surrounded by a small group of spectators, and with a warning wave to those behind we ran past him and reached our destination, Worthing, on the stroke of midday.

The scene at Worthing between 12 and half-past was full of animation: there seemed to be plenty of visitors: the town, and one and all took the liveliest interest in the cars as they arrived and took up their positions on either side of the sea front. The stragglers to-day were in a very small minority, and Warne's Hotel was soon the scene of a great galaxy of hungry and thirsty sportsmen: thirsts quenched and appetites allayed, notes were freely interchanged as to the various performances: very few cars had met with serious trouble, and the revised conditions of the hill test gave general satisfaction.

The return route was varied by taking the more direct way through Horsham, Crawley and Reigate, skirting Redhill and home through Purley and Croydon. The striking feature of the homeward journey was the number of police traps: every few miles we were notified of the presence of danger; but we believe that few or no "captures" were made.

As we were passing through Worthing on the way home we met the plucky little Cadillac coming in. We had heard rumours over our lunch of the sporting way in which the occupants of this car had repaired their broken wheel, or rather fitted a makeshift, on Saturday, and concluded the run, and we were glad to see her still travelling. At Horsham a compulsory stop of 15 minutes was provided, and Jarrott decided to fill up his petrol tank, this operation being comfortably performed within statutory time. All Horsham was out to take stock of us, and very cordial was the reception we got in

this "J.P.-ridden" town. From here to Dorking through Kingsfold the going was good. A pantechnicron outside Kingsfold took up a good three-quarters of the road and drove us on to the grass border. About here the 15 h.p. Belsize was passed in trouble with a broken connecting rod, which caused its retirement. A dust-up with a motorcycle, in which we were beaten, brought us to Capel—this same motorcyclist, by the way, gave us notice of a police trap later on.

From Reigate to Purley was the dustiest stretch of the day, and here, owing to the fact that we had overhauled many of the earlier starters, it was difficult to keep clear of it. At Purley Corner, which we reached about half-past four, the friendliness of the police was again demonstrated. A quick smile and an authoritative arm made short work of a lazy carter. The last six miles of the run provided a splendid object lesson in traffic driving and, as the run out had proved the quality of the modern motorcar over country roads and lanes, so did the run from Croydon to the Palace demonstrate its fitness as a speedy, safe, and comfortable vehicle for traffic work. As we rounded the South Tower a clock struck five, and at three minutes past, much to our regret, the stern laws of the Automobile Club compelled us to descend outside the storage tent where our comfortable car was run in for the night. A more enjoyable trip we could not have described or had.

A glance at the table of results for the day shows us that this was the most successful run up to that time: only one

car failed to complete the run: several of the smaller cars, notably the  $6\frac{1}{2}$  h.p. Clyde and the 5 h.p. Oldsmobile, did non-stop runs; and many other small cars, including the two tandems, the little Peugeot, the  $6\frac{1}{2}$  h.p. Cadillac and the 9 h.p. Eagle lost only five marks or less for trifling points. Of the bigger cars the two smaller 22 h.p. Daimlers, the 20 h.p. Humber, and the two De Dietrichs were prominent amongst the "non-stoppers."

Of our driver and his car we can only say that it is a privilege, a pleasure, and a revelation, to sit behind Jarrott, and that the car itself struck us as possessing three striking features—comfort, cleanliness and capacity.

#### THE RUN TO FOLKESTONE.

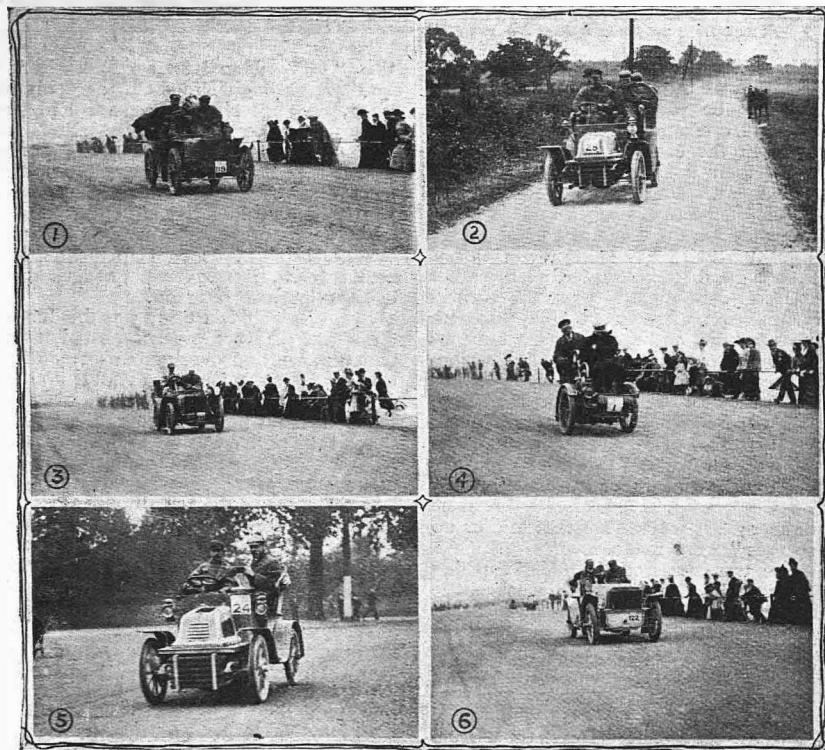
On the Tuesday, a second delightful trip was in store for us, for another Gordon-Bennett competitor, S. F. Edge, had placed at our disposal the seat beside him on his 12 h.p. Napier, and as Edge, in his capacity of hon. marshal, was a free lance, and as there were no other passengers with him, the promise of an enjoyable day was amply fulfilled. The run was to Folkestone via Bromley, Maidstone and Ashford, and when day dawned there was a heavy reeking mist hanging about the Palace. This turned to a drizzle soon after the cars had commenced to emerge from the Palace but, characteristically, the assembled drivers regarded the heavens with but a faint show of interest, for they are independent and almost callous about the weather. At 7.30 the first car moved off, the others following in rapid succession, and then we took our seats, and with a touch of the switch

the Napier's engine was ready and impatient to do our bidding. There was also a show of impatience behind us in the tonneau where Edge's favourite dog "Bully" was straining to get over and sit behind the dash. So persistent was he in his efforts and so careless in the way in which he breathed down the distinguished passenger's neck, that at last he was told to "come over" and with a rush he had taken an affectionate seat on the passenger's feet, with his head over the dashboard. Going rather a longer way round, we caught up the head of the procession ten miles out, and then took the lead. The roads were in good order, and the cars were all running exceedingly well. A couple of showers were encountered before Maidstone was reached, and afterwards the weather was dull and threatening. There was the usual fifteen minutes' stop at Maidstone, and then the road was taken to Folkestone. With a good hour and a quarter to spare, S. F. Edge had arranged his plans for forming up the cars in the grounds of the Hotel Metro-pole. Then came a hastily snatched meal, and at 11.40 the first batch of cars was seen slowly creeping along the road towards the hotel. It was a funny sight to see how each driver was torn in two directions. He desired to be first in, but he dare not bustle, because the hotel had appeared in view rather earlier than was expected, and the first batch was a few minutes in advance of minimum time. However, the situation was saved by the fact that the manoeuvring in the grounds for position, so that the cars could follow one another without chaos, all occupied some minutes, and so no marks were jeo-

pardised. The cars made a deep impression upon the spectators, and they came in in such close order that the work of marshalling them in the confined space was not easy, and thus all except three or four were in the grounds by 12.45. The order had been issued that the stay would extend till 1.30, when the first car would be despatched, and so there was ample time for a satisfying lunch and for explaining to the crowds of enquirers what the whole thing meant and what each car was. The light cars were running grandly, their more moderate speed, however, never allowing them to get far towards the front of each run. Rain fell lightly during the interval, and then at 1.30 the cars commenced to stream out, and it was found that the steep gradient towards Sandgate had become fearfully greasy. The Napier traversed the greasy stretch with never a suggestion of a slide, but some of the drivers had a tricky time in negotiating it. Soon after Hythe had been passed the rain fell in earnest, and thence to Ashford it poured in torrents, the rain suiting one's face like a hundred whiplashes. Beyond Maidstone, where there was the usual 15 minutes' stop, we ran into a thick bank of fog, and the whole of the way the roads were in a wet, sodden condition. Nearing Wrotham, the route diverged from that taken for the outward journey, and the cars proceeded to Riverhead, where some sporting contests were indulged in on the gradient, and then by Farnborough and Hayes Common the Crystal Palace was reached. The Napier had landed us at the Palace in exactly three hours, the only stop on the way being made for the purpose of donning waterproof garments. And within an hour and a quarter of our arrival the first batch of cars turned up, and thereafter they streamed in at intervals, very dirty and muddy, but running splendidly. Of troubles the day had been remarkably free; of policemen n'er a one had been seen. The run with S. F. Edge was enjoyable in the extreme, remarkable chiefly because of the fact that a six hours' uninterrupted conversation was possible, the engine proceeding with its work all the time like a perfect automaton, and seemingly demanding from its driver nothing more than a few attentions, mechanically given.

#### THE RUN TO SOUTHSEA.

We might have applied to ourselves Mr. Mantalini's phrase in "Nicholas Nickleby," a "damp, damp, moist, unpleasant body," on taking our seat on the 10 h.p. Gladiator, driven by E. H. Arnott, last Wednesday for the run to Southsea and back. A Scotch mist again worried us at the start, as the 83 cars were got off expeditiously; there was a Scotch mist at Southsea, and a nasty fog in patches greeted us as we neared the suburbs and the Palace on the return journey. But, strange to say, it was almost unanimously agreed that this was one of the most pleasant days encountered so far. As a matter of fact, after the grease on the roads and the haze in the air had been cleared at Croydon, the roads became hard and free from dust, the sun shone bravely, and altogether no better day could have been vouchsafed for the 144½ miles' journey. And it proved an eventful journey, for not only were police traps discovered by the score, but the Hindhead Hill climb was included in the run, while a surprise



#### THE RELIABILITY TRIALS: THE RUN TO BEXHILL.

1. The 12 h.p. Peugeot on Bexhill Track.
2. The 9 h.p. Beaufort going down.
3. Captain Deasy's Martini.
4. The Century Tandem and its chilly observer.
5. The 6 h.p. Swift on the way down.
6. The 20 h.p. Humber on the track.

stop took place on the return journey for the purpose of examining the engines of each car, and an equally unexpected emergency brake test was sprung on the drivers by the officials a few hundred yards further on. The route to Leatherhead was the same as that followed on the Worthing run, and then to Guildford (15 minutes' stop), Godalming, Hindhead, with a glorious view of the Punchbowl, Liphook, Petersfield, Cosnam, and Southsea. Mishaps on the road were not as frequent as usual, the first which had stopped being the Winton, while shortly afterwards another was noted up a side lane. It was at Merrow Downs that the first police trap was seen, but the shame-faced bobby was discovered by the size of his boots. After the enforced stay at Guildford, nothing of note happened until Hindhead was neared. Then the cars were stopped, with engines running, so that the numbers could be wiped over. Up the Hindhead the cars ran at full speed, timed at one end by Messrs. Swindley and Sturmev, and at the other by Messrs. Woolten and Straight. A large number of motorcyclists and private owners of cars were interested spectators on this up-hill stretch, and, indeed, for some distance beyond. Miss Wood, on a private Decauville, rendered yeoman service in unfurling a roll bearing the words "Police Trap," and right along the drivers were warned at certain points that the minions of the law were in hiding. We passed the little Eagle in trouble with the back tyre near Petersfield. The 12 h.p. Star was the first to reach Southsea, and with a few more that came up quite a triumphant entry was made to the sea-front, headed by two mounted police, a policeman mounted on a cycle, and a few on foot, who cleared the way splendidly for the small coterie of drivers. At Heath View, on the return journey, all the cars were stopped and the engines examined by Lieut.-Col. Crompton, Messrs. Worby, Beaumont, and R. E. Phillips—an operation which took nearly two hours to perform ere the last car got away. A few hundred yards further on a surprise emergency brake test was sprung upon each driver. One of the funniest incidents of the day's ride was a driver slowing down because he thought he saw a white flag waving in the distance, but it turned out to be the tail of a horse bearing a policeman in plain clothes, with a uniformed constable standing by his side. After this the horse's tail was turned to the hedge. The next car, the little 6 h.p. De Dion fell a victim to the mortified bobby, who swore the driver was travelling at 101 miles an hour. The greasy state of the roads and the fog made the suburban driving tricky, but a fast spin, without the suspicion of side-slip, brought us within the grounds of the Palace in excellent time. A large number of cars turned up late that evening.

