

# THE AUTOCAR

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

EDITED BY HENRY STURMEY.

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[PRICE 3D.

## THE AUTOCAR.

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### Notes.

Amongst those recently elected as members of the Automobile Club are the following: His Grace the Duke of Manchester, the Hon. Rupert Guinness, Baron Arthur de Rothschild, Messrs. Mark Mayhew, Chas. E. Murford, Thos. B. Drybrough, Fredk. T. Bidlake, Thos. Ritchie, Henry Leitner, Major C. P. Dawson, Messrs. Bertrand J. P. Roberts, F. W. Lanchester, Tom Sherratt, Joseph S. Taylor, Albert A. Jordan, James Whitfield, Chas. R. Hutchings, Allan Whitfield, Archibald Millership, C. R. D'Esterre, Robert B. Bird, S. B. Shelton, Emil Garcke, and A. Valintine.

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It is necessary to explain for the benefit of those who may become acquainted with *The Autocar* for the first time to-day that several of its regular and special features are necessarily withheld this week, as the space usually devoted to them has been absorbed by the reports of the Automobile Club trials and the French cab trials. Owing to their great importance the Automobile Club trials have certainly monopolised the lion's share of *The Autocar* this week. In our next issue the show itself will be exhaustively dealt with, and specially illustrated. All the photographs and illustrations in this issue, with one exception, have been produced by our printers and publishers, Messrs. Iliffe, Sons & Sturmev Ltd., the official photographers to the Automobile Club, who have a separate photographing and illustrating department.

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The Earl of Derby, the president of the Liverpool Self-propelled Traffic Association and Local Centre of the Automobile Club of Great Britain, is no idle figure head. He takes a real and lively interest in the progress of automobilism, and is as keen as any Liverpool man of business on the development of motor van communication between Liverpool and Manchester. It will be remembered that the second annual trials of vehicles for heavy traffic which are being promoted under the auspices of the Liverpool S.P.T.A. (July 29th to August 2nd) are being held in conjunction with the annual show of the Royal Lancashire Agricultural Society. By a very happy coincidence Lord Derby is this year's president of that society also.

Recently we chronicled the setting-out of Mr. Alexander Winton, of Cleveland, for New York on one of his own Winton motor cars. Great interest has been taken in his drive, the time for which was officially given as 47h. 33m., an average speed of about fourteen and a half miles an hour. This, considering the vile character of the American roads, which are to a large extent mere tracks, when the bigger towns are left, was a very good performance, and testifies to the qualities of the car, though this was evidently not altogether strong enough for the strain it was called on to bear, as one of the front axles smashed, and, though Mr. Winton and his companions were thrown out, they were not much damaged. We have fuller details in hand from our American correspondent, but lack of space compels us to withhold them till another issue.

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Mr. Chas. McRobie Turrell has resigned entirely from the British Motor Co., and he is going into partnership with Mr. J. G. Accles, at Holford Works, Perry Barr, Birmingham, as autocar and motor cycle manufacturers. In addition to this, Mr. Turrell will undertake consulting work, and the firm will be prepared to build motors or cars to any design. This should undoubtedly be of great service to inventors and others. In the first place there are many who are anxious to know of a really practical firm which would undertake to build from their designs, whilst there is an even more numerous class which feels the want of expert assistance in completing ideas which, however good in themselves, may be perfectly useless till they have been revised and supplemented by those who have had long experience in the construction of motor engines for motor cars. There is a possibility that Messrs. Accles and Turrell will be able to include a little new four-wheeler in the Automobile Club Show, but it is extremely doubtful if they will be able to get it finished in time.

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Last Saturday the Motor Car Club held a paper-chase. The trail was started from near Coulsdon on the main London-Brighton road, and ran through some miles of devious lanes and byways, over Banstead Heath, finishing up again on the main Brighton Road. The course was an exceedingly difficult one, and some very stiff hills had to be surmounted, so that sustained speed was out of the question. The club's hon. sec., Mr. F. W. Baily, arrived first on a De Dion tricycle, with Mr. Miles second on a Benz. The fast brigade, composed of men like Jarrott and Wridgway, seem to have been undone by their speed, as they overran the trail several times, and made no show at all at the finish. At one spot by Banstead Heath, where one of the false trails was laid down a steep pitch, a number of the speedier hares plunged at full speed, only to find they had made a mistake,



and that with their high gears they could not persuade the motors to drive the machines up again, so that they had to dismount and push. The last man was some three hours behind the winner. Several members dined at Reigate in the evening, and on Sunday ran on through Dorking to Shere for lunch, and then on through Ripley to town. Mr. Baily tells us that another paperchase will be held before long, and anyone wishing to take part is requested to communicate with him at 40, Holborn Viaduct, E.C.

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From our experience and observation, we are absolutely convinced that any vehicle which is intended to be used as a public conveyance should be fitted with nothing but wheel steering, unless the driver is entirely isolated from the passengers. Of course, in a public vehicle, it is impossible to pick and choose between the persons who wish to occupy the seat or seats beside the driver, and there is nothing to ensure that these will not be occasionally taken by people of nervous or excitable temperament. Should anything transpire during the drive which agitates them, and which they may look upon as dangerous, it is only too well known by bitter experience that the first thing they do is to wildly seize the driver, or his arm, and so upset the steering, and, very possibly, the vehicle, either by deflecting the lever, or knocking it right out of the driver's hand. Now with wheel steering, which cannot be knocked out of a man's hand, there is no danger of this kind, and, moreover, the driver can easily seize the wheel with both hands, if necessary. With a wheel of good diameter the power of the driver over the steering is very much greater, and no sudden movement on the part of his passengers would be likely to disquiet him, or upset his steering; in fact, he might almost withstand a violent assault, and still keep a straight course. This is a matter which should not be neglected. We are convinced that, if the practice of fitting motor carriages plying for hire with lever steering is continued, it will only be a question of time before some serious, if not fatal, accident occurs entirely on account of not using wheel steering.

\* \* \*

*The Horseless Age*, in a recent issue, illustrates and describes a new light two-seated motor carriage which has lately been constructed by Mr. W. T. McCullough, of the Back Bay Cycle Co., Massachusetts Avenue, Boston, U.S.A. The vehicle is quite American in appearance, the body being very light, and mounted somewhat higher than is usual in this country. Two small horizontal motors are employed, each capable of developing up to two and a quarter horse-power. They weigh about fifty pounds each, and are located in the front portion of the frame. Electrical ignition is employed, while the cooling of the cylinders is effected by means of radial ribs. The motors are arranged to work independently of each other, so that when only one is needed, the other may be thrown out of gear entirely. The power is transmitted from the motorshaft to an intermediary shaft by means of a chain and sprocket wheels, and from the intermediary to the rear wheel axle by means of two light chains, working on chain wheels located centrally on the axle. Only one forward

mechanical speed is provided, any intermediary speed being obtainable by advancing or retarding the electrical ignition, and by varying the quality of the explosion mixture. Two reverse motions are provided, also chain driven, the speed and reverse gear being put in and out of action by means of small friction clutches. The frame is built of cast steel, the body being supported thereon by strong springs. The wheels are of the suspension type; they are all 30in. diameter, shod with 2 1/4 in. pneumatic tyres. The steering is effected by means of a bar, and a feature is that the vertical standard, instead of passing through the floor of the vehicle, is located in front of the dashboard, directly over the front wheel axle. The weight of the carriage complete is stated to be about 520 lbs., and the maximum speed twenty-five miles per hour.

### THE AUTOCARIST'S DIARY.

June 13th to July 3rd.—Paris autocar show at the Tuileries (Automobile Club de France).

June 16th.—Rehearsal of driving competitions (Automobile Club) at Richmond. 4 to 7 p.m.

June 17th to 24th.—The Automobile Club Show at Old Deer Park, Richmond.

June 23rd.—Show banquet Automobile Club of Great Britain.

July 3rd to 15th.—Autocar exhibition at Agricultural Hall, N. (Messrs. Cordingley and Co.)

July 3rd.—Spa-Brussels-Antwerp race.

July 16th to 24th.—The great Tour de France (2,350 kiloms).

July 29th to August 2nd.—Heavy vehicle trials, Liverpool.

Autocarists passing through Penrith can obtain petrol from Messrs. T. Altham and Son, cycle agents and ironmongers of that town.

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Motor cycles are to be placed in the same category as motor vehicles in Vienna, and can only be ridden under licenses, as in France and Germany.

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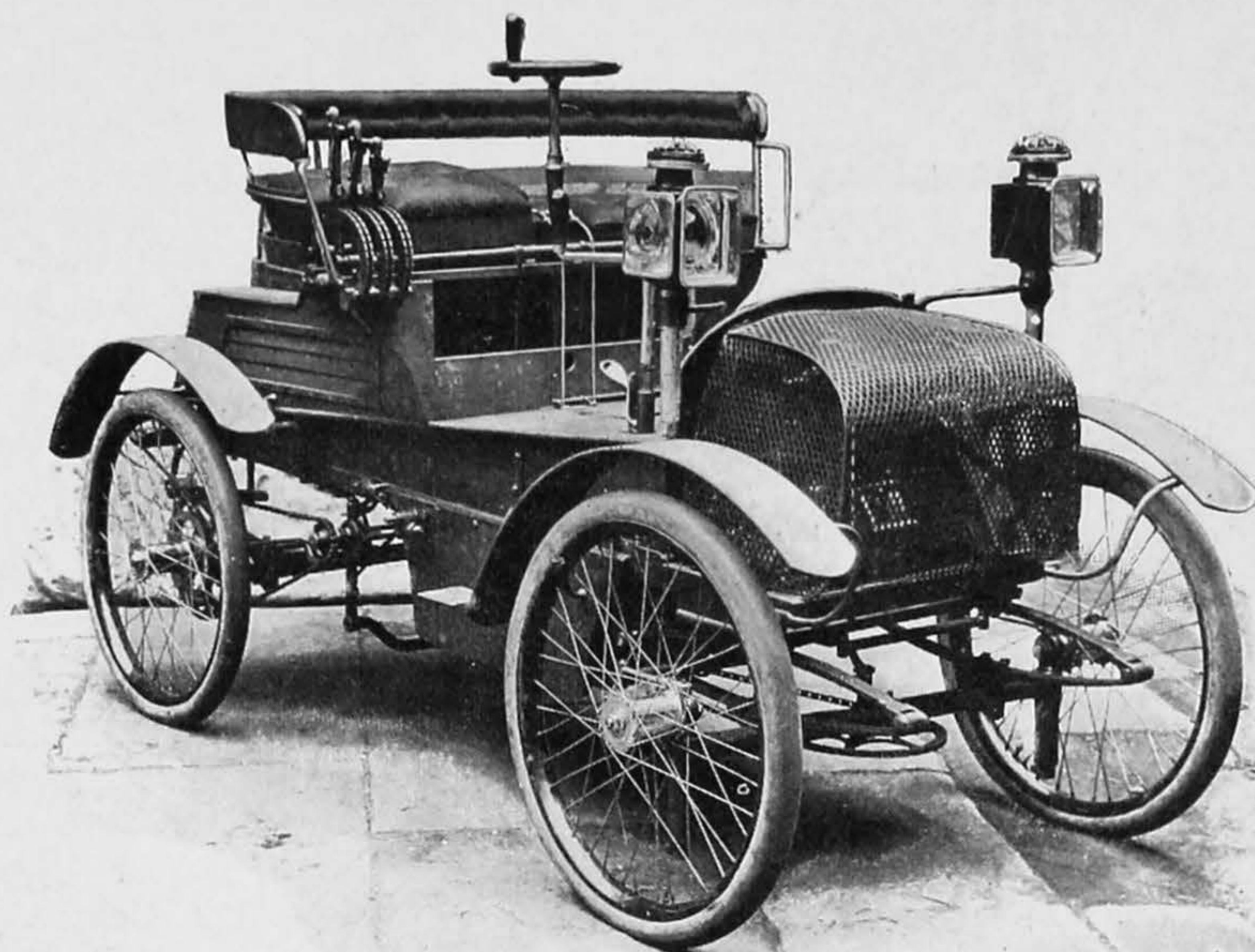
Messrs. Simpson, Strickland, and Co., engineers, of Teddington-on-Thames, keep a stock of petrol on their premises, from which autocarists can obtain supplies at any time.

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Mr. Fred. Cooper, of the firm of Messrs. Marriott and Cooper, cycle manufacturers, after a long course of land and water cycling, has turned to automobilism, and may now be frequently seen on the Surrey roads driving his Humber motor tricycle. The car, which was built three years ago at Coventry, has of late been vastly improved under the careful supervision of Mr. Walter Phillips, the manager of the Humber Co.'s Coventry works. The car is gear-driven by a two and a half horse-power motor, and just recently made a 110 miles trip with St. Alban's as a centre in a highly satisfactory manner. On an unfrequented stretch of give-and-take road the car ran two miles in 5m. 20s., and covered forty miles at a stretch in 2h. and 15m. Mr. Cooper is very pleased with his little motor car.



## THE JACKSON CAR.



Before now we have briefly referred to the Jackson doctor's car, which has been designed by Mr. Jackson, manager of the Yorkshire Motor Car Co., Ltd., of Albert Buildings, Bradford. The carriage is now completed, and will be on view at the Automobile Club Exhibition. It will be noticed that the wheels are strongly built on the tangent plan, and are fitted with 3in. pneumatic tyres. The frame is of channel steel, whilst the body is hung on laminated steel springs, so that the running of the car should be extremely comfortable. The body of the carriage can, of course, be of any design in reason, and the firm make a specialty of interchangeable bodies, so that two or more can be used at different times on the same carriage, and not only so, but at the sacrifice of some speed, the vehicle can be made suitable for use in the worst of weather by putting on a body with a thoroughly good protecting top. The makers tell us the car can also be used for light goods delivery, as it will carry up to five hundredweight, in addition to the driver. The motor is in the front, and is on the De Dion principle. The crank case, cylinders, etc., are hidden from view by a light perforated bonnet, which, while giving the car a finished appearance, stops the free circulation of the air to the motor as little as may be. A starting gear is fitted, so that the engine can be started without difficulty from the seat, a turn of the handle being sufficient to start. Three speeds are fitted, and the transmission is by belts, the driving belt at the moment being tensioned by a shifting jockey pulley. The three forward speeds are five, ten, and sixteen miles an hour. Our illustration shows a rear driver with two roller chains driven from a balance-geared countershaft on to each wheel. The car can be arranged to drive centrally. A band brake is fitted on the hub of each driving wheel, also a tyre brake, whilst in addition to this the braking action of the belts can be utilised if

the motor be stopped by cutting off ignition. Adjustable ball bearings are used almost throughout, and will be found to all the wheels, steering gear, countershaft and intermediate shaft, whilst even the jockey pulleys run on specially-designed ball bearings. The handles are well placed in convenient positions, the steering wheel being so fitted that in wet weather the driver can get his hands under the rug—a very considerable item so far as comfort is concerned.

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By this time next year the motor cycle and the motor car will be everywhere seen.—*Vanity Fair*.

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The same contemporary which made the ludicrous mistake over Charron's car also published a view of M. de Knyff taking a corner at Orleans during the progress of the Paris-Bordeaux race. It so happened that the competitors did not pass through Orleans at all.

\* \* \*

Last week a party of Norwich tourists started from the East Anglian cathedral city for Criccieth in North Wales. They hired a motor car from Yarmouth for the journey, and, as the weather was perfect, we have no doubt they had a most enjoyable drive.

\* \* \*

The Grapholine Manufacturing Co., of 195, Upper Thames Street, E.C., have long been known for their cycle chain lubricant, and they have now put on the market a somewhat heavier form of it under the title of "Pâte de Grapholine." This, they tell us, has already earned for itself a considerable reputation in France. Later on, when we have tested it personally, we may have something more to say on the matter.



## SNAP-SHOTS AT RICHMOND.



SCENES ON PETERSHAM HILL AND IN THE "STAR AND GARTER" YARD.

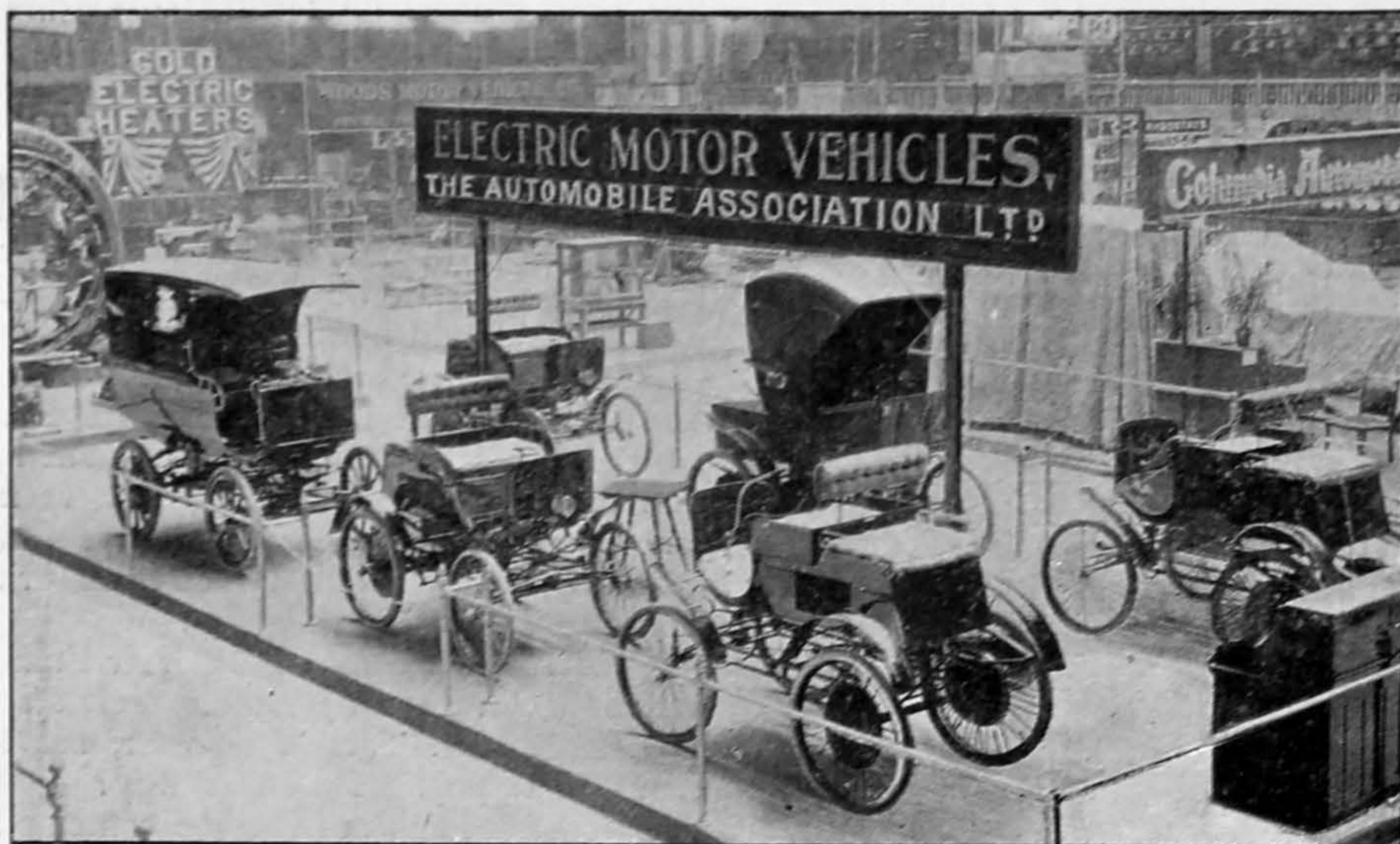
**THE NAPIER PETROLEUM SPIRIT MOTOR.**

Messrs. Napier and Co., engineers, of Vine Street, Lambeth, London, S.E., are introducing a new petroleum spirit motor specially arranged for use on motor vehicles. It is of the vertical twin-cylinder type, and, running at a speed of 780 revolutions per minute, is claimed to be capable of developing seven horsepower on the brake. The cylinders are 4in. in diameter by six inch stroke. The ignition is electrical, the sparking plug employed being of the ordinary form. Although not recommending tube ignition, the makers will fit this method when desired. The valves are arranged to be readily removed for cleaning purposes, etc., it only being necessary to withdraw them

to slacken two screws and remove one bolt. The cylinders are provided with a water-jacket for cooling purposes. A special device is provided for raising the compression valve when putting the motor in operation, which is effected by means of a crank handle. Ample provision is made for the lubrication of the working parts, while a centrifugal governor is provided controlling a hit and miss device, which cuts out one cylinder at a time. In connection with the motor Messrs. Napier have adopted the Longuemare carburetter, which, as is well known, is one of the most popular types in France. The weight of the motor complete with carburetter, water circulating pump, and fly-wheel is stated to be three hundred-weight.



## SOME SMART-LOOKING ELECTRO-MOBILES.



As we have already noted, the Automobile Association, Ltd., are importing the Waverley electric vehicles from America, and our illustration shows their Waverley stand in the Madison Square Exhibition of electric

vehicles in New York. It is hoped that a full range of these carriages will be exhibited at the Automobile Club Show.

## FRENCH JOTTINGS.

The week's fêtes in Paris which have followed upon the Grand Prix at Longchamp were inaugurated on Monday, appropriately enough, by an automobile tournament in the Tuileries Gardens. One could almost imagine, indeed, that we had dropped into the Middle Ages with the fair ladies gracing the stands along one side of the kilometre stretch which had been roped off in the avenue between the lines of trees. Down the other side the public were massed several deep, happy to find themselves protected from the sun, which shone down on the brilliant scene. From the venetian masts many coloured flags fluttered, and the stands were radiant with crimson and gold. Arrangements were first of all made for a tilting game, a number of buckets full of confetti being slung on a horizontal pole. The knights in the form of motor cyclists went valiantly at the buckets with their lances. Those who struck the bucket and got away from the falling confetti were rewarded with applause, while others who missed or got the confetti on their heads were received with laughter. Then the motor cyclists and drivers of Decauville and Benz light carriages tilted at rings, which they had to carry off on their lances, and afterwards pick up handkerchiefs from the ground, which performance is apparently not so easy as it seems when you have to keep an eye on the steering wheel at the same time. Each car was decorated in special colours, and the driver had to pick up handkerchiefs and tilt at rings of his own particular hue, so that the effect was very picturesque. M. Jenatzy gave an exhibition ride on the famous *Jamais Contente*, and a very amusing "number" was the obstacle race, in which the chauffeurs had to steer in and out of the iron figures used by the *Compagnie Générale des Voitures* at its training school for the drivers of electric cabs. These figures were placed

all over the track, and the public were given ocular demonstration of the way in which an automobile can be driven. M. Paul Meyan on a Panhard car, M. Archdeacon, Count de la Vallette, and others went through some very smart performances, and M. Krieger astonished the spectators by the way in which he drove his electric cab backwards through the obstacles. Another event was the driving of *voiturettes* by children, one young lady creating a very pretty effect by letting loose a number of doves from her decorated car, and then came the battle of flowers with the parade of automobiles. The fête terminated with the releasing of several balloons by the Aero Club, an off-shoot of the A.C.F., which expects that in course of time the petroleum motor will do for the balloon what it has already done for the road carriage. In every way the automobile fête was a big success, and it will no doubt be the precursor of many others.

