

THE AUTOCAR

A Journal published in the interests of the mechanically propelled road carriage.

EDITED BY H. WALTER STANER.

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CONTENTS.

	Page
NOTES: FIRST-HAND EXPERIENCE—THE NECESSITY FOR IMMEDIATE ACTION—BRAKES—BRAKING THROUGH CHAINS AND GEARS—BRAKING REQUIREMENTS	373-375
AN OBJECT LESSON (illustration)	374
USEFUL HINTS AND TIPS	376
THE 10 H.P. MIESSÉ STEAM CAR (illustrated)	377-378
FUELS FOR MOTOR CARS (concluded)	379
THE 1,000 MILES RELIABILITY TRIALS (illustrated)	380-382
THE STARTERS IN THE TRIALS	382
ROUTES IN THE 1,000 MILES RELIABILITY TRIALS (map)	383
THE DIARY OF THE ROAD TRIALS (illustrated)	384-393
TRIAL NOTES	393-394
THE VOITURETTE CLASS—SPECIAL REPORT (illustrated)	395-397
CONTINENTAL NOTES AND NEWS: COMING IMPROVEMENTS—THE SEMMERING HILL-CLIMB—TYRE PROTECTORS—SMUGGLING WITH AUTOCARS—A MOTOR CYCLE CRITERION	398-399
THE MOTOR UNION	399
CORRESPONDENCE	400-401
"THE AUTOCAR" DIARY	402
FLASHES (illustrated)	402-404
SOME QUERIES AND REPLIES	405
THE EXPERIENCES OF AN HONORARY OBSERVER	406-407
THE SPENCER MOTOR AIRSHIP (illustrated)	408
THE NEW LEON BOLLEE CAR	409
THE 16 H.P. ARIEL	409
SOME MECHANICAL DETAILS ON THE TRIAL CARS (illustrated)	410-412
THE MOTOR VOLUNTEER CORPS (illustrated)	413
NEW PATENTS	414
CLUB DOINGS	414
SOUTHPORT SPEED TRIALS (map of the course)	414

COLONIAL AND FOREIGN EDITION.

IN ADDITION TO THE USUAL EDITION OF "THE AUTOCAR," A SPECIAL THIN EDITION IS PUBLISHED EACH WEEK FOR CIRCULATION ABROAD. THE ENGLISH AND FOREIGN RATES WILL BE FOUND BELOW. ORDERS WITH REMITTANCE SHOULD BE ADDRESSED "THE AUTOCAR," COVENTRY.

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Notes.

First-hand Experience.

Last week we referred to the—in many respects—regrettable extinction of the amateur driver, so far as the Automobile Club's long distance reliability trials were concerned. At the same time, there is

another feature of the trials which is a very pleasant one indeed, and that is the number of manufacturers and principals of firms who make a point of driving the cars they make or sell every day throughout the trials. It may be said at once that they are not disinterested, and while this is perfectly true, we should, at the same time, be sorry if the practice were to die out. Luckily, it shows no sign of doing this, and the number of principals driving this year is at least proportionate to that of former trials. We like to see the chief of a firm at the helm of his car in the trials because it is an indication that the private user is dealing with a man who is doing his best to enter into his wants, and who is taking the opportunity of learning personally all he possibly can about the defects in his car. There is no question whatever that these reliability trials are under very severe conditions, and that, run as they are irrespective of weather, they often teach the observing manufacturer things which he would not find out in a whole year's ordinary pleasure driving, as no one drives for pleasure under all the stringent conditions imposed by the trials to test reliability. It is most satisfactory to see the old saying, "If you want a thing done well do it yourself," put into practice in such a practical manner.

The Necessity for Immediate Action.

We have repeatedly urged our readers to take every possible step they can in their own districts towards influencing local authorities favourably towards motoring, and to immediately report to the Motor Union any action taken by the District authorities either as to the application to the Local Government Board for the ten miles limit in areas where no such limit is required, or for the closing of certain narrow roads. This is being done in many cases, but the action is by no means universal, and there are many districts in which volunteer helpers of the Motor Union are few and far between, although undoubtedly much good work is being done in all parts of the country by motorists of influence which is not reported to the Union. However, the point which all motorists have to remember is the fact that in their own districts they should do their utmost. Where it is felt by the individual that either lack of time or of influence prevents him from taking as active a part as he would wish, he should approach some local automobilist who is not handicapped in this respect. It will often happen that the man best qualified by knowledge and ability has not the leisure to carry the matter through, but there are very few localities indeed in which some influential motorists could not be found to do good work if they were shown what to do and how to do it by the man who had the knowledge but not the leisure. We dwell on this particularly, because

we have discovered several instances in which the county motorists, and those who by their position wield very considerable local influence, have not moved to take any part in the way of tempering the action of their county and district councils. In fact, their inaction has been on a par with that of the pro-motor section of the House of Lords; they are sorry to see anything done which will incommode the automobilist, but it never seems to strike them that they are the people above all who could and who should do something to counteract the tendency. In most cases it only requires an interview by an enthusiastic motorist who understands the matter, and then they will move. We hope the hint will be taken, as up to the present there has been a general inclination to assume that every man who owns a motor is a man of leisure and considerable influence, and consequently able to devote himself to a work for which special qualifications are required if it is to be as successful as possible. In any case, now is the time for action, and if it is not taken advantage of there will undoubtedly be certain districts where motoring will be made unnecessarily irksome for some considerable time.

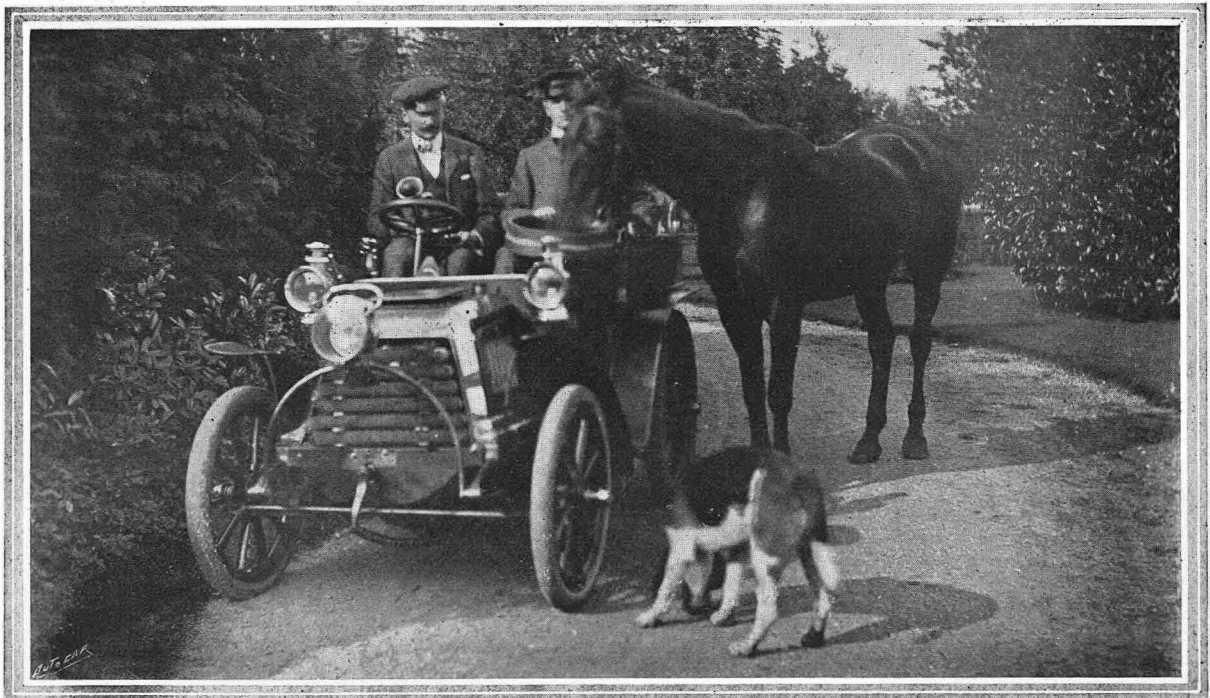
Brakes.

The correspondence which is appearing about brakes shows most plainly that the possibility of using the engine as an additional retarder in case of emergency is appreciated by those who own cars on which it is permissible. We may explain to those who are not intimately acquainted with the mechani-

cal details that there are many machines which, for convenience of driving, have the clutch coupled to the brake, so that when the brake is applied the clutch is drawn back and the engine automatically disconnected from driving the car. That is to say, the action of putting on the brake is all that is necessary, there being no need to press down the clutch pedal or to hold it down all the while the hill is being descended. This is a convenience on average hills, but, of course, when it comes to an exceptionally steep hill, and a brake which, through neglect of adjustment or other cause, is not working properly, the driver is robbed of all such retarding effect as he can get by throwing his engine into gear with the ignition switched off. This points to the fact that it would be an advantage, in very hilly districts at any rate, to have an arrangement whereby the double action of the brakes could be disconnected, so that the brakes could be applied without also taking out the clutch when desired.

Braking through Chains and Gears.

It should be clearly understood that we do not advocate using the engine as a brake, except in an emergency; but we certainly think it is a matter which should be considered by automobilists, so that they are not at a loss to know what to do should they find themselves in a tight corner at any time. It is not good for the engine or the transmission; in fact, it is bad for the car more or less all over to use the engine as a brake; but it is, of course, far better in every respect than allowing the machine to get out of hand. The main reason,



AN OBJECT LESSON. In the above illustration, a well-shaped hunter may be observed feeding from the hands of a passenger in an autocar. If those who rail against the automobile will only take the smallest trouble to educate their horses to the novel locomotion, we should hear of far fewer accidents than we do at present. Our photograph depicts a well-known Irish sportsman, Captain Langrish, J.P., M.F.H., who has been for many years, and is still, the popular huntsman of the "Kilkenny County," instructing a friend's "chaser" to realise the harmless innocence of a 7 h.p. Panhard, in which he invariably attends all his hunting fixtures in Ireland. He states that only a very few horses of his field now take the smallest notice of his car, which often carries him home after he has shown the hunt a first rate run, far from Knocktopher Abbey. We are indebted to Mr. Edward Kennard, of the Barn, Market Harborough, for the photograph from which this illustration is made.

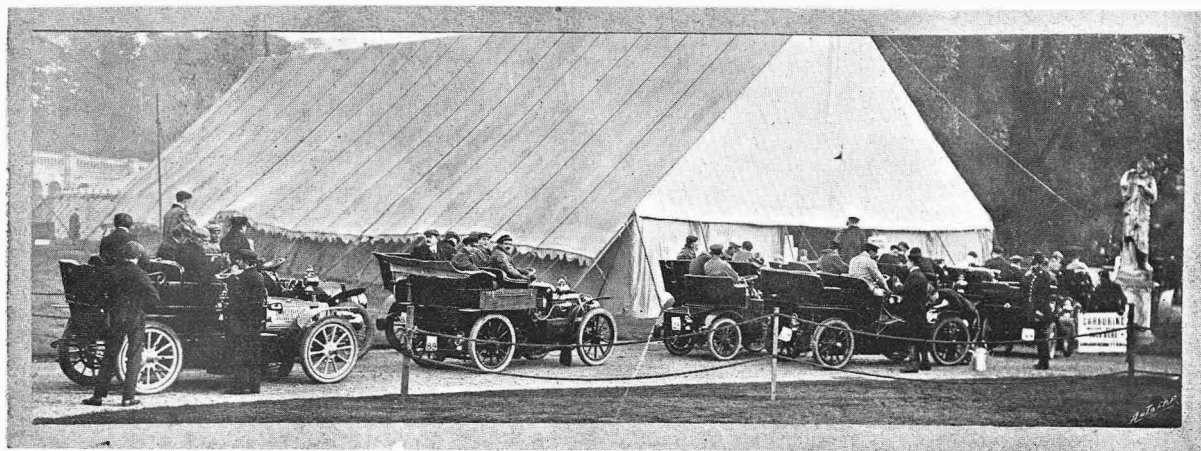


Photo.

THE 1,000 MILES TRIALS. In the Crystal Palace Grounds. The large car tent and some of its occupants.

Russell, Crystal Palace.

however, that we do not believe in the plan is because it may be taken that, broadly, the car which is driven with the brakes out of adjustment, or from any other cause are not acting at full power, is one which is not properly looked after, and the chances are that other parts of it will be in a bad state through neglect, and it is as likely as not that the man who depends upon his engine for retardation may be leaning upon a broken reed, because it must be recollected that all the braking effect from the engine passes through the transmission to the wheels the same as if the pedal brake is being used, and as it is a jerking and snatching sort of action, it sets up strains in all these parts, and there is the possibility that the balance gear or one of the side chains may fail; or, in the case of a gear-driven car, the driving bevel gear may strip its key, or some similar failure takes place, which means that the road wheels can revolve irrespective of whether the transmission is being retarded either through the pedal brake or through the engine. Many users do not realise that, so far as a chain-driven machine is concerned, the coming off or breaking of one of the side chains is just as serious as though both had failed, for the balance gear on the countershaft, which distributes the braking power from the pedal brake or engine in the right proportion to the two road wheels, so long as the two chains are in operation, transmits it to neither wheel as soon as one of the side chains is gone, and, of course, the failure of the balance gear itself is equally serious, so far as the efficiency of the countershaft brake is concerned, whether the machine be chain or gear-driven.

Braking Requirements.

What we have said points to the absolute necessity for the brakes on the side wheels being really powerful and efficient and equal to holding the machine on practically any hill. The requirements are that either brake shall be sufficient for this, but there are very many which are not up to this standard, though when the pedal and hand brakes are used in conjunction, they are quite enough for anything provided they are kept in proper order. The maker is awkwardly placed in the matter, because he knows in many cases if he fits extremely powerful brakes

they will be abused by most users of his cars, who will simply take advantage of their great braking power to postpone slacking speed till the last moment, when they will jam on their brakes, and very often lock the wheels regardless of the damage done to tyres and of the fact that they are straining their car in every part, and greatly increasing their running expenses, both for renewals and repairs. Consequently, the vehicle gets a bad name as being a costly one to keep up, and it would be better for the makers' reputation if he had fitted less powerful brakes. It is so difficult to make many drivers understand that, while they have at their command great brake power, it should always be used gently, and never to the extreme, except when the circumstances really warrant it. So much is this the case that we have often thought that an emergency brake of a particularly objectionable character, but none the less efficient, would be a good thing. It might take the form of a long and wide shoe, hinged something like the sprag under the middle of the car. It could have a shoe of at least two square feet and a system of levers which would enable it to be applied by a pedal with such force that it could be rammed against the ground with very great effect. It would make a tremendous noise and an abominable dust, and it would be more or less of a nerve-shattering experience to apply it. In fact, its use would be sufficiently unpleasant to ensure that it would not be used except in an emergency. At the same time, when it was applied, it would do no harm to the car, nor would it hurt the road if the shoe were properly shaped with the edges curved or bevelled. It is very difficult to protect the careless against themselves, as in all probability the man who most wanted the emergency brake would neglect to look at it for months, and when he tried to use it it would fail. Nevertheless, it would be possible to make a brake of this kind which would be absolutely proof against neglect, as every working joint would be secured in such a way that it would be impossible for it to come loose or otherwise fail; and as the brake would never be used except when greatly wanted, it would never get out of adjustment. In fact, there would be nothing to get out of adjustment until such time as the shoe was worn out.

USEFUL HINTS AND TIPS.

Attention to Clutches.

The comfort and safety of the driver and the efficiency of the car depend upon the clutch to a very much greater extent than is generally supposed by the average motorist. A fierce clutch takes up its work too quickly, causing the car to jump forward with a bound upon starting, instead of moving off gradually; in fact, almost imperceptibly at first. It is very obvious that the fierce clutch must put unusual strains upon the whole of the vehicle without exception, and it certainly does not impress the passengers when they are shot up in their seats, and by the time they comfortably settle themselves, to find the car travelling at about twenty miles an hour. This is particularly the case if it be their first experience of automobilism. On the other hand, with a properly graduated clutch the work is taken up by degrees, all excessive strains are eliminated, and the passengers cannot help admiring the ease with which the car is started.

Fierce Clutches.

A fierce clutch is often caused by the clutch spring being too strong, and this causes an unusual amount of power to be applied to the clutch pedal in actuating the clutch, and it is apt, particularly at critical moments, to stick, preventing its being as rapidly withdrawn as it should be, thereby needlessly increasing what risks there are attached to the driving of the car. These risks are very few indeed, and it is a great pity to make trouble for one's self where it need not exist. There are two certain remedies for a fierce clutch. One is to ease the tension on the clutch spring, the other is to thoroughly cleanse the clutch leather by means of petrol, and apply a small quantity of Colian or castor oil to the surface of the leather. This keeps it in a pliable condition, and permits of its slipping sufficiently when taking up its load, and yet holding it when driving with a full load on.

Slipping Clutches.

A slipping clutch, on the other hand, is a source of constant annoyance to the driver, as much of the power developed by the engine is wasted by the clutch slipping instead of its transmitting the power to the road wheels for purposes of propulsion. It will usually be found that the cause of abnormal slipping lies in the fact that the clutch is in such a position as to take up a lot of the oil which is ejected from the crank chamber of the engine or the gear case. If such is the case, the first thing is to find the course pursued by the oil, and to check it by means of a baffle plate composed of a piece of tin, or if it should be leaking through the bearing one can usually manage to wrap about the shaft a few turns of ordinary worsted yarn, which will prove an effective stop to the oil excretions. Provided that the

slipping is not due to over lubrication, it may be found that the clutch spring is too weak, and it is, of course, necessary to tension the spring up just sufficiently for it to transmit its full power and no more. Drivers who suffer from weak ankles are particularly addicted to slacking the clutch spring back, as in the course of a long day's run they suffer no small amount of physical pain if the clutch is at all fierce, while, as we have said before, the time may come when the prompt withdrawal of the clutch may avert an accident.

A Good Tyre Tip.

A tyre mystery which puzzles a good many people is the peculiar way in which one particular tube on a car will time after time get nipped or burst; sometimes nipping and bursting occur repeatedly with a succession of tubes on one particular wheel, and the suspicion is aroused that the rim of that wheel must be to blame; but tests reveal its accuracy. A case of the kind recently came under our notice, which we successfully diagnosed and cured. It was the off-side driving wheel tyre of the car which the owner described as continually giving trouble, not from genuine punctures but from nipping and bursting; repeatedly the cover would be found with one of its edges out of the rim so that the air tube had burst through the orifice between the rim and tyre cover. This had occurred, although the cover had been taken off and interchanged with covers from the other wheels; no matter what cover was put on this particular wheel it never seemed to fit securely. Careful examination showed that the wing nuts on the tyre-holding bolts were screwed up quite tightly, but we noticed that one of the bolts seemed to be shorter than the others, and by using a pair of pliers we found that the wing nut on this bolt could be screwed up by the use of some force to the extent of quite three-eighths of an inch more. Here was the explanation. The thread of that particular bolt was too tight a fit for the wing nut, so that although the latter appeared to be screwed up as far as it would go, it was merely screwed up to the tight part of the thread, but the head of the bolt inside the tyre was not drawn down into close contact with the edges of the cover. Consequently, this bolt had been the cause of repeated failures, the edges of the cover slipping out from between the rim and the bolt and sometimes nipping, and at other times bursting, the air tube. It follows that every tyre bolt should be suspected of similar imperfection, and the manipulator should not be content to screw the wing nut up as far as the fingers can turn it; but if the length of the bolt projecting beyond the wing nut is not what it should be pincers or a spanner should be used to force the nut to draw the bolt down further.

THE SOUTHPORT SPEED TRIALS.

Entries for the above trials close to-day (Friday), so that any who intend taking part and have not yet sent in their entries should telegraph them immediately, as none will be accepted after noon. Among the more notable machines already entered in the

various classes are: 18 h.p. James and Browne, 45 h.p. Napier, one 20 h.p. and two 60 h.p. Mercedes. 24 h.p. De Dietrich, 5 h.p. Oldsmobile, 12 h.p. Richardson, 10 h.p. Duryea, 10 h.p. De Dion-Bouton, and 6 h.p. De Dion-Bouton.

THE 10 H.P. MIESSE STEAM CAR.

ALTHOUGH THE MOTOR VEHICLE FITTED WITH INTERNAL COMBUSTION ENGINE USING VOLATILE SPIRIT AS ITS SOURCE OF POWER IS AT PRESENT VERY GENERALLY USED, THERE ARE STILL A LARGE NUMBER OF AUTOMOBILISTS WHO ARE DEVOTED TO THE STEAM PROPELLED VEHICLE, AND TO THESE THE FOLLOWING DESCRIPTION OF THE 10 H.P. MIESSE CAR WILL BE OF INTEREST, AS THIS CAR CONTAINS SEVERAL FEATURES NOT FOUND IN OTHER CARS OF SOMEWHAT SIMILAR CONSTRUCTION.

The Generator.

As the motive power of a mechanically-propelled vehicle is an item of first interest, we commence this description with details of the generator, going through the component parts in sequence.

The generator is of the flash type, wherein it differs from the ordinary boiler, inasmuch as it does not contain water under normal conditions, this being injected by means of a force pump, and "flashed" into steam, as required. The generator consists of about 200ft. of weldless steel tubing, the eight bottom layers being of $\frac{1}{2}$ in. outside diameter and $\frac{1}{8}$ in.

layers of tubes in the following order: Through layers from Nos. 1 to 8, from 8 to 14, from 14 to 17, then down to 9, eventually leaving at No. 13. The object of this is to get the superheating coils (which are Nos. 9 to 13 inclusive) as low down the generator as possible, so as to obtain a high degree of heat. The generator is enclosed in a sheet steel box A¹ (fig. 1), asbestos covered. A burner which consumes ordinary paraffin is also enclosed in the same box. A flue L (fig. 1) carries away any smoke or smell which may be emitted by the burner. The forward end of the flue is open, and is placed opposite an

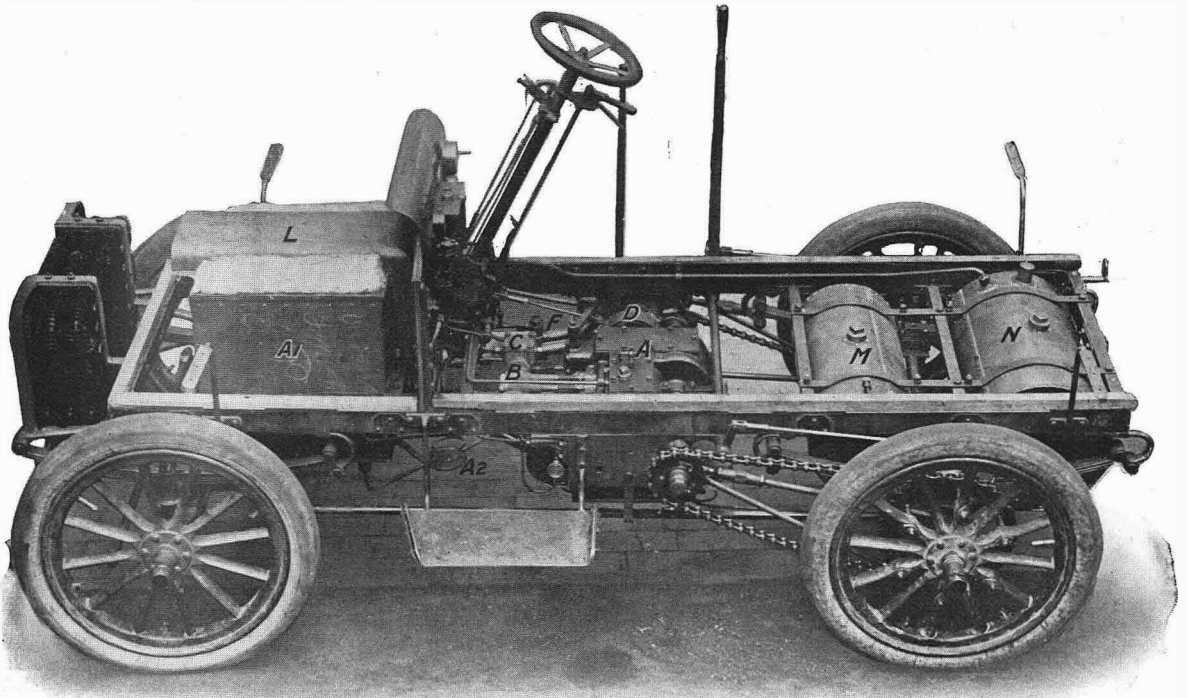


Fig. 1.—Perspective view of 10 h.p. Miesse steam car.

A, engine.
A¹, generator.
A², tray for starting lamp.
B, steam inlet valve boxes.

C, steam chest and throttle valve.
D, band brake acting on the crankshaft.
E, feed water-pumps.

L, flue from generator.
M, fuel tank, capacity 9 gallons.
N, water tank, capacity 18 gallons.

bore. The remaining layers are of the same outside diameter, but are of $\frac{1}{16}$ in. bore. A superheater forms a component part of the generator, and to understand how this is obtained it will be necessary to follow the course of the water through the various layers of tubing. Referring to the illustration, fig. 2, the water enters the pipe on the right-hand side. It should be stated that the generator in the position shown is really upside down, both the inlet for the water and the outlet for the steam being at the bottom. Our photograph from which the engraving is produced was taken from a generator which was on the testing stand. The water runs through the

opening in the front of the bonnet, so that when the car is running a draught of air is taken through the flue down the back of the generator and underneath the car. The water tank for supplying the generator is located at the back part of the car, as will be seen on reference to N (fig. 1). Its capacity is between seventeen and eighteen gallons, with which amount the car can be run a distance of eighty miles, after the working of the car has been thoroughly mastered. The nature of the ground covered also has an influence upon the distance which may be run. Naturally a higher consumption obtains in hilly districts.

The Burner.

The burner is of the ordinary Bunsen type, and is provided with a chamber wherein the vaporised oil and air are mixed together, and this mixture is consumed by the burner, which consists of a number of large diameter tubes having a number of very small holes drilled into them. There are altogether

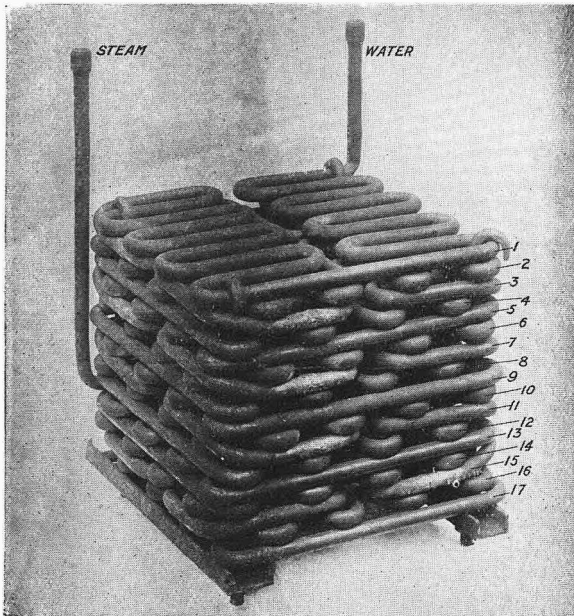


Fig. 2 - The Miesse steam generator.

seven tubes in the burner, each of which is provided with about two hundred holes, which are so drilled that the flame from one burner meets the flame from its neighbour on either side. The fuel tank M (fig. 1) has a capacity of nine gallons, and is made airtight, and a pressure of 60 lbs. to the square inch is maintained therein, this pressure being initially raised by means of a small hand pump, and maintained by an automatic pump so long as the car is running. A release valve, which blows off at the pressure named, ensures a no greater pressure than is absolutely required being raised. Oil is forced by the air pressure from its tank M by the air pressure through a regulating valve to a vaporising coil in the generator casing. Here it is converted into a gaseous form, and passed to the mixing chamber. The initial heating of the vaporising tube is obtained by means of a small blow lamp, whose nozzle projects through an orifice in the bottom of the generator casing, and projects its flame on to the second vaporising coil. A tray A² (fig. 1) is fitted, on which the blow lamp is placed. No attempt to automatically regulate the burner has been made, this being left to the judgment of the driver, who has readily to hand a small lever, which increases or decreases the flame as required.

