THE AUTOCAR

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

EDITED BY H. WALTER STANER.

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THE AUTOCAR.

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Notes.

The Participants in the Trials.

Those who have followed the club reliability trials from the start are naturally impressed with the fact that these have now become entirely a professional matter. That is to say, to all intents and purposes the entrants of the car and the drivers are directly or indirectly connected with the industry, the private owner no longer entering a vehicle and driving it for the pleasure of proving his car. When we look back to 1900 and remember the 1,000 miles tour of the Automobile Club and the 500 miles test at Glasgow fifteen months later, in both of which events, especially the first, a number of private owners and amateur drivers took part, the difference will be at once appreciated. The reasons for this are not difficult to find. In the first place the conditions under which the trials are now run are very severe indeed. They have to be in order that the test may be made as thorough as possible, so that the buying public may be furnished with the greatest amount of information which can be extracted from a lengthy trial under entirely impartial observation and judging. Not only so, but the speed limit under which the trials are conducted makes driving in them extremely monotonous, while with incidentals of one sort or another, participation in the events is very expensive. There are other causes at work, among which the reliability of the motor to-day is a very important one. Good cars are so reliable that there is practically no sporting interest in a road trial. At the same time, there is little doubt that private owners in former trials were discouraged by the fact that no inconsiderable proportion of the cars in their class, though possibly privately owned, could scarcely be characterised as being the property of entirely disinterested amateurs.

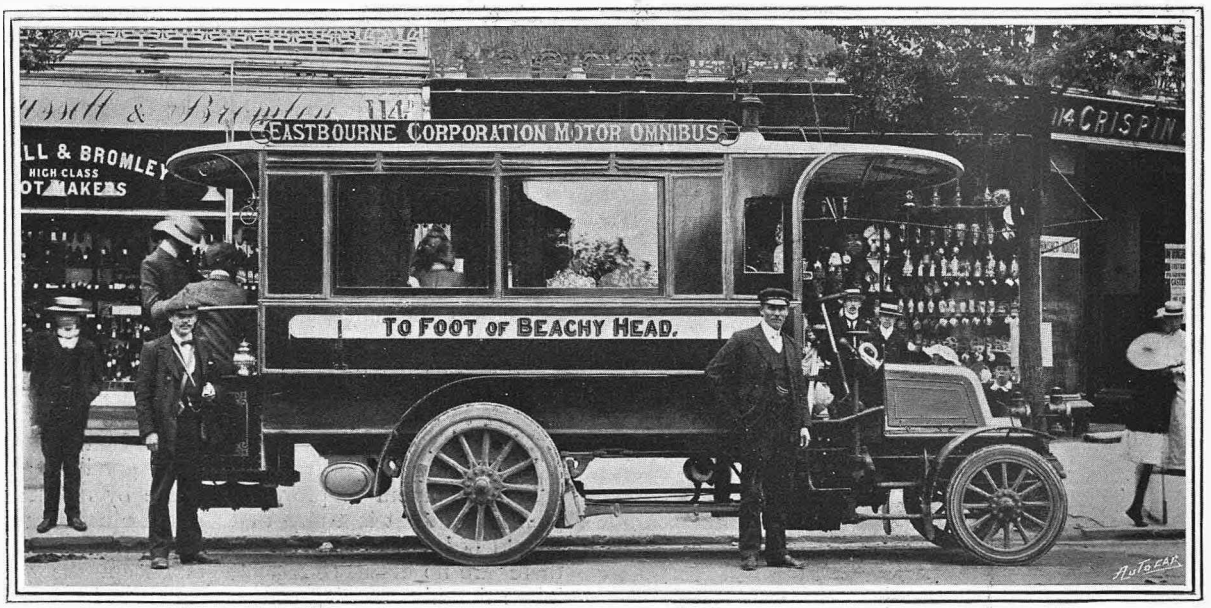
A Road Trial for Amateurs.

The extinction of the amateur class is regrettable from many points of view, though, if the manufacturer is considered, it is easy to see that he would naturally prefer to drive his car himself, or to have it driven by one of his men in whom he could place absolute reliance. He knows that some private owners of cars drive as well as he does himself and do the car the fullest justice, but he also knows, to his sorrow, that many of them do nothing of the kind, and as he, very properly, has a large voice in the organisation of the trials, he has not stirred himself to encourage the amateur class. However, while it is true that almost anyone can control a car with little or no instruction, really good drivers, whether amateur or professional, are by no means plentiful, and it is a pity that amateur carmanship should not be encouraged. At the present time there are no events for amateurs except the very interesting hill-climbing competitions held by various provincial automobile clubs and occasional races such as the Southport events. These, however, do not call for the same skill as the longer tests, and we should like to see the encouragement

of long non-stop drives for amateurs, such as those occasionally promoted by the Reading Club. There is no sense in making these trials too severe so that they become a weariness of the flesh, and we are convinced that an open reliability trial open to amateurs, with an amateur definition plainly set forth and strictly enforced, would be not only very interesting but very attractive both to the participants and to those who carefully followed the official reports of their driving, and we hope that the Automobile Club will see its way another year to institute some fixture of the kind. It will be necessary for it to be most carefully organised both with regard to ensuring that the private owner is not put to unnecessary expense, and further that no direct or indirect tax is levied upon the manufacturer, for, speaking generally, he is already put to very great expenditure through the shows and existing trials in which he feels bound to take part. In fact, a very large number of the members of the industry are strongly of opinion that the reliability trials on the present lines should, at any rate, not take place next year, as the expense is very great, and the majority of the best cars are already of proved reliability, so that unless a large number of new manufacturers come to the front, or some striking changes in design—the latter extremely improbable—are made, there is little necessity for further trials till 1905.

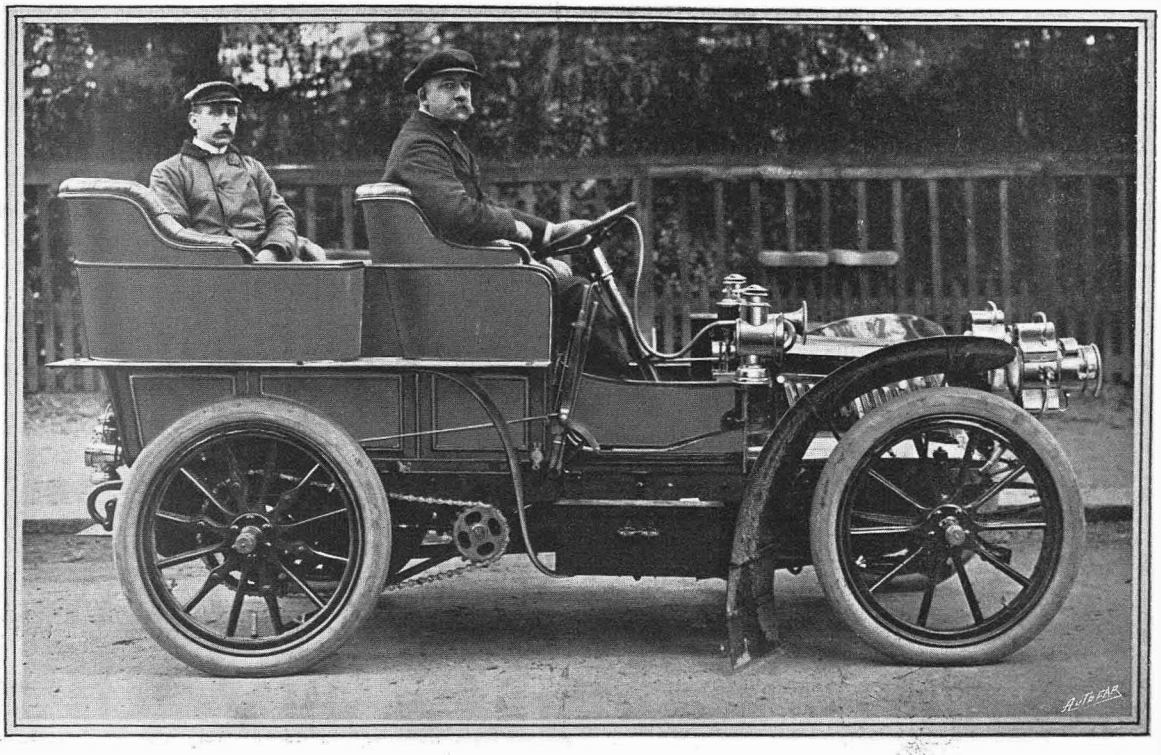
The Death-roll of the Horse.

To-day we publish the returns for twelve months' accidents due to horses, the present laxity of the laws controlling horse traffic, and almost criminal neglect of the authorities to enforce many of the existing regulations. The compilation of the record of fatal and other horse accidents has entailed much labour, but, as we explain elsewhere, the totals we give are far short of actual facts. As a proof of this we need only say that we have personally known of several accidents in the district in which we reside, one of them terminating fatally, which were never reported in any paper, so far as we could discover, while those accidents of which accounts have been sent us by our readers from all parts of the country have in very few instances been traceable in the papers published in the localities from which our correspondents wrote. As this is the case it is impossible to estimate the true total of fatalities, and we can only say that it is much larger than the appalling figures we give. From our totals as they stand it will be seen that nearly four thousand people are injured, some of them maimed for life, in England and Wales each year. In addition to this eight are killed every week by the horse. The total killed and wounded for Scotland and Ireland is not available, but it is at least proportionate. We do not give these figures with any idea of damaging the reputation of the horse, or of hurting the feelings of those who believe that animal traction is the best, but merely to provide automobilists with a weapon of defence when their method of locomotion is attacked by those who deem it dangerous as compared with horse driving. Our argument all along has been to the effect that there should not be one law for the horse and another for the motor, and not only so, but that the law should be fairly administered, as it cannot be said that it always is at present. It should not be far less costly in the way of fines and penalties for a drunken driver to rush his horse furiously through the streets of a crowded town than for a sober alert motorist to exceed twelve miles an hour on an open country road. This is but one point of many, the main aim of all people, whether motorists or not, should be the reduction of the death roll of the horse. This can only be effected by commonsense legislation, and among the remedies may be men-



G. and R. Lavis, photos. *Eastbourne.*

AN EASTBOURNE MOTOR OMNIBUS. The Eastbourne Corporation, with foresight which does them the greatest credit, have refused to allow the roads of their delightful seaside resort to be monopolised by electric trams, and have commenced to install a fleet of motor cars. They have only made one error in their plans—a very common one at the beginning—and that was in having too small a number of vehicles for the work required. However they are correcting this as speedily as time and finances will permit. All the machines are Milnes Daimlers. The one which we show has earned £6 3s. each day for the last three months. A larger vehicle is expected daily, if not already delivered, and at the last Council meeting a big two-decker vehicle was ordered.



PROF. HUNTINGDON AND HIS 12 H.P. NAPIER. Prof. Huntingdon, of King's College, has been a motorist for some time, and recently purchased a 12 h.p. Napier from Messrs. Charles Jarrott and Letts. It is fitted with a Milnes-Jarrott body, enabling all three occupants of the tonneau to face forward. He is delighted with his car, and the day after he had it delivered, started for a thousand miles tour with three passengers and a lot of luggage. He drove from London to Ipswich, Norwich, King's Lynn, and Spalding, to Lincoln. Thence through Doncaster and Bradford to Lake Side, and on to Barrow. From Barrow he went to Ambleside, Keswick, Ullswater, over Kirkstone Pass to Windermere. There he turned south *via* Lancaster, Preston, and Liverpool, into North Wales. After visiting Llangollen and Bettws-y-Coed and Bala, he returned to London by Llangollen and Shrewsbury, Worcester, and Oxford. From first to last he had no trouble with the engine, and was extremely pleased with the elasticity it displayed.

tioned powerful brakes, the proper training of horses, severe penalties for those who persist in using any animals known to be uncontrollable, the institution of an age limit so that irresponsible children or feeble men should not be allowed to have charge of horses on the public roads, and last but not least enforcement of the regulations as to the carriage of lamps at night. All these are commonsense suggestions which would bear hardly on no one. That something should be done is apparent when we mention that the total number of passengers and railway servants killed by accidents to passenger trains on British railways in the last twelve months was eight, the injured totalling two hundred and twenty-four. In other words, the horse killed as many in a week as the train in a year.

Accessibility.

Some critics of car design are apt to think we have placed too high a value on accessibility of the working parts and, further, that the Automobile Club is right in its decision to offer no marks for this very important quality in the reliability trials. Those who think so have argued that a good car, thoroughly well made throughout, is not meant to be taken to pieces; and, consequently, as this is the case, it is unnecessary to make special provision for easily getting at those parts which sooner or later require adjustment. At first sight this appears to be a very reasonable view, but it should be recollected that the time will come when it is necessary for a car to be overhauled. It may be after twelve months running or more, and then it is that the owner begins to appreciate the advantage of accessibility whether he does the work himself or has it executed for him, as the machine with inaccessible parts causes a considerable amount of annoyance and delay when it is necessary for these parts to be attended to. The owner who performs the work himself finds what should be a pleasure a tedious job, and if he engages others to do the work he realises how long it has taken them on account of the high charge made. There is little or nothing to show for the costliness of the work, and nearly all the expense is due to time in taking down and putting things together again, and most of this time could have been saved had the design provided for accessibility. There are several cars at the present time which may be taken as practically equal in every respect, so far as excellence of material and workmanship are concerned, but there is a great difference in accessibility, and there is no question whatever that the accessible car in the long run will prove the more satisfactory and the cheaper to maintain in best running condition. Some designers bear accessibility in mind throughout, and take the utmost care to provide for it. Others devote themselves wholly and solely to the efficiency of the mechanism as such, but never seem to give the attention to accessibility which it deserves.

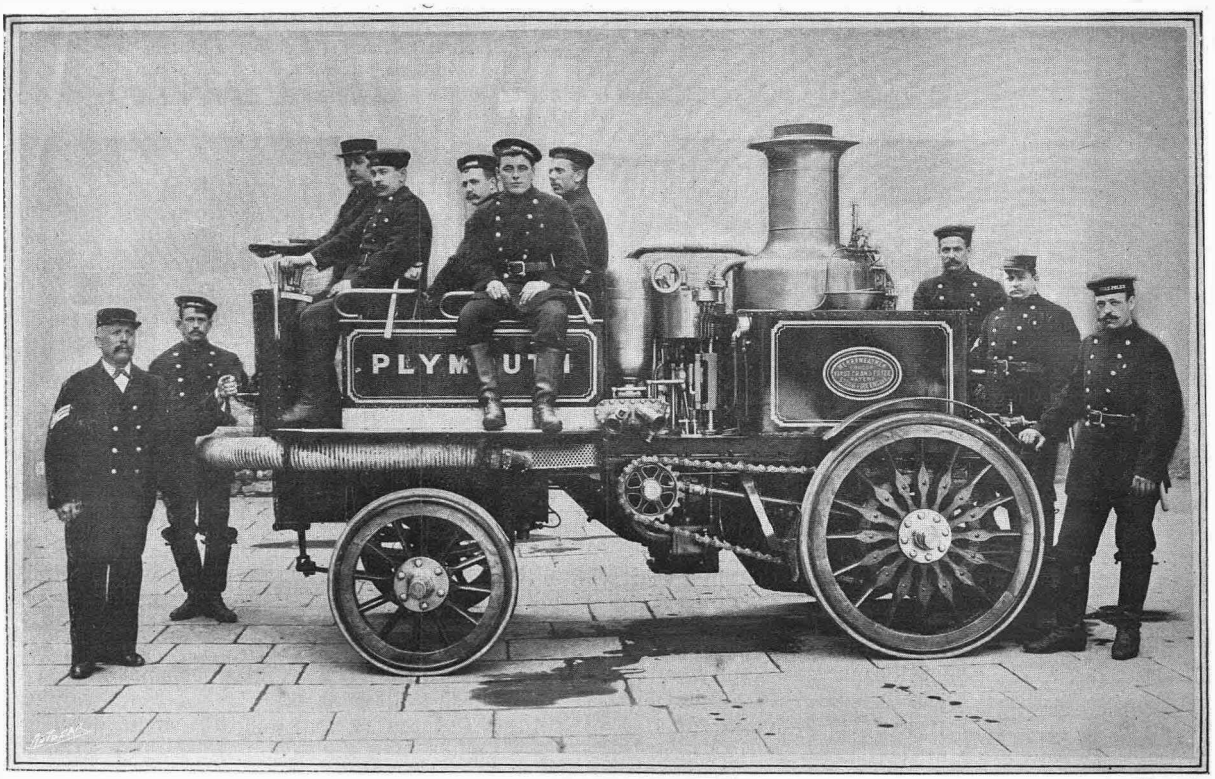
USEFUL HINTS AND TIPS.

Combined Systems.

Although many object to natural circulation, we wonder that the compromise between forced and natural is not more often adopted; some well-known cars possess this feature. It simply amounts to so arranging the radiator that a considerable proportion of the water is carried above the engine level. This and the proper disposition of the circulating pipes, of course on the assumption that sufficient area of radiator is given, will enable one to run quite satisfactorily with the pump out of gear. The water boils away quickly, and must be frequently renewed, but it is possible to continue to drive. With a system in which practically the whole of the water is carried below the engine, nothing can be done unless the pump is at work. Nowadays, pumps give very little trouble indeed, though they used to be a considerable source of annoyance. It is well to know the defects of one's pump, and to have the necessary spares or duplicates at hand in case of a delay sooner or later. If the cessation of the pump is not noticed till such time as the engine gets violently overheated, no attempt should be made to fill up the tank again until the engine is cooled off. In extreme cases it will be found that when the current is switched off the engine will go on firing. If this is so, the throttle should be instantly closed, as every revolution which the engine runs at this heat is dangerous, and may result in seizing. If things get to this stage, no water should be put into the tank for at least twenty minutes.

Steaming at the Radiator.

One should observe how hot the cooler gets in the ordinary way, and also whether any steam is given off, because then, if any noticeable increase of heat or steam occurs, one will immediately conclude that the water circulation is failing, and attention will be given to the point at once. The chances are that the pump will be the cause of the trouble. It will either have become deranged in itself, or, what is more likely, it will not run through the friction wheel, or other means employed to drive it, having temporarily failed from some trifling cause. This applies to cars with large radiators not depending at all upon forced draught. With machines which are fitted with a fan, the extra heating may of course be due to the belt or chain of the fan having come off. One can always tell whether the pump is working by the manometer, or circulation gauge, if one is fitted. If there is no instrument of this kind (and many cars are without it), it is easy enough to see whether the pump is throwing by opening the tap while the engine is running. If the water is thrown with vigour no anxiety need be felt as to the healthiness of the circulation.



THE PLYMOUTH FIRE ENGINE. This fire engine, which has just been completed by Messrs. Merryweather and Sons, was driven by road to Plymouth. On the way, the Lord Mayor of Bristol and the Chief Constable particularly requested that a demonstration should be made in their hilly city of its capabilities. Messrs. Merryweather consented to this, and a series of tests were made between the motor engine and one of the horse-drawn steam fire engines of Bristol. A call to an imaginary fire some two miles from the central station was given and the horse engine and the motor engine started off. The horse engine was on the road nearly half a minute in front of the motor, but the difference was quickly made up, and the scene of the imaginary fire was reached in 9½ minutes from the call, the horse engine arriving with its team badly beaten six minutes later. In other tests to demonstrate its quickness of turning out, the motor had slightly the best of it. The demonstration was attended by a number of prominent officials of Bristol, who from the Lord Mayor downward, expressed themselves as highly pleased with the result.

FUELS FOR MOTOR CARS.

(Continued from page 321.)

IN THE FIRST PART OF THIS ARTICLE, APPEARING IN "THE AUTOCAR" OF THE 5TH INST., THE CONVERSION OF HEAT INTO WORK AND SUITABLE FUELS AND THEIR CALORIFIC VALUES WERE DEALT WITH, AND A LUCID DEFINITION OF A HORSE POWER WAS GIVEN. IN THE SECOND INSTALMENT, APPEARING LAST WEEK, ENGINE EFFICIENCY AND COMPARATIVE FUEL VALUES WERE DWELT UPON AND SOME INTERESTING FIGURES GIVEN.

Acetylene as a Fuel.

Being a gas, however, and not being capable of safe employment in the liquefied condition (to which state, safety apart, it can easily be converted, acetylene cannot be carried "naked" on an autocar, and the size and weight of the vessels holding it cannot be overlooked. As most people know, acetylene is produced for domestic illumination, or for the supply of vehicular lamps, by allowing solid calcium carbide and water to interact in suitable generators; and, with modifications, a generator of the ordinary pattern might be carried on a car if space could be found for it. Nevertheless, as the smooth working of a generator depends largely upon its being fitted with a gasholder of considerable size, as that gasholder is bulky, and must contain a liquid, and as the liquid in the generator itself is likely to give trouble when severely and continuously agitated, or when the temperature of the air falls below freezing point, while the whole process of gas evolution requires some attention, the use of an acetylene generator on a road vehicle is not free from objection. But there is another method of using the gas which is much simpler, and this consists in having it ready-made and compressed into a cylinder. By itself acetylene cannot be safely compressed very far, but it may be compressed into a vessel to a pressure of ten atmospheres if that vessel is filled with porous matter, and at the same pressure a vessel of definite capacity will contain about ten times as much acetylene as it ordinarily would, if a proper quantity of acetone is present. This method of using compressed acetylene cannot be described at length in the present article, but the outlines of the process may be indicated.

Compressed Acetylene.