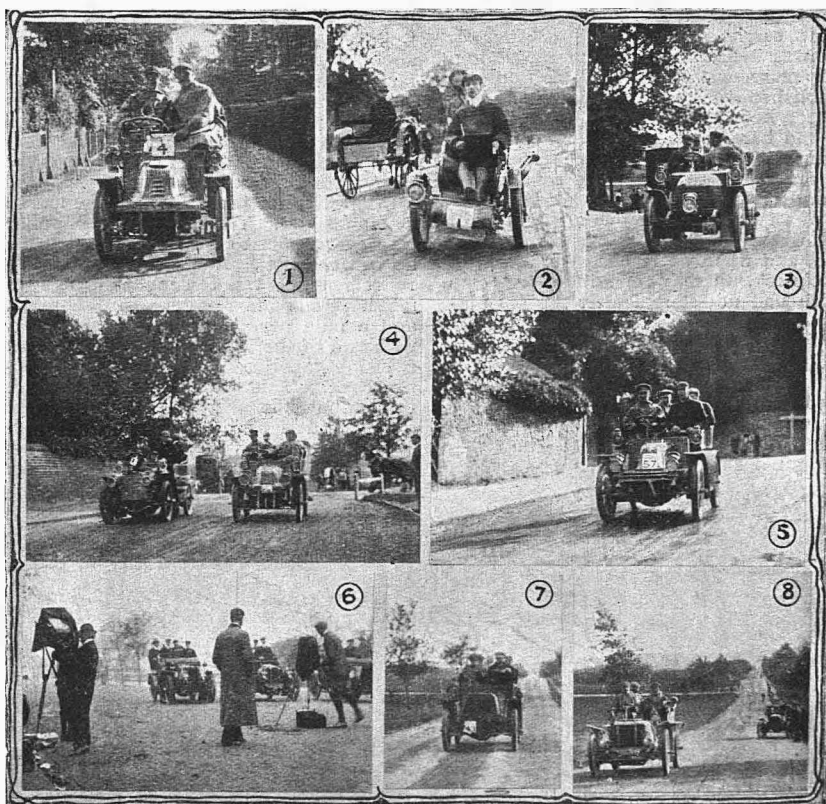
**THURSDAY'S RUN TO BEXHILL-ON-SEA.**

The start for the Bexhill trip—a total of 121½ miles—did not augur well from the appearance of the morning. A heavy wet mist obscured everything, and the road-way was damp. By 7.45 the signal was given "all aboard," and the writer took his seat in the 14 h.p. Brooke car, No. 68. We slowly passed the official starter, and swung down the hill and steered for West Wickham. In parts the going was decidedly bad, especially through the wind-

ing lanes, and the wet mist still hung about in an unpleasant fashion, but the going soon improved, and over excellent surfaced roads we steered for Polhill, with its glorious panorama of wooded country lying beyond it, then on through pretty Sevenoaks, where quite a crowd of people awaited us. The great crowd of cars drawn up in the main street looked unique, and interested the townsfolk greatly. Then we had a long run before us right into Bexhill. Exciting incidents were decidedly scarce, but to liven matters up a bit someone in front signalled a police-trap, and immediately the long line of cars dropped to a funeral pace. No trap, however, could we detect, although the rumour spread that a constable's helmet and smiling countenance were observed peering out of the branches of a tall chestnut tree, while he signalled to his confreres down the road. Others suspected a couple of harmless yokels as being "Roberts" in disguise. However, nothing happened, and we speeded up again and took in the beauties of the country that lies between Tonbridge and Battle. A village or two before the latter place was reached a genuine policeman was sighted, and in a twinkling the word "police trap" was signalled along the line—result, another funeral procession. It was truly ludicrous, and no one was more astonished, probably, than the solitary "peeler," especially so as he had to stand a fire of chaff from each car as it passed him. Arrived at Bexhill, the cars

were formed up on the Parade. The official speed trials were arranged to take place on the kilometre stretch of racing track along the sea front. The arrangement was for the cars to pass along the parade and take up a position as near the starting point of the track as possible. At a given signal they went up in groups to the actual starting point, and were despatched along the track in their order at intervals of one minute, the times being taken officially at each end. Each car, of course, had to do its very best with full load of passengers.

The results of the tests were as follows:—Class A: Century tandem, 31.8 miles per hour. Class A: 6½ h.p. Clyde, 33 m.p.h.; second place, Stanley steam car, 32.1 m.p.h.; third, 6½ h.p. Cadillac, 28.8 m.p.h. Class B: 8 h.p. M.M.C., 29.5 m.p.h.; second, 9 h.p. Beaufort, 29 m.p.h.; third, 9 h.p. Eagle, 26.3 m.p.h. Class C: 12 h.p. Wolseley, 35.1 m.p.h.; second, 10 h.p. Gladiator, 35 m.p.h.; third, 10 h.p. and 7½ h.p. Wolseleys, 32.7 m.p.h. Class D: 12 h.p. Gladiator, 41.3 m.p.h.; second, 12 h.p. Orleans, 39.3 m.p.h.; third, 12 h.p. Star, 39.2 m.p.h. Class E: 10 h.p. Gardner-Serpoilet, 42.8 m.p.h.; second, 14 h.p. Martini, 42.3 m.p.h. Class F: 20 h.p. M.M.C., 44.6 m.p.h.; second, 20 h.p. Germain, 42.4 m.p.h.; third, 16 h.p. Rochet Schneider, 41.3 m.p.h.; Class G: 24 h.p. De Dietrich, 43.4 m.p.h.; second, 22 h.p. Daimler, 39.4 m.p.h. After lunch the signal was given for the return to the Palace.



**THE BRIGHTON RUN.**

1. The Baby Peugeot approaching Redhill.
2. Century Tandem.
3. The 12 h.p. Wolseley.
4. The Wolseley passing the Relyants on the homeward journey.
5. The Georges Richard on the way home.
6. Photographers busy on the Palace Parade.
7. The Hallamshire on the way home.
8. Jarrott travelling well.

Good time was made right up to Uckfield. A slight collision had occurred here between a competing and non-competing car, the driver of the latter being slightly hurt, and a couple of minutes' delay caused. More police trap warnings were given, but no trace of the police could be found—at least, not in their trapping capacity. The return route differed from the outward one, being via Forest Row, East Grinstead, Godstone, and Purley. At Godstone 15 minutes' halt was taken, and then good running made right into Purley, the Palace being reached about 6 o'clock, after a thoroughly successful trip. A favourable word must be given for the excellent running of the Brooke car. The engines ran perfectly from start to finish without a screw having to be touched. There is a feeling that there is always ample power in hand, and the tonneau is roomy and most comfortably sprung.

**THE RUN TO WINCHESTER.**

Friday's run was to Winchester, by Leatherhead, Guildford, Farnham, Alton and Alresford, and back the same way. A seat had been reserved for us on the 14 h.p. Brooke, driven by Frank Wellington. As the luck of the draw had assigned us the 70th place on the starting list, it was close on eight o'clock before we swung round the north end of the Parade on our journey of 67 miles. Our car carried as a mascot a small white Maltese terrier, which some facetious Yankee was reported to have tied on to the bonnet overnight. This little animal, which, it may be mentioned, carried no license, was unmuzzled, and was the source of much speculation and amusement on the road, and quickly established itself a prime favourite. As a mascot, however, it was not a success, for we had hardly covered two miles of our journey before it became necessary for our driver to fit a fresh commutator chain, this operation taking about a quarter of an hour. After this all went well, and we proceeded to make up for lost time, and when we reached Guildford, at 10 o'clock, there were still a few cars which had not started after the compulsory fifteen minutes' stop. A cinematograph was at work here. Leaving Guildford in the hollow, we went briskly up the rise leading to that magnificent ridge road the Hog's Back. Along the top we passed the 9 h.p. Darracq, the occupants of which were all reading; this car had a chequered career on the run,



**THE RELIABILITY TRIALS. Sketched on the Winchester run.**

being "bagged" by the police outside Winchester for exceeding 25 m.p.h., its maximum speed on the track at Bexhill the previous day being only 24, and its limit of speed on this particular run being about 15, owing to faulty compression. Mr. Wellington thoughtfully handed them out a few cigars as we passed from the ample stock which he had laid in, and they were gratefully received by the smiling Frenchmen. We were now across the Surrey border, and very soon experienced a taste of police persecution, as practised in Hampshire. The warning, "A police trap every mile to Alton," proved to be no exaggeration. A more systematic arrangement of traps we cannot call to mind. We found Farnham full of traffic, and a mile beyond a "free lance" car, with two of the fair sex aboard, gallantly raised a "police trap" flag as we approached. This car did useful service throughout the day in frustrating the sneakish designs of the law. At Holybourne, a quaint village, with a long row of thatched-roof cottages, we overtook the

10 h.p. Thornycroft, and passing through Alton at a quarter to twelve we were bombarded with friendly warnings from the natives. "A trap every quarter mile for the next four miles" was the information we got at Chawton. After passing New Alresford, we had a few miles of free country, and Winchester was reached at 1.10.

After a hasty lunch, we were off again. The line of traps checked our speed, but did not abate our enjoyment. The journey home was full of fun. The afternoon turned out delightful, and the car was on its best behaviour, running sweetly. A mile outside Farnham we stopped to pump up a collapsing back tyre. An officious policeman took advantage of our helplessness to walk up from his post a couple of hundred yards away, and offer a few gratuitous insults. It transpired that he had just previously made an unsuccessful attempt to board a car. Our driver reported him to the sergeant at Farnham, and expressed his intention of also reporting the matter to headquarters.



**THE RELIABILITY TRIALS. The surprise visit of the judges on the Southsea run.**

With a full tyre and a clear road, we swung along for the next few miles to a merry tune, and reached Guildford just before five. Here we fitted a fresh valve to our troublesome tyre, and refreshed our own inner tubes at a cake shop. Three miles farther on we passed the 9 h.p. Beaufort, stuck up on the road; one of our artists was on board this car. Epsom was reached at 6 o'clock, and the Crystal Palace at 7.15. The results of the day's run were eminently satisfactory. Of 76 cars 45 did non-stop runs, 27 suffered slight delays, and no breakdown was reported. The feature of the run was the ridiculous action of the police, which had, however, the good result that it showed clearly that the sympathies of the non-motoring public are with the motorist and against the police.

**THE RUN TO BRIGHTON.**

There was a general air of satisfaction and relief on Saturday when the fun came for starting off on the last run of the trials. The task has been a trying one for drivers, because every minute and every mile has to be watched, and ears and eyes must be given no rest if the loss of marks is to be avoided. Seventy-five cars started for Brighton. The Century tandem was sole survivor in its class, the Eagle driver having declined to proceed because money had (so he said) not been forthcoming. In the light car class the survivors were the Baby Peugeot, the Regal, the Stanley steamer, the Cadillac, the Elswick, the two Oldsmobiles, the De Dion, the Swift, and the Achilles. All of these made non-stop runs, with the exception of the Century and the Regal, which lost five marks each, and one of the Oldsmobiles and the Clyde, which lost a little more, whilst the doings of the Achilles were not known at closing time. The run was very successful, and so lacking in incident that it need not be detailed. Nearly all the cars were back at the Palace by soon after four, and no less than 54 had made non-stop runs. On the return journey the judges continued their surprise stoppages, in order to test the brakes of those cars, the drivers of which received the tip on the Southsea run. But, even then, Miss Levitt, for the second time, was prepared, and was travelling slowly when the flag was thrust out. The only difficulty about these surprise visits is that passers-by take the group for a police trap, and proceed to warn the motorists accordingly! Mr. Astell had hard luck. His New Orleans had travelled splendidly, but within two miles of completing the runs he broke the fork of the gear.