The Air and Water Pumps.

It has been previously stated that the water is forced into the generator by means of pumps, and that the air pressure from the fuel tank is also maintained by an automatic pump. For starting purposes, air pressure is raised by an ordinary hand pump, as before detailed. When the generator is

sufficiently heated (which, starting from everything cold, occupies about fifteen minutes) to start the car, water is injected into the generator by means of a hand pump, which is worked by a lever on the right of the driver. About a dozen strokes of this pump are sufficient to get the car well under weigh. Referring to fig. 3, on the right-hand side are seen the pumps F and F¹. F¹ is the hand pump, which is operated by means of the side lever F². As soon as the car begins to move off, the automatic pump F begins to operate through the eccentric F³, which is mounted upon the countershaft. The delivery from the water pump to the generator is regulated by means of a lever working on a toothed quadrant, and placed in front of the steering column. This will be seen in fig. 1. It operates a bypass valve H, which permits of a given quantity of water being passed to the generator, the remainder being returned to the

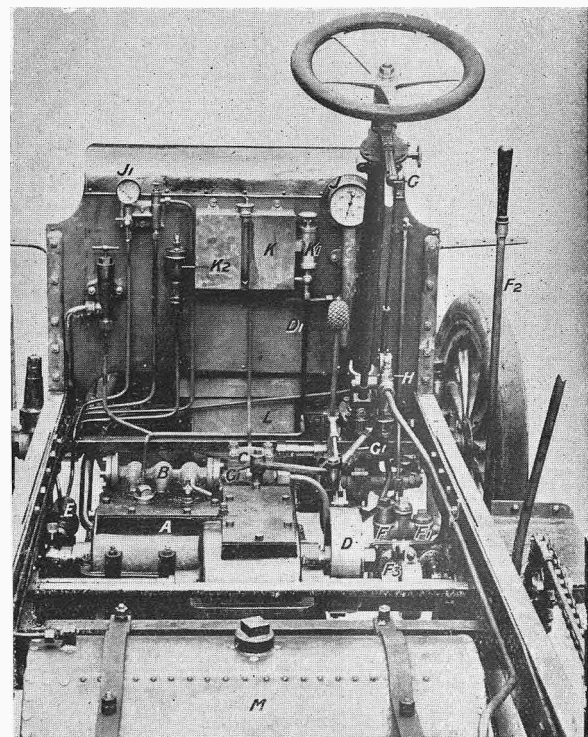


Fig. 3.
Part plan of the Miesse car.

- | | |
|---|---|
| A, engine | G ¹ G ¹ , connections between cam shaft and lever G |
| B, steam inlet valve boxes | H, feed water regulator and bypass |
| C, steam chest and throttle valve | J, steam pressure gauge |
| D, band brake acting on the crankshaft | J ¹ , air pressure gauge |
| D ² , brake pedal | K, lubricating oil reservoir |
| E, air pump | K ¹ , oil supply pump |
| F, feed water power pump | K ² , right feed lubricator to main bearings |
| F ¹ , feed water hand pump | L, flue from generator |
| F ² , feed water hand pump lever | M, oil fuel tank |
| F ³ , eccentric actuating the power pump | |
| G, lever controlling cut-off at inlet valves | |

water tank. On the left-hand side of fig. 3 will be seen the air pressure pump. This is worked by means of a crank on the end of the engine crankshaft. The air is delivered through the pressure regulating valve, seen on the right of the air pressure gauge seen on the dashboard, to the fuel tank M.

(To be continued.)

FUELS FOR MOTOR CARS.

(Concluded from page 347.)

THE FIRST PORTION OF THIS ARTICLE DEALT WITH THE CONVERTING OF HEAT INTO WORK—THE INTERNAL COMBUSTION ENGINE HORSE POWER—SUITABLE FUELS AND CALORIFIC VALUES. IN THE SECOND INSTALMENT THE EMPLOYMENT OF ACETYLENE GAS WAS CONSIDERED, AND SOME USEFUL INFORMATION GIVEN THIS SUBJECT IS CONTINUED IN THE CONCLUDING ARTICLE, WHICH ALSO TREATS OF MIXED FUELS. THE FIRST AND SECOND INSTALMENTS APPEARED IN "THE AUTOCAR" OF SEPTEMBER 12th AND 19th.

Petrol versus Acetylene.

But there is a modified way of using compressed acetylene as a fuel which makes it a more convenient and more concentrated source of energy though a trifle less efficient in practice. The material actually burnt in a petrol engine is not liquid petrol, but petrol vapour mixed with air—a kind of "air gas," in fact. The fuel is really air carburetted by being led over or through petroleum spirit. Instead of admitting air to the carburetter it is clearly easy to admit acetylene, thus preparing "carburetted acetylene" at the time of consumption, this mixture being mingled with the necessary proportion of air and then exploded in the cylinder as usual. Now, four grammes of petroleum spirit yield about one litre of vapour when suspended in air or acetylene at atmospheric pressure; so that if the calorific value of petrol is 11,000 calories per kilo., that of its vapour is 44,000 calories per cubic metre as against the 14,000 calories of neat acetylene. Thus, measured as gas or vapour, petrol is three times as concentrated a source of energy as acetylene, from which it follows that the carburetting of acetylene should (as in practice it does) increase the theoretical or heat efficiency of the latter as a fuel, and the increase will be measured simply by the proportion of vapour added to the gas, which proportion can be regulated by hand, or will depend on the design of the carburetter. Since the acetylene issues from its storage cylinder under pressure it will drive itself through the carburetter, and no attention will be required beyond that of the valve on the gas bottle.

Mixed Fuels.

Now, as already stated, Lépina's engine, which consumed 0.382 kilos. of petrol alone, or somewhere about 250 litres of acetylene alone (it was another engine of different size he tested with acetylene), for the development of 1 h.p. hour, took 108 litres of carburetted acetylene, of fifty litres of acetylene, plus 0.233 kilo. (0.34 litre) of petrol in the production of the same amount of useful work. Calculating out the volumes occupied by the fuels per 1 h.p.-hour, the figures are for petrol alone 0.56 litre without tank; for carburetted acetylene, fifty litres of gas (say, one litre when compressed into its bottle), plus 0.34 litre of petrol, *i.e.*, 1.34 litres altogether—about three times as much. Calculating out the weights, the figures for petrol alone 0.382 kilo. without tank; for carburetted acetylene, 0.058 kilo. for the gas itself, 1.5 kilos. for the bottle, and 0.233 kilo. for the petrol added: total, 1.791 kilos.—about 4.7 times as much, as compared with 15.6 times as

much weight when pure acetylene is used (the tanks for the petrol being overlooked in all cases).

There are, however, several other important advantages possessed by carburetted acetylene in comparison with the neat gas. When neat acetylene is mixed with ninety per cent. by volume of air and the gas is fired, the explosion travels through the mass at a speed of ten metres per second; but when the inflammable portion of the gaseous mixture is carburetted acetylene, the explosion only proceeds at the rate of 3.2 metres per second. Both rates are capable of alteration by modifying the relative proportions of combustible gas and air in the mixture fired; but the speed of the explosive wave is always lower when petroleum spirit vapour is present. Within limits, it is evident that the slower a gaseous mixture explodes in an engine cylinder the better; because the faster it does so the more does it strain the metal of the engine, while the slower it does so the more time is available for overcoming the inertia of the piston and its appendages. Again, mixtures of air and neat acetylene are explosive in presence of a spark or light if the proportion of the acetylene is anything between 3.35 and 52.3 per cent. by volume of the mixture (in a 19 mm. tube). Mixtures of petrol alone and air are similarly explosive only between the limits of 2.4 and 4.9 per cent.; and mixtures of carburetted acetylene and air are explosive between two or three per cent. and ten or twenty per cent. of the inflammable constituent. Precise figures can only be given for carburetted acetylene of known composition, because the higher limit of explosibility is reduced according to the proportion of vapour in the gas—probably Lépina's material had limits of two to ten per cent., or thereabouts. Now, the greater the distance between the lower and the upper limit of explosiveness—or the wider the "range of explosibility"—of any gas or vapour when mixed with air, the greater is the difficulty of designing an engine to burn it satisfactorily, or the greater is the fear that the mixture may explode prematurely. The ideal engine introduces into its cylinder precisely that quantity of fuel which is necessary to perform the work to be done, and mixes with that quantity exactly the amount of air which is required to consume it perfectly (and no more). Such exactitude is scarcely to be attained in practice, especially in portable engines; and, therefore, that fuel is preferable which is least likely to give trouble if the proportions between it and air are improperly arranged. In this respect, petrol alone is the best fuel, but carburetted acetylene is only a little inferior, neat acetylene being far worse.

The 1,000 Miles Reliability Trials.

(Continued from page 356.)

THE 1,000 MILES RELIABILITY TRIALS COMMENCED ON TUESDAY, SEPTEMBER 15TH, AT NOON, BY WHICH TIME THE CARS WERE REQUIRED TO BE WITHIN THE GROUNDS OF THE CRYSTAL PALACE. IN THE LAST ISSUE OF *THE AUTOCAR*, PAGE 348, WE GAVE A BRIEF SPECIFICATION OF THE CARS, AND A REPORT OF THEIR PERFORMANCES IN THE HILL-CLIMBING AND BRAKE TESTS, PAGE 354.

THE DUST, NOISE, AND VIBRATION TRIALS.

WEDNESDAY, SEPTEMBER 16th.

WITH but one or two exceptions, the brake trials having been concluded, to-day was devoted to somewhat elaborate tests for dust-raising, noise, and vibration.

The dust trials were carried out upon the cycle track, and as flour was employed as the representative of road dust, it was providential that not only was the day fine, but practically windless. For the space of about sixty feet the winning straight of the cycle track was covered as to its inner half with a layer of the flour $1\frac{1}{2}$ in. thick, and

themselves actuated the shutter of the camera by breaking a thread stretched across the track just as the car's front wheels left the flour. The judges sat on the turf some way back, and estimated the volume of dust thrown up, awarding marks in the proportion they deemed suitable.

From a personal point of view, we found it extremely difficult to differentiate between the large majority of the cars, and gave up the attempt we had intended to make on our own account; but Colonel Crompton assured us that he and



Photo. Russell, Crystal Palace.
The 6 h.p. Swift. No. 24

over this the cars to be tested were driven three times at speeds of twenty, twenty-five, and thirty miles an hour. Mr. Hutton's 12 h.p. Panhard fitted with a speed meter acted as speed setter, and ran on the outside of the path clear of the flour, while the vehicles to be tested drove through the dust substitute. Colonel Crompton, R.E., and Captain Nugent, R.E., judged visually, and photographs of the dust clouds raised were taken for the purpose of assisting later in the award of marks. The cars



Photo. Russell, Crystal Palace.
The 18 h.p. Star. No. 99.

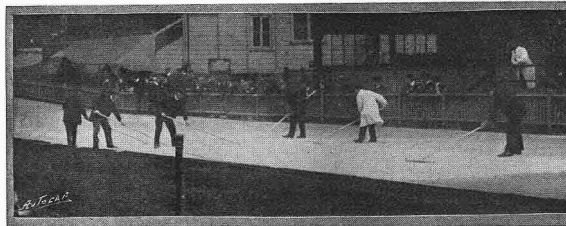


Photo. Russell, Crystal Palace.
Spreading the mill sweepings over a portion of the track.

his co-judge agreed wonderfully in their judgments. Let us hope that, unlike Disco, they were not mistaken. It seemed to us to be well nigh impossible to distinguish. Also, we are of opinion that flour is hardly the substance to employ for these tests; it is obviously too light, and throws up too easily. Again, the length floured might have been longer with advantage, for many of the cars hardly seemed to have worked up their maximum until they were just quitting the prepared section.



Photo.

The 6 h.p. Relyante, No. 16, driven by Mme. Geany Hervaux, with the pace-making Panhard in front.

Russell, Crystal Palace

In the bright rays of the September sun the scene was a pretty one, for the cars were ranged in a big semicircle on the road outside the northern curve, and entering through an opening in the fence on the back straight were there marshaled by Mr. S. F. Edge before being despatched for their three several circuits in company with the pacemaking Panhard, upon which one of the judges rode throughout the day.

On the back straight Colonel Crompton at our suggestion had had a small area coated with flour upon which the cars were required to stand while their engines were raced for the purpose of detecting whether the issue of their exhausts from their silencers had the effect of dust-raising. We are pleased to be able to state that only in a very few instances was the exhaust directed downwards, the majority of issues exerting no effect upon the flour stratum.

In the matter of dust-raising on the 60ft. section, observation of the results showed that cars which had fairly clean runs below their frames, and those possessing short wheel-bases and small tyres, induced the least clouds of dust. The effect of solid tyres, too, was to raise less pother than pneumatics. To those who closely watched and noted the dust trials, the marking awards of the judges when they are published will be scrutinised with interest.

Having got through their dust trials, the cars moved off the track to the broad path leading up from the Penge entrance for the noise, vibration,

and visible vapour tests. Messrs. Lyons Sampson and R. E. Phillips were detailed for this service. The cars made a trip on each speed up the rise towards the Palace, returning each time towards the gate upon their top speeds, and then coming to a halt before the judges. Their drivers were required

THE 1,000 MILES TRIALS.

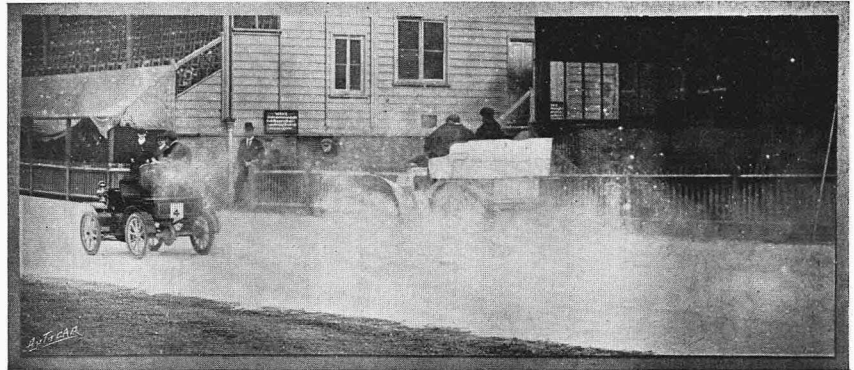


Photo. Russell, Crystal Palace. The Baby) Peugeot No. 4 in the dust trials, just leaving the floured stretch.



Photo. Russell, Crystal Palace. The 10 h.p. Spyker, No. 63

to run their engines slowly, and then race them while the judges stood upon the steps and adjudged the vibration so developed by the effect upon their bodies when positioned as stated. Therefore, the awards for vibration and noise will be made upon opinion only and not by the result of any exact tests. Whether the entrants will regard this as satisfactory when they come to the knowledge of the marks awarded has yet to be seen. We question whether all the drivers were aware that their vehicles were being adjudged for the discharge of visible vapour at the same time, or we fancy that many of them would have been less free with their allowance of lubricating oil, and in consequence would not have emitted such dense clouds of blue smoke.

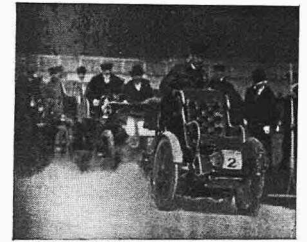
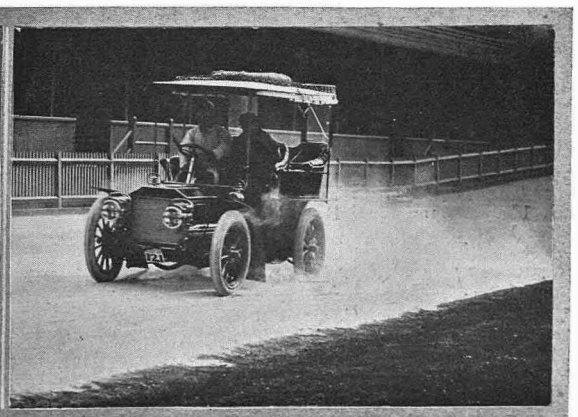
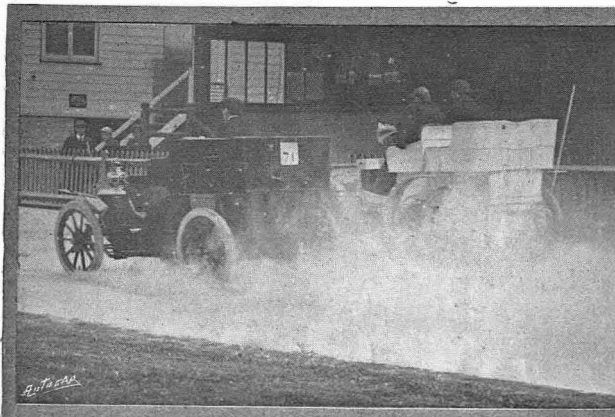


Photo. Russell, Crystal Palace. The Eagle tandem, No. 2.



Photos. THE DUST RAISING TEST. Two of the large cars running over the floured track. No. 71, 10 h.p. Peugeot, was accompanied by the official observer, who rode in the white Panhard on the right of the competitor. The second car, No. 121, is a 20 h.p. Beaufort. Russell.

THURSDAY, SEPTEMBER 17th.

This was practically an off day save for sundry examinations and tests on the part of the judges and the inaugural luncheon held in the restaurant of the Crystal Palace. The chair was taken by Mr. Roger Wallace, K.C., and the vice-chairs by Messrs. Basil Joy, J. W. Orde, E. Shrapnell Smith, W. Rees

Jeffreys, and J. Stewart Mallam. The usual toasts were proposed and replied to, Mr. Basil Joy's arduous labours being deservedly referred to by all the speakers, and Mr. Shrapnell Smith's work on behalf of the press was also duly acknowledged, his efforts being much appreciated by the pressmen engaged.

THE STARTERS IN THE TRIALS.

A Complete and Classified List of the 104 vehicles which were officially started from the Crystal Palace on the First Day.

CLASS A1.—Price less than £160. Three Starters.

- | | | |
|--------------------------------------|---------------------------------|-------------------------------|
| 1. Century tandem, driver A. Knight. | 2. Eagle tandem, F. J. Jackson. | 3. Rex Tricar, W. Pilkington. |
|--------------------------------------|---------------------------------|-------------------------------|

CLASS A.—Price not more than £200. Fourteen Starters.

- | | | |
|--------------------------------------|---|------------------------------------|
| 4. Baby Peugeot, A. Farrer. | 14. Cadillac, F. S. Bennett. | 18. Clyde, E. Dyer. |
| 5. 6 h.p. Regal, A. Hicks. | 15. Pony Richard, D. Edwards. | 19. 6 h.p. Elswick. |
| 9. Vulcan, J. Hampson. | 16. 6 h.p. Relyante, Mme. Genny Her-
veux. | 20. 6 h.p. De Dion, E. V. Fielder. |
| 11. Stanley steam car, F. Wilkinson. | 17. Oldsmobile, G. P. Huss. | 21. Oldsmobile, W. Batchelor. |
| 12. Humberette, J. Pearson. | | 23. Achilles, B. Thompson. |

CLASS B.—Price £200 to £300. Eleven Starters.

- | | | |
|-------------------------------------|--|-------------------------------------|
| 24. 6 h.p. Swift, A. McCormick. | 34. 10 h.p. Georges-Richard, J. T.
Overton. | 37. Roots, A. C. Weld. |
| 25. 8-10 h.p. Regal, M. Emile. | 35. 9 h.p. Eagle, R. Jackson. | 38. Mohawk Manon, E. Lambert. |
| 28. Beaufort tonneau, A. E. Oakley. | 36. 10 h.p. Rex, F. Griffin. | 39. 8 h.p. M.M.C., F. W. Hulse. |
| 29. 9 h.p. Argyll, R. George. | | 40. 9 h.p. Darracq, A. L. F. Beury. |

CLASS C.—Price £300 to £400. Eighteen Starters.

- | | | |
|--|---|------------------------------------|
| 41. 10 h.p. Gladiator, F. H. Arnott. | 50. Simms-Welbeck, B. Dick. | 58. 12 h.p. Relyante, W. Williams. |
| 42. 12 h.p. Albion, R. Wilson. | 51. 12 h.p. Wolseley, A. Callan. | 59. 13 h.p. Rex, C. Smith. |
| 43. 10 h.p. Hallamshire, L. Rowbottom. | 52. 10 h.p. Wolseley, T. Shaw. | 60. Déchamps, J. Tenearts. |
| 47. 9 h.p. James and Browne, F. L.
Martineau. | 54. Krupkar, L. N. Hurman. | 62. 7½ h.p. Wolseley, O. Ralls. |
| 48. 10 h.p. Argyll, J. E. Downie. | 56. Horbick, H. W. Cranham. | 63. 10 h.p. Spyker, F. Holgate. |
| 49. 14 h.p. Argyll, D. Govan. | 57. 12 h.p. Georges-Richard, W. Boor-
man. | 64. 12 h.p. Darracq, D. Hemery. |

CLASS D.—Price £400 to £550. Twenty-two Starters.

- | | | |
|--|--|--|
| 65. 12 h.p. Sunbeam, T. C. Pullinger. | 78. 14 h.p. Beaufort, S. Curran. | 86. 12 h.p. Clément, D. Weigel. |
| 66. 12 h.p. Gladiator, Miss D. Levitt. | 79. 16 h.p. Argyll, P. Thomas. | 87. 10 h.p. Lanchester, R. Colgate. |
| 67. Ariel, Harvey Du Cross, jun. | 80. Belsize, J. Owen. | 89. Brush, H. W. Bamber. |
| 68. 14 h.p. Brooke, Maudsley Brooke. | 82. 14 h.p. Brooke, Frank Wellington. | 90. Maxim, D. A. Brown. |
| 70. 10 h.p. Thornycroft, W. A. Young. | 83. Relyante steamer, S. F. Gillette. | 91. 12 h.p. De Dion, J. W. Stocks. |
| 71. 10 h.p. Peugeot, C. E. Dear. | 84. White Steam Car, W. E. Sonnaus-
tine. | 92. 12 h.p. New Orleans, W. H. Astell. |
| 75. Elswick, H. C. Stent. | 85. 12 h.p. Dennis, R. Downing. | 93. 10 h.p. Renault, H. R. Wilding. |
| 77. 12 h.p. Star, T. Lisle. | | |

CLASS E.—Price £550 to £700. Eighteen Starters.

- | | | |
|---|---|--|
| 94. 20 h.p. Thornycroft, T. Thorny-
croft. | 102. 24 h.p. Wolseley, S. Girling. | 111. 20 h.p. Spyker, E. F. Broadbent. |
| 95. Chelmsford, T. Clarkson. | 104. Winton, F. W. Packham. | 113. 14 h.p. Renault, H. T. Edwards. |
| 96. 15 h.p. Germain, E. Checkley. | 105. Gardner-Serpollet, J. W. Dew. | 114. P. 13 and P. 19, Martini, M. de
Martini. |
| 97. 15 h.p. New Orleans, T. Jenner. | 106. 24 h.p. Georges Richard, Mar-
quise de Noé. | 116. White Steam Car, W. White. |
| 99. 18 h.p. Star, T. F. Young. | 108. 16 h.p. Dennis, R. Dennis. | 117. 12 h.p. Humber, Ross Browne. |
| 100. 18 h.p. James and Browne, T. B.
Browne. | 109. 16 h.p. Lanchester, A. J. Miller
chip. | 118. 24 h.p. Darracq, L. Wagner. |

CLASS F.—Price £700 to £900. Fifteen Starters.

- | | | |
|--|---|------------------------------------|
| 119. 12 h.p. Peugeot, C. Friswell. | 125. Mandslav, H. G. Lees. | 130. Rochet Schneider, Capt. Deasy |
| 120. 20 h.p. Germain, P. E. Piper. | 126. 16 h.p. De Dietrich, W. L. Sorel. | 131. Mors, L. Carle. |
| 121. 20 h.p. Beaufort, C. Lorengen. | 127. C.G.V., W. Ewart-Hall. | 132. Holcar, Holroyd Smith. |
| 122. 20 h.p. Humber, C. Evinson. | 128. Chenard and Walcker, Henri
Walcker. | 133. 20 h.p. M.M.C., G. Iden. |
| 123. Wilson and Pilcher, G. H. T.
Slaney. | 129. Pipe, C. Rondauld. | 134. Fiat, V. H. Miller. |

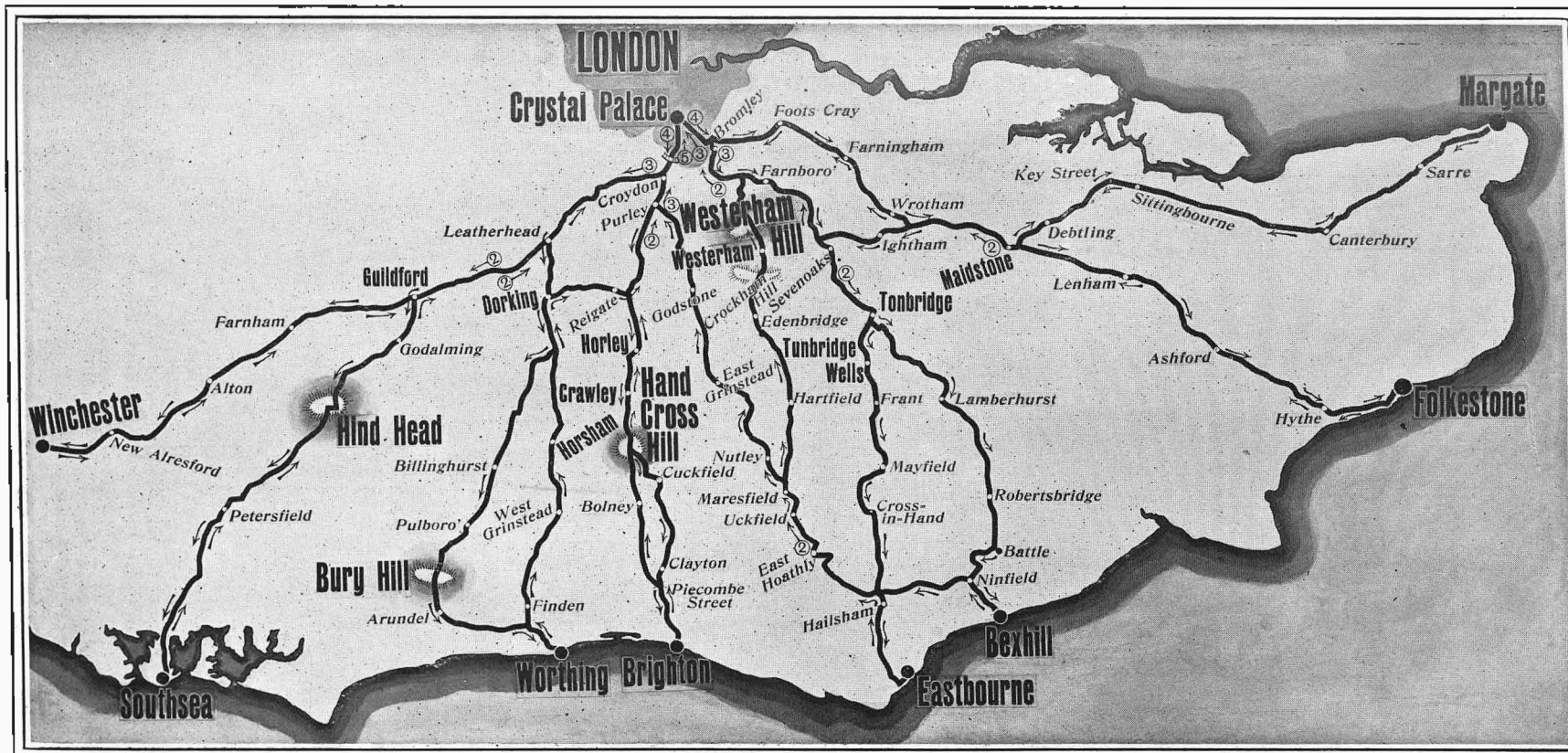
CLASS G.—Over £900. Three Starters.

