THE SUPPLY OF PETROL.

The firms whose names we give below have notified us that they have provided means to continue the supply of petrol without increase of cost:
CAMBRIDGE.—Humber Cycle Supply Co., 68, Regent Street.
KIDDERMINSTER.—Kidderminster Cycle Depot, Bull Ring.
LUTON.—A. P. Wills and Co., 3, New Bedford.
WINSFORD (R.S.O.)—Stubbs and Rogerson.
Many other suppliers of petrol have managed to arrange for their stock to be maintained right through the period of scarcity, but as they have not advised us of their enterprise we cannot include them in our list, which makes no pretence to completeness, and is merely published to bridge over the temporary difficulty, as it appears that the new clause which the railway companies are drafting will give satisfaction to the distributers of spirit.

Petrol by Road.

While some districts have scarcely suffered at all by the railway companies' action, others have run short, though a few agents have taken advantage of the situation and have charged exorbitant rates. In the district round London the Thornycroft Steam Waggon Co., Ltd., have performed excellent service, as during the past two or three weeks they have transported a very large quantity of petrol by road. A radius of seventy miles round London has been successfully dealt with, and many dealers in petrol have been kept supplied by these means.

The movement inaugurated by the Macclesfield Chamber of Commerce for enlisting the co-operation of the Board of Trade in the removal of the objectionable conditions is being taken up by other chambers, who are following the lead of the Macclesfield Chamber in memorialising the President of the Board of Trade on the subject.

CLUB RUNS.

Scottish Automobile Club (Western Section).

What is regarded as the most important event in the Scottish automobilists' year—namely, the anniversary run of the Western Section of the Scottish Club—took place on Saturday. Heavy rain began to fall just as the cars, which had assembled in George Square, commenced the journey to Luss, which had been chosen as their destination. Over fifty cars, containing members and friends to the number of 200, left the square, and pursued the following route: West Nile Street, Sauchiehall Street, Woodlands Road, and Great Western Road. Thereafter the route was optional.

Mr. R. J. Smith, the honorary secretary, read telegrams of greeting he had received from and despatched to the A.C.G.B.I., who were also on their anniversary run.

The return journey commenced about a quarter past four, and the first of the cars reached the city on the stroke of six.

Yorkshire A.C.

The most interesting run of the year was held on Saturday last, Worksop being the venue. A start was made from Bradford Town Hall amidst torrential rain. Quick travelling was the order of the day, Wakefield being reached in thirty-three minutes, the police being conspicuous by their absence (probably due to the lack of foliage in the hedges).

The following cars started: Mr. Jackson and party, 28 h.p. Mercedes; Mr. Albert Farnell and party, 22 h.p. Daimler; Mr. Hey (honorary treasurer) and Mr. Lancaster, 12 h.p. Daimler; Mr. Phœnix Jones and friends, 16 h.p. Panhard, Mr. A. W. Dougill (honorary secretary), 12 h.p. Loidis; Mr. Fejers and Mr. Broadbent, 11 h.p. Clement; and Mr. Tom Cottage, 2¼ h.p. tricycle.

Owing to the absence of signposts outside Tickhill, an error was made in the darkness, and after traversing various back lanes and farmyards, and having several hairbreadth escapes from meres and ponds, the main roads to Worksop were regained. Owing to the greasy condition of the roads, the tricycle entered one of the ponds, and was finally towed home.

It may be noted that, despite the antagonistic attitude of the railway companies, petrol was plentiful.

The return journey was made on Sunday morning *viâ* Retford, Bawtry, and Pontefract.

Answers to Correspondents.

This week the following correspondents have been, or will be, replied to by post:

Connolly.	Marlow.
Century.	J. J. Bell.
W. K. Murray.	E. Lloyd.
W. L. Gallette.	J. P. Miller.
H. Irvine.	Jno. Pullman
"Peter."	(Teddington).
N. Weldon.	H. Reeves (Saltash).
S. Melvin.	F. Rollins.
H. Day.	H. Percy Brown.
P. T. Peacock.	A. A. G.
D. E. H.	G. Ernest Raymond
H. S. Lugg.	(Middlesbrough).
H. J. Wheeler.	T. La Marche
J. C. Nixon.	(Guernsey).
K. Cookson.	Hon. E. Pierrepont.
H. Garner.	G. F. Fenwick.
A. J. Hawkey.	G. L. F. (London, W.)
D. G. H.	G. Cope Dixon.
S. J. Gammett.	J. Locke.
F. Archer.	C. Harvey.
C. W.	

Our thanks are due to the following for items of news and various topics of interest which have been or will be dealt with: R. J. Smith, G. Hurst, A. F. Garnham, J. H. Adams, B. B., T. B. Percy, W. Payne, F. G. Barton, A. Emmett, W. J. Bladder, Cautious, and R. Jenkins.

NOTICES.

SUBSCRIPTIONS.

"THE AUTOCAR" is published every Friday morning in Town and Country, and may be obtained of all Newsvenders and Bookstalls, or delivered first post on Friday, at the following rates:

GREAT BRITAIN.	s.	d.	ABROAD.	s.	d.
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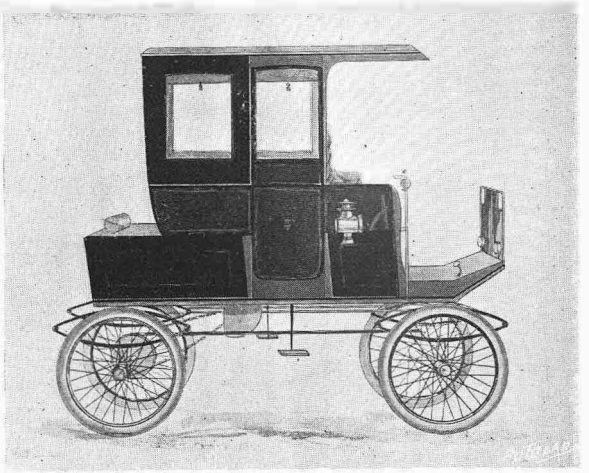

To meet the demand for a motor brougham, Mr. W. M. Letts has designed a special body which fits on to the chassis of the No. 05 standard pattern 6½ h.p. Locomobile. It is made to detach, so that in summer time the top will lift right off, and a car very much the same as a Loco Surrey will remain. The drawing we reproduce shows the appearance of the car. It will, of course, be fitted with ample wings, though these are not shown. It will be heated by exhaust steam, and the body will be built for the Locomobile Company by a well-known West End coachbuilder.

THE AUTOCAR

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

EDITED BY H. WALTER STANER.

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In "The Autocar" of November 8th, a coloured supplement plate—"The 16 h.p. Napier"—was published. Separate copies of this supplement can be obtained packed flat, post free, for 7d. from the publishers, 3, St. Bride Street, Ludgate Circus, E.C.

COLONIAL AND FOREIGN EDITION.

In addition to the usual edition of "The Autocar," a special thin edition is published each week for circulation abroad. The English and Foreign Rates will be found on the last page. Orders with remittance should be addressed "The Autocar," Coventry.

The Autocar can be obtained abroad from the following:

Australia: Phillips, Ormonde, and Co., 533, Collins Street, Melbourne.

France: Nice, Levant, and Chevalier, 50, Quai St. Jean Baptiste

United States: The International News Agency, New York.

Notes.

The North-Eastern Petrol Trains.

As we have already announced, the North Eastern Railway Co. are constructing light petrol railway cars at their works at York. Each car will be 53ft. long, and will stand 13ft. above the metals. At one end of the car will be the petrol engine in a compartment. The engine will drive two dynamos for generating current for the electric motors, which will drive the bogie under the engine compartment. At the opposite end there will be a guard's compartment, but control levers will be fitted in this as well as in the engine room at the other end, so that the car can be driven from either end like a tramcar. The saloon will seat fifty-two passengers in reversible garden seats, and will have a central gangway, approached through closing doors at each end. The cars will have a maximum speed of thirty miles an hour. They will be introduced experimentally on the small section between East and West Hartlepool in the first instance. They may subsequently be introduced on other branch systems where rapid and frequent local services are necessary, but almost impossible to obtain owing to the numerous and closely-placed stations to be stopped at. They will be able to reach the maximum speed in ten seconds, as against 1m. 50s. for light trains in the ordinary way. They will be lighted with electricity, and fitted with electric brakes. The engine will be of Napier make, and 85 b.h.p. The external appearance of the cars will be very similar to that of trams placed on railway carriage frames. A small clerestory roof will be fitted to the engine room, and the running tank will carry thirty gallons of petrol, and will be sufficient for five hours without replenishing. It is proposed to give a ten minutes' service between East and West Hartlepool. The places are two and a half miles apart, and as the train service between the two towns has hitherto been very unsatisfactory, the new system will be inaugurated to meet the increasing competition of the tramway service. The cars are designed by Mr. W. Worsdell, the locomotive engineer of the N.E.R., to whose courtesy we are indebted for the particulars we are able to give. We hope that the enterprising experiment will result in success, and that some trials will also be made of a more direct drive from the engine to the wheels. At the same time, the efficiency of the modern dynamo and electric motor is so high that they afford a means of flexible transmission that for these particular requirements is hard to beat. For longer runs there is no doubt that a modification of the transmission gears fitted to ordinary autocars would be superior.

Appealing to the Superior Court.

One of the strong points which is dwelt upon considerably by those who believe in the proposed bill for the numbering of cars is that provision is to be made for an appeal against magisterial decisions to a superior court. It has already been pointed out in our columns by more than one automobilist well versed in the law that there is little likelihood that Parliament would sanction anything like a royal road to the higher court, though even if it would do so, it would be but a poor consolation to

the man who is compelled to waste time and money in attempting to reverse a decision against him. Further than that, if the unsuccessful appeal to the high court in reference to the Worthing case can be taken as a precedent, it would appear to be a very unsatisfactory method. We are not attempting to discuss the legal side of the case or to quarrel with the finding of the learned judge, but if his decision is to be taken as final it would appear that magisterial dislikes, however strong they may be, and however openly expressed, do not in any way prejudice the decisions of that magistrate. In this matter it would appear that law and law alone is considered. This is certainly remarkable to the lay mind, as everyone knows the stir which is made if a juryman shows the faintest leaning towards either side while a case is in progress, but it seems that a magistrate may really possess and exhibit the utmost dislike for a movement, and yet legally be in every way qualified to decide upon it. The only possibility of reversing a magisterial decision is on a point of law on the facts of the case as accepted by him. Further, while the prejudiced magistrate and the policeman willing to swear to anything are still with us, we cannot see that numbering will alter matters in the least, as it simply means that, instead of it being proved to the satisfaction of the magistrate that at some point on the road an automobilist has driven at over twelve miles an hour, he will, in prejudiced districts, be accused as number so and so, and told that on a certain date he drove to the common danger. He will never know when this sort of accusation may be sprung upon him, and, of course, will have no witnesses, as he will not be aware what is hanging over him till the summons is served. In the meantime, the police will have collected their witnesses, and will have a strong case. What is wanted is moderation on the part of a few hare-brained automobilists who do so much harm to the movement, and softening of the prejudice of the magistrates and police authorities. As it is, the innocent occasionally suffer for the guilty, but till prejudice is stemmed they would do the same if numbering were legalised. After all, the only real trouble is the "police trap" on the open, deserted road. This will die out in time, and its place be taken by one in a village or populated area.

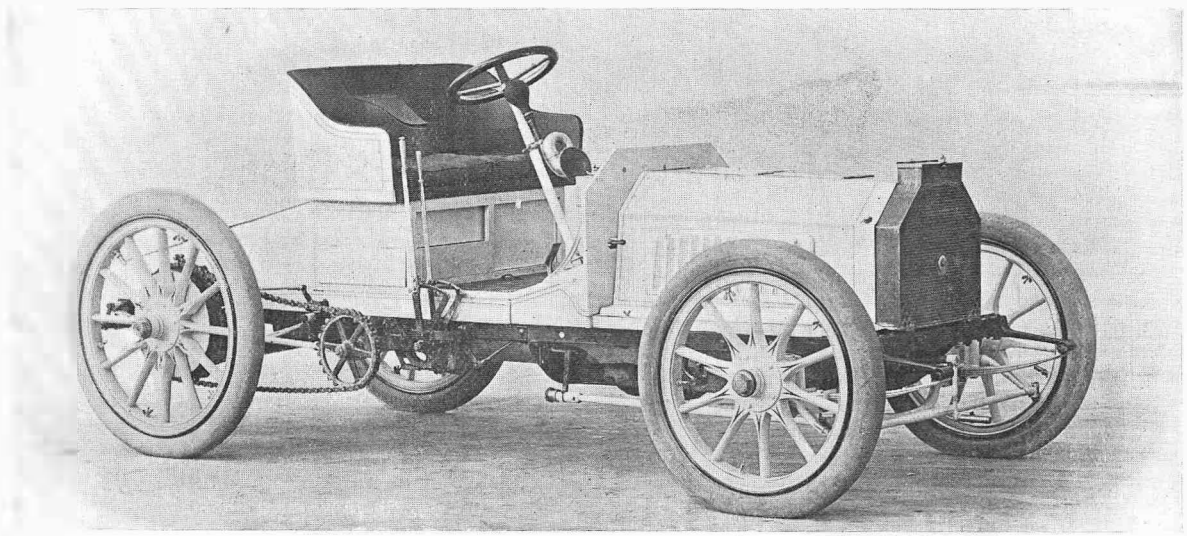
Prince Henry of Prussia driving his Locomobile. His Royal Highness started on October 10th for his first long motor trip of six hundred miles, from Kiel, through Hamburg and Dusseldorf, to Darmstadt, over bad and hilly roads. He arrived at the end of his journey on October 15th, having completed the journey, with the exception of one small derangement, which was remedied in a few hours, without a mishap of any sort.