Steel cylinders of any convenient dimensions, tested for safety by hydraulic means to twice the working pressure of ten atmospheres (*i.e.*, 150 lbs. per square inch), are filled apparently full of a certain kind of porous matter, which is of such high degree of porosity, or sponginess, that when the vessel looks full, eighty per cent. of its real capacity remains free to take up liquid or gas. Into these cylinders is charged a little less than half their capacity of the solvent liquid acetone, and then, either from a larger storage vessel, or by means of a tandem pump, acetylene is driven in till the pressure reaches the aforesaid limit of 150 lbs. per square inch. So charged, the cylinder contains one hundred times its volume of acetylene, measured at atmospheric pressure, and practically the whole of this is liberated when the valve is opened. Roughly speaking, the acetone lasts indefinitely, but really, the gas contains a small quantity of acetone vapour, which in certain respects is a distinct advantage. Having been sanctioned by the Home Office, this method of compressing acetylene may shortly be exploited on a commercial scale in Great Britain, as it already is in Paris, and when this takes place, the owner of a suitable cylinder will be able to have his bottles charged at a works precisely as can be done with secondary or storage electric batteries. It will be manifest that the process makes the use of acetylene for motors extremely simple, for the gas is ready for immediate combustion when a tap is turned on. Should an accident overtake the car and the cylinder be fractured, the acetylene would escape, and would catch fire in the presence of a light or spark produced from any ruptured piece of hard steel, but it would burn quietly without exploding; for even when under the maximum legally permitted degree of compression, acetylene absorbed in porous matter is not capable of explosion.

The Storage of Acetylene.

Broadly speaking, the bulk of a cylinder charged with dissolved acetylene may be almost ignored, as the following calculation shows: The smallest cylinder used in Paris has a capacity (in terms of water) of two litres, being 750 millimetres long and sixty millimetres in internal diameter. If it is assumed to measure 750 × 80 mm. outside, its bulk is 750 × 80 × 0.7,854 = 3,770 cubic centimetres, *i.e.*, 3¾ litres, and it holds 200 litres of available gas. Thus, including bottle, 3.77 litres of compressed acetylene are equal to 0.58 litres of petrol as a source of work. If, however, the comparison is approached in terms of weight, acetylene appears much less favourably. The steel bottles weigh about three kilogrammes per one litre of water capacity, *i.e.*, per 100 litres of compressed gas; and, therefore, for the development of 1 h.p.-hour from acetylene 3 × 2 = 6 kilos. of cylinder plus 0.234 kilos. of gas, or 6.234 kilos. altogether are required as against only 0.4 kilo. of petrol plus one kilo. or less of tank. Manifestly, then, compressed acetylene cannot compete with petrol as a motor fuel where weight is important, although the former is a more concentrated source of energy, and roughly twice as efficient a source of mechanical work as the latter per unit of "naked" weight.

(To be continued.)

In the course of a letter we have received from Mr. Walter Creber, of Barrhead, N.B., the following incident is related: "Coming on a fallen horse with a heavy cart of straw and few people about to assist I stopped and asked the carter to give me a rope tied to the top of his load. The other end I made fast to my front spring hanger, and drawing on it by back gear we managed to pull the cart up on its 'haunches' and relieved the poor horse, with the remark from the carter, 'Man, them things have their use after all.'"

THE 1,000 MILES RELIABILITY TRIALS.

CARS RUNNING IN THE TRIALS.

THE FOLLOWING IS A BRIEF SPECIFICATION OF EACH OF THE CARS RUNNING IN THE TRIALS. IT IS COMPILED FROM A PERSONAL EXAMINATION OF EVERY CAR. OWING TO THE STRICT SUPERVISION AND THE CLOSE PACKING OF THE CARS, ANYTHING APPROACHING A DETAIL INSPECTION WAS IMPOSSIBLE.

CLASS A!.—Tandems, Quadricycles, and similar two-seated vehicles over 170 lbs. Price not exceeding £160.

1. CENTURY tandem, entered by the Century Engineering and Motor Co., 6½ h.p. De Dion engine, bore and stroke 88 mm. and 110 mm., two-speed gear, seats two, weight 5 cwts. Price £125.

2. EAGLE tandem, entered by the Eagle Engineering and Motor Co., 6 h.p. Aster engine, bore and stroke 90 mm. by 110 mm., seats two, weight 5¾ cwts. Price £160.

3. REX tricar, entered by the Rex Motor Manufacturing Co. This is essentially a bicycle frame with a superstructure carrying a front seat mounted between the steering wheels. The Rex 3½ h.p. engine, bore and stroke 3⅛in. by 3½in., water-cooled head with double row of radiators round the back and sides of forecarriage, thermo-syphon circulator, seats two passengers, weight 320 lbs. Price £84. N.B.—Detailed particulars of this class will be found in *The Motor Cycle*.

CLASS A.—Vehicles at £200 or less.

4. BABY PEUGEOT, entered by Friswell and Co., single cylinder engine, bore and stroke 94 mm. by 100 mm., 5 h.p., gear drive on to live axle, three speeds and reverse, three band brakes, tubular frame, seats two. With the exception of the fitting of wood wheels no alteration is noticeable in this car.

5. REGAL car, entered by O. C. Selbach, single-cylinder engine, bore and stroke 90 mm. by 110 mm., 6 h.p., gear-driven, three speeds and reverse, half band brakes, two seats, weight 8 cwts. Price £178 10s.

6. SIDDELEY, entered by the Siddeley Autocar Co., single-cylinder engine, bore and stroke 4½in. by 5in., 6 h.p., gear-driven, three speeds and reverse, three band brakes, tubular frame, wood wheels, seats two, weight 8 cwts. Price £175.

9. VULCAN, entered by the Vulcan Motor Co., Ltd., single-cylinder engine, bore and stroke 4in. by 4in., 6¼ h.p., gear-driven, three speeds and reverse, expanding brakes on road wheels, band brake on gearshaft, wood frame with steel flitch plate, wood wheels, seats two, weight 10 cwts. Price £175. The water-circulating pump is gear-driven, and forms an integral part of the engine crank chamber. Mechanically-operated valves and governor are fitted.

11. STANLEY steam car, entered by J. Cockshoot and Co., two-cylinder engine, bore and stroke 2½in. by 3½in., 5½ h.p., gearing direct to live axle, seats two, weight 9 cwts. Price £194 5s. Full details of this car were published in *The Autocar* of August 8th, 15th, 22nd, and 29th, 1903.

12. COVENTRY HUMBERETTE, entered by Humber, Ltd., single-cylinder engine, bore and stroke 3⅝in. by 3⅝in., 5 h.p., gear-driven, two speeds and reverse, three band brakes, tubular frame, wire wheels, seats two, weight 5½ cwts. Price £147. Some detail particulars of this car were published in *The Autocar* of June 13th, 1903, page 682.

14. CADILLAC, entered by the Oldsmobile Co., Ltd., single-cylinder horizontal engine, bore and stroke 5in. by 5in., 6½ h.p., two speeds, central chain drive to live axle, three band brakes, pedal-applied, angle iron frame, wood wheels, fitted with Fisk tyres, seats three, weight 11¼ cwts. Price £200. This car is of American origin; but, unlike many of its fellows, is fitted with wheel steering and mudguards. The radiators are fitted to an opening in the front of the bonnet.

15. PONY RICHARD, entered by Messrs. Mann and Overton, Ltd., single-cylinder Richard engine, bore and stroke 90mm. by 100mm., 5½ h.p., three speeds and reverse, belt and gear drive, three band brakes, tubular frame, wood wheels, seats two, weight not given. Price £185. The engine in this car is governed, and the water-circulating pump gear-driven. The drive from the engine to the change-speed gear is by a 2in. green hide belt, crossed. The change-speed and reverse gear is contained in a box attached to the live axle. A tension of the belt is under the control of the driver from the seat, the belt being struck from the fast to loose pulley by pedal. A leather apron protects the belt from dust and dirt.

16. RELYANTE, entered by the Chief British Depot, single-cylinder engine, 6 h.p., bore and stroke 90 mm. by 110 mm., gear-driven, three speeds and reverse, expanding brakes to road wheels, pedal-applied band brake on gearshaft, tubular frame, wood wheels, seats two, weight 8½ cwts. Price £168.

17. OLDSMOBILE, entered by Charles Jarrott and Letts, Ltd., single-cylinder horizontal engine, 5 h.p., bore and stroke 4⅝in. by 6¼in., two speeds and reverse, central chain drive to live axle, laminated spring frame, wood wheels, Fisk tyres, seats two, weight 7 cwts. Price £150. It will be remembered that these cars are now being geared so that their top speed does not exceed twenty miles an hour, thus keeping them within the coming speed limit.

20. DE DION-BOUTON, entered by De Dion-Bouton, Ltd., single-cylinder engine, bore and stroke 90 mm. by 110 mm., 6 h.p., gear-driven, two speeds and reverse, three band brakes, tubular frame, wood wheels, seats two, weight 8 cwts. Price £200.

CLASS B.—Cars selling at less than £200, and not more than £300.

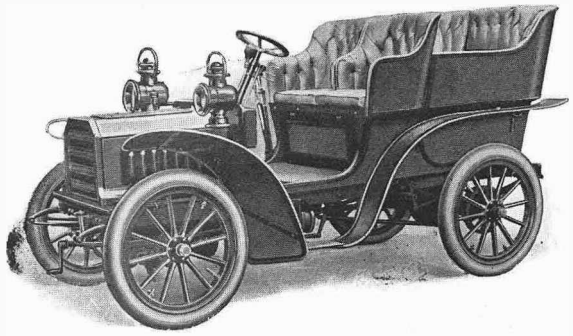
24. SWIFT, entered by the Swift Motor Co., Ltd., single-cylinder De Dion engine, bore and stroke 90 mm. by 110 mm., 6 h.p., gear-driven, two speeds and reverse, four band brakes—two on each drum on the road wheels, one set applied by independent pedal, the other set by pedal inter-connected with clutch—tubular frame, wood wheels, seats two, weight 10 cwts. Price £220 10s. A hood coming well over to the front is fitted to this car.

25. REGAL, entered by O. C. Selbach, two-cylinder engine, bore and stroke 98 mm. by 125 mm., 10 h.p., three speeds and reverse, gear-driven, three band brakes, seats five, weight 15 cwts. Price £300.

28. BEAUFORT tonneau, entered by the Beaufort Motor Co., single-cylinder engine, bore and stroke 110 mm. by 120 mm., magneto ignition, 9 h.p., three speeds and reverse, gear-driven, three band brakes, channel steel frame, seats four, weight 13 cwts. Price £295 16s. The engine is fitted

THE 1,000 MILES TRIALS. The 5½ h.p. Pony Richard. Class A.

with mechanically-operated inlet valve actuated by a double cam running in oil. An automatic governor is fitted, this also being self-lubricated, likewise the gear-driven circulating pump.



THE 1,000 MILES TRIALS. The 9 h.p. Mohawk Manon. Class B.

29. ARGYLL, entered by the Hozier Engineering Co., single-cylinder De Dion engine, bore and stroke 100 mm. by 120 mm., gear-driven, three speeds and reverse, three band brakes, Govan compensating arrangement to those on the road wheels, rolled steel frame, seats four, weight 12 cwts. Price £275.

34. GEORGES-RICHARD, entered by Messrs. Mann and Overton, two-cylinder engine, bore and stroke 100 mm. by 100 mm., 10 h.p., gear-driven, three speeds and reverse, three band brakes, seats two, weight 11½ cwts. Price £300.

35. EAGLE, entered by the Eagle Engineering and Motor Co., two-cylinder engine, bore and stroke 85 mm. by 110 mm., 9 h.p., gear-driven, two speeds and reverse, three brakes, wood frame and steel flitch plates, wood wheels, seats two, weight 9 cwts. Price £255. The gearing on this car is on a novel system, which was described in detail in *The Autocar* of Feb. 7th, 1903 In this vehicle the triple springs, as shown on the car exhibited at the last Crystal Palace Show, are replaced by the ordinary springing methods.

36. REX, entered by the Rex Motor Manufacturing Co., single-cylinder engine, bore and stroke 4½in. by 4½in., 10 h.p., gear-driven, three speeds and reverse, three band brakes, channel steel frame, seats four, weight 15 cwts. Price £278 5s.

37. ROOTS car, entered by Roots Oil Motor and Motor Car Co., Ltd., single-cylinder horizontal engine, bore and stroke 4½in. by 5in., 4 h.p., paraffin fuel, electric ignition, three speeds and reverse, seats two, chain-driven, central chain to live axle, band brake round differential gear, and another on the primary gearshaft, weight 11 cwts. Price £260.

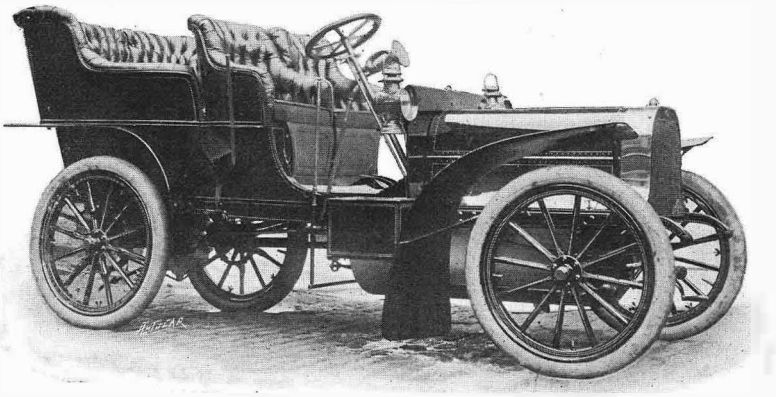
38. MOHAWK MANON, entered by Mohawk Motor Co., Ltd., single-cylinder Aster engine, bore and stroke 100 mm. by 120 mm., 9 h.p., gear-driven, three speeds and reverse, three band brakes, tubular frame, wood wheels, seats four, weight 12 cwts. Price £210.

39. M.M.C., entered by the Motor Manufacturing Co., single-cylinder engine, bore and stroke 110 mm. by 130 mm., 8 h.p., chain-driven, three speeds and reverse, three brakes, channel steel frame, seats four, weight 11¼ cwts. Price £270.

CLASS C.—Cars £300 and over, but not exceeding £400.

41. GLADIATOR, entered by S. F. Edge, Ltd., two-cylinder engine, bore and stroke 105 mm. by 130 mm., 10 h.p., four speeds and reverse, chain-driven, internal ratchet sprag on countershaft, three band brakes, seats four, weight 14½ cwts. Price £395.

42. ALBION, entered by the Albion Motor Car Co., Ltd., two-cylinder engine, bore and stroke 4½in. by 5in., 12 h.p., three speeds and reverse, chain-driven, three band brakes, channel steel frame, seats four, weight 22 cwts. Price £363. This car is fitted with the Murray patent governor, described in *The Autocar* of September 12th, page 326, also with the Murray low tension ignition, details of which will be given in a special article dealing with mechanical details next week. The front tyres of this car are pneumatics, the back wheels being shod with Buffer solid tyres,



THE 1,000 MILES TRIALS. The 14 h.p. three-cylinder Argyll. Class C.

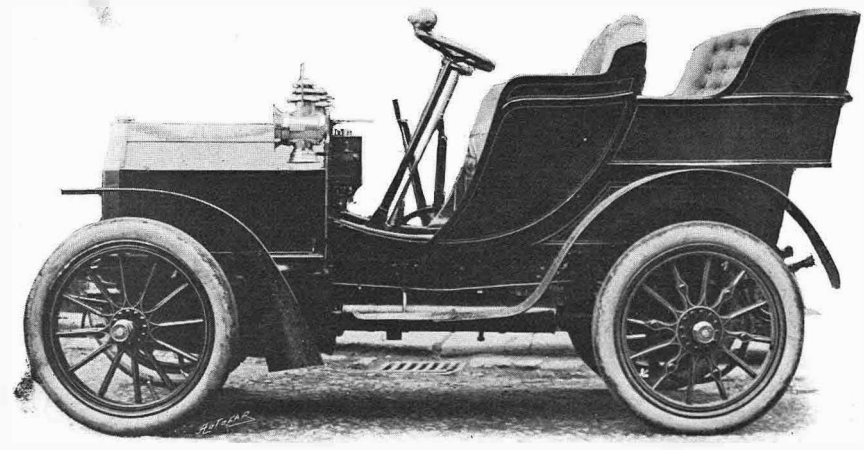
specially long springs being fitted on this account. A half gear case protects the chains. The engine and gearing are enclosed by a sheet steel apron. An Albany radiator is included in the cooling system.

43. HALLAMSHIRE, entered by Durham Churchill and Co., two-cylinder engine, bore and stroke 105 mm. by 120 mm., 10 h.p., three speeds and reverse, gear-driven, three band brakes, wood frame with steel flitch plate, seats four, weight 15½ cwts. Price £325.

47. JAMES AND BROWNE, entered by Messrs. James and Browne, Ltd., two-cylinder horizontal engine, bore and stroke 4in. by 6in., 9 h.p., James and Browne gear and brakes, seats four, weight 17 cwts. Price £400.

48. ARGYLL, entered by the Hozier Engineering Co., two-cylinder Aster engine, bore and stroke 88 mm. by 120 mm., 10 h.p., three speeds and reverse, gear-driven, three band brakes, rolled steel frame, seats four, weight 13 cwts. Price £535.

49. ARGYLL, entered by the Hozier Engineering Co., three-cylinder engine, bore and stroke 90 mm. by 120 mm., 14 h.p., mechanically-operated valves, gear-driven pump, three speeds and



THE 1,000 MILES TRIALS. The 12 h.p. Krupkar Class C.

reverse, gear-driven, three band brakes, rolled steel frame, seats four, weight 14½ cwts. Price £400. This is a similar car to the well-known four-cylinder 16 h.p. Argyll, though it will be noticed that a three-cylinder engine replaces this. 34in. diameter wheels are fitted to this car, the wheelbase of which is 7ft. 10in.

50. SIMMS-WELBECK, entered by the Simms Manufacturing Co., Ltd., two-cylinder engine, bore and stroke 95 mm. by 110 mm., 10 h.p., Simms-Bosch magneto ignition, three speeds and reverse, gear-driven, expanding brakes on road wheels, double shoe brake on gearshaft, wood frame with flitch plate, seats four, weight 13½ cwts. Price £360.

51. WOLSELEY, entered by the Wolseley Tool and Motor Car Co., Ltd., two-cylinder horizontal engine, bore and stroke 4½in. by 5in., 12 h.p., chain-driven, four speeds and reverse, expanding brakes on road wheel, band brake on countershaft, rolled steel frame, seats four, weight 19 cwts. Price £400.

52. WOLSELEY, entered by the Wolseley Tool and Motor Car Co., Ltd., 10 h.p., otherwise very similar to 51. Price £380.

54. KRUPKAR, entered by Krupkar, Ltd., two-cylinder engine, bore and stroke 115 mm. by 120 mm., 12 h.p., mechanically-operated valves, gear-driven, three speeds and reverse, three band brakes, pressed steel frame, seats four, weight 15 cwts. Price £400. A new type of radiator is fitted to this car, details of which will be given at a later date.

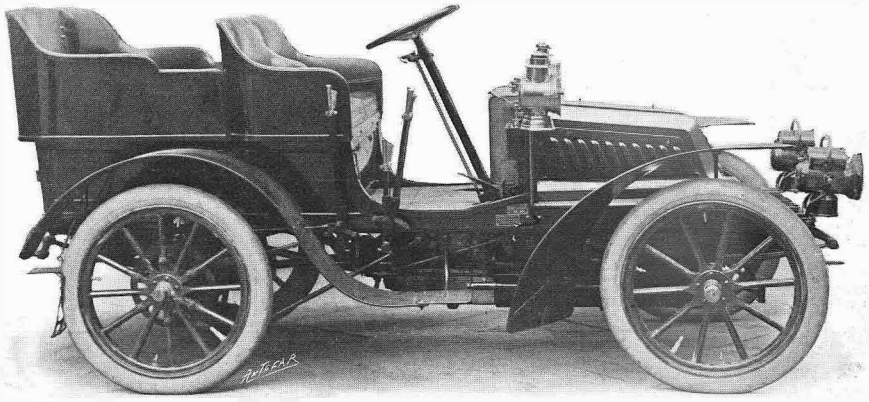
56. HORBICK, entered by Horsfall and Bickham, two-cylinder engine, bore and stroke 4⅜in. by 4¾in., 10 h.p., three speeds and reverse, gear-driven, three expanding brakes, tubular frame, seats four, weight 17½ cwts. Price £399. A form of spring drive is inserted between the engine and transmission gear.

57. GEORGES-RICHARD, entered by Messrs. Mann and Overton, two-cylinder engine, bore and stroke 104 mm. by 110 mm., 12 h.p., three speeds and reverse, gear-driven, three band brakes, seats four, weight 13½ cwts. Price £385.

58. RELYANTE, entered by the Chief British Depot, two-cylinder engine, bore and stroke 100m. by 140 mm., 12 h.p., three speeds and reverse, chain-driven, three band brakes, ratchet sprag on one wheel, pressed steel frame, seats four, weight 15 cwts. Price £367 10s.

59. REX, entered by the Rex Motor Manufacturing Co., two-cylinder engine, bore and stroke 4½in. by 4½in., 13 h.p., three speeds and reverse, gear-driven, three band brakes, channel steel frame, seats four, weight 15 cwts. Price £367 10s.

60. DESCHAMPS, entered by the International Automobile Manufacturing Co., two-cylinder engine, bore and stroke 100 mm. by 140 mm., 10 h.p., four speeds and reverse, chain-driven, three band brakes, wood frame with steel flitch plates, seats four, weight 16¾ cwts. Price £375.