It has been a very moot question whether the Automobile Club would be allowed to open its doors for some time, though no one supposed that the Government would make the dissolution of the club a permanent thing. At one moment the outlook appeared very dubious when the *Chambre Syndicale de l'Automobile*, apparently in defiance of the Government, re-elected Count de Dion as president of that body. The *Chambre Syndicale* has nothing to do with the Automobile Club, but it seemed scarcely probable that the Government would make any distinction. Happily, as the result of an interview of Baron de Zuylen with M. Charles Dupuy, when he explained to the President of the Council the exact objects of the Automobile Club, the seals which for a week past had been fixed to the doors of the club were removed,



and on Monday the A.C.F. was officially informed that it could once more take possession of its premises. The Government made some amends for its arbitrary action none too soon, for on the same afternoon the Dupuy Cabinet fell.

The proposed match between Charron and Mr. Winton appears to have fallen to the ground. The American's challenge was so clear that it did not seem possible to get away from it. He offered to race any Frenchman on American roads for from 20,000 to 100,000 francs. Charron clinched with the latter figure. Mr. Winton made a pretence of covering the deposit paid by Charron. Then he reflected that he was not ready, and wanted the match postponed until the autumn. Charron agreed. Mr. Winton was obviously getting uneasy at the readiness of the French crack to meet him, and now he declines to race for any stake at all on the ground that it would bring down a friendly contest to the degrading level of professionalism. Mr. Winton must have curious ideas of the influence of professionalism on autocar racing, for every racing chauffeur in France is to some extent a professional, and I have yet to learn that this wealthy and thoroughly sporting class of autocar owners have been degraded by racing for money prizes.

## Correspondence.

### AUTOMOBILISM AND DRESS.

[790.]—It seems to me that the future of automobilism in this country will depend in great measure on the impression created on the public mind by the forthcoming show at Richmond.

Automobilism is essentially a rich man's sport, and the prosperity of the industry depends on the favour of the leaders of society.

Appearances in this, as in most things, go a long way, and it must be confessed that hitherto the votaries of the mechanical carriage have, by carelessness of attire and by neglect of smartness in the turnout of their vehicles, done much to alienate those, especially of the fair sex, who admire a smart and attractive turnout.

I believe an intimation has already been issued to the members of the Automobile Club recommending that at Richmond next week they should discard for once the utility garments of automobilism and don the conventional frock coat and silk hat of the West End, and turn out their cars as smartly as possible.

In the same way, you, sir, by spreading a similar recommendation among your many automobile readers may do the movement an immense service, and induce the general body of motor men who will congregate at Richmond to uphold the credit of automobilism by turning themselves and their cars out as smartly as possible, and adding to the attraction of the vehicles by fair occupants decked out in all the most charming triumphs of the Ascot week.

In parenthesis I would venture to whisper that the yachting cap of the earlier motor men should be relegated to the professional driver.

COMME IL FAUT.

### AUTOCAR DESIGNS.

[791.]—Permit me to make a few remarks on this head, chiefly on the text of Mr. Turrell's very promising-looking car.

Wheel steering has doubtless some advantages over tiller steering, but the upright pillar is sadly in the way of a knee rug. I think it would be an improvement if the steering axis raked backwards, exactly like that of a bicycle, and had a similar handle-bar. Not only would it be out of the way of wraps, but the handle would be familiar to the cyclist, when he blossoms out into an autocarman, and an anti-vibration device might be used, since the handle of an autocar is neither leant upon nor pulled against, like that of a cycle. If, further, it were made to be turned over forwards, it would give more room for mounting, and, on being turned back for use, it might rest upon an adjustable spring.

I observe that some of the later French cars, *e.g.*, the Mors, on page 470, place their steerage on the right side. Mr. Turrell, however, has followed the Continental plan. I wonder why?

I am pleased to see that he contemplates starting his car from the seat. It has been a matter of amazement to me that, so far as I know, only one make of car has this most obvious convenience. Imagine a hay-motor which would only start on the driver dismounting and hauling it along by the head for several yards.

The position of the oil-tank to which you take exception seems to me rather a good feature, since it apparently gives the seated driver control over the lubrication, a point, I venture to think, somewhat neglected.

For instance, in my car, which is supplied with sight-feed lubricators, I find that they require frequent filling on a continuous journey, while on a stopping one, as when shopping, one has to let the oil waste, or turn them off every time, with the possibility of forgetting to turn them on when starting. In any case, the oil runs at the same rate, whatever the speed of the engine may be.

It seems to me that, where possible, an oil-bath should be used, and that elsewhere a pump should be fitted, thus ensuring ample lubrication and proportional to the requirements.

I would suggest to Mr. Turrell that he bring his seat more forward, and provide it with a good back and arms, the latter chiefly for the passenger's sake (*vide* Mr. Hope's experiences, page 390, second column), and that he provide a light detachable "dickey" behind, as sometimes it might be convenient and possible to take a third person, and it is much better for all to face forward, or some luggage.

It is an advantage, too, if it can be done without causing a rattle, to mount the front mudguards so that they will move with the wheel.

I wonder that makers, instead of slavishly keeping to the upright dashboards of the horse vehicle (one make of car actually has the rein's guide as well), which give such a sawed-off and incomplete appearance to many autocars, do not copy the far more graceful and efficient windguard of the Russian sledge.

Doubtless this will come in time; indeed, one may see a tendency that way in the sloping board of the Mors on page 470.



Finally, I should like to suggest that it would be a convenience if, in photographs of motors, a clearly-marked foot rule were included, so that the dimensions of the subject might be seen at a glance, and that it is a great mistake to use a short-focus lens for this purpose, especially if the subject is otherwise than broadside on, since it gives false ideas of proportion.

Observe, for example the absurd perspective in the two views of Mr. Turrell's car on page 276, especially fig. 4, in which it looks about ten feet long. [These photographs were only rough "shop" ones; they were not taken by *The Autocar* photographers. —ED.]

#### JANUS.

P.S.—I should be glad to hear some practical experiences of the Pennington car, of which there ought to be a good number on the road by this time, especially as to its running downhill (remembering what tricks a rear-steering tricycle used to play), and the accessibility of the engine for cleaning and repairs.

#### BRITISH MOTOR MATTERS.

[792.]—I notice that in the advertisement of the British Motor Company they advertise Gaste as having ridden a motor (of which they are the agents) in the Paris-Bordeaux race. Will you kindly note that Gaste rode a Gaillardet motor tricycle, and for fear of further mistake on their part I would also point out to you that the winning tricycle in the race from Brussels to Antwerp was also a Gaillardet.

Before leaving the question of the British Motor Co., Ltd., I would like to refer to their remarkable letter, of which you give a copy, sir, in your issue of the 27th May, page 449. They refer to valuable patents. What are these patents? Let the public and the trade generally know what they are. Do not let us have a replica of some of the marvellous patents claimed in the "cycle" and "tyre" trade, but let there be a strict understanding from the very start, and if these be valuable, they can be at once admitted as such. If they be valueless or questionable, then I for one shall be amongst the first to show fight.

Let the British Motor Co. give a list of these valuable patents.

Is one the "trembler"? I know half a dozen tricycle manufacturers that use the "trembler." I had one on a tricycle before the machine they sell existed in England. Is it the "four pillars"? The Hiller tricycles have the same with two pillars. And, in fact, their utility at all is too questionable to be called valuable. And there is many an old gas engine that was so made.

What then are they—the explosion chamber, the "igniter," "the radiators"—what are they?

I see nothing on this particular motor that is not used by individual other makers, either partly or combined, but I for one desire to be enlightened, and trust to receive information.

Why even the name of the motor, if manufactured by a particular firm, can be made public property where there are no patents. There is surely no law to forbid the telling of the truth. Then why is £5 to be paid for what? Let us have a list of the patents.

It is far preferable, sir, for the benefit of the trade and public, that innocent individuals such as myself should be enlightened on such points as these, as soon as they are claimed, that a proper footing can always be maintained as to the position of the trade at large.

It would be a pity to see any bogus patents held up to frighten the rest of the trade, particularly small manufacturers, or for the purpose of imposing on the public by the flotation of companies on the public belief in such patents.

I trust, however, that my last paragraph will not be taken as in reference to the company I refer to, which I believe to be in every way an honourable firm. My remark is purely general.

But, as regards my queries. I require them purely and in all innocence as an ordinary individual having the interests of the motor trade at heart, and I trust the British Motor Co. will, therefore, kindly reply by a list of their claims with reference to the particular motor on this tricycle.

I have been told by a certain well-known baronet, and by one of the first engineers of motors in France, that there are no master patents valid which are necessities to a motor, but I fear in the face of the letter signed by Mr. Jarrott that, notwithstanding the well-known ability and knowledge of such authorities, they must be mistaken, and, therefore, the information of these patents will come as all the more useful when such authorities are at fault.

Awaiting the favour of the reply from the able secretary of the British Motor Co.,

D. M. WEIGEL.

[793.]—In what respect does the British Motor Co. resemble the British nation? Answer—Both have quietly submitted in dignified silence to the pin-pricks, but when it comes to infringing on their rights both are instantly up in arms.

Now, in fairness to the much-maligned British Motor Co., I fail to see how the importers of De Dion motors can hope to obtain support, either morally or legally, against the payment of the stipulated royalty, seeing that the B.M.Co. have paid large sums for their patent rights in this system. Again, from another point of view. How are the public to know that they are being supplied with the genuine article? The affixing of the B.M.Co.'s plate appears to me to be an excellent security in this respect, and certainly the expenditure of £5 for this protection cannot be considered extravagant, even if the firm had paid nothing for its patent rights. In selecting a machine "the man in the street" would see at a glance the B.M.Co.'s guarantee, whereas, without this, it would take an expert, or, at any rate, a person well versed in motor details, to detect the difference between a genuine article and the reverse. At any rate, personally (and I know as much about motors as the generality of the public), from a business or economical point of view, should I decide upon going in for a motor cycle, and knowing as I do that the merits of the De Dion motor are being generally recognised, I would willingly pay £5 to an expert (in whom I had confidence) for assistance in enabling me to secure the right article, rather than accept the gratuitous advice of any Dick, Tom, or Harry.

FAIRPLAY.



## M. WEIGEL'S CHALLENGE.

[794.]—With further reference to my match with Mr. Wridgway, and in reply to his letter, I beg to state I am prepared to ride him under any rules he desires; it is quite immaterial to me. The only rule that I understand is, start together, and the one covering the greater distance wins. Fair play, I think, we can both reckon on, as it is not the first time Mr. Wridgway and I have met. The Jockey Club's rules would be as acceptable to me as anyone else's. I am a rank anarchist as regards rules for two gentlemen racing, and think a match can be arranged without the interference of any absurd governing body. However, any way he pleases, so long as we meet and have some fun in recompense for all the writing.

D. M. WEIGEL.

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*Flashes.*

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Petrol is kept in stock by Mr. R. W. Robinson, of York Road, West Hartlepool, who is also prepared to undertake repairs of all kinds.

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Mr. R. A. Marples, of 74, Rye Hill, Newcastle-on-Tyne, will be pleased to assist autocarists who may be passing through his neighbourhood. He also stocks Carless, Capel, and Co.'s petrol, which he will supply at cost to any who may be in need of it.

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In our description of the behaviour of the Coulthard boiler last week, we referred to the time taken to raise 200 lbs. pressure of steam in such a way that it might appear that this operation took forty minutes. To make the matter perfectly clear, we may say that 200 lbs. was got up in our presence in 25m.

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A good illustrated catalogue and price list has been issued by the London Autocar Co., Ltd., of 182, Gray's Inn Road, W.C. Among the machines detailed will be found the "Beatrice" motor victoria, Panhard and Daimler *char-à-bancs*, waggonettes, vans, etc., the latest pattern Bollée voiturette, the L.A.C. motor tandem, De Dion quads, and tricycles of various types, and last, but not least, the "Hurtu" car, which is now built entirely in this country, and shows every promise of turning out to be a thoroughly successful and practical vehicle. In addition to these, launch motors and classified accessories are detailed, and go to make the list a very complete and interesting one.

\* \* \*

Mr. Joseph Lisle was summoned at Wolverhampton for driving a motor car at a faster rate than the twelve miles an hour allowed. A butcher said that he and his daughter were driving down Stafford Road when defendant and his motor car passed at the rate of twenty miles an hour. The horse was frightened, and overturned the trap. This having been corroborated by a P.C., a fine of 40s. and costs was inflicted, with the remark that the Bench did not wish to discourage in any way the motor car industry in Wolverhampton, but the drivers of such vehicles must conform to the law.

**1899 HEAVY VEHICLE TRIALS AT LIVERPOOL.**

Mr. E. Shrapnell Smith, the hon. sec. of the Liverpool Self-propelled Traffic Association, tells us that there is a strong possibility that some further entries may be accepted from America, though whether this is so or not there will be a larger number of vehicles taking part in this year's competitions than last, probably not less than eight, of which two or more will carry loads of five tons and upwards.

With regard to the arrangements for the trials, the following rough details will no doubt be of interest:

FRIDAY, JULY 28TH.—Vehicles arrive at the showyard of the Royal Lancashire Agricultural Society, Wavertree Re-creation Ground, Smithdown Road, Liverpool. Inspection by the judges at 3 p.m., and preliminary records by observers.

SATURDAY, JULY 29TH.—Completion of observers' records of weights, capacities, dimensions, etc.

MONDAY, JULY 31ST.—The vehicles will leave the showyard about 10.30 a.m., for the manoeuvring, hill-climbing, and other special tests, which, it is expected, will last until about five o'clock.

TUESDAY, AUGUST 1ST.—Run of about thirty-five miles, starting from the showyard at 10 a.m., chiefly over route A of last year.

WEDNESDAY, AUGUST 2ND.—Second run of about thirty-five miles, starting from the showyard at 10 a.m., chiefly over route B of last year.

What may be termed the trials proper will occupy Monday, Tuesday, and Wednesday, July 31st to August 2nd inclusive, upon which days light motor carriages will be provided, at fixed charges, to carry visitors who desire to witness the behaviour of the competing vehicles upon the road.

It is particularly requested that all intending visitors will at once put themselves into communication with the honorary secretary, L.S.P.T.A., Mr. E. Shrapnell Smith, Royal Institution, Liverpool, so that they may be entered on the list of those to receive notices. During the continuance of the trials, the headquarters of the association will be at the Adelphia Hotel, Liverpool, where rooms should be engaged in advance. It is expected that the Post Office, the War Office, and all bodies who were represented last year will send delegates again, in addition to which numerous county, municipal, and other authorities have notified their intention of visiting the competition.

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Our active representatives in Australia, Messrs. Phillips, Ormonde, and Co., desire to thank several of our advertisers for the information recently supplied in reply to an enquiry for a motor car. They tell us that our advertisements have been of material assistance to them in their efforts to introduce the vehicles in Australia.

\* \* \*

"M. Tenabzy" is reported by the daily press to be in the habit of running his electrically-driven torpedo-shaped motor car along quiet country roads in France at the rate of sixty-five miles an hour. At a recent pace exhibition it is stated that he "tore up and down the avenue like a shell from a cannon, and the crowd looked on in astonishment." "M. Jenatzy" must really look to his laurels—that is, if he gets convinced of another Richmond in the field on plucking intent.



# AUTOMOBILE CLUB SHOW.

Hill-climbing Trials. Long-distance Electric Trials. Long-distance Petrol Trials.  
Long-distance Heavy Trials and Speed Trials.



THE LANCHESTER CAR APPROACHING THE TOP OF PETERSHAM HILL. JUDGE SIGNALLING TO TIMEKEEPER THAT THE CLIMB IS COMPLETED.

The above trials of autocars and motor waggons were held at the end of last and the commencement of this week, beginning with the hill-climbing trials on Petersham Hill on Friday, the 9th inst. It will be remembered that in our issue of 20th May we published a section of the hill in question, giving all the changes of gradient to a good scale, and now that the hill trials are completed it will be interesting to turn once more to this profile and consider it in relation to the performances of the cars as they will be found outlined in our account and fully given in the judges' reports. It speaks well for the improvements in the design and construction of the autocars of to-day that all save one of the cars put at the hill were successful in mounting it, and also passed through the stopping down hill and stopping and starting up hill tests with more or less success. With regard to the exception just mentioned, and when referring to the competing vehicles as up-to-date cars, it should be said that "the car that failed" was a three-year old Benz Ideal belonging to Mr. Beevor, a member of the club, who had entered purely from a sporting point of view. The yard of the Star and Garter Hotel, which crowns

the steep, presented an unwonted aspect by about 10.30 on Friday morning. On high days and holidays, as a rule, it is remarkable for the presence of drags, phaetons, and carriages of the horse-drawn pattern, so that crammed with nearly two score of horseless vehicles, including the two huge bright red G.P.O. Daimler vans which had returned from Coventry with sundry others, and were now acting as tenders to their lighter stable companions engaged in the trials, it presented a strange contrast to its usual aspect. So far as surface went the hill was in better condition than we ever remember to have seen it, and it stood the severe treatment it was subjected to remarkably well. Quite a force of police were present to assist, and each officer from the inspector downwards took a highly intelligent interest in the proceedings. The weather was all that could be desired, bright sunshine tempered with a light breeze from the north-east. Before mid-day a large crowd of spectators gathered on the slope, and we fancy the performances of the cars in the three evolutions they were called upon to perform sent the majority of the onlookers away with a higher notion of motor cars



and their capabilities on steep grades than they ever possessed before.

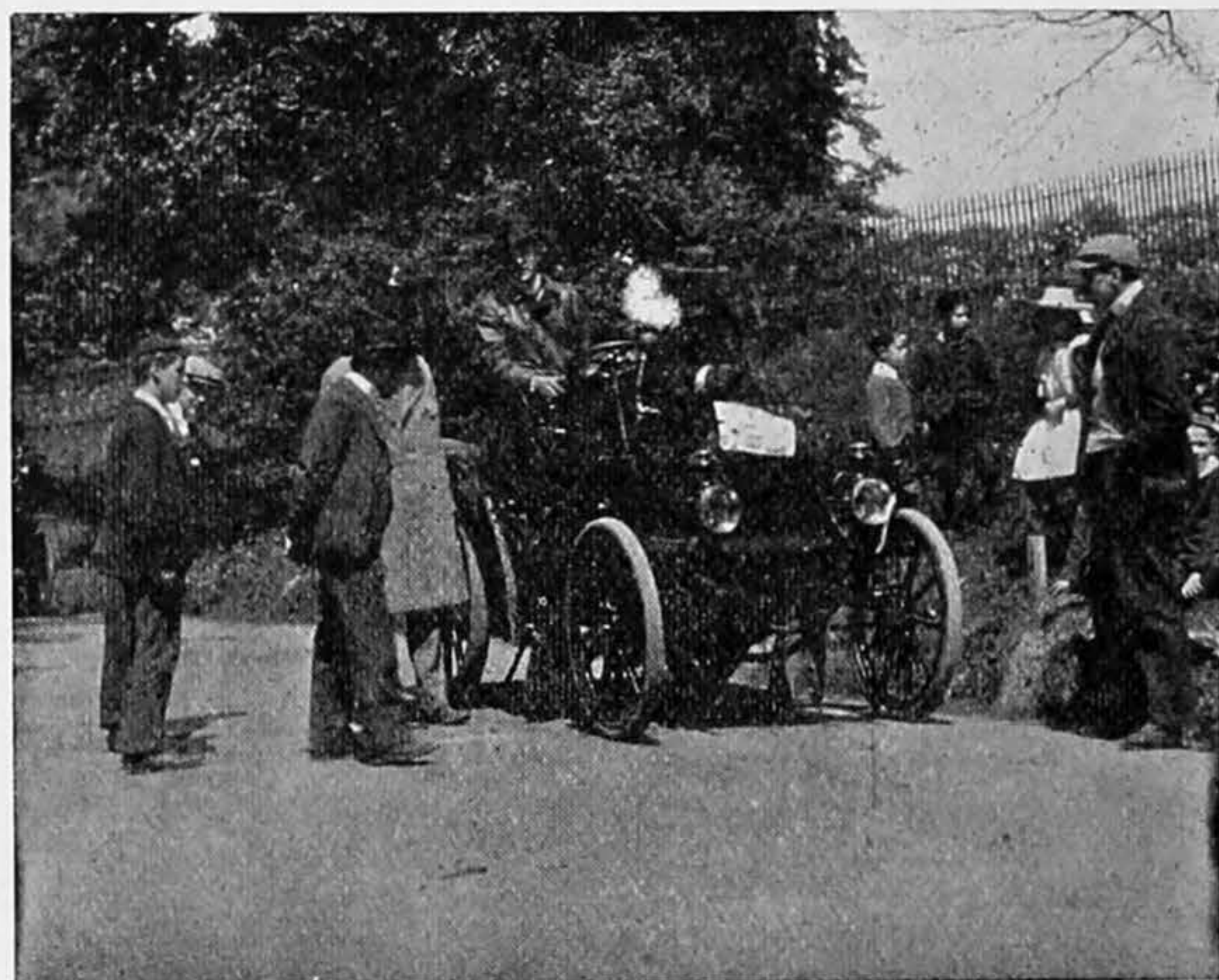
Before operations were commenced, quite a crowd of well-known English autocarists had put in an appearance. Sir David Salomons, J.P., A.M.I.C.E., drove down in his tasteful Peugeot phaeton, conveying Major Holden, R.A., F.R.S., the inventor of the best motor bicycle yet produced. The judges for the whole series of trials were Professor C. Vernon Boys, F.R.S., Mr. W. Worby Beaumont, M.Inst.C.E., M.I.Mech.E., Mr. Dugald Clerk, Assoc.M.Inst.C.E., Mr. Bryan Donkin, M.Inst.C.E., M.I.Mech.E., Professor Hele-Shaw, LL.D., M.Inst.C.E., M.I.Mech.E., Major Holden, R.A.,



THE HEWETSON BENZ NO. 1 AT THE TOP OF THE HILL.