Amateur Law Makers.

First one and then another of the truly rural district councils throughout the country take up the question of the control of "light locomotives." This time it is the Yeovil Council, who, probably as an excuse for neglecting their legitimate business, are wasting the ratepayers' money and their clerk's time writing to all the other district councils suggesting certain amendments to the order of 1896. Not content with indicating the tenor of their requirements, they minutely set forth the particular phraseology in which they would like their suggested amendments to be couched. Some of these go one better than previous attempts in this direction. They suggest that Art. IV. (2) should read "ten" miles an hour instead of "twelve." And add: "And when the light locomotive is within one hundred yards distance of a curve so acute that the driver cannot see round such curve, or the junction of two or more roads, or of a horse on the highway, the speed shall not exceed six miles an hour, or in the case of a light locomotive the weight of which exceeds two tons, four miles an hour." Art. IV. (7): "He shall, when about to overtake, and being within one hundred yards of any cart or carriage or any horse, mule, or other

beast of burden, or any foot passenger being on or proceeding along the carriage way, by sounding the bell or other instrument required by Section 3 of the Act, give audible, continuous, and sufficient warning of the approach or position of the light locomotive." Art. IV. (8): After the word "hand" add "or calling out." Suggested new regulation: "Every light locomotive shall bear a denoting mark or number so placed upon it as to be at all times easily legible." The practicability of their proposals is altogether a secondary consideration with these amateur law framers. For example, how is a stranger to the Yeovil district to know when he is within a hundred yards of the particular "curve" which they have in their mind? Do they propose also that an elaborate system of railway signals shall be erected at every branch road throughout the country with appropriate lights for giving warning at night to autocarists? If this communication was received by other councils in the same manner as the Rotherham Council received it, the Yeovil wiseacres would probably soon find another outlet for their energies, and would spend their time in minding their own business.

THE 24 H.P. PEUGEOT.



The above is an illustration of a particularly smart racing car lately imported from the other side of the Channel by Messrs. Friswell and Co. On Tuesday afternoon we were driven through the thick of the London West End traffic on this automobile, and were much pleased at its extraordinary quietness and perfect control even in the most congested portions of the London streets. The car was driven on its second speed—it has but three—for the major part of the distance, and thereon and in the hands of such a past master in the art of driving as Mr. Friswell, it was interesting to note how the car was caused to worm and wriggle and corkscrew its way through the London traffic. We hope soon to give detail diagrams and information with regard to this latest product of the Peugeot works.

A South African correspondent writes: "Motor cars are increasing at a great rate in Johannesberg." He also informs us that there is a great want for powerful cars using paraffin instead of petrol, as the spirit is so expensive, the price at Johannesberg being 35s. per case of ten American gallons, which is equivalent to 4s. 3d. per English gallon.

* * *

One would have expected something more broad-minded from a minister of go-ahead little Denmark than the restrictions sought to be imposed upon automobilism by the Minister of Justice in that country. According to this liberally-minded statesman, automobiles shall not be permitted to run on roads of less width than twenty-six feet, that their maximum speed in towns and villages shall not exceed six and a half miles per hour, and in the open country nine miles per hour. Huge number plates are also to be worn.

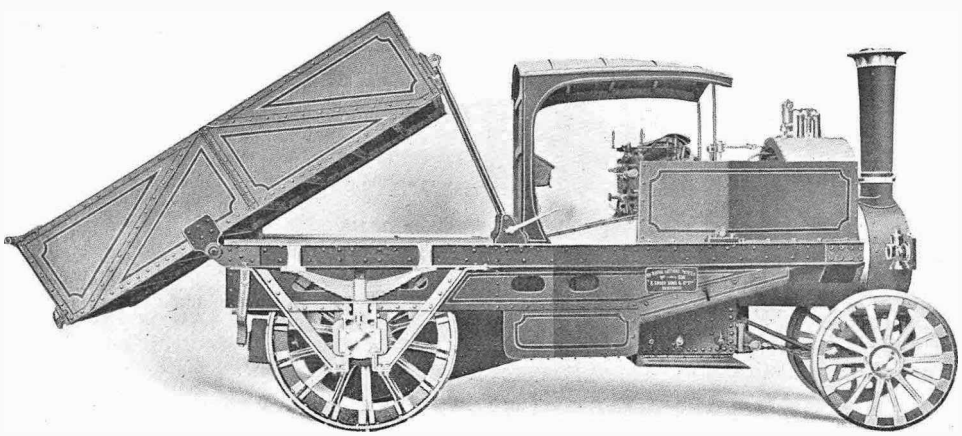
Speaking at the Worcester Chamber of Commerce to a resolution in favour of reducing the speed of autocars from twelve to ten miles an hour, General Davies characterised the proposition as absurd—it was not in the least necessary. Anyone who had travelled in autocars knew that it was perfectly safe to drive at a speed of twenty-five miles an hour.

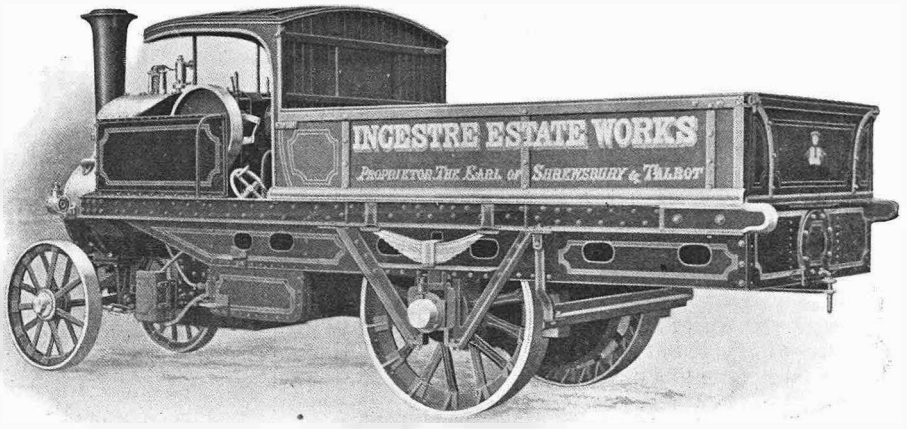
* * *

Messrs. W. T. Pritchard, Ltd., the big factors of 65, Duke Street, Liverpool, have taken premises in Park Lane (off Duke Street) for the repair of motor cycles and motor cars. Our Liverpool correspondent recently inspected the motor shop, which he found contained some exceedingly fine machinery. Several cars were under repair at the time of our representative's visit, and the mechanics doing the work appeared to be well up to their business.

SOME FODEN STEAM WAGGONS.

The steam goods waggon is not altogether the sort of thing to arouse enthusiasm in the man who possesses no engineering instincts, and that very probably is the reason that it more or less occupies a back place in motor circles and in "petrol talk," as compared with its lighter and more rakish *confrère*—the pleasure carriage. But although not so speedy—not so mercurial, let us say—as its "little brother," it is there, coming right along all the while, and steadily building up for itself a position all its own, and, indeed, the importance of its mission is not to be despised, much as it may apparently be overlooked in the rush and tumble popularity of the lighter types. Developed in its inception by independent investigators, the traction engine manufacturers, in whose particular province it appeared to lay, ignored—and for the most part still ignore—its possibilities until a year or so since, when Messrs. Foden, Sons, and Co., for many years connected with the heavy road traction business, developed and placed on the road a steam road waggon in which they availed themselves to the full of their traction engine experience, and, indeed, retained much of its design. It will be remembered that this vehicle made its first public appearance in the War Office trials at Aldershot last December, when, although it was not adjudged the winner, it handsomely beat all competitors alike in speed and in both fuel and water consumption, the Foden waggon carrying its load over the 258 miles in 41h. 43m., as against the next fastest's 44h. 46m., and using 3,111 lbs. of fuel and 1,918 gallons of water in the performance, as compared with 5,097 lbs. of fuel and 3,060 gallons of water of its most successful rival. We are not surprised, therefore, that the firm have met with a considerable demand for their productions, and that when in June they applied to the public for additional capital it was readily subscribed. They have now therewith been enabled to very materially increase their output, and we append illustrations of the three leading types of vehicle of their production. The first shows a covered van for the conveyance of goods which would be adversely affected by the weather; the second the Foden tip waggon, which the firm are supplying for municipal use; and the third a contractor's and general haulage waggon for the conveyance of rough and heavy goods of all descriptions. Like the generality of the lighter forms of car, these differences are all located in the top or body part of the vehicle—all that above the platform—the machinery in all waggons





conforming to a standard. In general appearance, as will be seen, these waggons very much resemble traction engines with rearward extensions, the bulk of the load being carried by the back wheels, which the body considerably overhangs. The horizontal multitubular boiler works at 200 lbs. pressure, and is fired with either coke or coal, the compound engine, working with dry steam in 4in. and 6½in. cylinders, being carried on the top. Each cylinder exhausts independently into the uptake, which takes the common "funnel" appearance, and a high pressure gear is provided, by means of which live steam can be admitted to both cylinders. The steam jacket of the cylinders is formed by the steam dome of the boiler avoiding condensation in the cylinders, and securing the most economical use of steam. A strong roller chain transmits the power from engine to a cushioned compensating gear, and two speeds are provided, the one having a nine to one ratio, and the other twenty-four to one, which at the normal engine speed of 400 give eight and three miles an hour respectively. In addition to the reversing gear, a powerful hand brake acts on the driving wheels, and all the working parts are steel stampings machined to gauge. Fuel and water storage for twenty miles is provided, and both feed and lift pumps fitted. The main frame is of channel steel tied and braced together in a particularly strong manner, and the standard platform area is a shade under 60 square feet, the dimensions being 9ft. 4in. × 6ft. 4in., with an underhung box below measuring 9ft. × 2ft. 9in. × 1ft. 3in. The wheelbase is 11ft., and the steering wheels set to turn in a 36ft. circle. The driving wheels are 4ft. 6in. diameter, with 9in. tread, and front wheels 3ft. × 6in. Wheel gauge 56in., overall dimensions of the waggon 19ft. 7in. × 6ft. 6in., and height to top of the uptake 8ft. 7in. We understand that the vehicles generally are giving full satisfaction, and that the firm's order book is a lengthy one.

Miss Kitty Loftus is a devoted motorist. She is not content with merely posing in a car opposite a camera or on the stage, as in "Naughty Nancy," but delights to drive her 8 h.p. Argyll, and as fast as the law will let her. She drives almost every week either to Oxford or Brighton and back.

PRACTICAL NOTES ON THE PRINCIPLES OF AUTOMOBILISM.

The Motor Car v. the Electric Tramcar.

A short time since, on his return from serving in South Africa, Colonel Crompton advanced the statement, very cautiously, that it was probable that in the future automobiles, and not tramcars, would be the media of urban and suburban communication. The statement was received with loud shouts of derision, particularly by a section of the electrical press. It was nothing short of rank heresy, and merited the treatment apportioned to heretics in all times. The writer ventures to think that those who so promptly jeered at the statement had hardly given themselves time to study the question properly, and he ventures to think, at the risk of being himself dubbed a heretic, that a few years hence we shall see a large development in the direction indicated by Colonel Crompton. The revolution, as it will virtually be, will take time, as all revolutions do where there are large vested interests at work, but it will be sure, none the less.

The Genesis of the Tramcar.