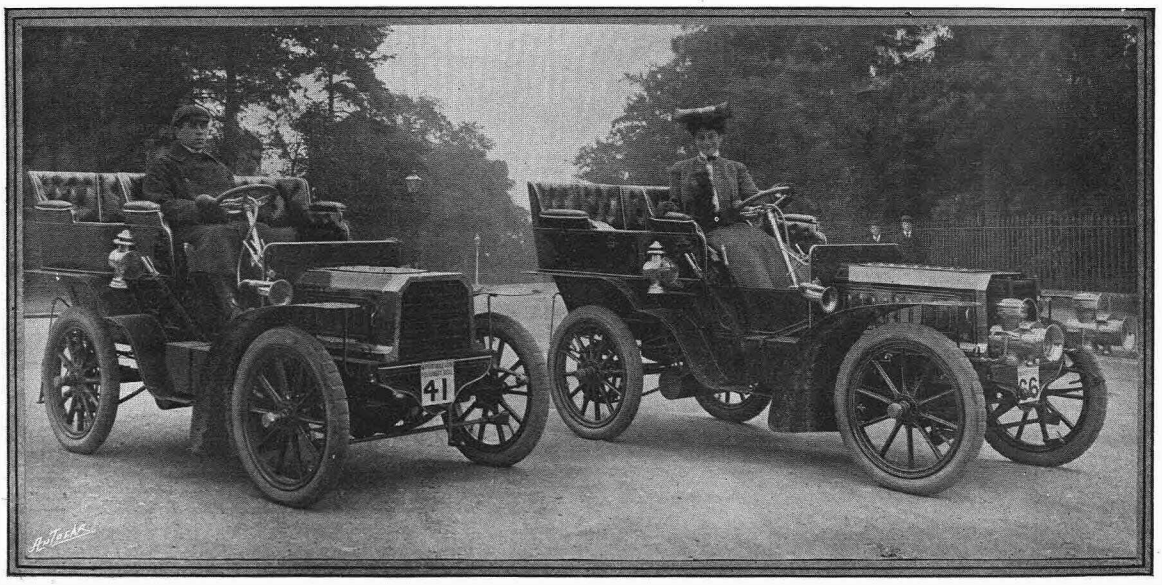


THE 1,000 MILES TRIALS. The 12 h.p. Georges-Richard. Class C.

62. WOLSELEY, entered by Mr. Oscar Thompson, two-cylinder horizontal engine, bore and stroke 4in. by 4in., 7½ h.p., three speeds and reverse, chain-driven, rim brakes to back wheels, band brake on countershaft, rolled steel frame, seats four, weight 15 cwts. Price £325.

63. SPYKER, entered by Mr. Albert House, two-cylinder engine, bore and stroke 100 mm. by 120 mm., 10 h.p., three speeds and reverse, gear-driven, metal to metal shoe brakes on wheels and gearshaft, pressed steel frame, seats four, weight, 13 cwts. Price £380. A new type of steering socket is seen on this car. This and other features of interest will be dealt with next week.

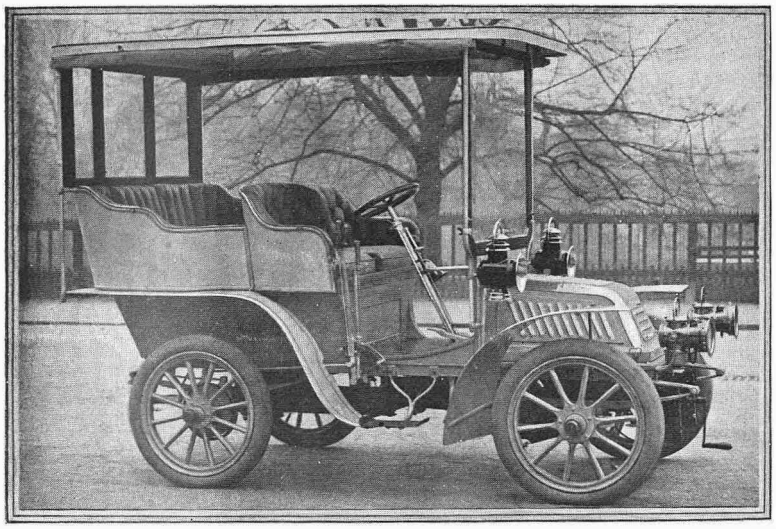
64. DARRACQ, entered by A. Darracq and Co., two-cylinder engine, bore and stroke 100 mm. by 120 mm., 12 h.p., gear-driven, three speeds and reverse, three band brakes, speed change lever on the steering column, wood frame with steel flitch plates, seats four, weight 15¾ cwts. Price £350.



THE 1,000 MILES TRIALS. The 10 h.p. Gladiator (Class C), with Mr. E. H. Arnott at the helm, and the 12 h.p. Gladiator (Class D) driven by Miss D. Levitt.

CLASS D.—Cars more than £400 and not exceeding £550.

65. SUNBEAM, entered by John Marston, Ltd., four-cylinder engine, bore and stroke 80 mm. by 120 mm., 12 h.p., three speeds and reverse, chain driven, expanding brakes to road wheels, band brake on countershaft, channel steel frame, seats four, weight 16 cwts. Price £525. One of the special features of this car are the gear cases which entirely enclose the side chains. These look particularly substantial and workmanlike, and should prove satisfactory in the light of the experience which the firm has had in this class of work.



THE 1,000 MILES TRIALS. The 14 h.p. Beaufort car. Class D.

66. GLADIATOR, entered by S. F. Edge, Ltd., four-cylinder engine, bore and stroke 88 mm. by 110 mm., 12 h.p., four speeds and reverse, chain driven, three band brakes, seats four, weight 15½ cwt. Price £540.

67. ARIEL, entered by the Ariel Motor Co., Ltd., four-cylinder engine, bore and stroke 3½in. by 3½in., 12 h.p., four speeds and reverse, gear driven, three band brakes, tubular frame, seats four, weight 17 cwts. Price £550.

68. BROOKE, entered by J. W. Brooke and Co., Ltd., three-cylinder engine, bore and stroke 3⅝in. by 4⅜in., 14 h.p., three speeds and reverse, chain-driven, three brakes, channel steel frame, seats four, weight 18 cwts. Price £500.

70. THORNYCROFT, entered by the Thornycroft Steam Waggon Co., Ltd., two-cylinder engine, bore and stroke 4in. by 4⅜in., 10 h.p., three speeds and reverse, gear-driven, three brakes, metal to metal, channel steel frame, seats four, weight 15 cwts. Price £440.

71. PEUGEOT, entered by Friswell, Ltd., two-cylinder engine, bore and stroke 105 mm. by 105 mm., 10 h.p., three speeds and reverse, chain driven, three band brakes, seats four. Price £450.

75. ELSWICK, entered by the Burlington Carriage Co., two-cylinder engine, bore and stroke 110 mm. by 130 mm., 8-10 h.p., seats five, weight 15 cwts. Price £472 10s.

77. STAR, entered by the Star Engineering Co., four-cylinder engine, bore and stroke 3½in. by 4½in., 12 h.p., three speeds and reverse, chain driven, three band brakes, channel steel frame, seats four, weight 17 cwts. Price £550.

78. BEAUFORT, entered by the Beaufort Motor Co., two-cylinder engine, bore and stroke 110 mm. by 125 mm., 14 h.p., three speeds and reverse, gear-driven, three band brakes, channel steel frame, seats four, weight 16 cwts. Price £417 15s.

79. ARGYLL, entered by the Hozier Engineering Co., Ltd., four-cylinder engine, bore and stroke 88 mm. by 110 mm., 16 h.p., three speeds and reverse, gear-driven, three band brakes, rolled steel frame, seats four, weight 16 cwts. Price £550.

80. BELSIZE, entered by Marshall and Co., two-cylinder engine, bore and stroke 4in. by 5in., 15 h.p., seats four, weight 17½ cwts. Price £455.

82. BROOKE, entered by F. F. Wellington, Ltd., similar to No. 68 but weighing 19 cwts.

83. RELYANTE steamer, entered by the Chief British Depôt, four-cylinder engine, bore and stroke 2½in. by 3in., 10 h.p., paraffin fuel, seats three, weight 18 cwts. Price £472 10s.

84. WHITE steam car, entered by the White Steam Cars, two-cylinder vertical compound engine, 3in. high pressure cylinder, 5in. low pressure cylinder, stroke 3½in., 10 h.p., flash generator, bevel gear drive on to live axle, seats four, weight 15 cwts. Price £420.

85. DENNIS, entered by Dennis Bros., Ltd., two-cylinder engine, bore and stroke 105 mm. by 130 mm., 12 h.p., three speeds and reverse, gear-driven, Dennis expanding brakes, channel steel frame, seats four, weight 19 cwts. Price £420.

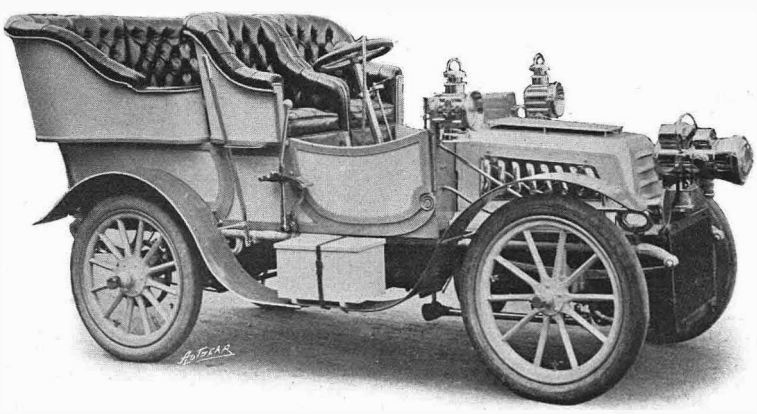
86. CLEMENT, entered by the British Automobile Commercial Syndicate, Ltd., four-cylinder engine, bore and stroke 75 mm. by 120 mm., 12 h.p., mechanically operated valves by single cam shaft, gear-driven, three band brakes, pressed steel frame, seats four, weight 14½ cwts. Price £550.

87. LANCHESTER, entered by the Lanchester Engine Co., two-cylinder engine, bore and stroke 5¼in. by 5¼in., 10 h.p., weight 19½ cwts. Price £525.

88. SUNBEAM, entered by Mr. Frank Shorland. This is a precisely similar vehicle to No. 65. It ran in the brake trials, but at the time of going to press it was doubtful whether it would be permitted to compete under rule 5, which stipulates that the number of cars of any particular type or h.p. entered by manufacturer or agent should be limited to one.

89. BRUSH, entered by the Brush Electrical Engineering Co., Ltd., four-cylinder engine, bore and stroke 85 mm. by 118 mm., 14 h.p., three speeds and reverse, chain-driven, three band brakes, wood frame with steel flitch plate, seats four, weight 18 cwts. Price £500.

90. MAXIM, entered by the London General Automobile Co., Ltd., two-cylinder engine, bore and stroke 110 mm. by 120 mm., 16 h.p., three speeds and reverse, chain driven, three band brakes, wood frame, steel flitch plates, four seats. Price £472 10s. The engine is attached to the main frame by brackets, and the gear box is carried in an underframe depending from the main frame.



THE 1,000 MILES TRIALS. The 12 h.p. New Orleans car. Class D.

91. DE DION-BOUTON, entered by De Dion-Bouton, two-cylinder engine, bore and stroke 100 mm. by 110 mm., 12 h.p., three speeds and reverse, gear-driven, three brakes, seats four, weight 14 cwts. Price £420.

92. NEW ORLEANS, entered by the New Orleans Motor Co., four-cylinder engine, bore and stroke 95 mm. by 110 mm., 12 h.p., seats four, weight 17 cwts. Price £500.

93. RENAULT, entered by the Roadway Autocar Co., two-cylinder engine, bore and stroke 95 mm. by 110 mm., 12 h.p., three speeds and reverse, gear-driven, expanding brakes on the back wheels, band brake on the gearshaft, tubular frame, seats four, weight 13 cwts. Price £437. This is the car which Mr. Wilding, the Roadway Autocar Co.'s representative, is driving through England on a business tour, and has already covered over 4,000 miles. We notice that an Auto trembler has been introduced into the ignition system, and has given every satisfaction.

CLASS E.—Cars more than £550, and not exceeding £700.

94. THORNYCROFT, entered by the Thornycroft Steam Waggon Co., Ltd., four-cylinder engine, bore and stroke 4in. by 4⅜in., 20 h.p. Price £640. This is a precisely similar machine to No. 70, 10 h.p. Thornycroft, with the exception that it has two more cylinders, seats four, weight 17 cwts.

95. CHELMSFORD steam car, entered by Clarkson, Ltd., two-cylinder engine, bore and stroke 4in. by 4in., 12 h.p., paraffin fuel employed, seats six, weight 28 cwts. Price £620. The leading features of this car will be fully dealt with in our next issue.

96. GERMAIN, entered by Captain Masui, four-cylinder engine, bore and stroke 95 mm. by 130 mm., 15 h.p., four speeds and reverse, chain driven, three band brakes wood frame, steel flitch plates, seats four, weight 18 cwts. Price £700. One of the most noticeable features of this car is the double silencer. Each of the four cylinders exhausts into a large drum, whence it is led through a long and large diameter pipe into a conical shell-shaped silencer.

97. NEW ORLEANS, entered by the New Orleans Motor Co., Ltd., four-cylinder engine, bore and stroke 100 mm. by 110 mm., 15 h.p., three speeds and reverse, gear-driven, three band brakes, tubular frame, seats four, weight 19 cwts. Price £561 15s.

99. STAR, entered by the Star Engineering Co., four-cylinder engine, bore and stroke 4in. by 4½in., 18 h.p., three speeds and reverse, chain-driven, three band brakes, seats four, weight 18 cwts. Price £600.

100. JAMES AND BROWNE, entered by James and Browne, four-cylinder engine, bore and stroke 4in. by 6in., 18 h.p., seats four, weight 18 cwts. Price £650. This car was described in detail in *The Autocar* of February 4th, 1903. It has already covered over 4,000 miles.

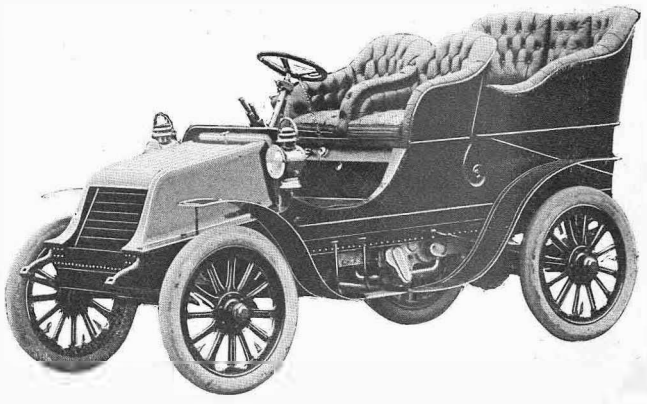
102. WOLSELEY, entered by the Wolseley Tool and Motor Car Co., four-cylinder engine, bore and stroke 4½in. by 5in., 24 h.p., four speeds and reverse, chain-driven, rim brakes on road wheels, band brake on countershaft, channel steel frame, seats four, weight 23 cwts. Price £650 5s.

104. WINTON, entered by the Oldsmobile Co., Ltd., double opposed cylinder engine, bore and stroke 5¼in. by 6in., 20 h.p., two speeds and reverse, three band brakes, double angle and sheet steel frame, seats five, weight 23½ cwts. Price £650.

105. GARDNER-SERPOLLET, entered by the Speedwell Motor and Engineering Co., Ltd., four-cylinder steam engine, bore and stroke 75 mm. by 72 mm., 10 h.p., chain-driven, three band brakes, channel steel frame, seats four, weight 20 cwts. Price £670 10s.

106. GEORGES-RICHARD, entered by Messrs. Mann and Overton, Ltd., four-cylinder engine, bore and stroke 104 mm. by 100 mm., 24 h.p., three speeds and reverse, gear-driven, three band brakes, tubular frame, seats four, weight 16½ cwts. Price £650.

108. DENNIS, entered by Dennis Bros., Ltd., four-cylinder engine, bore and stroke 88 mm. by 110 mm., 16 h.p., three speeds and reverse, gear-driven, Dennis expanding brakes, wood frame, steel flitch plates, seats four, weight 19½ cwts. Price £577 10s.



THE 1,000 MILES TRIALS. The 20 h.p. Winton Class E.

109. LANCHESTER, entered by the Lanchester Engineering Co., two-cylinder engine, bore and stroke 5⅜in. by 5⅛in., 16 h.p. standard type Lanchester, seats four, weight 20 cwts. Price £700.

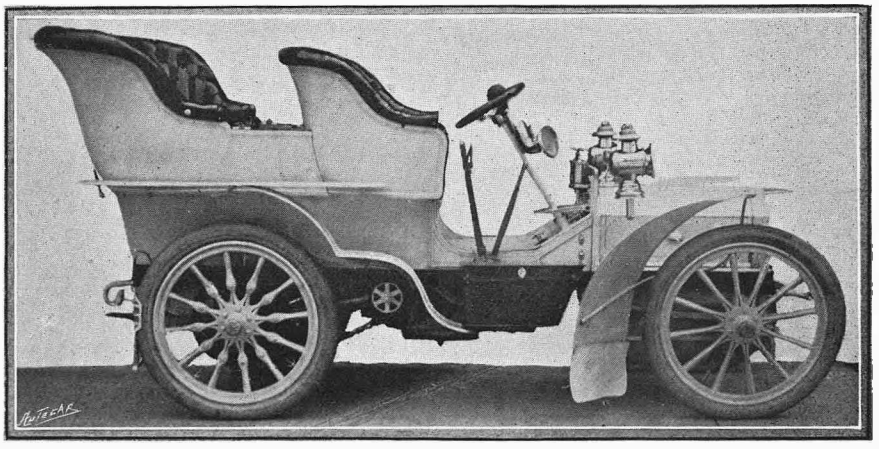
111. SPYKER, entered by Mr. Albert House, four-cylinder engine, bore and stroke 100 mm. by 120 mm., 20 h.p., three speeds and reverse, gear driven, three band brakes, pressed steel frame, seats four, weight 19¾ cwts. Price £650.

113. RENAULT, entered by the Roadway Autocar Co., four-cylinder engine, bore and stroke 85 mm. by 105 mm., 14 h.p., three speeds and reverse, gear-driven, Renault expanding brakes, tubular frame, seats four, weight 15 cwts. Price £630.

114. MARTINI, entered by Capt. H. H. P. Deasy, four-cylinder engine, bore and stroke 100 mm. by 130 mm., 14 h.p., four speeds and reverse, chain-driven, three band brakes, wood frame, steel flitch plates, seats four, weight 16½ cwts. Price £695. This car is fitted with a new type of radiator, and the ignition is by the Simms rotary magneto.

116. WHITE steam car, entered by Mr. Oliver Shiras, two-cylinder vertical compound engine, bore high pressure cylinder 3in., low pressure cylinder 5in., stroke 3½in., 10 h.p., bevel gear drive on to the live axle, seats four, weight 16 cwts. Price £555.

117. HUMBER, entered by Humber, Ltd., four-cylinder engine, bore and stroke 3⅞in. by 4in., 12 h.p., four speeds



THE 1,000 MILES TRIALS. The 16 h.p. Fiat. Class F.

THE 1,000 MILES TRIALS.—The 14 h.p. Martini car. Class E.

and reverse, gear drive, three band brakes, tubular frame, seats four, weight 19 cwts. Price £577.

118. DARRACQ, entered by A. Darracq and Co., four-cylinder engine, bore and stroke 112 mm. by 120 mm., 24 h.p., seats four, weight 20 cwts. Price £665.

CLASS F.—Cars more than £700 and less than £900.

119. PEUGEOT, entered by Friswell, Ltd., four-cylinder engine, bore and stroke 85 mm. by 90 mm., 12 h.p., four speeds and reverse, chain drive, three band brakes, seats four, weight 17 cwts. Price £750.

120. GERMAIN, entered by Capt. Masui, four-cylinder engine, bore and stroke 105 mm. by 140 mm., 20 h.p., four speeds and reverse, chain-driven, three band brakes, wood frame, steel flitch plates, seats four, weight 19 cwts. Price £900.

121. BEAUFORT tonneau, entered by the Beaufort Motor Co., four-cylinder engine, bore and stroke 95 mm. by 110 mm., 20 h.p., four speeds forward and reverse, Simplex change-speed gear, two band brakes, channel steel frame, seats four, weight 21 cwts. Price £745 13s.

122. HUMBER, entered by Humber, Ltd., four-cylinder engine, bore and stroke 4½in. by 5¾in., 20 h.p., seats four, weight 21 cwts. Price £787 10s. This car has the longest wheelbase of any taking part in the trials, it being no less than 9ft.

123. WILSON AND PILCHER, entered by Wilson and Pilcher, Ltd., four-cylinder engine, bore and stroke 3⅞in. by 3¾in., 12 h.p., seats four, weight 19½ cwts. Price £710.

125. MAUDSLAY, entered by the Maudslay Motor Co., three-cylinder engine, bore and stroke 5in. by 5in., 25 h.p., four speeds and reverse, three band brakes, square sectional tubular frame, seats four, weight 23 cwts. Price £892 10s. The appearance of this car has been improved by bringing the radiators up in front of the bonnet.

126. DE DIETRICH, entered by Messrs. Charles Jarrott and Letts, Ltd., four-cylinder engine, bore and stroke 104 mm. by 120 mm., 16 h.p., seats four, weight 18¼ cwts. Price £760.