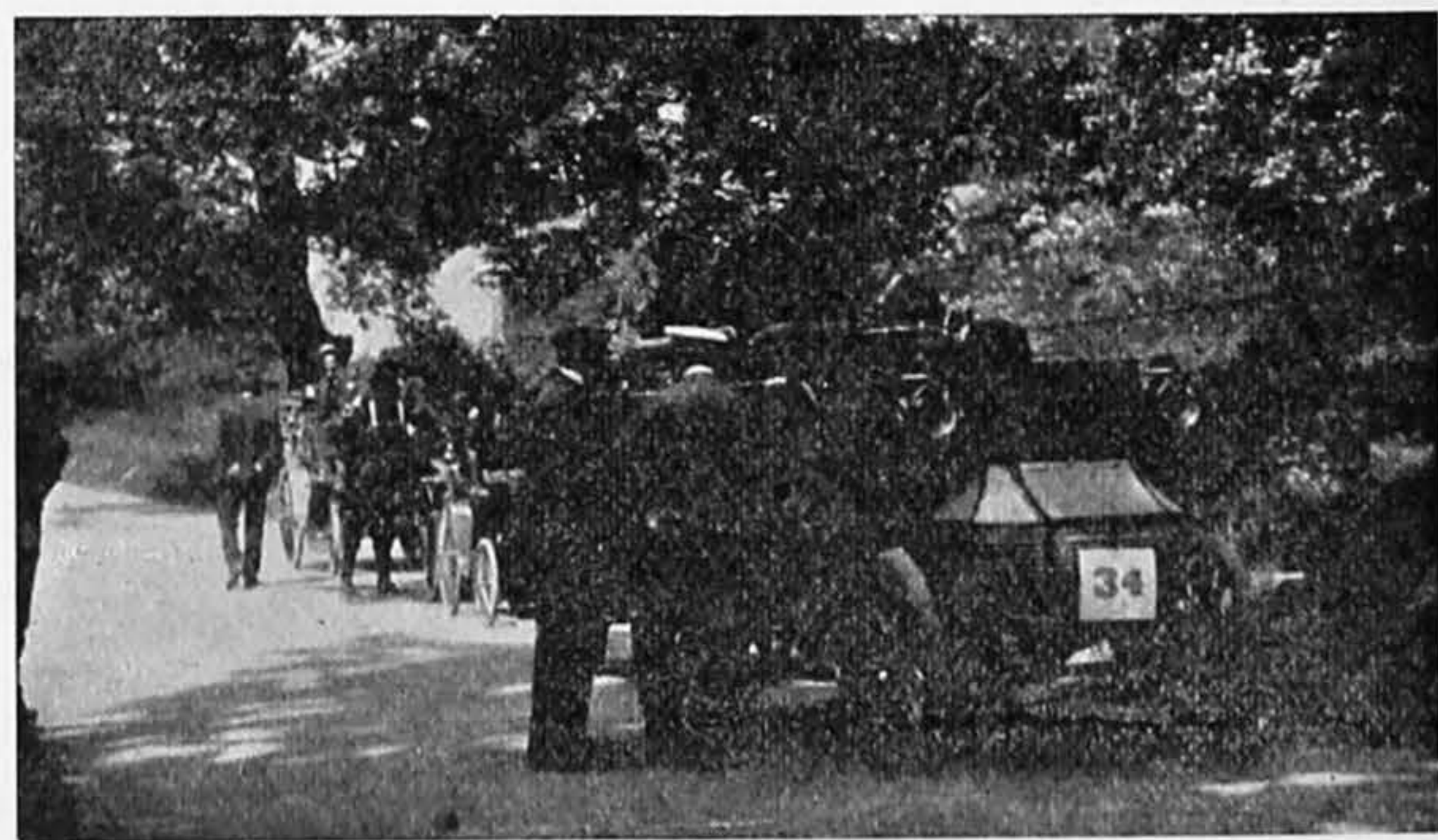
F.R.S., Sir W. H. Preece, C.B., F.R.S., Pres.Inst.C.E., Mr. Boverton Redwood, F.R.S.E., Assoc.M.Inst.C.E., Sir David Salomons, Bart., J.P., Assoc.M.Inst.C.E., and Mr. James Swinburne, M.Inst.C.E., M.I.Mech.E.; secretary to the judges, Mr. C. Johnson, and assistant secretary, Mr. Basil H. Joy. All put in an appearance at Petersham with the exception of Mr. Dugald Clerk, Sir W. H. Preece, and Mr. Jas. Swinburne, who officiated on one or more of the following days. About an hour after that advertised for starting, the first car was despatched down the hill, a considerable period having been taken in checking the cars and registering their weights. The length of the run up hill for the climbing test was about 325 yards, the lift in that distance being eighty-three feet, or one in 11.75 nearly. The grades ran, however, between one in 9.49 immediately at the start to one in 15.7 in the centre of the ascent, sharpening again to one in

9.53 at the top of the course. The method adopted was as follows: The cars ran to the bottom of the hill beyond the Dysart Arms, turned and proceeded to within twenty yards of the judges' station at the foot of the hill, where they stopped. On a signal from the official the cars started at best speed for the climbing trial, and were clocked on passing the lower judges' and again on passing the upper judges' stations. The



THE HON. C. S. ROLLS ON PETERSHAM HILL.

cars then continued to the summit, where they turned and descended the hill again at not less than twelve miles per hour, until a whistle was sounded by one of several observers posted at regular intervals. The driver then arrested the progress of his car to the best of his and its ability, and the distance from the whistling observer to the point at which the car came to rest was forthwith carefully measured and recorded. By timing the car between two given points in its descent, its rate of speed was also noted, and this compared with the stopping length will be taken into consideration by the judges in making their report on each car's performance. On climbing the hill for the second time the cars were caused to stop at a red flag posted on the one in 9.53 grade, and restarted, which was to test the restarting power of the car. The Orient, a four-wheeled vehicle driven by a three and



THE DUCROISET HERCULES CAR (AUTOMOBILE ASSOCIATION).

a half horse-power motor, and entered by the Automobile Association, opened the ball. It mounted the hill in good style, but ran a considerable distance after the whistle sounded, and was followed at short intervals by a Hewetson Benz dogcart, eight horse-power two-cylinder motor, carrying driver and three passengers. Next came an electric car run by the



Electrical Undertakings Co., which, so far as we were able to judge without the official times before us, appeared to make the fastest passage up the hill, although its stopping distance was somewhat lengthy. It was, however, running fast when the whistle sounded. Another electrical car quickly followed, viz., the Mackenzie Carriage Co.'s hooded phaeton, a very tasteful-looking vehicle, but in rate of ascension it did not compare with that mentioned above, although its performance was creditable upon the whole, and its stopping distance about the same. A



AN OFFICIAL GROUP.

Rougemont waggonette (Daimler Co.) made a comparatively slow, but very steady and uniform, ascent, and was held up on the whistle in about fifteen yards when travelling at good speed on the steep down grade. The unique Lanchester, the internals of which are as yet a secret, though the motor is described in our patents columns to-day, made a smart climb, but owing to its driver slashing down hill at about eighteen to the hour he ran a considerable distance with his brakes asqueal after the signal to stop. The Delahaye four-wheel phaeton should come out near the top for time of climb and smartness in pulling up, although we imagine the Hon. C. S. Rolls with his dark chocolate Panhard, which, by the way, ought to be called the Chameleon, may be found to rival, if he does not indeed better, the Delahaye's climbing time. In pulling up, however, the demon car was not quite so spry. Amongst the larger vehicles the Iveagh phaeton, accommodating five persons, made a good steady climb, and was pulled up when running down in about twenty yards. For pure speed up hill the Barrière tricycle certainly took the palm, for it appeared to tear up, and was also well under control when the order came to use the brake. A commendable run up and stop was made by the Daimler Co.'s Siamese phaeton, and we fully expect to find this fine car well spoken of in the report. The Motor Carriage Supply Co.'s convertible waggonette, although a taking-looking car, seemed a bit sluggish at the climb, and ran a considerable distance, descending again before the vehicle was brought to rest after the signal. A Benz No. 1, fitted with a three horse-power motor, travelled well on the

up-grade, and stopped when desired in a creditable manner. An International motor car, with a four and a half horse-power English-built Benz-type motor, did very well, both up and down, as did the English-built Hurtu, by Marshall and Sons, of Manchester, so far as running up was concerned. Its stop, however, was not so satisfactory, and in the stop and start test on the hill there was also trouble. A Vallée car, entered by the Automobile Association, ran up well, and for climbing speed should be near the top of the list, but it seemed to want a lot of stopping on the down-hill test. Dr. Lehweß, with the Automobile Association's small Mors car, climbed well, but in stopping his want of acquaintance with this particular car did not do it justice, and upon a second trial the care with which he descended rather discounted an improved result. The Lynx, a neat car propelled by a two-cylinder Benz-type motor, and entered by the Automobile Association, did well on the hill, and fairly on the stop. The Hercules, a big car driven by Mr. Atkins, came up very steadily, but ran very freely on the whistle. Being allowed a second turn, however, the stop was improved by about twenty-five yards. The Tourist, a sociable cycle three-wheel car on Bollée lines, mounted the slope fairly, but made the longest run of anything entered after the stopping signal, the car only being finally arrested by the driver putting his hand on the off leading wheel. The brake was said to be out of order. With regard to the stop and start tests on the hill all but two cars, the Hurtu and the Cannstadt Daimler, stopped and moved on again without difficulty, but it is impossible to say how these results will be tabulated, as the awards therefor depend entirely upon the judges' personal opinion. After nearly all the cars had left, a Mors waggonette turned up directly from Paris, and was put through the series of tests by Messrs. Johnson, Redwood, jun., and Harry J. Swindley, and performed all three in a very creditable



SIR DAVID SALOMONS AND PROFESSOR BOVERTON REDWOOD.

manner. Whether this car will be considered by the judges or not we cannot say. With regard to the hill-climbing trials as a whole, we have no hesitation in asserting their entire success. The difficulties in handling them, and they were not few, were most successfully overcome, and the Automobile Club may congratulate themselves upon the work of their officials.



The climbing tests were timed by Harry J. Swindley (*The Autocar*) and Mr. A. J. Donne clocked for the speed of the descents.

### The Efficiency Trials for Electric Automobiles.

Saturday was the day appointed for the distance trials for electromobiles, and a most convenient point of starting was selected on the L. and S.W.R. goods yard at Richmond, which communicated direct with the premises of the local charging station. The car to first put in an appearance was No. 10, of the Electrical Undertakings Co., 12, Miller Street, Camden Town, four-wheel buggy, fitted with Henry



THE ELECTROMOBILE OF THE ELECTRICAL UNDERTAKINGS CO.

Leiter accumulators. The batteries will give, roughly, one hundred and twenty ampère hours, and are very light, weighing only five hundredweight. The car is handled entirely by means of controller lever at right-hand side, is fitted with electric brakes (Leiter's patent), and when the car is running down hill, the controller transforms motors into dynamos, which charge back into batteries. The driving is effected by spur and pinion gear, the internally-toothed spur wheel engaging directly with the pinion on motor-shaft. The spur wheel is bolted to spokes of driving wheels. There are two motors, each driving one driving wheel independently. The weight of the car is fourteen hundredweight, and on an average road a full charge is sufficient to propel the car seventy miles. An emergency brake is fitted to be applied by the foot from the footboard. The car is speeded up to twenty-seven miles, if required.

No. 14, of the Mackenzie Carriage Co., Walnut Tree Walk, Kennington Road, S.E., which was also early on the ground, was a mail phaeton fitted with batteries on the Riker system. The car weighs complete eighteen and three-quarter hundredweight, and is speeded to three, six, and twelve miles per hour forward, and two and five backwards. The wheels are shod with Hartford pneumatic single-tube tyres. The body is mounted on a flexible tubular frame, the flexion being obtained by joints so arranged that wheels can mount obstacles independently.

After a considerable time had elapsed, and any hope of more starters turning up had been abandoned, the cars were run down to the weighbridge, and officially scaled, and a judge's observer ensconced in each, and at 11.40 the judges gave the word to

the Undertakings car (No. 10) to go, and it at once glided away from the L.S.W. goods yard, followed five minutes later by the Mackenzie car (No. 14). This car we decided to follow, and it was not a matter of ease at the commencement, as Richmond was full of traffic in connection with the horse show, and several stoppages had to be made before we struck the Petersham Road. Along here a nice even speed of ten or twelve miles an hour was kept up, and Richmond was soon left behind, the car running very steadily and well. Good progress was made between Thames Ditton and Esher, and at the Bear Hotel the road for Leatherhead was taken. On this road one or two steep little slopes were encountered, and, although the Mackenzie took them somewhat slowly, it went up exceedingly well, and with great smoothness. At Leatherhead the road for Ashted was taken, and the return journey commenced, as half the distance had been covered. The dust between Esher and this point had become almost unbearable. This was largely due to the manœuvres of a couple of Daimlers. The drivers of these machines evidently meant to see all they could of the progress of the trials, and every now and then they would rush by the Mackenzie, and disappear in a perfect sirocco of dust. Then, having ascertained the whereabouts of the leading car, they would stop till overtaken, and recommence their objectionable operations. What with the deep dust, and the beating of their exhaust on the ground, the clouds they raised were positively a nuisance, and once or twice we were compelled to come almost to a standstill, as we could not see where we were till the dust had somewhat settled. Steady progress was maintained through Epsom and Ewell. Maldon Station had been left behind, and at the foot of Norbiton Hill the batteries ran out. It was only calculated that they would stand a drive of twenty miles, but, as they lasted for twenty-six, they, at any rate, performed more than they were expected to do. We then headed off the Undertakings



THE MACKENZIE ELECTRIC CAR.

car, which completed the journey in 3h. 26m. from the start, its cyclometer registering thirty-six miles, though the official course as given in the club road book made the distance thirty, and, so far as we have been able to ascertain, the actual distance is 33½ miles. However that may be, the performance





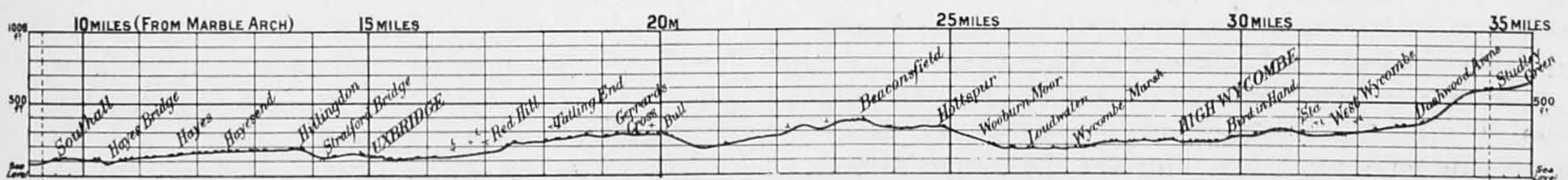
A DAIMLER WAGGONETTE AT THE SUMMIT OF THE HILL.

of the Undertakings car was good, and up to the point at which the batteries ran out the other car undoubtedly performed well over a road that was by no means an easy one.

### The Fifty Miles Efficiency Tests.

On Monday what was perhaps the most interesting and important of the series of trials took place. This was the fifty miles efficiency tests of all classes of cars under thirty hundredweight. The starting point was the Red Lion Hotel, Southall, which hostelry is very well suited for such a gathering by reason, not only of the width of the roadway in front of it, but on account of the spacious coachyard or quadrangle opposite, and here the cars foregathered by 10 a.m. under a cloudless sky and a burning sun. The route—the profile of which was given in our issue of May 20th, and which we reproduce on a smaller scale—was through Hillingdon, Uxbridge, Red Hill, Gerrard's Cross, Beaconsfield, High Wycombe, West Wycombe, and up the steep hill by the Dashwood Arms and Studley Green just short of Stokenchurch, where the cars turned, and came back over the same route to Southall. On arrival, we found the officials hard at work getting the cars weighed, properly filled

up with water and petrol, and the contents of their reservoirs checked, the judges who were present and engaged on this work being Sir David Salomons, Major Holden, and Messrs. Beaumont and Boverton Redwood, assisted by Messrs. R. E. Phillips and Shrapnell Smith, the former of these gentlemen, with Mr. Harry J. Swindley, being responsible for the timing arrangements for the day. Each car was accompanied by an observer, the gentlemen serving in this capacity being as follows: *Judges' Observers*—Dr. J. J. Acworth, Messrs. B. Blount, H. Percy Boulnois, M.Inst.C.E., R. W. Buttemer, C. Crompton, H. Estcourt, Druitt Halpin, M.I.Mech.E., Walter Hancock, E. H. Cozens Hardy, J. R. Hargreaves, J.P., Killingworth Hedges, M.Inst.C.E., Richard Muirhead, M.I.Mech.E., P. O'Gorman, Robert E. Phillips, Assoc.M.Inst.C.E., M.I.Mech.E., J. Lyons Sampson, M.I.Mech.E., E. R. Shrapnell Smith, Stephen H. Terry, M.Inst.C.E., M.I.Mech.E., and T. F. S. Tinne. *Official Observers*—Messrs. R. Appleyard, A. M. Arter, L. F. Awde, F. E. Bate, E. A. Berry, E. Boulton, L. M. Bowtell, T. B. Browne, P. F. Burge, W. J. Butterfield, W. B. Clarke, C. D'Estelle, S. S. De Ritter, L. M. G. Ferreira, H. Fowler, A. J. Hemming, L. Hounsfield, B. C. Joy,



PROFILE OF THE OXFORD ROAD BETWEEN SOUTHALL AND STOKENCHURCH.



A. Marshall, F. Mecock, G. B. Napier, L. Preece, E. H. Raworth, J. F. Prestwich, L. Sanderson, S. B. Shelton, H. Simmons, E. Tulloch, and H. B. Vorley. All cars which were constructed to carry more than two persons made up their complement with personal friends, attendants, and members of the Automobile Club, who happened to be present. Before starting, each of the judges' observers was furnished with a book, and instructed as to the matters his duties called upon him to record, and he was also instructed to time each mile of the journey, and warn the driver should he at any time exceed the limit of twelve miles per hour imposed by an ultra-cautious and grandmotherly Local Government Board, any serious excess of which would lead to disqualification, a regulation productive of many jokes amongst the autocarists present at the expense of those driving speed carriages. When the carriages came to be mustered up, it was found that of the thirty-seven entrants some twenty only had put in an appearance, a Motor Manufacturing Co.'s Iveagh phaeton arriving about one o'clock, and bringing the number of actual starters to twenty-one. Then came the word to "go," and the small assemblage of spectators saw the cars file out one by one at a few minutes interval in the following order:

Official No.	Description.	Time of Departure.
		a.m.
24	Lanchester Car. Driven by owner. Mr. Terry as observer ...	h. m. 10 42
36	The Tourist Cycle Car, Bollée type, carrying driver and Mr. Ferreira, observer ...	10 47
16	Cannstadt Daimler. Mr. Simms and three others up ...	10 56
32	Mors Car. 8 h.p. Four passengers ...	10 59
21	Benz Dogcart. Four passengers. 8 h.p. motor ...	11 2
22	No. 1 Benz. 3 h.p. Two passengers ...	11 4
20	Small Daimler Car. Driven by Mr. Drake. One passenger ...	11 7½
34	Ducroiset Car. Driven by Mr. Atkins. Five passengers. 7½ h.p. ...	11 12
18	Daimler Siamese Car. 4 h.p. Three passengers. Driver, Mr. Otto Meyer ...	11 13
23	International Car. English motor, Benz type. 4½ h.p. Driver, M. Cappellen. One passenger.	11 15
35	Orient Express. Driver and one passenger. 3½ h.p. ...	11 17
26	Delahaye Car. Driver, Mr. Heyermans. Three passengers. 8 h.p. ...	11 18½
31	Vallée Car. Driver and one passenger ...	11 21
33	Lynx Car. Driver, Mr. Frentzel ...	11 22
1	Barrière Tricycle ...	11 24
28	Benz Car. Mr. Butler driver, and two passengers ...	11 29
17	Critchley Car, Daimler. Driven by Mr. Critchley. One passenger ...	11 31
19	Daimler Waggonette. Driven by Mr. G. F. Pedley. Five passengers ...	11 33½
29	Panhard Car. Driven by Hon. C. S. Rolls. One passenger ...	11 37½
25	Hurtu Car. Driven by Mr. Rush. One passenger ...	11 39
27	Iveagh Car. Motor Manufacturing Co. ...	12.59 p.m.