The tramcar, horse-driven, came to us from America, and promptly caught on, and the reason was, travelling in the tramcar was so much easier than in the old jolting 'bus. The tramcar arose in America, like so many other things that have since been adopted in this country, because its need was felt so strongly there. Roads in those days, in even the very largest American cities, were very bad, and the jolting must have been terrible in the ordinary horse-driven vehicle. Also, owing to the bad state of the roads, the power required was very considerable, in proportion to that required with a tramcar running upon rails. Further, the tramcars were very much nicer vehicles; they were roomy and comfortably fitted up. All this was felt to a minor degree on this side of the water, and so tramcars grew and multiplied.

The Present Conditions.

But the conditions at the present day are quite different from those which existed both in America and in this country at the time when tramcars were first introduced, and the conditions are still altering year by year. Roads are better than they were in those days, and the prevalence of the electric tramlines themselves is slowly tending to the alteration that is leading to conditions favourable to the motor car as against the tramcar. The development of electric tramways is slowly displacing a certain number of horses, as well as taking a portion of the suburban traffic from the railways, and every horse that is taken off the road, every horse less that draws a load along any particular road, is so much in favour of the motor car as against the tramcar.

The Passing of the Horse.

The great advantages that the tramcar has over vehicles which do not run on metals are the greater ease and comfort of running and the smaller amount of power required to draw them, owing to the smaller amount of friction. But it is the horse that is responsible for a very large portion of the friction. The horse digs his hoofs into the road and uses the purchase so obtained to pull himself along with his load, and where he does not dig his hoofs in so much he uses them as hammers to pound the road, and his pounding is not even. The result of horse traffic is in almost every case the appearance of small hollows in all parts of the road, which are particularly noticeable just after a shower of rain, and these hollows cause the excessive jolting with which those who ride in London 'buses are so painfully familiar. The smaller the number of horses there are pounding and digging at the road the smaller will be the number and the shallower will be these hollows, with the result that jolting, with all that it means in its effect on springs and on the power taken, will be less and less. The autocar does not wear the road in this way. It wears a slight groove, and the next car can run in the same track; and when motor cars are general the roads will probably be worn evenly. The writer is aware of the case that has recently been made against motor cars on roads by the surveyor of Nottingham —that his roads were not ballasted for the weights carried—but surely that is a matter of arrangement. At present it is of no use making heavy roads; they are not better than comparatively light roads, and the latter are easier and more cheaply repaired; but when the horse has passed the way of the dog for traction purposes it will be more economical to make roads that will bear heavy traffic. The horse also, it need hardly be mentioned, in rendering the sanitary state of the streets so bad, also adds to the friction of the wheels of vehicles in passing over the surfaces of the roads.

The Crux of the Question.

The crux of the whole question in these cases is largely the matter of cost. With the travelling public there are the following points to be taken into account in their choice of the method they patronise—Convenience, speed, cost, and comfort. Each factor rules in a different degree with different persons, but it may be taken that speed and convenience are the dominant factors with a large number of the male sex—at any rate, all those who have business to attend to. And next to these comes cost. Speed and convenience mean cost in many cases indirectly—in the majority of cases, in fact—both to the suppliers of traction and to travellers; but with speed and convenience the same, cost naturally asserts its claims. Up to recently, speed, convenience, and cost all ruled for train service. Now trains are being deserted in favour of electric tram services, and in the writer's opinion the same causes that are at work taking traffic from the train services will operate to take it from the electric trams, and hand it over to motor cars. The motor car service problem has really not been attacked yet. The automobile itself has not settled down to its final form. It has been following the form it is displacing, as usual, and has not evolved its own form. This will come later on. Meanwhile it may be noted that, assuming that motor cars are made as comfortable as tramcars, the question of speed will be decided in their favour, and also that of convenience. And the writer believes also that of cost. He proposes to deal further with both of these questions in his next instalment of notes.

USEFUL HINTS AND TIPS.

Electric Ignition.

In setting up a new sparking plug the first thing to be seen to is that the ends of the platinum sparking points are flat and parallel. In cutting off the wire for these points a pair of cutting pliers are used, with the result that the ends are left in the shape of a broad V. Now as the sharp edges of the V are likely to be at any angle to one another, it generally happens that the actual sparking areas are but little more than equal to the diameter of a very small pin. The natural result is that a weak spark is produced, and the novice may look for a very long time before finding the real cause of it. What is required for the highest point of efficiency is two flat surfaces parallel to and opposite one another—simple conditions, but difficult to fulfil.

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To attain the best conditions for the sparking plug points it is first necessary to reduce the V points to a flat surface, and this is best done with a jeweller's or any thin flat file. Having got the points up flat and parallel, they must next be set up to their correct distance. This distance is variously given as one millimetre, one thirty-second of an inch, and the thickness of a visiting card—whatever that may be—but the distance really depends upon the power of the coil and the resistance offered by the compression of the cylinder charge. Naturally, a powerful coil with a good voltage behind it will give a "fat" and hot spark, but this may easily be offset, to a certain extent, by high compression. The best practice is, then, to find by experiment the most efficient position of the points and to have a permanent guide in the form of a gauge to set them up to. This gauge may be a piece of sheet metal, and once obtained should be religiously preserved.

× × × ×

To set up the sparking points correctly a pair of flat-nosed toggle-jointed pliers are required. We specify this type of tool as its jaws are always parallel, and by its use the points may always be set correctly in line without trouble, while for other purposes they are equally useful. The keeping of the points parallel vertically is a matter of judgment by the eye, while the gauge looks after the distance. It is advisable to always set up and test spare plugs before putting them into the "spares" compartment in the car or tool-bag, as this will frequently save time and trouble on the road.

× × × ×

While on the subject of plugs, it is useful to note that in the event of misfires occurring through a reduction of voltage at an inopportune moment, sparking can always be improved by setting in the points a little closer. Especially is this the case when dry batteries are used, and their use may be considerably prolonged if the trouble of setting in the points, when the spark gets weak, is put up with. To this end we devised a rough gauge on a pocket knife, scratching a mark on the base of the blade for the distance of the points when the batteries were new. As the battery power decreased the sparking gap was correspondingly reduced until the cutting edge of the knife blade was reached. This point was absolutely the last gasp of the battery.

× × × ×

The following instructions as to the fitting of a trembler blade will be of great interest to those whose motors are fitted with the trembling contact breaker, and will explain the difference in the running of a motor with an old and a new trembler blade.

First loosen the platinum screw by one or two turns (we are supposing that the trembler is cleaned), and then fix the trembler by firmly tightening the screw, and note the position of the trembler in the notch of the cam. The illustrations show three positions of the trembler, as follows:

Fig. 1.—The trembler does not go far enough in. In this case if you regulated the platinum screw you would have great difficulty in starting the motor, but if you did this (for instance, by pushing the car, which would cause the motor to turn quicker than with the starting handle) you could then make

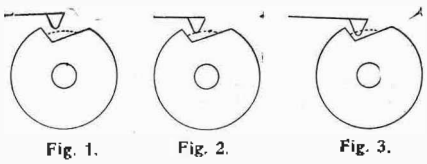


Fig. 1. Fig. 2. Fig. 3.

the motor run with the full advance on, but as soon as this was taken off the motor would misfire. Result: The motor would not mount moderate hills on the high speed, but would run on the level at a good pace.

Fig. 2.—The trembler advances too far. In this position, if you regulate the platinum screw the motor would start easily by turning the starting handle, and would not have any misfiring, provided you only had the advance half-way over; passing this position, however, the misfiring would commence. Result: You would be able to go up moderate hills on the high speed, but on the level you would only be able to go at a medium speed.

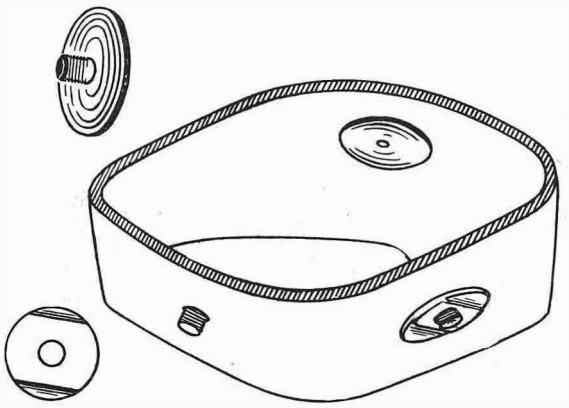
× × × ×

The result of this is that the trembler must be adjusted by the hand, one way or the other, so that it should fall as exactly as possible in the middle of the notch (fig. 3); after which you must proceed to adjust the platinum screw very carefully. For this adjustment you must screw up the platinum screw until it touches the trembler and pushes it very lightly. In this position the trembler ought to vibrate at the slightest touch of the finger, and the spark should appear very fat and very blue between the sparking plug points, which should have been unscrewed and placed, fitted up with its wires, upon the top of the motor.

In order to be assured that the regulation is perfect the best way is to take off the inlet dome, and by turning the starting handle slowly this should produce at the sparking plug a very fat blue or violet spark each time the trembler falls in the notch of the cam. The platinum screw should be locked by means of the small screw. The motor should then reply to all the positions of the contact breaker.

THE AUTOCLAVE.

Under the above title, there are being offered for sale small mushroom-headed soft metal plugs, which, it is contended, are infinitely superior to patches for repairing punctures in the inner tubes of pneumatic tyres. We do not venture to pronounce upon the efficacy of this treatment without personal test, but it may interest our readers to note the form of the plugs and the manner in which they are introduced into the inner tube. By means of the



A section of an air tube with repairing plugs in it. The plug and cap are shown separately on the left.

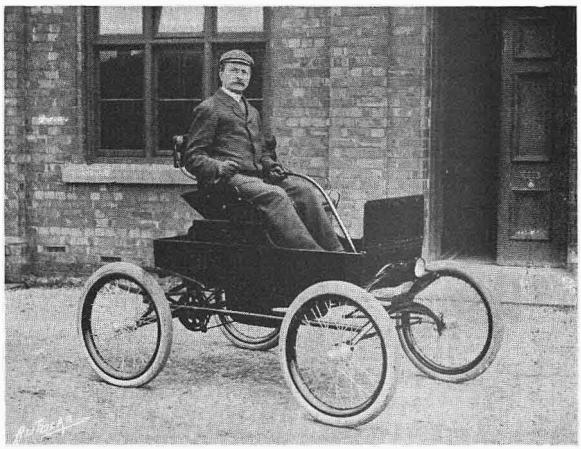
point of a penknife or a little boring instrument carried for the purpose, increase the size of the puncture to a diameter of about 3 mm. = $\frac{1}{10}$in. Stretch this hole lengthwise by pulling on the tube in opposite directions, and introduce the mushroom-shaped head of the plug into the interior of the tube through hole. This is facilitated by wetting the head of the plug. Put a little solution on the threaded stalk of the plug projecting above the exterior surface of the inner tube, and screw down the chamfered head on to the tube as tightly as possible with a pair of pliers. Finally smooth the outer head down with a file, and the job is complete. If this method of puncture repair is satisfactory, it should prove better, more expeditious, and certainly less messy than patching in the usual way.

THE BAKER ELECTRIC AUTOMOBILES.

The Baker electric motor carriages are made by the Baker Motor Vehicle Co., of Cleveland, Ohio, U.S.A. There are three types of these vehicles, made to carry two passengers each, viz., the Runabout (see illustration), the Imperial, and the Stanhope, weighing 600 lbs., 815 lbs., and 900 lbs. respectively, complete with battery. The two latter are fitted with hoods, and are specially adapted for ladies' and doctors' use. All are self-lighting.

The motor is of the most modern multi-polar type, with special windings adapted to this particular system of control, and will stand any load the battery can furnish without burning out. It is on ball bearings throughout, as is also the countershaft, by which the power is transmitted. The controller is placed at the driver's right hand, and is remarkably simple. It is practically non-sparking, and eliminates any possibility of welding the contacts. There are three speeds, of six, eleven, and fourteen miles per hour, which are equally efficient both forward and backward. The controller also acts as a brake, and there is a push button in the end of the handle for ringing the bell.

In addition to the controller brake, which is used on ordinary occasions, there is an emergency



brake beneath the floor of the car sufficiently powerful to lock the vehicle on the steepest gradient. This is equally efficient both forward and backward.