127. CHARON, GIRARDOT, AND VOIGT, entered by Messrs. Evart-Hall, Ltd., four-cylinder engine, bore and stroke 90 mm. by 130 mm., 15 h.p., four speeds and reverse, chain drive, three band brakes, channel steel frame, seats four, weight 19 cwts. Price £890.

128. CHENARD AND WALCKER, entered by the Weston Motor Syndicate, four-cylinder engine, bore and stroke 100 mm. by 130 mm., 18 h.p., three speeds forward and reverse, gear-driven, expanding brakes to road wheels and band brake to countershaft, channel steel frame, seats four, weight 20 cwts. Price £750.

129. PIPE, entered by the London Motor Garage, four-cylinder engine, bore and stroke 100 mm. by 135 mm., 15 h.p., three speeds and reverse, chain-driven, wood frame, three band brakes, seats four, weight 20 cwts. Price £760. This car is fitted with the Jenatzy magneto clutch.

130. ROCHET SCHNEIDER, entered by Captain H. H. P. Deasy, four-cylinder engine, bore and stroke 100 mm. by 150 mm., 16 h.p., four speeds and reverse, chain-driven, three band brakes, wood frame, steel flitch plate, seats four, weight 20 cwts. Price £850.

131. MORS, entered by the Roadway Autocar Co., four-cylinder engine, bore and stroke 106 mm. by 125 mm., 18 h.p., four speeds and reverse, chain drive, three band brakes, pressed steel frame, seats four, weight 22 cwts. Price £900.

132. HOLCAR, entered by the United Kingdom's Inventions Association, four-cylinder engine, bore and stroke 4¼in. by 5in., 20 h.p., seats five, weight 21 cwts. Price £850. This car was described in detail in *The Autocar* of March 28th, 1903, page 386.

133. M.M.C., entered by the Motor Manufacturing Co., four-cylinder engine, bore and stroke 100 mm. by 130 mm., 20 h.p., seats four, weight 21 cwts. Price £750.

134. FIAT, entered by the Fiat Motor Agency, Ltd., four-cylinder engine, bore and stroke 100 mm. by 110 mm., 16 h.p., four speeds and reverse, chain drive, expanding brakes to road wheels and shoe brakes on countershaft, all metal to metal, wood frame steel flitch plates, seats four, weight 17½ cwts. Price £850.

CLASS G.—Cars exceeding £900.

136. DAIMLER, entered by the Daimler Motor Co., four-cylinder engine, bore and stroke 105 mm. by 130 mm., 22 h.p., four speeds and reverse, chain-driven, three band brakes, channel steel frame, seats ten, weight 29 cwts. Price £1,000.

137. DAIMLER, entered by the Daimler Motor Co., four-cylinder engine, bore and stroke 105 mm. by 130 mm., 22 h.p., four speeds forward and reverse, chain driven, three band brakes, channel steel frame, seats four, weight 21 cwts. Price £975.

138. HART petrol electric, entered by E. W. Hart, four-cylinder engine, bore and stroke 112 mm. by 135 mm., 24 h.p., motor directly connected to a dynamo, and electric motor geared on to countershaft, thence the drive is by chains, two band brakes on road wheels and electric brake, seats five, weight 21 cwts. Price £1,000.

140. DE DIETRICH, entered by Messrs. Chas. Jarrott and Letts, Ltd., four-cylinder engine, bore and stroke 120 mm. by 120 mm., 24 h.p., four speeds forward and reverse, three band brakes, wood frame, steel flitch plates, seats four, weight 19½ cwts. Price £960.

FURTHER DETAILS.

Next week a special double number of *The Autocar* will be issued, dealing with the first five days of the trials, and giving the fullest available particulars of the performances of the cars over that period. The arrangements we have made for reporting the trials are very complete. Not only are qualified correspondents occupying seats on different cars in every class, but two powerful vehicles, entirely independent of the trials, are being used editorially, so that we can keep in absolute touch with the progress of the test throughout. One of the special features of next week's issue will be the illustrated details of various interesting mechanisms on the cars taking part in the trials.

EARLY ARRIVALS.

Although twelve noon on Tuesday was the latest time at which cars competing in the trials could enter the Palace, on Monday at 5.30 p.m. only eight cars had passed the gates. These were the three Peugeots entered by Messrs. Friswells, Ltd., the Albion car, one of the Beauforts, two De Dions, and the Swift. Several other cars, we believe, arrived later on Monday, but credit should be given to those we have mentioned for their punctuality.

THE HILL-CLIMBING AND BRAKE TESTS.

THE BRAKE TRIALS CONCLUDED.—SEVERE TESTS.—REMARKABLY GOOD PERFORMANCES.—FAILURES FEW AND FAR BETWEEN.—MARKED IMPROVEMENT IN HOLDING OF BOTH PEDAL AND SIDE BRAKES IN CARS OF ALL CLASSES.—EXCELLENT STARTING ON THE STEEP GRADE.—ONE HUNDRED AND FOUR CARS FACE THE HILL.

Preliminary to the Trials.

A cold day but fine was Tuesday last, when the first scene of the 1,000 miles reliability trials, in the shape of the brake trials, was played out on the steep pitch with which the road from the Rockhills Entrance to the Palace grounds falls to the level of the cycle track. This somewhat precipitous steep was employed last year for similar tests, and those who watched the trials then and were present again on Tuesday did not fail to remark upon the wonderful all-round improvement in brakes and braking. The failures were wonderfully few in number, and even some of those could have been averted had the drivers either been more fully aware of what was required of them or showed more skill in the handling of their cars.

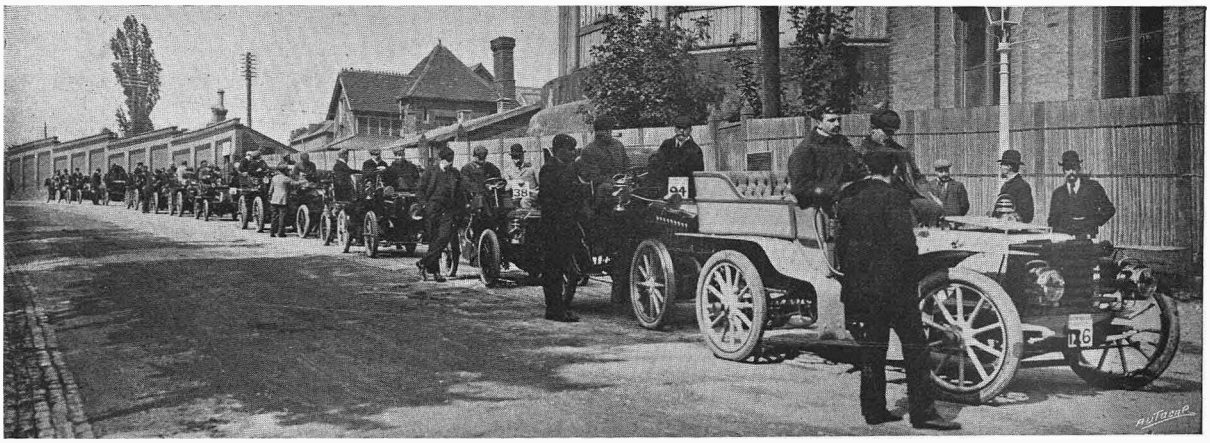


Photo. *Russell's, Crystal Palace.*

THE 1,000 MILES TRIALS. On Anerley Hill. Waiting to be weighed.

According to the published diary, the brake trials should have commenced at ten a.m., but at that hour the hillside was as bare of officials and cars as the loneliest moor in Scotland. It was well past eleven before anyone put in an appearance, and then some time was occupied by Mr. S. F. Edge rehearsing the programme with his 12 h.p. Napier for the benefit of the judges.

A space of about 25ft. was set set off on the steepest part of the slope, where the gradient cannot be much less than one in six, and it was settled that each car should be required to perform the following evolutions.

The Conditions of the Brake Trials.

With a full load, each car ran up to the uppermost flag, and was there declutched and held upon the hill by application of the foot brake only. Upon intimation from the observer, the foot brake was released and the car allowed to run backwards down the hill, until the observer signalled that the brake should be again applied, when it was required that the car should be arrested before the rear wheels crossed a white line drawn across the road from the lower flag. The car was then allowed to run some further distance down the hill, and return again to test the hand-applied brakes under exactly similar conditions. Then the carriage was required to return with its front wheels toeing the lower white line, and to start thence up the hill from a standing start, the sprag being allowed to be down. This was a really severe test for the lower-powered cars, but all but a few of them passed it most successfully.

In the running back and braking tests, some cars were let off much more easily than others, for the observers seldom signalled for brake application at the same spot, with the result that some of the cars were running much faster than others before the brakes were applied. In fairness to those vehicles that were so permitted to gather much more way than others, it is to be hoped that due allowance will be made them by the judges, though whether this was so ordered or not we cannot say.

The hill curving considerably to the left in descending required much skilful steering when the vehicles were going astern, and in several instances the cars with their occupants were plunged well into the heart of a huge laurel bush on the right-hand side of the road.

When after some time the preliminaries had been settled, and a large number of cars were ranged along the road over the causeway at the foot of the hill, the signal was given to start. With a large majority of the 104 cars doing what was asked of them in a most satisfactory manner, we do not propose to refer to them in detail, particularly as in some instances our visual findings might presently be found more or less out of line with the judges' awards. It will suffice for the present to refer only to the whole or partial failures, of which, as we have said, there were very few. It should be said that in the starting from sprag trial, a white line was drawn across the

crest of the pitch about 40ft. from the starting mark, and the cars were required to cover this distance from rest in fifteen seconds.

Details of the Brake Trials.

No. 66, a 12 h.p. Gladiator driven by Miss Dorothy Levitt, commenced the proceedings, and made a most satisfactory performance.

No. 91, 12 h.p. De Dion, ran back two feet or so twice, but started well.

1,000 MILES TRIALS. On the Crystal Palace weighbridge.

No. 20, 6 h.p. De Dion, had some difficulty in restarting, but otherwise did well.

No. 95, the 12 h.p. Chelmsford steam car, was the first vehicle to take the laurel bush in running backwards. The car held well on foot and hand brakes, but not so well on steam brakes alone.

No. 129, 15 h.p. Pipe, ran back slightly on the running back foot brake and both side brake tests, but started from rest well.

No. 96, 15 h.p. Germain, ran back a little on side brake running back test, but otherwise performed excellently.

No. 120, 20 h.p. Germain, gave a disappointing show, none of the brakes appearing to be capable of holding it quite still, while the driver let down his sprag each time. Its apparent failure may in some measure have been due to the driver, a foreigner, not grasping what was required of him.

No. 132, 20 h.p. Holcar, held well enough on all its brakes, but the driver appeared to find considerable difficulty in letting it run backwards. He ultimately plunged right into the middle of the fateful laurel bush and nearly swept all his passengers out of the car.

Nos. 94 and 70, the 20 h.p. and 10 h.p. Thornycrofts, performed well with their brakes, but experienced some difficulty in the restart.

No. 1, the Century tandem, ran back into the laurel bush, and getting away from the start rather indifferently, did not reach the upper white mark.

No. 82, 14 h.p. Brooke, did well with its brakes, but failed in starting.

No. 5, the 6 h.p. Regal, did well with brakes, but started poorly.

No. 16, 6 h.p. Relyante, did fairly well with brakes, but failed in the restarting test. This car was driven by a lady.

No. 58, 12 h.p. Relyante, restarted poorly, but otherwise did well.

No. 12, 5 h.p. Coventry Humber. In running back the first time this car took the laurel bush, but otherwise did well with brakes. Some difficulty experienced in restarting, and went up the hill slowly.

No. 75, 8 to 10 h.p. Elswick. Did well with foot brakes but not with side brakes. Failed in the restarting test.

No. 48, 10 h.p. Argyll. Foot brakes good, but side brakes did not hold. Good start.

No. 49, 14 h.p. Argyll. Foot brakes good. Side brakes did not hold. Failed in restarting trial.

No. 79, 16 h.p. Argyll. Neither foot brakes nor side brakes good. Start from rest excellent.

No. 2, 6 h.p. Eagle tandem. Foot brakes good. Hand brake failed. Failed in restarting test.

No. 113, 14 h.p. Renault. Foot brakes did not hold, but side brakes held well. The restarting test was a failure, due, we fancy, to slight electrical trouble only, as the engine never seemed to run fast enough.

No. 59, 13 h.p. Rex. Both brakes held well. Failed in restarting test.

No. 18, 6½ h.p. Clyde. Brake test satisfactory, but failed in restarting.

No. 97, 15 h.p. New Orleans. Both brake tests excellent, but failed in restarting test.

No. 50, 10 h.p. Simms-Welbeck. Foot brake fair, side brakes good. Failed in restarting.

No. 35, 9 h.p. Eagle. Foot brake good. Side brake did not hold in running back test. Started up excellently.

No. 25, 8 to 10 h.p. Regal. Foot brake good. Side brakes did not hold well in running back test. Failed in restarting.

No. 83, 10 h.p. Relyante steamer. Made two attempts but did not get up to test. The car apparently was not steaming well at the time.

No. 40, 9 h.p. Darracq. Brakes satisfactory, but failed in restarting test.

The cars that started first had rather the best of the deal, as the surface of the pitch became very loose and stony before the afternoon was old.

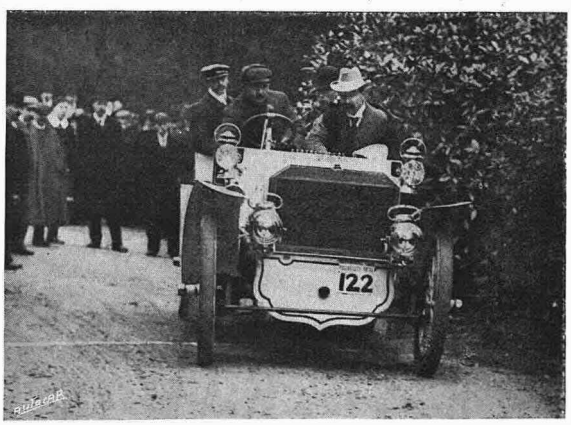
TRIAL NOTES.

A Canvas Home for the Cars.

Quite a motor camp has arisen on the spacious smooth lawn below the Lower Terrace. Two huge marquees provide ample storage for all the cars engaged in the trials, each having its particular berth numbered and marked out on the floor by white lines. Another large rectangular tent is devoted to repairs, and is vacant at the moment of writing, while large canvas erections have been set up for the comfort and convenience of the officials and judges and the press.

The Trials Programme.

The programme issued in connection with the trials contains a list of entries, maps and routes,



1,000 MILES TRIALS. The 20 h.p. Humber at the brake test.

rules, and a vast amount of other information, and is the most complete thing we have yet had in connection with any trials yet held by the A.C.G.B. and I. The originating hand of Mr. Claude Johnson is visible still, but Mr. Basil Joy must be credited with

the introduction of several refinements and improvements, together with most successful organisation, as far as the preliminary day's work has gone.

Some Non-starters.

At the moment it is impossible to know the reasons for the absence of several very interesting vehicles. The greatest disappointment in the voiturette class is the 6 h.p. Wolseley. It seems that there was originally no intention to run this car, but when the trials were postponed it was hoped that it would be finished in time for the trial, though, of course, it would have been run in a rough, and to some extent unfinished, condition. However, it was found impossible to get it into entirely roadworthy trim in time for it to do justice to itself.

Perhaps an even greater disappointment is the Standard, with its 5in. bore and 3in. stroke, which is also included among the new cars that could not be, as our French friends say, terminated in time for the trials.

Another unlucky two-seated car was one of Messrs. Jarrott and Letts's Oldsmobiles, as the 5 h.p. when on the way to the Palace collided with a lamp-post, owing to the vagaries of some horse traffic. The front axle of the car was strained, and the engine put out of line. Nevertheless, it was decided to let the little car go as it was, and see how far it will run. It is possible, of course, that it may get through the trials, though this is hardly likely with the engine out of line. However, we shall watch 21 and see how it performs.

Still harder was the fate of the 9 h.p. three-cylinder Humber, as that, too, when making its final run before being despatched to the Palace, had to be driven into a bank to avoid a collision. It was so damaged that it was impossible to put it into the trials, and as it was the one and only representative of the three-cylinder type at present finished, Messrs. Humber had to content themselves with the two four-cylinder and one single-cylinder cars in the trials. We are extremely sorry that the three cannot be run, as there are so many excellent features in the design that we believe it would have rendered a very good account of itself.

Another to come under the heading of non-starters is the 10 h.p. Ryknield, the new Burton-on-Trent make, which was not finished in time, and its makers decided that, rather than run an unfinished car, as the trials would be its first public appearance, they would withhold it from the present competition. Other cars which have been scratched are the two 10 h.p. Picks and the Okodene steamer.

In addition to the non-starters, there are some cars which are really being prematurely run. Among them may be mentioned the 18 h.p. four-cylinder Chenard-Walcker. This particular power will be the standard for next year, but it has been found impossible to complete the car in the full sense of the term for the trials. That is to say, it is more or less a rough specimen of what the actual machine will be. For instance, the consumption will probably be higher compared with the two-cylinder records held by the Chenard-Walcker make, this being due to the fact that the new carburetter is not yet made, so that the holder of the world's records for lowness of consumption will probably not distinguish itself in its latest form at the moment. Then there is the matter of quietness of running, in which the car will also compare unfavourably with some of its finished competitors. However, all these matters are having attention, and the car as it is to be will be very different from the car as it is.

Photo *Russell's, Crystal Palace.*

1,000 MILES TRIALS. Cars waiting at the foot of the hill in the Crystal Palace grounds for their turn in the climbing and brake tests.

The Return Times.

It may be useful for those who visit the Crystal Palace in the afternoon to see the cars return from the daily runs if we give the approximate times of the returns as estimated by the club officials. It will be understood, of course, that the times are approximate, but so far as can be stated at the moment the cars will arrive at the Crystal Palace each afternoon as follows:

Sept. 18th, from Margate, 6.13.
,, 19th, from Eastbourne, 5.30.
,, 21st, from Worthing, 4.47.
,, 22nd, from Folkestone, 5.50.
,, 23rd, from Southsea, 6.2.
,, 24th, from Bexhill, 5.12.
,, 25th, from Winchester, 5.46.
,, 26th, from Brighton, 3.45.

THE SAMSON-HUTCHINSON NON-SKID TYRES.

Under the above name yet another, and what we should imagine should prove an effective, check on the side-slip tendency is being put upon the market by Capt. Masui, the agent for the Germain cars, at 1, Hanover Court, Hanover Street, W. Our illustration shows a Germain car the tyres of which have been furnished with these bands. The protector consists first of a band of stoutest chrome leather, covering the whole of the tread of the pneumatic tyre, and strongly solutioned thereto. On to this band is secured similarly in its turn another band of equal width, carrying a circumferential strip of leather riveted thereto with iron rivets and steel washers, in three lines, the disc-shaped heads of the rivets projecting about three thirty-seconds of an inch above the surface of the outermost strip or band, and so forming at once an unpuncturable protection and an armoured tread to the tyre. It is claimed that with this tread side-slip is impossible, while its comparative narrowness largely mitigates the dust trouble, and the speed of the car is little if at all diminished. The protector can be fitted to tyres which have been in use, and should consider ably increase their life.

THE BRITISH ASSOCIATION MEETING.

At Southport, during the meeting of the British Association, autocars have played a distinctly prominent part. On Saturday last a motor run was arranged to Hoole to visit the historic church there and other interesting places in the immediate neighbourhood. Over seventy-five members of the Association were conveyed by motor, some twenty-three cars being lent for the purpose by resident or visiting motorists. Prominent among these vehicles was Mr. Leonard Williamson's 30 h.p. Mercedes. Mr. Williamson is, *par excellence*, the motor enthusiast of Southport. Mr. Vernon lent his Daimler, Sir John Thornycroft one of his own 20 h.p. cars, while special mention must be made of Miss Hampson, who drove the scientists in her 10 h.p. Lanchester. She was the only lady driver present, and the honours of the day rested with her. Everyone expressed great admiration for the way in which she handled her car. The weather was bad, fierce showers falling at intervals, while at one place the cars had to run through flood waters some two feet deep. However, nothing daunted the motorists. Among other cars taking part in the run were a Gladiator, a couple of Panhards, four Daimlers, M.M.C., Mors, Napier, Vulcan, a Darracq, and several others. Despite the weather, the run was altogether most successful and enjoyable. This, however, was not the only motor flavour given to the British Association visit, as Mr. Thomas Clarkson read a paper on the previous day on the "Development in Automobile Construction." He confined his attention mainly to the type of vehicle for the carriage of weights of from half a ton to two tons, and in the course of his paper gave much valuable information, based upon his exhaustive series of experiments in connection with the development of the steam car. How practical and successful these have been is well shown by one of his remarks about the Chelmsford steam car, as he stated that, except for steering and brake motions, there was no need any longer to carry an oilcan, as one filling of the well in which all the engine and mechanism is contained with about a gallon of oil provided sufficient lubrication for 1,000 miles or more. Owing to the pressure of news upon our columns, we regret we are unable to give the attention to Mr. Clarkson's able and exhaustive paper which it undoubtedly deserves.

One of our correspondents, who profited by our hint as to the great improvement made in the running of a 7½ h.p. Wolseley by the substitution of the old two jet carburetter for the single jet type, has written us stating that his experiences fully bear out our own, and he also points out that it has considerably reduced the consumption of petrol. This is certainly very reasonable. We have not measured carefully, but approximately it is twenty-five miles to the gallon for a car which without spares weighs 15 cwt. The 7½ h.p. was a good car with the two jets, but it has unquestionably been greatly improved by the substitution of the single jet. We saw one quite recently make a very easy ascent of Sunrising Hill, despite the fact that the surface was holding.