Having seen the cars depart, and refreshed the inner man, what time the judges discussed in solemn conclave the data already in their possession, as the hour approached for the return, we accepted a seat on Mr. Hargreaves' eleven horse-power Daimler, in company with Mr. Worby Beaumont, and the Messrs. Redwood *père et fils*, and essayed to meet the returning vehicles. Not being under the official rule, our pace at times, we believe, exceeded the limit—anyway, our progress was good, and we were running through Hillingdon before we met the first car on its homeward way, this being the Delahaye equipage, travelling smoothly, and certainly beyond the limit. In Uxbridge the Lanchester car was en-

countered travelling very steadily and quietly, and a mile later on the high-powered Benz dogcart, in charge of Mr. Cole, was met, the black-coated crew looking like so many millers' men for the thick dust which covered them, and following close behind came Mr. Atkins with the Ducroiset-Hercules car running strongly, but somewhat more noisily than upon the Whitsun tour, and, like all the cars we now met, more or less smothered in dust, for the roads beyond Uxbridge were thick with a heavy carpet of dust on them, and a glance backwards at our own track as we sped down the long declines at a pace we would rather not put figures to showed both road and landscape completely obscured by the rising cloud which lifted in our wake. Cars Nos. 22 and 18 were next met with, and about a mile further on came the Cannstadt Daimler "with her mouth open," as it appeared from the fact of the motor-cover top being raised to get the full benefit of the breeze. Crossing the common at Gerrard's Cross, Mr. Drake on the Daimlerette (four horse-power) was met going well, with the Tourist (No. 36) in close attendance, and at the bottom of the Bull Hill came the Vallée with Mr. Rolls in close attendance, looking painfully resigned at his unusually modest rate of travelling. A little later on, at the foot of a long descent, the Orient Express was met coming steadily up, closely followed by Mr. Critchley on the five and a half horse-power Daimlerette, who, having failed at the Dashwood Arms Hill, owing to his low speed gear being out of order, had turned round and done a steady twenty-five all the way, and was then simply sliding up the rise in fine style. Mr. Pedley, with six up on a Daimler Rougemont, was not far behind, his car running well, Dr. Lehwiss with his Mors followed, and then the Lynx, going very slowly. Close to Beaconsfield we turned just as the only tricyclist with Mr. Claude Crompton on his 8in. cranked "Referee" bicycle as attendant judges' observer came up, and, making good running on the homeward run, found the Lynx stopped just after we had met it, with a bearing fired, Mr. Frentzel on the Orient in trouble a little later with a broken lubricator, and the Vallée stranded for the nonce in Uxbridge. By the time we reached the Red Lion most of the cars were in, and the rest filtered in as the time went by, the order of finish, together with the net times made by the different cars, being as follows:

Order of Arrival.	Description of Car.	Net Time.
		h. m.
1	Delahaye ...	3 23
2	Lanchester ...	4 10
3	Ducroiset ...	3 53½
4	Benz Dogcart ...	4 4
5	Benz No. 1. ...	4 6½
6	Siamese Car, Daimler ...	4 4½
7	Critchley Car, Daimler ...	3 52
8	Cannstadt, Daimler ...	4 27½
9	The Tourist ...	4 46
10	Small Daimler... ..	4 25½
11	Vallée Car ...	4 21½
12	Panhard (Rolls's) ...	4 8½
13	Mors ...	4 52½
14	Daimler Waggonette ...	4 18½
15	Barrière Tricycle ...	4 32½
16	Iveagh Car ...	3 28
17	Lynx Car ...	5 12
18	The Orient ...	5 32½

Mr. Butler's Benz and the Hurtu Car were still unaccounted for when our report left.

Upon enquiry, we learned that the majority of the cars had behaved excellently, and come through the



trials without a hitch. Of those which did not we have already recorded the troubles of some of them, and of the rest Dr. Lehweß had trouble with a belt, which came unsewn, and the aid of a saddler had to be called in to repair it. The International (No. 22) had a lot of trouble with the cam of the exhaust regulator on the outward journey, but made up time on the homeward run, and Mr. Simms's Cannstadt Daimler slipped the clutch a little on the top of the big hill, but the effectiveness of its water cooling arrangements was shown by its using but two and a half ounces for the journey. Other particulars will be gleaned from the judges' report, which we are able to give in the present issue.

The trials over, we took a seat on Mr. Van Toll's Daimler Universal for the run to town, and, when passing Notting Hill Police Station behind a car which had just passed us, a policeman suddenly rushed out waving his arms, and calling on us to stop, which was instantly done in the length of the car, whereupon he informed Van Toll he was driving to the common danger, and name and address were taken, and a few yards further on Mr. Drake was encountered with the Daimlerette stranded with both loose pulleys fired, so we finished up the day by towing him home, much to the amusement and bewilderment of the populace.

### The Heavy Vehicle Trials.

Tuesday was fine with a fresh east wind blowing, and some clouds, which rendered the weather less oppressive than on the previous day. This day was devoted to the trials of heavy vehicles, the route selected being the same as on the previous day, but starting from the Chequers Hotel, Uxbridge, from the



THE CANNSTADT DAIMLER LIGHT VAN.

fifteenth milestone and turning at the thirtieth milestone, which reduced the total distance for the day's run to thirty miles. Of the judges, Sir David Salomons, with Professor Boys, Major Holden, and Messrs. Bryan Donkin and Worby Beaumont were present, and for the trials six vehicles had entered, three steamers and three light oil cars, this being memorable as the first occasion upon which any public demonstration had been made of spirit motors for really heavy work, and the trial, we have no hesitation in saying, was distinctly satisfactory, especially as the heaviest load of the lot—five tons—was carried by a

spirit motored car. Of the six cars entered, only one—that of Messrs. Clarkson and Capel—failed to put in an appearance, and the rest, with one exception, ran through their trials without a hitch, and in a perfectly satisfactory manner. As on the previous day, the observers had instructions to keep the pace of the cars down strictly to the legal limit of their respective types, and we have no hesitation in saying that all the cars which successfully made their trials could have covered the route in from fifty per cent. to one hundred per cent. better time had they been allowed. The regulations called for the competing cars to be on the spot at 10 a.m., so as to have



THE HEAVY CANNSTADT DAIMLER.

their tare weights, loads, and fuel supplies checked, and all save one were promptly up to time, and the first car started on its journey shortly after eleven, the vehicles taking part in the competition and their order of starting being as follows:

A Daimler eleven horse-power G.P.O. delivery waggon by the Daimler Motor Co., Ltd. This car, with a four-cylindered engine, we have already illustrated and described in these columns (May 20th, 1899). Mr. J. S. Critchley was driving, with Mr. Meyer and an observer on the box seat and two men on the top of the van, in addition to which a dead weight of some thirty-two hundredweight was carried. This car has four speeds, the lowest about two miles per hour, has rubber tyres—the only one of the competitive cars so fitted—and since our description of it has been fitted with water tanks on the top of the cab, thus largely obviating the difficulty at first experienced with the pump.

A Thornycroft steam waggon by the Steam Carriage and Waggon Co., of Chiswick. This car, a lorry, has been entirely redesigned since the Liverpool trials of last year, and is distinctly a better carriage in every way. The coal fired water-tube boiler has undergone but little change, but there are many points of novelty in the rest of the vehicle. The engine, a fourteen horse-power compound fitted centrally underneath the vehicle, and with a two-speed gearing calculated to get the car up gradients of one in ten and one in six respectively with full load, drives a pinion on the driving axle directly engaging with a toothed wheel forming the periphery of the compensating gear, which is fitted in a gear case. A very clever and in-





THE LIGHT DAIMLER CAR CLIMBING PETERSHAM

genious device is shown in the driving, for whilst the two driving wheels run loose on the axle ends, they are driven through a couple of elliptic springs attached to their hubs, and driven by the hollow axle in connection with the compensating gear, this taking off the strain of a "dead" direct drive which would otherwise be imposed. The tare weight of the vehicle is 2 tons 18 cwt., and the load carried three tons with driver, observer, and two passengers.

A Cannstadt-Daimler two-ton lorry entered by the Motor Carriage Supply Co., Ltd., and built by the Daimler Motoren Gesellschaft of Germany, a machine embodying several novel features. This machine was fitted with a two-cylinder six horse-power—eight horse-power brake—Daimler spirit motor with the same ingenious system of water cooling shown on the carriage run the previous day, and which consists of filling the water tank in front of the car with some hundreds of small tubes, through which air is constantly drawn by a fan. As with the Thornycroft, chains for driving are dispensed with, the system of driving being something akin to that used on the Lifu, viz., the driving of a central shaft which with bevel wheels turns a countershaft carried a short distance forward of the main axle, and fitted with a pinion at each end driving the wheels through the medium of internally-toothed rings fitted to them. The bottom frame of the car with its tie rods is practically made in two parts hinged in the middle to allow for freedom of movement of the four wheels in accommodating themselves to the road surface, though the brackets by which these are hung from the upper frame strike us as being somewhat weak. The car

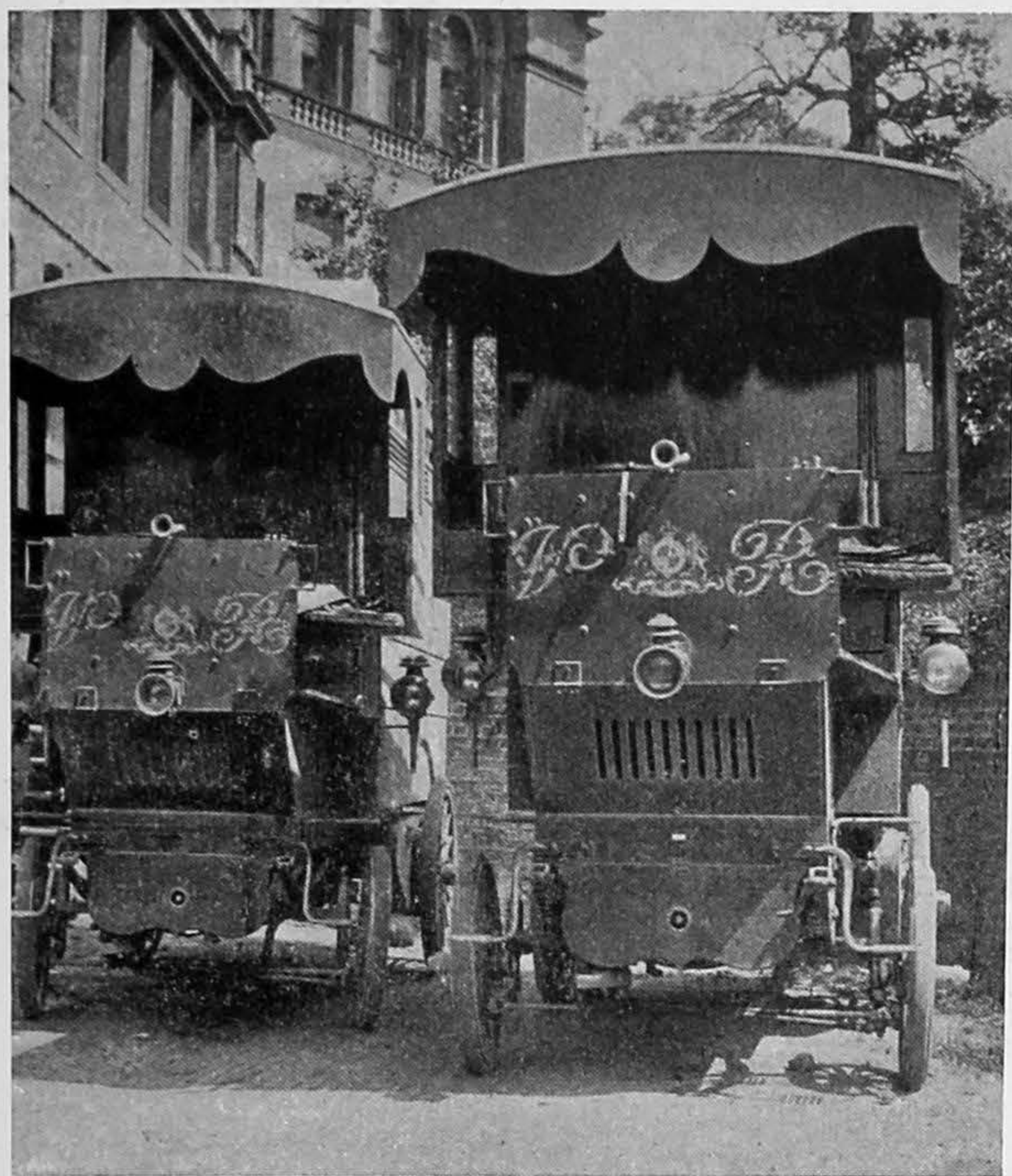
has four speeds with gearing on the same principle as on the lighter passenger car already illustrated and described in the pages of *The Autocar* (see page 468), the arrangement giving variations ranging from 1.87 to 7.45 miles per hour. The tare weight of the vehicle was declared at 1 ton 17 cwt., and the load carried, including passengers, 2 tons 2 cwt. Mr. Hankinson was in charge.

A Cannstadt-Daimler five-ton lorry, built by the Daimler Motoren Gesellschaft, and shown by the Motor Carriage Supply Co., Ltd. This car was practically a facsimile as to detail of the last, but built stronger and heavier throughout, and fitted with a two-cylinder ten horse-power—twelve horse-power brake—Daimler engine. The four speeds range from 1.3 to 5.89 miles per hour. The tare weight came out at 2 tons 19 cwt. 3 lbs., and she carried the heaviest load of the company, viz., five tons, and had eighty square feet of platform area. These four cars all arrived to time, and were all got off before 11.30, but at one o'clock, some three hours late, a fifth turned up in the shape of

Bayley's steam lorry, by Bayleys, Ltd. (late E. H. Bayley and Co.) This vehicle appeared to be a curious combination of other builders' ideas and designs, and was the only one which did not go through its trials with perfect satisfaction. Although exhibited by Bayleys, Ltd., little but the woodwork and wheels were by that firm, who were stated to be "motor-car builders," the engineering work being chiefly by Owen, Brazil, and Holborow, of Bristol. The boiler was a "De Dion," the engine a "Straker" compound twenty horse-power, and the back carriage arrange-



ment and driving gear a copy of the Daimler arrangement shown on the two cars of the Motor Carriage Supply Co., the two gear speeds giving five and seven miles per hour at five hundred revolutions of the engine per minute. The load carried was three tons "dead" load, and seven passengers, and the total net weight of car and running load was 6 tons 12 cwt. 2 qrs.



THE TWO POST OFFICE VANS.

This car having been after some considerable delay got away, the judges and other officials refreshed the inner man, and then, mounting a couple of Daimler cars which were there, ran out to meet or overtake the competing vehicles, overtaking the Bayley steamer up Red Hill, about four miles out, when at the time we overhauled it it was stopped, the engine having come out of gear. The stoppage, however, only lasted a minute or so. At the top of the hill out of Gerrard's Cross Mr. Hankinson's waggon was met coming up the hill at a very respectable pace. At the bottom of the slope Mr. Critchley reported the red G.P.O. van to be "doing well," as also did the crew of the Thornycroft steamer, which, after one stop for water, was following close behind, and we ran on to the top of the long slope before Beaconsfield, where we turned on the previous day, and which was again our turning point, for here we met Mr. Simms with his five-tonner, also reported "going well." The Bayley steamer was met on the return in the hollow making good progress, and just out of Gerrard's Cross the motor omnibus of the London Steam Omnibus Co. was met in charge of Mr. Sidney Straker, going over the course. This vehicle is the identical Cannstadt Daimler (built very much on the same principle as the two lorries in the trials) shown by the British Motor Co. at the omnibus demonstration nearly a year ago, but with the German body removed and replaced by one with a garden-seated top of the usual London type built by E. H. Bayley and Co., and with the name of Messrs. Owen, Brazil, and Holborow figuring on the motor casing in place

of that of Daimler. It appeared to be making good progress.

By the time we reached Uxbridge again the smaller Cannstadt waggon had arrived, and investigation showed her to have consumed two gallons six ounces of petrol, eleven ounces of water—probably spilt over or leaked out, as the water was not too warm to bear the hand in—and six ounces of lubricating oil.

The Daimler G.P.O. van followed with a consumption of three gallons of petrol, twenty-one ounces of lubricant, and two gallons six pints of water.

Thornycroft's waggon on arrival was found to have consumed one hundredweight eighty-five pounds of coal, and one hundred and thirty-six gallons of water, and was practically free from visible steam or smoke when running.

The five-ton Daimler got in half an hour later, showing a consumption of four gallons of petrol, one gallon of water, and forty ounces of lubricating oil. All these cars, with the exception of the steamer which had stopped once to replenish her water tanks, had accomplished the journey steadily without a stop.

Then the time passed slowly as we waited for the belated Bayley to turn up. It should have been in by 5.30, and when an hour after this there were no signs of its appearance, Mr. Lanchester volunteered to flit out on his flier and prospect, and shortly returned with the intelligence that it was coming along about two miles out, and that the omnibus had run out of petrol, and was stranded four miles away, so he promptly carried out a fresh supply, and by seven o'clock the missing steamer turned up, and promptly got stuck in the hotel yard, evidently being on a dead centre, as neither high nor low pressure steam availed to move her, and then it took the united efforts of as many men as could get a hand on her, with the assistance of a crow-bar, to lever up the wheels, to move her. It seems that, after we had left her, she lost half an hour in a stop for water, and, after climbing the long hill at the end of the route, got stuck in a hole in turning at the top, and had to unload her cargo to get out, but even this did not avail, so her crew of seven, reinforced by three from



THE TWO-SEATED DAIMLER ASCENDING THE HILL WITH AN EXTRA PASSENGER ON THE MOTOR BONNET.

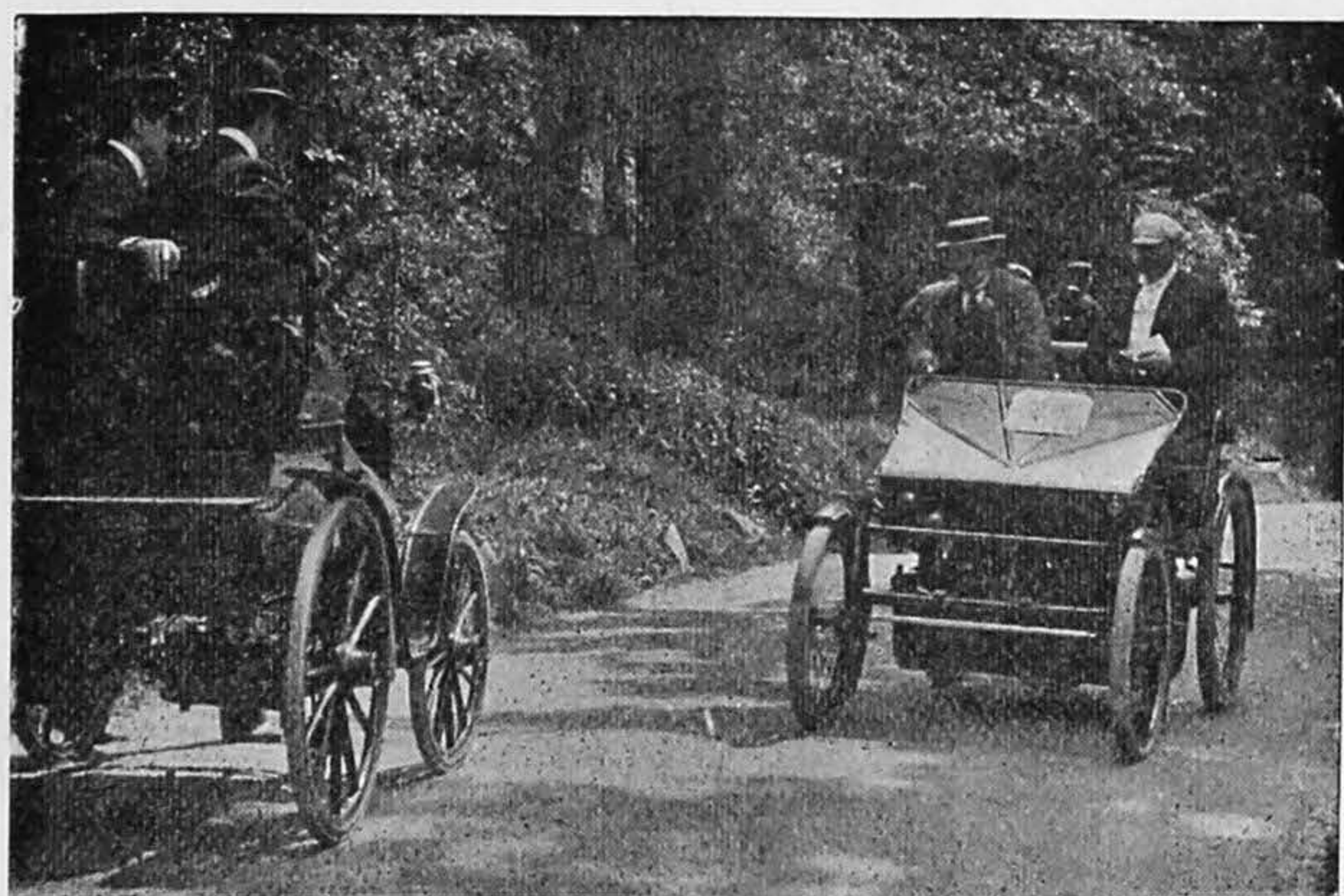
the omnibus which then came up, tried what they could do to no avail. Then a traction engine came along, and the driver wanted her to haul him out, but the observer would not permit it, so the crew of the tractor, with a couple of wayfarers, making fifteen in all, lent a hand, and, with the car's own steam, after a delay of forty-five minutes, got her out, and she made the best of her way home, blowing much steam out of her up-take on every rise, and using ninety-nine



gallons of water on the journey, with 122 lbs. of coke fuel. And so ended the heavy-car trials of the Automobile Club, which were undoubtedly successful in every way, and productive of most striking evidences of improvement in the past year, which cannot fail to impress all whose observation is critically centred on the movement.

### The Speed Trials.

On Wednesday it was arranged that the speed trials should take place, but owing to the double difficulty of finding a suitable road upon which such trials could be run, and of authorities sufficiently alive to the requirements of the times to consent to overlook a literal infraction of the law, it was not until Tuesday that it was absolutely certain that such trials could be held. Then, through the instrumentality of Mr. Stopes, of Colchester, who used considerable influence with the local authorities, and found them extremely reasonable on the point, a stretch of roadway in that neighbourhood was selected, and the different entrants notified by wire of the decision. Unfortunately, however, the notice thus given was insufficient to allow of proper preparations being made, and what are probably the two fastest cars in



THE LANCHESTER WITH ITS PATENT HINGED WIND BOARD "DOWN."

England were prevented from taking part, owing to their being for the moment in the painter's hands in preparation for the forthcoming show. However, in view of the probability of some vehicles putting in an appearance, and with the certain knowledge that one at least was on the spot, a small party of officials went down to Colchester by the 11.45 on Wednesday morning, Major Holden and Prof. Boys being the judges, and Messrs. Henry Sturmev and H. J. Swindley, of *The Autocar*, the official timekeepers for the journey, the party being accompanied by Mr. Joy, the very careful and courteous secretary of the trials, together with several other gentlemen in the capacity of observers and spectators.