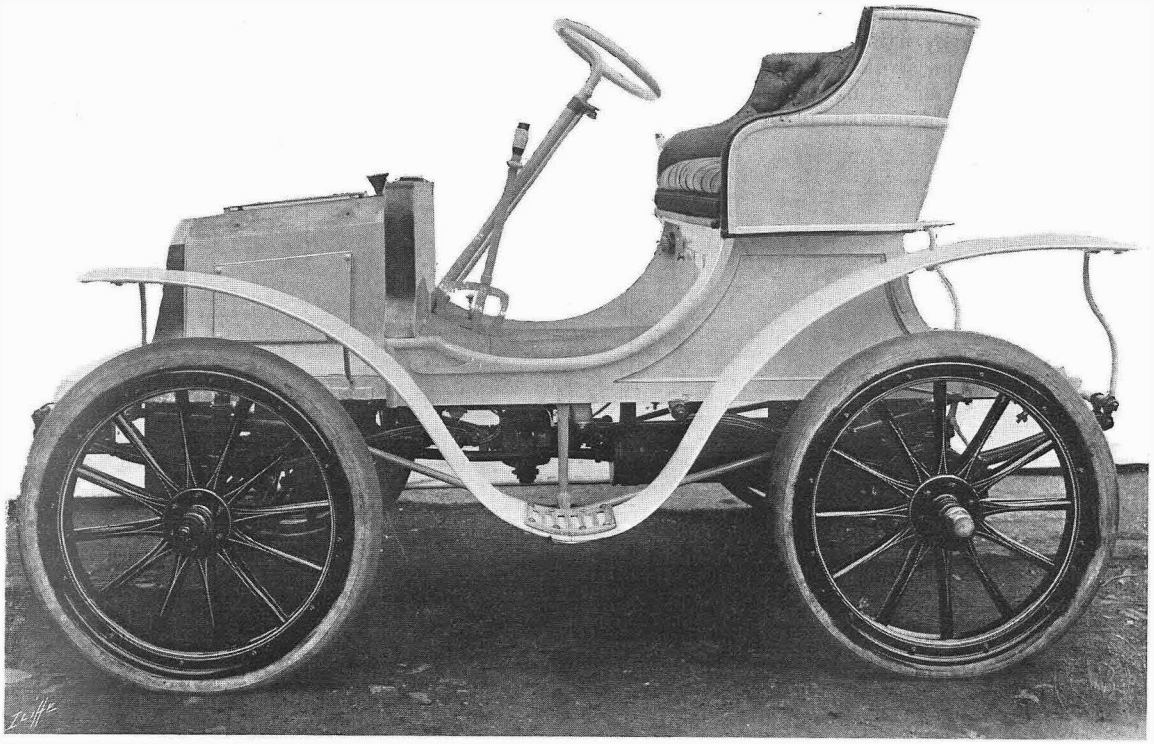
The battery, as supplied with the Runabout, contains twelve cells of 2 volts each, which are charged to 2.65, giving a total of 32 volts and 100 ampère hours, or, in other words, sufficient to run forty miles on a level road with one charge of the battery. For the Imperial and the Stanhope, which are larger cars, they are more powerful, but give the same amperage. The batteries are of the built-up type, and are supplied by the Gould Storage Battery Co., of New York, which exhaustive experiments have shown to give particularly good results.

The wheels are bicycle type, with spokes and hubs of a special alloy of metal of great strength, and are absolutely rustproof. They are shod with single-tube Palmer tyres, which experience has shown to be the most desirable.

The front axle and steering knuckles are Baker patents, as are also some other fittings. Each car is fitted with a Weston standard volt-ammeter and a Veeder trip odometer. The vehicles are noiseless, free from smell and vibration, and are always ready for instant use. These cars are handled in this country by Mr. Samson Parsons, of Darlington.

The automobile omnibus service lately exploited between Rouen and La Feuilée has proved so satisfactory that two new lines of traffic are about to be opened. The first will be between Rouen and Duclair (twelve miles), and the second between Rouen and Bois-Guillaume. The latter service will be very welcome, as the traffic is heavy and the want of communication great between Bois-Guillaume, Bihorel, and Rouen, by the Route Nationale of Neufchâtel. The vehicles to be employed for this service will be of the De Dion type—one of 25 h.p. carrying fourteen passengers and 6 cwts. of luggage and the other of 35 h.p. transporting twenty-five passengers and 15½ cwts. of baggage, etc. The vehicles will average fifteen miles per hour.

THE EAGLE LIGHT CAR.



We were recently afforded an opportunity of inspecting the latest production of the Eagle Engineering and Motor Co., Ltd., of Oakfield Road, Altrincham—a neat and light little car to seat two, designed by the works manager, Mr. Ralph Jackson. A good general idea of the vehicle is conveyed by the illustration appearing on this page. The car is strongly built and very nicely finished, the one shown above being painted ivory white, with red wheels and lines, the upholstery being in red leather and the metal parts brass mounted. Room is provided at the back of the seats for a small amount of luggage. The total weight is 8 cwts.; wheelbase, 6ft. 6in.; gauge, 3ft. 10in.; wheels, 30in. in diameter, shod with 2¾in. Clipper-Michelin tyres. An 8 h.p. De Dion engine is at present employed, but the makers contemplate fitting an engine of their own in the near future. The transmission system adopted is Mr. Jackson's own patented device, the object being to do away with all side shafts, and to drive through linable shafts direct, the reducing gear wheels always being in mesh. The line engraving shows one of two applications of the driving gear. In this the drivingshaft A A is in two parts, the left in connection with the engine, and the right with the live axle and road driving wheels. Loosely mounted upon the shaft A is a hollow shaft B B, and upon this is a sleeve C C, the former being in two parts, like the central shaft. Keyed upon the end of the axle A, in connection with the motor, is a gear wheel D, which engages with a set of pinions E E revolving on studs fixed to a flange F on the second outer shaft B B. These pinions intermesh with teeth cut in the inner face of the gear box H H, which forms part of the sleeve C C. The periphery of this gear box is flanged and turned to receive a band brake on I I. To form the necessary friction clutch the gear box H H has a conical face formed upon it, as shown by J J, this part making the female cone. The opposite cone is carried on the first part of the outer shaft B B. Fixed upon this shaft is a brake drum K and a cam lever L, by means of which the sleeve C C is slid lengthwise upon B B to put the clutch in or out of engagement. A jaw clutch P sliding on the shaft A engages with its opposite members formed on the outer shaft B and the sleeve C, and the shafts A and A^1 are then connected for the forward drive. Now, when the friction clutch is brought into action, the whole line of shafting becomes as one, with the gear box revolving as a supplementary flywheel. This is the top speed. To drop to the slow speed, the friction clutch is taken out of engagement and the band brake applied on the drum at I I. The gear pinions E E on the shaft B B are now driven by the gear wheel D with a sun and planet motion, so that the second parts of the shaft A A^1 are driven at a slower speed than the first part of A. The slow speed may be regulated by gradually applying the band brake on the drum. The reverse motion is obtained by withdrawing the friction clutch J J and bringing the jaw clutch P into engagement with C C, and applying the band brake on the drum K K. The pinions E E become idlers revolving on their studs, which are now held fast, giving a reverse motion through the internal teeth cut in the gear box H H. With the engine running free, the clutch J J is out, and the band brake is free, in which case only the driving

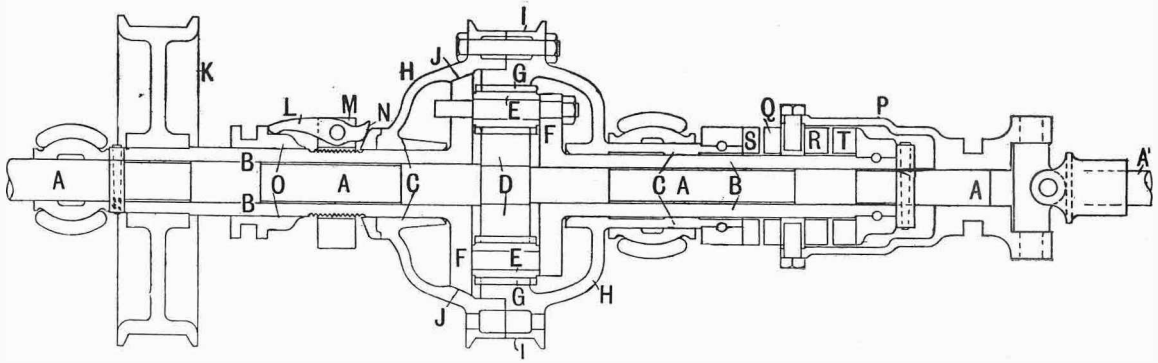
part of A A is revolving. The changing of speeds is controlled by a lever, in a quadrant giving three positions, the central one being out of gear, and the others high and low speeds respectively. The method of cooling is by natural circulation, and is effected by means of an air-tube radiator in front of the bonnet, which has ¾in. tubes, 3in. long, running through it. The top part of the cooler runs from the front of the bonnet to the petrol tank (the latter forms the dashboard), and the front of the cooler reaches to the lowest point in front of the engine. There is a rubber connection from the lowest point of the engine cylinder to the lowest point of the cooler, and from the highest point of the engine to the highest point of the cooler. About four gallons of water are carried, and, as the circulation is natural, of course no pump is required.

The front part of the cooler bears a striking resemblance to a tubular boiler, and it is only logical to assume that, as the tubular boiler is one of the best means of producing steam, a cooler with tubes chilled by cold air passing through them should prove effective. The whole arrangement is most workmanlike, and a bonnet considerably bolder than is usually found on small cars is one of the results of this system of cooling. Inspection doors are provided in each side of the bonnet.

As previously stated, the dashboard forms the petrol tank. This tank is 3in. wide, and it has a holding capacity of five gallons, on which quantity the car, with an 8 h.p. engine, will run from 100 to 110 miles.

The steering wheel is of the open variety. The arm (which is bent downwards) is cottered on to the steering column, and the wheel can be raised or lowered about 4in. to suit the tastes of different drivers. The controlling levers are conveniently placed at an angle of about 45° from the steering wheel.

The artillery wheels with which the car is fitted are complete wheels before the pneumatic tyres are placed on them. They are fitted with metal tyres, similar to those used on horse-drawn vehicles, so that in the event of serious breakdowns with the pneumatic tyres, the latter and the side plates can be taken off and the car run home on the metal tyres. The flanges holding the pneumatic tyres in their places consist of side plates having beaded edges, which are bolted to the wheels. One of the advantages of this kind of rim is that the air tube is always easily get-at-able, for it is a very simple matter to remove a side plate, and a cover, difficult to dislodge, could be dealt with in that way with ease and certainty.



Longitudinal section of the Eagle driving gear.

A A A A², main driving shaft.
B B B, hollow secondary shaft.
C C, sleeve free on B B B.
D, central gear wheel of epicyclic.
E E, epicyclic gear pinions.
F, flange on C carrying studs for E E.
G G, internal teeth of epicyclic gear cut in the gear-box H H.
H H, epicyclic gear-box.
I I, brake drum around H H.
J J, conical friction clutch.
K K, brake drum fixed to C.
L, cam lever actuating the friction clutch J J.
M, ring carrying the lever L.
N, angular face upon which L acts.
O, sliding collar actuating lever L.
P, jaw clutch sliding upon A.
Q & R, S & T, toothed faces of the jaw clutch.

The boilers of the Steam Carriage Co. of America are stamped out of sheet steel, the only riveting being round the bottom tube plate, which is flanged in the usual manner, so that really the boiler is like a very deeply flanged plate with a shallow flange riveted into its base for the bottom tube plate, as the shell and top tube plate are all stamped in one piece. These boilers are smartly made in various patterns, in some of which the boiler shell is sufficiently long to act as a casing for the burner. Others are made on the dry plate principle. In these there is a baffle plate about 1½in. from the top of the boiler. Through this the tubes all pass to the top tube plate, so that there is a hot space at the top of the boiler, in which the steam is superheated to some extent and priming is prevented. The tubes in the centre are a dead fit in the dry plate, but those outside are more loosely fitted, so that the trouble of refitting tubes in a dry plate is reduced to a minimum. Messrs. Toward and Co., of St. Laurence Works, Newcastle-on-Tyne, have just been appointed British agents for these boilers.

* * *

Although their attention has been chiefly directed towards producing bicycle motors, the Dorman Engineering Company of Northampton have not neglected the more powerful engines, and at the present moment have in hand an engine which can be adapted as a single, double, triple, or quadruple cylinder as desired, the bore being 4⅛in. and stroke 5in. They are also turning out a double-cylinder motor of 22 h.p., the bore of the cylinders being 4 9/16in. and stroke 5½in. This motor is now being successfully used in launches and in heavy cars carrying over two tons.

CONTINENTAL NOTES AND NEWS.

New Racing Rules.