- | | | |
|----------------------------------|--------------------------------|---------------------------------------|
| 136. 22 h.p. Daimler, G. Street. | 137. 22 h.p. Daimler, A. Rush. | 140. 24 h.p. De Dietrich, C. Jarrott. |
|----------------------------------|--------------------------------|---------------------------------------|

ROUTES IN THE 1,000 MILES RELIABILITY TRIALS.

SEPTEMBER 26TH, 1903.

THE AUTOCAR.



Friday, Sept. 18.—MARGATE, Fooks Cray, Farningham, Maidstone, Sittingbourne, Canterbury, Margate. Return same route. 150.5 miles.

Saturday, Sept. 19.—EASTBOURNE, Sevenoaks, Tunbridge Wells, Mayfield, Hailsham, Eastbourne. Return via Uckfield and Westerham (Hill Climb). 121 miles.

Monday, Sept. 21.—WORTHING, Leatherhead, Billingham, Bury Hill (Hill Climb), Arundel. Return via Horsham, Dorking, Reigate. 118.75 miles.

Tuesday, Sept. 22.—FOLKESTONE, Maidstone, Ashford, Folkestone. Return from Maidstone via Seal and Farnborough. 137.5 miles.

Wednesday, Sept. 23.—SOUTHSEA, Leatherhead, Guildford, Hind Head (Hill Climb), Petersfield, Southsea. Return same route. 144.5 miles.

Thursday, Sept. 24.—BEXHILL, Tonbridge, Lamberhurst, Battle, Bexhill (Speed Trial). Return via Ninfield, Uckfield, and Godstone. 121.5 miles.

Friday, Sept. 25.—WINCHESTER, Leatherhead, Guildford, Farnham, Chawton, Winchester. Return same route. 133.5 miles.

Saturday, Sept. 26.—BRIGHTON, Purley, Horley, Crawley, Cuckfield, Brighton. Return via Bolney and Handcross (Hill Climb). 91.75 miles.

The numbers contained in the circles in the tails of some of the arrows denote the number of times the cars will pass over that portion of the road against which they are placed, and the direction in which they travel.

The Diary of the Road Trials.

MARGATE AND BACK. FRIDAY, SEPTEMBER 18th.

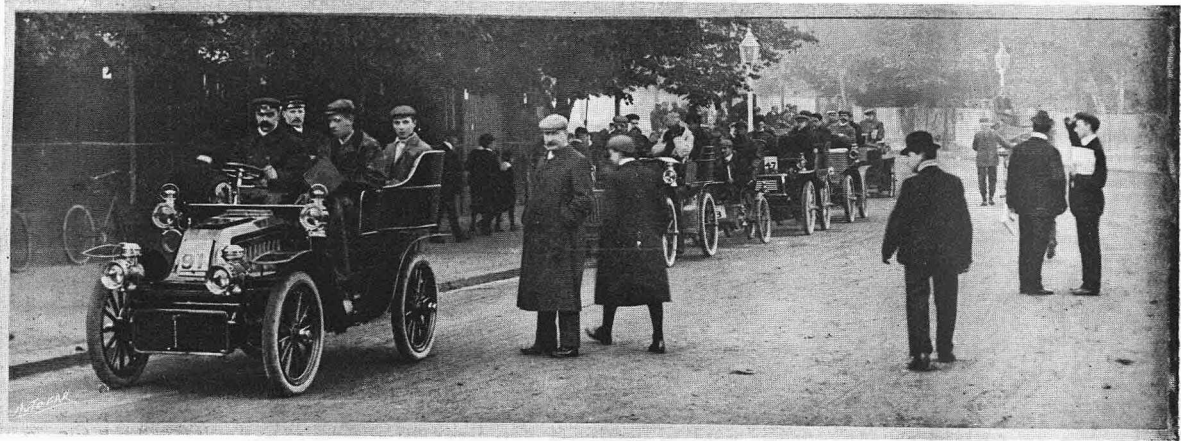


Photo.

THE CORNER ON THE CRYSTAL PALACE PARADE. The cars marshalling for the start to Margate. Mr. J. W. Stocks driving the 12 h.p. De Dion car (91) into position. Argent Archer, Kensington, W.

IT has already been notified that the opening run was arranged for Margate, the route being by Bromley, over Chislehurst Common, joining the Maidstone Road at Foots Cray, and running by the pretty village of Farningham, nestling in the valley of the Darent, over breezy uplands, to where the hill looks over Wrotham and the Weald of Kent, and away to Maidstone, where a compulsory stop of fifteen minutes, both on the outward and homeward journey, was imperative. Leaving Maidstone, the main Dover Road was joined at Key Street, by taking the cross route from Maidstone and climbing Debtling Hill to get out of the Medway Valley. Sittingbourne, that town of bricks and brickmaking, was passed, and the old main road kept to, up Boughton Hill to Canterbury, through the ancient gate, and along the narrow streets of which the cars passed slowly and carefully, and out by the Barracks on to the Margate Road, through Sturry and Sarre.

In order that pride of place might go where chance ordained, the order of starting was drawn for, and resulted in No. 1 falling to the lot of Mr. D. Weigel, driving No. 86—a 12-16 h.p. four-cylinder Clément of very smart appearance. On page 382 we give a list of the cars which actually started and their drivers, but in dealing with the runs on the days that follow we shall only refer in detail to the vehicles that have dropped out of the stern combat. The scene in the huge storage tents pitched below the Lower Terrace was indeed a busy one, even as early as 6 a.m. Engines were running, and mechanics darting here and there, so that one was

almost constrained to the thought that these huge canvas erections were the homes of giant metallic bees, whose insistent demands must promptly be met. Cars were continually issuing from one or other of the tents towards one or other of the replenishing stations, which, under the watchful eye of Mr. Basil Joy, the Anglo-American Co., Messrs. Carless-Capel, or the people who are pushing that excellent spirit Carburine had set up. Thence so soon as tanks were charged and the spare supply taken aboard, the self-propellers betook themselves in close and palpitating single file to the Rockhills

outlet from the grounds, where they turned to the left, and, running down the somewhat pungent Westrumited but dustless surface of the Crystal Palace Parade, took up the position assigned them by the drawn number, and awaited the signal to move off. Notwithstanding the early hour, quite a number of well-known automobilists had driven up to watch the start.

Mr. S. F. Edge, the honorary marshal, Mr. J.

D. Siddeley, the honorary secretary for observers, and Mr. Basil Joy, were present at the start, and gave the word to go shortly after the appointed time, when upon due enquiry they found that each car had been weighed, also its passengers, and that the observer was *au fait* with all that was required of him. A little more than an hour was occupied in getting the long line away, and as soon as the last car—a 10 h.p. White steam car—had turned the bend of West Hill we packed ourselves in our smooth and quiet running little 12-16 h.p. Clément and followed on the trail of the competing cars.

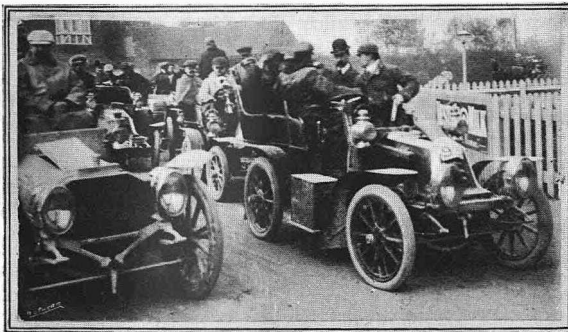


Photo.

Argent Archer, Kensington, W.

The cars lined up outside the Crystal Palace for the start on Friday morning.

The absence of breakdowns, also that of public interest—at least within fifty miles of London—was remarkable. Although we passed many cars during the run out, the first we found in distress was No. 75—the 8-10 h.p. Elswick—which was stationary on the hill leading up to Chislehurst Common. This car might have been stopped by accident, for there was a real jam up this narrow, winding road. Running into Foots Cray, we lighted on the 24 h.p. Georges-Richard (No. 106), with tyre troubles, which robbed it of a non-stop record, and continuing on our way discovered the first law officer (on a bicycle) as we passed over Wrotham Heath. He appeared quite oblivious to the continual fitting of the cars. Between Wrotham and Malling we left the 12 h.p. Wilson and Pilcher (No. 123) with its floor boards up, but had no time to enquire the trouble. At Town Malling tyre trouble was halting the 18 h.p. Mors (No. 131), but thereafter we did not note any halt of consequence. Maidstone, as a whole, seemed but little perturbed at the arrival of the scores of dusty cars, although they were parked in the centre of the broad Market Place, and required to stay fifteen minutes before striking up Debtling for the Dover Road. At Sittingbourne folks were more interested,



A block at Sturry level crossing.

and Faversham had sent many out to Ospringe to watch the passing of the cars. The clerical quietude of Canterbury was but little ruffled, but all the villages were out, and Margate was "real agog" at the motor invasion. The competition cars were here parked or massed in four lines in the centre of Cecil Square, under Mr. Edge's direction, private cars being relegated to the north-east corner. The Square was crowded with interested spectators, and their enthusiasm made quite a feature of the otherwise somewhat featureless run. The motorists were welcomed to Margate by the Mayor, who was present in Cecil Square, and particularly complimented Miss Dorothy Levitt upon her successful driving of No. 66, the four-cylinder Gladiator.

Cars starting out on the return journey were leaving the Square while others were still arriving, and quite forty were still standing when we left on the homeward journey. The return was made over exactly the same ground, the most trying pull being up Wrotham Hill, which we saw tackled most satisfactorily by many cars. Our Clément, with five up and stores, waltzed up on its third and second speeds in the most light-hearted way, but stopped dead at the exact summit—because not a drain of petrol was left, either in tank or carburetter. No. 37, the 4 h.p. Roots car, was passed standing outside

THE 1,000 MILES TRIALS.



Photo. Argent Archer, Kensington, W.
The 8 h.p. Achilles, No. 23. The official observer is examining his watch preparatory to the start.

Margate. At the top of Wrotham, just as our petrol petered out, we passed the 16 h.p. Lanchester, driven by Mr. Millerchip, with a broken fan to port engine, and No. 122, the 20 h.p. Humber, stopped in Foots Cray for petrol. A finer day overhead could not have been desired, but we could have wished the dust modified, although this nuisance was much more provoked by some cars than by others. It will be interesting to note whether the flour trials verify observations on the road. One of the cars carrying the judges, and which, not being entered in the trials, had not been put through the dust test, was a terrible offender in this respect, and threw up about twice as much dust as any other car we noticed. Some villagers had been careful to well water the roads passing between their habitations, and so saved themselves much annoyance. The following cars made **non-stop runs**.

CLASS A.—No. 5, 6 h.p. Regal; No. 14, 6½ h.p. Cadillac.

CLASS B.—No. 24, 6 h.p. Swift; No. 34, 10 h.p. Georges-Richard; No. 38, 9 h.p. Mohawk-Manon; No. 39, 8 h.p. M.M.C.



Photo. Argent Archer, Kensington, W.
The 18 h.p. Star No. 99.

THE 1,000 MILES TRIALS.

CLASS C.—No. 41, 10 h.p. Gladiator; No. 47, 9 h.p. James and Browne; No. 48, 10 h.p. Argyll; No. 51, 12 h.p. Wolseley; No. 52, 10 h.p. Wolseley; No. 54, 12 h.p. Krupkar; No. 56, 10 h.p. Horbick; No. 57, 12 h.p. Georges-Richard; No. 59, 13 h.p. Rex.

CLASS D.—No. 71, 10 h.p. Peugeot; No. 79, 16 h.p. Argyll; No. 80, 15 h.p. Belsize; No. 85, 12 h.p. Dennis; No. 86, 12 h.p. Clément; No. 91, 12 h.p. De Dion; No. 92, 12 h.p. New Orleans.

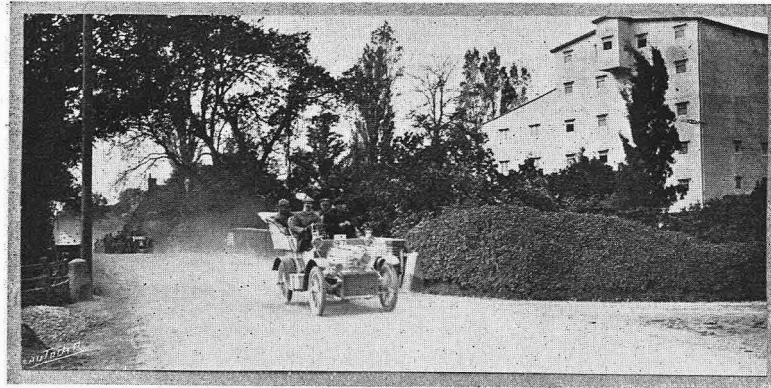
CLASS E.—No. 95, 12 h.p. Chelmsford steam car; No. 97, 15 h.p. New Orleans; No. 102, 24 h.p. Wolseley; No. 104, 20 h.p. Winton; No. 116, 10 h.p. White steam car; No. 118, 24 h.p. Darracq.

CLASS F.—No. 119, 12 h.p. Peugeot; No. 120, 20 h.p. Germain; No. 125, 25 h.p. Maudslay; No. 126, 16 h.p. De Dietrich; No. 133, 20 h.p. M.M.C.; No. 134, 16 h.p. Fiat.

CLASS G.—No. 136, 22 h.p. Daimler; No. 137, 22 h.p. Daimler.

The following cars completed the day's run with delays involving only a **loss of five marks or less**:

CLASS A1.—No. 2, 6 h.p. Eagle tandem.



Coming over the bridge by Sturry Mill, two miles on the Margate road from Canterbury.

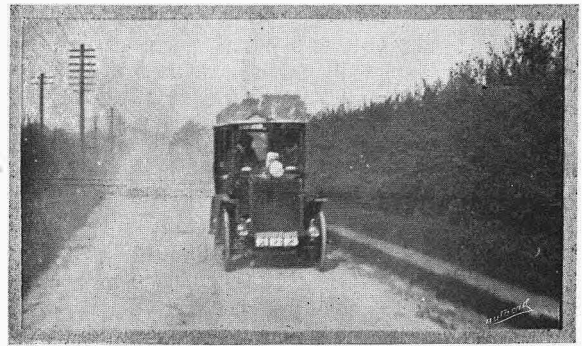
CLASS A.—No. 4, 5 h.p. Baby Peugeot; No. 9, 6½ h.p. Vulcan; No. 12, 5 h.p. Humberette; No. 17, 5 h.p. Oldsmobile; No. 18, 6½ h.p. Clyde; No. 21, 5 h.p. Oldsmobile.



Scene in Cecil Square, Margate.

CLASS B.—No. 29, 9 h.p. Argyll.

CLASS C.—No. 42, 12 h.p. Albion; No. 49, 14 h.p. Argyll; No. 64, 12 h.p. Darracq.



The Clarkson steam car. This picture was taken from the back of one of the editorial cars a few yards after passing this vehicle. Other cars in the rear are hidden by the dust.

CLASS D.—No. 66, 12 h.p. Gladiator; No. 68, 14 h.p. Brooke; No. 70, 10 h.p. Thornycroft; No. 87, 10 h.p. Lanchester; No. 89, 14 h.p. Brush; No. 93, 10 h.p. Renault.

CLASS E.—No. 94, 20 h.p. Thornycroft; No. 99, 18 h.p. Star; No. 100, 18 h.p. James and Browne; No. 105, 10 h.p. Gardner-Serpollet steam car; No. 108, 16 h.p. Dennis; No. 113, 14 h.p. Renault; No. 114, 14 h.p. Martini; No. 117, 12 h.p. Humber.

CLASS F.—No. 130, 16 h.p. Rochet-Schneider.

The following cars completed the run, but with delays which involved a **loss of more than five marks** out of 375:

CLASS A.—No. 11, Stanley steam car; No. 19, 6 h.p. Elswick; No. 20, 6 h.p. De Dion; No. 23, 8 h.p. Achilles.

CLASS B.—No. 28, 9 h.p. Beaufort; No. 35, 9 h.p. Eagle; No. 36, 10 h.p. Rex; No. 40, 9 h.p. Darracq.

CLASS C.—No. 43, 10 h.p. Hallamshire; No. 50, 10 h.p. Simms-Welbeck; No. 58, 12 h.p. Relyante; No. 62, 7½ h.p. Wolseley; No. 63, 10 h.p. Spyker.

CLASS D.—No. 65, 12 h.p. Sunbeam; No. 75, 8-10 h.p. Elswick; No. 78, 14 h.p. Beaufort; No. 82, 14 h.p. Brooke; No. 84, 10 h.p. White steam car; No. 90, 16 h.p. Maxim.

CLASS E.—No. 96, 15 h.p. Germain; No. 106, 24 h.p. Georges-Richard; No. 109, 16 h.p. Lanchester.

CLASS F.—No. 121, 20 h.p. Beaufort; No. 122, 20 h.p. Humber; No. 127, 15 h.p. C.G.V.; No. 128, 18 h.p. Chenard and Walcker; No. 131, 18 h.p. Mors.

CLASS G.—No. 140, 24 h.p. De Dietrich.

The following cars did not complete the day's run:

No. 15, Pony Richard; No. 25, 8-10 h.p. Regal; No. 37, 4.7 h.p. Roots (oil fuel); No. 83, 10 h.p. Relyante (steamer); No. 111, 20 h.p. Spyker.

No. 123, 12 h.p. Wilson and Pilcher, abandoned run for the day on the outward run at Wrotham, and returned to the Palace, the nut on the commutator shaft having come adrift.

THE 1,000 MILES TRIALS.

No. 129, 15 h.p. Pipe, was seriously delayed, not getting into the garage until very late.

No. 132, 20 h.p. Holcar, abandoned the run on the outward journey at Wrotham, and returned to the Crystal Palace, owing to gear troubles.

The following cars have retired from the trials:

No. 3, the Rex Tri-car, 3½ h.p., retired from the competition on the outward journey at Chislehurst through clutch troubles, and will not resume the trials.

No. 16, 6 h.p. Relyante, abandoned the whole trials on this day.

No. 67, the 12 h.p. Ariel, retired from competition on outward journey at Chislehurst, having sustained a bent axle through avoiding a collision with another vehicle. This car will not be able to resume, and both the Ariel Co. and the driver of the car, Mr. Harvey DuCros, jun., have our sincere sympathies in a bit of hard luck.

The results for No. 1 (Century tandem), No. 41 (10 h.p. Gladiator), No. 56 (10 h.p. Horbick), and No. 60 (10 h.p. Dechamps) had not been computed by Saturday evening.

A summary of the above figures shows that out of the 104 cars that set out for Margate, thirty-five completed non-stop runs, twenty-six did almost as well, their delays being but five minutes or less, twenty-



The cars packed in Cecil Square, Margate.

eight suffered from delays of over five minutes, eight retired, two met with serious mishaps and could not continue, one of these being the 12 h.p. Ariel, Mr. Harvey DuCros, jun., steering to avoid a smash from the carelessness of another driver, sustaining a broken axle. The results of four are in abeyance at the moment of writing, but may be published at any time.

The judges in attendance throughout the day were Messrs. E. H. Cozens-Hardy, Lyons Sampson, R. E. Phillips, and Colonel Crompton, C.B.

EASTBOURNE AND BACK, SATURDAY, SEPTEMBER 19th.

THE scene of Friday morning, so far as the tents and the Palace Parade were concerned, was re-enacted, save that the cars started in quite a different order, in accordance with the draw for the day. The route out was by West Wickham, Hayes Common, Locks Bottom, Farnborough, Polhill, Riverhead, Sevenoaks, River Hill, Tunbridge Wells, Frant, Mayfield, Hailsham, and Willingdon, returning by East Hoathly, Uckfield, Hartfield, Edenbridge, Westerham, Keston, and Hayes Common. This day's run, in itself a particularly trying one (crossing as it did Ashdown Forest and

Crockham Hill), included, of course, the timed ascent of Westerham Hill, as it is popularly known, although designated on the official programme as Betsom's Hill, being christened from a farm situated halfway up, on the left-hand side. The roads throughout were in excellent condition, though, owing to the absence of rain, very dusty. The cars (which may not be cleansed in any way throughout the trials except at the expense of lost marks) looked very dingy and dirty for a call at so fashionable and dainty a seaside place as Eastbourne, and must have created a poor impression on many beholders.



Photo.

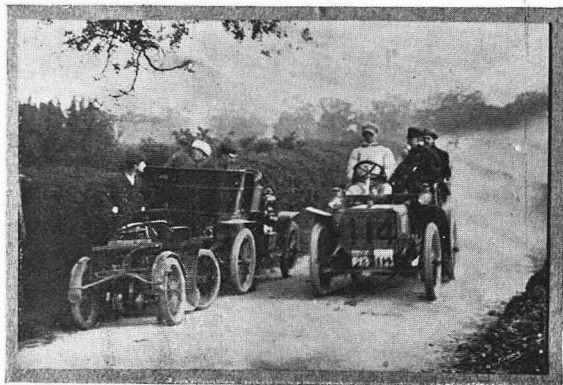
Russell, Crystal Palace.

A group of the Argyll cars running in the Trials No. 29 is a single-cylinder 9 h.p. car; No. 48, a two-cylinder 10 h.p. car; No. 49, a three-cylinder 14 h.p. car; and No. 79 a four-cylinder 16 h.p. car.

THE 1,000 MILES TRIALS.

Westerham Hill Climb.

Crockham and other steep hills formed something like trial climbs before Westerham was reached, where the first car arrived considerably after four o'clock. The surface of the hill was in excellent condition, and long before the hour at which the first automobile could arrive innumerable private cars had arrived upon the scene, and taken up positions on each side of the hill crux—to wit, Hell Corner—narrowing the available road space to a very serious extent. Indeed, the utterly unsportsmanlike behaviour of the owners of private cars, in so placing themselves, and driving up and down the hill while the trial cars were essaying the ascent, was altogether unpardonable, and resulted in the climb proving more or less of a fiasco. A managerial mistake was made also in not holding up the cars some



The official timekeepers—Messrs. H. Sturme and H. J. Swindley—at the foot of Westerham.

two or three hundred yards from the point at which the timekeepers at the foot of the hill, Messrs. Henry Sturme and Harry J. Swindley, had taken up their position. At times the cars were much hampered by the motor bicyclists and private cars plying up and down, and at one time quite a dozen competing cars were brought to a dead stop by the stoppage of a car just in front of the clocking line. The cars were timed at the summit by Messrs. T. W. Woollen and D. Straight.



Photo. Argent Archer.
The 10 h.p. Dechamps, No 60.

clamber up the mile steep of Westerham Hill, the following cars made non-stop runs:

CLASS B.—No. 28, 9 h.p. Beaufort; No. 40, 9 h.p. Darracq.

CLASS C.—No. 42, 12 h.p. Albion; No. 47, 9 h.p. James and Browne; No. 48, 10 h.p. Argyll; No. 51, 12 h.p. Wolseley; No. 56, 10 h.p. Horbick; No. 63, 10 h.p. Spyker.

CLASS D.—No. 84, 10 h.p. White steam car; No. 91, 12 h.p. De Dion; No. 93, 10 h.p. Renault.

CLASS E.—No. 97, 15 h.p. New Orleans; No. 102, 24 h.p. Wolseley; No. 105, 10 h.p. Gardner-Serpolet; No. 116, 10 h.p. White steam car.

CLASS F.—No. 121, 20 h.p. Beaufort; No. 130, 16 h.p. Rochet-Schneider; No. 133, 20 h.p. M.M.C.

CLASS G.—No. 137, 22 h.p. Daimler.

The cars given hereunder completed the run, but suffered from delays of various kinds, resulting in the deduction of five marks or less.

CLASS A.—No. 4, 5 h.p. Baby Peugeot; No. 12, 5 h.p. Humberette.

CLASS B.—No. 24, 6 h.p. Swift; No. 29, 9 h.p. Argyll; No. 34, 10 h.p. Georges-Richard; No. 39, 8 h.p. M.M.C.

CLASS C.—No. 41, 10 h.p. Gladiator; No. 50, 10 h.p. Simms-Welbeck; No. 52, 10 h.p. Wolseley; No. 57, 12 h.p. Georges-Richard.

CLASS D.—No. 68, 14 h.p. Brooke; No. 77, 12 h.p. Star; No. 82, 14 h.p. Brooke; No. 85, 12 h.p. Dennis.

CLASS E.—No. 96, 15 h.p. Germain; No. 100, 18 h.p. James and Browne; No. 108, 16 h.p. Dennis; No. 114, 14 h.p. Martini.

CLASS F.—No. 119, 12 h.p. Peugeot; No. 127, 15 h.p. C.G.V.; No. 129, 15 h.p. Pipe; No. 134, 16 h.p. Fiat.

The following cars completed the run but lost more than five marks:

CLASS A1.—No. 1, 5 h.p. Century tandem; No. 2, 6 h.p. Eagle tandem.

CLASS A.—No. 5, 6 h.p. Regal; No. 9, 6½ h.p. Vulcan; No. 17, 5 h.p. Oldsmobile; No. 18,



Photo. Russell, Crystal Palace.
The 20 h.p. Spyker car.



Photo. Argent Archer, Kensington, W.
The 10 h.p. White steam car, No 84.

6½ h.p. Clyde; No. 20, 6 h.p. De Dion; No. 21, 5 h.p. Oldsmobile; No. 23, 8 h.p. Achilles.

CLASS B.—No. 36, 10 h.p. Rex.

CLASS C.—No. 43, 10 h.p. Hallamshire; No. 54, 12 h.p. Krupkar; No. 58, 12 h.p. Relyante; No. 59, 13 h.p. Rex; No. 60, 10 h.p. Déchamps; No. 64, 12 h.p. Darracq.

CLASS D.—No. 65, 12 h.p. Sunbeam; No. 66,

THE 1,000 MILES TRIALS,
20 h.p. Humber; No. 125, 25 h.p. Maudslay; No. 131, 18 h.p. Mors.

CLASS G.—No. 11, Stanley steam car; No. 104, 20 h.p. Winton; No. 140, 24 h.p. De Dietrich (seriously delayed).

Retired from the day's run: No. 14, 6½ h.p. Cadillac; No. 19, 6 h.p. Elswick; No. 75, 8 h.p. to 10 h.p. Elswick; No. 78, 14 h.p. Beaufort; No.

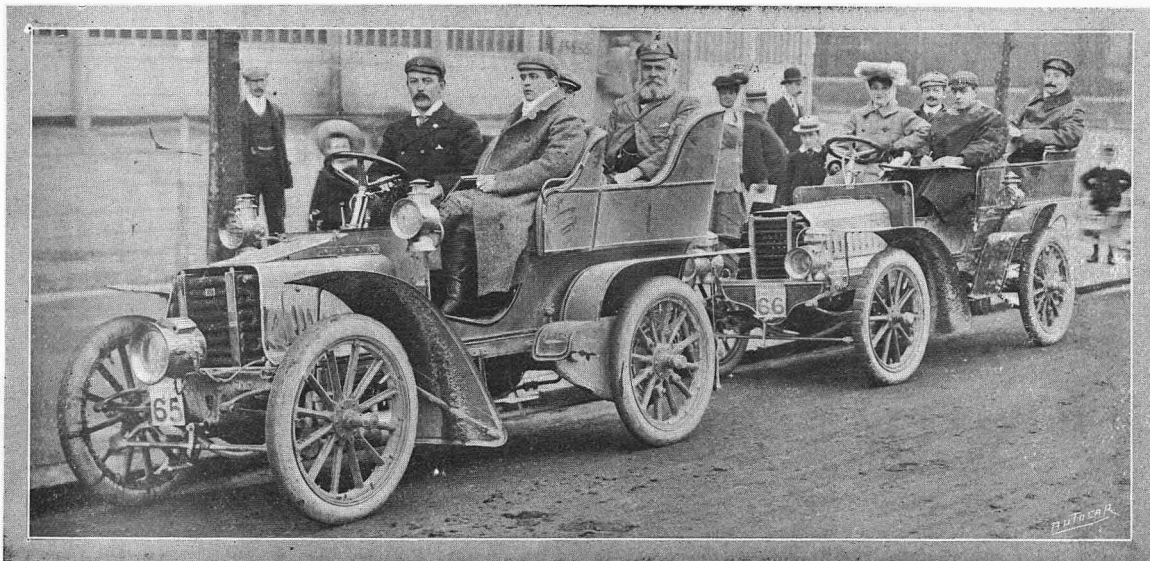


Photo. The 12 h.p. Sunbeam, No. 65, one of the cars new to the Trials, followed by the 12 h.p. Gladiator, No. 66, driven by Miss Dorothy Levitt, leaving the Palace for Eastbourne. Argent Archer, Kensington, W.