THE 9 h.p. HUMBER LIGHT CAR.

(*Continued from page 325.*)

LAST WEEK WE COMMENCED OUR DESCRIPTION OF THIS NEW THREE-CYLINDER CAR. IT WILL BE REMEMBERED THAT THE ENGINE ALONE WAS DEALT WITH. THE OPENING PARAGRAPHS ON THIS PAGE COMPLETE SOME OF THE MINOR DETAILS IN CONNECTION WITH THE ENGINE.

The lubrication of the engine does not present any very special features, it being effected by a system which is very largely employed and gives universal satisfaction. This is the supplying of oil to all the principal bearings from a sight feed lubricator placed upon the dashboard of the car. The oil, after completing its services in the bearings, collects in the bottom of the crank chamber, whence it may be drawn by means of a tap placed in the lowest part of the crank chamber for the purpose. At a further stage in our description of mechanism from the dashboard lubricator is also a good one, and it is, we find, much appreciated.

The radiator employed is of a very attractive design; it forms the forward end of the motor bonnet, and consists of a hollow framework, which forms the water tank. In the rectangular open panel the radiating tubes are placed vertically. These are of oval section, and are placed at an angle, so that the full benefit of the draught is obtained. Perhaps the best method of explaining the disposition of these tubes is to liken them to the lattices of a

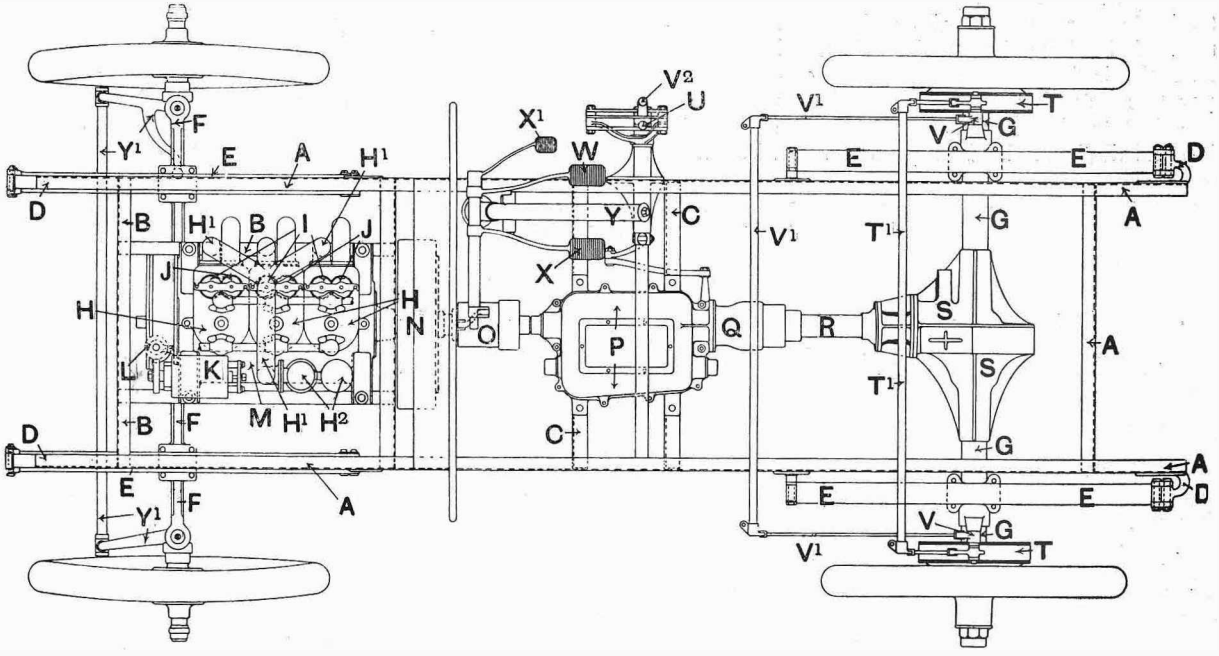


Fig. 3.—Plan of the 9 h.p Humber.

A A, frame
B B, underframe supporting engine
C C, transverse members carrying gear box
D D, front axle hangers
E E, springs
F F, front axle
G G, rear axle sleeve
H H, cylinder combustion chambers
H^1 H^1 H^1, induction pipe triple branch
H^2, carburetter
I, induction valves
J J, exhaust valves
K, magneto
L, rotary pump
M, crank chamber
N, flywheel and clutch
O, clutch spring box
P, gear box
Q, universal joint case
R, propeller-shaft
S S, differential and bevel driving gear case
T T, road wheel brakes
T^1 T^1, brake lever connections
U, change speed gear lever
V, rear internal brake lever
V^1 V^1, rear internal brake connections
V^2, rear brake hand lever
W, brake pedal
X, clutch pedal
X^1, accelerator pedal
Y, steering standard
Y^1 Y^1, steering arms and connections

the gear it will be noticed that a ring type lubricator is employed.

In this the top bush is split, and a loose ring is placed in the channel so formed. The rotation of the shaft carries this ring, which is of much larger diameter than the bearing, round with it and dips it into the oil well located beneath the lower part of the bush. The ring then picks up a sufficient quantity of oil to supply the bearings. It is a system commonly employed in the engineering world, and is as effective as it is simple. The plan of oiling practically the whole of the motor and Venetian blind placed opposite to one another, so that they form an obtuse V shape.

It should be mentioned that the high tension ignition system consisting of battery and induction coil may be fitted in place of the magneto system if desired.

The Clutch and Gearing.

Passing from the engine, we next come to the clutch and gearing. The engine flywheel, which forms the female portion of the clutch, will be seen on reference to fig. 2, in which O O is the rim of the flywheel and O^1 the conical face of the female

clutch, A being the end of the engine crankshaft. Upon this end of the shaft the male portion of the clutch is mounted, and is free to slide thereon. Attached to the male part of the clutch is a spring driving arrangement, which communicates power to the primary gearshaft of the three-speed and reverse gear (fig. 5), lettered A A A. This gear gives three speeds forward and single reverse, the top gear driving direct from the engine crankshaft to the bevel gear surrounding the differential gear on the live road axle. This gear is very simple and very ingenious in its action, which will be easily followed by carefully reading the description and referring to the drawing given in fig. 5. A A A is the first motion gearshaft, which, as we have stated before, receives its power from the engine through a spring drive. A portion of this shaft is of square section, and upon

When the low gear is in action, the pinion D is slid backwards by means of the sleeve B, the collar J, and changing fork, until it intermeshes with the gear wheel D^1 upon the countershaft C C C. This countershaft now revolves, turning with it the pinion F^1, which engages with the gear wheel F, through it giving motion to the propeller-shaft, and so to the live axle of the car. It will be understood that, while both the shaft A A A and the sleeve carrying F are revolving, the three speeds are different, that of A A A being greatly in excess of the sleeve upon F. If the second speed is desired, the sleeve B slides along until the gear wheel E is brought into mesh with E^1, and as the diameters of these two wheels are more nearly equal than those of D and D^1, the speed of the shaft C C C is greatly increased, as is that of the gear wheel and sleeve F in like propor-

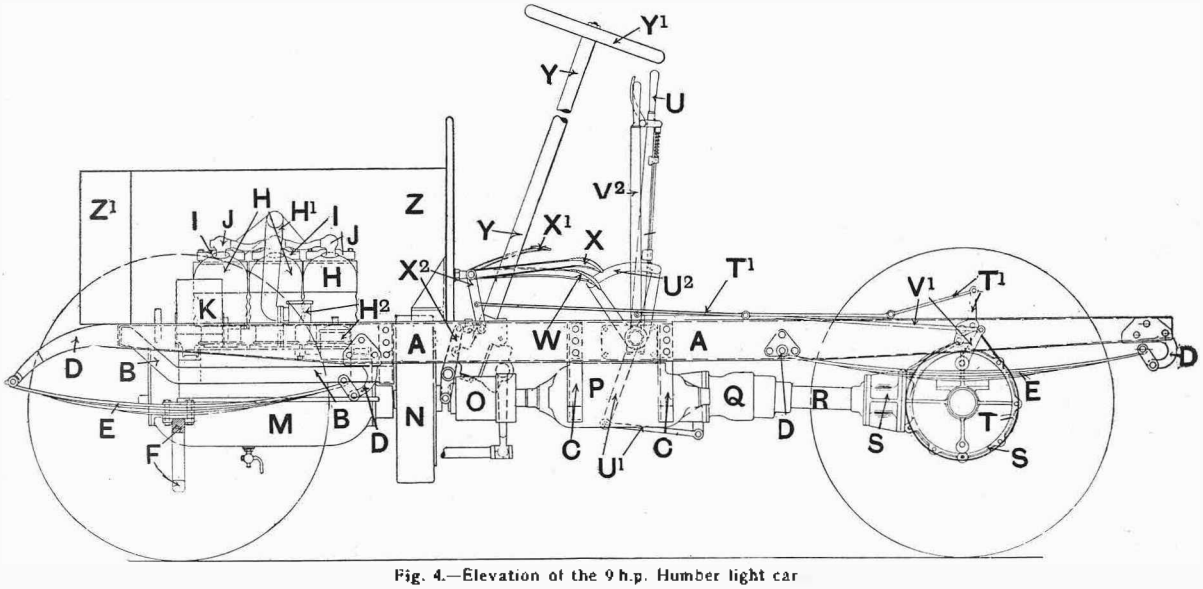


Fig. 4.—Elevation of the 9 h.p. Humber light car

A A, frame
B B, underframe supporting engine
C C, transverse members carrying gear box
D D, front axle spring hangers
E E, springs
F, front axle
H H, cylinder combustion chambers
H^1, induction pipe triple branch
H^2, carburetter
I, valve bridge pieces
J J, water return to radiator
K, magneto
M, crank chamber
N, flywheel and clutch
O, clutch spring box
P, gear box
Q, universal joint case
R, propeller-shaft
S S, differential and bevel driving gear case
T, road wheel brake
T^1, brake lever connection
U, change speed gear lever
U^1 U^1, gear striking rod
U^2, gear and brake sectors
V, rear internal brake lever
V^1, rear internal brake connections
V^2, rear brake hand lever
W, brake pedal
X, clutch pedal
X^1, accelerator pedal
X^2, clutch levers
Y Y, steering standard
Y^1, steering wheel
Z, motor bonnet
Z^1, radiator

this are mounted a sleeve and two gear wheels, lettered B, D, and E respectively. Upon the larger gear wheel E are four projections, which form the jaws of a positive drive clutch, whose mission will be described later. The sleeve B is also provided with a collar J, with which the speed-changing fork engages. The end of the shaft A beyond the square section is turned down and pocketed into a bushed hole in the sleeve to which the gear F is attached, as is also the coupling R for the propeller-shaft. The end of this shaft, with its bush, is indicated by dotted lines. Mounted in two capped bearings is a countershaft C C C, to which are keyed two gear wheels D^1 and E^1, while upon the right-hand end, or, as it lies in the frame, at the rear end, of the box is a pinion F^1, which is capable of being slid a certain distance along the shaft, but is prevented from rotating thereon by means of feathers. In the position shown in the drawing, the gearing is inoperative.

tion. When the third or top speed comes into gear, a double movement takes place—first the sleeve B slides the gear wheel E out of mesh with E^1; then a fork working in the collar K withdraws the pinion F^1 from mesh with F; and directly this is accomplished a further movement is given to the sleeve B, so that the projections G on the gear wheel E and the projections H on the gear wheel F interlock, and the drive is then taken straight through from the crankshaft of the engine to the propeller-shaft R, there being no differential movement between the shaft A and the gear wheel and sleeve F on account of the positive clutch jaws G and H interlocking. The lubrication of the main bearings of the gear is effected by means of oil well and rings, both of which are clearly shown in our drawings. It will be understood, of course, that when driving upon the top gear the only gear wheels which are revolving are the bevel drive to the live axle, the countershaft

C C C and the gear wheels thereon remaining idle until such time as the gear is lowered. The drive should be very sweet, as a spring is interposed to transmit the power between the clutch and the gear box.

The Rear Axle.

The bevel gear wheel, through which the power from the engine change-speed gear is directed to the road wheels, has a differential gear in the usual

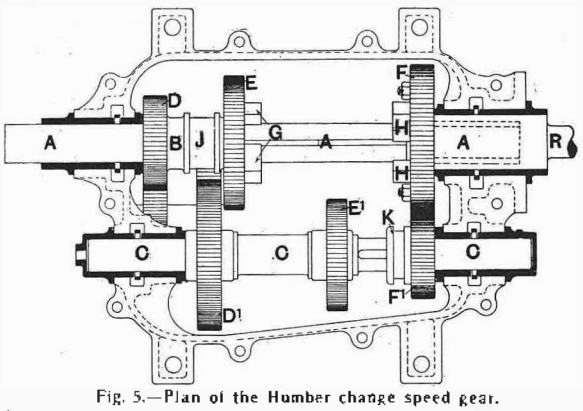
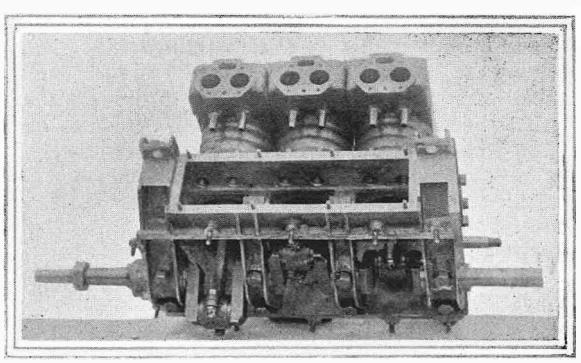


Fig. 5.—Plan of the Humber change speed gear.

A A A, primary gearshaft
B, sleeve sliding on squared portion of A
C C C, secondary countershaft
D, slow speed pinion on A A A
D¹, slow speed gear wheel on countershaft C C C
E, second speed gear wheel on A A A
E¹, second speed gear wheel on C C C
F, gear wheel keyed to the propeller-shaft R (figs. 1 and 2). The end of the shaft A is journaled into this
F¹, pinion on C C gearing into F for first and second speeds only
G G, jaws of a positive clutch fixed to the gear wheel E. They engage with the opposite clutch H of the gear wheel F
H H, positive jaw clutch on gear wheel F
J, collar on A A A
K, collar on C C C
R, propeller-shaft (see figs. 3 and 4)

manner; the live axle is enclosed in a sleeve which gives it ample bearing surfaces and every facility for lubrication; while the wheels themselves revolve on the sleeve, the hubs being attached to the live axle at their outer ends. This construction gives a remarkably rigid yet comparatively light construction for the back axle, which, of course, is a most important part in the gear driving vehicle. Upon each of the road wheels is mounted a drum, which is turned on its outer and inner periphery. The outer surface is encircled by a band brake, while an expanding ring gives a second brake on the inside of this drum. The inner brake is actuated by a pedal W (figs. 3 and 4), while the band brake is applied



The Humber three-cylinder engine with bottom of crank case removed. It will be seen that this can be effected without disturbing the crankshaft bearings, also that a long inspection door is provided in the side of the crank case above the bearings.

by means of the side lever, so that there are four brakes in all, but as they all act on the road wheels all strain is removed from the propeller-shaft and bevel drive.

In the operation of the car there is very little variation from the usual procedure. The clutch is operated by means of one pedal on the internal expanding brakes, while a similar pedal serves as an accelerator by cutting out the governor. There are no hand levers, with the exception of those for the change speed and the band brake. The running of the vehicle should be very smooth and sweet, as the engine is as near a perfect balance as is possible, while great length of spring is employed, the plates being wider than those generally used. The weight of the car complete is about 14 cwts. The first public appearance of the car was to have been in the reliability trials, but, unfortunately, the car met with an accident the day before they commenced.

THE MOTOR MOLOCH.

(From the Daily Papers.)

"Motor Car Accident.

"Bridget Brown, an elderly woman, was found dead in seven feet of water at the bottom of a well at the back of Bunkum's Rents, S.E. A bucket with a broken rope attached to it was also found in the well. The police (who have a clue) believe that she was frightened by a motor car passing down Walker Street, which runs at right angles to Bunkum's Rents. The ruffian must have driven off without climbing the wall which intervened between him and his victim, for which conduct under the new Act he would be fined £10. The sooner drastic action is taken against these terrors of the highway the better for the lives and limbs of His Majesty's lieges."

"Serious Accident. Motors Again!

"The bursting of a traction engine boiler at the top of Rootam Hill, on Tuesday last, frightened the horses of a coach driven by Major Smith, J.P., and they ran away down this dangerous declivity, and came into collision with two motor cyclists who were ascending the hill. At the sharp turn at the bottom the coach upset, Major Smith breaking his arm and Lady Snuphanough, who occupied the box seat, sustaining concussion of the brain. The police were quickly on the scene, and the Major and Lady Snuphanough were at once conveyed to the Cottage Hospital. Much sympathy has been shown by the local gentry and magistrates. The police are watching the cottage to which the cyclists, who are said to be seriously injured, were conveyed; they will be duly brought before the local bench if they recover."

"The Scorching Terror

"As two omnibuses were racing along the Old Kent Road, a pedestrian suddenly dashed off the pavement, and fell under the wheels of one of the vehicles, sustaining injuries which proved instantly fatal. The police have a clue, as they are informed that Mr. Wedge, the motor car driver, has been seen in the district. No doubt the victim, who has not yet been identified, had been at some time frightened by a motor car. No importance is attached to the story that he was pushed off the pavement by a hooligan."

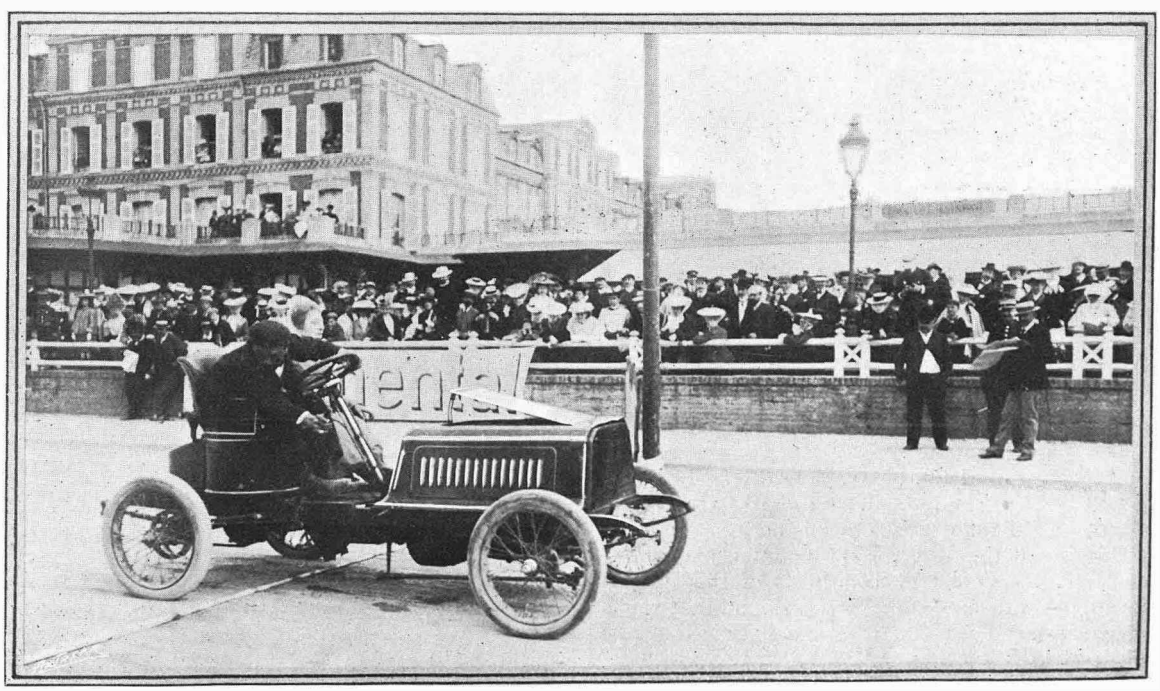
CONTINENTAL NOTES AND NEWS.

BRAKE TRIALS AT DEAUVILLE.