The system of classifying vehicles according to the order in which they finish a race does not always give general satisfaction. From a sporting point of view, the method is, of course, the only logical one, but in autocar racing the sport is merely one factor—of less importance certainly than its commercial and technical character. If makers go to the enormous expense of running cars in big races, it is not for the mere pleasure of seeing them win or for the sake of the prizes which attach to these contests, but they enter vehicles to prove their qualities of speed and endurance, and thus advertise them to the world. A race is therefore essentially commercial. If a maker finds that the conditions under which these events are held do not allow of his competing on equal terms with more powerful firms, he has no inducement to take part in a race. He may only be able to send two or three cars, while another maker may compete with half-a-dozen vehicles or more; and as these events necessarily offer great risks, the chances of winning are, of course, much more considerable with several cars racing than when only one or two are engaged. Makers would like to eliminate the element of risk as much as possible, and run under conditions so that the most reliable and fastest type of vehicle, as distinct from individual cars, would have the best chance of winning. In view of the Paris-Madrid race next year, the Automobile Club de France have decided to modify their rules on the ground that speed is only an indication of material progress when it is not obtained at the expense of regularity, and consequently in all future races the question of regularity is to be a factor of more importance than mere speed in the final classification. In previous events, and notably in Paris-Vienna, special prizes have been offered for a certain number of cars of the same make and type doing the best aggregate times; but the importance of these prizes was entirely overshadowed by the victory of single cars, even though their performances may not have been proportionately so good as those of a number of vehicles of the same make and type, which all gave proof of remarkable reliability and durability by going over the entire course without serious trouble of any kind. Henceforth, reliability with speed will be the basis upon which vehicles will be classified. At the same time, this will not detract from the honour of being the first to finish a race. The man who gets through first with his car is always bound to meet with a great popular reception, and the notoriety gained is of itself of some commercial value to the maker, but those who are more successful in going over the entire course with a certain number of cars will find themselves at the top in the final results. In the regulations as originally presented to the sporting committee, it was recommended that each maker should enter five cars, but the committee are inclined to reduce the number of each make and type to four, so as to meet the requirements of manufacturers who consider that more than this would entail upon them unnecessary expense. The times will be calculated as follows: Supposing all the cars of one make finish the course, their total times will be added, and the team with the lowest aggregate time will, of course, be declared the winner. If, however, some of the cars give up the race, their times up to the last control through which they passed will be taken into account, and to these will be added a "penalised time," which will be calculated at so many kiloms. an hour for the remainder of the course; that is to say, if the distance remaining to be covered is a hundred kiloms., and the penalty time is estimated at ten kiloms. an hour, it would be necessary to add ten hours to the time officially taken at the control beyond which the vehicle stopped. The results thus obtained are called the "commercial times." Some of the other rules are also to be modified so as to emphasise the character of the race as a test of reliability. Not only must all repairs be carried out on the road and be included in the racing time, but they must be done exclusively by the driver and his mechanic with the tools he has on board, and no part necessary for the running of the car can be changed. In a word, it is recognised that any attempt to give a purely sporting character to autocar racing is calculated to falsify the results, and at the same time favour a few makers at the expense of the majority. Though the new rules have not yet been definitely adopted, it is fairly certain that they will be approved of by the sporting committee, with only slight modifications. In view of the necessity of studying the interests of all the makers, the number of members composing the committee has just been increased by the admission of representatives of the Chambre Syndicale des Constructeurs d'Automobiles.

Improvements in Carriage Work.

If there is one thing more than another which provides full play for taste and originality, it is in the designing of carriage bodies. Certainly we are a long way ahead of the "horseless carriage" of eight or ten years ago; but though the industry has settled down to the production of typical patterns of automobiles, it cannot be said that recent developments in the carriage-builders' art have been of a striking character. The survival of the fittest has resulted in a fixed pattern of tonneau and Limousine which tends to become rather monotonous. As the motor bonnet takes up about a third of the frame space, the carriage-builder, of course, labours under a disadvantage, and finds himself confronted with a problem which is very much like trying to get a quart into a pint flask, but even after taking into account the restrictions as to space it is difficult to believe that the carriage-builders have exhausted their ingenuity. Not only ought passengers to be more comfortably seated than is often the case, but the high powers now put into autocars would easily permit of bigger loads if only the bodies could be made more commodious. The frames cannot very well be made longer on account of the difficulty of taking corners, turning in narrow streets, and steering in the traffic with an abnormally long wheelbase. But now that so many makers place their motors low down until they only project a little above the frame, there seems no

reason why the carriage body should not encroach upon the bonnet. Apart from commodiousness, however, there is the question of appearance, and it is clear that the trade has everything to gain by being able to offer a variety of carriage types, subject, of course, to their being of a practical character. The matter is one which is to receive special attention at the forthcoming Paris show. A competition of carriage bodies is to be organised, when awards will be given for the cars offering the most attractive and practical designs. The vehicles must be complete with their motors and driving gears, and the arrangement of the mechanism in conjunction with the carriagework will be taken into account in making the awards. It is to be hoped that the competition will have the result of encouraging builders to evolve something out of the usual run of carriage designs.

An Alcohol Congress.

If alcohol does not rapidly take the place of mineral oils in countries which cannot get cheap supplies of petroleum, it will not be the fault of the French Government, or the different agricultural bodies, or even the Automobile Club de France, who are all doing their best to overcome the difficulties which stand in the way of the economical utilisation of this spirit. No automobile manifestation is now complete without giving some prominence to alcohol, and for the first time it is to become a feature of the programme in connection with the forthcoming Paris Show. It is intended to organise an international congress of alcohol from December 16th to the 23rd, when the questions to be discussed will cover the whole range of the industrial application of the agricultural spirit. The programme will be divided into five sections, under the head of automobiles, motors, lighting and heating, chemistry, and economical questions. The automobile industry is, of course, mainly interested in the two first sections, as well as in the chemical section dealing with the methods of denaturising the spirit. The discussion on motors will cover the utilisation of alcohol, the quantity employed, regularity and reliability at different compressions and at different speeds, and construction and economy of engines. The congress will afford an excellent opportunity to English motor engineers of keeping themselves in touch with the latest developments in the application of alcohol as a fuel, for, as we have said previously, the matter is one which is bound to be forced upon their attention at a more or less distant date.

Automobilism in Portugal.

At the time of the Figueira-Lisbon race we stated that arrangements were being made for the formation of an Automobile Club of Portugal. These arrangements have now been terminated, and the committee is composed of H.R.H. Prince Dom Affonso, Duke of Porto, Comtes de Beiros and de Caria, Vicomtes d'Alter and Boa Vista, Councillor Weneslau de Lima, Dr. Zeferino Candido, Dr. Jayme Neves, Anselmo de Sousa, Eduardo Noronha, and Carlos Callixto. On his return, His Majesty King Dom Carlos will be invited to accept the presidency of the club, and the vice-president will be Prince Dom Affonso, the brother of the King. The committee are already preparing a series of races and trials to be carried out next spring, and it is intended to give special prominence to alcohol, as there is a considerable over-production of this spirit in Portugal, and if a means can be found of providing an outlet for alcohol it cannot fail to have excellent results upon the economical prosperity of the country. It is believed that the Government will do its best to hasten the solution of this problem by favouring the automobile movement. The Minister of War has, in fact, already purchased five cars from Fiat, of Turin, as the result of the victory of this firm in the Figueira-Lisbon race, and it is clear therefore that Portugal is a market to which foreign makers may profitably give some attention.

Records.

The records got another severe shaking last week on the official road at Dourdan, when Augières, on a Mors of the same type as that driven by Fournier, reduced the time for the mile to 46s., but, owing possibly to the number of people on the road when he tried later in the day, he failed to secure the kilom., which still remains to the credit of Fournier. Another remarkable performance was that of Thellier, on a Passy-Thellier voiturette, who beat the records for this type of vehicle by covering the kilom. in 36 1/5s. and the mile in 58s. Demy annexed the bicycle records by covering, with a two-cylinder Clément, the kilom. in 39 4/5s. and the mile in 1m. 5 2/5s., and with a four-cylinder Clément the kilom. in 33 1/5s. and the mile in 53 2/5s. Other times were: Théry (light Decauville), kilom. in 30s. and mile in 48 2/5s.; Osmont (De Dion tricycle), kilom. in 33s.; Rigal (Buchet tricycle), kilom. in 33s. and mile in 53 3/5s.; Oury (Clément voiturette), mile in 1m. 1 4/5s.

Motor bicyclists pacing French professionals going for record at the Parc des Princes racing track, Paris. With the motor bicycles to cut the air for them and to create a partial vacuum, so that the current of air is with rather than against the athletes on the pedal bicycles, who have been slowly increasing the distances accomplished, till at last over forty-eight miles in the hour have been covered. The motor bicycles are monstrous machines, with motors of 8 to 14 h.p., and quite useless for any other purpose.

Alcohol Bicycle Race.

An interesting meeting was held at Epernay on Sunday, when Count Gaston de Maigret organised a race of motor bicycles weighing less than 50 kilogs. and using alcohol as fuel. The course was a circular one over the magnificent roads of the Champagne country, and had a length of 100 kiloms., or sixty-two miles. The weather was fine, but very cold, and the event attracted a great deal of interest at Epernay. There were fourteen starters, but the field was very soon thinned out by accidents, several of the competitors being thrown by dogs, which persisted in getting into the way. Only four bicycles finished, in the following order: René Gallice (2¼ h.p. Werner), 2h. 22m. 10s.; Péron (2¼ h.p. Werner), 2h. 28m. 11s.; Jollivet (1¾ h.p. Pécourt), 2h. 31m.; Person (2¼ h.p. Werner), 2h. 39m. Thus three out of the four Werners competing finished the course, and beat half-a-dozen other types of bicycles.

Correspondence.

THE COST OF RUNNING DELIVERY VANS.

[2667.]—In reply to "H." (No. 2661), re delivery van, I have been driving motor vans for four years, so I can give him a pretty good idea of cost of fuel. I am at present driving a 12 h.p. Daimler. The consumption of petrol for five working days—Monday to Friday—is between eight and twelve gallons per week at a cost of 9½d. per gallon; lubricating oil, two gallons per week at 2s. 6d. per gallon (gas-engine oil). I travel from ten to twenty miles every day, and at long stops always stop my engine, as it is no trouble to start it again. I always have Saturday morning to keep car in order. This car is an exceptionally good one, but others I have driven have not cost much more in actual running expenses. I think an 8 h.p. Daimler or M.M.C. light delivery van would just be what "H." needs for his business. My total for renewal of parts from March to date has been £8 15s.

A. SCOTT.

[2668.]—In answer to "H.'s" enquiry, I am pleased to furnish particulars asked for from actual experience, and hope other users and prospective users of light delivery vans may also find them of interest. My van has a 5½ h.p. motor, water-cooled, with pump, commutator, etc., in very accessible position, is fitted with three speeds and reverse; the top speed is geared to seventeen miles per hour, and the low speed is so designed that full load, aproximately 17 cwts., can be taken anywhere. The machine throughout is designed with a view to simplicity and reliability, and being constructed (excepting the body) by one of the finest French firms, is entitled to consideration, if only on account of having passed the exhaustive tests their productions always undergo. The cost of running works out at three-eighths of a penny per mile for petrol and lubricant under favourable conditions. Much low speed work necessarily runs up the rate. I have had no expense for repairs. The van could without effort do the work of "H.'s" two horses, viz., seventeen miles per day, their cost of keep alone amounting to fourpence per mile covered, or, roughly, £90 per year. Charging the van with £30 for depreciation and repairs, £1 5s. per week for boy to drive, we arrive at £95 per annum; so that the keep alone of the two horses amounts to nearly the amount absorbed in the case of the motor for depreciation, repairs, and driver's fees, leaving actual cost per running mile for petrol and lubricant only to place against all other expenses outside keep of "H.'s" two horses, necessarily leaving a large balance in favour of the motor van.

The body could be made convertible, so that for pleasure purposes a tired horse is not overworked, or a business vehicle requisitioned through lack of other equipment. I shall be pleased to show "H." or others interested my van, or furnish any further particulars in my power.

W. J. TWIGG.

DIRECT DRIVING.

[2669.]—On page 453 of your issue of November 1st you refer to "fourth speed on a direct driving gear." I think it would be interesting to see or read some description of how this is arranged. I should imagine it rather complicated.

S. F. EDGE.

[Our correspondent quotes words as ours which we never used. The paragraph he refers to was a suggestion that necessarily the fourth or top speed on a gear-driven car need not be the direct gear, and for certain weights and powers of cars the third speed preferably should be the direct drive, not the fourth. One or two well-known gears could easily be altered to give these results, if constructors deemed it desirable.—ED.]

BLACKMAIL.

[2670.]—We should like to have the opinion and experience of others in the trade upon the following, which is an experience we have not hitherto encountered. A short time since we received a letter, of which the following is a copy:

"Gentlemen,—I am writing to ask you if you can allow me something on the car which my master has recently bought from you, as I am to look after it. I have asked Mr. —— (our agent). He told me he could not give me anything. Yours obediently, ——."