The doings of the cars have been roughly tabulated, because it is expected that the complete report will not be available until some time in November. Four cars, the 8 h.p. M.M.C., the 10 h.p. Argyll, the 12 h.p. Wolseley and the 22 h.p. Daimler, have completed the distance without an unauthorised stop. Seven cars made one stop, eleven made two stops and eleven made three stops. The 104 starters whittled down to 74 to finish. Light cars have travelled well, but they have not been able to avoid unauthorised stoppages. The 6½ h.p. Cadillac has performed best in the way of reliability, making five non-stop runs. It would have done even better but for the fact that the cumbersome Clarkson managed to crush a Cadillac wheel. But, until the detailed report is received, any attempt to arrive at the results would be absolutely futile.

The judges are at work this week examining the cars for condition at end of trials, and the accountants are busy working out the figures obtained in the course of the runs.

**Reading Automobile Club.**

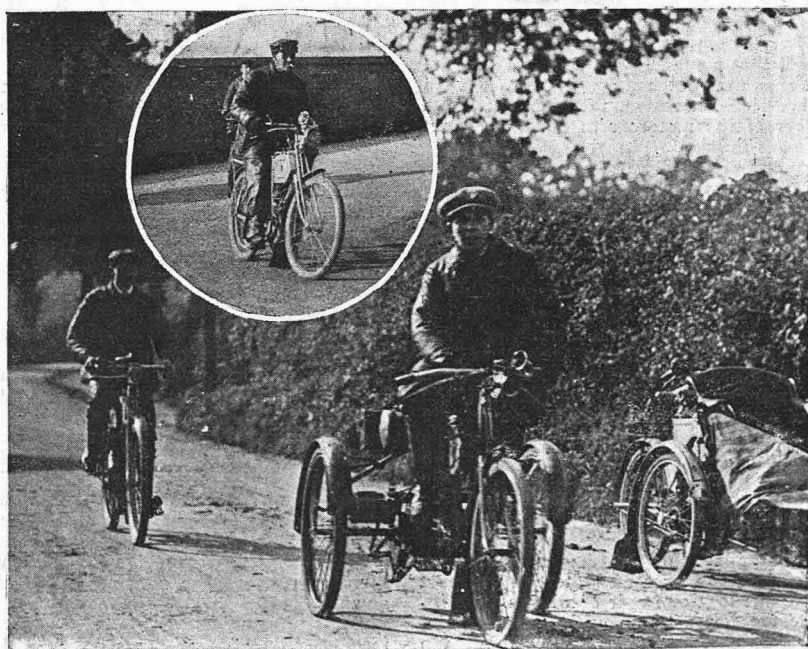
The fifth and final monthly run in connection with the Challenge Cup Competition for 1903 took place on Wednesday last in pleasant weather. Leaving Reading at 2 p.m., the route lay along the Oxford road as far as Littlemore station, and thence to Wallingford, via Chiselhampton and Warborough, and back to Reading, via Streatley and Pangbourne. Those taking part in the run were:—Dr. A. C. Major (Baby Renault), Mr. C. Dodd (8 h.p. Renault), Mr. A. C. Bremerton (10 h.p. Georges-Richard), Mr. A. E. Pocock (8 h.p. Dennis), Mr. C. H. Smith (10 h.p. Clement), Dr. Truman, Mr. J. V. Molnet and Mr. A. Phillips.

**Irish Automobile Club Hill-climb.**

On Saturday last the members of the Irish Automobile Club held a hill climbing competition at Glendoo Hill, a rise of about 1 in 12, near Dublin. Twelve members competed, of whom eleven succeeded in reaching the top of the hill. The result was as follows:—W. G. D. Goff (12 h.p. Napier), 5 mins. 1 sec.; W. Sexton (10 h.p. Siddeley), 5 mins. 11 secs.; L. J. O. Higgins (10 h.p. Gladiator), 5 mins. 11 secs.; Mrs. R. J. McCreedy (6 h.p. De Dion), 5 mins. 35 secs.; C. W. Hely (10 h.p. Panhard), 5 mins. 38 secs.; R. J. McCreedy (10 h.p. Siddeley), 5 mins. 42 secs. Five other slower times, ranging to over nine minutes, were recorded. The feature of the competition was the excellent performance of Mrs. McCreedy's 6 h.p. Dion, which beat five cars of higher horsepower, although half a minute was lost at the start through the brakes not being easily released.

**The Motor Cycling Club's 200 Miles Reliability Trial.**

On Saturday last the Motor Cycling Club held what was intended to be the final trial for the S. F. Edge trophy. There were ten competitors left in from the previous trials, and eight of these put in an appearance at the Red Lion Hotel, Hatfield, for the start over the usual 200 miles course to Stony Stratford, Hitchin, Berkhamstead and Hertford. The competitors who faced the starter at 6 a.m. were Messrs. Clark, Cowles, Crundall, Heighton, Holmes, Jones, Milligan and Wilson. The competitors were closely observed by Club officials from a motorcar. On the first stage to Stony Stratford and Hitchin, Clark retired with ignition troubles, and Crundall had some defect in his petrol supply pipe and dropped out. At the end of the first stage it was found that Holmes, Heighton and Wilson had exceeded the speed limit. These competitors objected, but essayed to complete the distance if possible. On the second stage Heighton failed to surmount Holywell Hill coming in to St. Albans. Holmes, Milligan, Jones, Wilson and Cowles got through the second stage, but of these only Cowles, Milligan and Jones were entitled to compete in the third stage. These latter succeeded in making non-stop runs, consequently a further trial will be necessary to find a winner out of these three. Cowles was mounted on a 2 h.p. Stockwell bicycle, with Minerva engine; Jones on a chain-driven De Dion tricycle; and Milligan on a Bradbury 2½ h.p. bicycle. The speed limit was slightly increased to enable the test to be completed, as far as possible, in daylight. The roads were in excellent condition, and weather very favourable. Mr. J. A. Jackson acted as marshal Messrs. C. W. Brown, J. van Hooydonk, G. E. Roberts, T. Hooydonk and C. W. Schafer were the observers. Mr. D. K. Hall acted as official timekeeper.



**THE MOTOR CYCLING CLUB'S TRIAL.**  
The three survivors: Milligan, Cowles (in circle) and Jones (tricycle).

### The Irish Reliability Trial. The Result.

The result of the 100 miles reliability trial, which was held under the auspices of the Motor Cycle Union of Ireland on Saturday week last, has been announced as under—

	Marks.
R. W. Stevens (Star Griffon) ..	135 } 1
H. Hirst (James) .....	135 } 1
L. R. Oswald-Sealy (Brown)....	160 } 3
A. Summers (Triumph).....	185 } 4
T. Wells Houghton (F.N.).....	230 } 5
J. J. Cahill (Roebuck) .....	250 } 6
H. Shaw (Excelsior) .....	260 } 7
C. B. Franklin (F.N. with fore- carriage) .....	265 } 8
E. Martin (Excelsior).....	275 } 9

The plan on which the trial was conducted was to divide the course of 100 miles into 13 sections, and between each of the checking stations a speed of not less than 12 miles an hour, or more than 20, was fixed. For every minute gained on the minimum time the rider lost 15 marks, and for every minute lost the rider was penalised five marks, while a pace of less than 12 miles an hour between any two checking stations disqualified the rider. Despite the big penalty for fast pace, most of the marks lost were for gaining on the minimum time; in fact, one rider lost over 100 marks in a comparative short section of the course. Remembering that the trial was conducted over very wet roads, the performances speak eloquently for the skill of the drivers and the reliability of the machines.

#### A "Race for Life."

The "Daily Express" last week published an account of a thrilling race for life on a motorcar which, although it has on the face of it rather a "De Rougemont" appearance, may very well have been literally true; truth often being a good deal wilder and more romantic than fiction. It appears that Mr. J. E. Stead, an engineer of Middlesbro', was about to cross a level railway crossing, the gates being open to road traffic, when a fast goods train came crashing through: car and train were both travelling at such a speed that a pull up was impossible: the train could not manifestly turn off to either side: it rested, therefore, with the driver of the motorcar to make an effort to save himself. In the words of the "Daily Express": "the chauffeur adopted the daring expedient of turning the car on to the track in front of the train. Then ensued an exciting race for life and limb. Straining every nerve to keep to the irregular and uneven track, the chauffeur extracted from his motor every bit of speed which it was capable of. The engine driver on the goods train, who, in the excitement of bursting the gates of the crossing did not at first appear to have noticed the motorcar, now realised the peril of the motorists, shut off steam, and put on the brakes. Notwithstanding the efforts of both, the engine eventually ran into the motorcar, but as the speed of the former was by that time slackening, the impact resulted in nothing more serious than a severe shaking." When we consider the relative widths of a railway track and the average motorcar we must conclude that one pair of wheels were inside the rail and the other pair outside. There is nothing impossible about the feat, but if the car got in front of the engine, how did it get through the yet unbroken gate?



The Parade. Southport, where the Speed Trials take place on Friday and Saturday next.

The Auto-Cycle Club has appointed a special committee to consider the new racing standards for next year.

#### A London Depot for Clement Cars.

For the last few years Mr. E. H. Lancaster has been a more or less prominent figure in the motor world, first as motor expert to Mr. Alfred Harmsworth, and latterly as engineer to the Automobile Club. About three months ago Mr. Lancaster resigned his appointment with the A.C.G.B.L., and many rumours were current as to his business intentions. We are now able to give the first official intimation on the matter, and this we think will be interesting to the many friends of Mr. Lancaster in automobile circles. We have it on the best authority that Messrs. Clement and Co., the famous French motor manufacturers, are opening a depot of their own in London for the sale of Clement cars, which have, up to now, been handled in this country by a firm of agents. Mr. Lancaster will be the direct representative of Messrs. Clement ("Concessionnaire Exclusif" is the most popular expression), and will manage all their English business. We wish Mr. Lancaster the success which his thoroughness and business-like qualities deserve.

#### Stair-climbing on a Car.

During the course of the reliability trials in the past fortnight a 5 h.p. Oldsmobile, of the same specification as that officially engaged in the trials is reported to have done a rather remarkable performance—no less than the ascending and descending of the great flight of steps leading up to the firework terrace in front of the Palace. An achievement such as this, whether it be of great or of little value in actual practice, must at any rate afford a splendid guarantee of the materials and workmanship of the car which accomplishes it: no jerry-built vehicle could safely attempt it. Mr. W. M. Letts, of the well-known firm of Charles Jarrott and Letts, claims that the thing has been done by the car above mentioned without the loosening of a single bolt or nut and without the slightest straining of any part. Mr. Letts drove the Oldsmobile up and down the steps himself in the presence of Mr. Basil Joy and one or two other gentlemen. Mr. Letts' assurance of the *bona fides* of the performance is sufficient of itself to satisfy the ordinary mortal; coupled with the name of Mr. Joy it would banish sus-

picion from the bosom of Othello himself: but at the same time we cannot help thinking that Mr. Letts would be wise to arrange for a public exhibition of the powers of his car; these would be of undoubted interest. We are afraid that the British public is somewhat sceptical of private exhibitions and exhibition photographs, and it is, moreover, notorious that manufacturers in America have not hesitated to employ most unscrupulously-faked photos to corroborate their fictitious achievements.

#### The Southport Automobile Speed Trials.

The trials jointly organised by the Automobile Club and the Liverpool Self-propelled Traffic Association, to be held on Friday and Saturday next, October 2nd and 3rd, promise to be highly successful. A large number of entries have been received, amongst them being Messrs. Edge, Jarrott and Stocks. Vehicles must be entered specifically in one section and class. A section will be provided for touring cars, which must not exceed 30 h.p. The competing cars will also be classified as to their advertised places. Class E will consist of touring cars for two passengers, price £200 or less; Class F, touring cars for four passengers, price up to £400; Class G, cars for four passengers, price up to £550; Class H, cars up to £750; Class J, cars up to £1,000; Class K, cars over £1,000; and Class L, steam cars up to £800. There will be a scratch race for cars weighing less than 1,000 kilogrammes, the winning car must cover the kilometre (five-eighths of a mile) in less than 40 seconds or at the rate of 55.9 miles per hour. There will also be a race for cars of any power and weight. The motorcycle section comprises Class A for machines with cylinders up to 70 x 70 mm., and total weight up to 114 lbs.; Class B, machines up to 170 lbs. weight, cylinder 84 x 84; Class C, confined to Lancashire owners of machines, weight not more than 170 lbs., cylinder 84 x 84 mm.; Class D, for machines of any cylinder capacity and up to 170 lbs. weight. The prizes in each section will be a cup, a silver medal, and a bronze medal. No motorcycle will be allowed to compete unless fitted with efficient brakes. A fully illustrated report of the trials will appear in our next issue.