12 h.p. Gladiator; No. 70, 10 h.p. Thornycroft; No. 71, 10 h.p. Peugeot; No. 79, 16 h.p. Argyll; No. 80, 15 h.p. Belsize; No. 90, 16 h.p. Maxim.

CLASS E.—No. 94, 20 h.p. Thornycroft; No. 95, 12 h.p. Chelmsford; No. 106, 24 h.p. Georges-Richard; No. 113, 14 h.p. Renault; No. 118, 24 h.p. Darracq.

CLASS F.—No. 120, 20 h.p. Germain; No. 122,

86, 12 h.p. Clément; No. 99, 18 h.p. Star; No. 109, 16 h.p. Lanchester; No. 117, 12 h.p. Humber; No. 128, 18 h.p. Chenard and Walker.

The day's work may be summarised as follows: Ninety-three cars started, twenty-three made non-stop runs, fifty got through with but trivial delays, four retired, and eleven had not arrived in the Palace at eight o'clock.

WORTHING AND BACK (BURY HILL). MONDAY, SEPTEMBER 21st.

THE total number of cars which faced the starter, Mr. Siddeley, on Monday morning last stood at eighty-six, including No. 14, 6½ h.p. Cadillac, which had been reported as withdrawn owing to a broken wheel damaged by colliding with the Chelmsford steam car. The run was to the police-infected district of Worthing, the route taken being *via* Croydon, Carshalton, Sutton, Ewell, Epsom, Dorking, Holmwood Common, Ockley, Billinghamurst, the steep of Bury Hill, Arundel, Broadwater, and Worthing, the return journey being made *via* Horsham, Dorking, Reigate, Merstham, and Croydon. The day was a glorious one with bright sunshine and a cool wind from the south, which blew the dust off the roads for the main part of the journey.

Bury Hill-climb.

The crux of the day's run was, of course, the climbing of Bury Hill against the watch, and this hill, though not quite so severe or so long as Westeham, was still stiff enough. The profile of this hill,

which we give on the following page, gives the steepest gradient as 1 in 10.8, and the average as 1 in 11.74. From the manner in which the County Surveyor, Mr. W. B. Purser, has plotted the section, we should say that the first 350 yards of this hill, which takes the cars round the first bend, is somewhat stiffer than the grade above mentioned, probably approaching 1 in 9. However, so far as our information goes at the moment of writing, all but three of the cars which reached the foot of the hill by 12.30 p.m. succeeded in passing over it, though whether by shedding passengers or not has not yet been published. Over a large portion of the route, north-east and south-west of Billinghamurst, the cars ran over the old Roman road, which stretches fore and aft over hill and dale for miles; and, being under ordinary circumstances a particularly deserted highroad, is provocative of smart running, and must have been very tantalising to many of the drivers in the procession. The public, save in Arundel and Worthing, were not largely excited

THE 1,000 MILES TRIALS.

by the passage of so many cars, but the village children appeared to derive immense amusement from the passing show. The cars were parked for the appointed time in the park at Worthing, and many passengers and drivers made for that renowned motorist's house, Warne's Hotel, for lunch. The returns give No. 80 (the 15 h.p. Belsize) only as retiring from the day's run; but No. 123 (the 12 h.p. Wilson and Pilcher) shed its passengers at Pulborough, and did not pass over Bury Hill. We passed this car returning to the Crystal Palace *via* Ockley between that village and Holmwood Common. What ailed it is not known.

There were police traps galore within a few miles of Worthing, but all were unmasked to the cars, which proceeded through all of them at a snail's pace. Finding themselves foiled, the police just issued from their lairs and demanded names and addresses just when they thought they would. We have one instance in our mind where the car crept at six miles per hour over the measured distance, but was nevertheless hauled up and accused of doing no less than twenty-two miles per hour.

The following cars made non-stop runs:

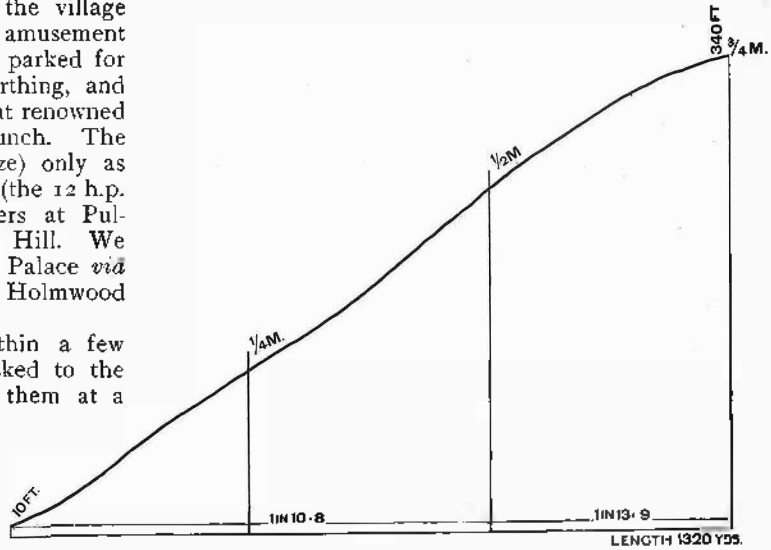
CLASS A.—No. 18, 6½ h.p. Clyde; No. 21, 5 h.p. Oldsmobile.

CLASS B.—No. 34, 10 h.p. Georges-Richard; No. 39, 8 h.p. M.M.C.

CLASS C.—No. 42, 12 h.p. Albion; No. 47, 9 h.p. James and Browne; No. 48, 10 h.p. Argyll; No. 49, 14 h.p. Argyll; No. 51, 12 h.p. Wolseley; No. 52, 10 h.p. Wolseley; No. 56, 10 h.p. Horbick; No. 57, 12 h.p. Georges-Richard; No. 59, 13 h.p. Rex; No. 60, 10 h.p. Déchamps; No. 62, 7½ h.p. Wolseley.

CLASS D.—No. 65, 12 h.p. Sunbeam; No. 70, 10 h.p. Thornycroft; No. 77, 12 h.p. Star; No. 79, 16 h.p. Argyll; No. 84, 10 h.p. White (steam car); No. 87, 10 h.p. Lanchester; No. 91, 12 h.p. De Dion-Bouton; No. 93, 10 h.p. Renault.

CLASS E.—No. 96, 15 h.p. Germain; No. 97, 15 h.p. New Orleans; No. 105, 10 h.p. Gardner-Serpollet; No. 114, 14 h.p. Martini; No. 116, 10 h.p. White (steam car).



Section of Bury Hill, encountered on the outward journey to Worthing.

CLASS F.—No. 122, 20 h.p. Humber; No. 126, 16 h.p. De Dietrich; No. 130, 16 h.p. Rochet-Schneider; No. 133, 20 h.p. M.M.C.; No. 134, 16 h.p. Fiat.

CLASS G.—No. 137, 22 h.p. Daimler; No. 140, 24 h.p. De Dietrich.

The following cars completed the run, but lost not more than five marks:

CLASS A1.—No. 1, 5 h.p. Century tandem; No. 2, 6 h.p. Eagle tandem.

CLASS A.—No. 4, 5 h.p. Baby Peugeot; No. 14, 6½ h.p. Cadillac; No. 20, 6 h.p. De Dion.

CLASS B.—No. 28, 9 h.p. Beaufort; No. 29, 9 h.p. Argyll; No. 35, 9 h.p. Eagle.

CLASS C.—No. 58, 12 h.p. Relyante.

CLASS D.—No. 68, 14 h.p. Brooke; No. 71, 10 h.p. Peugeot; No. 82, 14 h.p. Brooke; No. 90, 16 h.p. Maxim.

CLASS E.—No. 94, 20 h.p. Thornycroft; No. 95, 12 h.p. Chelmsford; No. 100, 18 h.p. James and



Photo.

Some of the cars arranged on the foreshore at Worthing

Argent Archer, Kensington, W.

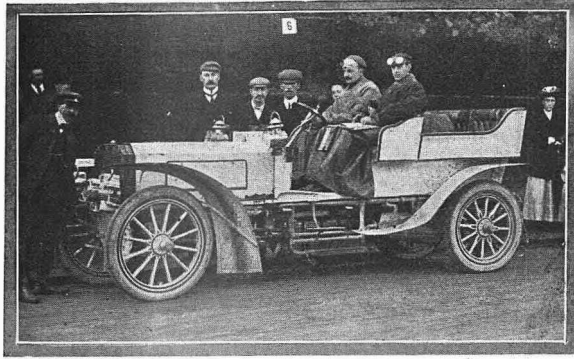


Photo. *Argen Archer, Kensington, W.*
No. 122. The 20 h.p. Humber car, with a 9ft. wheelbase.

Browne; No. 102, 24 h.p. Wolseley; No. 106, 24 h.p. Georges-Richard; No. 108, 16 h.p. Dennis; No. 113, 14 h.p. Renault; No. 118, 24 h.p. Darracq.
CLASS F.—No. 121, 20 h.p. Beaufort; No. 125, 25 h.p. Maudslay; No. 129, 15 h.p. Pipe.

FOLKESTONE AND BACK. TUESDAY, SEPTEMBER 22nd.

FOLKESTONE was the objective for last Tuesday's run, and the day for visiting that pleasant seaside resort was marred by a heavy downpour of rain, which accompanied the automobilists from the moment of leaving the sea until Maidstone was re-entered. The cars, to the number of eighty-six, left the Palace by the same route as on the Margate day, following that itinerary as far as Maidstone, where again a halt was called, and then proceeding *via* Charing, Ashford, and Hythe, to Folkestone and the courtyard of the Metropole Hotel, where the cars were massed while drivers and passengers lunched within. The run down was almost without incident, but the returning cars encountered many flocks of sheep and droves of bullocks, which delayed the long line from time to time. This run, which is one of the prettiest of the week, would have been much enjoyed, as the early morning rain had lain the dust very nicely, but the downpour of the afternoon quite spoilt the day. The roads from Maidstone on were very heavy and slippery.

The following cars made non-stop runs:

CLASS A1.—No. 2, 6 h.p. Eagle tandem.

CLASS B.—No. 28, 9 h.p. Beaufort; No. 39, 8 h.p. M.M.C.; No. 40, 9 h.p. Darracq.

CLASS C.—No. 42, 12 h.p. Albion; No. 47, 9 h.p. James and Browne; No. 48, 10 h.p. Argyll; No. 51, 12 h.p. Wolseley; No. 52, 10 h.p. Wolseley; No. 57, 12 h.p. Georges-Richard; No. 58, 12 h.p. Relyante; No. 62, 7½ h.p. Wolseley; No. 64, 12 h.p. Darracq.

CLASS D.—No. 65, 12 h.p. Sunbeam; No. 70, 10 h.p. Thornycroft; No. 71, 10 h.p. Peugeot; No. 82, 14 h.p. Brooke; No. 84, 10 h.p. White steam car; No. 87, 10 h.p. Lanchester; No. 89, 14 h.p. Brush; No. 91, 12 h.p. De Dion; No. 92, 12 h.p. New Orleans; No. 93, 10 h.p. Renault.

CLASS E.—No. 95, 12 h.p. Chelmsford; No. 100, 18 h.p. James and Browne; No. 102, 24 h.p. Wolseley; No. 105, 10 h.p. Gardner-Serpollet; No. 106, 24 h.p. Georges-Richard; No. 108, 16 h.p. Dennis; No. 114, 14 h.p. Martini.

THE 1,000 MILES TRIALS.

CLASS G.—No. 136, 22 h.p. Daimler.

The following cars completed the run, but lost more than five marks:

CLASS A.—No. 5, 6 h.p. Regal; No. 11, 5½ h.p. Stanley steam car; No. 12, 5 h.p. Humber; No. 17, 5 h.p. Oldsmobile; No. 23, 8 h.p. Achilles.

CLASS B.—No. 24, 6 h.p. Swift; No. 36, 10 h.p. Rex; No. 38, 9 h.p. Mohawk-Manou; No. 40, 9 h.p. Darracq.

CLASS C.—No. 41, 10 h.p. Gladiator; No. 43, 10 h.p. Hallamshire; No. 50, 10 h.p. Simms-Welbeck; No. 54, 12 h.p. Krupkar; No. 63, 10 h.p. Spyker.

CLASS D.—No. 66, 12 h.p. Gladiator; No. 85, 12 h.p. Dennis; No. 89, 14 h.p. Brush; No. 92, 12 h.p. New Orleans.

CLASS E.—No. 104, 20 h.p. Winton; No. 113, 14 h.p. Renault.

CLASS F.—No. 119, 12 h.p. Peugeot; No. 120, 20 h.p. Germain; No. 127, 15 h.p. C.G.V.; No. 131, 18 h.p. Mors.

CLASS F.—No. 119, 12 h.p. Peugeot; No. 126, 16 h.p. De Dietrich; No. 127, 15 h.p. C.G.V.; No. 129, 15 h.p. Pipe; No. 130, 16 h.p. Rochet-Schneider; No. 133, 20 h.p. M.M.C.

CLASS G.—No. 136, 22 h.p. Daimler; No. 137, 22 h.p. Daimler; No. 140, 24 h.p. De Dietrich.

The following cars completed the day's run with delays involving only a loss of five marks or less:

CLASS A.—No. 4, 5 h.p. Baby Peugeot; No. 17, 5½ h.p. Stanley steam car; No. 17, 5 h.p. Oldsmobile; No. 18, 6½ h.p. Clyde; No. 20, 6 h.p. De Dion; No. 21, 5 h.p. Oldsmobile.



Photo. *Argen Archer, Kensington.*
The 20 h.p. Germain.

CLASS B.—No. 24, 6 h.p. Swift; No. 29, 9 h.p. Argyll; No. 34, 10 h.p. Georges-Richard; No. 35, 9 h.p. Eagle; No. 38, 9 h.p. Mohawk-Manou.

CLASS C.—No. 50, 10 h.p. Simms-Welbeck; No. 59, 13 h.p. Rex; No. 60, 10 h.p. Déchamps; No. 63, 10 h.p. Spyker.

CLASS D.—No. 66, 12 h.p. Gladiator; No. 68, 14 h.p. Brooke; No. 77, 12 h.p. Star; No. 79, 16 h.p. Argyll; No. 85, 12 h.p. Dennis; No. 90, 16 h.p. Maxim.

THE 1,000-MILES TRIALS.

CLASS E.—No. 94, 20 h.p. Thornycroft; No. 96, 15 h.p. Germain; No. 97, 15 h.p. New Orleans; No. 113, 14 h.p. Renault; No. 116, 10 h.p. White steam car; No. 118, 24 h.p. Darracq.

CLASS F.—No. 120, 20 h.p. Germain; No. 121, 20 h.p. Beaufort; No. 122, 20 h.p. Humber; No. 125, 15 h.p. Maudslay; No. 131, 18 h.p. Mors.

SOUTHSEA AND BACK (HINDHEAD). WEDNESDAY, SEPTEMBER 23rd.

EIGHTY-THREE cars left the Crystal Palace Parade for Southsea at 7.30 in a dense mist, which spread over the country until after Petersfield was reached. The rain of Tuesday had left the roads very heavy, and, so far as the suburban highways were concerned, very greasy and dangerous. No mishap, however, occurred to any of the cars.

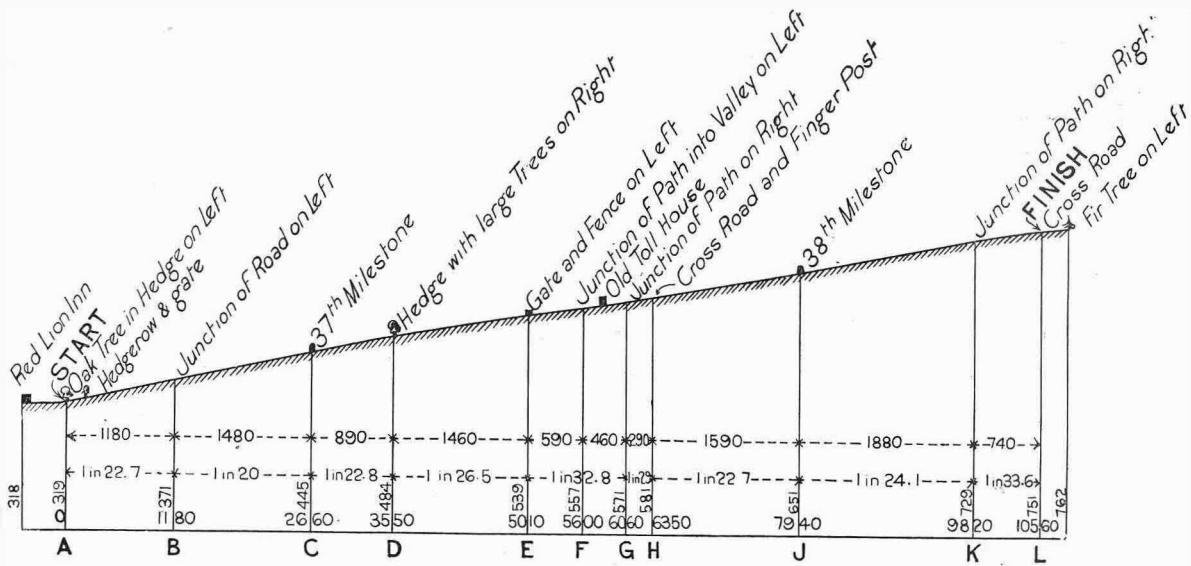
The Hindhead Climb.

The first car passed the timekeepers at the foot of Hindhead at 10.19 a.m. The last to come at 12.20 p.m. was the Humber voiturette. The Winton sustained a broken crankshaft at Carshalton, and we discovered it up a side road under repair. Mr. Packham, who is driving this car, had sent up to London for a new flywheel and shaft, and had got them into position and ready to run at four o'clock in the afternoon. He intended to continue and com-

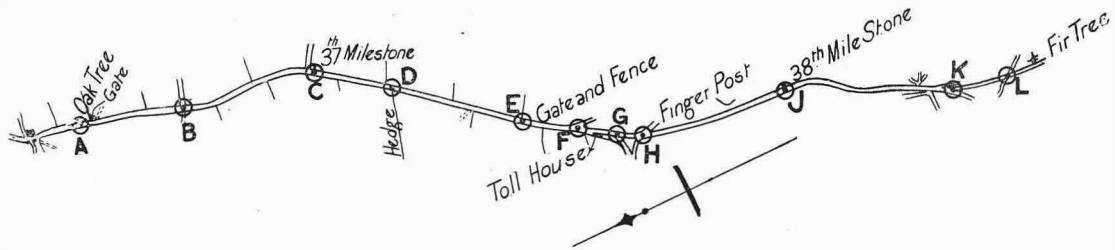
could not have been much impressed with their appearance. At the time of writing nothing had been heard of police traps, not even on the Epsom, Ewell, and Sutton road.

On the return journey from Southsea, the cars were halted on Hindhead for inspection, and on the sharp fall round the corner for surprise brake tests. At eight p.m. only thirty-five cars had returned to the Crystal Palace, and the dense fog which hung over the outskirts of London did not improve the condition of affairs for the absentees.

The following cars have now finally retired from the trials: No. 3, 3½ h.p. Rex Tricar; No. 15, Pony Richard; No. 16, 6 h.p. Relyante; No. 25, 8-10 h.p. Regal; No. 37, 4.7 h.p. Roots car; No. 49, 14 h.p. Argyll; No. 54, 12 h.p. Krupkar; No. 67, 12 h.p. Ariel; No. 75, 8-10 h.p. Elswick; No. 78, 14 h.p. Beaufort; No. 80, 15 h.p. Belsize; No. 83, 10 h.p.



Section of Hindhead.



Plan of Hindhead.

plete the course—a fine example of American pertinacity. The heavy rain of Tuesday had caused the cars all to be more or less coated with mud, so that the crowds which gathered in the streets of Portsmouth and Southsea to watch their arrival

Relyante steamer; No. 99, 18 h.p. Star; No. 109, 16 h.p. Lanchester; No. 117, 12 h.p. Humber; No. 123, 12 h.p. Wilson and Pilcher; No. 128, 18 h.p. Chenard and Walker; No. 132, 20 h.p. Holcar.

THE TIMES AND AVERAGE SPEEDS ON WESTERHAM AND BURY HILLS.

Some of the Fastest Times (Westerham).

No.		Mins.	Secs.
137	22 h.p. Daimler ...	2	27 ⁵ / ₈
102	24 h.p. Wolseley ...	2	28 ⁴ / ₈
133	20 h.p. M.M.C. ...	2	38 ⁵ / ₈
114	14 h.p. Martini ...	2	43 ⁵ / ₈
92	12 h.p. New Orleans ...	2	57 ⁵ / ₈
91	12 h.p. De Dion ...	2	57 ⁵ / ₈
130	16 h.p. Rochet-Schneider ...	3	8 ⁵ / ₈
113	14 h.p. Renault ...	3	9 ⁵ / ₈
108	16 h.p. Dennis ...	3	12
105	10 h.p. Gardner-Serpollet ...	3	18 ⁵ / ₈
97	15 h.p. New Orleans ...	3	20 ⁵ / ₈
134	16 h.p. Fiat ...	3	20 ⁵ / ₈

Average Speed Table (Westerham).

No.		Miles per hour.
137	22 h.p. Daimler ...	over 14
102	24 h.p. Wolseley ...	" "
133	20 h.p. M.C.C. ...	" 13
114	14 h.p. Martini ...	" "
92	12 h.p. New Orleans ...	" 12
91	12 h.p. De Dion ...	" "
130	16 h.p. Rochet-Schneider ...	" 11
113	14 h.p. Renault ...	" "
108	16 h.p. Dennis ...	" "
105	10 h.p. Gardner-Serpollet ...	" "
97	15 h.p. New Orleans ...	" 10
134	16 h.p. Fiat ...	" "
140	24 h.p. De Dietrich ...	" "
120	20 h.p. Germain ...	" "
34	10 h.p. Georges-Richard ...	" "
126	16 h.p. De Dietrich ...	" 9
129	15 h.p. Pipe ...	" "
52	10 h.p. Wolseley ...	" "
77	12 h.p. Star ...	" "
66	12 h.p. Gladiator ...	" "

Some of the Fastest Times (Bury).

No.		Mins.	Secs.
130	16 h.p. Rochet-Schneider ...	2	36 ⁵ / ₈
105	10 h.p. Gardner-Serpollet ...	2	39
102	24 h.p. Wolseley ...	2	43
114	14 h.p. Martini ...	2	43 ⁵ / ₈
140	24 h.p. De Dietrich ...	2	59 ⁵ / ₈
137	22 h.p. Daimler ...	3	0
106	24 h.p. Georges-Richard ...	3	4 ⁵ / ₈
133	20 h.p. M.M.C. ...	3	7 ⁵ / ₈
134	16 h.p. Fiat ...	3	11 ⁵ / ₈
126	16 h.p. De Dietrich ...	3	13 ⁵ / ₈
120	20 h.p. Germain ...	3	17 ⁵ / ₈
84	10 h.p. White steam car ...	3	18

Average Speed Table (Bury).

No.		Miles per hour.
130	16 h.p. Rochet-Schneider ...	over 17
105	10 h.p. Gardner-Serpollet ...	" "
102	24 h.p. Wolseley ...	" 16
114	14 h.p. Martini ...	" "
140	24 h.p. De Dietrich ...	" 15
137	22 h.p. Daimler ...	" 14
106	24 h.p. Georges-Richard ...	" "
133	20 h.p. M.M.C. ...	" "
134	16 h.p. Fiat ...	" "
126	16 h.p. De Dietrich ...	" 12
120	20 h.p. Germain ...	" "
84	10 h.p. White steam car ...	" "
66	12 h.p. Gladiator ...	" "
97	15 h.p. New Orleans ...	" "
108	16 h.p. Dennis ...	" "
92	12 h.p. New Orleans ...	" "
91	12 h.p. De Dion ...	" "
122	20 h.p. Humber ...	" 11
118	24 h.p. Darracq ...	" "
94	20 h.p. Thornycroft ...	" "

TRIAL NOTES.

Two or three 6 h.p. De Dions were fitting about Westerham before the competing cars came up from Eastbourne. They each had a try at the hill and made wonderfully clean ascents, of course with their full load of two passengers in each case.

* * * *

We really think that the suggestion we made half jokingly at the time of the first 1,000 miles trials in 1900 should be taken up. We suggested then that participants in the trials should distribute handbills in each town headed, "Why we are dirty." These leaflets would explain that a number of cars running in close order to schedule, impose conditions which never obtain in ordinary driving, and consequently that, although all taking part in the trials lived in a sirocco—and looked like it—their condition must not be regarded as a fair specimen of the state of the average automobilist when driving for pleasure. The difference between the trials with a crowd of cars running in close order, and the consequent dust from a single car running for pleasure is not understood by the general public, and there is no doubt that a bad impression is often caused by the arrival of a horde of dust-begrimed individuals.

The ruling out of No. 86, 12 h.p. Clément, after that car had run successfully through the Brake Trials and the Margate trip on the first day, will prove a keen disappointment to those who intended to keep an eye upon the doings of the only Clément car entered in the trials. This car was driven in the dust, vibration, and noise tests, and on Friday last by Mr. D. Weigel, who was informed at six o'clock the following morning that he would not be allowed to drive again. At such short notice it was impossible for Mr. Weigel to provide another driver; but the car was nevertheless driven by him over Saturday's route, and climbed Westerham most successfully. The British Automobile Syndicate, who entered the car, must be great losers by the ruling out of their vehicle from these trials, in which it is more than probable it would have behaved with the best. Having regard to the impossibility of finding another driver to take the car through Saturday's run, it seems extraordinary that Mr. Weigel should not have been allowed to drive the car upon that day at least, seeing the *impasse* in which the sudden resolve of the club officials placed his firm. Mr. Weigel has our sympathies.

One of the interested spectators on the steepest part of Westerham Hill was Mr. Claude Johnson, the ex-secretary of the Automobile Club, who had driven down from town on his 15 h.p. New Orleans to see the cars perform on the hill.

* * * *

Steep Climbing.

One of the sensations of the trials was Mr. W. M. Letts's feat of driving his Oldsmobile up the steps leading to the terrace at the Crystal Palace. The machine he had was the one he uses daily, and he had driven down upon it to see the start of the Saturday's run to Eastbourne. The gradient of the steps is 1 in 2.39. The first time he tried an attempt was made to go up step by step, but after climbing up five or six the car ran back. However, when a running start was made the car went right up. Hitherto these step-climbing feats have been confined to the United States. Luckily, one is not called upon to repeat them on the main road, but they certainly serve as an extreme test of what can be done on a car. We should say that the Oldsmobile is none the worse for its efforts.

* * * *

Westerham Hill.