Now, what do other traders do in a case like this, and is it in their experience more common than in our own? We believe this species of blackmail has developed into virtually a recognised system in the carriage trade but we have never met with it before in ours. Of course we declined to accede to the request. Shortly afterwards the man—who had been looking after his master's horses previously, and knew nothing of motors—took the car out in his master's absence, and did considerable damage, whether intentionally or from sheer ignorance we cannot say. We mention the matter so as to get, if possible, some sort of an understanding amongst the trade upon the subject, as these evils creep in insidiously and require to be checked in the bud, and, if it is clearly understood amongst automobile manufacturers that such a custom will not be tolerated, each one's hands will be strengthened in opposing it.

THE DURYEA COMPANY.

TOURING IN FRANCE.

[2671.]—In reply to a "Would-be Nomad," I can give him the following advice, having done a good deal of touring in France.

He should drive his car to Chamberlain's Wharf, which is close to London Bridge Station; there he can ship it by the Bennett Steamship Co. direct to Boulogne for 35s. The boats leave three times a week and take twelve hours to cross. If he is a good sailor he can go by the same boat for a very moderate sum, otherwise he can get to Boulogne *viâ* Folkestone. On arrival at Boulogne good accommodation can be found at the Hotel Maurice. The road to Paris *viâ* Abbeville and Beauvais is simply splendid. I should recommend him to stop the night at Beauvais (Hotel Lion d'Or). This is about three hours' run from Paris. I should be pleased to give any other particulars.

EARDLEY BILLING.

PARAFFIN BURNERS FOR STEAM CARS.

[2672.]—I would like to inform your correspondents and readers who are interested in this subject that a friend of mine, Mr. Morriss, of Finsbury Park, London, has designed and fitted an apparatus for using paraffin to his steam car, and from what I have seen of it it gives no trouble. His car has run 900 miles on paraffin, and he does not intend to use anything else.

C. CRASTIN.

[A very important point with paraffin burners, which is too often missed by their designers, is the amount of skilled attention they require on the road. Most petrol burners are practically automatic, and to compete successfully with them the paraffin burner should be as nearly as possible self-regulating. The majority of owners are not engineers. This is a truism, but designers of paraffin fires frequently seem to forget it.—ED.]

THE WHITE CAR FOR MEDICAL USE.

[2673.]—In further reply to "Three Interested Ones," No. 2649, I also can very strongly recommend the White steam car.

I have driven it 4,000 miles on all classes of roads, and I agree with your correspondent "F. E. R." that it is one of the most comfortable, easiest running, and most reliable cars now on the market.

I find the consumption of petrol considerably lower than that given by "F. E. R.," and that it costs me very little over ½d. per mile at the present price of petrol. I should consider it just the car for a medical man. It is well and strongly made, and in my case repairs have been trifling.

R. E. C.

[2674.]—In reply to "Three Interested Ones," in your issue of the 8th, I have recently gone in for a White steam car, and am pleased to say that so far I am delighted with it. I have been over all sorts of roads, and the car seems to stand splendidly. The generator and burner have given every satisfaction, and I find that one filling of the petrol tank, holding eight gallons, will last about 100 miles, depending of course on the nature of the district. I can with confidence recommend anyone to go in for a White.

J. WILLIAMS.

MOTORING AND THE MANHOOD OF ENGLAND.

[2675.]—In letter No. 2666 of the 15th inst., your correspondent complains that motoring will damage not only those who supply and breed hunters, but also the youth of England.

As to hunters, motoring will often enable people to reach distant meets who could not otherwise do so, and should, therefore, be useful to hunting. The presence of such cars at meets would also be useful in accustoming horses to motors, as the car drivers would be anxious to oblige members of the hunt by running the engine, when stationary, by moving slowly, etc. I had such an opportunity myself a fortnight ago when driving a voiturette.

As to the manliness of motoring, to obtain from any car its best work in relation to gradient, etc., with least expenditure of fuel, requires great judgment, as does turning corners in slippery weather, etc. Most men who drive cars find time for other sports, which give as much muscular exercise as they require. Judgment of pace and gradient are important, as well as the development of a particular set of muscles, and as much nerve may be required for driving as for riding. It is surely better to drive to a meet one's self than to sit in a railway carriage, exercising neither judgment nor nerve.

OFFICER R.A.

MECHANICALLY OPERATED INLET VALVES.

[2676.]—As the question of mechanically operated inlet valves for motors from motor cycles up to the biggest cars is creating a good deal of comment and interest at the present moment, it seems to me that before the English trade are led away by possibly interested people, or some who have not given the matter every consideration, it would be well that some of the scientific researches of Mr. Napier on this subject should be put before English motor manufacturers.

The first point is what is the greatest theoretical advantage of a mechanically operated inlet valve?

The greatest claim that I have seen by even its most enthusiastic partisan is that half inch stroke of the piston is required to open the ordinary suction inlet valve.

Now on the Napier engine with its special inlet valves (now copied, by the way, by foreigners) only 1 lb. pressure to the square inch is required to overcome the pressure of the springs, and it only requires one-eighth of an inch movement of the piston to obtain this pressure, so that by making our crank throw one-sixteenth of an inch longer we can gain the same initial pressure and volume as would be gained by mechanically operated valves.

When we come to the closing of valves here the advantage rests absolutely with the automatic inlet valve, which must close practically instantaneously and invariably at the correct moment suited to the speed of the motor.

Some correspondents suggest the puffs noticed from the chimney of a surface carburetter are caused through the inlet valve not closing properly, but of course it should be well known that this is not the case, but is caused by the flow of gas being suddenly checked through the closure of the inlet valve, and this check causes the incoming gas to recoil and puff out of the chimney.

I have now put forward the disadvantage from an efficiency point of view of the automatic inlet valve, but let us turn to the disadvantages of the mechanically operated inlet valve.

First there is the additional complication and weight of the second valve shaft and gear wheel, and the extra set of valve lifting rollers and guides. Much heavier cylinder head castings. Two openings in each head for valves instead of one, hence twice the number of joints to keep tight. Greater difficulties in getting at the valves. Heavier engine body castings, as it has to be arranged with the spaces and necessary lugs, bearings, etc., for the second valve shaft.

Surely the great aim to-day should be simplicity and reducing the number of working parts, not increasing them.

My own experience with hundreds of users of automobiles has been that one and all desire simplicity, and I do not think anyone can contend that this is arrived at by the addition of the mechanically operated inlet valve. It has one advantage at the present time that I think has not been touched upon, and that is the engine when running light will run slightly slower, but even on this point Mr. Napier is producing engines of considerable horse power that hardly make more noise than a sewing machine.

S. F. EDGE.

THE RELIABILITY TRIALS.

[2677.]—The reliability trials instituted by the Automobile Club are invaluable to the rapidly increasing number of the public who are interested in automobilism. Those who already own cars naturally look first at the results obtained by the style of car they possess. On this principle I was led to examine rather closely the performances of the four Locomobile cars entered for the competition, and in doing so various anomalies struck me so forcibly that I came to the conclusion that, unless very carefully scanned and analysed, the published results, as expressed in marks, would seriously mislead the seeker for information as to the relative reliability of the various makes of cars.

Personally, I think to deduct marks from steam cars for filling up with water in a trial specially devoted to ascertaining reliability is a mistake. I am aware that the White steam car and the Gardner-Serpollet use condensers and do not have to stop for water, but all purchasers of Locomobiles know that they must allow so much time for so many stoppages for water according to the size of their tanks. This is nothing against their reliability.

Similarly, to make deductions for replenishing fuel seems to me beside the mark in a reliability trial. This applies, of course, to petrol cars as well.

Car No. 20 can only be fairly said to have lost one mark—the driver turned on steam accidentally, and the resulting damage caused a deduction of thirty marks for delay and thirty-five for work necessitated by the accident beyond the time allowed. On the Thursday the car ran through the whole day with only one stop of four minutes for water, but the whole day's marks were deducted because, by an accident after the day's run, the boiler was scorched. In judging of reliability, I should disregard marks deducted for work done at night. I arrive, then, at the following results: Car No. 21 made the full 1,800 marks, a distinction shared only by the 20 h.p. Wolseley, and, judging my way, the White car No. 29, from which one mark was deducted for extra work. Car No. 20 lost only one mark, which ranks it with the Baby Peugeot and the 15 h.p. Panhard. Car No. 9 lost seventy-five marks (chiefly for chain troubles), and Car No. 10 seventeen for various small adjustments.

Taking them in their respective classes, the two Locomobiles in Class B went through satisfactorily, and the other two makes competing both broke down. The two in Class C tied with the White car in reliability.

In the hill-climbing on Westerham, the Locomobile beat everything except the redoubtable 20 h.p. Wolseley, and on River Hill it was fifth. The system of marks adopted is simply useless. The Humber bicycle, for instance, gets 418 marks, the Wolseley forty-one. The White steam car, a mile and a half slower than the Locomobile, gets twenty-

four marks more; the M.M.C. voiturette for about half the pace of the Locomobile twenty-one marks more. The system is ingenious and complicated, but perfectly useless. The ordinary man thinks that car the best which will take its allotted number of passengers quickest up a hill, and here again the Locomobiles won easily in their classes.

In the brake contest, the Locomobiles had fifty marks each deducted for bad design of tyre brake. This again is misleading. The Locomobile Co. do not fit more than one brake on their standard pattern unless specially required. This is because reversing the engine gives them a wonderful stopping power, and a second brake is not necessary. The Locomobile Co. fitted all their cars with a second brake to comply with the conditions; the White very properly did not, and were fined 125 marks. All these lost marks I should credit to the steam cars. Then, in the condition tests, these marks appear to have been deducted again from the Locomobiles, but not from the Whites. Why is this?

Lastly, the marks for horse-power and weight are as meaningless to the average man as the hill-climbing marks.

I consider, therefore, that the Locomobiles won easily in both their classes, and that in reliability and hill-climbing combined, they were practically beaten only by the vastly more powerful 20 h.p. Wolseley, and that, taking all four cars, they were better all round than the four Wolseleys. The "grand total" marks by which the four are placed thirty-second, thirty-third, thirty-fourth, and forty-seventh respectively, appear to me, therefore, to be totally misleading.

G. C. ASHTON JONSON.

SOLIDS *V.* PNEUMATICS.

[2678.]—Allow me to give my own experiences as to solid *v.* pneumatic tyres. My last car, a 6 h.p. Darracq, was fitted with pneumatics. These proved such a constant worry and expense that when I ordered my present car, a 10 h.p. Wolseley, I specified for solids. I received the car in March last, and have since run it over 2,000 miles, over about the roughest and hilliest country in England. The tyres have never given a moment's trouble, and are very little cut about, and though the driving ones are worn down very considerably I think they are still fit for at least another 1,000 miles. I have had no breakages or renewals of any kind due to vibration. The car is very well sprung, and for speed up to about twenty miles per hour it is all that can be desired. At speeds above about twenty-five miles the steering becomes difficult, owing to the front wheels hopping about, and, moreover, there is considerable jolting. But as twenty miles is quite as fast as any reasonable man would wish to go in such a country side as this, it would be little or no advantage to me to be able to go faster.

Certainly I have not the smallest desire to go back to pneumatics.

As to side-slip, there is little or nothing to choose. I am inclined to think solids are the worst in this respect.

A DEVON MEMBER A.C.

THE IMPORTANCE OF ADEQUATE MUDGUARDS.

[2679.]—Though now somewhat out of date, there must be among your readers many owners of belt driven cars. For the benefit of such, as well as of chain driven cars, I write the following.

In one of the earlier books on motoring (by R. Moffat Ford) the statement is made that belts are hygroscopic and readily take up moisture from the air, this causing them to slip.

On careful experiment I find that this is not so, but that the sole reason of belts slipping is the liquid mud thrown up on to the pulleys by the *front* wheels.

As a rule mudguards are very carelessly fixed, but when properly placed, as indicated above, the belts run as well in wet as in dry weather.

In order to achieve this, a string should be stretched from the point of contact of the front wheels with the ground to the parts to be protected. The leather guard, well oiled, should then be hung close to the pulleys to intercept these lines. I have had no trouble in wet weather since this was done to our car.

For drivers of chain-driven cars, I may say that by suitable guards reaching to within three inches or so of the ground, and of adequate width, the chains can at all times be kept free of mud, and this not only on short spins, but also on longer runs of twenty or thirty miles in dirty weather. The importance of this to speed running needs no comment. When chains can be so easily kept clean I find ordinary sweet oil the best and cleanest lubricant.