Arrived at the Cups Hotel, Colchester, Messrs. Heyermans and Harrington Moore were found with the Delahaye car, having made the run down from town the previous day, sixty miles, in two hours and a half, but these were the only representatives of the competitors present. A few minutes after our arrival, Mr. Stopes appeared on his Daimler Siamese, and informed us that a stretch of level road had been selected about three miles out of the town, whither

after lunch we made our way, enjoying the experience of a ride on the Delahaye on the way out, and finding her an undoubtedly fast car, very powerful on hills and most comfortable in riding, and in the hands of her very competent and careful French driver at all times well under control. The spot selected was a stretch of road about a mile and a half in length, dead level, and as straight as a die the whole way, the surface, if anything, a trifle on the loose side, and very dusty, but otherwise good. As the road was not blessed with milestones, the judges set to work to measure out the course, and, selecting a direction post pointing down a branch road to Great Horkesley as the finishing point, a mile was measured out by the process of tying a handkerchief on to a spoke of one of the steering wheels of Mr. Stopes' car, which was driven slowly over the road, and the revolutions counted, a careful measurement of the distance traversed in twenty revolutions having previously been made. Mr. Stopes had taken the precaution previously to send a man over the course upon a bicycle with a cyclometer, but the cyclometer reading and the dead reckoning thus checked off did not agree by some fifty yards, so the cycle and its cyclometer were metaphorically thrown overboard, and the course mapped out by the car wheel selected, with a starting point measuring 13ft. 8in. back from a black gate-post close to a house on the left-hand side of the road. A further distance of 550 yards was then measured back to a poplar tree just at a point where the road bent from a straight course, and this distance allowed for those making the trials to get up their speed in before passing the starting point at a flying start. After checking watches, Mr. Swindley took the finishing point and Mr. Sturmev the start, and Mr. Stopes having expressed his desire to run his car over the mile as well as the Delahaye (which proved to be the only car taking part), the two vehicles were started, and in a perfect whirlwind of dust the Delahaye with her load of four sped down the road, Mr. Stopes following a hundred yards behind. A comparison of the watches afterwards showed that the Delahaye had accomplished the measured mile in 2m. 13 4-5s., or a pace of a shade under twenty-seven miles an hour. The other car, not being a speed vehicle, rolled off its mile in 4m. 26 3-5s., but this was a private trial only, and the car had no official part in the proceedings.

It was felt by those present that the paucity of starters for this interesting trial was regrettable, and that it really was not altogether fair to give, as circumstances compelled, such short notice, and we understand that, if it can be arranged, an opportunity will be given at a later date, perhaps one day next week, during the show, for a repetition, when it is hoped those who were prevented from taking part on Wednesday will be able to be present. We may add that the weather was glorious, and what little wind there was was behind the competitors.

The West German Automobile Club of Aix-la-Chapelle is organising a motor car race between Amsterdam and Aix-la-Chapelle for the 25th inst. The distance is about 260 kilometres, and the race is divided into two categories, motor cycles and motor cars. No competitor will be eligible for a prize who occupies more than fourteen hours for the journey.



## THE AUTOMOBILE CLUB TRIALS. OFFICIAL PARTICULARS.

## Fifty Miles Trial. Notes from Logs.

16. Stopped at 25th mile to adjust draught to lamp, which was burning low. Stopped at Stokenchurch Hill owing to friction clutch slipping; three passengers got down, and then all right. Stopped at 1st mile for restive horse. Seemed to have kept speed uniform. Weight  $27\frac{1}{2}$  cwt.; only two and a half ounces water required.

17. Weight  $13\frac{1}{2}$  cwt. Turned back.

18. Weight  $27\frac{1}{2}$  cwt.; no stoppage; average twelve miles; one and a half gallons water.

19. Weight  $29\frac{1}{2}$  cwt. Stoppage at 24th mile, two minutes to put burner right. The same at 33rd mile. Slowed up at 33rd mile on return for food. No person left the car at any time. Average speed good. One gallon water required.

20. 12 cwt. 2 qrs. Stopped half minute on hill at 9th mile—governor too low. Stopped at 10th mile to clean shutter. Average speed good. Two gallons water required.

21. 22 cwt.; no stop; average speed good; two gallons five pints water required.

22.  $10\frac{3}{4}$  cwt.; no stop; average speed fair; one gallon five pints water required.

23.  $11\frac{1}{2}$  cwt. (42 lbs. short). Two gallons water required at Wycombe, Dashwood Arms, and Lambert Arms. Stopped at 17th mile; faulty ignition; same at 21st mile (twelve minutes). Stopped twenty-three minutes at 22nd mile to adjust exhaust spring. Stopped again in four minutes for twelve minutes, and again at 24th mile for four minutes. Stopped again at 22nd mile fourteen minutes to fill tanks. Stopped seven minutes at 23rd mile—crank bearing loose; then three minutes to make ignition easier; three minutes to clear cylinder lubricator. Stopped at 33rd mile to refill tanks—water had leaked out owing to tap being left open. Twelve minutes at 21st mile for hot bearings. Stopped at 16th milestone to refill tanks. Speed generally fifteen miles per hour; six pints water required.

24. 17 cwt.; no water required. This car was slowed down before each milestone so as to keep within limit.

26. Speed 14.77;  $25\frac{1}{2}$  cwt.; stopped two seconds for traffic.

27. Had to relight one burner three times. Weight 1 ton  $8\frac{1}{2}$  cwt.; speed uniformly fast.

29. Weight  $20\frac{1}{2}$  cwt.; no stops; average speed uniform.

31. 13 cwt. Stopped one minute to adjust motor. Stopped 33rd mile on return journey four minutes to adjust ignition. Stopped again three minutes a few yards further on. Same after thirty miles—ignition wrong, and driven sprocket hot. Again at 27th mile nine minutes to cool bearings. Hot bearing again 16th mile on driven sprocket; bucket of water over it. Speed when running uniformly too fast.

33.  $13\frac{1}{2}$  cwt. Stopped at 14th mile to pump tyre; again at 17th mile for two minutes. Stopped at 23rd for water and to change gear. At 27th to change gear. Same for water at 33rd mile four minutes. Again at 30th mile on way back. Again at 22nd mile something wrong. Stopped on hill at 21st mile half a minute. Speed uniformly too fast.

34. 32 cwt. Stopped one minute on Lightfoot Hill. Stopped two minutes owing to collision due to frightened horse. Speed uniformly too fast.

36.  $7\frac{3}{4}$  cwt. Stopped at 23rd mile to oil crank chamber. Stopped at Denham Arms for refreshment and to put more oil in crank chamber. Average speed twelve miles; used one-third pint oil.

35.  $15\frac{1}{2}$  cwt. Joint of top-speed belt broke. Car stopped on Stokenchurch Hill—lubricator blocked and broken, cylinder run dry. Stopped again at 32nd mile for lubricator. Stopped again for three minutes at 20th mile on way home; ditto at 18th, 26th, and 16th miles, and again at end of 16th, 13th, 12th, and 11th miles. Average speed twelve miles.

25.  $14\frac{1}{2}$  cwt. Stopped 15th mile for breakfast. Frequent adjustment of ignition required. Stopped on hill 22nd mile—wrong mixture. Great jarring up owing to both speed belts getting into gear. Absolutely failed to climb Stokenchurch Hill, even when pushed by both passengers—engine hot, belts slipping, mixture wrong. Car had to be towed up. Vibration on return very bad. Driver had to get off on hill on 23rd mile, and again at 21st, and again at 13th. Stuck on canal bridge, and borrowed some oil to get home with. Average speed twelve miles.

28.  $21\frac{1}{4}$  cwt. Stopped on hill at 18th mile; belt guide bent; trouble continued to 20th mile, where car stopped for repairs at blacksmiths. Stopped for four minutes at Stokenchurch Hill. Stopped three and a quarter hours at 26th mile to have new collar and pin made. Stopped at 16th mile for electric ignition. Speed all through too high.

## Hill-climbing Trials, Friday, June 9th.

No.	Stopped in feet.	At Speed of	On Gradient of	Ascended Hill at Speed of
				Miles.
1	85.0	14.62	1 in 13.85	13.926
10	9.0		1 " 13.85	10.965
14	98.0	15.47	1 " 12.9	5.719
16	96.75	14.88	1 " 12.9	4.00
18	47.0	15.43	1 " 12.9	5.35
19	48.0	14.65	1 " 12.9	4.41
20	95.0	12.47	1 " 12.9	5.46
21	103.0	15.13	1 " 12.9	5.98
22	82.5	16.23	1 " 13.85	9.77
23	38.0	10.41	1 " 12.9	6.99
24	131.00	21.28	1 " 12.9	5.75
25	74.75	6.99	1 " 12.9	7.42
26	37	15.96	1 " 12.9	7.91
27	68.6	14.09	1 " 1.8	4.58
29	94	13.11	1 " 12.9	8.75

The performances of the seven cars entered by the Automobile Association cannot be given until our next issue.

## Electric Trials, Long Distance. Saturday, 10th June, 1899.

Weight of Vehicle.	Time of Start.	Time of Arrival.	Stoppages.	Remarks.	Description.
(10)	a.m.	p.m.			
16 cwt. 2 qrs. 16 lbs.	11.35	2.56	For horses in Esher, one moment. Three minutes for hot bearing in Esher. Three minutes for hot bearing in Epsom.	Time of run, 3h. 26m. Total distance, $33\frac{1}{2}$ miles = 10.36 miles per hour. Took two wrong turnings. No miles done at more than twelve miles per hour. No noise, no vibration.	Four-wheel buggy. Electrical Undertakings Co.
(14)					
21 cwt. 2 qrs. 0 lbs. With two passengers.	11.42	3.32	At 5th mile for traffic in Kingston Market Place. 25th mile, 4m., pushed car fifteen yards up to top of hill. At 27th mile, 16m. to rest cells, which were nearly run down. At 30th mile stopped, charge run out.	Time of run, 3h. 50m. Distance, 29 miles. 7.56 miles per hour. Humming slightly at times on taking a hill.	McKenzie Carriage Co.



## Long-distance (Petrol) Trials, Monday, June 12th.

Official Num- ber.	Name of Exhibitor.	Description.	Time of Start.	Time taken to 21st mile.	between 25th and 26th	between 33rd and 34th.	RETURN		Total Time.	Speed miles per hour	Total con- sumptn		Con- sumptn. per mile	Water Con- sumptn.	
							between 26th and 25th.	between 21st and 20th			galls pts	pints.		galls pts	
16	Automobile Association Motor Carriage Supply Co.	Barrière Tricycle ... Convertible Wag'nette	11.29 10.56	58 59½	5 19 5	14.47 15½	5.42 8½	5 20 8	4.33 4.27½	10.98 11.21	0 6 2 4	'12 '4		2 4	
17	Daimler Motor Co. ...	Critchley Light Car ...	11.31	54	4½	Turned back									
18	" " ...	Siamese Phaeton ...	11.13	58½	5	6.45	6	5.25	4.4½	12.29	1 4	'24		1 4	
19	" " ...	Rougemont Wag'nette	11.33	54	6	9.50	6.40	6½	4.18½	11.62	2 2	'36		1 0	
20	" " ...	Critchley Light Car ...	11.7	1.1	5.50	8.30	7	6	4.25	11.24	1 4	'24		2 1	
21	Hewetson's, Ltd. ...	Benz Dogcart ...	10.57	51	5	7	6	4½	4.4	12.29	2 2	'36		2 5	
22	" " ...	" Ideal ...	11.3	57	4½	10	6	6	4.6½	12.19	1 2	'2		1 5	
23	International Motor Car Co.	Four-wheel Inter- national	11.14	1.2	4.5	24	7	15	6.3	8.6	3 0	'46		6 6	
24	F. W. Lanchester ...	Three-seat Car ...	10.42	60	5	5	5	5	4.10	12	1 6	'28			
25	Marshall & Co. ...	Four-whl. Car (Hurtu)	11.39	48	4	2h. 45m.	6½		8.1	6.11	3 2	'52		3 0	
26	Delahaye ...	Four-wheel Phaeton ...	11.19	48	4	6	3.5	4	3.2½	14.77	1 4	'24		1 1	
27	Motor Manufacturing Co.	Five-seat Phoenix ...	12.59	44	4	8½	7	4½	3.28	14.42	2 4	'4		6 7	
28	F. H. Butler ...	Benz Ideal ...	11.27	63	2.50	12	3h. 13m.	4.15	7.23	6.77	3 4	'56	nowater		
29	H. C. S. Rolls ...	Panhard ...	11.35	53	5	5	5	5	4.8½	12.09	2 2	'36		0 4	
31	Automobile Association	Vallée ...	11.20	49	3	7	4	5½	4.21½	11.53	3 2	'52		2 0	
32	" " ...	Mors ...	10.59	55	5	12	4½	4½	4.52	10.25	1 2	'2		1 0	
33	" " ...	Lynx ...	11.22	68	4	12	4.20	5½	5.12	9.6	1 2	'2		7 0	
34	" " ...	Hercules ...	11.12	53	4½	8½	5	5	3.53	12.87	4 2	'68		3 0	
35	" " ...	Orient Express...	11.16	56	5	11½	5½	9	5.32	9.03	3 4	'56		5 5	
36	" " ...	Tourist ...	10.47	57	5.20	6.55	8.30	5	4.46	10.49	1 5	'26	nowater		

## Heavy Waggon, Twenty Miles Trial. Tuesday, 13th June.

No.	T'l. weight.	Weight carried.	Time for 20 miles.	Water used.	Wat. per ml	Fuel.	Fuel used.	Fuel per ml.	Average speed.
41.—Steam Carriage & Wag. Co.	6 19 0	3 8 0 18	3 42 20	136 gals.	6.8 gals.	Coal.	197 lbs.	9.85 lbs.	5.4 mls per hr.
42.—Motor Carriage Supply Co.	8 13 0		5 19 0	1 gal.		Petrol.	4 gals.	'2 gals.	3.76 " "
43.—Motor Carriage Supply Co.	4 6 0	2 4 1 0	3 27 0	11½ ozs.		Petrol.	2 gals. 6 pts.	'1375 gals.	5.84 " "
44.—Daimler Motor Co. P.O. van	4 1 3	1 18 1 0	3 59 0	2 gals. 7 pts.		Petrol.	3 gals.	'15 gals.	5.02 " "
45.—Bayley's Ltd. ...	6 12 2		4 9 0	99 gals.	4.95 gals	Coke.	122 lbs.	6.1 lbs.	4.81 " "

To-morrow (Saturday), the Automobile Club Show will be opened by their serene Highnesses the Prince and Princess Edward of Saxe Weimar.

\* \* \*

A meeting has just been held in Budapest, when a provisional committee was appointed to draw up rules for a projected Hungarian Automobile Club.

\* \* \*

At the moment of going to press we received the following letter from Mr. S. F. Edge: "Referring to M. Weigel's recent challenge to ride another motor tricyclist over the Brighton and back course, this has been accepted by Mr. Chas. Jarrott on the conditions agreed to by M. Weigel."

\* \* \*

It is announced from Barcelona, Spain, that Messrs. Benz and Co., of Mannheim, Germany, are about to open a dépôt in that town for the sale of their well-known motor vehicles. The dépôt will be located at 213, Calle de Bilbao, and will be under the direction of Messrs. E. Roerecke and Co.

\* \* \*

We are afraid from the mentions of the Automobile Club Show at Richmond which have appeared in some of the daily papers that a few at least of the outside public may be disappointed, as it would appear from these paragraphs that the show, which opens to-morrow (Saturday), would take place simultaneously with the hill-climbing and long-distance trials. We mean our contemporaries, or some of them, appear to have got it into their heads that the trials and the show were to be held at the same time, and not that the road events had taken place a week previously to the opening of the show.

La Société d'Automobilisme et de Cyclisme, of Paris (32, Rue Caumartin), has changed its title to La Société d'Automobilisme (Société d'Etudes).

\* \* \*

The Standard Motor Manufacturing Co., of Glen Cove, L.I., U.S.A., have been incorporated with a capital of £30,000, to manufacture and equip self-propelling vehicles of all kinds.

\* \* \*

La Société des Voiturettes l'Créanche is the title of a company which has just been formed in Paris (7, Rue Brunel) with a capital of £20,000, to manufacture and deal in motor cycles and motor cars, etc.

\* \* \*

The hon. sec. of the Motor Car Club writes: "Pending the formation of a properly-constituted and representative control body of racing motorists, the committee of the Motor Car Club are prepared to investigate claims to record, and to certify as to the correctness of same. All claims, together with time-keepers' certificates, must be sent to the hon. sec. of the Motor Car Club, 40, Holborn Viaduct."

\* \* \*

## USEFUL KNOWLEDGE.

Speed governor—Any idiot apparently at present.

Slide valves—Frozen footpaths.

Circulating system—Subscribing to *The Autocar*.

Screw adjustment—Fixing salaries.

Feeders—Prize pigs.

Reversing device—A double somersault.

Engaging device—A servants' registry.

Disengaging device—A month's warning.



## THE PARIS MOTOR CAB TRIALS.



THE JENATZY CAB.

The results of the Paris trials of motor cabs and delivery vans which terminated on Monday were much more encouraging than could have been hoped for in view of the absence of anything new in the way of propelling mechanisms. On the first day it must be confessed that the outlook appeared to be somewhat dubious. There were the same competitors and the same vehicles, but when M. Jenatzy turned up with his big van, and the vehicles of Mildé et Mondos and Panhard et Levassor put in an appearance the prospects of an interesting competition began to improve. There was very little that was new in these cars, it is true, but they at all events afforded a line with which to estimate the progress which has been made during the past twelvemonth. The trials, too, were favoured by splendid weather, though on certain days the heat was so oppressive as to be very trying to the small army of commissaires, who devoted themselves to the cause of technical research, while their



THE PANHARD BROUGHAM.

indefatigable leader, M. Forestier, chief engineer of the Ponts et Chaussées, bore the heat and burden of the day, sending off the cabs, and turning up at all the halts in his Peugeot cab, with his usual buoyancy.

As the vehicles arrived at the works at Levallois-Perret of MM. Clément et Cie. they were weighed, the vans with their loads, and the cabs without the passengers, though in all cases the drivers were included. The weights were as follow: Cab carrying four passengers of the Société des Voitures Electriques Krieger, 1,405 kilos.; delivery van of Mildé et Mondos, 2,810 kilos., including a load of 400 kilos.; cab for two passengers of the Société Internationale des Transports Automobiles (Jenatzy system), 1,600 kilos.; delivery van (Jenatzy system), 4,754 kilos., including a battery of 1,250 kilos., and a spare battery, representing a load of 1,400 kilos.; Jeantaud hansom cab, 1,330 kilos., including 400 kilos. of accumulators; Jeantaud victoria for two persons, 1,440 kilos.; Jeantaud cab, 1,310 kilos.; Jeantaud drojsky, 1,024 kilos.; Panhard et Levassor cab, 1,160 kilos.; Panhard et Levassor delivery van, 1,800 kilos. After weighing, each vehicle was placed between two hurdles, one fifty centimetres behind, and the other a metre in front, and it had to steer out without touching them. All the vehicles did this successfully, and even the heavy Jenatzy van managed to squeeze itself out of these narrow quarters. This is, of course, one important factor of efficiency in vehicles intended for town service, as it is evidently of the first necessity that they should be able to get out of a tight fit in the thick traffic. After these manoeuvres the cars were sent along a marked kilometre, where they were timed for the various speeds, and then they went to Mont Valérien for the brake tests. Here again the vehicles performed much more satisfactorily than they did last year. The previous trials showed makers the necessity of having thoroughly reliable brakes, and these have been so far improved that in the tests down hill not a single failure was noted. The cars were driven down the



THE PANHARD DELIVERY VAN.

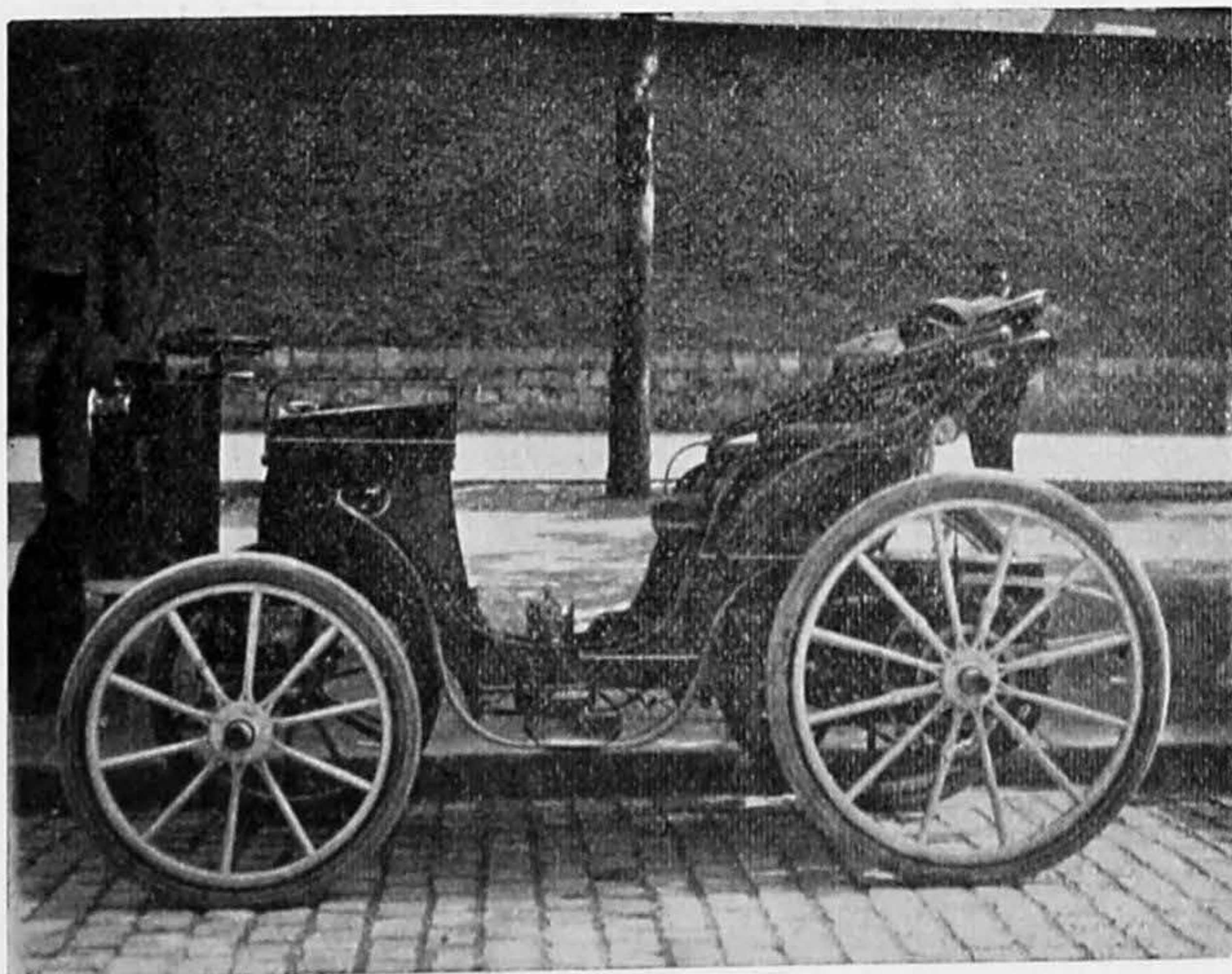




MILDE ET CIE'S VAN.