## 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.

### Cyclometer for Olympia Tandem.

Sir,—If your correspondent "Cyclometer" will get Humber's to make him a special clip he will be able to fit a "Veeder" (or I suppose any cyclometer) to the front wheel with excellent results. I have used this method on an "Olympia" tandem for some time and had most accurate measurements.—Yours faithfully,  
A. S. HENDERSEN.

### Benz Cars.

Sir,—Replying to the enquiries of "Would-be-motorist" and "Savant" in your issue of September 2nd, I can most certainly recommend them to invest in a 3½ h.p. Benz car, as I have had one for some time past and have had some very enjoyable runs with it. My car has tangent wheels, with chain rings on hubs; Connolly's "Ideal" solid tyres; two speeds, viz. 4 to 8 and 10 to 20 miles an hour, and although I have no crypto gear I find I can climb almost any hill with two up on the low speed, and have climbed most hills met with on the top speed with two and three up by putting the throttle full on and retarding the ignition slightly, and in the case of a previous slope before a hill I always rush down on top speed so as to get a good impetus to carry me up the next hill. I have driven the car through Devonshire and Hampshire and along the South Coast and have never yet met a hill that I could not climb. I may say the Benz car is most economical as it will run 45 to 50 miles on a gallon of petrol if the carburettor and throttle are properly managed; my carburettor is of the surface type with the usual float feed. As regards price I think about £65 very fair for one in sound condition, although I have seen them advertised as low as £35, but these are generally of the oldest type with direct spokes and engines of 2½ h.p. and are often very much worn out. As regards upkeep I find the Benz car no more expensive than a motor-bicycle, as I use mine daily and find the weekly expense, including two gallons of petrol, lubricating oil, stable, etc., does not exceed 8s. although I do on an average 100 miles a week.—Yours faithfully,  
Southsea. "HEWBENZ."

### Remedy for Misfiring with Coventry Eagle Motor.

Sir,—In reply to J. A. Blears (Heaton Moor), whose query appears in issue September 2nd, I might say that I have a Coventry Eagle motor with brush contact and experienced the same trouble with misfiring. I found that the brush was not making a good contact, so I cleaned it and bent the spring to give more pressure on the fibre disc. This effected a remedy in my case.—Yours faithfully,  
D. HUGHES.

### Band Brakes for Fore-carriages.

Sir,—The very interesting article of your correspondent "Cylinder" in your issue of September 2nd contains a gratifying testimonial to the efficiency of the Bowden rim brake for motor-bicycles, but we think that he is unaware that we market in addition to this a special form of double-acting compensating band brake for fore-carriages. These are controlled by a single lever, and if your contributor had had them fitted to his fore-carriage we feel sure that he would not have had to alter or re-inforce them.—Yours faithfully,  
E. M. BOWDEN'S PATENTS SYNDICATE,  
LTD.

### Fore-carriage with Light versus Heavy Motor.

Sir,—"Cylinder," in his article on "Experiments with a Fore-carriage with a Light Motor," goes to some length in explaining its working and advantages, but personally I have little faith in this type. To me, the high-powered engine is the proper accompaniment to a fore-carriage; the reserve of power is always ready, and most hills can be climbed at a very fair pace. But hill climbing with a fore-carriage is an art in itself, and is only learnt by experience.

"Cylinder" is certainly ingenious in introducing the many improvements and alterations in his machine, but these are, in my opinion, beyond the capabilities of an average motorist. The many difficulties met with are certainly no recommendation of a light motor, and as they are practically absent with a high-powered motor, the light-power engine will not, I am afraid, become extensively used. The question of overheating is no small matter with an engine running at 2,000 revolutions per minute. The fitting of wind scoops does certainly not overcome the overheating difficulty, the advantage being only noticeable when driving against a head wind. Chain driving does not seem altogether a success for fore carriage work, although a combined chain and belt drive might be better. To my way of thinking, a high-powered motor with free engine clutch, two-speed gear, fan cooling, and twin belt drive is the ideal combination for fore carriage purposes.—Yours faithfully,  
R. G. PRIEST.

### Wishes to Fit an Air Scoop.

Sir,—I ride an F.N. 2 h.p. motor, with a Mills and Fulford fore-carriage. I should be glad if some reader would kindly give me an idea of how to cool the engine by some sort of funnel or wind scoop. In the article by "Cylinder" I cannot understand how he fits it on, or its size. My engine overheats terribly.—Yours faithfully,  
CHARLES W. SEGRAVE.

### Reply to Cyclometer Query.

Sir,—In reply to G.S.M. in "THE MOTOR," August 26th, I fitted an ordinary 28 inch Veeder cyclometer to my Trimo as follows: The meter would not do for the front wheels of fore-carriage, so I removed an unessential part of the holder, loosened the back wheel and slipped meter over the axle between fork and hub, then tightened up wheel. The nipple supplied would not fit on to the spoke, but a piece of stout wire (a piece of ordinary bicycle spoke) bent and fastened on with flower wire, adjusted, and made secure with a touch of solder, acted just as well. The only drawback to this method is that one is unable to see the meter whilst travelling. I shall be glad to know of any other method.—Yours faithfully,  
H. D. BATEMAN.

### Starting Methods in Motor-Bicycle Speed Trials.

Sir,—With a view to the improvement of motor-bicycle races I write to complain of what, in my opinion, is the inefficient method of starting adopted at the recent speed trials on the track at the Crystal Palace. It is obvious that there is a vast difference between starting an ordinary cycle race, which is handicapped by distance, and one which is handicapped by time. The Crystal Palace starter arranged his men in order, glanced at his watch, and at the necessary intervals of time he called out the word "Go." When the competitor heard it he looked to see if it were intended for him and, believing it was, pushed off. In some cases some of the men in their doubt lost the benefit of the whole handicap. My object in writing this letter is to point out that if the same system which is adopted in swimming races were adopted in motorcycle handicaps there would be no cause for complaint: all swimming races are started from the same mark, and a programme would be made out as follows, say for ten starters:—

A.	...	Scratch	...	Go at 32
B.	...	2 seconds	...	Go at 30
C.	...	5 "	...	Go at 27
D.	...	10 "	...	Go at 22
E.	...	12 "	...	Go at 20
F.	...	17 "	...	Go at 15
G.	...	20 "	...	Go at 12
H.	...	25 "	...	Go at 7
I.	...	30 "	...	Go at 2
J.	...	32 "	...	Go at Go

It is self-explanatory. The starter, after informing each individual man what

number he will "Go" at, takes his watch in his hand and counts off the seconds in a loud voice; as he comes to each competitor's number that competitor is absolutely ready on the very second and a perfect start is assured.—Yours faithfully,  
"SPARKER."

### How to get Good Results from a Front-drive Werner Machine.

Sir,—I see from a recent issue that "A. Harris" is in trouble with his Werner F.D. machine, and that you consider all the trouble comes from the carburetter. You recommend him to change it for a spray. Excuse me if I say that I am of opinion you are wrong. I have my old F.D. still and I consider, with a slight modification, it is the best carburetter invented. You cannot make a good job of fitting a spray, and it will cost £2 to £3, whereas my way will give better results and cost about 6d. The whole secret of the Werner "meat safe" style of carburetter is in the material used to cover it. With volatile petrol calico first and flannel over it was best; as petrol density altered I had trouble, so fitted a tin funnel at the back of the cylinder with a 3/4 in. rubber pipe to top of carburetter for a warm air feed, of course making other openings tight with flannel packing; this carried me on for a time, but I still had trouble, so I took the carburetter out, made a number of holes in the bottom with a sharp file tang, and partly filed and partly pulled out with the nippers the tin between until I had a hole big enough to get two fingers in. I also made some small holes through the tin just below the gas outlet, and threaded wire across and across to form a rough grating. I then filled the inside with pieces of sponge (not too tightly) taking care that one was a good long piece which would hang down through the hole in the bottom to the bottom of the tank. All this cost nothing. I then sent to the chemist for two 4d. baby sponges as thin and flat as he had got, and of fine texture; these I laid on the outside of the two gauze openings of the carburetter and lapped them with two thicknesses of soft flannel, not too tightly wound. I tied this tightly round close to the top and bottom with string. With this carburetter I have never had any trouble; it will use all kinds of stale petrol (if such a thing exists, but I have never found any) and, except when I had the engine running hot, it worked perfectly. As this heating occurred pretty often, and was new to me, I was troubled and took carburetter to pieces and cleaned it thoroughly. When I started it again I did not put the hot air pipe on, and since then the heating has ceased, and I have not used hot air since, though I may do so in the winter again. Whether that was the cause or not I am not sure, but, anyhow, it is not required. I use the hole in the carburetter to pour a small quantity of petrol in to soak the sponge quickly if it has stood long enough to evaporate dry, which it does very quickly if the petrol tap is closed. This carburetter, with the bird fountain feed, which always keeps the supply regular, and the air ring on the right handle, is a perfect arrangement; you can regulate the running with the air instead of the throttle, and should never know what a sooted sparking plug means; none of the new machines are half so perfect to my mind in this respect. I found the trembler ignition a nuisance, and had a

very primitive wipe contact made out of it; this works well without any alteration to the coil, but I fancy uses more current. The only fault with the petrol arrangements of the old Werners were: want of a gauge to show how much spirit was left, and that about two inches at the bottom of the tank were never used, so that if you shook it there always seemed plenty in when you were really at the last gasp. If you emptied this residue out at the end of the season it would show you what was in your spirit that should not be! A quantity of water, some thick oil, and solid matter. Of course, this carburetter is quite indifferent to solid matter, and is a good filter, allowing nothing but gas to get to the engine. It is all nonsense about the F.D. being bad for tyres; that depends on the driving, or the ignition. My Dunlops have run over 7,000 miles, and are as good as new; I have only had one puncture. I use Smith's light bicycle bands, 1 1/2 in. wide, which carry me about 2,000 miles as a rule, although, when troubled with faulty ignition, I have worn a pair out in 200 miles. I do not observe any noticeable difference between the wear of back and front wheels. I find that the spark lever has to be almost at one place since fitting wipe contact, so that I have much less control of speed and, I think, use more current; these defects might be obviated by a trembler coil?—Yours faithfully,

"UJDANYA."

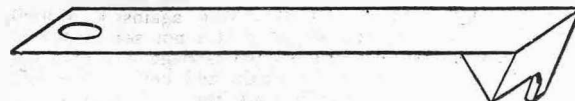
### Interesting Riding Experiences.