We regret to say in many respects the timed ascents of Westerham hill will be misleading, for the simple reason that the cars were let out of Westerham village much too close together, and it was quite common for three or four to pass the timekeepers at the foot of the hill in a bunch with little more than a length between them. This was all very well on the starting grades, but further up, when the steepness increased, trouble began. Spectators were numerous, and some of them would persist in leaving their cars in awkward places, though the officials managed to keep the very worst part of the hill clear, but the crowding of the lower portion several times prevented a faster car from getting in front of a slower rival. Not only so, but there was a constant stream of cycle traffic from town and a good many cars, as well as some little horse traffic used the hill during the climbing period. However, these were but small matters compared with the block caused by sudden stoppages of the competing vehicles. For instance, one or two of the drivers from nervousness or over anxiety missed gear and stopped their vehicles. In other instances they ran out of petrol half way up the hill, while beyond this there were some cars which through bad driving or temporary derangement failed also. In one case six if not seven cars had to be stopped entirely owing to a glut of this kind. Consequently, their times will appear much slower than that of some other machines of about equal power and weight which were lucky enough to get an uninterrupted run up the hill. In fact, in the majority of cases it may be fairly said that the cars which performed badly were either poorly driven or blocked by other cars. It was astonishing to note how many machines easily capable of climbing the hill well were mishandled by their over nervous drivers. As they stand the Westerham result can be, to a large extent, ignored, and we must look to the performances on the other hills for guidance, though, as Westerham was the severest test of all, this is to be regretted.

A Second Westerham Trial.

Owing to the unsatisfactory conditions of the hill-climb at Westerham on Saturday, those entrants who wish may make a re-climb on Monday next, the 28th inst.

* * * *

The 10 h.p. Wolseley which was supplied to the Metropolitan Police Commissioners—a six-seated vehicle, by the way—has been following the trials each day.

* * * *

The Ten-seated Daimler.

On Monday last we had an exceedingly pleasant run to Worthing on that most serviceable vehicle the 22 h.p. Daimler waggonette. There is a general impression that the car is a slow one, but more than once during the run it proved itself capable of a speed more than double that allowed by law. We were one of ten passengers, and the way the car took the hills was most creditable. The severe test hill known as Bury Hill was climbed with ease, while on Saturday it seemed quite at its best on Westerham. We may add that this car is a facsimile of one supplied to the King in the early part of this year for conveying his beaters and loaders from one covert to another at Sandringham. We were delighted at the smooth running of this car, and noted the ease with which the gears were changed.

* * * *

We drove back from Westerham on Saturday in the new 12 h.p. Wolseley. Mr. Luff Smith is driving the 12 h.p. every day over the trials course, and we must say that, despite the outward similarity, there is no question that the 12 h.p. is a considerable advance upon the 10 h.p. The higher compression and the higher speed of the engine result in an appreciable increase in the hill climbing capabilities of the vehicle, which is fully capable of taking most ordinary slopes without change of gear. As to speed on the flat it is considerably more than is usually required, and the clutch pedal is in constant requisition. The running is improved in other respects, i.e., it is quieter and smoother than on the 10 h.p. In fact, the 12 h.p. is what its makers claim it to be, an improvement on any two-cylinder car which they have previously turned out.

* * * *

An Imaginary Trap.

Sir.—That everything supposed to be a police trap is not always what it seems was amusingly illustrated the other morning. About 8.20 I was standing at the roadside just going into Leatherhead to watch the cars go by. With me stood my brother-in-law's head gardener. Two motor bicycles, apparently an advance guard, came by, looked at us, stopped, and then one turned back. Shortly after that Mr. Edge came up very slowly on his car, stopped, and spoke to the gardener, asked him the time, and said he wanted to know how long they had been coming from the Crystal Palace. He then asked to examine the man's watch, to compare it with his—no doubt to see if this imaginary police constable was provided with a stop watch. He then went on, but all the cars following came up at a snail's pace.

I am sorry that so much trouble should have been taken over an imaginary "trap." Perhaps the circumstances may be recognised by those who fell into it.

I noticed that, slowly as the cars were travelling, they were almost noiseless, and from the Napier car, even when standing still, there was no sound.

F.R.C.S.

THE VOITURETTE CLASS—SPECIAL REPORT.

THIS YEAR FOR THE FIRST TIME THE SMALL MACHINES COSTING £200 OR LESS AND PROVIDED WITH SEATING ACCOMMODATION FOR TWO (CLASS A) ARE WELL REPRESENTED IN THE RELIABILITY TRIALS. MANY OF THEM ARE ENTIRELY NEW, AND AS LITTLE OR NOTHING IS KNOWN ABOUT THEIR PRACTICAL PERFORMANCES, WE HAVE COMPILED A SPECIAL REPORT UPON THEIR BEHAVIOUR.

AS the trials progress general interest increases in the performances of the smaller type of two-seated car entered in Class A to be sold for a sum of £200 or less, for it should be remembered that the conditions of distance, speed, hill-climbing, etc., are the same for all vehicles, whether of 5 h.p. or 25 h.p.: so that it is evident that if the trial bears the semblance of a trial for the car costing £1,000, it must be a very severe test to the car costing, say, £150 with engine power in proportion. The majority of the big-powered cars are treating the tests as an ordinary touring run at speeds far below what the cars are capable of, and for which they have been designed; so that, whereas the driver of a powerful car has to throttle down his engine all the way to prevent overrunning time, the small cars in Class A have to make the most of every opportunity in order to get through on minimum time, though as by the rules of the trials working to minimum does not count any extra marks, it is obviously a talking point for the maker if his car can be said to have gone through non-stop and in the same time as the bigger-powered cars; hence all the competitors endeavour to arrive back at the Palace at the earliest moment allowed instead of being content with twelve miles an hour.

In these trials it is extremely difficult to make detail and exact observation of the behaviour of these smaller cars, as the observer must of necessity be on a more powerful car, with the result that he probably passes three or four on an uphill grade at high speed, and has barely time to take their numbers.

A special effort was made to obtain accurate information of this small class of vehicle by actual notes taken in running; but in making comparisons on such notes alone it is clear that, although the defects of some of the cars might come in for special mention, equally defective or meritorious cars might and do escape attention altogether, so that it becomes necessary to study any such report in conjunction with official figures to arrive at a fair conclusion.

Each day the starts were made at 7.30 a.m., and as the order of starting was by ballot the smaller cars had an equal chance in the matter of position.

The First Day's Run.

On the first day's run to Margate, we started out some fifteen minutes after the last competing car, and having ample speed and power with no restrictions other than legal ones, there was the

opportunity of seeing nearly every competing car at least once.

Chislehurst Hill proved to be the first trouble to some of the small vehicles, for as our car passed up some three or four voiturettes were being pushed up, and it was here that the Rex Tricar retired from the run through clutch troubles. The same hill also

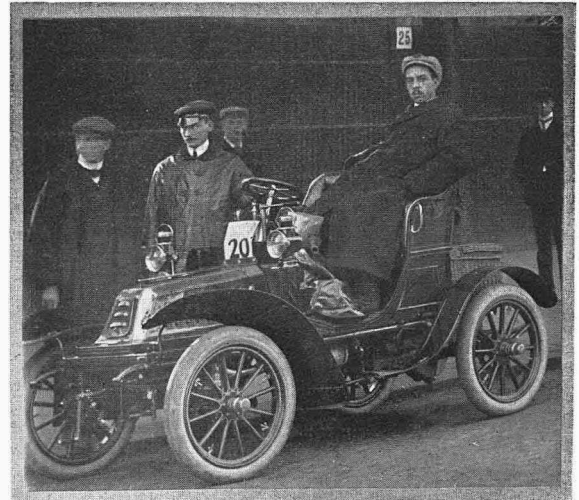


Photo. Argent Archer, Kensington, W.

The 6 h.p. De Dion-Bouton, No. 20 Class A.

accounted for the 12 h.p. Ariel through a bent axle.

Several cars both large and small were passed pulled up for tyre troubles of one kind or another, and the long steep climb out of Maidstone proved an ordeal to the smaller type. The 5 h.p. Coventry

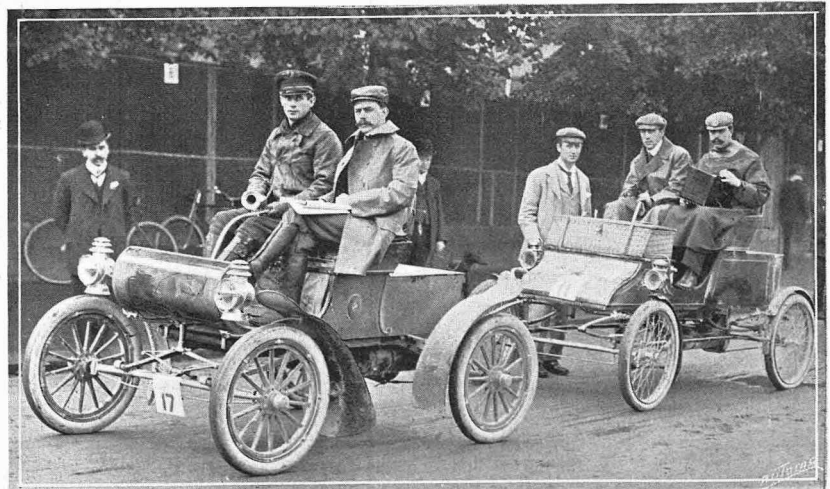


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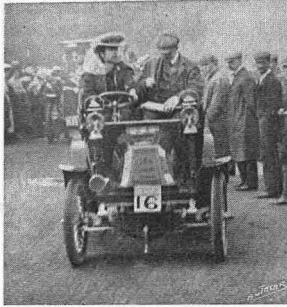
Argent Archer, Kensington, W.

TWO AMERICAN COMPETITORS. The 5 h.p. Oldsmobile No. 17, and the Stanley steam car No. 11.

THE 1,000 MILES TRIALS.

Humberette, the 6½ h.p. Cadillac, and one of the two 5 h.p. Oldsmobiles were at this point going well. Later on the 6 h.p. De Dion was overtaken going in splendid style.

The first cars in this class to arrive at Margate were the 6 h.p. Elswick, 6½ h.p. Clyde, 6 h.p. De



The 6 h.p. Relyante Class A).

Dion, and 6 h.p. Regal; and these were the only Class A vehicles which had arrived at 1.30 p.m., the time at which we started on our homeward journey, during which very few cars were encountered, as the smaller ones were all behind, and there was a big gap forward. On receipt of official results, it was found that two only of Class A had made an actual non-stop run, these being the 6 h.p. Regal and the 6½ h.p. Cadillac; but six others were back in excellent time, and had encountered very trifling troubles, involving the loss of five marks or less out of a total of 375, as follows: 5 h.p. Baby Peugeot, 6½ h.p. Vulcan, 5 h.p. Coventry Humberette, 5 h.p. Oldsmobile, 6½ h.p. Clyde, and the second Oldsmobile.

The Pony-Richard retired from the day's run at Sittingbourne on the outward journey, and consequently is out of the remaining trials; and the 6 h.p. Relyante was knocked out by collision at Farningham on the homeward journey, having done 135 miles.

The Stanley steam car had serious delay, and did not arrive until very late.

The Second Day's Run.

On the second day's run to Eastbourne, Class A was found to have suffered on the previous day, and when Eastbourne was reached, the class was spread-eagled all over the road. The following, however, had come well, and all arrived between 12.15 p.m. and 12.25 p.m.—very little behind minimum time: Clyde, the two Oldsmobiles, and Achilles. Westerham Hill had to be encountered on the homeward

journey, and was naturally dreaded by the small single-cylinder vehicles, as this is one of the worst hills in the whole country, being 1,076 yards long with an average gradient of 1 in 10¾ and a bad bend at 1 in 8.

The official figures are not to hand at the time this is being written, but the ascent was made by the 5 h.p. Baby Peugeot. The 6 h.p. De Dion could not get up, being short of fuel, but turned round and went up backwards on the reverse. The 8 h.p. Achilles, 5 h.p. Humberette, and 5 h.p. Oldsmobile also accomplished the climb. The 6½ h.p. Clyde also got up, but had to be pushed off to get a restart in the middle of the hill.

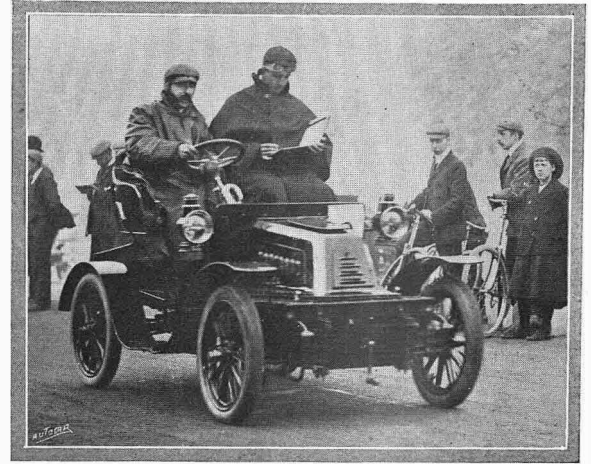


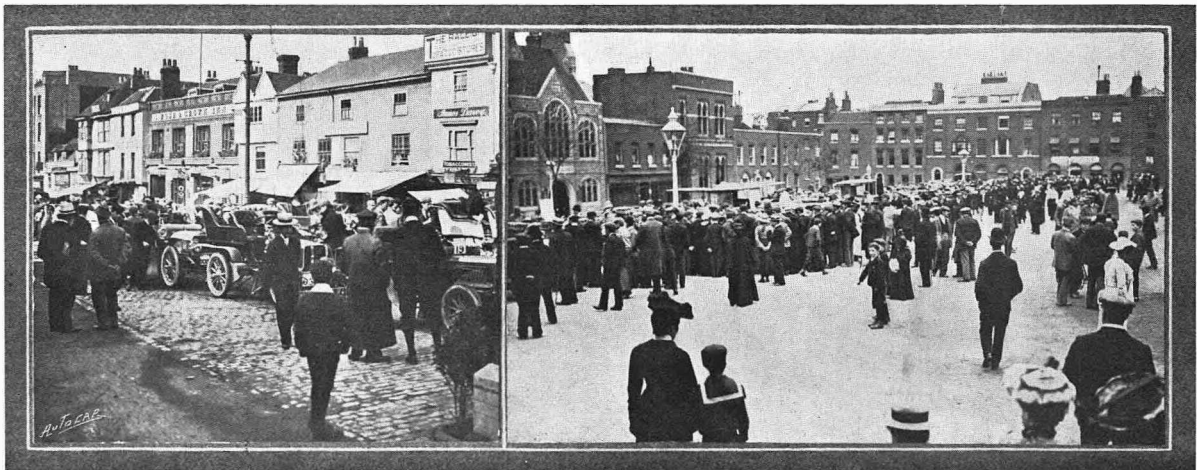
Photo.

Russell, Crystal Palace

The 6½ h.p. Vulcan, running in Class A.

The first car in Class A to arrive back at the Palace was the Baby Peugeot at 5.50 p.m., closely followed by the De Dion and the Regal in the order named. Then at 6.25 p.m. came the Clyde, and at 8.0 p.m. the Relyante and Coventry Humberette.

Non-stop runs were not accomplished by any cars in Class A. Westerham Hill accounting for this; but the journey was completed, and good running made, in addition to those already named, by both the Oldsmobiles and the Achilles cars.



The cars in the Market Square, Maidstone, and in Cecil Square, Margate.

The Elswick retired on the homeward journey through ignition troubles; and the Cadillac, which had run so well the previous day, was unfortunately knocked out by collision at the foot of River Hill on the outward journey, one of the driving wheels being completely wrecked; but by special permission of the judges it has been allowed to resume the trials.

The Third Day's Run.

The third day's trial to Worthing and back, including the Bury Hill climb, was entered upon by eighty-six cars out of the original 104. All the voiturettes left in got well away, and held their position to the first compulsory stop at Dorking, the Achilles, Regal, Oldsmobile, and Elswick all being close together; and at Worthing the following arrived between 12.5 p.m. and 12.20 p.m.: Stanley steam car, both Oldsmobiles, Regal, Baby Peugeot, and Clyde.

Bury Hill was climbed by several of the small cars; but the Baby Peugeot, which passed our car, was going up in splendid style.

In Class A the 6 h.p. De Dion was the only car to make a non-stop run, though the Baby Peugeot, Stanley steam car, Coventry Humberette, both the Oldsmobiles, the Clyde, and the Elswick, all made good runs, and lost few marks; and there were no serious breakdowns in any class.

The Fourth Day's Run.

The first three days' proceedings had taken place under lovely weather conditions, but on the fourth morning at the start for Folkestone rain threatened, when eighty-four cars (or two less than on the previous day) made a start, eleven of these being in Class A: The two Oldsmobiles, the Baby Peugeot, Regal, Stanley steam car, Coventry Humberette, Cadillac, Clyde, Elswick, De Dion, and Achilles.

On the outward run the Baby Peugeot, the Regal, and one of the Oldsmobiles were always prominent.

The cars in Class A did not do so well as on previous days in the matter of mark scoring, and on the outward journey were quickly dropped behind the big cars, not one arriving in the first flight at Folkestone, and nothing making a non-stop run except the Eagle tandem (Class A1).

In all, thirty-nine cars did an absolute non-stop run, and thirty-two others had but trivial delays, involving the loss of a few marks. In this section came the Baby Peugeot, Stanley steam car, Oldsmobile, Clyde, De Dion, and the second Oldsmobile.

The first of this class to arrive back at the Palace

(To be continued.)

THE 1,000 MILES TRIALS.

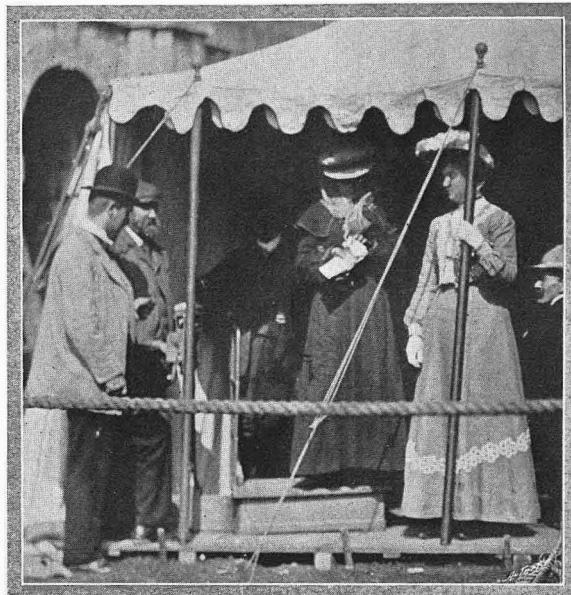


Photo. *Russell, Crystal Palace.*
Weighing the drivers and observers in their special tent. The driver of No 16 on the scales

was the 6 h.p. De Dion at 6.17 p.m., followed by the Stanley steam car at 6.20 p.m.

When everything is considered, it must be seen that the smaller vehicles are making a very brave show, or at least those which are now left in, for the rule that nothing must be touched in the way of cleaning or repairs tells far more heavily in the case of small single-cylinder cars than on a four-cylinder, which can still continue to make time with even two cylinders out of order.

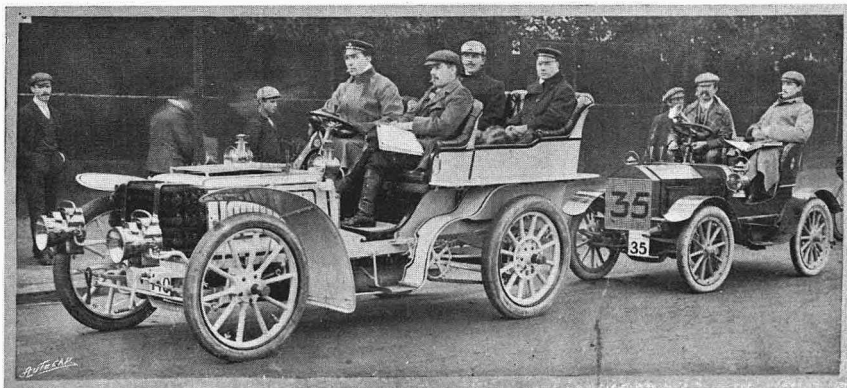


Photo. *Argent Archer, Kensington, W.*
Mr. Chas. Jarrott at the helm of the 24 h.p. De Dietrich (140), behind which is seen the 9 h.p. Eagle light car (35).

The weeding out appears now to be complete unless breakdowns occur. It is likely that the remaining small cars will complete the runs.

When the 20 h.p. Thornycroft was baulked on Westerham Hill by the stoppage of two cars in front of it which completely blocked the road, Mr. T. Thornycroft, who was driving it, instantly took out his clutch and dropped straight down the hill back-

ward at a good round speed so as to get a fresh start without hindrance. Unfortunately, the second trial was not altogether fortunate, as the driver stopped his car on the steepest part of the gradient and had some little difficulty in restarting.

CONTINENTAL NOTES AND NEWS.

Coming Improvements.

Though three months still separate us from the Paris Salon, the French makers are already giving attention to the novelties to be exhibited there, for in an industry which undergoes such remarkable progress every year, it has become almost a necessity for makers to show something new. If the visitor is unable to see anything that represents a decided advance on previous exhibitions he begins to talk of the industry having developed to the fullest extent it is capable of doing. This would be satisfactory if it were understood that the autocar has reached perfection, but, of course, no one is ever entirely satisfied with things as they are, and as it can hardly be supposed that mechanical improvements are no longer possible, the visitor would be very disappointed if he found, as he thinks, the industry standing still. Therefore it is necessary that every automobile salon should convey an idea that the autocar is moving with the times, despite speed restrictions of all kinds, and that every year puts another mark on the road to perfection. But in what way can the autocar be perfected, unless it be by an entire change in the motive power or its method of application, which certainly does not appear within measurable distance of realisation? The internal combustion engine has reached a very high state of efficiency and economy, and while being nearly silent has been given remarkable elasticity; the mechanical transmission is probably as good as it can possibly be made, and the material of which the frame is constructed has been selected after careful tests and long experience as the best suited for the purpose. It is difficult to see how improvements can be carried further unless they be in matters of detail. The Automobile Congress has shown that it is in these little, though very important, matters that we can look for perfection in autocar construction in the early future. The combined experience of makers has resulted in the acceptance of certain ideas which allow of the laying down of a practical basis for autocar construction. It is, for instance, admitted that wheels should be as light as possible, and therefore makers aim at securing lighter wheels without sacrificing any of their strength. Improvements such as these are of vastly more importance than new inventions which, while giving interest to a show, and awakening a good deal of discussion as to their merits, fail to fulfil the claims made in their favour, in which event the supposed advance is merely a delusion, and the autocar very soon returns to the state of things that existed before the inventions materialised. Improvements in detail, on the other hand, mark a real and steady advance, and it is for this reason that the forthcoming show is likely to be of more interest to the automobilist than to those who are always looking out for some sensational discovery. These improvements will be of an essentially practical character. We shall, for instance, see chassis constructed for the convenience of the carriage builder, who has always complained that if he has not been able to give scope to his practical originality it is because he has found himself

tied down to limitations by the autocar manufacturer. In the future the whole of the mechanism will be carried within the frame, without anything projecting above except the motor, and the radiator will usually be placed underneath the frame instead of in the bonnet. This gives a decidedly neat appearance to the vehicle, as will be seen from the new Georges Richard cars, which have adopted this arrangement. The prevailing tendency at the moment is towards a standardisation, and the designing of chassis to give a clear deck for the carriage body which, as the dimensions become uniform, can naturally be manufactured much more cheaply and can be taken out of stock and instantly fitted to any car. All the improvements being carried out are, therefore, of a highly practical character. But this does not mean that the forthcoming salon will be devoid of remarkable inventions. Invention in the way of electrical cars is undoubtedly becoming prolific, and who knows but that the salon will not show us something sensational? One of the leading Paris makers informs us that he will be showing a new storage battery having double the capacity of any existing accumulator. If this be so, it will mean a great deal for the future of the electric carriage. There is also promise of something new in the way of petrol-electric cars, and it is probable that the seeker after novelty will find plenty of novelty to interest him in the forthcoming Paris Salon.

The following competitions have already been decided on: (1) A trial of acetylene lanterns; (2) a trial of starting devices for motor engines; (3) a trial of apparatus used for inflating pneumatic tyres by means of mechanical power driven by the engine fitted to the car.

The Semmering Hill Climb.

The annual Semmering hill-climbing trials organised by the A.C. of Austria were to have been held on Sunday of last week, but owing to the deplorable weather they had to be postponed on two occasions. The competition is the most important of the kind held out of France. The Semmering is situated about fifty miles from Vienna, and is a very favourite resort during the summer months, the visitors finding accommodation at a fine hotel at the summit, whence there is a splendid view of the surrounding country. The road on which the trial took place on Thursday week has the reputation of being one of the best in Europe. Starting from Schottwein, it winds constantly for ten kilometres to an elevation of 400 metres, with a maximum gradient of seven per cent. The course is therefore anything but a difficult one. The chief event of the day was the contest for the challenge cup offered by the A.C. of Austria. This was won for the second time by Mr. Clarence Gray Dinsmore, who had engaged his two Mercedes, driven by Braun and Werner, the latter having the vehicle which won the Gordon-Bennett Cup. The only incident of the day was the overturning of a Lohner-Porsche car driven by M. Lohner himself. The occupants were fortunately not injured. All previous records were broken, Braun lowering Werner's time last year by nearly

two minutes, while in the light carriage and voiturette classes the records were beaten by about five minutes. The following were the results :

Braun (60 h.p. Mercedes), 8m. 47 3-5s.
 Werner (60 h.p. Mercedes), 9m. 4 1-5s.
 Bugatti (De Dietrich), 9m. 45 1-5s.
 Fischer (40 h.p. Mercedes), 10m. 35 1-5s.
 Trummer (35 h.p. Regent), 11m. 9 4-5s.

LIGHT CARRIAGES.

Hieronymus (Spitz), 9m. 30 2-5s.
 Barbaroux (Benz), 9m. 35 3-5s.

VOITURETTE.

Maurer (Neuburger Union), 14m. 37s.

Tyre Protectors.

Those automobilists who have been in the habit of throwing away their old tyre covers should carefully hoard them, as they may find them worth the value of new ones. This at least is the experience of M. Paul Meyan, who has just returned from a long tour in Italy, where the roads with their sharp flints very soon cut to pieces five outer covers and eleven air tubes, and also exhausted his supply of repair bands. Thinking that the expense of fitting new tyres every day or so was likely to make his Italian tour expensive, M. Meyan had the idea of using an old outer cover to protect the tyres. The cover, naturally of bigger dimensions than the one it protected, was pierced with holes along one edge corresponding with the spokes of the wheel. The tyre was deflated and one edge of the old cover was forced underneath, while the other edge was fastened to the spokes by wire. Though the old cover was much larger than it ought to have been—it ought to be one number above that of the protected tyre—the arrangement was so effective that M. Meyan completed his tour without another puncture, and he is convinced that protected in this way a tyre will last almost indefinitely. It is true that the double cover rather slows the car, but this is a small price to pay for the added security and the economy of tyres.

Smuggling with Autocars.

It is highly satisfactory to find that the French Government, having appointed an extra-Parliamentary Commission composed largely of automobilists to draw up a new set of regulations for autocar traffic, has placed itself entirely in the hands of that body when it is necessary to take action pending the determination of their deliberations. It was at the request of the Commission that the President of the Council recently issued his circular to the Prefects inviting them to veto any irritating byelaws which the local mayors might put into force to the special disadvantage of automobilists, with the result that the hitherto famous notice that autocars must not exceed "walking pace" has been replaced by the much more agreeable invitation to "all vehicles" to proceed "at a moderate speed." Thus automobilists do not feel themselves specially singled out by the byelaws, and are consequently the more willing to scrupulously observe them. Now the Government has appealed to the Commission for advice as to what should be done in the case of smugglers using automobiles. The number of autocars employed for rushing contraband goods through the Customs at the frontier is increasing so largely that the authorities are finding it very difficult to stop them, except by placing barriers or chains across the road, which would naturally have dis-

astrous results for cars travelling at high speeds. One of the suggestions of the Commission is that three drains should be dug across the road about six feet wide and two feet deep, in such a way that they may be safely negotiated by cars travelling at ten miles an hour, but would stop vehicles running at more than this speed. The drains would be signalled during the day by red discs, and at night by red lights. When the Government is so anxious to avoid doing anything that may cause damage to smugglers' cars, things are looking very pleasant indeed.