I see so few cars on the road, or in print, adequately fitted with mudguards, that I venture to think the above may prove useful to many of your readers. I shall be happy to answer any enquiries on the subject.

Chepstow. J. CROPPER, M.D.

SOME HILL-CLIMBING TESTS.

[2680.]—The great success of the 20 h.p. Wolseley car in the reliability trials at the Crystal Palace, both as regards its excellent running and also its hill-climbing, comes to me with no sort of surprise, as it only confirms my own experience with a similar car.

To those of your readers who know the old coaching road from London to Bath, the hill I used in testing my 20 h.p. Wolseley will be quite familiar.

Loaded up with five persons of an average of eleven stones each, we ran down Derry Hill from the Golden Gates at Bowood, and while travelling at a fair speed, we put on the side brakes on a gradient of about one in six. The brakes held the car safely and well, and brought it to a complete standstill, much to the surprise of some of our passengers.

We then ran through Chippenham to Bath, and turning homewards again, ran up Box Hill with complete ease at third speed Turning off to the right through Corsham and Laycock, we faced Bowden Hill. This hill is perhaps the worst in the county. It winds a good deal, is some half a mile long, and has a gradient at its worst of one in four.

I think it may be safely said that any car, of whatever power, even with a flying start and only a driver, that negotiates this mountain side in good form, is not a bad hill-climber. But to make our test the more severe and trustworthy, we stopped our car in the middle of the ascent; and as we found our brakes held us well and were perfectly reliable, we started up again. For some of our passengers, I grant you, it was an anxious moment, as they had never ridden in a real hill-climbing car, and newspaper accounts of motors slipping down Scotch hills backwards rose vividly and painfully before their minds; nor had experience taught them when was the right moment to jump, or whether it was best to stick to the ship or not. But their fears were very shortlived, as the motor tackled the gradient in fine style, and we were soon able to change into second and third speeds and reach the Spye Arch with ease and safety, and with every confidence now in our car.

I cannot pretend to give an opinion on the vexed question as to whether the horizontal engine is better than the vertical one, or whether the side chains give a better drive than the bevel gears, but all I can say is that I am perfectly satisfied with the smooth and noiseless running of my horizontal engines and side chains; and if the vertical engines and bevel gears can run up Bowden Hill, stop in the middle, and not shed any passengers, well, I then decide, from the practical side, that there is nothing to choose between them, and that the two types are equally good.

Will some owner of the bevel gear type test his motor in the manner I have attempted to describe, and give us the benefit of his experience?

I make a suggestion to the Automobile Club. Why not one year run your test trials from London to Bath, returning by Corsham and Laycock, run up Bowden Hill, and down Derry Hill on the Devizes road, and so back to London. This would give you a run of over two hundred miles on an excellent road and two jolly steep hills to test the climbing powers and brakes of any motors.

ARTHUR COTES.

New York motorists are much interested in the announcement that tracks, consisting of flat steel rails 12in. wide, with ridges on each side to act as wheel guides, are about to be laid in the centre of two busy streets as an experiment. It is "believed that the track will make motor cars of 3 h.p. or 4 h.p. as serviceable as those of 8 h.p. or 10 h.p."

Flashes.

The Star Engineering Co. will have a very good display at the National Show. They will not only have specimens of their 7 h.p. and 10 h.p. twin-cylinder cars and the 20 h.p. four-cylinder complete, but a chassis which will make the system of all four types, which are identical in general arrangement, plain to the enquiring visitor.

* * *

Describing a sparking plug protector in our last issue on page 499, we attributed this to the United Motor Industries. This, they inform us, does not find a place among their very extensive stock.

* * *

At the Caerleon Petty Sessions on the 13th inst., Supt. James asked permission to withdraw a summons against Mr. H. Lanchester, of Birmingham, charging him with having driven a motor car along the Usk Road at a greater speed than the regulations permitted. He had made inquiries, and discovered that defendant was many miles away on the day named. On the application for the summons being made, a police officer appears to have given evidence that Mr. Lanchester passed him on the road at a high rate of speed on a certain date. Without any further explanation, the Bench allowed the summons to be withdrawn. An investigation is absolutely necessary, for had not a clear *alibi* been set up the former evidence of the constable would have been believed, with a result not hard to imagine.

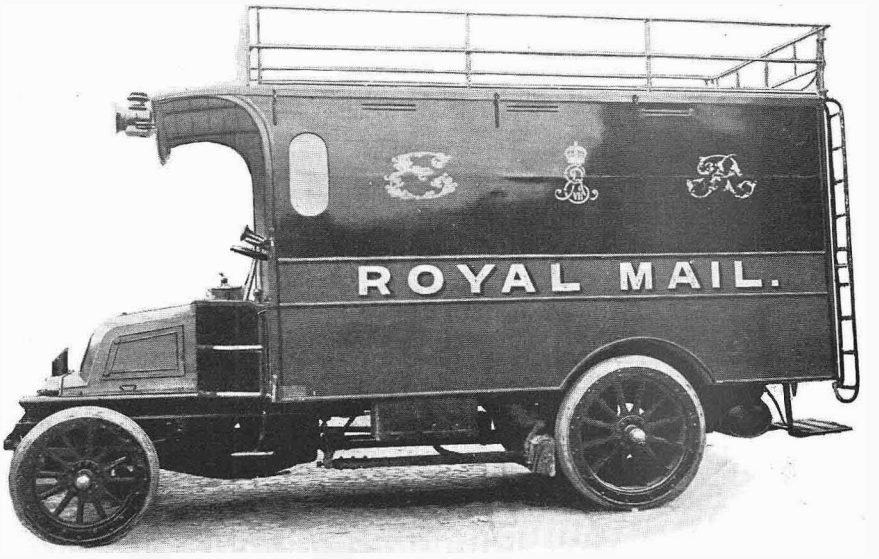
* * *

The Wolseley Tool and Motor Car Co. supplied one of their 7½ h.p. cars for the use of the chief marshal of the procession organised at Birmingham on Monday night last in honour of Mr. Chamberlain on the eve of his departure to South Africa. The advantage of being thus mounted was evident at all points on account of the ease with which it was possible to get from one part of the route to another. The car started at five o'clock in the afternoon, and did not finish till 12.30 (midnight), during which time the engine was not once stopped. The horses of the Yeomanry and the police along the route took no notice whatever of the car, but seemed to be perfectly at home with it. The vehicle proved its usefulness during the evening in connection with an accident which happened to a woman at the entrance to Cannon Hill Park. The motor car took the injured woman to the hospital in record time, as certified by the police officer in charge of the case.

At the recent wedding of Lord Manners to Mrs. Buchanan Riddell, the bride, accompanied by Sir Samuel Scott, arrived at the church in an automobile.

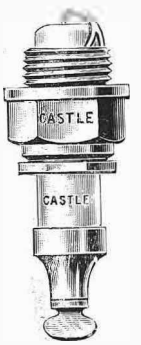
* * *

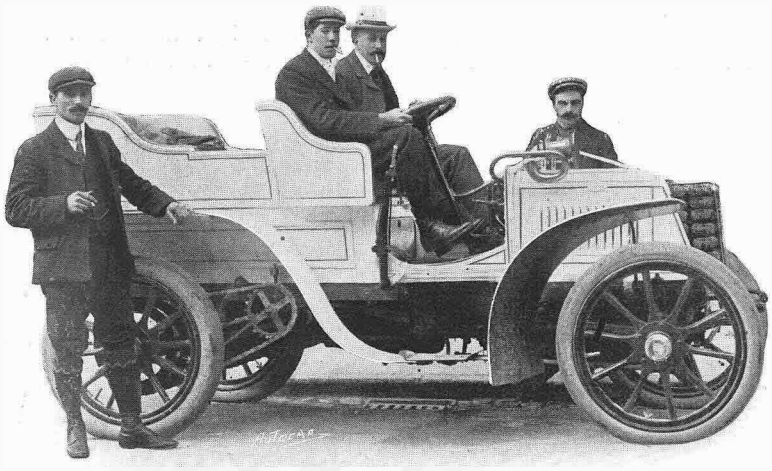
The litigation concerning steam car patents in America is assuming large dimensions. At the present time the Locomobile Co. of America are suing the following firms for alleged infringement of patents controlled by them: Foster Automobile Co., White Sewing Machine Co., Stanley Bros., Grout Bros., Prescot Automobile Co., and the Conrad Automobile Co.



One of the Post Office motor vans running between Liverpool and Manchester. These cars, which are made by Messrs. G. F. Milnes & Co., Ltd., and one of which was shown in the last Automobile Club exhibition, are fitted with Goodyear endless solid tyres. These tyres are moulded without a join, and are compressed to more than double the density of ordinary commercial rubber. In fact, they are almost the same density as pure rubber. They fit dead on to the rim, and are held on by the detachable flange, as is the case with the Goodyear pneumatic. The tyres are a very tight fit, and are put on under hydraulic pressure. There is no chance of creeping as the outer row of flange bolts pass through the tyre, and the bottom row through the felloe of the wheel. The whole base of the tyre is practically a solid, and forms part of the wheel. That is, taking a line across the top of the flanges it might practically be a steel wheel, as the flanges of the base of the tyre hold them firmly together. It is consequently impossible for the tyre ever to pull out of the wheel. In addition there are longitudinal wires in the base of the tyre, as well as transverse pieces. The back tyres in the P.O. vans are 40in. x 5in., and the front 32in. x 4in. The total weight of the vehicle loaded is 3½ tons, but it has frequently been used with a load bringing the weight up to nearly four tons, and thus burdened it has been run from London to Liverpool in about twenty hours. The daily journey is forty miles, and the contract speed eight miles an hour, but this is very frequently exceeded.

The United Motor Industries, Ltd., send us some specimens of a sparking plug, of which they purpose making a special feature. The plug is short—the illustration is half-size—and is equally suitable for motor cycles or cars, having been tested on both. The end of the porcelain in the cylinder is spherical, it being claimed that this form is less liable to soot. The "earthed" sparking point is connected to the plug body by forked points, which prevent its setting being altered while screwing in the plug. The porcelains, we understand, are of the very best quality procurable, and the whole of the workmanship and finish are of the best. Each plug is provided with a copper and asbestos washer and a wood cap to protect the points. The price is ridiculously low for the quality.





The Hon. R. Beresford's 20 h.p. Panhard. This machine is of the latest type, and is fitted with a Centaur engine. Mr W. L. Creyke, the owner of Serpollet's "Easter Egg," is at the wheel, and by his side is Mr F. G. Barton, the manager of the Oxford Automobile Agency, of George Street, Oxford. This was the enterprising firm which sent a traction engine with three pantechnicon vans to London for ten tons of spirit, so that the participants in the Automobile Club commemoration run should not go short of petrol. We inadvertently did them an injustice last week, for in a paragraph we stated that the souvenir photographs of Rose Hill which they distributed were presented by another firm of somewhat similar name.

Considerably over half a century ago a steam carriage was running with more or less success on the roads in the neighbourhood of Birmingham.

* * *

An experiment is suggested of opening shops in the poorer districts of London for the sale of various kinds of fish at a very much lower price than now obtains, the morning supply to be sent up at night direct from fishery centres by autocar.

* * *

Adjustable steering wheels will be fitted to the new Velox cars. Mr. Budge has designed an arrangement which not only enables the angle of the steering column to be altered so that the wheel can be shifted further away or nearer to the driver as desired, but he is also making provision for some 5in. of vertical movement of the steering wheel. This second adjustment is somewhat similar to the arrangement for altering the height of bicycle bars, though special provisions are taken to prevent the possibility of the wheel stem twisting in the steering column, as, of course, that would be a vital defect. With horizontal and vertical adjustment, it will, of course, be possible for any owner to adjust the wheel to fit him, and the ungainly appearance of some drivers to which we referred last week will be no longer excusable.

The Brush Electrical Engineering Co. must be added to the list of British firms who will be exhibiting at the Paris Salon next month.

* * *

On the 14th inst. Messrs. Friswell opened their free garage outside Portland Road Station, which is only some three minutes from Regent Street.

* * *

Irish motor cyclists will be interested to learn that the Singer Cycle Co. have taken over their Irish agent's business at 114, Stephen's Green, and intend to convert it into their headquarters for Ireland.