Sir,—Being the owner of a Trimo, I have read with very great interest the articles on "Fore-carriage Experiences." I think it is the duty of all motorists who have experienced any unusual difficulty with their machines, and been able to discover the fault, to write to "THE MOTOR" and enlighten others, as a slight return for the numerous tips obtained from "THE MOTOR." A friend of mine who has a Trimo was in great difficulty the other day with his engine misfiring, so he wrote to you for help. In the meantime I offered my assistance, and succeeded, after one hour's work, in discovering the fault, which was exactly as you stated, viz., bad contact between the brush and the commutator; but I think it advisable to explain the reason of this failure. The portion of the blade that rests on the commutator is shaped like a bird's beak, and is wider than the commutator, consequently as it wore down it left a tang projecting as shown in the sketch; this tang caught on the side of brass contact piece, and caused it to jump at each revolution. By rounding both corners well off the fault was cured, and will not, I think, occur again for some time. Now I wish to say a few words about accumulators. It is shameful, I consider, the way amateurs are using their ignition batteries; however, I do not blame them so much as the repairers, etc., who undertake to charge the batteries for them; they never keep them on the charge half long enough in my opinion. When I bought my machine, after running fifty miles I took the battery out and put it on the charging circuit, thinking, of course, that it would be fully charged in, say, two

hours. You may not believe me when I state that it took 24 hours to fully charge. By this I do not mean "gassing," it did that in two hours, but to get the plates to their proper colour, viz., the positives to a deep chocolate and the negatives to a slate grey. I charge the battery once a week, whether I use it or not. I know it will pay me in the long run. The specification of my machine is 2 1/2 h.p. De Dion engine, Longuemare carburetter, wipe contact and coil ignition, belt driven, fore-carriage with pedal brakes. I experienced a lot of bother with the carburetter, as I found after considerable trouble that the spray jet I was using was passing too much petrol, causing the engine to sputter badly. My gear, when I first received the machine, was 5 to 1. I have altered it to 5 1/2 to 1; but these Buxton hills are truly awful; my passenger always has to walk whilst I rush them and pedal like a steam engine. In conclusion, might I ask the opinion and advice of some of your readers with respect to lowering the gear ratio still further. My pulley is 4 in. outside diameter, the back rim measuring 2 1/2 in., the ratio being 5 1/2 to 1. If I buy a new pulley, 3 1/2 in. outside diameter, the ratio would be 6.2 to 1. Would this mean crawling along the level, and would it tend to overheat the engine? I find that to fit a water-cooled head to motor would cost about £5; I am quite prepared to pay this if I should benefit to any extent in the running and increase of power. At present I have two cowls fitted underneath the fore-carriage, with one large bell mouth, and when running I can feel the heat rising from the engine very strongly; when rushing a hill the engine heats excessively, and nearly knocks itself to pieces. I should be much obliged for advice from some rider who has actually tried water-cooling on a Trimo; and I should be glad to know if the extra weight is compensated by the extra benefits obtained.—Yours faithfully,  
Buxton. "A.M.I.E.E."

### An Unbreakable Accumulator.

Sir—I have noted frequent references in "THE MOTOR" to troubles inherent and incidental involved in the use of ignition accumulators. The chief of these appear to be:—(a) The general deterioration of the battery owing to the washing about of the liquid. (b) The frequent breakage of battery plates and lugs owing to the excessive vibration when the car or cycle is in use. (c) The breaking of connections external to the battery due to the corrosion of metallic parts by acid creeping. Now, although I have been a reader of your journal for some months I have not seen any reference to a battery that came before my notice some time back, and of which I think a description would be of service to your many readers. The battery is an ordinary accumulator, but with plates of a particularly good make. It contains, however, no free acid, all liquid being absorbed by a vegetable substance in such a manner that "spraying" or "creeping" cannot take place, and the battery may be used in any position required. A friend of mine who has to do with the repair and recharging of a large number of ignition batteries weekly informs me that although he has from time to time practically all the makes of batteries through his hands for sundry repairs, he has never had to deal with a faulty battery of this make.



Illustrating letter from "A.M.I.E.E."

The breaking of plates and connections owing to vibration is entirely obviated by the absorbent which acts as a buffer, relieves all sudden shocks, keeps the paste in the plates by mechanical pressure, thus making short circuits an impossibility. Any further particulars as to technicalities or prices the manufacturers of the battery, Messrs. Wakelin and Co., 5, Tottenham Street, London, W., will, I have no doubt, be happy to supply.—Yours faithfully,  
A. F.

**Police Traps.**

Sir,—It might be of interest to your numerous readers to know that Inspector Marks, of Weybridge, has been promoted and made Superintendent of the Hershams Police. His district, therefore, now embraces Hershams, Walton-on-Thames, Esher and Oatlands Park; and the portion of the Portsmouth Road from Esher to Ripley is now under his control. Motorists therefore need to observe all caution when travelling along roads in these neighbourhoods, bearing in mind Inspector Marks' past record.—Yours faithfully—  
"SPARKUP."

Sir,—There are numerous traps around here, one in particular on entering Lytham from Preston, and I should advise all motorists not to exceed the legal limit after leaving the village of Freckleton. There is another on the Promenade, and another on Clifton Drive on the main road to St. Annes and Blackpool. Motorcycles with trailers are being stopped for exceeding the absurd six mile limit. Hoping this will do some motorists a favour.—Yours faithfully.

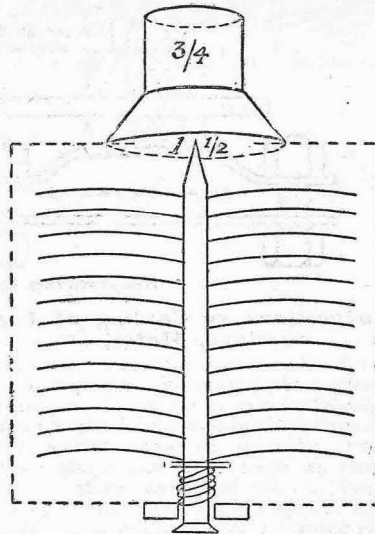
"JUSTICE."

Sir,—I would warn motorists that police traps are alternately laid on the Birmingham and Sutton roads, leading out of Walsall. The traps consist of two policemen in plain clothes, with cycles, and a measured quarter of a mile.—Yours faithfully,  
F. R. HEELEY.

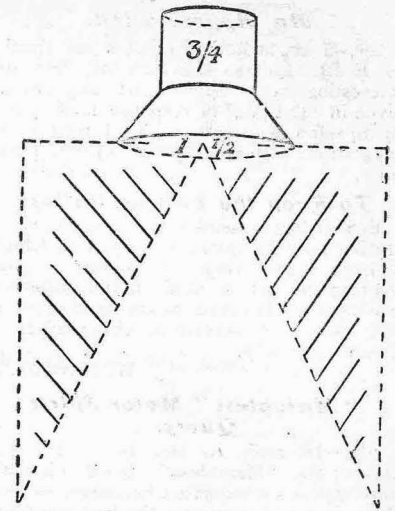
Sir,—For the benefit of readers of "THE MOTOR," I beg to inform you that there is a police trap at Little Wolford, Worcester. This is about four miles from Shipston, on the road from Oxford to Stratford. On a recent Sunday I was warned of this by a car, and consequently took care to drive slowly. I saw a plain clothes man give the signal of my approach, and slackened up still more. In spite of this, I was stopped, and told I had done half a mile at the rate of over twenty miles an hour. My actual rate must have been about ten miles, or under. I have now been summoned to appear at the Shipston Court, on September 5th. Of course, I shall be fined, as I was alone, and I suppose the evidence of the three trappers will be believed, and my word absolutely disregarded.—Yours faithfully,  
A.C.J.

Sir,—I beg to warn readers of "THE MOTOR" that a trap exists at Drayton, near Cosham. The police hide in a bush by the village church.—Yours faithfully,  
"MOTORIST."

Sir,—I beg to inform you that a police trap is laid in High Street, and also in Langley Mill Lane; that is, the main road from Belper to Mansfield. I trust this information may be of use to some of your readers.—Yours faithfully,  
"A SUBSCRIBER."



No. 1.



No. 2.

Illustrating letter from "Silentium."

**The Auto-Cycle Club's 1,000 Miles Reliability Trials.**

Sir,—The results of these trials have given rise to a great deal of criticism, and it is clear that the experience gained by the promoters will enable them to avoid some of the anomalies which mark the trials recently concluded. Many of these have already been touched upon, but there is one which, so far as I have seen, has altogether escaped attention, and that is that, by the system of scoring, it was possible for machines which did not actually complete the 1,000 miles to qualify for certificates. My idea of a test or competition over a given distance is that anyone failing to complete that distance cannot possibly qualify for an award, and this is confirmed in all branches of sport. Yet, in the trials in question, some machines, which it is well-known covered part of the distance by train (in fact there was no attempt at concealment), have obtained certificates. In other words some machines have obtained Reliability Certificates for 1,000 miles whereas they did not cover that distance. In a system of scoring whereby ten marks per day maximum may be lost, it is of course more pleasant when it is raining hard to lose those ten marks in the train rather than by plugging through by road, but it is not a test of reliability over a thousand miles. I think that next year there should be a definite rule to the effect that anyone not covering the full course will not be entitled to any award whatever, although as a matter of fact such a rule should go without saying.—Yours faithfully,  
A. F. ILSLEY.

**Benz Car Experiences Wanted.**

Sir,—Would some of your very practical readers who have had experience in running the Benz car help me on the following points? Acting upon the advice given by a correspondent in "THE MOTOR" recently I came across a 3 1/2 h.p. Benz car for £50, and on the whole am getting some very enjoyable runs on it. I have a difficulty in getting the engine to start by turning the fly-wheel, but if I push the car 20 or 30 yards and quickly put on the second speed the engine starts easily. I am using Pratt's "B" spirit; would "A" quality be better? Would an automatic inlet valve lifter be an advantage? There is a small brass screw cap below the spark plug; what is this for? I quite agree with your correspondent "Benzite" that the Benz is a most useful little vehicle for learners.—Yours faithfully,  
W. B. NICHOLSON.

**Silencer Construction.**

Sir,—If the last word has not been said in your excellent paper on the subject of motor silencers, allow me to suggest that the exhaust gases should be divided by being made to impinge upon an obstacle immediately after leaving the exhaust chamber, such obstacle, of course, being constructed so as to allow for necessary expansion of the gases. I send rough sketch of two notions for a motor silencer. No. 1 is a metal spiral brush riding on a spring, enclosed in an all over perforated metal box. No. 2 is a perforated cone provided with a few metal bristles, fixed in an all over perforated box with an open bottom. Personally, I think motor engine makers should arrange a much larger exit or a differently shaped exit to exhaust chambers, both for silencing and avoidance of back pressure? The present pattern exhaust chamber simply bottles up the gases. Surely when gases are liberated by the exhaust valve their expansion should not be checked, from which it follows that the widest part of exhaust chamber should communicate immediately with a silencer of still greater capacity for allowing expansion and division. Would not a funnel-shaped exhaust chamber be suitable?—Yours faithfully,  
"SILENTIUM."

**THE MOTOR MANUAL**

*is the standard book of the motorcycle and light car. It misses nothing and is replete with hints and useful information. The fifth edition is now selling rapidly.*

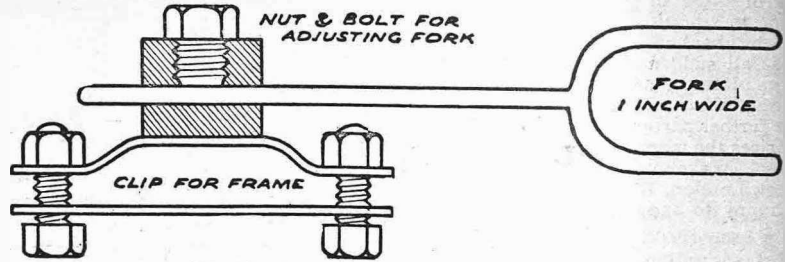
*Is. is the price.*

**An Appreciation.**

Sir,—I would like to express my thanks to E. J. Mears, (Leytonstone) for his interesting and appreciated suggestions given in "O.P.V.," in response to a query by myself a few weeks back. I read these suggestions with much profit.—Yours faithfully,  
Y. GOSNOLD.

**To Keep the Belt on Pulley.**

Sir,—I beg to send you a diagram illustrating how I constructed a device which I have found very satisfactory in preventing the belt coming off the pulley of my 2½ h.p. Minerva motor, and trust it may be of some service to other readers.—Yours faithfully,  
W. NEVISON.



Illustrating letter from W. Nevison.

**"Matchless" Motor Spirit Query.**

Sir,—In reply to Mr. D. Best (Holt Castle) the "Matchless" motor spirit we may say is a deodorised benzoline of less than 700 sp. gr., and is the best spirit we know of for surface carburetters. It is supplied in two-gallon cans, four to a case. It is not connected with Pratt's as you suggest. We will answer all enquiries re this spirit providing a stamped directed envelope is enclosed.—Yours faithfully,  
JONES AND CO.

Talbot House, Lichfield.