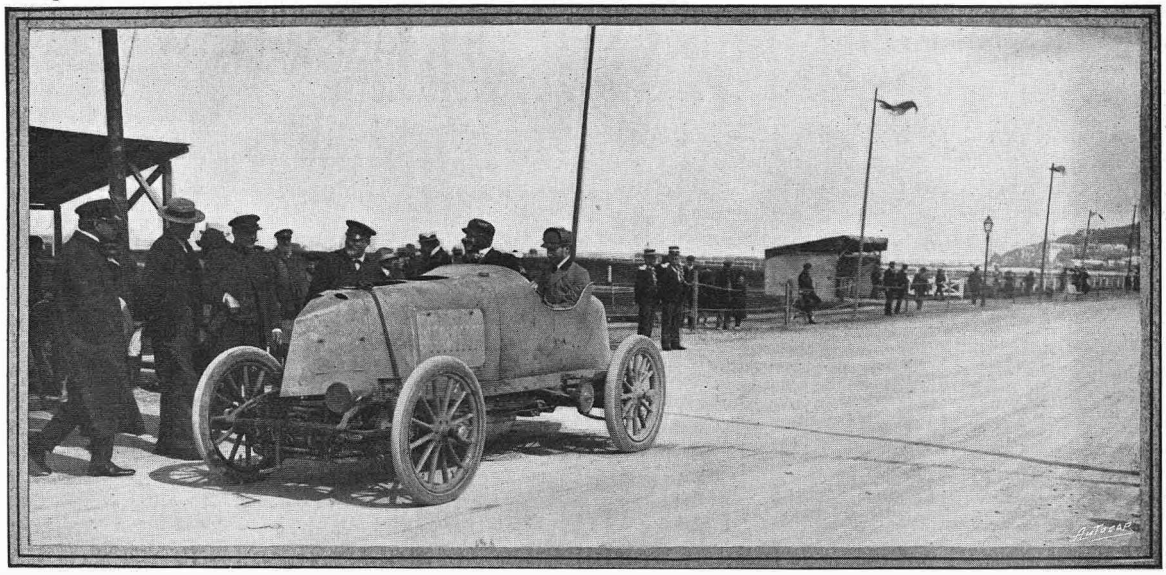
The annual event at Deauville seemed at one moment to be on the point of going the way of nearly all the other speed tests in France, and when the promoters offered to renew the mile and kilometre speed trials they were met by the objection that, as the road along the sea front only allowed about three hundred yards in which to draw up, it was no longer suitable for the huge racing machines travelling up to eighty miles an hour or so. Recognising that this objection was perfectly logical, the promoters, *L'Auto*, were on the point of abandoning with regret the Deauville meetings when it occurred to them that it would be highly instructive, though perhaps less interesting from the public point of view, to replace the mile speed trial with brake tests over five hundred metres on the lines suggested by Baron Pierre de Crawhez, and carried out for the first time in the park of Uriage-les-Bains on the day following the Laffrey hill climb. In these trials a straight course of five hundred metres is marked out. The competing car takes up its position just behind the tape at the start, and on the signal being given it has five seconds in which to cross the line. As soon as it does so the Mors electrical apparatus is automatically set to work. If the driver is unable to get over in five seconds, the time from that moment is counted in his running time. The object of the competitor is to get into his pace as soon as possible, and stop from high speed in the shortest possible distance. The car must stop with the tape between the steering and driving wheels, but if it should overrun the mark, it may be reversed on to the tape on condition of its not going beyond another mark twenty-five metres from the tape. In such an ordeal every quality of the vehicle is put to the test. At the start the load is introduced to the engine as rapidly as possible, when, if the clutch is not properly adjusted, there may be too much slipping, or the motor may stop, and then, after travelling at the highest possible speed, the brakes have to be applied, and enormous strains are put on every part of the car, while the tyres have to stand particularly rough usage. It is also a trial of driving skill, for nothing requires greater judgment than to know when and how to brake to bring a car from high speed to a dead stop at a given point. The weather conditions preceding the trials were certainly not favourable to the Deauville meeting, but, fortunately, the rain held aloof on Thursday of last week, and if the stiff breeze that blew against the cars was a little provoking, it was compensated for by the sun whose presence on this occasion deserves special mention. It is true that the day finished up with a violent storm, which swept away a jetty and covered the road with sand and stones.

Novelties at the Deauville Meeting.

During the morning the competitors were allowed to make trials over the course, and they took full advantage of the permission. The racing vehicles did not show up in strong force, and the only big ones were the Mors and the Serpollet, the two latter being driven by M. and Madame Leblon. The driving wheels of the Serpollet were fitted with the new Michelin flat tread tyre. It will be remembered that the original type of flat tread tyre was brought out at the beginning of the year, but it was



Beconnais on his 40 h.p. Darracq light car, which secured second place in the racing section.



M. Jeandré on his 70 h.p. Mors, which beat the record made by Rigolly on his 110 h.p. Gobron-Brillié by ⅕sec.

soon found that the edges wore round, so that they lost the advantage they were supposed to possess. M. Michelin, however, has so much faith in the principle of the flat tread as a means of preventing side-slip and avoiding punctures, that he has improved on the old method by imbedding small iron rectangular pieces in the tread at the edges at intervals of about half an inch, the idea, of course, being to prevent the edges from wearing away. The tread is not absolutely flat, but is slightly concave. Its width is about two and a quarter inches. The touring cars made a very good show. The Automotrice has been wonderfully improved during

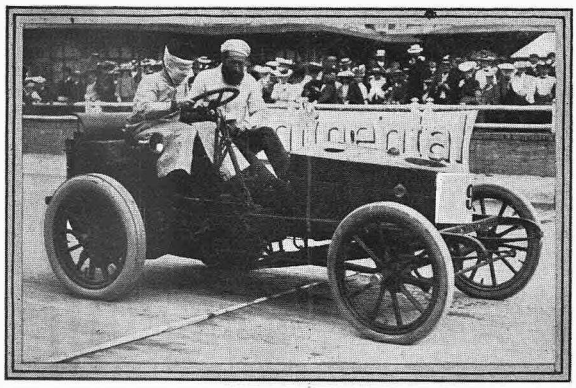
Wagner (18 h.p. Darracq voiturette). Third in the racing section.

the present year, and the big vehicle driven by M. Gasté was greatly admired. The 12 h.p. Bardon of Comte de Cardignan was chiefly noticeable for being fitted with the Roussel spring wheels, which are the only practical type of wheels of this class employed in France. There is no doubt that the spring wheel is an excellent feature, if only it can overcome the defects which have been revealed in them in the past. Whether this has been done in the Roussel wheel can only be proved by practical experience, but it certainly seems to have a good deal in its favour. The wheel is made entirely of metal, and the spokes are replaced by elliptical springs of thick steel strip passing through connections under the felloe, while the ends of each spring are bent round bolts held between two plates on the hub. There are thus a flexible movement of the spring and a free play of the ends around the connecting bolts. The wheel has a solid rubber tyre of truncated cone section. We carefully watched the running of this car, and could detect no more jolting of the body than is usual with pneumatic tyres.

The Trials.

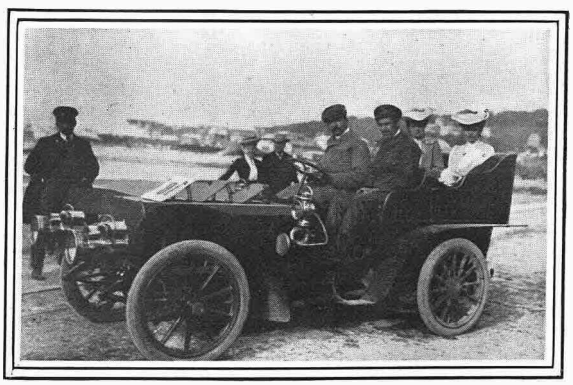
The arrangements for the trials, carried out under the personal supervision of M. Le Hoc, Mayor of Deauville, were highly satisfactory. The side of the road skirting the sea front was roped off, and railings barred the side streets, so that no one was allowed on the track except the officials. Despite the lateness of the season, there was a very large crowd, who lined the road several deep, and the gardens of the hotels and mansions were filled with spectators. The method of communicating the times was excellent. No sooner had a competitor finished than the time was chalked up on a blackboard, and thus the public were able to take an interest in the performances during the whole meeting. It is true that the meeting was shorter than had been anticipated. A large number of vehicles failed to put in an appearance, and Madame Bob Walter was unable to compete because her big Panhard had not arrived. A test of this kind may not be so exciting as a mile speed trial, but it was decidedly interesting. It might have been feared that a trial, where everything centred in the braking of the vehicles, would prove monotonous, and so it would have done if the task set the competitors were as easy as it appeared to be. Under ordinary circumstances, the stopping of a vehicle on a line is not a difficult operation, but it requires the highest judgment and skill when a competitor has to cover the distance from start to finish in the shortest possible

time. Most of the drivers erred by braking too late, and only one stopped before the tape, and had to advance a few inches. The first to be started was the 9 h.p. Passy-Thellier car of M. Morane, which



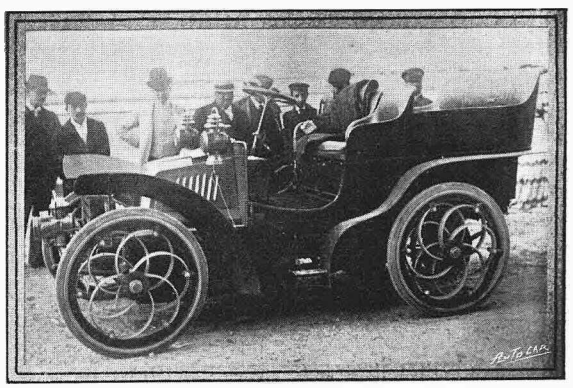
Mme. Le Blon (Serpollet) fourth in the racing section.

stopped dead on the line, but M. R. de Roumy drove his Renault beyond, and had to reverse. It was in reversing that the petrol cars had a disadvantage. Some of the drivers did not notice that their driving wheels were over the tape until their attention was called to it, and they lost several seconds in reversing. Renaux drove his Peugeot up smartly and just managed to stop with his back wheels touching the tape, but the Clément of Hanriot went a few inches beyond and got back promptly. The Gardner-Serpollet touring car was stopped just before the tape, and jumped forward with little appreciable loss of time, while the driver of a Tony Huber car seemed to mistake the line, and was out of it altogether. As was to be expected, the best performances were done by the racing cars. It might have been supposed that the lighter vehicles would have an advantage in a trial of this kind, but as events proved we had a repetition of the Uriage-les-Bains trials, when the quickest time was accomplished by a heavy car, Jeandré on his 70 h.p. Mors covering the distance in 33⅘s., thus beating the record of Rigolly on his 110 h.p. Gobron-Brillié by



M. Gaste on the 20 h.p. Automotrice which accomplished 500 metres in 1m 4s.

⅕s. The records for all types of racing cars were beaten. Leblon on his Serpollet made a bad start, and he was beaten by Madame Leblon, who did remarkably well in her first competition. It was evidently a trial in which driving skill was the principal factor, though more than one clever driver had very bad luck. When watching the trials during the morning we noticed that most of the drivers started to brake at a distance of sixty or seventy yards. The braking was done gradually, and it was usually found on nearing the tape that the speed was not reduced sufficiently, so that when the brakes were put down hard the vehicle skidded some distance beyond the line. Of course, it should be remembered that they had been travelling at racing speed. Time after time the drivers renewed the attempt until they found a landmark where they should begin applying the brakes. Gabriel on his Gordon-Bennett Mors failed to stop on the mark, and during the trials in the afternoon he went beyond it. The experiment showed clearly enough that when travelling at high speeds there is nothing to be gained by braking suddenly. Pneumatic tyres offer very little resistance to smooth roads, and once the wheels begin to skid the momentum will carry the car some distance, entirely beyond the control of the driver. The competitors found that, from racing speeds, they had continually to change the point where they

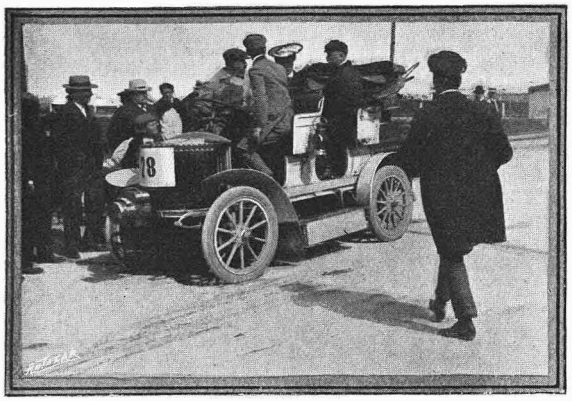


The 12 h.p. Bardon car, fitted with the Roussel spring wheels.

started braking until they could reduce speed sufficiently to stop the car on the line with only a slight skidding. The trials were not only interesting, as illustrating the control of cars at high speeds, but they also put a terrible strain upon the cars and tyres. Only one tyre burst in the preliminary tests, and a propeller-shaft broke in a light racing car. Otherwise the trials went off without a single incident. The meeting was to have included the contest for the De Crawhez Cup, but the only entry was that of Jeandré, who, in his trial, drove the Mors beyond the line, when his motor stopped, and as the cup rules specify that the engine must not be stopped Jeandré was disqualified. The following were the results of the trials:

RACING CARS.

Jeandré (70 h.p. Mors), 33 4-5s.
Béconnais (40 h.p. Darracq light car), 35s.
Wagner (18 h.p. Darracq voiturette), 35 3-5s.
Madame Leblon (Gardner-Serpollet), 38 3-5s.
Durtal (Clément motor cycle), 39 2-5s.
Leblon (Gardner-Serpollet), 43s.
Pasqual (Clément motor cycle), 44 4-5s.
Molon (Darracq voiturette), 48s.
Hanriot (Clément voiturette), 50s.
Rasson (Clément voiturette), 53 1-5s.



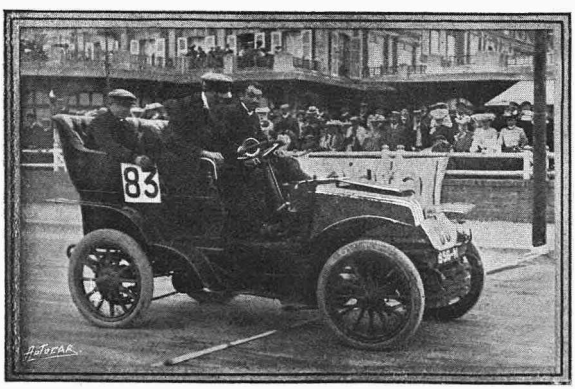
The Gardner-Serpollet driven by Pelzer. First in the touring section.

TOURING CARS.

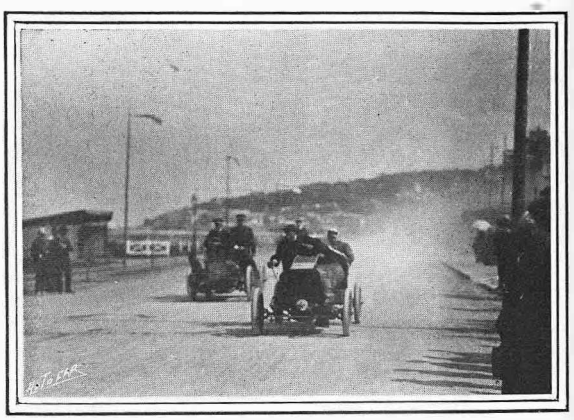
Pelzer (Gardner-Serpollet), 42 2-5s.
Rasson (Clément), 43 2-5s.
Bedel (Gobron-Brillié), 50 3-5s.
Van Allen (Chenu), 51s.
Renaux (Peugeot), 51 3-5s.
Agence Internationale des Chassis Mécaniques, 52 1-5s.
Métivier (Delahaye), 55 3-5s.
Hanriot (Clément), 56 3-5s.
Bedel (Gladiator), 57 4-5s.
Henri (Boyer), 59 2-5s.
Cabaillot (De Dion-Bouton), 1m. 2 2-5s.

Paris-Rome Touring Trials.

One of the most important events during 1904 will be the trial of touring cars organised by M. Paul Meyan, of *La France Automobile*. As the Paris-Madrid fiasco put a stop to international racing, M. Meyan has seen that the only way of continuing the series of events, which aimed at taking in all the capitals of Europe, is to replace the racing machines by touring cars, and the next big event, it is hoped, will inaugurate a new series, when makers and private owners will compete in trials under conditions usually governing such contests—that is to say, a maximum number of marks will be fixed and points will be deducted for any shortcomings that may be observable during the run. The cost of such a tour will necessarily be rather heavy, though not too much for tourists who undertake the journey for pleasure and find satisfaction in the receptions and *fêtes* to be given in their honour along the route; but the pleasure will nevertheless be combined with a good deal of profit for owners or makers whose cars come out



The Gobron-Brillié driven by Bedel. Third in the tourist section.

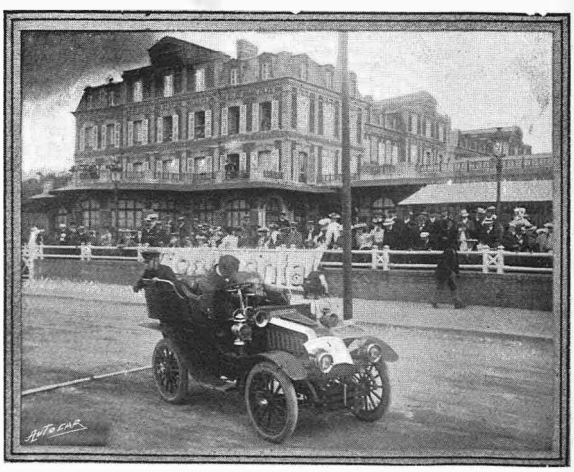


A good stop by the Automotrice.

of the trials satisfactorily, as a large amount of prize money has already been offered. M. Meyan has recently returned from Italy, where he has prospected the route. The cars will start from Paris in March next, and will go by way of Dijon, Lyons, and Marseilles, to Nice, where the competitors will remain a couple of days to witness the consumption and touring trials during the Nice week. They will then cross into Italy by the Col de Tende, and go on by Coni to Turin, with further stages to Milan, Bologna, Florence, and Rome. Excluding the two days at Nice the journey will occupy ten days.

Autocars at the French Manoeuvres.

At the annual military manœuvres in France the Government is accustomed to invite representatives from all the different countries, and the number of foreign officers attending is so considerable that the Minister of War has had the idea of placing autocars at their disposal for conveying them to the different points of vantage on the field. The cars are in charge of Captain Genty, of the Artillery, who has specialised himself in automobiles, and has taken part in many races under the name of De la Touloubre, when he drove a Decauville vehicle. The foreign officers, who have to start from the headquarters at Orange every day to distant parts of the field, are said to greatly appreciate the facilities offered them by the autocar. A story



A bad stop.

is even going the rounds in Paris that the British representative. Lieut.-Col. Hon. Montagu Stuart-Wortley, wanted to use his automobile to run to Paris during the afternoon; and when it was pointed out to him that a journey of more than four hundred miles was a little too much even for an automobile to accomplish between the meridian and sundown, the British officer remarked that he would do it another day.

Correspondence.

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

BRAKES.

[3163.]—Mr. Schwind says, "Woe betide the man who trusts to leather brakes." Twelve months ago I took off the wood blocks from my hand brake and put on leather (pieces of traces from local saddler). I use the car—a Daimler weighing over a ton—a good deal in Surrey, where we have some very bad hills; for example, Hindhead, Leith Hill, Box Hill, etc. The brake has always answered well on the longest descent, and is now in use every day. It is, naturally, beginning to wear, as car has been several thousand miles. I quite agree that metal to metal (cooled) is much better. I believe now the Daimler Co. fit nothing else. H. G. L. MILLS.

THE EDISON ACCUMULATOR.

[3164.]—In your article on Edison's new electric accumulator, page 316, there occurs the phrase, "Mr. Edison does not appear to have given up the bombastic style which has so dimmed the lustre of his achievements in the past."

May I ask what these lustrous achievements were?

Beyond the bringing out of two ingenious toys—the phonograph and the kinematograph—and the perfecting of the art of bombast, including, of course, those heavy calls on the future tense and the subjunctive mood so dear to our sanguine cousins of the New World, I have not been able to detect any lustrous achievement of a truly novel kind by the "Wizard of Menlo Park." If this be only my ignorance, many others share my fate, so it seems worth while to ask for enlightenment.

May I also ask what is the age of this "new" accumulator, or is its perennial youth due to the "Wizard" having really, though unconsciously, made one truly lustrous discovery—the philosopher's stone?

I think it was about a year ago that your very sensible contemporary the *Horseless Age* (of New York) got tired of the everlasting youth of this invention, and considered the continually unfulfilled promise of its adolescence was exceedingly detrimental to the automobile trade, owing to the postponement of purchases awaiting this fulfilment.

Thirty years or so ago much harm was done to innocent but nervous people by the panic in gas shares due to the tall talk about what the glow lamp was "going to" accomplish. Surely the public should be advised as to the true value of this stuff. J. BROWN.

[3165.] On reading your article on Mr. Edison's new electric accumulator in last week's valuable journal, my attention was at once called to a reference to Mr. Edison in the *New York Journal* of the 15th ult., taken apparently from the *New York Tribune*, which read as follows: "The statement that Mr. Edison is making a fresh test of his storage battery has a familiar sound. On several occasions during the last two years the country has heard substantially the same thing. It has also been informed before, as it is now, that the inventor is reluctant to talk. Well, he is entitled to take all the time needed to perfect the device, and if experience has taught him the value of reticence no one can blame him."

I have met many people who say they have made up their mind not to buy a motor car until Mr. Edison's accumulator is perfected, as great things are already being done with the accumulator, according to Mr. Edison's account. Now, I do not believe Mr. Edison has really given a sanguine report at all of the possibilities of his accumulator, but it has been handed down from one to another in an exaggerated form as to remind one of the man who was sick and threw up three black crows, while, in fact, it was only something as black as a crow. The way some people are going on from year to year saying they are waiting for a few more perfections resembles the gentleman most of us know who was going to buy a bicycle, but there was always something new about to be introduced as he was deciding which kept him back. Poor fellow, he got old, and went to his grave without even mounting a bicycle. Moral: Get some kind of satisfactory motor, and obtain your experience, which will be far more valuable in helping you to appreciate sound improvements than the small amount you would lose in making an exchange. A. E. JOHNSON.

NON-SLIPPING TREADS.