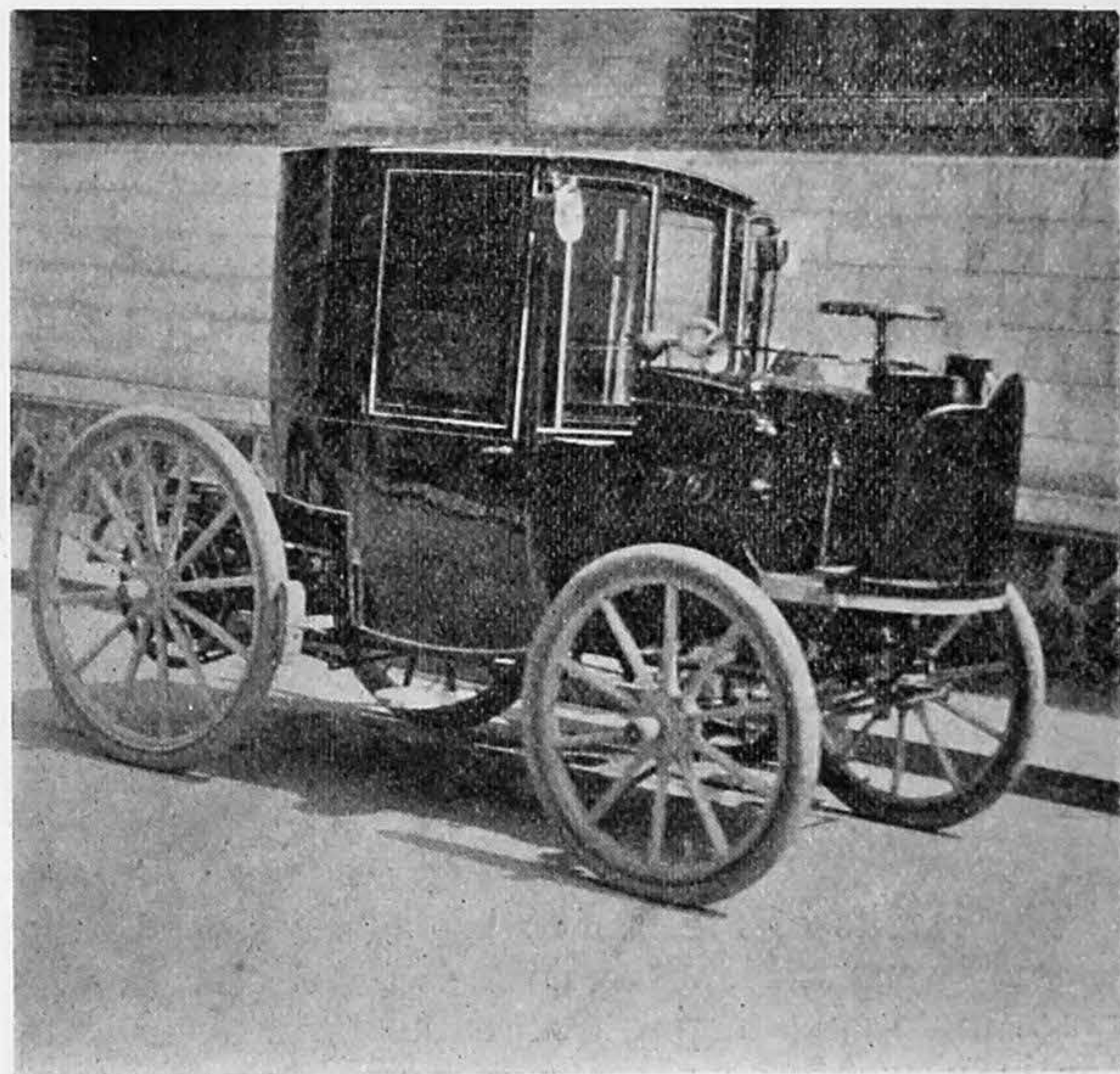
gradient at the rate of about twenty kilometres an hour, and they all came to a standstill in about five metres after the application of the brakes. So far as these are concerned, it is not easy to see how they can be improved upon. The band brakes are thoroughly efficient, and, with the additional brakes on the back wheels as an emergency, the cars can be stopped immediately.

It will be remarked above the enormous disproportion there is between the dead weight of the electric vans and the load. The Midlé van weighing more than two tons only carried about half a ton, and the Jenatzy van, weighing three and a half tons, carries a load of one and a half tons, though the inventor claims that it has a carrying capacity of two tons. By reducing this proportion to the limit allowed by the English law, it will be seen that the electric vans must have a very small carrying capacity, and there is, of course, no way of augmenting this without reducing the weight of the batteries by increasing the capacity of the accumulators. Unfortunately, the trials do not appear to show that any conspicuous advance has been made in this direction



THE JEANTAUD TWO-SEATED CAB.

during the past twelvemonth. Some advance certainly has been made by diminishing the consumption, and this affords some hope that the improvement, if small, is at all events sure, and may in course of time so far economise the consumption as to allow of lighter batteries being carried. It is to the solu-



THE JEANTAUD COUPÉ

tion of this problem that the makers of electric vehicles are chiefly directing their attention until such time as they are provided with the ideal form of accumulator, and it is obvious that, for the moment at any rate, they must strive rather at further economy, instead of relying too much upon augmenting the storage capacity of the batteries.

The Jenatzy van, built for the Magasins du Louvre, which have ordered several others of the same type, has a gross weight with load of about five tons. During the trials it carried two batteries, the second



THE JENATZY VAN.

one taking the place of the load. One battery is sufficient for a journey of about forty kilometres, though Mr. Jenatzy claims that it would have easily enabled the car to do the full distance of sixty kilometres.



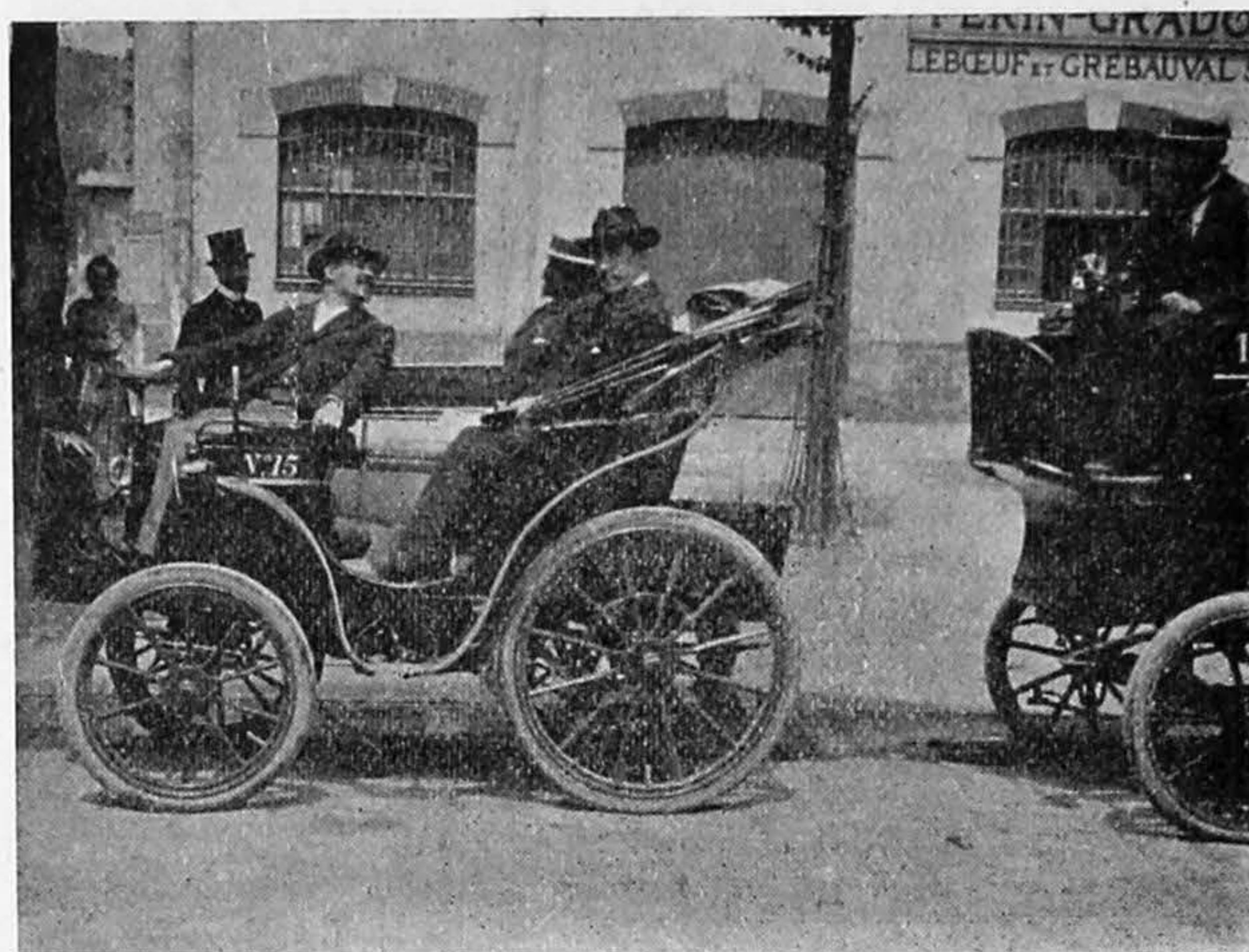
We have, however, to confine ourselves to the results of the trials, when the second battery was connected on during the halt for lunch, when about two-thirds of the distance had been covered. The accumulators are of the Blot-Fulmen type, with Planté positives. The propelling mechanism consists of two Poste-Vinay motors, each of 10,000 watts, and these are geared on to the countershaft, which carries the chain wheels. Just inside these wheels is the band brake operating on the countershaft, and this arrangement appears to be a particularly effective one, and seems to act more promptly and more powerfully than when the brake is on the rear hubs. The rear wheels have broad iron tyres, and the front ones are shod with rubber. As a delivery van, the Jenatzy vehicle proved itself to be thoroughly satisfactory, but it was by no means the most comfortable conveyance for those passengers who, in the absence of seats, had to do their best for a makeshift during the journey of sixty kilometres inside. In company with M. Georges



THE JEANTAUD HANSOM

Prade, of *Le Vélo*, and the inevitable photographer, we covered the C route on the last day, and we could fully appreciate the sufferings of W. S. Gilbert's martyr, who was "fastened to the floor," while a "mercenery whopped him with a will," the mercenary in this case finding a substitute in the granite setts, which caused the bottom of the car on which we sat to tremble and jump in an unpleasant, not to say painful, manner. The vibration, however, was scarcely noticeable on the good roads, and, indeed, was no worse than would be experienced in a horse vehicle, despite the fact that the van was travelling at a much greater rate. M. Jenatzy had the van under admirable control, stopping and starting his car with the greatest ease, and insinuating the heavy vehicle through the traffic in a way that made the cabmen look green with envy. They were pretty free, too, in their expressions of opinion, which were not always couched in the most polite language. The route lay up over Montmartre, by way of the famous Rue Lepic, with its long and trying gradient and cobbled surface. This hill was taken at a brisk walking pace with a rate of discharge of 105 ampères

at eighty-five volts, while the photographers followed behind taking snapshots, though, unfortunately, the results, owing to the dull weather, were not satisfactory. At the top of Montmartre Jenatzy took a wrong street, and found himself jammed in a narrow thoroughfare, unable to proceed any further. He



THE JEANTAUD DROJSKY.

had to back out downhill, a rather risky performance, but he accomplished it without danger, and we were soon going down the other side of the Butte. Then we got mixed up in the thick traffic of the Rue de Paradis, and while the horses were sprawling about in all directions on the asphalt, the big electric van went through smoothly and silently, not losing an inch of its position behind the other vehicles. Notwithstanding the weight of the van, the power developed was very small, for on the level the average was forty ampères at eighty-five volts, and this, too, for a speed of about fifteen kilometres an hour. After lunch the pace was increased, and in passing the cabbies M. Prade tried to get a snapshot of one of these professional opponents of the autocar in a state of excitement, but, though he tried to work



THE KRIEGER CAB

them into fury, they were all in desperately good humour, and the idea of fixing the features of an irate cabby on the plate had to be abandoned. The van covered the distance in about four and a half hours, and on some days considerably less, and the consumption was 36 1-3 kilowatt hours.

(To be continued.)



## JUSTICES' JUSTICE.

Mr. Fredk. William Lawrence, 63, King Street, Cambridge, was summoned for driving a motor car furiously in St. Andrew's Street on the 8th inst.

Mr. S. J. Miller appeared for the defendant. P.C. Sharman said he saw the defendant driving a motor car furiously. There were several vehicles in the street, and Lawrence was driving nine or ten miles an hour. As he was going between two vehicles he caught a wheel of Mr. Beales's conveyance. Afterwards defendant said he was driving about five or six miles an hour. Mr. C. E. Hammond, a banker of Newmarket, said he saw the motor car, which was going about eight or nine miles an hour. It collided with a carriage. The defendant said he had been to Wolverhampton to learn "the ins and outs" of a motor car, and could manage one properly. When the driver of the carriage saw the motor trying to pass him he pulled into the middle of the road, and they collided. Sydney Smee, a photographer, gave similar evidence. Hubert John Hills also gave evidence. Defendant was fined £1, including costs.

A correspondent who was present at the hearing of the case writes: "A curious admission was made by the magistrate, Dr. Cooper. In examining a witness, Mr. Miller, the defending solicitor, said that if the car had been a cab no notice would have been taken of it, and the witness agreed, and later on Mr. Miller, in addressing the Bench, stated that it was purely a case of prejudice against motor cars, and Dr. Cooper said without any hesitation that '*he himself was prejudiced against them, and that he had never ridden in one and never would.*'"

"There were two other magistrates in attendance, and as the case was panned down to these facts, that the car (a Star Benz) was travelling at six and a half miles per hour, and in passing between two vehicles one of them drew out, and this carriage (the one that was being overtaken), which was proceeding at a walking pace, collided with the car, but there was no damage done either way, and really no case. A fine was imposed.

"I must mention that the police of Cambridge are not only fair, but are favourable to motor cars."

The two first appointments as official timekeepers to the Motor Car Club are those of Messrs. F. T. Bidlake and F. W. Baily.

\* \* \*

We hear that a South London engineering firm, Mr. J. Stannah, of Southwark Bridge Road, S.E., is constructing an experimental motor vehicle.

\* \* \*

Mr. C. F. Monk has entered into partnership with Mr. H. M. Lonsdale, and they have commenced business under the title "Monk and Lonsdale," at 105, North Road, Brighton. They cater fully for the wants of autocarists, and hope shortly to introduce a light car of their own design.

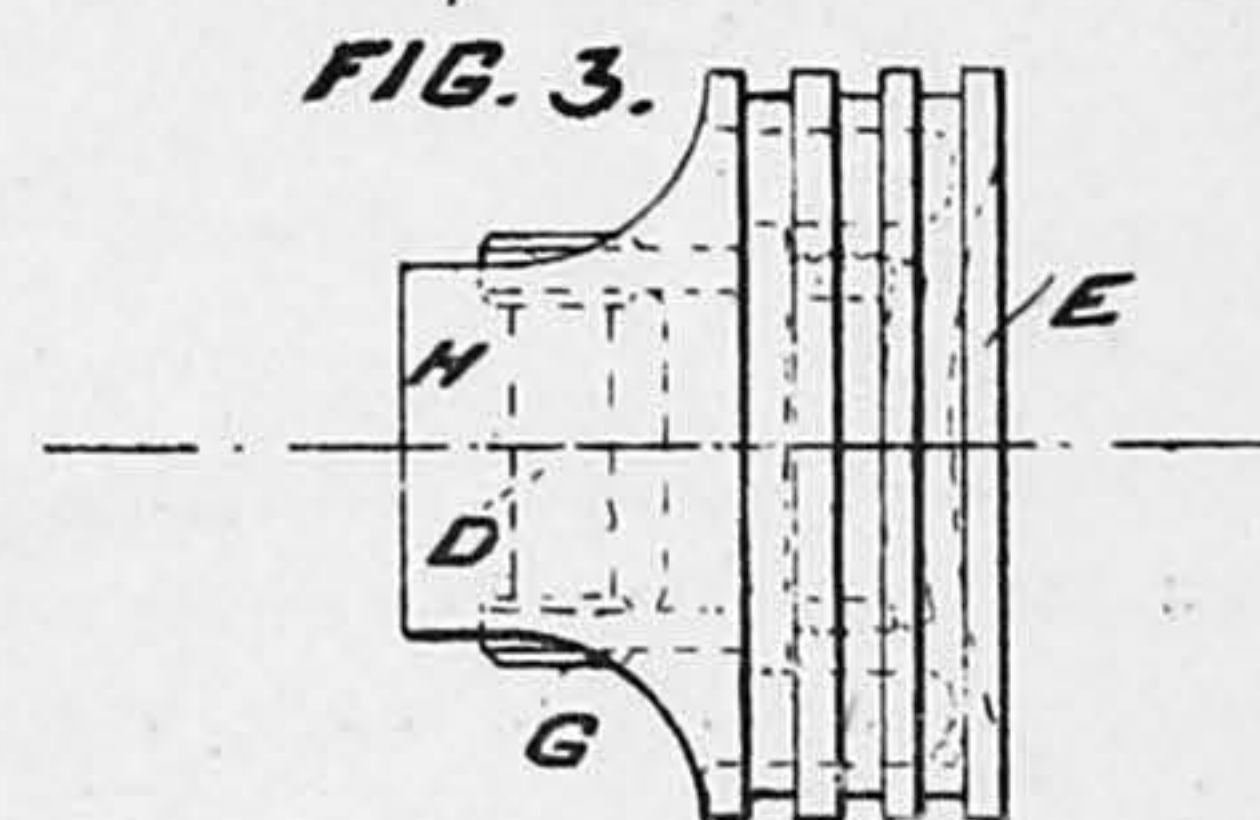
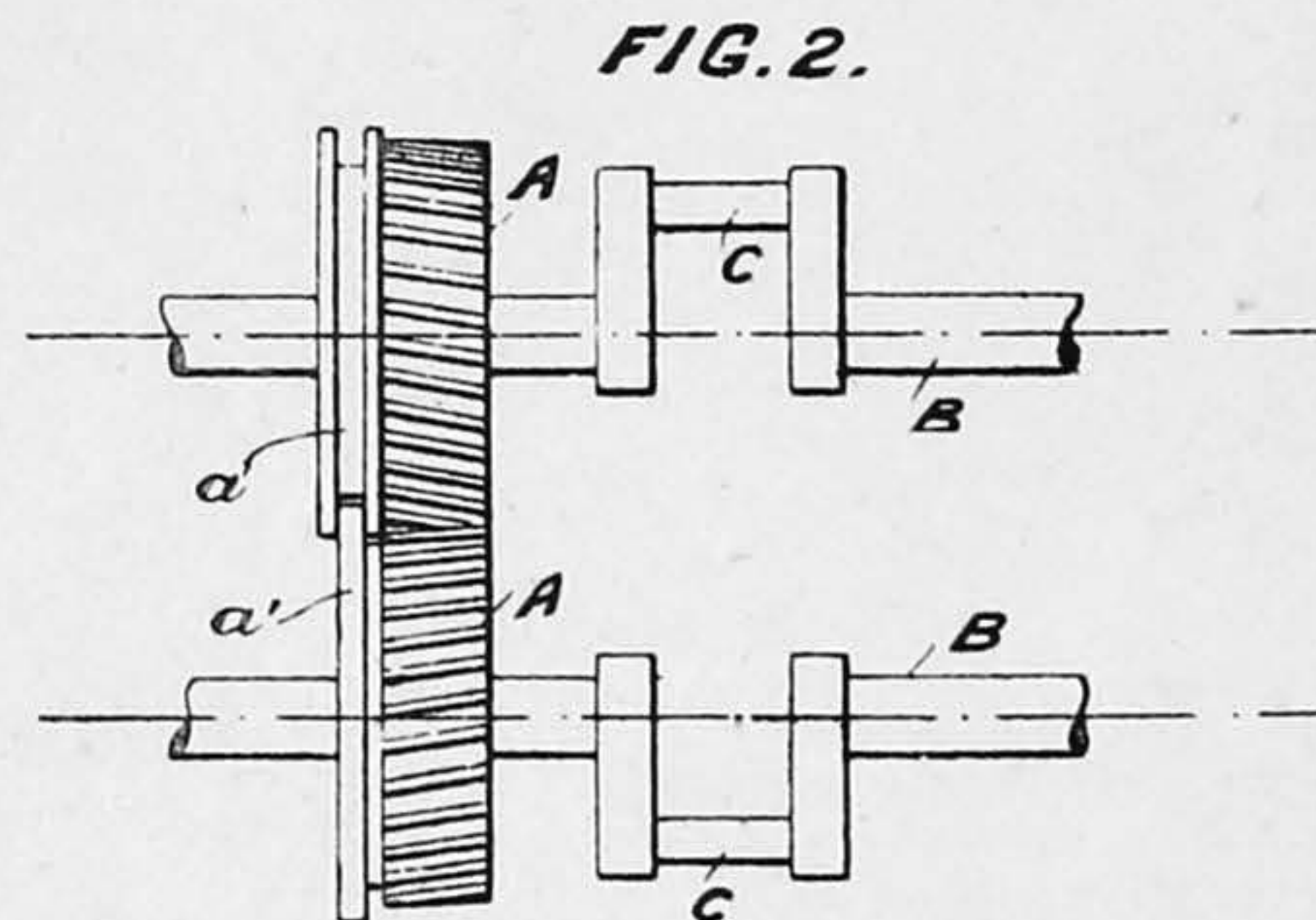
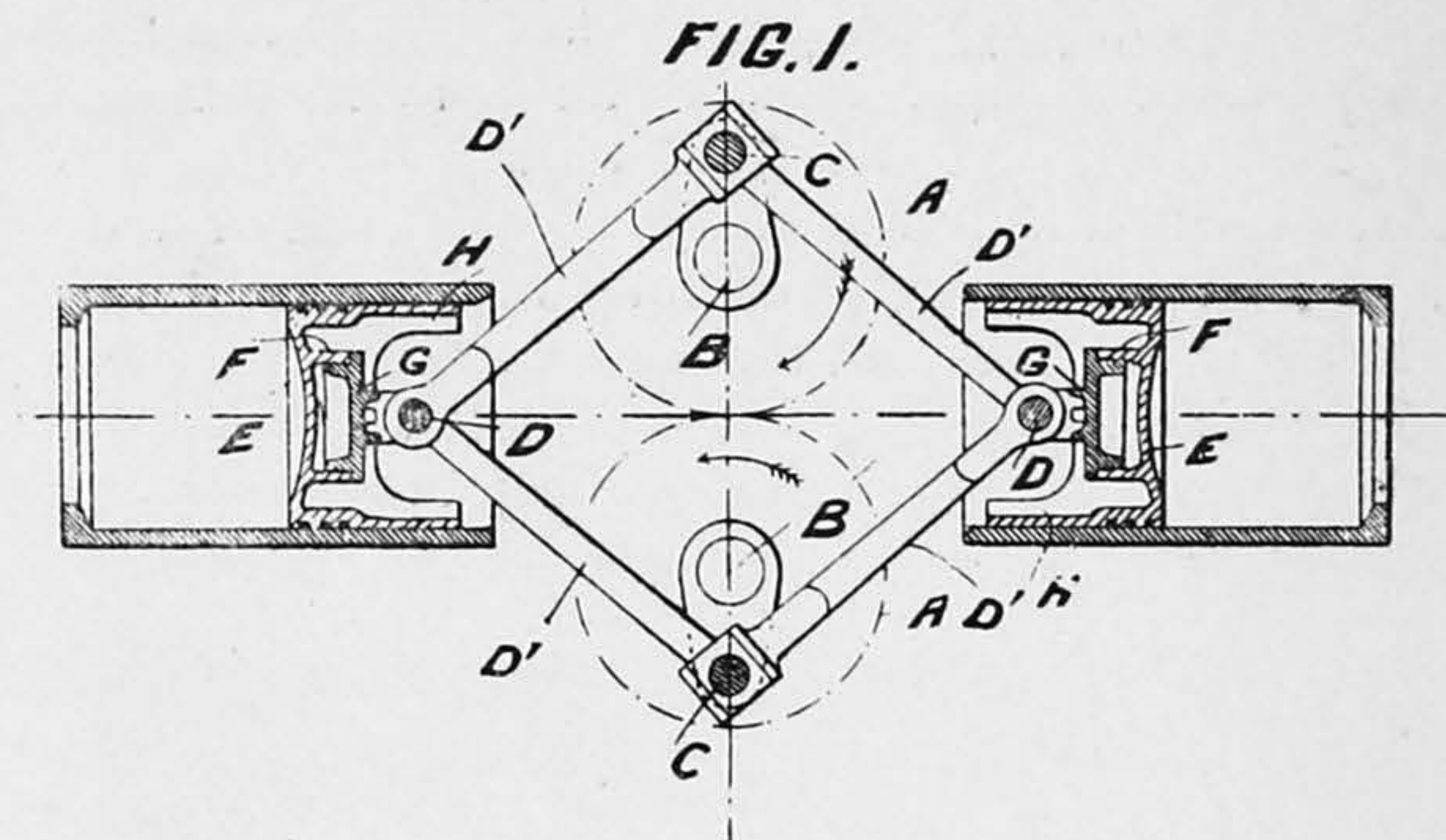
\* \* \*