**Spare Parts.**

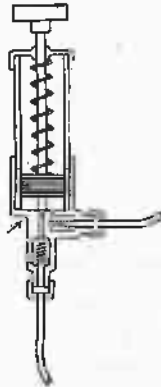
Sir,—More than once attention has been drawn in your paper to the difficulty some of your readers have experienced in getting any part of their machine which has to be renewed. I do not think there is a better machine than the one I have, but should I require a new part sixty miles from home I may have to wait days before it comes to hand. Every firm that advertises should be able to despatch any part of the machine on receipt of a wire. If they cannot do this it should be noted in their advertisement.—Yours faithfully,  
P.E.C.

**The "Trusty" Carburetter.**

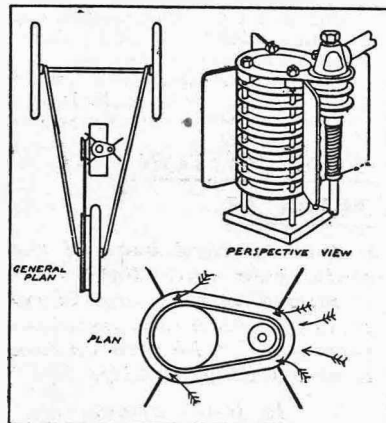
Sir,—As mention has lately been made in your paper of the "Trusty" carburetter, my experience of same may be of interest. I have a motor-bicycle, with home-made "English Mechanic" pattern engine, to which I fitted a "Trusty" carburetter. The results have been most satisfactory. With petrol of nearly 720 sp. gr., I have not had the least difficulty in starting. When all is cold the petrol supply valve is opened to a little more than its ordinary running position, and the engine starts off at once. When it has warmed up, the petrol valve is slightly closed, and the engine will run for as long as may be desired without any further attention, as far as the carburetter is concerned. The air supply takes care of itself, and requires no attention. The carburetter seems to be quite unaffected by atmospheric conditions, and the consumption of petrol is very moderate. Before engine was mounted on frame, I tried it for a few minutes in my workshop with paraffin, and found it worked as well as with petrol; and I should say engine gave rather more power, but also made a slight smoke, which I attribute to want of proper regulation, and to engine not being sufficiently hot. I hope in a few days to experiment further in this direction, and will let your readers know the results.—Yours faithfully,  
Cork.  
J.E.L.

**Suggestions re Cooling of Fore-carriage, Motor, etc.**

Sir,—As a constant reader and great admirer of your sensible paper, may I be allowed to say a few words concerning motorcycles and their accessories: Firstly, why, when a Bowden exhaust valve lifter is fitted to a motorcycle, is the lever on the handlebar made so short that it requires herculean efforts to raise the valve? I see no reason why it should not be made as long as the ordinary Bowden brake lever, provided, of course, that there was not another large lever on the same side of the handlebar. Secondly, as regards the pump for lubricating the engine, I understand that the purpose of the bothersome two-way tap usually fitted is to prevent the oil from being sucked through the pump and into the crank case. I suggest the following arrangement, which does not involve the use of any tap to be manipulated by the rider. On the top of the plunger of the pump is fitted a spiral spring of sufficient strength to bring the plunger smartly to the bottom of the cylinder; on the under side of the plunger is fitted a pin which closes the delivery pipe of pump (like the needle valve in a spray carburetter); ball suction and delivery valves are fitted in addition. Thus it will be



seen that no oil can pass when the plunger is down. Thirdly, as to cooling the engine, it is, alas, too well-known that the ordinary air-cooled engine, especially when screened by a fore-carriage, overheats seriously on hills; various arrangements have been proposed to avoid



Illustrating letter from O. D. NARTH.

this, including fans, water-cooled heads and hoods: but it seems to me that the two former add unnecessary complications to the machine, while a hood is useless if the wind is blowing behind or at right angles to the direction of motion; I, therefore, propose that four "wings" of thin metal be fixed to the cylinder as in figure; it will be seen that a wind coming from any direction would be concentrated upon the cylinder, and although this arrangement would not give so strong a draught with a head wind as a hood, I think it would give better average results under varying conditions of wind and weather.—Yours faithfully,  
O. D. NARTH.

**Silencer Enquiry.**

Sir,—Would Dr. McMurty say through "O.P.V." if the "Fairfax" silencer he found so successful when fitted to his Werner machine is the No. 3 size? I am desirous of making the change and wish to get the correct size.—Yours faithfully,  
P. S. SHEARDOWN.

**"Carburine" Spirit for Surface Carburetter.**

Sir,—For the last few months I have been running my motor-bicycle on "Carburine" supplied by the Gas Lighting Improvement Co., Ltd., Devonshire Street, London, E.C., and agents. I use a surface carburetter and get splendid results, quite equal to what I used to get with Carless'. This may interest readers who have trouble with Pratt's.—Yours faithfully,  
JOHN BREERE.  
Temple Cowley, Oxford.

**A Reply re Motor Launch.**

Sir,—I beg to send the following answers to "J.F.H." who enquired re motor launch in issue No. 80:—(1) No. (2) "Popular," Harrow Road, London; "Truscott," address unknown; "Stirling," Glasgow and Teddington, S.W. (these are two stroke engines without valves); "De Dion," 10, Great Marlborough Street, W.C.; "Blake," Kew, S.W.; "Simms," address unknown to me (these are four cycle engines with valves and high tension ignition and more expensive). (3) I use a "Popular" 2½ h.p., costing about £60 complete. (4) 1½ h.p. would be ample for the purpose required, but as all are somewhat noisy, you will not get near ducks with the engine running. A 14ft. centre-board boat is not very suitable; you would get no speed and a big wash. Better sell your centre-board and buy a boat complete. Try Lister, Harrow Road.—Yours faithfully,  
REGINALD HARRISON.

[We believe the Simms motor referred to is the one made by the Simms Manufacturing Co., Kimberley Road, Willesden Lane, Kilburn, N.W.]



## 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.

### Altering Contact Breaker.

W. Clark (Small Heath) writes:—My car has a 9 h.p. De Dion engine, De Dion coil and trembler contact. I get a good spark at trembler, but a very feeble one at plug. Is the fault in the high tension wire? I am thinking of changing the ignition. Is it possible (I am told it is) to have a trembler fitted to existing coil? Would you rather advise me to get a new trembler coil with present trembler contact (a friend says he has done this with success), or would you get a new trembler coil and wipe contact?—(1) The fault is pretty certain to be due to an imperfect connection between the "M" terminal of coil and motor: join the wire direct to a nut or bolt on the motor. (2) You cannot have a trembler fitted to coil satisfactorily, but can get an "Auto trembler" and fix it in circuit giving same results as a trembler coil (see advertisements for makers.)

### Starting Difficulty with Magneto Ignition.

A.B. (Kensington) writes:—I ride a motor-bicycle fitted with a 2½ h.p. Simms engine with magneto ignition and Longuemare carburetter. When riding through traffic I regulate the speed with the exhaust valve lifter, but it sometimes happens that after opening the valve for only a few seconds the engine refuses to start again until I have pedalled the machine 20 or 30 yards. This happened to me the first day I rode the machine and it still does so after 300 miles. Will you kindly explain the cause of this trouble?—It is likely due to your not throttling the air supply to carburetter. The spraying nipple is probably a fine one and it requires considerable suction to get the petrol to spray out. If the air supply is not capable of easy regulation you might effect a remedy by fitting a larger nipple. Of course, you must remember that the magneto spark is rather feeble at a slow speed and will only ignite a good charge.

W.S.B.—It is not advisable to have the front wheels too small in diameter. They do not steer well, and the vibration becomes excessive.

### Renewing Platinum Tips.

J. B. Cooke (Ellesmere) writes:—(1) Can I re-tip trembler with platinum? If so, how? and best way to remove remains of old tip? (2) A short time ago I purchased a woven glass accumulator. It arrived when I was away from home, and when I returned the acid had nearly all run out of the cells. It was charged before being sent to me, and when I tested it I found it showed 3.6 volts. On filling up with acid it showed 4 volts. I used it for a few minutes only, and it has run down again. The top part is filled with a white jelly-like substance similar to a solid acid cell I have. Please say if you think it all right; and, if not, what would be the best to do with it? (3) Can you give me any information about a friction or other clutch with hand starting arrangement to fit to a motorcycle with belt drive?—(1) File the old platinum flush with spring: then knock it out with the tang of a file. Purchase a piece of genuine platinum wire from Derby and Co., 44, Clerkenwell Road, London, E.C., to fit the hole tight. Force a piece into the hole and let it project one-eighth of an inch on top of spring and one-sixteenth underneath. Then get a light hammer and carefully rivet over on small anvil or piece of iron. (2) Cells simply require thoroughly charging and then they should be all right. (3) All the devices of the kind have appeared in our advertisement pages. Nothing perfect yet.

### Misfiring Query.

R.S.L. (Croydon) writes:—I ride a 2½ n.p. motorcycle fitted with F.N. carburetter and high tension ignition. For some time past I have been troubled with misfiring and hope you can help me through your valuable paper. My machine will run perfectly for 15 miles or so, and then suddenly begin to misfire badly. The accumulator (Peto and Radford's) shows 4.3 volts; I have just fitted a new plug, and that is free from all soot or oil, as also is the contact. However, I find that the platinum is burnt into small holes, although the trembler is adjusted to a nicety, just to make and break immediately. I have tested the whole of the wiring and find no short circuit. Would this pitting of the trembler be due to too strong a coil, and would this cause misfiring, or can you explain the misfiring in any other way?—It looks as if you either get (a) your motor overheated through flooding of carburetter or through using too much gas. Have you a throttle valve fitted? It is very desirable: or (b) misfiring through bad contacts at make and break. You can only try the device of cutting down your current with a bit of resistance wire in circuit and placing spark plug points a little closer. The fault really lies in the coil not being well balanced electrically.

A. A. Selby (East Finchley).—We cannot recommend you to proceed with the design of cycle you submit. The steering would be most erratic, and the machine could not possibly keep up on a greasy road.

### A Sparking Mystery.

W. Hudson (Windermere) writes:—I have a 2½ h.p. Coventry Humber motorcycle which misfires on advancing the spark to full compression. On examination of the machine in the dark I found a leakage in several places on the high tension cable. I replaced by a new one, but found it sparked through that. I then enclosed the cable in a new piece of hose pipe, but it sparks through the lot. Everything on the machine is in perfect order; have adjusted trembler on coil to several different positions: very little sparking at contacts: have tried new plug; battery all right: wiring perfect throughout. I should be glad if you can tell me why spark gets through such very high insulation in preference to jumping the very narrow distance between the plug points.—It is not necessarily a defective cable unless you actually get snapping sparks through the insulation. You will notice a "brush" discharge in the dark from a very good piece of cable. We should be inclined to attribute the misfiring to the brush or spring on the fibre disc not pressing hard enough on the contact piece. Also, are you certain there is not a crack in spark plug insulation? This would short circuit the spark on full compression.

### Filtering Oil.

R. H. Armstrong (Blackgang) writes:—Is it advisable to filter the residue oil from crank chamber of my 8 h.p. De Dion engine to use again? I empty the chamber about every thirty miles as a matter of routine, and often nearly a full charge seems to come out: it is black, but otherwise seems all right. I use Price's Motorine "B." I have tried a syphon made of wicks for filtering and find I get what seems quite good oil, but very dark green in colour when seen in a big bottle, the thin edge a rich brown. Is this oil unfit for use in the engine again? I have a large quantity of it, and it seems so wasteful to throw it away.—We cannot say that we come across many motorists who filter their used engine oil. Personally, we think that the oil is bound to lose a considerable amount of its viscosity and to get decomposed through use in the motor; and that it is, therefore, not satisfactory to use again for that purpose, although it might be permissible to use it for bearings (wheel and gears) if quite free from grit. The system of filtering you adopt is, we fear, too primitive to do its work thoroughly. Oil filters of special design can be purchased, but filtering only pays when one is dealing with large quantities. You mention that the oil is green in colour. This may be due to traces of acid in it acting on the bronze bushes.

R. Patterson (Littlebourne).—There is a good work on accumulators, all types, by Sir David Salomons. We believe you could get this from S. Reutell and Co., Ltd., Publishers, 36, Maiden Lane, London, W.C.