[3166.]—I see that several people are asking about the efficiency of the Wilkinson tread, and so the following particulars may be of interest: I had these treads fitted to the back wheels of my car about six months ago. My car is light, weighing approximately 10 cwts., and its maximum speed is about twenty-five miles per hour. I have driven the car on these treads about 2,500 miles, and I have found them very satisfactory. They certainly check the tendency to side-slip very considerably, and I have never yet had a puncture through the tread, though I have repeatedly picked out nails which have failed to penetrate. I have had no trouble with the treads leaving the tyre, and they are still adhering as firmly as when first put on by the Wilkinson Co. My only difficulty has been that a cover having burst, I sent it to be repaired by a repairing firm, and failed to get it satisfactorily done, the company affirming that it was practically impossible to repair tyres which had been fitted with this tread. I do not see how this can be the case, and if the Wilkinson Co. are prepared to satisfactorily repair covers fitted with their treads I consider that the chief objection to them would be removed. 6 h.p. ARGYLL.

[3167.]—I am much obliged to "Progressive" for his breezy letter of the 5th inst., and only wish he had gone a little more into detail, such as the weight of his car, size of wheels, and horse-power, without which it is quite impossible to form an accurate opinion.

"Progressive" seems to have put on his Wilkinson treads, driven twenty miles on a good road, and then made up his mind that the treads were *a complete failure*.

He does not tell us how or why they did not stop him from skidding. Does he mean that they were only badly vulcanised, and came away from the outer cover? "Progressive" also finds that the pins wear level with the cover, from which I gather he has got his rows of pins too narrow.

As I have stated several times, a 3in. tyre should have the pins at least 2in. wide, and a 5in. tyre at least 3in. wide. When the centre pins are worn, you will then have two or three rows of pins left entire on the outsides of the wire tread, which will prevent any side-slipping.

I cannot agree with "Progressive" as to steel bands or rings for non-skidding. They stop the skidding, I allow, but they one and all eat into and ruin the outer covers. When they have run a few hundred miles they begin to rattle, the bolts wear holes in the outer covers, and the steel segments, with which most of them are shod, fly off and destroy the mudguards.

I have never seen a chain yet that would run many miles without breaking, and they also wear out the outer covers.

The so-called rubber non-slipping treads cannot be depended upon. They may be a shade better than plain outer covers, but are useless on a greasy hill with a flock of sheep at the bottom of it. I have never seen the Corbet non-skidder in use on the roads, and should like to have a report on it very much.

I have no hesitation in saying, as far as my experience goes, and I have gone into the matter closely, and have most excellent roads to test non-skidders on, that the pin non-skidding system (or Wilkinson's) is at the moment the most efficient on the market, and I believe the cheapest, for the simple reason that when the tread is worn out the outer cover remains as good, or nearly as good, as new.

I find the weak points in the Wilkinson treads are as follows: (1.) The band of pins is not wide enough, and the pins are too small and weak. (2.) The tread is only partly and not wholly vulcanised to the outer cover. This causes the rubber to split and crack at the sides, and in time the

tread comes away. (3.) There is no leather, canvas, or packing placed between the tread and outer cover to prevent the flat sides of the pin (not the points) indenting the outer cover. (4.) When the tread has run, say, 2,000 miles the pins bend and come away, and require more support to hold them in their places and in a perpendicular position.

I have no doubt Messrs. Wilkinson can alter all these faults, and if they can I see no reason why a good tread on a car weighing under one ton should not run at least 3,000 to 4,000 miles. ARTHUR COTES.

[In addition to the above we have a letter from a user of a motor cycle, stating that he has not obtained satisfaction from the Wilkinson treads. It is stated that the wire bristles rapidly wore away, and that difficulty was experienced in keeping the tread firmly fixed to the tyre cover. This is not altogether surprising, as we are afraid there is no gainsaying the fact that at the moment the majority of motor bicycle tyres are too light for their work so far as the driving wheel is concerned, and if this is the case the tread can hardly be satisfactory.—ED.]

SOLID TYRES.

[3168.]—In your issue of August 29th "Another Medico" asks for information as to solid tyres.

I had a 5 h.p. Wolseley two years ago supplied with wired-on solid tyres. After 2,500 miles running the outer part of the tyres of the driving wheels began to strip off the wires: they evidently could not stand the strain.

I then had 2½in. Royal patent Buffer tyres fitted, and these have run 5,300 miles, and are as good as new.

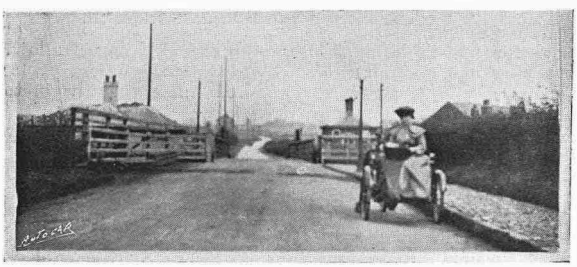
The tyres on the front wheels are those originally supplied, and to all appearance they are in excellent order.

I use my car for medical work. Many of the roads in my district are in very bad condition, full of holes, and in dry weather there are plenty of flints on some of the roads kicked up by the horses.

I have also ridden on Wolseleys of 7½ h.p. and 10 h.p. fitted with Royal patent Buffer tyres. I have found them comfortable enough for anything, even at good speeds, and the cars do not seem to be any the worse for any extra vibration to which they may be subjected. W.L.C.

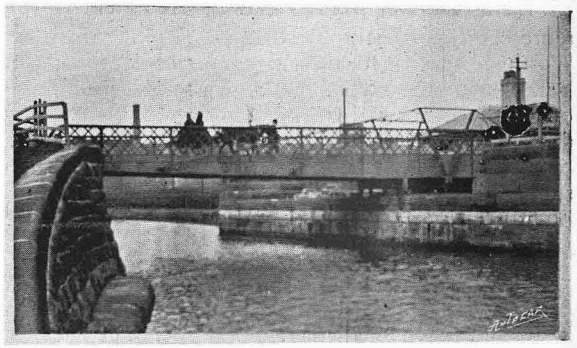
A DROP IN THE DARK.

[3169.]—I have been touring in the Cheshire district on a Werner motor bicycle with forecarriage; and as I thought it might be of interest to you, I have taken two photographs of the spot where a short time ago Mr. Hulton and his friend drove into the River Weaver (at Sutton Weaver) one night when returning from Chester. It was dark, and the drawbridge was up, but no light was showing. One view shows the approach, which is down-hill, and the



other view shows the tremendous drop the car must have had. The water here is about 12ft. or 15ft. deep, so the escape of the driver and his friend was a very fortunate one. The car was eventually recovered by means of divers and a crane, and thoroughly overhauled by Mr. Bellian, Sankey Street, Warrington, who was recently appointed one of the official A.C. repairers.

I might here also mention for the benefit of other tourists that Mr. Bellian keeps a stock of petrol, lubricating oils, accumulators, tyres in the most usual sizes (car and bicycle), and also spare parts of De Dion and other leading makers' engines. He has a competent staff, and can undertake repairs of any magnitude, as he has good plant at his works. From my own experience I can speak for the



prompt attention he gives to those who require his aid, and I would further add that I found his charges most moderate. ERNEST H. ARNOTT.

CYLINDER CAPACITY.

[3170.]—In the table of engine dimensions and horse-powers of the various cars which are taking part in the 1,000 miles trials, Mr. H. T. Winton gives to No. 103 the credit of having the smallest capacity per brake horse-power in Class E, and he further gives this as 116 cubic centimetres.

Now this is very much below the average of that class, and I should be pleased to know how Mr. Winton arrived at this result.

I know that in the table of cars with their cylinder dimensions the dimensions of this particular engine are: Cylinder, 2; bore, 90 mm.; stroke, 110 mm.; and I presume that Mr. Winton has taken area of piston by stroke. But what is this stroke?

Is it the stroke of the upper or lower pistons, or the total of these or some average?

It seems to me that something is wrong, or else this engine under notice is a radical departure from the usual practice of the Gobron-Brillié Co., and I rather fancy that the capacity should work out at about double what Mr. Winton has given. As I do not know the full dimensions of the engine, I may be wrong. I find that the dimensions of the only other engine having two pistons in each cylinder are given for the bore of cylinders and total stroke for the two pistons, and this, I think, is as it should be.

As Mr. Winton seems to be interested in cylinder capacities, and as there has been much talk of limiting the capacities of racing car cylinders, I should like to say that I have a 10 b.h.p. motor working on the Otto cycle, with a cylinder capacity of 98 cubic centimetres per b.h.p., and I am at present engaged on a 20 b.h.p. motor constructed on the same principle, which is of the same capacity per b.h.p., viz., 98 cubic centimetres.

I should very much like to see some limit put on the cylinder capacity of racing cars, for I am prepared to build a motor which, working on the Otto cycle and with given cylinder capacity, compression pressure, revolutions per minute, and cubic measurement of whole motor, will develop *twice* the b.h.p. of any motor now running. The fuel to be petrol or alcohol.

Number of cylinders, cranks, and connecting rods to be the same.

I hope soon to be able to give full particulars of this engine. In the meantime, I should like to ask whether there is any motor on the market (a) whose piston and piston rings can be removed without touching the connecting rods, (b) whose connecting rods can be removed without removing the piston, (c) whose piston at 3in. or any greater diameter can be made to 1-1,000in. fit when cold and yet not bind when running under full power, (d) whose valve chest and combustion chamber can be removed and whole of cylinder opened up without breaking a water joint of any description (pipe connections excepted), and (e) whose pistons and cylinders are absolutely cylindrical and without a boss or web to distort them when heated.

I understand that the above are essential points, and I should like our German, French, or American friends whose motors embody *all* these points to put in their claims before they see how it is done in England.

WM. BALLANTYNE BURCHALL.

Flashes.

Twelve motor-landaulettes are to be placed on the streets of Dublin shortly.

* * *

In addition to their 16 h.p. and 10 h.p. cars, the Lanchester Engine Co. are producing a 6 h.p. two-seated vehicle, while for those who want something at a lower price they have taken in hand the agency for the Oldsmobile in the Midlands.

* * *

One of our readers is much gratified with the manner in which he has been treated by Mr. Maurice Bushell, of South Street, Deal, who executed some repairs to his car for a very reasonable sum. He adds that there is an excellent garage on the premises and a good stock of requisites. This information will doubtless be of value to motorists visiting the neighbourhood.

* * *

It is not long since we recorded the fact that the Earl of Northampton had purchased a Duryea, and we now learn that Sir Charles Cameron has been added to the list of owners of these attractive vehicles, which certainly seem to be in request after the excellent showing they made in the Irish fortnight last July.

* * *

Mr. Wentworth Forbes, the British Consul at Prague, specially draws the attention of the manufacturers of autocars to an international exhibition of the spirit industry, which is to be held in Vienna from April 16th to May 31st next year. The whole of the Continental nations are displaying great interest in it, and a special department is to be devoted to the adaptability of spirit as a motive power for autocars, etc. Incidentally, Mr. Forbes mentions that the import of "locomobiles," under which term he includes all forms of self-propelled vehicles, to Bohemia from the United Kingdom last year totalled £30,042.

* * *

The Russian Departments of Roads and Communications having recognised the advantages of being able to use the great military Caucasian road for autombobiles, has accorded M. Kakula permission to establish a service of automobiles between Tiflis and Vladivostock. The distance is about one hundred and thirty-three miles, and the time taken at present by horses is twenty-six hours. The conditions of the permission given are that the cars shall not weigh more than five tons, either with merchandise or passengers, while the speed is fixed at nine and a half miles, the width of the pneumatic tyres to be not less than four inches. The season, when possible, is to extend from the 1st of April to the 13th of November, but, of course, its length must depend on the weather.

"THE AUTOCAR" DIARY.

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

Sep. 18.—Margate and back. *150·5 miles.*
" 19.—Eastbourne and back (Westerham Hill). *121 m.*
" 21.—Worthing and back (Bury Hill). *118·75 miles.*
" 22.—Folkestone and back. *137·5 miles.*
" 23.—Southsea and back (Hindhead). *144·5 miles.*
" 24.—Bexhill and back. *121·5 miles.*
" 25.—Winchester and back. *133·5 miles.*
" 26.—Brighton and back (Handcross). *91·75 miles.*
" 28-29.—Examination by Judges.

Sep. 17.—Leicestershire A.C. Drive to Derby.
" 19.—Sheffield and District A.C. Drive to Baslow.
" 19.—Scottish A.C. (Western Section). Drive to Aberfoyle.
" 19.—Wolverhampton & District A.C. Drive to Newport.
" 19.—Southern Motor Club. Drive to Leatherhead.
Oct. 2-3.—Southport Speed Trials.
" 3.—Lincolnshire A.C. Drive to Folkingham.
" 3.—Leicestershire A.C. Drive to Dunchurch *via* Rugby.

Mr. Bennett Burleigh, the famous war correspondent of the *Daily Telegraph*, has chartered a C.G.V. car for the autumn manœuvres.

* * *

Mr. F. W. Bayley, the secretary and manager of the Crystal Palace Automobile Show, has been appointed the local correspondent of the Crystal Palace district for the Motor Union, and would be glad to receive the names and addresses of owners of cars and cycles in the neighbourhood.

* * *

With the object of testing the Fisk detachable tyres, a description of which we recently published, Mr. and Mrs. R. Billings and a mechanic prolonged their stay in the United Kingdom after the Gordon-Bennett race in order to make an English tour, and covered a total of 1,300 miles on a Locomobile tourist car, weighing about 3,000 lbs., running on 28in. by 3in. Fisk detachable tyres. They covered the entire distance without a single puncture and without any trouble whatever.

* * *

In view of the new legislation, a point about the Murray governor, which we described last week, and which is fitted to all the Albion cars, is worth consideration. When desired two marks can be made on the hand lever segment, corresponding respectively to ten and twenty miles per hour on the top gear, so that the driver can absolutely assure himself at all times that he is running within the two new speed limits.

* * *

The Continental Caoutchouc and Guttapercha Co., of 64 and 65, Holborn Viaduct, have arranged to have a tent in the Crystal Palace grounds during the reliability trials, so that they may be in a position to render assistance to any users of their tyres. They have a competent staff, and may be relied upon to offer every facility to pneumatic tyre users. The United Motor Industries also have a van full of all sorts of accessories.

* * *

An examination of the tyres of a car after a few hundred miles will reveal numerous cuts—some large and deep, some small. These should by no means be neglected, but should be plugged with some specially-prepared tyre stopping that can be obtained for the purpose. If these cuts are neglected, they take in the wet, with the result that the tread becomes loose about the spot and peels off, and the only remedy is to send the cover away and have a new piece vulcanised in, or, if the damage is very bad and in several places, to have a new tread fitted. Perhaps the latter method is the most satisfactory. It may not be generally known that the Dunlop Tyre Co. make a speciality of this kind of work, the company undertaking the vulcanising of new treads on all kinds of motor tyres which exhibit signs of becoming disintegrated.

Mr. Chas. J. Glidden has already beaten his long drive of last year, when he covered 5,125 miles. The latest advice which reached us shows that he has accomplished 5,210 miles already, and that he continues to go along merrily. In addition to crossing the circle he has journeyed in Ireland, England, Wales, Denmark, Sweden, Germany, Austria, and Bohemia, has only had six punctures, and half an hour's delay for a mechanical trouble. Mrs. Glidden accompanied him during the whole of the trip.

* * *

A correspondent, who appeared to have been unfortunate in his experiences with garage proprietors, wrote us some time ago a strong letter of complaint. Now he desires, in fairness to those concerned, to present the other side of the case. The other day he was hung up at Tooting with a flooding carburetter. He sent a boy from the crowd which always waits upon a delayed motorist to fetch Mr. French, motor expert, of Tooting Broadway. Within ten minutes the car was taken in tow by another on which Mr. French had arrived, and fifteen minutes sufficed to locate the trouble and cure it. Our correspondent, who was presented with an account for eighteenpence, is now convinced that the race of good men is not yet extinct.

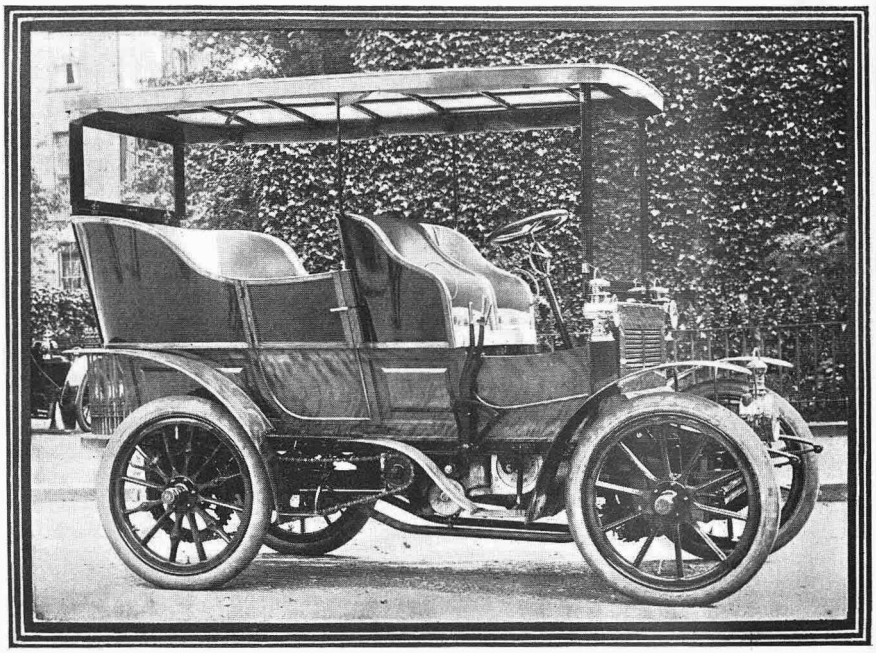
* * *

The Post Office officials at Newcastle-on-Tyne have commenced the running of a 4 h.p. motor van between the Sunderland and Newcastle Post Offices, *via* South Shields. The inaugural trip was successful in every way. The van leaves the Wearside town at 10 p.m., calls to pick up parcels at South Shields and Jarrow, and is due at Newcastle at one o'clock. The return journey is commenced about 1.30, when the van has been reloaded with parcels, and is timed to reach Sunderland by four o'clock in the morning. The vehicle has been built at the Elswick works of Messrs. Armstrong, Whitworth, and Co., and is the first constructed by this firm, which has a large Government order for these motor vehicles. The van has rubber tyres, will carry five hundredweights, and can travel at the rate of twelve miles an hour. Paraffin is used as fuel, and it is calculated that a gallon of paraffin at sevenpence will run a car thirty-two miles, while a similar quantity of petrol, costing one shilling and fourpence, would only take it twenty-four miles. Should the service prove satisfactory, it is intended to extend it in the district. Messrs. Armstrong are now constructing a much larger vehicle. It is 12 h.p., and is designed to carry twenty-five hundredweight.

Like Bret Harte's famous "heathen Chinee," the ways of the Newcastle (Staffs) magistrates are peculiar. Last week Mr. W. A. Vincent, of Stoke-on-Trent, who had previously boasted freedom from fines or accidents, notwithstanding that he has been driving for six years cars varying from 4 h.p. to 60 h.p., was summoned for driving at an excessive speed. The evidence for the prosecution was certainly amusing, if lacking in veracity. No person was endangered, but it was sufficient that the policeman estimated the speed of the car at twenty-five to thirty miles an hour, and that "he could not stop or time it." After he had recovered from his astonishment, he instituted enquiries for "a motor with wings." Conclusive evidence was brought to prove that the car was not exceeding eight miles an hour, but as the Bench had only obtained five shillings and costs from the previous case in which a man (?) was convicted of blackening his wife's eyes and generally maltreating her, it was right and proper in their eyes that Mr. Vincent should suffer for a heinous offence which had not been proved against him, and accordingly £1 2s. was extorted from him. It is typical of the attitude of a section of the press that half a column should have been devoted to a report of the case, while the other case referred to was dismissed in a few lines.

* * *

The Bishop of St. Asaph appeared at Rhyl recently against an alleged "furious" motorist, and declared that he met him driving at the rate of nearly fifty miles an hour! Naturally, £10 plus so-called costs were required to arrange matters after this little "burst of speed."



A BONNETLESS CAR. As we pointed out at the time of the Crystal Palace show, the James and Browne cars, owing to the horizontal engine and general arrangement of the mechanism, lend themselves to a flush front to meet the requirements of those who object to the appearance of the motor bonnet, and it will be remembered a very neat brougham was shown in which no motor bonnet was included in the design. This has now been elaborated and improved still further, so far as the outline is concerned, and the very handsome 9 h.p. car we illustrate has just been finished to meet the requirements of Mr. Edward Armitage, of Tilford, Surrey. We should add that the accessibility of the engine is in no way affected by the change in the appearance, which is external only, i.e., on the same chassis, a bonneted car of the conventional type could be satisfactorily erected

The Society of Motor Manufacturers and Traders, Ltd., automobile show for 1904 will be held at the Crystal Palace from February 12th to 24th next. Already the names of 152 exhibitors figure upon the list, and no less than fifty firms have sent a bond in to exhibit, but Mr. Bayley informs us that, except for a few stands on the ground floor, the whole of the Palace is already let.