A Motor Cycle Criterium.

An important event has been run off this week on one of the cycle tracks in Paris, when a race of one hundred kiloms—62.1 miles—was organised for motor bicycles under very novel and interesting conditions. The competing machines had to be propelled by motors whose cylinder capacity did not exceed a quarter of a litre, which represents normally a little more than $2\frac{1}{4}$ h.p. Each bicycle had to carry a minimum weight, and pedals were not allowed to be used; in a word, it was a trial of machines in which the athletic skill of the rider played no part whatever. There were so many entries that the competition had to be run off in five heats and a final, each with about twelve starters. The winner was a direct-driven Knap bicycle, which won less on account of its speed than of its great regularity. As regards speed, a remarkable performance was accomplished by Lanfranchi on a Peugeot in one of the heats, when he covered the 62.1 miles in 1h. 23m. and 44.77 miles in the hour. This, too, with a little $2\frac{1}{4}$ h.p. motor. How many makers of cars would be glad to be able to do as much? Full details of this interesting competition are to be found in the current *Motor Cycle*.

THE MOTOR UNION.

Mr. Rees Jeffreys, the secretary of the Motor Union, has sent a letter to the volunteer correspondents who are doing their utmost to safeguard the interests of the automobilists in their own locality. Mr. Jeffreys points out the importance of getting into personal touch with the chairmen, clerks, surveyors, and engineers of county and county borough councils, and, in fact, of all bodies which will be concerned in any way in administering the Act; also the importance of reporting immediately the applications of local authorities to enforce the ten mile limit or to close 16ft. roads. It is also suggested, and wisely we think, that when possible the district representative of the Union should form a small committee of the automobilists in his district. This is certainly good in every way, as it would not only enable the locality to be subdivided, but would also make it possible for much more work to be done than can be satisfactorily carried out by one individual. All automobilists willing to help should communicate with the secretary at 16, Down Street, Piccadilly, W., at once, as there are still some districts unrepresented or only partially covered. There is no time to lose. Those who are willing to help should volunteer immediately, or the necessity for their co-operation will be passed.

Correspondence.

The Editor is not responsible for the opinions of his correspondents.

NON-SLIPPING TREADS.

[3171].—Replying to Mr. Cotes's letter, page 365, the weight of the car with these treads is about 18 cwt. They are fitted on the driving wheels only; the horse power is ten on the brake; the tyres 32in. by 3½in.; the width of the pins 1½in. The outside pins are not worn level, as they probably seldom touch the ground. I did not experience side-slips. Twenty miles on good country roads in fine weather would not develop side-slip. The treads have split at the juncture with the outer cover; the vulcanised part is still adhering as far as one can judge at present. In addition to Mr. Cotes's suggested improvement (with which I entirely agree), I consider these treads, instead of being vulcanised on the covers, should be attached to the wood rims of the wheel, so that they could be easily detached without removing the tyres, and new treads substituted when necessary. The cost ought also to be reduced. I do not recommend the steel bands on the outside of the covers; the particular make I had in my mind has a loose band of steel inserted between the inner tube and outer cover, known as "Wheeldon's puncture guard." It is not attached in any way. I should like to have someone's opinion on Wood's pneumatic wheel shown in *The Autocar* of August 22nd. **PROGRESSIVE.**

[3172].—I note on page 365 of the last number of your journal a communication from Mr. Arthur Cotes, in which he says in respect of non-skidding devices, "I have never seen a chain yet that would run many miles without breaking, and they also wear out the outer covers." I think my experience with the Parson non-skid might usefully be given in connection with the matter. I have now run with this attachment over every kind and condition of road for some thousands of miles on my two Daimler cars: Antrona, weighing 27 cwt., and my new 22 h.p. car, weighing over 33 cwt. when fully loaded. I have just returned from a prolonged tour in the North, where I encountered most trying conditions of greasy roads in Derbyshire, Wales, and the North Riding of Yorkshire, and I should certainly have been quite unable to have travelled with any degree of safety without these appliances. My experience with regard to the chains has been that some of the earlier forms were too small in section, and too weak; or the material was either too soft, causing the links to wear through rapidly; or too hard, causing the chains to be brittle. Experience in manufacture, however, has now enabled the Parsons' Non-skid Co., Ltd., to produce a chain which my experience shows can be thoroughly depended upon for many hundreds of miles.

For country driving, where you wish to prevent slipping, but do not use your brakes too suddenly, a non-skid on one driving wheel (the near side) seems to be sufficient for all ordinary purposes. In town, over greasy paving and tram-lines, where you may have to pull up suddenly owing to traffic, it is desirable to have chains on both driving wheels.

As far as my own experience has gone, the chains have no effect on the rubber tyres. The Parson non-skid attachment being arranged so that it is continually shifting round the tyre never remains long enough on one spot to chafe and wear the indiarubber; and thus it has no more effect than the small stones one is continually running over upon the road. **HENRY EDMUNDS.**

AN EXPLANATION DESIRED.

[3173].—Can you or one of your readers explain the following incident? It is so inexplicable to me that I give all the details at some length. We arrived here after dark last night, and went into the hotel, leaving the chauffeur to drive the car (a 12 h.p. Darracq with automatic valves) into the stable yard. I obtained rooms, ordered dinner, etc., and then to my surprise heard the engine still running in the yard, though five or ten minutes had elapsed. I at once went out and found the man, rather flustered, working at the engine, which would not stop firing, though the *touche* plug was out and the petrol

turned off. He pluckily pulled both high-tension wires off, but felt no shock, and meanwhile the engine was kicking, knocking, and back-firing tremendously. After one or two ineffectual experiments I was hastily grabbing for the tools to take out the inlet valves, when the mechanic removed the commutator cover, and held both trembler blades off contact, and the engine promptly stopped, though the high-tension wires were both off. I may remark parenthetically that the car has no switch, and the current can only be broken by the *touche*. We, of course, proceeded to examine the engine. Here are some points:

(1.) The current was short-circuited on the commutator cover.

(2.) There was no leakage of petrol to the carburetter, which was absolutely dry. The engine had been running for at least twelve minutes with the petrol turned off, and yet it can usually be stopped in a very few revolutions by simply closing the petrol tap.

(3.) Most of the water had leaked out *via* the pump, and the back cylinder was glowing hot.

I can imagine various reasons why it continued to fire, but what was it firing? It looks to me as if hot air was exploding. We can both guarantee that it ran *sans* petrol for the time stated. **BASIL DAVIES.**

White Lion Hotel, Tenterden, 21st Sept.

A NEW PREDICAMENT.

[3174].—I wonder if any of your readers have had an experience similar to the following; if so, I should very much like to know what they did under the circumstances.

I met my *chauffeur*, who is a most excellent lad of about twenty, extremely intelligent, and a highly capable driver, careering through the village on a motor bicycle. I found that he had just bought it, without saying anything to me.

I have told him that I cannot keep him on unless he gets rid of it. My reasons—which I have not given to him—are:

(1.) I do not see why he should use my oil and petrol.

(2.) He has a 16 h.p. car to look after, and I consider that this should occupy his time, rather than his own machine.

(3.) If he is free to go scorching all over the country he will probably get into mischief, and I may get some of the blame.

But the chief question is, now that a fairly good motor bicycle is obtainable for about £20 or less, I feel sure that very soon all the servants in the place will want to have one, paying for it, of course, on the deferred payment principle.

[We presume our correspondent refers to second-hand bicycles. No new motor bicycle can be bought at much less than double the price he mentions, and many of them cost three or more times the sum named.—ED.]

A certain amount of agreement, generally speaking, is useful in these matters.

Have any others been brought face to face with a like predicament, and, if so, what have they done, or what do they intend to do? **Y. Z.**

STEAM V. PETROL.

[3175].—I have driven cars for six years now and have owned four petrol driven and one steam (a White), which I have had for a year. I have also driven on some of the most up to date petrol cars there are. On the whole I prefer steam cars for many reasons, chiefly for absence of vibration. Vibration on petrol cars has been reduced, but when on anything but the top speed there it is, and whether you feel it or not, sooner or later it will tell. My wife, who is extremely sensitive to vibration, can travel for longer distances on a steam car than she can on a petrol without being tired.

For a man of moderate means who can not afford to keep a chauffeur, and who does not want to do a couple of hundred miles between breakfast and dinner, and who prefers comfort to speed, I would certainly advise steam. There are, however, many steam cars on the market of bad design and too lightly built to stand our roads. Now that 100 miles or so can be run by steam cars without a stop the chief objection to that method of propulsion has disappeared. **F. E. R.**

SILENCERS.

[3176.]—I am much interested in the letter of "Volodno" in your issue of Sept. 5th on the question of an efficient silencer, especially so as I have an Argyll car on order to be fitted with a 9 h.p. De Dion engine. Your editorials have time after time drawn the attention of makers to this, to my mind, important matter, and if some practical engineer would pronounce in your columns upon the feasibility or otherwise of the expansion chamber suggested by Volodno, laymen, such as myself, would be very grateful. The "Maxim gun" reports on some single cylinder cars make them a nuisance, and if more attention were given to silence, motor cars would not be railed against quite as much as they are.

A. A. JONES.

[The additional silencer suggested by "Volodno" is a practical and satisfactory arrangement, i.e., it deadens the sound of the exhaust without putting appreciable back-pressure upon the engine. Although not the only consideration, by far the most important is that a silencer shall be large enough so that the exhaust gases can expand freely and escape into the air at a low pressure. The silencers which should be regarded with suspicion are those which are small and at the same time have a great quietening effect, as it is almost impossible to construct such a muffler without imposing negative work upon the engine. As practically every car made has ample room for a large silencer, it is extraordinary that so many should be made with very small exhaust boxes.—Ed.]

A CORRECTION.

[3177.]—I cannot lay any claim to be the first motorist in this county (Herefordshire), as mentioned in *The Autocar* of September 12th, page 341. I bought a 3½ Benz in April, 1900. I believe several other persons in this county had cars or tricycles at that date.

J. T. HEREFORD.

ENGINE BRAKING.

[3178.]—Is not Mr. Joseph Rochford somewhat hasty in bluntly declaring I was wrong in stating that compression is purely negative so far as braking is concerned? Let us draw a balance sheet of the Otto cycle and see what really occurs.

STROKE.	ACTION.	EFFECT ON CAR.
1	Suction	Nil
2	Compression	Retard
3	Expansion	Accelerate
4	Exhaust	Nil
5	1st stroke repeats, etc.	

These two balance

It will be seen the total effect is nil, as I have already stated.

WM. CROSS, M.I.C.E.

A STARTING HANDLE.

[3179.]—If the persons who called at our works at Newport Pagnell on Tuesday, Sept. 22nd, for twelve gallons of petrol in a 22 h.p. Daimler Car, fitted with canopy and painted yellow, will send us their name and address, which they declined to give at the time, we will forward their starting handle, which was found in the road a short distance from our works.

SALMONS AND SONS.

ALCOHOL FUEL.

[3180.]—In reference to the proposals to use alcohol instead of petroleum spirit for automobiles, I beg to make the following suggestion:

Obtain the assistance of the Society of Chemical Industry, who have been trying to obtain a modification of the restrictions of the excise authorities, whose rules prevent the manufacture of many chemicals and aniline dyes which require distillation with alcohol in their production. The result is that we have to get huge quantities of anilines from Germany, where the Government arranged for the use of denaturalised alcohol many years ago, with the result that the chemical industry has reaped immense wealth.

I am sure that Mr. Levenstein, of Manchester, would assist those who are trying in Ireland to start the production of alcohol for motors.

H. WRIGHT.

THE RELIABILITY TRIALS.

[3181.]—Among your remarks in your issue of September 19th on participants in the above, you state that no private owner is entering a vehicle. I should, however, like to point out that my entry, No. 62, a 7½ h.p. Wolseley, is purely and solely a private one.

I have absolutely no connection of any kind with the Wolseley Company, and merely entered my car out of curiosity, it having run so well that I was desirous of seeing how it would fulfil the very arduous conditions of the club trials. I paid all fees, etc., and should have driven the car myself, but was prevented from doing so by illness. In these circumstances—my own driver being a novice—I requested the Wolseley Company to lend me one, but beyond doing so and overhauling the car before the trials, it having already run some thousands of miles, they have had nothing to do with the matter.

OSCAR S. THOMPSON.

THE STAFFORDSHIRE POLICE.

[3182.]—With reference to your remarks last week concerning a police prosecution at Newcastle-under-Lyme, I desire to say that the police in the North Staffordshire district have been most reasonable in their behaviour towards those motorists who travel in a quiet and careful manner; and it is deeply to be regretted that the reckless conduct of others has not only brought well-deserved trouble on themselves, but has induced police espionage, which was entirely absent and uncalled for so long as motorists showed proper consideration for other persons. Infinite harm has been done, which nothing now can rectify.

A COUNTY MAGISTRATE.

THE EASTBOURNE MOTOR OMNIBUSES.

[3183.]—I notice in last week's *Autocar* that you have an illustration of one of our public service motor omnibuses. But I wish to draw your attention to the fact that the last line of the descriptive letterpress accompanying it is incorrect, as we are not expecting a "larger vehicle," and the Council have not ordered a "two-decker vehicle," and do not intend to do so until the tyre question has been satisfactorily solved. It is all that we can do to find a tyre that will last on our present single deck buses, and they would certainly not carry the extra weight of the top deck and passengers. It is true that in two other places in England double deck motor omnibuses have been running, but as regards one of them the route is absolutely level and the road surface is some excellent wood paving. In the other case I understand the tyre troubles have also been experienced. Our fleet of buses is now four in number, three running and one kept as a spare. We have a twenty minutes service on two routes and a thirty minutes service on the route on which the bus shown in your photograph is running.

A fifth bus is also on order, and this one is to accommodate the same number of passengers, and will be a Chelmsford steam car built by Messrs. Clarkson, Ltd.

J. K. BRYDGES, borough electrical engineer.

A SPEED GOVERNOR.

[3184.]—I see that some of your advertisers have decided not to sell motors which can exceed a given speed. Perhaps the way in which the writer overcame a similar difficulty with a traction engine abroad may be interesting. The country was, to say the least, extremely undulating, and we soon found that the driver's post was no sinecure, as any speed above three miles per hour caused the writer, who was at the wheel, to perspire profusely in his efforts to keep the engine on the narrow and crooked track. After landing in a sand-hole and a somewhat acrimonious argument, we decided to put the belt on the governors, and soon found that the engine would govern itself perfectly, and run at the same speed up-hill or down. To use the same idea on a motor a small governor driven by a belt or cord from one of the road wheels would be required, and once set to throttle the gas at a given speed that speed could not be exceeded, no matter what gear was in or what speed the engine was running at, as, of course, it would not act until the car itself had reached the set speed.

In the event of the driver being held up by the police, it could be proved by demonstration that it would prevent the car exceeding the limit, which would be a powerful plea for the defence.

R N

Flashes.

Motor car tyres in France will shortly be raised in price owing to the alleged scarcity of rubber and the claims made by the native gatherers of the necessary gum or raw material. The first increase will be about fifteen per cent.—no small item for a set of tyres for a large car.

* * *

Messrs. De Dion-Bouton have patented a system of soldering the copper cap on to the porcelain of their sparking plug by an alloy of copper and aluminium. This system has been in use for some time, with the most successful results. Previously it has been very difficult to get the cap to adhere to the porcelain securely. Messrs. De Dion-Bouton, however, devote a large amount of attention to experiments, and have a chemical department especially for this purpose, and by this means have been able to discover the best means of fixing these caps, and so making their plugs even more perfect than formerly.

* * *

A Johannesburg correspondent informs us that the Johannesburg Town Council has passed a byelaw to the effect that all motor cars shall carry a number, the figures to be 3in. in height.

* * *

During the recent heavy rains, a heavy steam-roller employed in repairing a road in the neighbourhood of Middleton-in-Teesdale became imbedded in soft material, and sank over a foot below the surface. A Thornycroft steam waggon, which happened to appear on the scene at an opportune moment, was hitched on to the roller with ropes and chains, and steamed away hauling the heavy vehicle clear of the troublesome spot.

* * *

It will be useful to owners of De Dion vehicles to know that a catalogue of parts for replacement has been prepared. It will only be sent to owners of licensed De Dion vehicles, and will be forwarded on application, giving the number of the engine, to De Dion-Bouton, Ltd., 10, Great Marlborough Street, London, W.

* * *

Strict regulations governing the employment of autocars on public roads and thoroughfares in the province of Palermo have been issued. According to the British Consul, all cars must be registered, and exhibit a number and the name of the place of registry. The Consul also draws the attention of tourists in Sicily to the fact that a society has been formed in Palermo for the protection of foreigners and travellers, and for the encouragement of travelling in Sicily. Foreigners in trouble, or who have complaints to make, have but to address themselves to this association at the Town Hall, Palermo.

There is no doubt that racing automobilists take to motor yacht racing quite naturally. More than one renowned French driver will be seen in the motor yacht competitions next season, and among them is Maurice Farman, who will drive a Panhard-Levassor launch.

* * *

Mr. C. Harris Stratton, of Warminster, who has been using a 4½ h.p. geared Benz car for two years and three months, writes: "It may interest your readers to know that this summer, having previously driven the car quite 10,000 miles without new valves or piston rings, I drove from this place to Cambridge, a distance of one hundred and fifty miles, on just over four gallons of petrol, without any mishap or unpremeditated stop, carrying about twenty-five stone weight of passengers and luggage. There had been enough rain to lay the dust, but the roads were good." The solid tyres with which the vehicle was originally fitted are now about worn out. They appear to be the only important part of the car which has reached this stage.

* * *

The announcement that "the Automobile Club held a series of speed tests at Groot Schuur" is indicative of the pushfulness of the motor car. It does not, however, mean that the A.C.G.B. and I. has extended its sphere of influence to South Africa, but refers to the club which has been established in a colony where automobilism is making progress so rapidly that it is probably unequalled in any other part of the Dark Continent. The races at Groot Schuur were participated in by a variety of the cars familiar to English motorists, and varied in size from the 5 h.p.

Baby Peugeot to the 22 h.p. Daimler.

* * *

We understand that Colonel W. J. Bosworth, of Cedar Court, Roehampton, who is greatly interested in military motoring, has recently given extended trials to cars of divers types in the manoeuvre area, and will shortly publish the results of his own observations and those of the experts who accompanied him.

* * *

The publication of the drawings of the three-cylinder 9 h.p. Humber engine in *The Autocar* of a fortnight since has caused blue prints to be sent us of a design by another motor engineer. These drawings bear a striking resemblance to Mr. Cross's Humber design, and we are asked to mention the matter so that when these at present unpublished designs are made public the engineer responsible for them will not be accused of copying the excellent Humber design. Of course, there are many points of difference between the Humber and the present anonymous make, but there are sufficient points in common to make the resemblance somewhat striking. It is evidently another instance of progressive minds following parallel lines of reasoning and arriving at very similar conclusions.

"THE AUTOCAR" DIARY.

A.C.G.B. and I. 1,000 Miles Reliability Trials.

- Sep. 25.—Winchester and back. 133.5 miles.
 " 26.—Brighton and back (Handcross). 91.75 miles.
 " 28-29.—Examination by Judges
 Sep. 26.—Southern Motor Club. Drive to Bletchingley.
 " 26.—Wolverhampton & District A.C. Impromptu Drive.
 Oct. 2-3.—Southport Speed Trials.
 " 3.—Lincolnshire A.C. Drive to Folkingham.
 " 3.—Leicestershire A.C. Drive to Dunchurch via Rugby.
 " 3.—Southern Motor Club. Drive to Chertsey.
 " 5-10.—Paris Cab and Delivery Van Trials.
 " 10.—Midland A.C. Hill-climbing Competition.
 " 10.—Sheffield A.C. Drive to Sickleholme.
 " 17.—Scottish A.C. (Western Section). Anniversary Drive to Troon.
 " 22.—Leicestershire A.C. Drive to Market Bosworth, Hinckley, and Earl Shilton.

During the Southport trials Messrs. Geo. P. White-side, Roe Lane, and Harold Bell, Tulketh Street, Southport, will be able to accommodate visitors' cars.

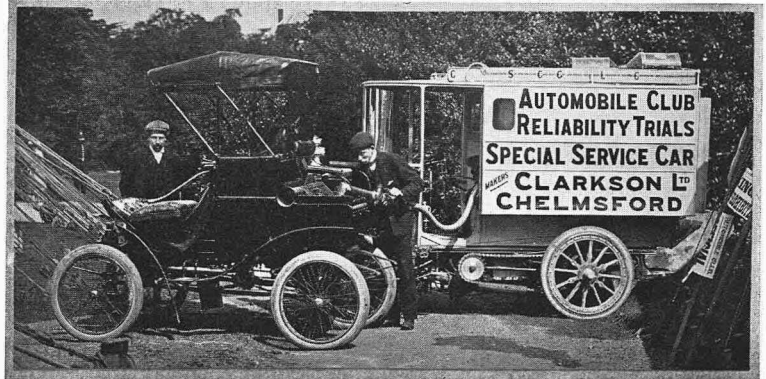
* * *

A proposal is on foot, and very probably a company will be formed, for the purpose of running a service of motor cars between Greenock and Gourock and Largs. If the project is carried out, the service will be commenced early next summer. The route is about eighteen miles in length and through some of the finest coast scenery in Scotland. The present idea is to give an hourly service between the two towns, and as Wemyss Bay is passed through *en route*, cheap and attractive combined motor car and steamboat circular tours between the towns mentioned, and Fairlie, Millport, etc., could easily be arranged.

* * *

Readers continue to send us news paper reports emphasising the inequality of the laws which govern horse and motor traffic, but exigencies of space prevent the publication of these in detail. A report of a prosecution at Grimsby is typical of the majority. Three waggonette drivers were summoned for reckless driving, and the evidence of the Chief Constable reads like the account of an Athenian chariot race. The defendants drove at a furious pace through crowded streets, passing and re-passing each other in a most reckless manner, until one of the vehicles collided with an electric tram standard, upsetting the occupants and flinging a couple of them under an approaching tram, which the driver pulled up in the nick of time to prevent a tragedy. Two of the defendants were fined one guinea each, and the summons against the third was withdrawn. How different would have been the penalty if the defendants had been motorists it is too awful to contemplate, judging by precedents.

A case which has attracted considerable attention at Havant—a striking instance of the methods adopted by the police to secure the conviction of motorists—was that in which Mr. T. Scott Foster, jun., the son of a Southsea alderman and J.P., was summoned for exceeding the legal limit. Accord-



Filling the water tank of a White steam car from the supply tank in the Clarkson special service car, which carries petrol, oil, and spares each day over the 1,000 miles route.

ing to the evidence two constables hid in a recess, and one gave the other the signal to start a stop-watch immediately the car reached a given spot. On arriving at the hiding place the men stopped the car, and alleged that it had travelled a distance of 280 yards at the rate of twenty-five miles an hour. Alderman Foster, who was in the car at the time it was stopped by the police, proved that their statements were not in accordance with the facts, and succeeded, through the evidence of an architect and surveyor, in making it clear that it was impossible for the police to see the spot where the trap was alleged to have commenced, from their hiding place. The Bench also had considerable doubt as to the pace at which the car travelled, and on the evidence decided not to convict, as "the police might have made mistakes." We fail to see, however, why inoffensive users of the highway should be compelled to go to all this trouble and expense to escape the results of a discreditable system of espionage, and obtain no recompense.

* * *

At Detroit in a motor race the tyre of Oldfield's racer burst when he was driving at high speed on the trotting track. His car ran off the track and killed a spectator who had imprudently stationed himself on the fence at one of the bends. Oldfield broke a rib, and his mechanic was hurt.

* * *

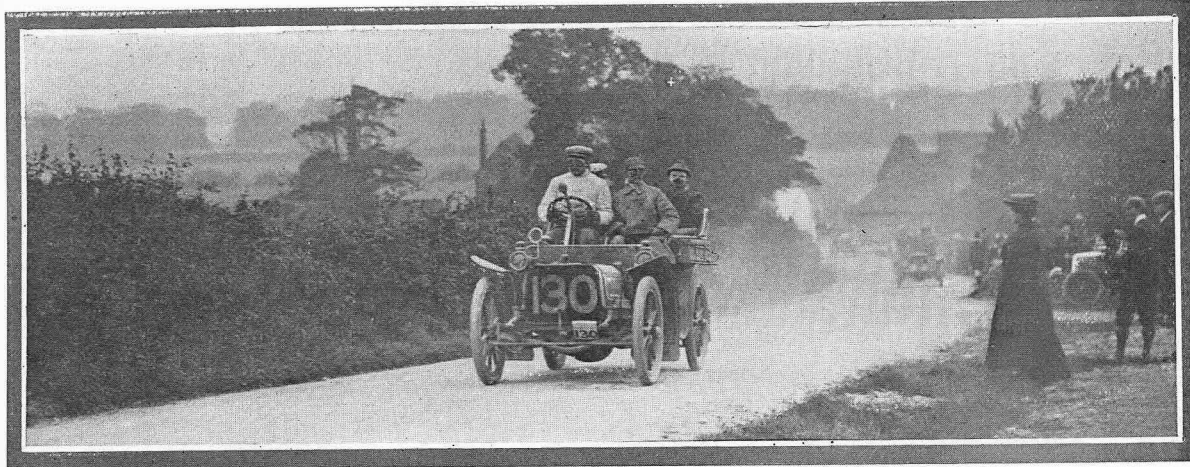
The members of the Southern Motor Club journeyed to Leatherhead and the headquarters at Ewell on Saturday last, and on the following day to Westerham, returning *via* Godstone.



Photo.

J. T. Newman, Beshkampstead.

THE ARMY MANOEUVRES. A scene near the village of Wickham. The automobile employed by the Commander-in-Chief is seen on the right, and a troop of cavalry deploying to the left. In the background will be seen a battery of artillery and transport waggons.



ASCENDING WESTERHAM HILL. The 16 h.p. Rochet-Schneider, No. 131, driven by Capt. H. P. Deasy in the 1,000 miles trial.

A very amusing incident occurred a few days since near a Southern seaside resort. Twelve months ago an automobilist was fined for an alleged excess of the legal limit. When in the district again last week he recognised, loitering by the roadside, disguised as a farm labourer, the constable who had stopped him twelve months before. He stopped and spoke to the man, who also recognised him, and before the disguised constable realised what he was doing, the automobilist got out his camera. Then it dawned on the man he was about to be photographed in his disguise, and to the huge delight of the onlookers he took to his heels pursued by the lithe long-limbed automobilist and his all-embracing camera. The chase was of short duration, and the constable was soon run to earth, taking his defeat with good grace when he found that escape was impossible.

* * *

When the Carrick district committee of the Ayr County Council met on Monday last a report from the surveyor suggesting that motor cars passing through the villages should be restricted to ten miles an hour, and that notice boards to that effect should be placed at reasonable intervals, was, after a brief discussion, deferred to the next meeting. In the meantime the parishes will be asked to submit a list of the places where the suggested regulations should apply. The Marquis of Ailsa, who was present at the meeting, elicited from Mr. Robt. Inglis, factor to Col. Hamilton, that he had a couple of days before been frightened at a passing motor car, though the horse he was driving was not. He did not recognise the occupants of the car, and confessed that, although they were going at a moderate speed, he struck at them with his whip, knocking the driver's hat over his eyes. Mr. Inglis's feelings when he was told that the occupants of the car were Lord and Lady Ailsa, and that his conduct was a gross breach of the law and might have resulted in a serious accident, were doubtless confused ones, and he immediately expressed regret to Lord Ailsa for his conduct. This case affords another instance of the manner in which those in charge of horses lose their heads and become even more unmanageable and unreasonable than the beasts which accompany them at the sight of a motor car.