The latest departure in automobile construction is a motor lawn roller and mowing machine. Such a combination is being introduced by Messrs. Grimsley and Son, of Halford Street, Leicester, who claim that it is particularly well adapted for use in parks, cricket grounds, etc. The roller and mowing machine is driven by a two-cylinder petroleum engine working up to six horse-power. Something of the sort was brought out in America a year or two back, and was referred to in our columns at the time.

## New Patents.

### ABRIDGMENTS.

No. 10,836, A.D. 1898, MAY 12TH.—FLUID PRESSURE ENGINES, F. W. LANCHESTER. This invention relates more particularly to balance motors of the type described in specification No. 13,560 of 1896. The principal object is to relieve the piston and cylinder or crosshead guide from wear, and to prevent the connecting rod linkwork being subjected to unequal stresses, and further to provide a piston that shall



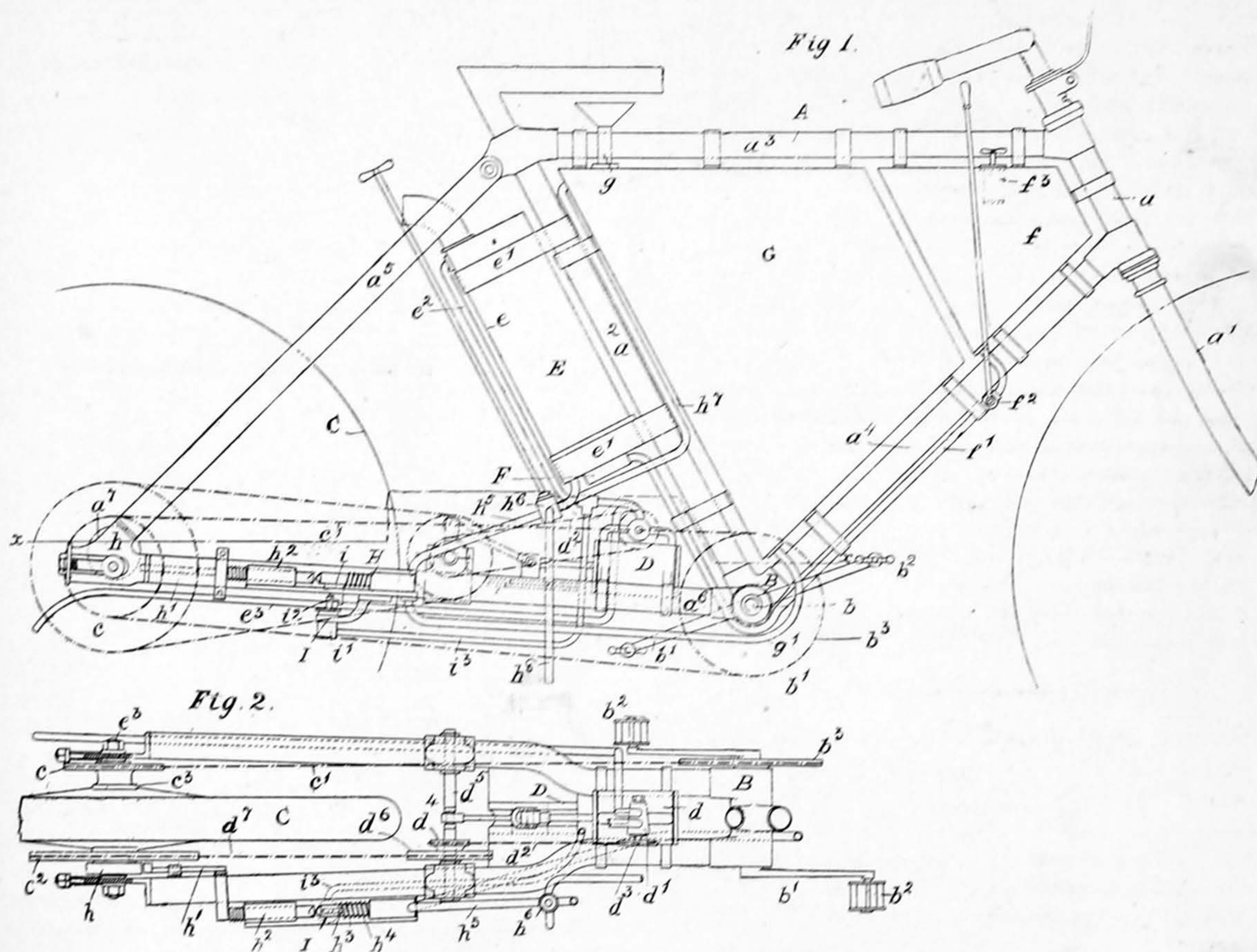
be of relatively great lightness. The invention consists in gearing the respective crankshafts so as to rotate in positive relation one with the other and irrespective of the connecting rod linkwork, so that the piston or pistons may have a perfectly straight line motion, and the motive force be distributed equally through the connecting rod linkwork. The invention further consists in the form and construction of piston hereafter specified. The spur wheels A A are keyed to crankshafts B B, and gear with each other so that the respective crank pins C C occupy positions always equidistant from the centre line of the motor. The crank pins are coupled to piston pins D D by the connecting links D' D', which are of equal length. The gear wheels A A are preferably of helical form, so that their running may be as silent as possible. The double helical form may be employed, or the special form shown in fig. 2, in which a plain pair of helical wheels combine with a groove and tongue thrust arrangement a a'. The piston pins D D are carried by brackets G secured to the flange F of the piston. The back of the piston E is concave. The tongues H integral with the pistons steady the piston in the event of undue friction on the pin bearing, and also hold and retain the lubricant and cause it to be more evenly distributed over the interior of the cylinder.



No. 464, A.D. 1898, JANUARY 7TH.—MOTOR-DRIVEN VELOCIPEDES, G. A. KITCHEN. The motor D is a steam engine, having a double-acting cylinder  $d$  with a rotary valve  $d^1$ . This valve is driven by a chain band  $d^2$  passing over the sprocket wheels  $d^3 d^4$  fixed to the motorshaft  $d^5$  and valve spindle. The motorshaft  $d^5$  is fitted with a sprocket wheel  $d^6$ , and the latter gears with the sprocket wheel  $c^2$  upon the driving wheel D by means of the chain band  $d^7$ . Arrangements are made by which the motorshaft or the driving wheel axle can over-run the pedal crank axle. To the seat-post  $a^2$  is fixed a generator E, made of a coil of steel tubing enclosed in a metal casing  $e$  lined with a fire clay or asbestos. This coil is held in position by clips fixed to the casing  $e$ , the latter being fixed to the framework by clips  $e^1$ . From the upper end of the coil is led a pipe  $e^2$  to the cylinder valves  $d^1$  for the steam supply to the cylinders, and an exhaust pipe

regulate the injection of water in accordance with the power required a controlling device is employed, which has a graduated terminal  $i$  fixed to the plunger  $h^3$ . At right angles thereto is mounted a cylinder  $i^1$  fitted with a plunger  $i^2$ , whose outer end engages with the stepped terminal  $i$ . The cylinder communicates by a pipe  $i^3$  with the generator E. The plunger  $i^2$  is normally kept home in the cylinder  $i$  by a spring. The exhaust pipe  $e^3$  may be led to a condenser fixed to the framework A. In order to stop the action of the motor quickly a by-pass valve  $h^6$  is arranged in the delivery pipe  $h^5$  from the pump to the generator, and a branch pipe  $h^7$  is led from the valve  $h^6$  to the water tank G. Leading from the valve also there is a pipe  $h^8$  which can communicate with the generator and act as a blow-off pipe.

No. 20,532, A.D. 1898, SEPTEMBER 28TH.—ELECTRICALLY PROPELLED VEHICLES, R. W. BLACKWELL. The vehicle is



No. 464.

$e^3$  is led from the valve  $d^1$  to the rear of the machine. In the casing beneath the coil there is fixed a petroleum burner F, to which the petroleum is fed by gravity from a vessel  $f$  through the pipe  $f^1$  having a shut-off cock  $f^2$  therein. To increase the pressure of the fuel as it issues from the burner I make the vessel  $f$  airtight, and fix therein an air pump  $f^3$  operated by the rider when required. A water tank G fixed to the framework A is provided with a filling manhole and cover  $g$ , and the water is led by a pipe  $g^1$  to a pump H fixed to the lower part of the framework. The pump is operated by a cam eccentric  $h$  fixed to the driving wheel hub  $c^3$ . This eccentric communicates its motion through a sliding rod  $h^1$  to a sliding rod mounted in a guide  $h^2$  in line with the axis of the pumps. The pump plunger  $h^3$  is normally held out against the rod  $h^1$  by a spring  $h^4$ . From the pump is led the feed or delivery pipe  $h^5$  to the generator. In order to

furnished with two storage batteries A A' and electric motors having two sets of armatures and commutators B' B<sup>2</sup> mounted on the same shaft and corresponding field coils  $b^1 b^2$ , a resistance C, and a switch or controller D D', all of the devices being so arranged that, besides the stopping or in-operative position, nine different conditions of working are provided for. The switch or controller D D' comprises two relatively adjustable parts, the stud plate D, and the switch cylinder D'. The stud plate is provided with thirteen contact studs  $a$  to  $m$ , connected to the storage batteries, motor, and resistance. The positive poles of the batteries A A' are respectively connected to the studs  $a$  and  $l$  by conductors  $a^1$ ,  $a^2$  and the negative poles are respectively connected to the contact studs  $m$  and  $k$  by the conductors  $a^3 a^4$ ; the terminals of the resistance C are respectively connected to the contact studs  $a$  and  $b$ ; the terminals of the motor field



coil  $b^1$  are connected to the contact studs  $c$  and  $d$ , and the terminals of the motor field coil  $b^2$  are connected to the contact studs  $e$  and  $f$ ; the terminals of the armature coil  $B^1$ , or the brushes constituting these terminals, are connected to the contact studs  $g$  and  $h$ , and the terminals of the armature coil  $B^2$ , or the brushes constituting the terminals are connected to the contact studs  $i$  and  $j$ . On the surface of the switch cylinder  $D^1$  are provided a number of contact blocks so arranged that at different parts of the rotation of the said cylinder they will be caused to make contact with some or all of the studs of the stud plate  $D$  according to the particular direction in, or speed at, which it is desired the vehicle shall be propelled. When the vehicle is at

11 in fig. 1, with the result that a big current, and consequently big starting torque are obtained, the ratchet wheel recess  $e^2$  serving to retain the switch cylinder  $D^1$  in this position for any desired length of time. The motor will then propel the vehicle forward at its minimum speed. The forward speed of the vehicle may then be gradually increased through the III., IV., V., and VI. stages until the maximum stage (VII.) is reached. When the switch cylinder is moved so that the part 3 thereof is presented towards the stud plate  $D$  the contact blocks  $3^n 2^p 2^q 2^r$  and  $2^s$  cause the last described circuit to be maintained, but with the resistance  $C$  short-circuited, as shown at III. (fig. 1), the result being that a higher speed is obtained without wasteful consumption

Fig. 1.

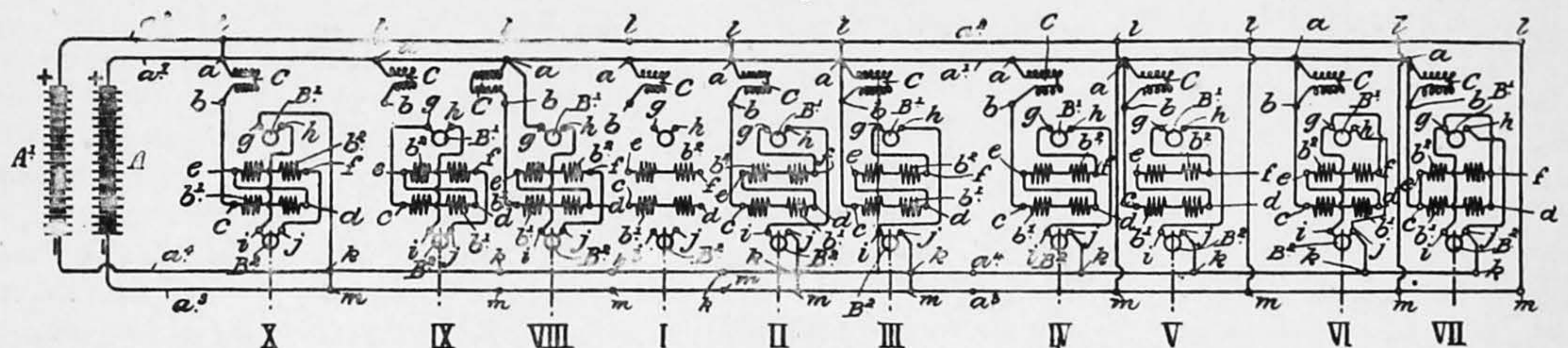


Fig. 2.

Fig. 3.

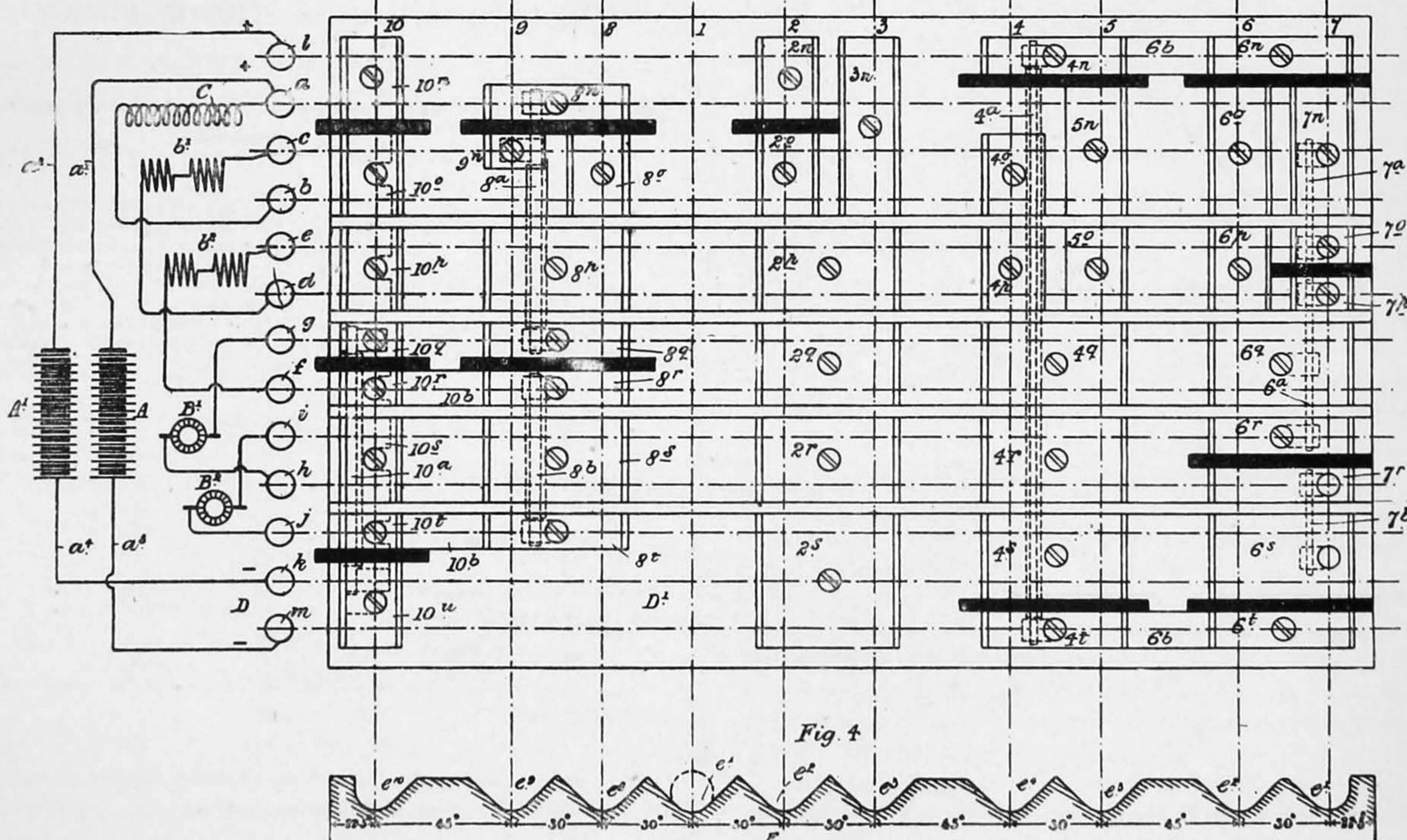


Fig. 4.