* * *

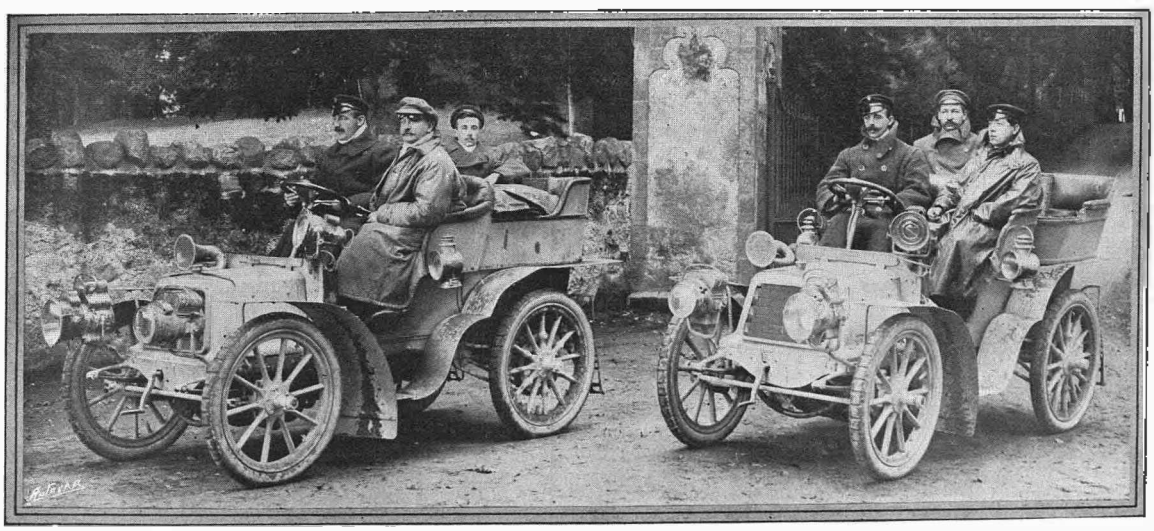
Recently when illustrating the Eltham 'bus, and mentioning the satisfactory behaviour of its Buffer solid tyres, we inadvertently robbed it of 2,000 miles of its record. In the 9,000 miles only one tyre has been renewed. This is a distinct difference from the results which have been attained with motor 'buses elsewhere fitted with other systems of solid tyres. It almost goes without saying that the conditions of motor 'bus work are very much more severe than those obtaining with an ordinary private carriage. There is not only the heavy load, but there is the constant starting and stopping, dodging about in traffic, and continuous daily work.

* * *

So impressed was Captain Deasy by the 14 h.p. Martini car in the reliability, hill-climbing, speed and petrol consumption trials, held at Aix-les-Bains last July, that we understand he has taken the entire output of the Martini Motor Works, with a minimum of a hundred cars. In the main, the Martini car is on Rochet and Schneider lines, but it exhibits several improvements which probably account for the success in the trials just mentioned. In a personal review of the Martini car, Captain Deasy severely tested the vehicle in the ascent of the Chasseval, with five up, and it took this ascent in splendid style.

Augustus Rischgitz. *Bayswater*

PARIS TO ST. PETERSBURG. Last week we announced that Madame, Lockert, of "La Chauffeur," had started upon a drive from Paris to St Petersburg. Our illustration shows the intrepid Frenchwoman and her two daughters setting out upon their journey from Notre Dame on their 14 h.p. Tony Hubert car. A note from Aachen informs us that the tourists found the weather very severe, and that they have already taken to their furs. So far the roads have been fairly good.



598 MILES WITHOUT A STOP. Last week, a very fine drive was accomplished by two Panhard cars—one an 8 h.p. three-cylinder, driven by Mr. George Du Cros, and the other a new type 10 h.p., driven by Mr. Willie Du Cros. A start was made from Piccadilly at 9 a.m. on the Tuesday, and Inverness was reached at 10.18 on the following evening. No ferry was crossed, the long route via Stirling and over the Grampians being taken. Stops were made for petrol, water, etc., but the engines were not stopped between London and Inverness. For examining the signposts at night an universally-jointed lenticular searchlight was fixed on the near side of the dash

SOME QUERIES AND REPLIES.

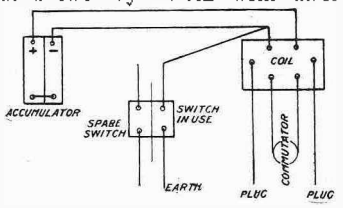
We are always pleased to reply to queries, even if they be of an elementary and untechnical description, under this heading. Only a selection of those which are of general interest will be published, though all will be answered direct through the post, for which purpose a stamped and addressed envelope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

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

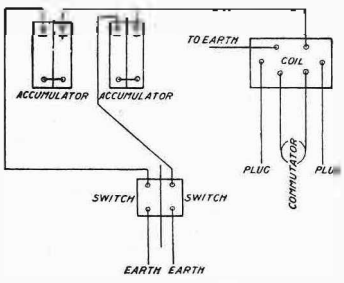
Letters should be addressed The Editor, "The Autocar," Coventry.

CONNECTING UP A DOUBLE SWITCH.

About a fortnight ago I wrote to ask your advice about the wiring of my 12 h.p. Darracq, and in reply I got a sketch from you similar to the one shown in *The Autocar*, August 15th, and for which I thank you, but, unfortunately, this is perfectly useless to me, as you show in your sketch a two-way switch with *three* terminals, whereas mine are two distinctly separate switches with *four* terminals, and my coil is shown to have *six* terminals, but the one you illustrate has only *five*. I have been away from home, or I should have written you earlier. Will you kindly tell me how I am to make my connections? I send you another sketch showing the old arrangement of the wires when the car came from the makers, which may explain to you the kind of coil in use.—G.W.J.



The sketch below shows the modification required in the wiring to suit the two-way switch. Disconnect the wire from the switch in use and attach to the coil and also the negative terminal wire. Earth the coil terminal, connect up the two positive terminals of the batteries together by means of a wire, connect the negative terminals of the abtteries to the switches as shown, and earth the other two terminals of the swiches To work, switch off one side over to the other, without touching any of the wires.



GEAR RATIO AND SPEED.

Will you please help me out of a difficulty by answering these questions: (1.) What are the number of revolutions of the average 6 h.p. engine? (2.) The weight of a small car being seven hundredweight, and the diameter of the driving wheels 30in., what must be the ratio of the propeller-shaft to the engineshaft to give six, fourteen, and twenty miles per hour forward and four miles per hour reverse? (3.) Is it better to have the mitre wheel at the end of the propeller-shaft equal to or half the size of the wheel it drives?—E.V.A.W.

The number of revolutions vary in the case of single cylinder engines from 1,000 to 1,700 per minute. A good mean to take is about 1,450 revolutions per minute. With bevel wheel on propeller-shaft having half the number of teeth of that on road wheel shafts, the ratios of wheels on engineshaft to those on propeller-shaft are approximately: 14 into 146 for six miles per hour; 30 into 130 for fourteen miles per hour; 40 into 120 for twenty miles per hour. And for reverse an intermediate wheel must be used having teeth twenty and fourteen, these being rigidly connected together, and to rotate on a loose pin, which can be moved to bring the wheels into mesh with pinions 14 and 146 respectively, when the wheels are out of engagement and the low speed forward gear. If bevel on propeller-shaft has one-quarter the number of teeth of that on the road wheel shafts, then the ratios of wheels on engineshaft to those on the propeller-shaft are approximately: 13 into 67 for six miles per hour; 26 into 54 for fourteen miles per hour; 32 into 48 for twenty miles per hour. And for reverse, the intermediate wheel must have teeth of thirty and ten, which will come into gear with thirteen and sixty-seven respectively, as described above. It is better to have the mitre wheels equal, but this has the disadvantage in practice of requiring too large a reduction of gear between the engine and propeller-shafts, hence a very large gear box would be required, so the usual practice is to gear down one step in the gear box and the remainder in the driving bevels, which, if properly carried out, is quite satisfactory.

TYRE STOPPING.

I have an Argyll car with two-cylinder Aster engine. The tyres are cut about a good deal, some of the cuts being very deep. What should I fill up the cuts with, and where can the solution, or whatever it is, be procured? The tyres are Clincher-Michelin, and are about ten days old.—W.H.C.

An excellent tyre stopping, which we have found very satisfactory, is made by the Westwood Tyre and Rim Co., Milk Street, Birmingham. In ordering mention that it is for motor tyres, as the outfits are made in two sizes, one for cycles and the other for motors. It is a very good plan to run round the tyres every week or two and stop any cuts as they occur. When you find a very deep one which appears to have damaged the fabric at all, it is advisable to apply one of the internal strengthening pads, which you can get from the tyre makers. These are made of several thicknesses of canvas curved to fit the tyre, and are solutioned on the inside of the cover. By doing this you will keep the partially cut fabric from being strained. The present damage to the fabric may be very slight, but it is quite likely that eventually you might have a burst, perhaps 1,000 or even 2,000 miles after the damage was done, but the supporting pad will obviate this.

MESSING ALLOWANCE.

Can any of your readers tell me what is a fair allowance to a driver or mechanician for messing when on tour with a car, either by week or day, to include his bed and meals?—A. MELVILLE WHITE.

POLICE TRAPS.

The police traps which have been notified to us since the publication of our list in the last issue are as follows: A measured one hundred and seventy-six yards on the Portsmouth Road, from the Royal Huts Inn at Hind Head towards the Seven Thorns; at Scole Inn, on the Norfolk-Ipswich Road. When a car passes the inn a policeman wires from the adjoining Post Office to Dickleborough.

Autocarists will be pleased to hear that their cars can be stored temporarily, or by the week, month, etc., at Messrs. J. Phillip and Son's livery stable, 37, Welton Place, S.W. This is in Knightsbridge, not far from Sloane Street, nearly opposite the Albert Gate, and of course near to Hyde Park Corner. A correspondent discovered the place, and writes that there is a good pit, and, at present, room for ten or a dozen cars under cover. The charges are moderate, and there is an excellent garage.

ONE YEAR'S HORSE ACCIDENTS.

3,991 Accidents: 411 Persons Killed, and 2,991 Injured.

IT IS NOW TWELVE MONTHS SINCE WE COMMENCED TO SEARCH THE NEWSPAPERS FOR REPORTS OF ACCIDENTS DUE TO HORSES. DURING THAT PERIOD THE NUMBER OF SUCH ACCIDENTS WE HAVE DISCOVERED IS 3,991, RESULTING IN INJURIES TO 2,991 PERSONS, AND IN THE DEATH OF 411 OTHERS.

The above are alarming totals, considering that the horse is generally believed to be such a safe animal to control and drive. The object we had in view was to show the necessity for some more stringent regulations in regard to horse traffic than those which obtain at the present time; or, in the alternative, that no greater necessity exists for special legislation in regard to motor cars than horses. Our contention all along has been for equality of legal restraint upon all kinds of traffic on the highways of this country. As a matter of fact, the question has been dealt with by Parliament since the commencement of the compilation of these statistics, but we need hardly say that it is not yet finally settled, and will not be till such time as motor cars are placed under the ordinary restrictions of the common law.

Horse accidents have become so common that they are disregarded, except in the particular locality where they happen, and all manner of obscure local newspapers have to be searched in order to find reports even of the most serious mishaps in which persons may be killed. It is quite a common occurrence for a fatal horse accident to be dismissed with less than half a dozen lines of newspaper space. The occurrences are so lacking in novelty that newspaper editors find they do not make good copy. This is one reason why the impression is abroad that horse accidents are rare. A motor car accident, on the other hand, is much more of a novelty. There is the glamour of the "snorting, vibrating, pulsating mechanism," which to the common mind is invested with a kind of superstitious horror, as though it were a unholy death-dealing creation imported from the infernal regions. These features give to motor car accidents a sensational interest in the public mind akin to that which attaches to ghastly crimes. The newspaper editor, therefore, must needs instruct his reporters to "write them up," so as to tickle this craving after sensationalism. This also accounts for the fact that whenever a horse takes fright and causes an accident on the road or in the street every effort is made by the penny-a-liner to import, though only in imagination, a motor car upon the scene. If only a suspicion of a motor car can be dragged in the accident is at once, and without further enquiry, attributed to that cause, and is blazoned abroad in large type as "A Terrible Motor Accident." A case in point occurred at Durham recently, when a lady was thrown out of a trap and killed. The first reports of the accident stated in the most positive manner that the lady "died from the effects of an accident sustained by her horse taking fright at a motor cycle." The motor in this case existed only in the imagination of the reporter, for at the inquest it was elicited that there was no motor nor motor cyclist about at the time, but that the sad affair came about by reason of the lady being unused to horses.

Again, drivers of horses are always too ready to assume that their animals are bound to take fright on the approach of a motor, and, by undue solicitude for their poor animals (who in most cases are not nearly so frightened as the persons in charge), bring about accidents which otherwise would not occur. There is, without a doubt, quite as much need in the interests of public safety for certificates of competency to be taken out by horse drivers as there is in the case of drivers of motor cars. Indeed, at all points it is not overstating the case to say motor cars are far more controllable, reliable, and free from vice than horses. In regard to the horse there is always an element of uncertainty. The peculiar characteristics of the animal's mental and moral development—if such a term may be permitted—have to be taken into account. A motor, on the other hand, is entirely devoid of these doubtful mental or moral characteristics, so that the driver's will, in regard to its management, is never disturbed by speculations as to how the machine will act. The competent driver knows to a certainty how his vehicle will behave under given conditions, but this cannot be said even of the most competent coachman in regard to the behaviour of his quadruped. As we have already pointed out, horse accidents are so common that they are unheeded; reports of them are not sought after by the public, and hence the general, though entirely erroneous, impression that they are few in number. That they are pretty plentiful is abundantly shown by those we have been able to discover during the past year. These are by no means exhaustive; probably the half has not been told. Our last return was made in *The Autocar* of June 13th. The following details are for the last three months—June, July, and August—during which period the accidents numbered 980, the persons injured 849, and the killed 82. For the whole year, the figures show an average of 76.75 accidents per week, with 57.52 persons injured, and 7.9 killed every week.

TABLE SHOWING NUMBER OF HORSE ACCIDENTS, AND PERSONS INJURED AND KILLED THEREBY, DURING THE YEAR ENDED AUGUST 29, 1903

Number of accidents enumerated.		Persons injured.	Persons killed.
3,011	Brought forward from *The Autocar* of June 13th, 1903	2,142	329
90	Week ending June 6th	68	5
79	,, ,, ,, 13th	57	8
86	,, ,, ,, 20th	77	7
91	,, ,, ,, 27th	62	7
88	,, ,, July 4th	67	7
58	,, ,, ,, 11th	47	5
66	,, ,, ,, 18th	41	3
66	,, ,, ,, 25th	42	8
68	,, ,, August 1st	56	7
58	,, ,, ,, 8th	61	6
93	,, ,, ,, 15th	79	13
83	,, ,, ,, 22nd	54	1
54	,, ,, ,, 29th	38	5
3,991		2,991	411

CLUB DOINGS.

East Surrey A.C.

An automobile club has been formed for East Surrey, affiliated to the A.C.G.B. and I. and the Motor Union, with headquarters at the White Hart Hotel, Reigate, the principal object of which is to look after the interests of automobilism in that district. In view of the importance of the work to be done during the next three years, the committee would gladly welcome the support of gentlemen in the district interested in this movement. Mr. David J. Barry, of 50, High Street, Reigate, has been appointed honorary secretary and treasurer, and will be glad to forward full particulars to intending members and submit names to the committee for ballot.

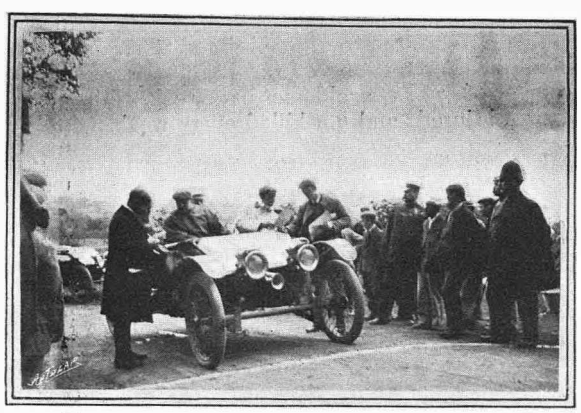
Nottinghamshire A.C.

One of the most interesting functions held in connection with the above club during the present season took place on Saturday afternoon last, in the form of an informal hill-climb up Kettleby Hill, near Melton Mowbray. The rendezvous was at Nether Broughton, and the following members were present: Messrs. C. Evinson (20 h.p. Humber), A. R. Atkey (12 h.p. Georges-Richard), E. W. and W. D. Wells (12 h.p. Daimler), R. Cripps (16 h.p. Clément), R. R. Latham and W. J. Dexter (12 h.p. Progress), J. C. Bennet (12 h.p. Georges-Richard), W. Hugh Warburton (12 h.p. Georges-Richard), M. Ross Browne (12 h.p. Humber), Chas. Hardy (10 h.p. Georges-Richard), G. H. Kirk (12 h.p. Georges-Richard), H. Belcher (12 h.p. Humber), Dr. Atkinson (9-11 h.p. Clément), C. L. Schwind (16 h.p. Rex), S. Harvey (4½ h.p. Renault), R. Harbidge (8 h.p. Progress), A. King (12 h.p. King), Colonel L. L. Powell (6 h.p. Argyll), G. R. Cowen (9-11 h.p. Clément), W. Don Foster (12 h.p. Humber), and Mr. S. F. Edge on his Gordon-Bennett Napier.

The conditions of the hill-climb were that each car should be in touring trim and carry its full complement of passengers, the club offering a gold badge to the car which in the opinion of the races' committee of the A.C.G.B. and I. should have accomplished the most meritorious performance. Messrs. T. Large and J. H. Scothern kindly officiated as honorary timekeepers. Mr. Lloyd, who had journeyed down on the 35 h.p. Napier driven by Mr. J. W. Stocks in the Gordon-Bennett race, made an ascent of the hill, but the *pièce de résistance* was the drive up the hill by Mr. Edge on his big Napier, a feat which was enjoyed by those who witnessed it.

Midland A.C. Hill-climbing Handicap.

On the Sunrising ascent of Edge Hill the Midland A.C. held a successful hill-climb on Saturday last. Only the stiffest part of the hill was included in the test, and the



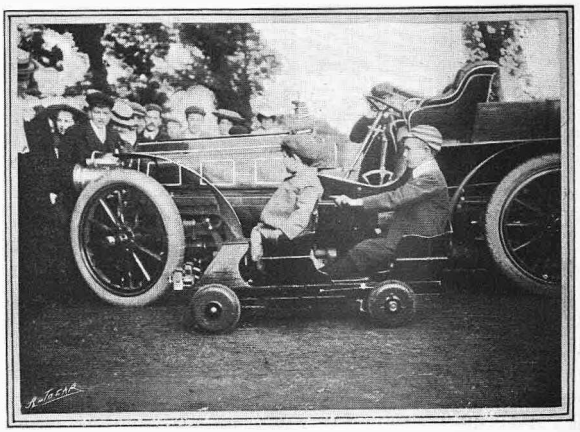
The Lanchester car (No. 7) waiting for the signal to start.

standing start was made upon a sharp bend with a gradient of 1 in 9. This soon increases to 1 in 8, and then becomes 1 in 6¾, easing off to 1 in 7 or thereabouts, and finishing with 1 in 6 43. and then decreases slightly to the finish. No part of the hill included in the climb was easier than 1 in 9½, so it will be seen that it was a very severe test.

Of the twelve cars entered, eight competed as follows:

No.	Name.	Name of Car.	H.P.	Weight of Car in lbs. Light.	Weight of Car in lbs. Weight of Passengers only.	Time. M.	Time. S.
1	J. A. Holder	Panhard	24	2436	616	1	[illegible]
3	H. A. Holder	De Dietrich	16	2520	616	1	11
4	C. W. Dixon	Lanchester...	10	2408	644	1	55⅕
6	M. A. Lawrence	Lanchester...	10	2380	700	2	2
7	E. J. Hartenfeld ...	Lanchester...	10	2408	616	2	[illegible]
8	H. Luff Smith	Wolseley ...	10	2072	532	1	27⅘
10	A. E. Crowdy	Wolseley ...	20	2912	532	1	16
[illegible]	Harvey Du Cros ...	Ariel ...	12	2212	616	1	22⅘

The actual winner of the handicap will be declared after the formulæ have been worked out.



A toy motor car, which was occupied by two boys at Sunrising. Mr. C. Vernon Pugh, a vice-president of the Midland A.C., took a snap shot of the youngsters, with the 20 h.p. Ariel as a background and contrast. He kindly placed the negative at our disposal, and we reproduce it above.

Reading A.C.

On Wednesday, the 9th inst., the members of this club drove to the residence of Mr. and Mrs. Charles H. Dodd in Maidenhead. A good many members availed themselves of the kind invitation extended by one of the most enthusiastic automobilists in the district, and the run was very enjoyable. On arrival the members were entertained at tea, and after looking round the grounds and inspecting the assembled motor vehicles, the return journey to Reading, *via* Henley, was commenced, Mr. Dodd piloting the party through the intricacies of Maidenhead Thicket.

The Kent A.C. Hill-climb.

Sir,—In the report of the hill-climbing competition held by the Kent Automobile Club, it is not mentioned that the Lucas was a four-seated car which had had the tonneau removed to run as a two-seated car, which enabled it to run into second place; that some threequarters of an hour was spent by the driver of the Lucas, etc., in fitting on a specially made sprocket wheel of abnormal dimensions, which only cleared the ground by a couple of inches or so, as the car could not take the hill on its normal gear; that the Darracq made an official run with the same number of persons as was carried by the Lucas, and yet beat the time of the latter by some three seconds.

Your readers would naturally conclude (unless mentioned) that the cars all ran in their ordinary trim, and for the results to be of any value this should be so where a competition is held as one for touring vehicles, and it would appear strange in the absence of the above why the Darracq, which was faster by about half a minute up the hill, should only be second in the other climb. With the exception of the Lucas, the Darracq and others made the runs upon their normal gears, and therefore show their capabilities of tackling the hills that may be met without the necessity of spending time on the road for the purpose of changing gear wheels.

H. E. HALL.