A nasty accident occurred to Mr. J. B. Woodward, of Derby, last Saturday. He was driving near Ambergate with his wife, his son, and a friend, and when running at about eight miles an hour the horizontal rod connecting the steering pillar with the front axle snapped. As the machine was being turned slightly to the right to avoid a wheelbarrow, it of course went right across the highway before it could be stopped, although Mr. Woodward immediately applied the brakes. There was a low stone wall on the side of the road which stopped further progress and upset the car. Luckily Mr. and Mrs. Woodward and their son were not seriously injured, but their friend was rendered unconscious. This accident again shows the vital necessity of the steering being so made that it is practically impossible for it to fail.

* * *

Two pieces of iron have been sent to us by Mr. E. A. Stretton, of Cheltenham. One is a large wall spike over six inches long and nearly an inch wide at its thickest part; the other is not quite so long. He found these buried in the ground just outside his garage. They were projecting an inch, and were two inches apart, and he can only conclude that they had been placed there by some evil-disposed person. As to their effect on tyres we need say nothing, but it is necessary to remember that it would be even more serious for a horse; it might utterly ruin the animal. At any rate, we do not see how six-inch wall spikes can get into the road automatically.

* * *

The strenuous efforts which had to be made to get even main roads in Spain into passable condition for the Paris-Madrid race will still be remembered, and apparently the Spanish Government is alive to the fact that, before the autocar movement can make any developments in the Peninsula, roads over which an autocar can be driven will have to be provided. In a Royal Order, published in the *Madrid Gazette*, the absence of secondary lines of communication through the country is deplored, and it is proposed that a length of district roads, amounting to seventy thousand kilometres, shall be put in hand. These roads are to follow mainly the lines of existing pathways and tracks, or to connect towns and villages with the nearest railway stations.

SOME QUERIES AND REPLIES.

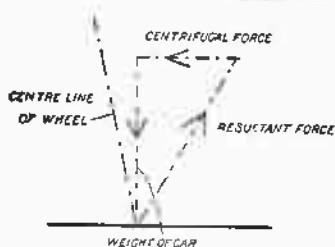
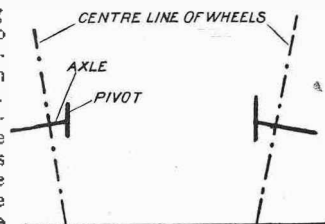
We are always pleased to reply to queries, even if they be of an elementary and untechnical description, under this heading. Only a selection of those which are of general interest will be published, though all will be answered direct through the post, for which purpose a stamped and addressed envelope should be enclosed.

When advice concerning different makes of cars is sought, each vehicle should be given an identifying number.

Letters should be addressed The Editor, "The Autocar," Coventry.

ROAD WHEEL DESIGN.

I notice in your description of the Weller car of June 13th, 1903, the steering pivot is inclined to the vertical (I believe this is common to many vehicles). This is done, I suppose, so that the force of the shocks received at the tyre of the wheel will be transmitted to the



centres of the pivot, and not act on it as through the centre line of the driving wheel. Now, whichever way the wheels are turned for steering, they incline to the centre, as shown in the first illustration. Now, what I wish to ask

is, will not the centrifugal force tend to break the outside wheel in turning the car in either direction?—H. D.

The force due to centrifugal action tends to break any wheel in turning corners whether the wheel centre is inclined or horizontal. The wheels must be designed to resist the enormous stresses encountered when the wheels take a grip on the road without skidding when turning corners. The front wheels may be dished so that the weight of the car shall act along the centre line of the spoke vertical to the ground.

LICENSES UNDER THE NEW ACT.

I should feel greatly obliged if you could afford me a little information respecting the license of a small car. Supposing a license to be taken out at the present time, would this lapse at the end of the year, or would it be transferred forward to twelve months from the time it was dated? Also, under the New Act, will a dealer have to have every car that passes through his hands licensed, and transfer these licenses to the purchasers, or will a license be issued to cover all the cars that may pass through his hands, and how will the registration clause be worked in the latter case?—C. V. FISHER.

You have to pay the full license which is due on the 1st of January every year if the license is taken out any time between the 1st of January and the 30th of September. If taken out between the 30th of September and the 31st of December half the full fee is charged, but this only carries you to the end of the year, and on January 1st you will have to pay the license again for the ensuing twelve months. The clause as to the transfer of licenses from the maker or dealer is as follows: "(a) A person shall not be liable to a penalty under this section if he proves that he has had no reasonable opportunity of registering the car in accordance with this section, and that the car is being driven on a highway for the purpose of being so registered; and (b) the council of any county or county borough in which the business premises of any manufacturer of, or dealer in, motor cars are situated, may, on payment of such annual fee, not exceeding three pounds, as the council require, assign to that manufacturer, or dealer,

a general identification mark which may be used for any car on trial after completion, or on trial by an intending purchaser, and a person shall not be liable to a penalty under this section while so using the car if the mark so assigned is fixed upon the car in the manner required by the council in accordance with regulations of the Local Government Board made under this Act." Of course, as soon as the car is sold the owner will have to take steps to get it registered.

SPARKING AT THE COMMUTATOR.

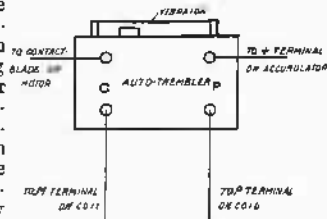
The wipe ignition on my 11 h.p. Clement seems to spark very much where it makes contact by the pressure of the roller on the internal brass segment. These brass segments have worn very much, but only where the roller leaves or breaks contact. Is it possible for the excessive sparking to cause this wear? Both plates are worn the same, though the roller runs in oil. I see in *The Autocar* of August 15th, page 225, you give a diagram of wiring a two-way switch with a common earth wire. Don't you think that this will cause the accumulators to equalise or average?—O. B.

The brass segment may be made of very soft metal, hence the wear would be rather considerable. There is always a spark created when contact is broken, this being variable in amount according to the make of coil. The brass segment could be replaced by a hardened steel one of the same shape, which would considerably reduce the wear of the surface, and would act just as well. The common earth wire will not cause the accumulators to equalise, as the positive terminals are not both connected at the same time, but only the one on which the switch is moved over to.

WIRING AN AUTO-TREMBLER.

Can you inform me the correct way to wire up an auto-trembler to the coil, etc., of my 4½ h.p. De Dion? The factor I bought it from is quite foggy about it, and before fixing it I prefer to be advised by someone who understands it.—WIMBING.

Disconnect the wires at the primary terminals of the coil and connect up the lower pair of auto-trembler terminals, as shown in the accompanying diagram. The trembler blade and positive terminal of the accumulators are dealt with in the same manner as the diagram, and the trembler adjusting screw should be adjusted to make harder contact with the trembler blade when the V piece falls in the cam notch. Be careful to see that the screw clears the blade when the V piece is on the round part of the cam.



NOISY GEARS.

Sir,—I have a 10 h.p. Argyll. It behaved at different times something as described. I found when sent out the flywheel sometimes touched the steering gear, so much so that it became polished by the rubbing before it was rectified. Stronger springs in the inlet valves also had a marvellous effect. Thinning the grease in the rear axle with a little oil on the approach of the colder weather also had a good effect.

ALEX. POOLE.

THE EXPERIENCES OF AN HONORARY OBSERVER.

THE ESSENTIAL FEATURE OF THE AUTOMOBILE CLUB TRIALS IS THE FACT THAT AN HONORARY AND INDEPENDENT OBSERVER IS PLACED ON EVERY CAR EACH DAY, A DIFFERENT OBSERVER BEING APPOINTED TO EACH CAR FOR EVERY DAY OF THE TRIALS. MUCH DEPENDS UPON THE CONSCIENTIOUS PERFORMANCE OF THIS WORK, WHICH REQUIRES NO SMALL KNOWLEDGE OF THE SUBJECT AS WELL AS CONSIDERABLE POWERS OF OBSERVATION. THE EXPERIENCES OF ONE OF THE HONORARY OBSERVERS ON THE FIRST DAY MAY BE TAKEN AS TYPICAL OF THE SUFFERINGS OF THOSE WHO HAVE THE MISFORTUNE TO BE APPOINTED TO A CAR WHICH BREAKS DOWN.

For the benefit of the uninitiated as to the position of an observer, I quote Rules 16 and 17 governing the Automobile Club's reliability trials.

Each vehicle will carry an official observer, for whom a front seat must be provided.

An observer shall, as far as possible, ride on a different vehicle every day, and must not in any way assist drivers of cars. For instance, they must not turn on lubricators or perform any function, however small, in connection with the car. They must in all cases act impartially as representatives of the club. The only exception to this rule is that in the case of cars carrying only two persons, the observer may, if he thinks fit, and is requested to do so by the driver, assist in the event of a pneumatic tyre puncturing.

Appointed to watch a Lady.

On the morning of the first day's run, I found myself appointed to record the performance of a small two-seated 6 h.p. car to be driven by a professional French chauffeuse.

While many would have regarded this to be the post of honour, considering this to be the only instance in Class A, I must say that I did not, and set about my duties with a certain amount of misgiving, which subsequent events fully warranted.

My first impression on taking my seat in the car was that Class A was decidedly of the low-priced variety. Immediately in front was a large plain black petrol tank with just sufficient room underneath it for me to tuck my toes, and there was an entire absence of all those pretty things, such as voltmeters, lubricating valves, switches, etc., that remind one so of the switchboard of an electrical power station.

The daily report upon any one for the day's run is of a confidential nature, and must not be quoted here; yet the particulars given are of actual facts and supplementary to the official report—it has more direct reference to the driver than to the car, and it is not within my province here to depreciate the latter in any way; but for vibration in excess commend me to a single-cylinder engine of 6 h.p. mounted as it was in this particular car, especially when standing still and "racing." Fourteen hours' continuous riding was sufficient to impress the thump of the engine upon one's brain for twenty-four hours after. The day was Friday, and a bad start was made. Nearly half an hour had gone before the engine was started, whereas one minute is considered sufficient. I was soon convinced that women's brains and muscles could be better employed in other spheres, and that in this instance at least they were totally unfitted for driving and adjusting a motor car.

A Protest.

In future trials I would strongly protest against the employment of Parisian ladies as drivers, especially as in this case she had no knowledge of the English language. I noticed that my chauffeuse had a tendency to drive, as they do on the Continent, on the "off" side of the road, and that she was under the impression that we were taking part in a race. Consequently, we had hardly covered ten miles when, as the result of erratic steering, we collided with another car, and had a portion of the mudguard carried away. We were hardly out of this when, on passing another car, we ran into a milkcart coming to a full stop, on which I jumped out and disengaged the vehicles. We certainly had the worst of the exchange in the matter of damages of a minor scale, but were able to proceed to Maidstone, where I reported my lady friend for inefficiency, and protested against her being allowed to proceed to Margate. However, my objection was ruled out, and I was directed to proceed.

A Catastrophe Averted.

I had almost forgotten to mention what might have been a catastrophe, in coming to the bottom of a steep hill with a house on the left and the road winding to the right. I found my driver steering direct for the wall, her sudden application of both brakes bringing us to an immediate stop, the wheels skidding, and the car taking a zigzag direction. Had the roads been wet, I say, without exaggeration, that my pen would never have recorded the events of this day's run.

After Maidstone things went smoothly. We got to Margate in time to meet some of the cars coming out on the return journey. A stop of forty-five minutes, and we in turn had completed the distance to the Palace within seventeen miles, viz., at the village of Farningham.

In Trouble again.

I called a stop to light lamps, and to my dismay I noticed that the reservoir of the red tail lamp was void of oil and wick, and also that the two head lamps were not properly trimmed, and also that smoke was coming through the bonnet holes freely. "Très bien," remarked Mademoiselle, pointing to a red hot tube that connected the water tank with the water jacket of the engine, and proceeded to fill the tank with cold water, getting clouds of steam and a burst pipe as a result. I will not weary my readers with all the details, but the next two hours were spent in effecting repairs in which half the village assisted and more effectually retarded.

At last another start was made up the hill leading out of the place. When a third of the way

up, again the engine stopped; another broken sparking plug and none to replace it. Our hopes now lay in being supplied by a passing car, or spending hours, or possibly the night, by the roadside.

Yes! a car! All right now, thought I, but it turned out that they were using magneto ignition and could not help us with a plug, and it proceeded on its way to Norwood, leaving best wishes and a cigarette.

Another weary wait, and a cyclist hove in sight. He willingly acted as our messenger, and returned to the village to get the required ignition plug, but came back without one.

The Advent of the Hardy Man.

To increase my anxiety it now began to rain, and the outlook was worse than ever. I suggested returning to the village for shelter and possible help, or to renew our exertions by daylight, but no, the determined and almost worn out chauffeuse declared her intention of reaching the Palace that night. I declared the thing to be impossible, and with the combined help of a retired "handy man" we turned and pushed the car to a shed at the village inn, at which my driver collapsed from exhaustion, and was taken charge of by our hostess.

Now is the time thought I to record my experiences of the first day, so, calling for paper, I had only succeeded in making a few notes when the urgent need of food and sleep began to assert itself.

A Final Effort and Abandonment.

Sleep won, and I was awakened the next morning by the noise of the engine running. The chauffeuse had found a sparking plug, and with the aid of the "handy man" of torpedo boat engine fame had succeeded in starting the car. All right now, thought I; here is the end of the trouble, and looked forward to a nice run to the Crystal Palace. At last we started, and halfway up the hill the engine began to "miss" badly, and on reaching a motor repairer's shop a new sparking plug was inserted and another start

made. A mile or so farther we came to another enforced stop, when the inlet and outlet valves were ground in with oil and emery powder.

Another start, and half a mile covered, when we stopped again, and the driver proceeded to wash out the engine with a syringe of petrol. I heard a shriek, and there was the syringe lying on the other side of the road, while the engine vomited flame, and a rag was burning furiously underneath it. I thought the climax was reached now, but succeeded in kicking away the rag, while the petrol in the engine quickly burnt itself out. All this was the result of introducing petrol when the engine was hot, and without removing the "touche" connected with the accumulator. I finally left my unfortunate driver at noon with her car "with something wrong" in a country lane, and proceeded to the nearest town by train to seek out a mechanic to go to her assistance.

I reached the Palace by train in time to see some of the cars return from the Eastbourne run, and to report my official existence.

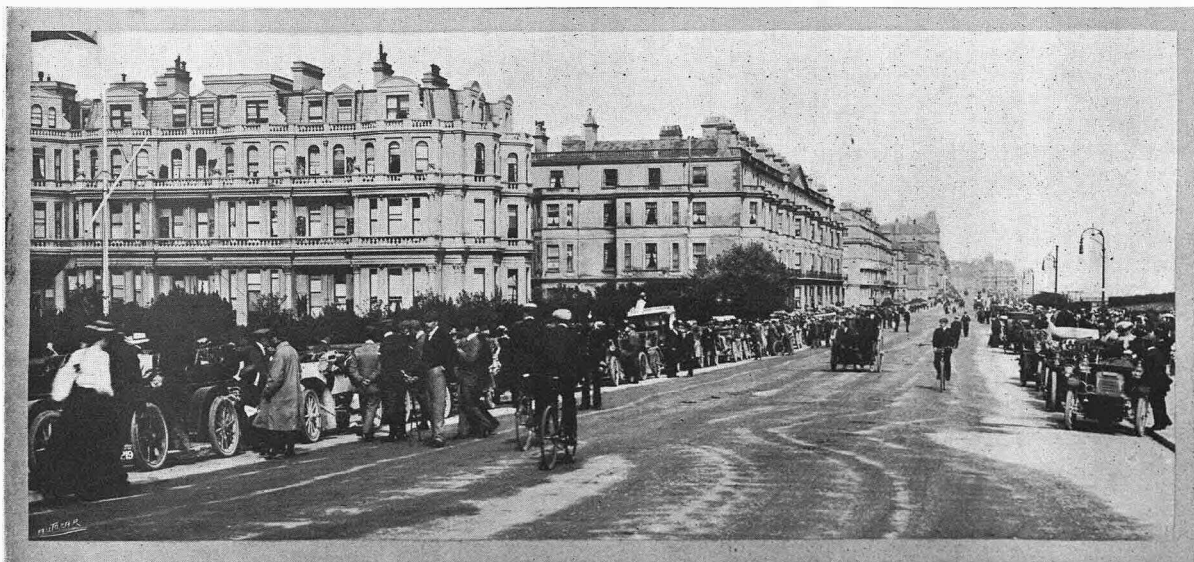
For the Club's Consideration.

The generally disturbed conditions of the journey prevented my keeping a proper record of the run, as required, and I felt that the duties of an observer would have been considerably lightened if the route and report form had been combined on each page singly, instead of being in two separate books.

I certainly consider the feminine temperament is not one that lends itself to strict observance of the rules laid down for drivers of cars by the Automobile Club of Great Britain, and that it is a very delicate position for one who, by virtue of his office, is unable to offer his services to a chauffeuse in difficulties; but the rule affecting this was not observed on the day following the Margate run.

Another experience such as this, in my case, would be productive of an attack of meningitis, and a permanent dislike in future for the duties of an honorary observer.

R. C. RYAN.



Photo

The scene at Eastbourne during the compulsory 45 minutes' stop

G. & R. Davis, Eastbourne.

THE SPENCER MOTOR AIRSHIP.

On Thursday, the 17th inst., Mr. Stanley Spencer, of the firm of Spencer Bros., the well-known aeronauts, attempted to make a trip from the grounds of the Crystal Palace round the dome of St. Paul's, returning to the starting point, but the attempt was only partially successful. The weather was fairly favourable for the effort, and after executing a few

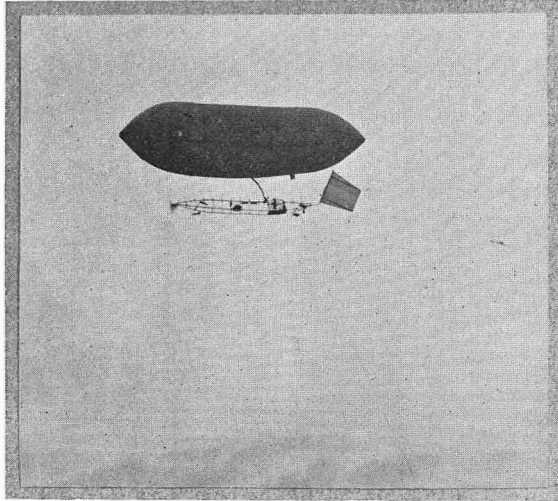


Photo. *Russell, Crystal Palace,*
The Spencer airship aloft.

manœuvres over the grounds of the Crystal Palace, Mr. Spencer turned his machine northward on the voyage, and this was successfully accomplished, so far as the outward journey was concerned; but when St. Paul's was reached, in attempting to round the dome, the airship came broadside on to the breeze, and this was sufficiently strong to cause the aerostat to drift with it, the operator not being able to get its head into the wind. It was thought that the machine would alight somewhere near Messrs. Spencer Bros.' premises at Highbury, but the intrepid aeronaut continued northwards, and landed in Trent Park, New Barnet. To the numerous people who were looking out for the passage of the airship, its non-return caused considerable disappointment. The airship, which is patented by Mr. Stanley Spencer, has a gas container of silk fabric, varnished inside and out, and is 93ft. in length, 24ft. maximum diameter, and has a capacity of 30,000 cubic feet. As will be seen from the accompanying illustrations, this gas container is of cigar shape, and to it is fixed on the horizontal line a strong sailcloth band from which the bamboo framework depends. The car is 12ft. below the underside of the balloon itself. A Simms four-cylinder 24 h.p. engine is employed to actuate

the tractor, which is placed at the forward end, and takes the form of a two-bladed screw propeller. The engine is fitted with magneto ignition, as is usual with the Simms engines, and the end of the exhaust box is covered with several layers of wire gauze to protect any gas which might come into proximity with the opening becoming ignited. The speed of the engine is a little over a thousand revolutions per minute, and the speed of the tractor is about three hundred revolutions per minute, the reduction of speed being obtained through the agency of a simple reducing gear, the clutch enabling the tractor to be disconnected with the engine. The control of the motor is by means of Bowden wires, as the engine and the passenger car are some distance apart, this arrangement being necessary to obtain an even balance. Between the engine and the operator are two tanks, one of which contains the water for cooling the engine, which, as usual, is circulated by a pump, and is passed through a series of radiators for cooling purposes, and the other tank contains petrol for the motor. The balance arrangement is used, so that the aeronaut may project the front of the tractor below or above the horizontal line as he requires to descend or ascend. Or, on the other hand, a hand air-blower is fitted, so that pure air can be forced into the gas container, reducing its specific gravity, and consequently bringing it nearer to earth. For high altitude work, ballast is carried, just the same as in the ordinary balloon. As the machine ascends, so the pressure in the balloon part increases, and to prevent it bursting, an automatic valve is fitted, which allows gas to escape, thus ensuring the stability of the machine

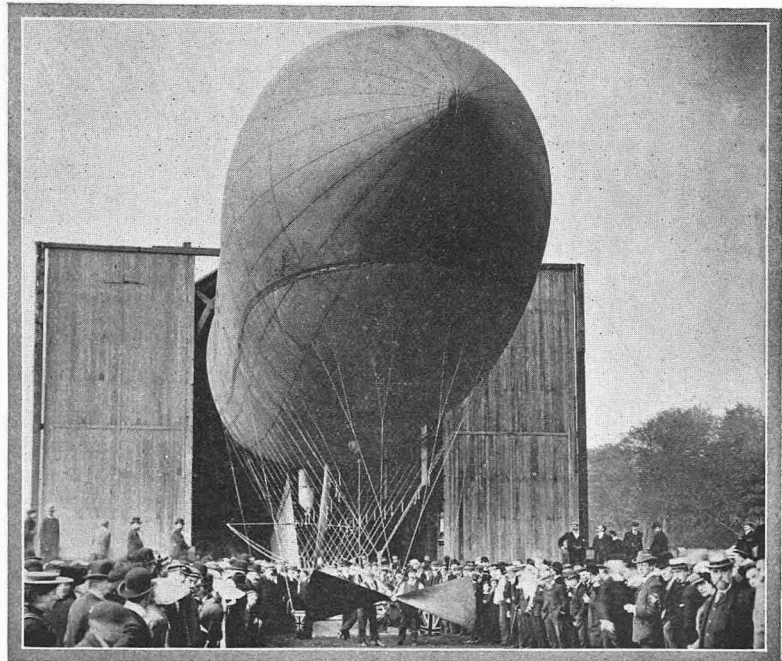
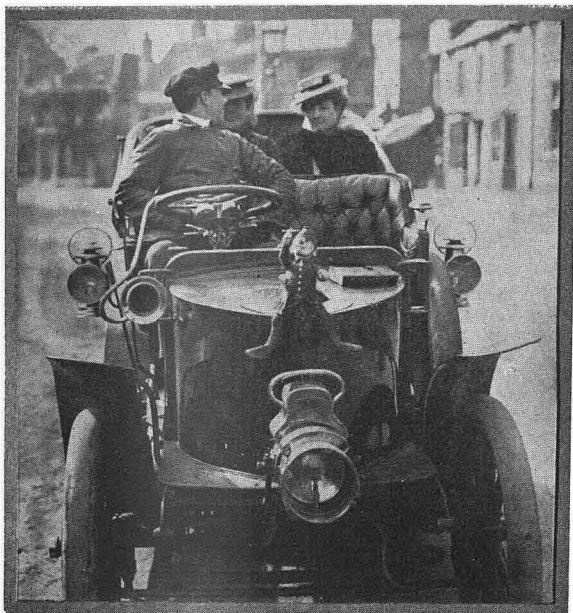


Photo. *Russell, Crystal Palace.*
The Spencer airship leaving its shed in the Crystal Palace grounds on the occasion of its initial trip.

so far as its power for remaining in the air is concerned. In the event of the balloon bursting through extraordinary causes, the netting is so arranged that the fabric will collect in the top, and so form an effective parachute. Mr. Spencer intends working with this balloon to a large extent, and hopes before long to accomplish an outward and homeward journey. He also tells us that the engine worked in a very satisfactory manner throughout the whole of the trial.



A Serpoilet at Westerham with a small effigy of a policeman on the front excited much interest last Saturday. Most police constables who have seen it regard it as a distinct tribute to their efficiency.

THE NEW LEON BOLLEE CAR.

More than twelve months ago it was stated that M. Leon Bollée had abandoned his own designs for motor cars, and had determined to build a vehicle which should be, broadly speaking, upon Mercedes lines. Many have forgotten this, as practically nothing has been heard of the vehicle since; but M. Bollée has been going steadily ahead, introducing improvements where possible, and doing his very best to turn out a vehicle which should be quieter in running and with greater elasticity of engine power than any car previously designed. The Speedwell Motor and Engineering Co. have been appointed exclusive agents for it in this country, and their principal informs us that the noiselessness has been so effectually secured that when the car is standing still with the engine accelerated, it makes no more noise than the ticking of a watch, and it is impossible to know that the motor is running without looking to see if the flywheel is revolving. This is a very sweeping statement, and we shall look forward with great interest to verifying it, as we hope shortly to test the car, which is full of original detail features. So far as the general measurements are concerned, the car is the same as the Mercedes. There will be two models — one 28 h.p. and the other 45 h.p., both with four cylin-

ders. The smaller car weighs 860 kilogs. (16 cwt. 3 qrs. 26 lbs.), but to obviate tyre troubles 920 mm. by 120 mm. tyres are fitted to the back wheels and 910 mm. by 90 mm. are used in front. In other words the back tyres are 36¼ in. by 4¾ in. and the front 35¾ in. by 3½ in.

THE 16 H.P. ARIEL.

For some months we have been driving a 16 h.p. four-cylinder Ariel—the automobile which excited such remarkable interest at the Club trials last year. It will be remembered that this vehicle was disabled in an accident in Edinburgh due to a road grating being left open, and consequently it was just too late for the trials; but it followed them every day, and we were so much struck with its running that later we obtained a similar vehicle. After a long period of hard work we are thoroughly satisfied with the running of the car. It is remarkably silent, having a couple of really efficient silencers, is free from vibration, and possessed of great elasticity. The engine is of the high-speed variety, and it is extremely well balanced and smooth in running, but at the same time it answers well to any call made upon it, and will take most ordinary hills upon the fourth speed with its full load. Despite the high rate of revolution we have not found the engine sensitive, the only item which requires careful adjustment from time to time being the commutator, which has been considerably simplified since we purchased the car in question. The wheelbase is long and the springs are easy, so that it will be realised at once that the running of the car is extremely pleasant in every respect. The present equivalent to this car is known as the 12 h.p., though we believe it gives about 16 h.p. upon the brake. It is practically similar to the vehicle we have been discussing, with the exception of the fact that the inlet valves are mechanically operated.



Photo.

J. T. Newman, Berkhampstead.

THE MILITARY MANOEUVRES. The French and German attaches who witnessed the operations from a Wilson and Picher car

SOME MECHANICAL DETAILS ON THE TRIAL CARS.

THE FOLLOWING ARE SOME MECHANICAL DETAILS WHICH SHOW ADVANCE IN DESIGN OR CONSTRUCTION WHICH WERE NOTED ON DIFFERENT CARS RUNNING IN THE RELIABILITY TRIALS. THERE WERE MANY OTHER DETAILS AMONGST SUCH A VARIED COLLECTION OF VEHICLES, BUT THESE WERE NOT VISIBLE, OR THERE WERE NO MEANS OF OBTAINING INFORMATION WITH REGARD TO THEM.

Amongst the many variations of the honeycomb or box type of cooler, that fitted to the Krupkar (54) is neat and effective, with a minimum of soldered joints, and consists of the usual top and bottom box, the top conforming to the outline of the bonnet, and connected by a number of very small vertical tubes, passed through horizontal stiffening plates at intervals, which increase to some extent the cooling surface. The usual fan is behind the cooler.