### Heavy Consumption of Petrol.

W. Holden (Crewe) writes:—I have a 1903 double-cylinder Darracq car, 9 h.p., which the makers state should run 30 miles on one gallon of petrol. I have run the car about 800 miles and the petrol used averages about 14 miles per gallon. I think the fault lies with the carburetter (of which I enclose a sketch), as I have noticed that when the air lever is in a normal position and the engine running, petrol drips from the small hole at the bottom of the spray chamber. I have tried inserting a piece of fine wire into the nozzle of the spray, which has a good 1-16th inch hole, but found I could not get enough gas to work the engine satisfactorily. I shall be glad if you can inform me how I can bring down my petrol consumption.—The carburetter is doubtless flooding through a defective float or needle valve: the latter might do with grinding-in; or the float may be perforated. Have you tried also carefully regulating your petrol supply tap?

### A Good Spark but no Explosion.

P.H.S. (Kaling) writes:—Please advise on following:—Trembler all right: good spark at plug when exposed, but when screwed into engine no explosion, but only a slight click in silencer (when trembler is vibrated by hand) as though sparking were going on in the box: am unable to get the engine started, but on one occasion I got a few revolutions which soon died down and could not get another start: the carburetter floods well and all other details seem correct. The engine is a 2½ h.p. Kerry, which has been going well, the only troubles being those due to my inexperience. If the silencer has to be cleaner how can it be done? It seems impossible to get inside.—You cannot expect a good spark unless your contacts press well together; no use having a trembling contact. We should suspect the accumulator is not up to full voltage; have it recharged. See that all connections are clean and tightly screwed up. You will only be able to clean out silencer by flooding with waste petrol and shaking well.

### Misfiring Troubles.

R. W. Flawkey (Birmingham) writes:—I get continual misfiring with my motor-bicycle, which makes the running jerky. Carburetter works all right: accumulator well charged. One curious thing I have found out is that there is a wire which leads from M of coil to crank case. I can get a spark at plug as good without this wire as with it. I feel certain that it is the electrical gear which is wrong somewhere. My wiring is: positive of coil to positive of accumulator; negative of accumulator to handlebar switch; T of coil to platinum screw; and M of coil to crank case.—It sometimes happens that the makers of the coil join the M terminal inside to the T terminal and connection occurs through trembler blade. Even without this you can as a rule get a spark at the plug, but it does not stand the compression. Most probably it is either your adjustment of contacts at fault. Are you sure they are genuine platinum? Also join trembler base to motor by a wire.

### Gradual Loss of Power.

R. King (London) writes:—I have built a motor-bicycle with 2½ h.p. engine and Longuemare carburetter, etc.; it runs very well on the stand, but when I take it out it plays tricks. The electric ignition is all right. There is a little difficulty in starting, but after running two miles it gathers speed and power and runs for about three miles further, and then commences to misfire and lose power until it refuses to fire at all; neither does it act better when engine cools down. I have been over all joints and found none leak; valves are all right, that is they fit well and have been well ground in: accumulator shows 4 volts: trembler blade clean and contact all right: I have tried with all kinds of air supply. I use Pratt's "A" quality motor spirit. Can you suggest possible cause?—Are you certain about the timing being correct (see article in issue 73)? It also looks as if your carburetter was not acting well. The petrol supply seems to be defective at first and then floods out, causing overheating; better overhaul it. You may be deceived with your accumulator, and be getting only a weak spark. The accumulators should always be looked to first and tested with a 4 volt lamp as this gives a more reliable indication than the voltmeter.

### New Hudson Motor-Bicycle Queries.

G. W. Taylor (London, W.) writes:—I have a "New Hudson" motor-bicycle with a 2 h.p. De Dion engine fitted with Longuemare carburetter, type E. My troubles are as follow:—(1) Engine dimensions are 62 mm. bore and 72 mm. stroke. At how many revolutions per minute will this develop 2 h.p.? (2) The pulley on engine is 3in. diameter; on back wheel 1gin.; no matter what hill I try to run up the belt is always slipping. I have tried running with a tight belt with the result that the hook pulled through: next I tried with slack belt but the result is always the same, I have to help machine up with pedals: my belt is a Lincona, and it has been dressed with makers' dressing. Would you advise me to have a larger pulley, say 4in., as I think cause of all the trouble is in the small one? (3) With the carburetter I have as much trouble in adjusting the air as I had with a surface one: I have tried different cones and different sleeves in the carburetter as mentioned on page 94 of September and issue. All the time I am riding the mixture is constantly changing, and I am everlastingly adjusting the air lever. It seems a little more constant at night than during the day. Can you advise any remedy? (4) Would this machine, given a fair day with a ten stone rider, take all hills to Brighton and back, of course supposing nothing was the matter with the engine, etc.?—(1) We do not think these dimensions would give 2 h.p. on a brake test; pretty safe to say 1½ h.p. at 1,800 revolutions per minute. (2) Not advisable to alter pulley, it would make the gear too high; although we thought a 3in. pulley would prove rather small when we first saw the De Dion motor. You might try one of the many dodges suggested in "O.P.V."; one of the best is to have a series of small screws fitted in pulley face just to project into groove and grip the belt, a good local repairer would do the job. (3) Have a look at needle valve; we believe it is leaking slightly. (4) Yes, if engine is working well.

"THE MOTOR" Index is now ready and will be sent on application.

A. Jones (Newport).—Try the Chicago Raw Hide Co., Birkenhead. We believe some particulars appeared in back issues. **Difficulty with "Quadrant" 1½ h.p. Machine.**

L. Wallace (Liverpool) writes:—I bought a secondhand "Quadrant" 1½ h.p. machine with surface carburetter. (1) The first day I tried it the machine went well for about six miles and then after I stopped to turn the machine round I could hardly get it to start again; when I did do so I had to pedal occasionally to keep it going at any speed. The engine seemed to have lost all power although I tried every alteration of gas and air levers and advanced spark lever. On arriving home I took the machine to pieces and found everything in good order; timing quite correct; and valves working all right. I tried new Pratt's spirit after that several times, but it never seemed to have any power to speak of. At last I took it to an expert (?) here, and he said the engine was all right, but something was wrong with the carburetter. So I took the carburetter to pieces, found everything right, and then soldered it together again. Still the same result. I then took out the inlet valve and slightly ground it in although it did not appear to need it in the least. I also ground compression tap in and re-jointed it. On trying the machine again it gradually lost power and became as bad as ever. The accumulator is fully charged all the time, and three different new sparking plugs have been used. Can you explain this inexplicable behaviour? What can I do to make it work? (2) There is no ball valve on crank case; would it be advantageous to have one and where should it be placed? (3) The compression tap seizes when engine is hot, although cylinder oil is used on it; would it be better made of brass entirely instead of iron as at present? Could you give me a sketch showing how I could fix a Bowden twisting handle to alter spark advance? (4) Should piston rings touch when in their places (at the joint) or what clearance should be allowed? I have used Pratt's "B" spirit and tried same in carburetter with densimeter. (5) There is ¼in. clearance between foot of exhaust lifter and rod: is this right?—(1) The likely points where you may be at fault are, either timing of motor, compression weak, or carburetter needle valve leaking and causing chamber to flood and impossibility of getting a good mixture. You should read the article in No. 73 dealing with timing an engine. (2) It would be advisable to fit a ball valve to side of crank case: see that piston rings are properly spaced. (3) Should dispense with compression tap; fit a screw plug in hole and have a Bowden exhaust lifter instead. The Bowden Patents Syndicate will send you particulars of their twisting handle control: their address is 39, Baldwin's Gardens, Gray's Inn Road, London, E.C. (4) The ends of the piston rings should not come quite close together; clearance about 1-32nd inch. You might get better results from Carless' petrol for surface carburetter. (5) The fact that you have ¼in. play between exhaust stem and lifter will seriously affect power. Have a new valve fitted and see that clearance does not exceed bare 1-32nd inch, as valve lift on these little motors is only 3-16ths inch.

J. Doraine (Ayton).—Our map and profile road book will be of the greatest assistance to you in tracing out the route you require.

F. G. Howell (Oxshott) would be glad to know of a firm of repairers who make a speciality of remedying defective thermo-syphon cooling system for cars. Can any reader oblige our correspondent?

E. McK. (Dublin).—You would get probably a 15 per cent. increase of power. The London Autocar Co., Gray's Inn Road, London; or D. J. Smith, Great Arthur Street, Goswell Road, London, might be able to supply the cylinder. Write manager of our advertisement department for other particulars.

"T." (Sutton).—(1) The M.M.C. engine is made by the Motor Manufacturing Co., Coventry. (2) Either an Eadie, Perry, or Chater Lea frame. (3) For friction clutches look up recent advertisements. (4) For castings try the London Autocar Co., Gray's Inn Road; and the Motor Castings Co., 101, Gray's Inn Road, London, W.C.

E. Hall.—We should advise you to look to the inlet valve spring. Unless this is exactly the right tension you will not get the power you should: they generally get weak with continued use. Another detail we suggest your looking to is the stem of the exhaust valve: this should have barely 1/32nd inch clearance from the lifter. If neither of these details affects the running we should suspect the carburetter was not acting well.

**Imperfect Contact.**

W. Lawrence (Enfield).—Your connections are quite correct, but you have evidently got a defective circuit through the frame. You will probably obtain good results by joining the frame wire direct on to the motor, that is, to any convenient screw or nut to which you can secure the wire. You must have a good return from shell of spark plug to coil or only a feeble spark will occur at the points.

**A Variety of Queries.**

"Paddy" (Dublin) writes:—(1) If my "F.N." machine does not show a good fat spark at contact breaker does it follow that there will not be a good spark at plug points? (2) Am I correct in understanding that the coil wire should be attached to the "positive" terminal of the accumulator? If I did not couple up thus, what would be the effect on the coil? (3) Is a spark gap of any use? What distance apart should the points of same be to get the best results? (4) What is the best thing to use to get the band brakes on a Mills and Fulford fore-car to grip? I have cleaned the leathers thoroughly with petrol and still they will not grip.—(1) The less sparking you have at the contact points the better: of course, it is not possible to get rid of it entirely, but it should be only slight if the coil is a good one. (2) It is important that coil wire should join up to the positive as they give a better spark with current flowing in one particular direction: reversing, however, would not injure the coil. (3) Entirely a matter of opinion; personally, we have only found it useful as a tell-tale when riding at night to show if anything goes wrong with ignition. Its "anti-misfiring" value is very doubtful. (4) Have you tried Riches "Plaxine"? It is claimed to be very effective. Are the bands well adjusted?

**Spark Retarding.**

P.K. (Burton) writes:—Would you please explain to me through the columns of "THE MOTOR" the reason for gradually retarding the spark when climbing a hill? Also, does the spark when fully advanced take place when the piston is at the top of cylinder? What is the effect of advancing the spark instead of retarding on a hill? I find it stops the machine instead of giving more power.—The chief reason for retarding the spark when hill climbing is to avoid the effect of early ignition retarding the piston on the compression stroke owing to there not being a sufficient reserve of power on the fly-wheels to overcome the pressure from the explosion. When fully advanced the spark takes place a considerable time before the piston gets to the end of the compression stroke, but the position varies with different motors; see recent article on timing. You must expect to find the motor pull up if you advance spark when piston has a heavy resistance against it.

**Single v. Independent Control.**

"Fore-car" (Tavistock, South Devon) writes:—Congratulations on your interesting, useful and large paper. May I first suggest that all advertisers of motor-bicycles should give height of frame? (1) Would a 3 h.p. motor-bicycle with fore-carriage manage most of these Devonshire hills without pedalling, and the stiffest of them with a little pedalling. Or for Devonshire would you advise a trailer? (2) Do you advise a one-lever-controlled or an ordinarily levered machine (sparking, throttle, etc.), for fore-car work? (3) What (if any) are the disadvantages of the one-levered machines; and do the disadvantages outweigh the advantages?—(1) A 3 h.p. motor of standard make should be equal to the work, but gear rather low. (2) Personally, we should have separate control levers, as it is possible to get the maximum range of adjustment with economical running. The conditions under which the motor has to work are so variable that the factors which govern the power such as quantity of gas, time of ignition, and strength of charge, should be capable of control independently. This explanation will also fit query No. 3. We should advise a spray carburetter if you select the machine referred to in your letter. It is considered a good machine.