No 20.532.

rest the part 1 of the switch-cylinder  $D^1$  is presented to the stud plate  $D$ , and as there are no contact blocks at this part of the switch cylinder no electrical circuit is established, as shown at I. (fig. 1), the recess  $e^1$  of the ratchet or star-wheel  $E$  serving to retain the cylinder  $D^1$  in this position for any desired period. When it is desired that the vehicle shall be propelled forward the switch cylinder  $D^1$  is turned so as to present the part 2 thereof towards the stud plate  $D$ , in which position, through the contact blocks  $2^n 2^o 2^p 2^q 2^r$  and  $2^s$  and all of the contact studs  $a$  to  $m$ , the batteries  $A A^1$  are connected in parallel, and the resistance  $C$  and field and armature coils  $b^1 b^2 B^1 B^2$  are connected in series as shown at

of electrical energy, there being no idle resistance presented to the passage of the current. The recess  $e^3$  of the ratchet or star-wheel  $E$  serves to retain the switch cylinder  $D^1$  in the last named position for any desired length of time. When the part 4 of the switch cylinder  $D^1$  is presented towards the stud plate  $D$  the contact blocks  $4^n 4^o 4^p 4^q 4^r 4^s$  and  $4^t$ , the first and last of which are electrically connected together by a conductor  $4^a$  by making contact with the studs  $b$  to  $m$ , serve to connect the batteries  $A A^1$ , field and armature coils  $b^1 b^2 B^1 B^2$  and resistance  $C$  all in series, as shown at IV. in fig. 1, with the result that, owing to the greater electromotive force then available a higher speed is obtained. When



the part 5 of the switch cylinder D' is presented towards the stud plate D the contact blocks 4<sup>n</sup> 5<sup>n</sup> 5<sup>o</sup> 4<sup>q</sup> 4<sup>r</sup> 4<sup>s</sup> and 4<sup>t</sup> and all of the contact studs *a* to *m* cause the last described circuit to be maintained, but with the resistance C cut out therefrom as shown at V. in fig. 1, so that the vehicle is propelled at a greater speed with no useless expenditure of electrical energy. When the part 6 of the switch cylinder is moved into its effective position the contact blocks 6<sup>n</sup> 6<sup>o</sup> 6<sup>p</sup> 6<sup>q</sup> 6<sup>r</sup> 7<sup>r</sup> 6<sup>s</sup> and 6<sup>t</sup>, in conjunction with all the contact studs, connect the field coils in series, the armatures in multiple, and the batteries in series, the resistance being cut out. The blocks 6<sup>q</sup> and 6<sup>r</sup> are electrically connected by a conductor 6<sup>a</sup>, and the blocks 7<sup>r</sup> and 6<sup>s</sup> are also connected by the conductor 7<sup>b</sup>. Also 6<sup>n</sup> and 6<sup>t</sup> are likewise connected by conductor 4<sup>a</sup> in connection with the blocks 4<sup>n</sup> and 4<sup>t</sup> with their joining pieces 6<sup>b</sup>. To obtain the maximum forward speed the switch cylinder is turned into its seventh position, so as to place the blocks 6<sup>n</sup> 7<sup>n</sup> 7<sup>o</sup> 7<sup>p</sup> 6<sup>q</sup> 6<sup>r</sup> 7<sup>r</sup> 6<sup>s</sup> and 6<sup>t</sup> in contact with all the studs *a* to *m*. The blocks 7<sup>n</sup> and 7<sup>o</sup> are electrically connected by a conductor 7<sup>a</sup>, the blocks 7<sup>p</sup> 6<sup>q</sup> and 6<sup>r</sup> are electrically connected by the before mentioned conductor 6<sup>a</sup>, and the blocks 7<sup>r</sup> and 6<sup>s</sup> are electrically connected by a conductor 7<sup>b</sup>. By this arrangement the batteries A A' are connected in series, the field and armature coils b' b<sup>2</sup> B' B<sup>2</sup> are connected in parallel, and the resistance C is cut out of the circuit as shown at VII. in fig. 1. Throughout these stages the switch cylinder D' has been turned always in the same direction, and when it is desired to stop or reverse the motion of the vehicle after the cylinder has been thus operated the cylinder must be turned in the reverse direction, so that these several stages may be passed through in the reverse order. When it is desired that the vehicle should stop without the application of brake power, or allowing the vehicle to proceed by its own momentum as when travelling down an incline, the switch cylinder D' is turned into, and retained in the position in which the part 1 thereof is presented towards the stud-plate D, so that the electrical circuit is broken. When, however, it is necessary to apply brake power to arrest the progress of the vehicle the switch cylinder D' is turned so that its part 8 is presented towards the stud plate D, in which position the blocks 8<sup>n</sup> 8<sup>o</sup> 8<sup>p</sup> 8<sup>q</sup> 8<sup>r</sup> 8<sup>s</sup> and 8<sup>t</sup> in conjunction with the contact studs *a* to *j* connect one of the field coils and the corresponding armature coil with the other of the field coils and its corresponding armature coil so that each motor generates an electro-motive force in such a direction that a current is caused to circulate through the two motors and through the resistance C, thereby creating a powerful force for retarding the vehicle; in this position of adjustment, as shown at VIII. (fig. 1), the batteries are entirely disconnected. When the maximum braking power is to be applied the switch cylinder D' is moved so as to present its part 9 towards the stud-plate D, in which position the blocks 8<sup>n</sup> 9<sup>n</sup> 8<sup>p</sup> 8<sup>q</sup> 8<sup>r</sup> 8<sup>s</sup> and 8<sup>t</sup> by making contact with the contact studs *a* to *j* cause the batteries to remain disconnected as in the first braking position VIII. (fig. 1), and the resistance C to be cut out from the circuit as shown at IX. in fig. 1, consequently because of the decreased resistance of the circuits of the motors now acting as generators the current greatly increases and the braking effect also correspondingly increases. When it is desired that the vehicle shall travel backwards the switch cylinder is turned into its tenth position, so as to bring the contact blocks 10<sup>n</sup> 10<sup>o</sup> 10<sup>p</sup> 10<sup>q</sup> 10<sup>r</sup> 10<sup>s</sup> 10<sup>t</sup> and 10<sup>u</sup> into contact with all of the studs *a* to *m*, so that the batteries A A' are connected in parallel, and the field and armature coils b' b<sup>2</sup> B' B<sup>2</sup> and resistance C are connected in series as shown at X. in fig. 1, the current then passing through all the coils in such a direction as to drive the motors backward.

## Answers to Correspondents.

R. F. C.—Many thanks for yours.

T. ALTHAM AND SON.—Thanks; have noted.

R. W. ROBINSON.—Have noted in this issue.

A. F. E.—Please accept our best thanks for your last.

R. A. MARPLES.—Many thanks; have done as suggested.

FAIRPLAY.—Will insert if possible, but the pressure of news this week is so great that we may be compelled to withhold at the last moment.

H. KEMP (Slough).—Have done as wished. We do not see how you can possibly do better than the dry battery. Every motor tricyclist with whom we are acquainted is pleased with it, and finds it the most satisfactory that he has used. Let us know your troubles, and very likely we, or one of our correspondents, will be able to put you right.

R. BECK.—Very many thanks for your note. It would appear that *Cycling* fell into the same error that the motor car paper did the previous week. However, we think we have put the matter straight as far as possible. Glad you will be at the Richmond Show; we think you will find it extremely interesting. When you see Mr. C. please tell him we shall be glad to hear of his progress in automobilism.

## Miscellaneous Announcements.

**All advertisements inserted in this column must be strictly prepaid.**

*Under this head we are prepared to insert advertisements of autocars and other goods for sale, situations vacant and wanted, patent rights, partnerships, businesses for disposal or wanted, and other miscellaneous announcements of a like character. The charge for each insertion is 2s. 6d. for thirty words or less, and 6d. for every six words or less in addition, and a discount is offered of one free insertion in a series of thirteen, i.e., a 2s. 6d. advertisement will be inserted thirteen times for £1 10s., etc. All advertisements or series of advertisements inserted in this column must be strictly PREPAID, and must reach COVENTRY not later than MIDDAY on WEDNESDAY to ensure insertion.*

**Numbered Addresses.**—For the convenience of advertisers, letters may be addressed to numbers at THE AUTOCAR Office. When this is desired, 2d. will be charged for registration, and three stamped and addressed envelopes must be sent for forwarding replies. Only the number will appear in the advertisement. Replies should be addressed "No. 000, c/o THE AUTOCAR, 19, Hertford Street, Coventry," or if "London" is added to the address, then to the number given, c/o THE AUTOCAR, 3, St. Bride Street, Ludgate Circus, E.C.

**Deposit Department.**—Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with THE AUTOCAR both parties are advised of this receipt, and upon intimation of the arrival and acceptance of the goods, the money is forwarded less a charge of 1s. for registration, and a deposit fee of 1½ per cent. on the value of the transaction. All deposit matters are dealt with at Coventry.

**All advertisements inserted in this column must be strictly prepaid.**

## SITUATIONS WANTED AND VACANT.

**ADVERTISER**, eleven years' practical engineering experience, having completed the construction of a petrol motor with electric ignition from own designs, is open to take charge of the motor department of a firm taking up the manufacture of motor cars; motor can be seen working.—Apply 1,563, The Autocar Office, Coventry.

**GENTLEMAN**, having had considerable experience in the manufacture of gas and oil engines, electrical apparatus, and cycles, will shortly be open for an engagement in either of the above trades, or would entertain commencing a motor department for any manufacturing firm of repute.—No. 1,562, The Autocar Office, 3, St. Bride Street, London.



**THE SHARE MART.**

**W**ILL accept £50 for 349 deferred shares in the London Motor Van and Waggon Co.—No. 1,500.

**W**HAT offers for fourteen ordinary and 344 deferred shares in the London Electric Cab Co.—No. 1,499.

**F**OR Sale.—Ten £10 shares in the Daimler Motor Co. Wanting immediate cash, will accept £45. No. 1,498.

**A**N opportunity for speculation.—Advertiser is open to consider any reasonable offer for 150 British Motor Co. ordinary shares; 100 preference (five per cent.) and 100 four per cent. debentures.—No. 1,501.

**CARS, &c., FOR SALE AND WANTED.**

**W**ANTED, motor tricycle, quadricycle, or other light car; state particulars as to condition, maker's name, price, and where to be seen and tried.—G. DEAN, Hydro-pathic, Windermere.

**W**ANTED to purchase immediately, six Daimler cars to carry four to eight passengers; must be cheap.—Send full particulars and photos to FRANK F. WELLINGTON, 58, Rosslyn Hill, N.W.

**W**ANTED, twelve De Dion motor tricycles, 1½ or 1¾; must be in perfect running order and good condition.—Full details and photos to FRANK F. WELLINGTON, 58, Rosslyn Hill, N.W.

**W**ERNER Motor Bicycle to be sold, cheap, perfect order.—Apply FRANK F. WELLINGTON, 58, Rosslyn Hill, N.W.

**R**OOTTS and Venables' latest paraffin car, to hold two; to be sold, £100.—Apply FRANK F. WELLINGTON, 58, Rosslyn Hill, N.W.

**M**OTOR Char-à-banc, by Daimler, or can be used as a lorry, will carry twenty persons; to be sold cheap.—Apply FRANK F. WELLINGTON, 58, Rosslyn Hill, N.W.

**O**NE Daimler 5½ h.p. Delivery Van, fitted with spare pleasure body, winner of silver medal Crystal Palace, new in August; to be sold cheap.—Apply FRANK F. WELLINGTON, 58, Rosslyn Hill, N.W.

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**P**ANHARD and Levassor Motor Waggonette, to carry eight persons, fully licensed as a stage carriage to run in London, quite equal to new, a rare chance; to be sold cheap.—Apply FRANK F. WELLINGTON, 58, Rosslyn Hill, N.W.

**F**OR Sale.—Almost new Humber Bollée, to seat three, in perfect condition, to be sold cheap; free trials to buyers; full particulars and photos sent.—Apply to FRANK F. WELLINGTON, 58, Rosslyn Hill, N.W.

**F**OR Sale, 5 h.p. Benz Sociable, in perfect running order, quite equal to new, latest improvements; no reasonable offer refused.—Apply FRANK F. WELLINGTON, 58, Rosslyn Hill, N.W.

**D**AIMLER Waggonette, nearly new, seat six, handsome car; £300, 5½ h.p. (Kent).—Apply No. 1,537, *The Autocar Office*, Coventry.

**B**ENZ Victoria, to carry four, in perfect order, recently repainted, very pretty; price £90, a bargain.—HOLDSWORTH, 61, Lord Street, Liverpool.

**N**EW Beeston Co. Motor Tricycle, 1¾ h.p., Beeston tyres, tube ignition, extra tank, and all accessories; in good condition and order; price £44.—Apply K., c/o Tufnail, Newbury.

**G**ENUINE Leon Bollée Voiturette, excellent condition. fast, reliable, and easy to manage; photo sent.—Bernard, 101, Goldhawk Road, Shepherds Bush, London, W.

**G**ENUINE De Dion motor tricycle, new twelve months ago; for sale cheap.—Particulars of "A" DEPARTMENT, Cycle Components Manufacturing Co., Ltd., Componentsville, Birmingham.

**S**ECOND-HAND International Car for sale, cheap, three h.p., fitted with new Connolly tyres, about two years old; can be seen and tried. What offers?—SPEEDWELL MOTOR Co., Reading.

**V**ERY exceptional offer, Benz two-cylinder Desideratum, very fast traveller, in fair order; will accept £100 cash if sold within one week; money wanted.—No. 1,567, *The Autocar Office*, Coventry.

**F**RENCH made De Dion motor pacing tandem bicycle for sale, quite new, with licence plate, 1½ h.p., splendid condition, and very fast.—Apply A. LESLIE BUCKNALL, Esq. Wickhurst Manor, near Sevenoaks.

**M**OTOR (2 h.p. alternating), by Langden Davies, to suit 100 volt circuit, with starting switch and resistance; has never been used; £20.—LILFE, SONS & STURMEY LTD., *The Cyclist Printing Works*, Coventry.

**F**OR Sale, Phebus Aster racing tricycle, extremely powerful motor, will average thirty miles per hour on the road; very large tyres.—S. F. EDGE, 7, Tavistock Chambers, Hart Street, Bloomsbury, London.

**F**OR Sale, brand new 1¾ h.p. 1899 De Dion-Bouton Tricycle, of genuine De Dion-Bouton manufacture, in perfect order; immediate delivery, rare opportunity; cash, £72.—No. 1,565, *The Autocar Office*, Coventry.

**1**899 International Benz Dogcart, Brampton chain, Connolly tyres, automatic chain lubricators, regulating lever, plated top rail, fast and powerful car; £150, free trial.—JOHNSON & SON, St. James Street, Lynn.

**F**OR Sale, Benz Dogcart, 5 h.p., nearly new, written guarantee as to condition, good hill-climber and fast, every facility for testing same; owner has larger car.—Price, etc., No. 1,566, *The Autocar Office*, Coventry.

**T**HREE Benz 16 h.p. Waggonettes, for thirteen persons, excluding driver; on level, sixteen miles. Will take full load uphill; first-class condition; immediate disposal.—HY. LEDSAM, Chartered Accountant, 22, Waterloo Street, Birmingham.

**B**ENZ Ideal, £95; 1½ h.p. Beeston tricycle, electric ignition, £45; 1¾ h.p. De Dion motor tricycle, £68; carrier, suit tradesman, with box, without motor, pneumatic tyres; £14 10s.—COBORN CYCLE AND MOTOR Co., 363, Mile End Road, E.

**GENERAL TRADE ANNOUNCEMENTS.**

**T**RANSFERS for Autocars.—Write for sketch (free) and prices, enclosing wording, to LILFE, SONS & STURMEY LTD., Coventry.

**J**ULIUS HARVEY & Co. supply steam, oil, and electric motor vehicles of every description; illustrated catalogues on application.—11, Queen Victoria Street, London, E.C.

**P**LATINUM used ignition tubes wanted, and platinum scrap of all kinds purchased, best prices, by DERBY AND Co., 44, Clerkenwell Road, London, E.C. Established 1797.

**P**ATTERN and Model Makers.—We have had a large experience in motor work; light patterns a speciality; brass and aluminium founders.—GOODWIN & SON, 16, Charles Street, Hatton Garden, E.C.

**T**HE King quadricycle (convertible), seats two, £105; the King tricycle, £80; King's P.T.S. autocycle (seats two), £84; leather suits, combination waterproofs, densimeters; agents wanted.—THE KING MOTOR CAR Co., 70A, Rye Lane, Peckham.



**EXCEPTIONAL Offer.**—New Benz Cars, all our latest improvements, electric light, regulating lever handy, etc. Eclipse cars sold by others for power. £25 worth extra work put in. Sold at usual prices.—HUNTER, Eastdown Works, Lewisham.

**EXPERIMENTAL Work,** repairs, oil-retaining gear cases for motor tricycles a speciality. — JAMES & BROWNE, 155, Buckingham Palace Road, London, S.W. (near Victoria Station). Telephone 363, Westminster. Telegrams, "Jeminess," London.

**AILSA CRAIG MACHINE COMPANY, LTD.,** Putney.—Nickel-platers, enamellers, motor engineers; repairs, accumulators charged, fittings supplied. Complete cars quoted for, first-class workmanship, moderate prices. Enquiries solicited. Telephone 192, Battersea.

**NEW and second-hand Autocars for sale.**—Accommodation for motor cars; repairs promptly carried out by skilled workmen; petrol, grease, etc., in stock.—ROWLAND BARNETT & CO., LTD., electrical and mechanical engineers, 74, Northumberland Street, Newcastle-on-Tyne.

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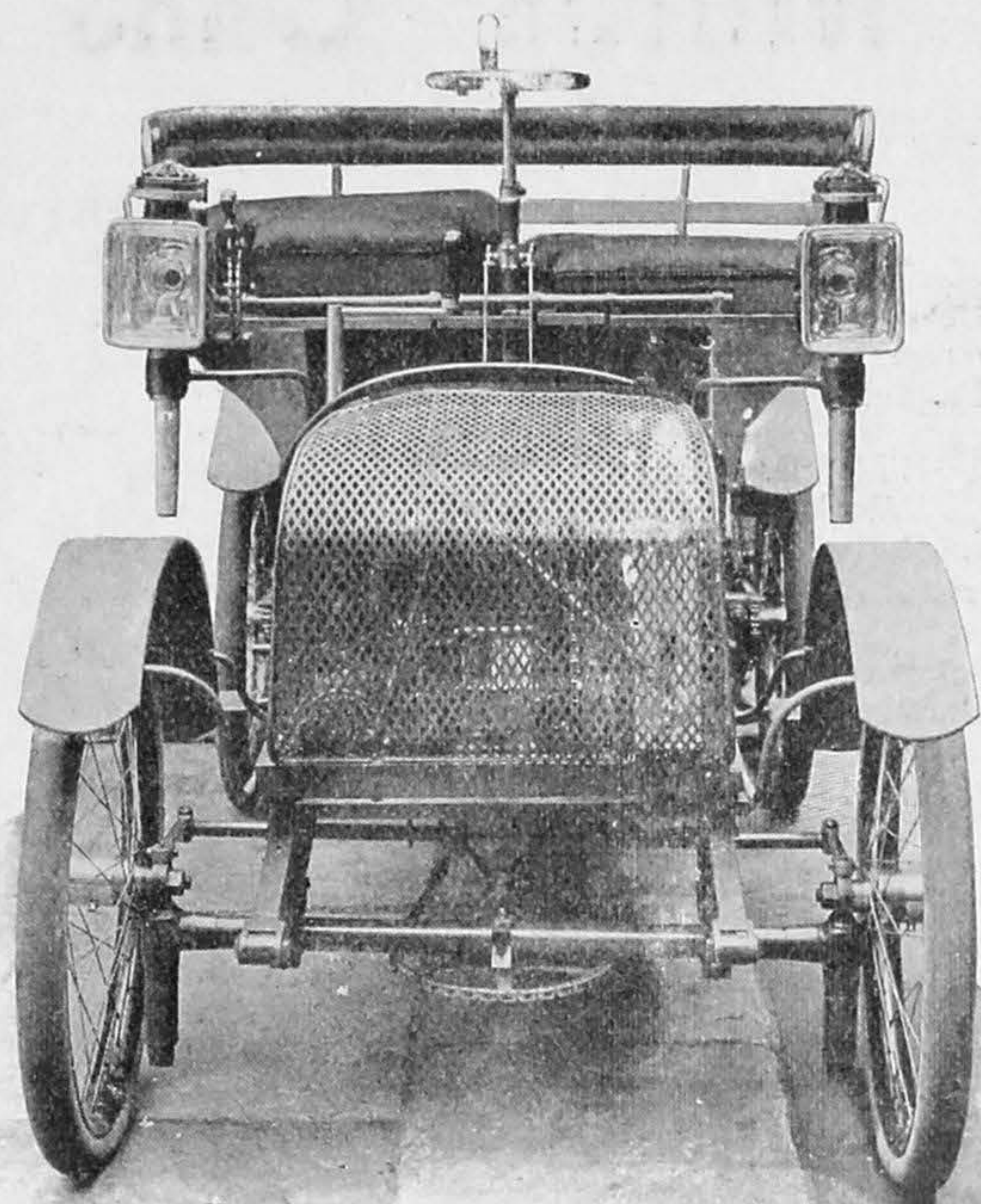
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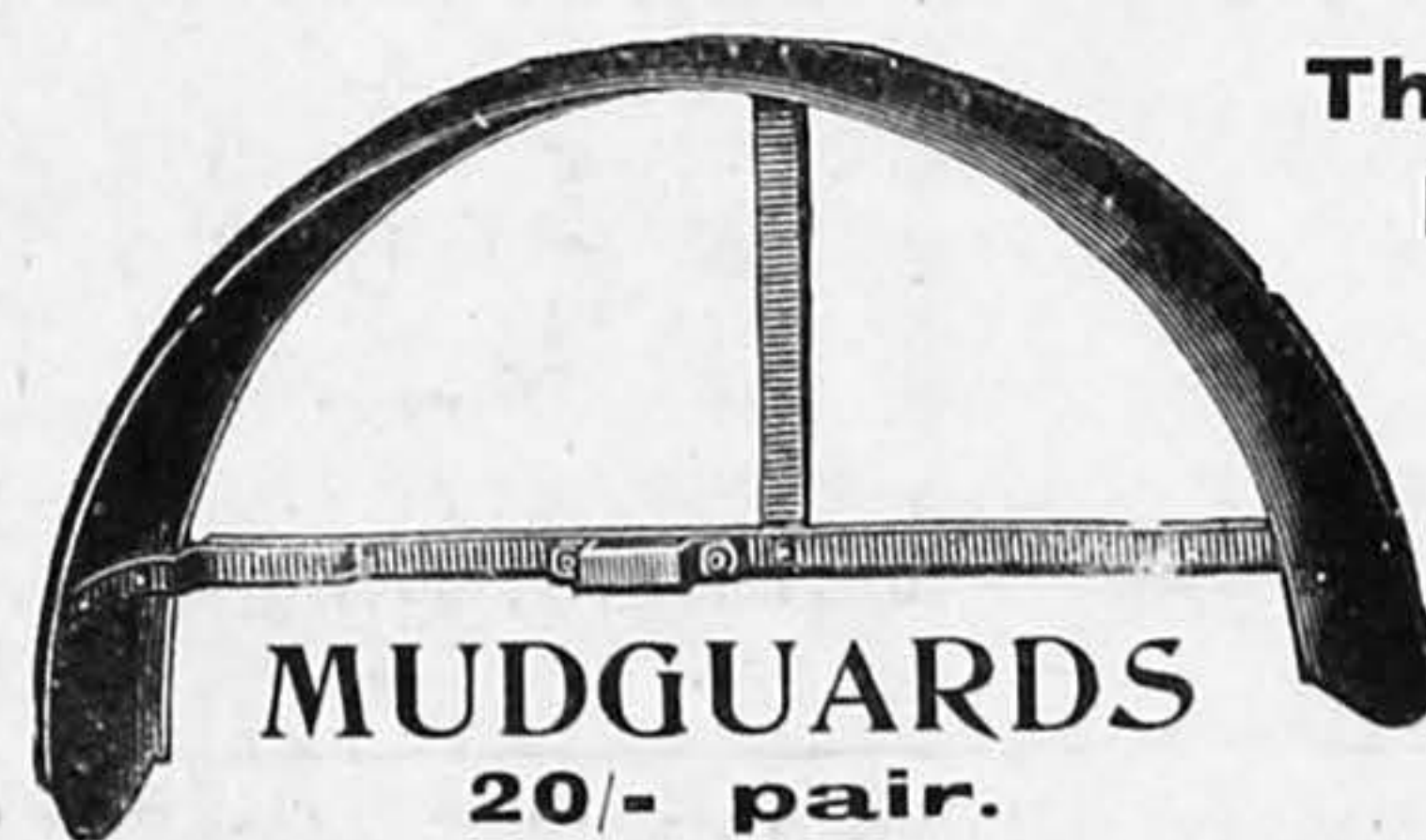
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