On the same car, instead of attaching separate horns at the back to carry the spring ends, the frame side member itself is extended rearward, as sketch, and a stud projecting outwards takes the spring at a wider spread than the frame, bringing it as close as possible to the wheel.

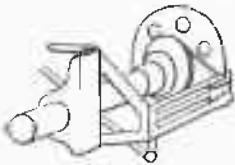


The Paraffin Car.

The Roots car (37) in its latest form is fitted with a new gear box, radiators at the sides of the bonnet, and also electric ignition, although the starting is effected with lamp to heat vaporiser.

The Lanchester Disc Brake.

On that most original and successful car the Lanchester (87) were fitted brakes acting on the back wheels, but in quite a new method. The rough sketch will assist in conveying their operation. Mounted just inside the back wheel, on each side of the car of course, is a thin disc, pierced for lightness. From the back axle end a plate bracket projects backwards, whilst another bracket projecting in the same direction is attached to the lug which engages with the spring end at its bottom and the tension rod at its top. These two brackets are connected by two narrow strips or bars, one each top and bottom of the extremities of brackets. Between these strips or bars the long arm of a lever works, its fulcrum being at the end close to the disc. From the top bar there depends a lever, which engages with the long end of the above horizontal lever, and on the rod attached to the bottom of the vertical lever being pushed back a very great multiplying effect is obtained, with the result that the short end of the horizontal lever, which passes round the edge of the disc to its outer side, squeezes the latter between itself and a surface on the bracket mentioned. As carried out by the makers, it is quite in keeping with the other clever features of the car.



equal to that of the water in the boiler are fixed three steel tubes, one above the other, and horizontally extending from side to side of the dash, with their ends supported to a fixture each side. The top and bottom tubes are merely distance members, but the centre one is connected to the water and steam space in the boiler, and is free to expand and contract, so operating the bypass valve from the feed pump. Now, the boiler being in front of the dash, and therefore in front of the said tubes, if the car is travelling uphill the variable tube of the three will fill with water, and will contract in length, and thus act upon the valve to decrease the water supply to the boiler, so assisting in keeping a good head of steam. If running downhill, steam fills the variable tube, which expands, and the opposite action takes place, so raising the water level when heat is not wanted so badly. On the level, a medium length of the tube, due to intermediate conditions, regulates the feed accordingly. As there is a difference of some 200° available, the plain steel tube has been found to give quite sufficient movement.

The same car (which, it will be remembered, is fitted with a most complete and certain lubricating pump and distribution system) is provided with a glass indicator fitted to the dashboard and in the oil circuit, by which means the delivery from the pump can be seen and verified at any time.

Where a number of pipes are all running together, so to speak, Mr. Clarkson adopts the sensible plan of indicating what they carry by colouring them respectively red, blue, black, etc., so rendering the tracing of a connection very simple.

The Albion Magneto Ignition.

The Albion car (42) is fitted with the Murray patent governor, which was described in *The Autocar* of September 12th, page 326, and with the

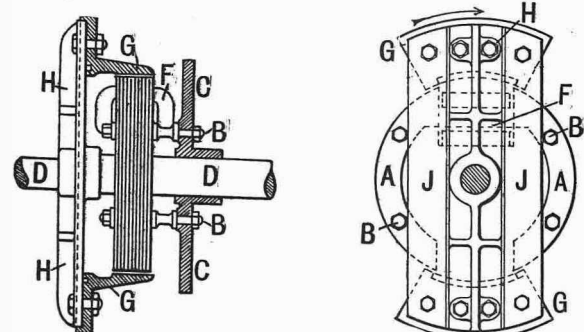


Fig. 1.

Fig. 2.

- A A, laminated armature
- B B, bolts fixing A to the forward end of gear box
- C C, part section of gear box (fig. 3 only)
- D D, engine crankshaft
- E E, gap in the armature A (fig. 1 only)
- F F, winding on the armature A
- G G, pole pieces
- J J, permanent magnets

The Clarkson Automatic Water Level.

To utilise the effect of the gradient upon which the car is travelling as a means of automatically regulating the feed is probably an entirely novel arrangement; certainly it is as carried upon the Clarkson steam car (95). On the dashboard at a height about

Murray patent ignition gear, and diagrams of the latter are given herewith. The system is entirely on the low tension, and consists of two principal parts.

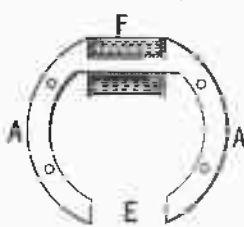


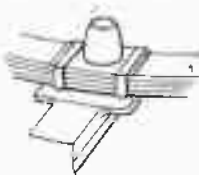
Fig 3

A fixed armature core of laminated iron plates A (fig. 1), around which is wound at one part a number of layers of wire, as at F. Opposite to the core is a gap, so that when a current of electricity passes through the core the armature is temporarily converted into a magnet. The armature is bolted to the forward end of the gear box C C by the bolts B B (fig. 3). D in the same figure is the crankshaft engine, which carries a bronze bridge-piece H H, to which is bolted steel pole pieces G G, which serve to convey magnetic flux from the permanent magnets J J to the armature. As these magnets rotate, an alternating current is generated in the coil F. This current is conveyed by thickly insulated wire to an insulated bar running across the top of the engine. From this bar the current is conveyed to the insulated pole of the sparking plug by means of a short insulated wire and terminal. A

very handy terminal allowing of instant detachability of the wire to the sparking plug is shown in the accompanying sketch. At the outer end of the terminal insulator two washers with inwardly conical faces are pressed together by a fairly stiff little spring, and when the plate terminal is forced down between them they hold it firmly. The sparking plug consists of a mica insulated pole piece carrying a platinum tip and an oscillating spindle carried in a long bearing, so as to form a gastight joint without the necessity of using any packing. On the end of this spindle, which is inside the cylinder, is a short arm carrying a platinum tip, which makes contact with the platinum tip of the insulated pole when a spark is to be produced. A simple mechanism serves to work this oscillating spindle, first pulling the arm down to make contact with the opposite member, when the circuit is established, and this is rapidly broken by an arm being pulled away from contact by a spring. As the platinum points separate, an electric spark is produced by the arc so formed, and this ignites the compressed charge in the cylinder.



On the Maudslay car (125) a rubber buffer stop is fixed, as sketch, forming a cushion to the front springs. In case of extreme range of action, the frame would come down upon the top of the rubber pinnacle.



The Martini Cooler.

A radiator or cooler of the box type, and entered separately in the trials, is found on the Martini car (114). It consists of zigzag water passages, from top to bottom boxes in the usual way. The feature, however, is that each passage, so to speak, is a flattened tube, but flattened to such an extent that the sides all but touch, whilst the width from front to back edges is about 5/16 in. A nest of these placed side by side, with air spaces between and a fan behind, must cool most effectively the extremely thin—about stout paper thickness—films

of water passing through the passages. There is, further, a minimum of soldering.

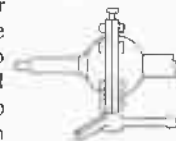


On the De Dion car (91) the front springs are arranged as sketch, and certainly afford de-

lightfully easy springing.

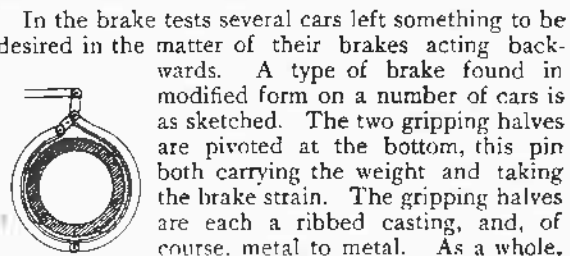
Some Spyker Features.

On the Spyker car (63) will be found a front axle fitted with steering heads of quite an unusual type, this being entered for special test in the Parts Section. The swivel for the front wheel stub-axle is best described as a large ball joint and a hinge joint combined. The shell, as shown in sketch, is in halves, flanged together, so keeping everything dustproof. The outer half of shell has an aperture large enough to permit motion of stub axle for steering. The spherical part inside has a pin projection top and bottom to steady it and retain it in position with the stub axle moving in a horizontal plane. The bottom pin projection takes the usual steering levers. A small lubricator is fitted in the top. Practically all the finishing is turned work, tending towards economical production, whilst the head is claimed to be dustproof and oil-retaining. Also entered in the Parts, and fitted to the other Spyker car (111), is a gear box, in which the main object has been to prevent the usual waste and mess caused by grease leaking out. This box is all one piece practically up to the level of the top, thus suppressing the usual flange joint on centre plane, or on two planes, if in three pieces. Further, the gear-striking lever, instead of entering through the bottom or the side, as the case may be, enters a portion of the box which projects above the rest in the form of a letter A or inverted vee— Λ —and where, of course, there is no body of lubricant. The lever sliding the wheels depends internally from the apex of this, swinging between the sides of the Λ . The gear wheels themselves are not case-hardened, but made from a brand of silica—manganese steel, which, though hard, is not so likely to allow of minute chips separating in use, and getting carried into vital parts by the lubricant. For inspection, it is only necessary to swing a spring steel cross strip sidewise, when a circular cover can be lifted off.



With the object of preventing dithering of the steering column, it is in this same car hinged at the bottom to the frame on the inside, but the permissible movement of the vertical member sidewise is controlled and checked within very narrow limits by a stiff spring, and the device serves to insulate the column from any slight tremor of the frame.

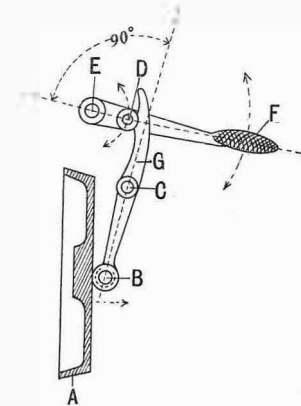
In the brake tests several cars left something to be desired in the matter of their brakes acting backwards. A type of brake found in modified form on a number of cars is as sketched. The two gripping halves are pivoted at the bottom, this pin both carrying the weight and taking the brake strain. The gripping halves are each a ribbed casting, and, of course, metal to metal. As a whole,



it would appear to be a simpler and stronger job than the usual steel bands and toggle arrangement, which latter type often rubs the drum when "off," and in some cars only acts effectually one way, whilst the light rods are sometimes bent. A frequent variation of the above sketched type is found in the inwardly expanding type on the same lines, and metal to metal.

The New Orleans Motor Co., Ltd., show a new form of clutch operation on one of their cars, and this is entered in Section 2 (9). The accompanying diagram will serve to make the action of this clutch

intelligible to our readers. A is the male portion of the clutch, which is of the enclosed type, a lever pivoted at C carrying at its lower end a fork with rollers B bearing against the clutch. At the upper end the lever is given a curved form where it bears against a roller D fixed to the clutch pedal F, which is pivoted at E to the frame; when the pedal F is depressed the roller D is moved downwards and tends to mount the lower point of the curvature in the clutch lever G, thus forcing it



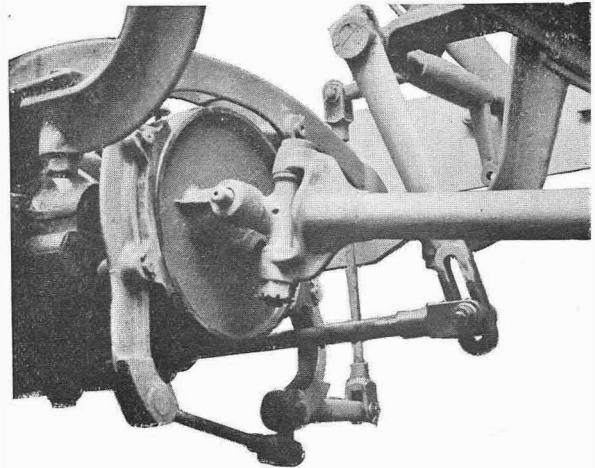
The New Orleans clutch action.

A, male cone of clutch
B, roller on the lever G actuating A
C, pivot on which G works
D, roller on pedal lever actuating G
E, pivot for clutch pedal F
F, clutch pedal
G, lever through which action is given to A from F

opposite movement to the roller B at the other extremity of the lever G. This forces the male cone of the clutch inward, moving it from contact with the opposite member of the clutch, thus disconnecting the engine. Under ordinary circumstances the pedal F rises, the roller D drops to the point of the curve in the upper end of the lever G, allowing the roller B to move in the direction of the arrow and permitting the clutch to come firmly into contact with its opposite member. The pedal F is lifted by means of a small spring not shown.

A highly efficient form of brake is that used on the 10 h.p. Simms Welbeck car (No. 50). On the rear end of the main drive shaft of the change-speed gear is a cast-iron drum, on to which two metal shoes

are applied. These are hinged at their upper extremity to the frame, and are connected together as to their lower ends by an equalising joint, so that equal pressure is exerted by both shoes upon the



brake drum. This is very simple and effective in action, and it is also to be seen in one form or another on many of the cars at present on the market.

Matters still Requiring Attention.

If a few constructional "pointers" are not out of place, manufacturers might give some attention to the following, not mentioned in connection with any one car, nor found all on one car, but noticeable here and there:

Metal to metal clutches run dry, so causing screaming, and making them rather fierce as well.

Spring horns formed by carrying frame itself forward, somewhat too light, and subject to distortion.

Radiators of the honeycomb type, leaking at soldered joints.

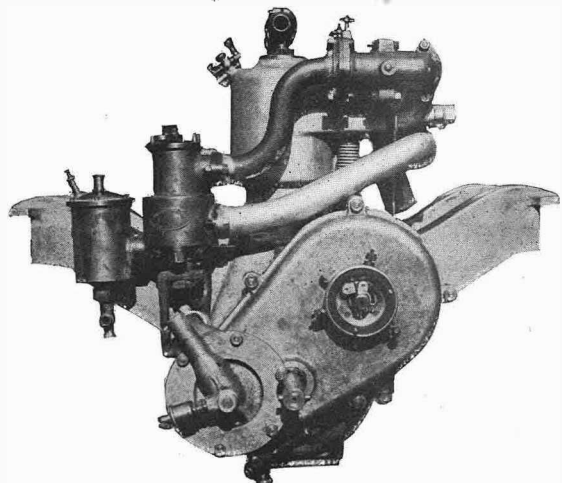
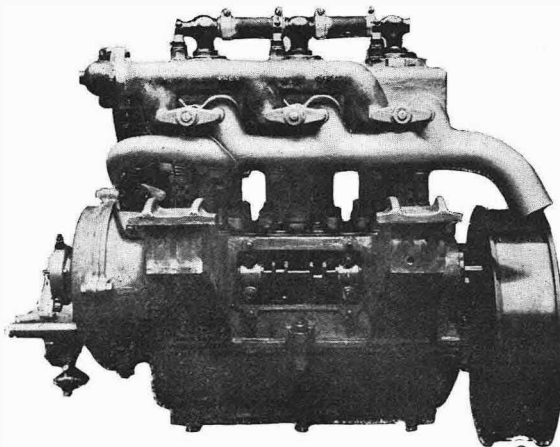
Gear change levers sticking, and not working smoothly, and teeth not entering with sufficient lead.

Brake and gear levers fouling one another, or too close for convenient handling.

Friction-driven pumps not set true, causing end pressure, and set in a position where they are likely to be damaged on cars where a positively-driven pump in a better position is easily arranged for.

No provision for greasing spring joints, lever spindles, etc.

Chains running too close to tyres.



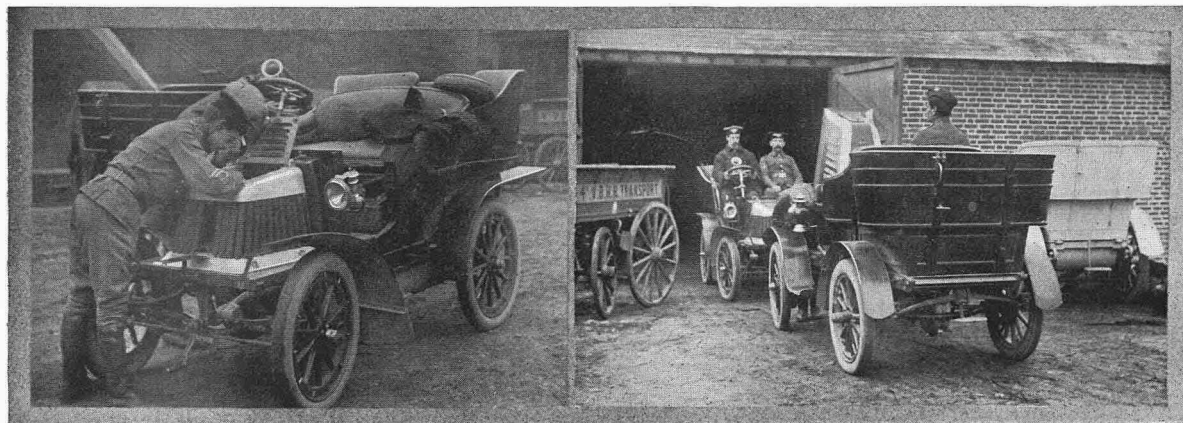
A front and side elevation of the 14 h.p. three-cylinder Argyl engine fitted to car No. 49 running in the Reliability Trials.

THE WORK OF THE MOTOR VOLUNTEER CORPS.

An Appreciation by Lord Roberts.

The officers and members assembled on Saturday, the 12th inst., at the Aylesbury Arms Hotel, Marlborough, their headquarters, during the manoeuvres. The following officers were present: Lieut.-Col. Mayhew (commanding officer of the corps); Majors Knox, Eden, Stamford, and Windham; Captains the Hon. C. S. Rolls, Goff, Crampton, Polden, Ker-Seymour, Midgeley, Lee, M.P., Hearne, and Hammond; Lieutenants Trippel, Paynter, Holder, and the Hon. A. V. Cave; Adjutant Capt. Skeffington-Smyth, D.S.O. Having messed together the commanding officer gave an outline of the very important duties that officers and members would be called upon to perform. On the Sunday morning there was a foot parade of the corps, and an inspection by the C.O. Orders for the day were then announced, and duties entered upon forthwith. During the day special duties were performed by the senior officers and men in the conveyance

F. Trippel, the Hon. A. V. Cave, Messrs. C. A. Knight, Hippisley, L. Bury, W. H. Bloomfield, and F. Butler (attached), the remainder standing by as reserves. Tuesday was an exceedingly busy day, the duties commencing at 6.45 a.m. Lieut.-Col. Mayhew conveyed the Commander-in-Chief to Shefford, beyond Hungerford, and was accompanied by other officers of the corps. The foreign military attachés were conveyed to Shefford, Newbury, and Hungerford, while a detachment worked with the umpire camp. Much praise is due to the latter for the manner in which they accomplished their various tasks, since they had to undergo the hardships and inconveniences incidental to a moving camp. On Friday morning, the 18th inst., Lord Roberts inspected the hundred odd officers and members of the corps who were drawn up with their cars in the public thoroughfare of Marlborough. His lordship spoke to nearly every mem-



A CAMP GARAGE. Motor cars are playing a prominent part in all manoeuvres. Our illustration is reproduced from a photograph which was taken at the motor garage of the 4th Batt. Hants Regiment, in camp at Holmsley, New Forest. The cars comprise Major Curtis's 8 h.p. Argyll, Major Peters's 9 h.p. De Dion, and a 20 h.p. Daimler.

of H.R.H. the Duke of Connaught and suite to Tottenham House, where the Duke planted a yew tree. His Royal Highness then proceeded to inspect the manoeuvre area district lying between Swindon and Marlborough. Generals Sir H. Hillyard and Kelly-Kenny and staffs were conveyed in officers' and members' cars to various points in the manoeuvre area district, and it was evident that the facilities offered by the new arm of the service were greatly appreciated. Night duties of a light nature were performed by officers and men in connection with the headquarters camp, comfortable quarters being provided for the cars and motor bicycles in a special marquee with inspection pit. On the Monday extensive orders were issued, and the following officers and men were detailed for special duties in connection with headquarters camp: Col. R. C. Knox, Captains Goff, the Hon. C. S. Rolls, Ker-Seymour, Messrs. G. S. Foote, and A. S. Gilbert. The following officers and men also conveyed the foreign military attachés over various parts of the manoeuvre area: Capt. A. B. Hearne, Lieutenants

ber of the corps, and in a brief speech thanked them for their services. He remarked that they had, by their extraordinary facility for getting about, rushing hither and thither in an incredibly short space of time, enabled the troops and their commanders to do many things they could not possibly have accomplished without their use. Indeed, they all owed much, if not everything, to the motors for the highly satisfactory control and conduct of the Army manoeuvres of 1903. He further added that the manner in which those of this corps who were on all night duty stuck to their work and were always on hand, ready to go anywhere and everywhere at the touch of an electric button, won his admiration, and were entitled to his warmest thanks.

Some very excellent repair bands and patches are made by R. Lord and Co., of Tontine Street, Blackburn. They are made in four sizes for different requirements. The same firm also make a tyre stopping, by which holes in the covers can be filled.

New Patents.

This department is conducted by Mr. G. Douglas Leechman, consulting engineer and registered patent agent, 18, Hertford Street, Coventry, 32, York Street, Dublin; and 9, Exchange Chambers, New Street, Birmingham; from whom any further information respecting patents, designs, and trade marks may be obtained.

The following specifications were printed and published on the 17th of September, 1903. All notices of opposition to the grant of patents on the several applications should be filed not later than the 2nd of November, 1903.

1902.

18,588.—G. Quick. Three-wheeled or other vehicle propelled by muscular energy and brake for same.

19,754.—A. Tooter and H. Samuel. Tyre with air tubes enclosed in the rim and solid tread.

22,902.—S. L. Boot, R. Clegg, W. Taylor, and J. Ediss. Inflator to be operated by the motive power of automobiles

24,739.—H. Falconnet. Wired-on solid tyres.

27,030.—S. D. Bezbie. Lever mechanism for connecting relatively inclined shafts as in speed changing gear.

1903.

5,665.—C. I. Straub. Scavenging explosion motors by charges of air compressed by the motor.

7,491.—P. Magnus. Manufacture of pneumatic tyres with single and double concentric air tubes.

9,077.—Société Anonyme des Anciens Etablissements Panhard et Levassor. Speed controller worked from a rotatable shaft in the steering wheel.

10,190.—J. McClymont. Sleeve for protecting the contact points of a contact breaker from oil, etc.

12,532.—C. T. Osborne. Explosion motor with compressed air auxiliary.

13,020.—W. Sander. Sparking plug with adjustable cap-shaped point.

13,932.—S. Nicolson and W. H. Paterson. Tyre detaching apparatus.

14,652.—T. C. Cordock. Stand for motor bicycles, with hand lever lifting apparatus.

14,668.—F. Brittain. Conical driving pulley around which the belt may take two turns.

CLUB DOINGS.

Scottish A.C. (Western Section).

A club meet took place at the clachan of Aberfoyle on the 19th Sept. The gathering comprised twenty-nine cars, including the following types: Argyll, Albion, Arrol-Johnston, Babbie, Darracq, De Dion, Gillet-Forest, Gladiateur, Lanchester, Panhard, Progress, Renault, and Wolseley. The roads were in capital order, and the day being fine the majestic scenery surrounding the little Highland hamlet was viewed to the best advantage. After tea at the Bailie Nicol Jarvie Hotel, many of the cars were driven to the shores of Loch Ard and of the Lake of Monteith, and other interesting and picturesque spots in the neighbourhood. Among those present were Messrs. John Adam (chairman), Dr. Wm. Grant, Provost Kennedy, Dr. Kirkland, Robert J. Smith (hon. secretary), etc.

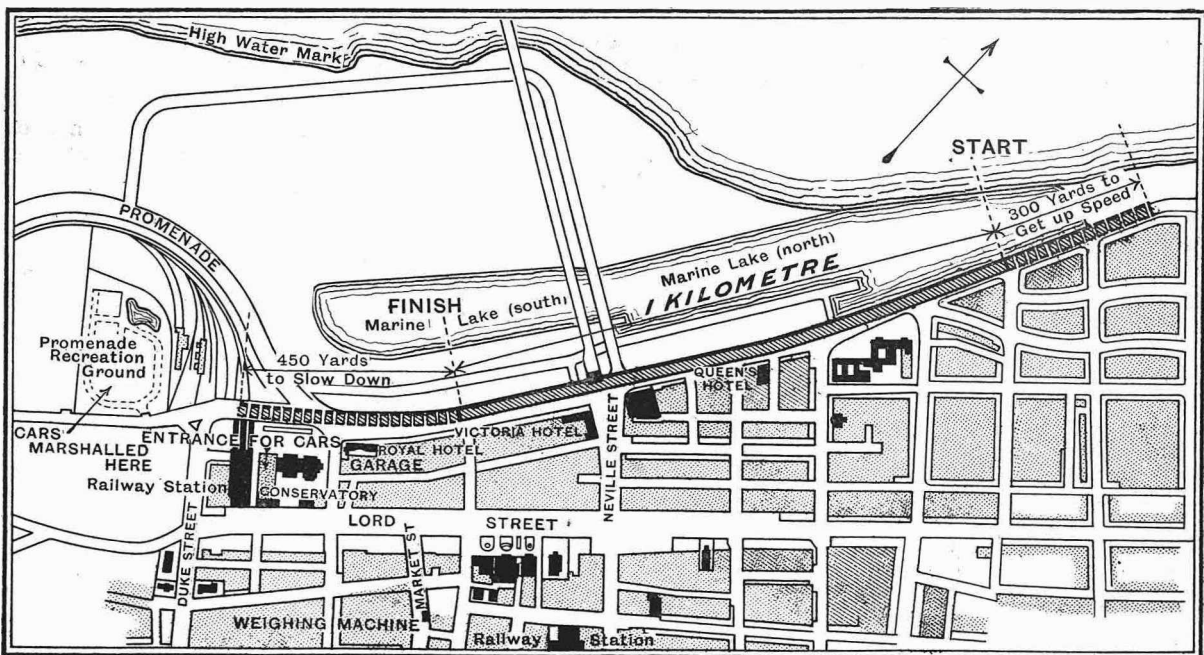
Yorkshire A.C.

On Saturday last the Yorkshire A.C. held a series of speed trials of a purely private and social nature at Wentworth Woodhouse, Rotherham, the seat of Earl Fitzwilliam, president of the club. The programme comprised six classes, three being for motor cars of the touring class, one for racing cars, and two for motor cycles. The course was half a mile in length, with sufficient room for a flying start and the finish. The president entered three Daimlers, two 22 h.p. and one 14 h.p. The weather was in every respect favourable to the competition, and between 400 and 500 people witnessed the trials.

Keat A.C. Hill Climb.

Sir,—In answer to Mr. Hall's letter about the Kent Automobile Club's hill test at Wrotham, firstly, the car which took second place in the Vigo Hill was a standard pattern two-seater; secondly, it did, as a matter of fact, unofficially take four people, including officials, time-keepers, etc., several times up Vigo Hill in the ordinary course of helping them in their work; thirdly, the car which took first place on Trotterscliffe Hill ran on a different sprocket, and was entered as another car altogether, and made no pretence at climbing with the same sprocket. The Lucas car is a petrol car fitted with a two-cylinder valveless 12 h.p. engine, and runs without change speed gear altogether. The makers in sending out the cars fit them with different size sprockets, according to the district they are going to be run in. The car which took second place on Vigo Hill was not fitted with a fast sprocket, or it would probably have beaten the Darracq on that also. The car which took first place on the Trotterscliffe Hill was fitted with the very hilly district sprocket used in such places as Wales or Cornwall.

RALPH LUCAS.



The Course at Southport upon which the Speed Trials will be run on October 2nd and 3rd. The 300 yards for getting up speed is level, as is also the first 300 yards from the start. For the next 500 yards there is a slight rising gradient, thence to the finish a very slight down gradient. The pulling up 450 yards has a slight rise. The minimum width is 40 feet, and the surface tar macadam. We are indebted to Mr. R. P. Hirst, A.M.I.C.E., the borough engineer of Southport, for the plan and particulars.