**A Double Trailer Difficulty.**

H. B. Radcliffe (Bradford) writes:—I am now using a 2½ h.p. Humber machine, which I find everything that it should be, and I use with it a large Millford trailer, double width, to take my wife and little ones. On the whole the combination is successful, but steep hills have generally to be walked and long gradients overheat the engine which gives out towards the top and starts to knock. The great drawback for family use is the inability to converse and the impossibility of leaving the motorcycle standing if one wants to dismount. Another thing is the want of power in these hilly parts; the motor should be at least 3½ h.p., but I don't know that I could get one really reliable of that power. What would you say to a fore-carriage 4 feet wide outside? I must change the combination in some way as it is not powerful enough for my purposes, and not sociable enough for touring and long distance work. With my present

turnout, however, I can run the whole lot about 80 miles or over on a gallon of petrol, and the upkeep generally is in the same proportion compared with a car. If I make a change it seems as though I must get a voiturette. (1) Do you recommend converting the trailer arrangement to a fore-carriage? and if so, is there any motor to compare with the Humber of 3½ h.p. or higher that could be used with it? (2) What is your opinion of a water-cooled tricycle of sufficient power to take all the hills hereabouts, including some long ones of 1 in 9? I mean, of course, to take the 4ft. trailer and, say, 30 stone of passenger weight. (3) If impracticable, is there any voiturette costing not more than £150 that would do what I require, viz., (a) to carry three adults or to take a strong detachable spider seat. (b) to have luggage capacity in addition for a 2-gal. can, spares and tools, and two holdalls: (c) a strong and thoroughly reliable engine not less than 5 h.p., and preferably 6, governed twin cylinder if possible, m.o. inlet valve, electric ignition, well silenced, with a transmission that will not involve either noise or vexation from continual attention, three speeds and reverse, well braked and a powerful hill climber: (d) not so light as to be unequal to rough roads or heavy strains, nor so heavy as to be continually puncturing; artillery wheels for preference: (e) to run fifty miles on a gallon: (f) efficient cooling by radiators and a geared pump: (g) long wheel base so as to give immunity from skid, and a car that will not make one nervous in grease. I am aware that these requirements are exacting, but the maker that gets nearest to these will have a big demand. The pony and trap man must be catered for, and properly too. I have been looking forward to the light car trials with very great interest and hope that I shall see my way clearer after they are over. If you could see your way to a series of articles on this subject before long, you would do a real service to a large section who, like myself, want a vehicle that will take father and mother and a grown-up friend or two children safely out and back. The tonneau does more than this and is too expensive: the two seater might as well be a bicycle and fore-car: what is wanted is something between the two on the lines I have suggested.—(1) Personally, we do not think you will gain anything by attempting to convert to a fore-carriage. There are several good 3½ h.p. engines to be had, but it would be an extremely difficult matter to adopt one to a special frame like the Humber. (2) For any vehicle of the cycle type it is best to dispense with water-cooling if possible. Although a decided advantage for hill climbing, there is the complication and worry introduced inseparable from water-cooling systems. We believe, however, that there are some firms who would undertake to build you a quad or tricycle with two-speed gear. Then there are the vehicles of the Century tandem order to be had fitted with water-cooled motors up to 6½ h.p. (3) We cannot name a car embodying all the features you name at the price. There are several reliable little cars such as the Humber, Vauxhall, Oldsmobile, Crestmobile and Gordon Miniature, all excellent little vehicles at prices varying from £100 to £150. There will doubtless be important developments in light cars for next season.

J. Gray (Orkney).—The liquids you refer to will not affect the metal tanks in any way. Neither would they injure the motor cylinder.

R.G.C. (Wolverhampton).—(1) It is immaterial what part of the primary circuit you place the G.S. wire in: perhaps the most convenient place would be between the positive terminal of accumulator and the wire from positive of coil: the important point is to have it in series with the circuit. (2) You will only require to take out a single license under the circumstances.

### Making Silencer Rust Proof.

G. Shaw (Ashton-under-Lyne) writes:—I shall be obliged if you will tell me what to put on a motor silencer. Mine is made of sheet iron and has rusted very much. I have tried aluminium enamel but it burns off. I have also tried blacklead and oil, but am not satisfied with its appearance.—We think the most satisfactory plan would be to have the silencer nickel plated. It will get discoloured by the heat to some extent, but will not rust; at least this is our experience. There are certain paints obtainable which will stand heat, but we have not tried them. If any of our readers know of a good remedy for this trouble perhaps they will let us know.

### Timing Gear Query.

E.F.G. (Liverpool) writes:—(1) What should be the exact position of the cam in a wipe contact when the piston is at the top of its stroke? (2) What is the reason of my Rex motorcycle going slower instead of faster when I advance the spark? It does this even when I have proportionately more gas. I had the 2 to 1 gear down the other day; is it possible it has been put back wrong? and, if so, should it be adjusted so that the spark occurs sooner or later? It did not do this before I touched the gearing. (3) On a trembler coil what pressure should there be between the two platinum tips? Should they be just touching, or pressed firmly together? (4) Within the last few days I have noticed a curious "pop" which occurs occasionally and sounds to me like a flame trying to get back into the carburettor: if this is the case is there any danger of its getting through the wire gauze (the carburettor is a surface)? Could this be accounted for by the 2 to 1 gear being out of position?—(1) The best explanation with diagram you will find in issue 73, in the article on timing an engine. Approximately the cam should touch the brush at about half the range of movement of the spark lever when the piston is just about to descend on the firing stroke. The important point to note is that the cam is in its right position with relation to the exhaust valve cam. (2) Pretty evident you have disturbed the timing: see article referred to on correct timing; the correct wheel teeth to mesh together should be marked. (3) To get the most rapid vibration of the trembler the screw should be adjusted so that it breaks contact by a 64th of an inch when the armature touches the core. (4) It is not unlikely that owing to your timing being set incorrectly, and the exhaust opening very early, that part of the explosion actually occurs in the exhaust pipe and silencer. Providing your inlet valve spring is not weakened there should be no danger of firing back.

J. Derville (Wandsworth).—The following dimensions should suit your engine:—Exhaust valve  $\frac{1}{2}$  inches diameter, lift  $\frac{1}{4}$  in.; Inlet valve  $\frac{1}{4}$  in. by 7-32nds in. lift; fly-wheel 40lbs. weight. For the special castings try the following:—D. J. Smith, Great Arthur Street, Goswell Road, London; Motor Castings Co., 101, Gray's Inn Road, London; and London Autocar Co., Gray's Inn Road, London.

### Converting Gas Engine.

G. S. Haydon (Brixton).—You will be able to run your gas engine just as well on petrol, and you would probably get a small increase of power as the stroke you mention is not too long. It would probably give you 1 b.h.p. at 1,000 revolutions. You would have to fix up the usual ignition gear and follow the lines of any other motor in this respect. One of the new E.I.C. coils (trembler) and brush contacts would be easy to adopt. An ordinary F.N. spray carburettor with throttle valve would suit very well.

"Jakko" (Salisbury).—Should prefer a  $2\frac{1}{2}$  h.p. Excelsior or Humber to those you mention. You can rely on either of these having the power you specify. (2) If you fancy a magneto ignition machine we can speak well of the "Davison." As you say, the magneto would undoubtedly be an advantage if the machine was to be taken to India. (3) There will be a good deal that is new to be seen at the shows. (4) Components "Sociable." (5) Some people claim to be able to ride an unloaded side-car, but in general we consider it very risky. (6) Strain on machine is nothing to speak of.

### Humber Motor Loses Power.

J. Vincent (Weymouth) writes:—Will you give me your opinion as to the reason of want of power at hills in my  $\frac{1}{2}$  h.p. Beeston Humber machine with trailer? Rider and passenger are both lightweights. Engine (only) has been sent back to makers to be tested: carburettor has been changed: valves, compression, spark and accumulators all seem good: motor runs evenly and perfectly, but has not much power, making hard work of small hills, notwithstanding that the gear has been lowered. When spark is well advanced the motor is constantly tapping. When throttle is half open full air supply is required; opening throttle further is then useless as sufficient air does not seem to be obtained. Would you advise enlarging air slits in the collar? Can you give me address of makers or agents of the Longuemare carburettor if you think it is in fault? Without trailer the motor will not take me up a hill of 1 in 10 without pedalling. —It appears to us that it is the carburation at fault, and that the motor runs hot. From the fact that full air supply is required with half throttle there is evidently too much petrol coming through the carburettor jet, and it would be as well to replace present jet with one having a smaller number of slits. We are assuming that the float and needle valve of carburettor are all right, and that you do not have any flooding. We hope to have a good article shortly dealing with the Longuemare carburettor. The United Motor Industries, 45, Great Marlborough Street, London, W., keep a stock of the Longuemare carburettor parts. The knocking you refer to is doubtless due to having spark too much advanced when the motor is heavily loaded or running uphill.

C. Brazier (Wood Green).—The double tube would certainly be an advantage for a heavy motor. The inside tube should either be a tight driving fit or brazed up at the ends.

B.A.G.—Your best plan is to go to the G.P.O. for particulars re protecting your idea. After you have it protected offer it to the trade through an advertisement in "THE MOTOR."

### ANSWERS BY POST.

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

Thursday, September 17th.—W. H. Ireland (Sankey), E. A. Dibb (Hull), H. Faden (Yardley), R. C. Thompson (Crawford), H. C. White (East Grinstead), S. D. Roberts (Pontypridd), J. Newcombe (Grantham), D. Hagon (Seaton Delaval), C. L. Gibson (Middleboro'), R. E. White (Milford Haven), L. H. Pearson (Nuneaton), A. E. Turner (Musselburgh).

Friday, September 18th.—T. G. Kelley (Desford Grange), P. Lamb (Gainsborough), J. Barker (Horwich), W. Sorby (Sheffield), W. Hunter (Edinburgh), J. H. Jones (Crewe), H. W. Parker (Royston), W. Shone (Chester), G. H. Peake (Hatch End), G.T.S. (Fort George), C. J. Lee (Liverpool).

Saturday, September 19th.—S. F. Boan (London, W.), E. G. Henigan (Baltimore), H. Rollet (London, E.C.), H. A. Finn (Egham), C. J. Simm (Wroxall, I.W.), J. W. Walker (London), H. Willcocks (Wadebridge), F. B. Weetman (Glossop), G. W. Bonner (Leicester), S. M. Massey (Folkestone), R. Matthews (Pendleton).

Monday, September 21st.—H. R. Goodall (East London, S.A.), L. W. Jeff-Petit (Llanrwst), H. C. Hitchmough (Liverpool), H. W. Eastcott (Gateshead-on-Tyne), A. S. Henderson (Windsor), D. G. Milne (London, S.E.), W. Wade (Walsall), G. B. Rooke (London, S.W.), G. S. Goddard (Gloucester), F. Rowntree (York), P. J. Carpenter (Maidstone), H. Seddon (Manchester).

Tuesday, September 22nd.—A. Robinson (Wolverhampton), H. Harrison (Walton-on-Thames), United Advertising Co. (Sheffield), T. Jones (Manchester), J.C. (Ashford), G. Heath (Bath), R. K. Hubbard (Basingstoke), C. H. Tyler (Hampstead), A. G. Heckman (Henley), F. E. Hurlstone (Ilminster), F. H. Bee (Hull), W. Warmer (Leamington), J. Baxter (Bristol), R. Pill (Newport), C. J. Still (Tavistock), T. A. Sullivan (Cork), J. Foulds and Co. (Colne), G. Powell (Norwich).

Wednesday, September 23rd.—H. Guy (Sevenoaks), G. Boggart (Croydon), J. Proudman (Grimsby), H. G. Brennan (Cirencester), T. G. Gandy (Uffculme), W. Spalding (Lee), J. T. Drysdale (London), R. A. Denham (Esher), S. M. Fowler (Harlesden), G. Benson (Peterborough), T. C. Musgrove (London, W.), F. Stuart (Wexford), D. Hughes (Sunderland), J. Connell (London), T. G. Kelley (Desford Grange), J. S. Fuge (Stratford-on-Avon), H. B. Overton (Carlisle), G. Russell (Southampton), W. Hanson (Noriton-on-Tees).