* * *

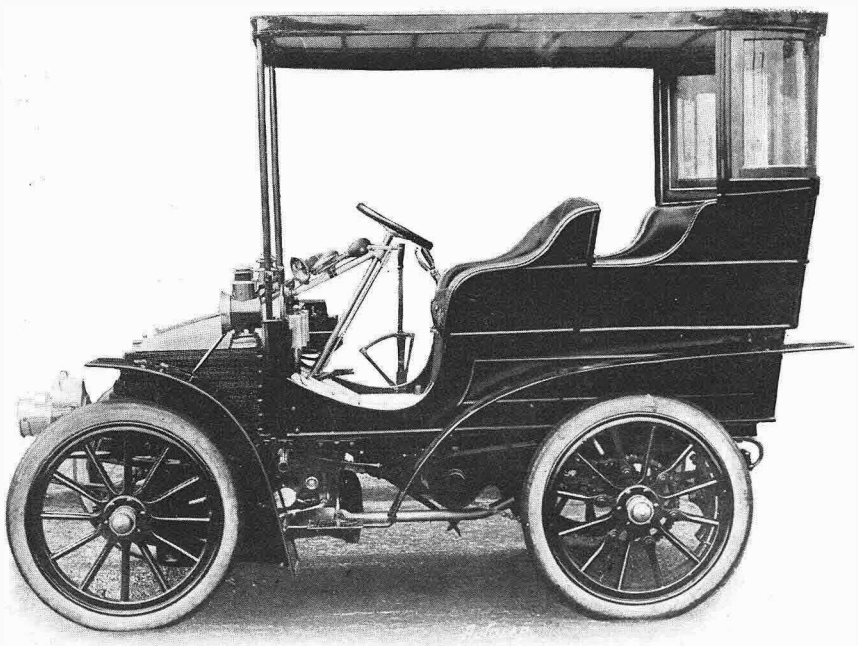
A cab-driver who obstructed the free passage of a motor car at Romsey and jeered at the occupants the other day was fined 10s. and 4s. costs. This is satisfactory as far as it goes, though we doubt not if it had been the automobilist who caused the obstruction the fine would have reached pounds instead of shillings.

* * *

Prince Albert, nephew of the King of the Belgians, is announced to have become an "ardent motorist."

* * *

Pathetic. At the foot of the fixture-card of the Essex Hunt, printed in red ink, is the following notice: "Ladies and gentlemen attending the meets of these hounds are earnestly requested not to come in motor cars."



Lord Stanley's 10 h.p. Wolseley. This car is fitted with a Siamese phaeton body and a canopy, while it will be seen a curved glass screen is fitted at the back, somewhat similar to that used on the King's last Daimler. Lord Stanley is, we hear, extremely pleased with the running of this vehicle.

The Century Engineering Co., of Willesden, are moving along with the times, and are turning out a 12 h.p. tonneau-bodied car with a canopy top and side curtains. This has every appearance of a smart and at the same time eminently useful vehicle.

* * *

In view of statements which have been made to the contrary, the United Motor Industries send us a copy of a letter they have received from Messrs. Bassé and Michel, in which the latter firm state positively that they make two types of coil, one being cheaper than the other, and differing internally as well as externally.

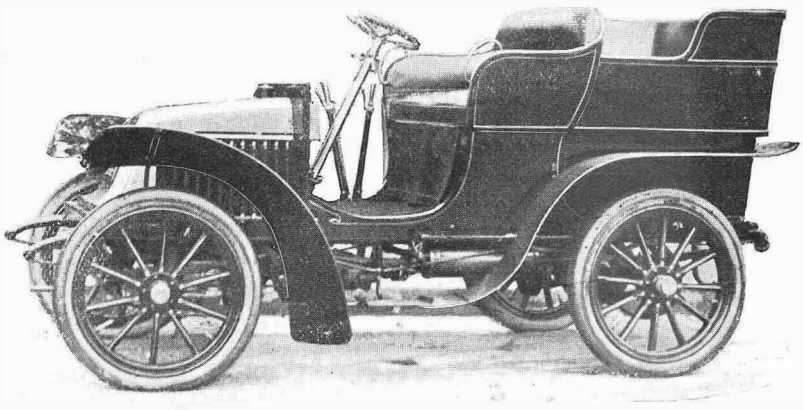
* * *

It will have been noticed in the daily papers that the Prince of Wales has become an automobilist, like his Royal father, but the car he uses is not generally known. It is one of the City and Suburban Electric Carriage Co.'s four-seated electric phaetons. It will travel ninety miles on one charge, and the top speed is twenty-five miles an hour. It is, of course, like all good electromobiles, absolutely noiseless and entirely without what our French friends call *trepidation*.

* * *

The president of the Sheffield and District Automobile Club (Mr. B. H. Foster) has offered two challenge cups for a hill-climbing competition—one cup for cars and another for cycles—to be held twice a year. Any member winning the cup three consecutive times becomes the owner of the trophy. It is intended to affiliate with the A.C.G.B. and I.

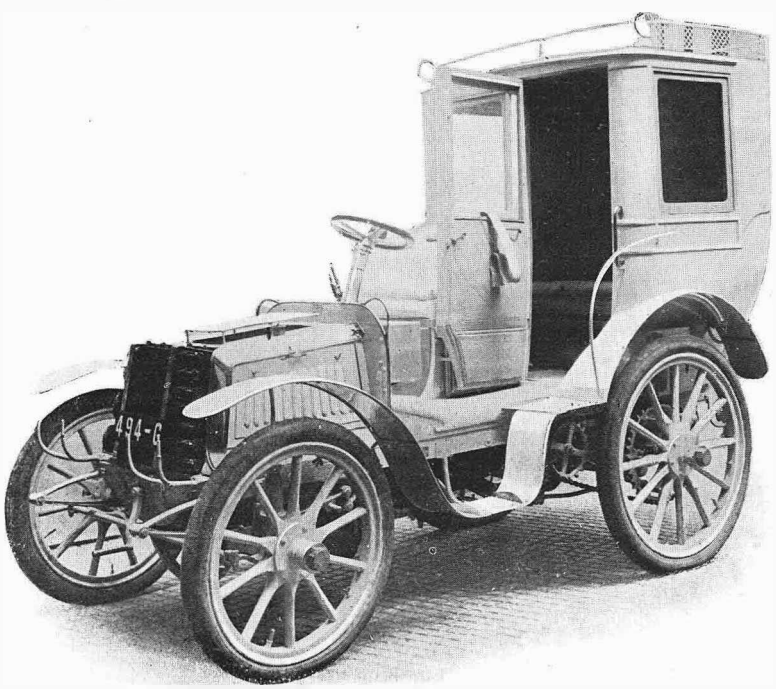
The Belsize cars, Messrs. Marshall and Co. inform us, can now be seen and tried by arrangement with Messrs. Rawlings Bros., Ltd., of 165, Sloane Street, London, S.W. The firm have so many enquiries from London and the South that they wish this to be known.



The above illustrates a 9 h.p. light car which the Speedwell Motor Co., of Reading, are introducing for 1903. The vehicle is being made to their orders in France, and is fitted with a De Dion engine having natural water circulation, with the radiators around the bonnet. A Panhard type three-speed gear is used, the top speed being direct on to the live axle. The car is controlled in the usual way, three band brakes being fitted. Artillery wheels, 30in. diameter, and fitted with 3½in. Clipper-Michelin tyres, carry the vehicle. The car is of good design, and should be worthy of attention. The price is to be 240 guineas.

Mr. C. J. Glidden, the American owner of a 16 h.p. Napier, whose tour thereon through Europe we commented upon lately, is the first person to send a cable message completely round the world. This Mr. Glidden was enabled to do by the completion of the British cable from Vancouver to Australia. The message was sent in the ordinary way of business from Boston, and took 39h. 20m. to return to that city. The message ran: "Glidden, Boston, Mass. Around the world."

* * *



A new type of motor brougham recently designed and made by Messrs. J. Rothschild et Fils, Ltd.

No less than eight automobiles were packed in the yard of the White Lion at Cobham on Sunday last during the luncheon hour, among them being Monsieur Jenatzy's 100 h.p. car, Mr. S. F. Edge's 16 h.p. Napier, Mr. Jarrott's 12 h.p. Napier, and Mr. Swindley's 9½ h.p. Clément.

* * *

Messrs. Gobron-Brillié are building cars fitted with 100 h.p. engines, four cylinders, and eight pistons. The cars are for the events of the Nice week, and will weigh 16 cwts. 2 qrs. 22 lbs.

* * *

The proposal to hold the Gordon-Bennett cup race in Ireland is being received with much heartiness by the press of that country, especially in the counties of Cork, Waterford, Tipperary, Clare, Limerick, Kerry, and many parts of Leinster. The *Cork Evening Echo* and other Cork papers simply go into ecstasies of delight at the prospect of witnessing an event which will appeal so strongly to Irish sporting proclivities.

At the Crystal Palace on Tuesday, Fred W. Chase beat the six hours' motor bicycle record by over sixteen miles. He covered 228 miles 250 yards in the time.

* * *

Autocars were put to very good use in the recent municipal elections at Ipswich. Among those who did good service was Mr. J. Reginald Egerton's 8 h.p. Gobron-Brillié. He seems to have possessed greater powers of persuasion than some automobilists, as he conveyed quite a number of aged and nervous voters who had never been in a car before, but some of them required considerable coaxing. The polling station was on the top of a steep hill, so that they all had quite an experience, but everyone seemed to enjoy it.

* * *

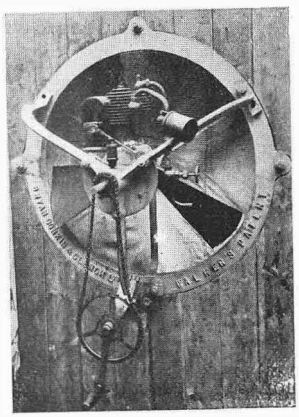
We hear that Mr. Frank Morriss, of King's Lynn, has driven his 10 h.p. Sandringham car up the celebrated Gas House Hill at Norwich. The only two cars which have previously conquered this are Mr. Edge's 50 h.p. Napier and Mr. Egerton's Locomobile. Mr. Morriss's car being the first he has made, is fitted with solid tyres, and weighs between 15 cwts. and 16 cwts. He went prepared for a struggle, and had a man behind him with blocks of wood handy to put under the wheels, but the car went right up with something to spare.

* * *

The Belgian syndicated Chamber of Commerce of Automobiles is organising its second exhibition of mechanical locomotives, that of last year proving supremely successful, and have formed a most efficient committee. The show will be held, as before, in the great hall of the Parc du Cinquantenaire on the 30th of April next, and the committee already comprises the names of many important persons, including M. le Comte de Smet de Nayer, the Prime Minister (who has consented to be president of the Committee of Honour), and the Minister of Finances and Public Works as president of the council

* * *

Another addition has been made to the many purposes to which small internal combustion motors have already been put. The Simms Motor Mfg. Co. have recently attached to the crankshaft of one of their standard 2 h.p. air-cooled motors a ventilating fan—an arrangement which should prove of great value when there is no current supply to run an electric motor. The motor may be obtained to run with either coal gas or with spirit, as is most convenient to the purchaser. When oiled up and started the motor is good for a nine hours' run without the slightest attention, and there can be no doubt about the air cooling. The fan runs in ball bearings at 1,000 r.p.m., and should find a very large field for its services, its scope being practically unlimited.



Lady Harrington this year is utilising her little electric car for the purpose of attending the meets of Lord Harrington's hounds.

* * *

A correspondent, commenting on the usefulness of our weekly list of police traps, says: "I wish you could induce motorists to agree to a common method of trap indication, some system whereby a motorist has not to wait more than, say, ten minutes and leave a clear and visible sign for the next victim."

* * *

The 9½ h.p. Earl car, we are informed, made a non-stop run of 100 miles on the Oxford Road. The machine is driven by a two-cylinder governed engine. It carried its full tale of four passengers, bringing the total weight of car and load up to 22 cwts. It ascended Dashwood Hill at twelve miles an hour, and the ascent on the other side coming back from Oxford was made at eleven miles an hour—a very good performance considering the heavy and greasy state of the roads. The petrol consumption was four gallons one pint, and the waste water one and a half pints.

* * *

We learn on the best authority that Mr. E. W. Hart, of Luton, will exhibit several automobile carriages at the Paris Exhibition. We hope next week to be able to give a few details of a most interesting exhibit that in all probability will be found there on this exhibitor's stand. The following cars—to wit, a 9 h.p. 1903 Renault, a 12 h.p. two-cylinder E. W. Hart car, an 8 h.p. four-cylinder Panhard, a 20 h.p. four-cylinder transformed Flying Darracq, and last but not least a genuine 8 h.p. four-cylinder Mercedes—will be shown by Mr. Hart at the Crystal Palace Show which opens to-day.

* * *

Mr. C. E. Smith, a naval architect and engineer of West Hartlepool, bought the Brush car which ran in the reliability trials. During these trials he occupied the position of passenger in the vehicle every day, and in the course of an interesting letter to us he says: "I can quite endorse your remarks in your issues of September 20th and 27th relating to the car. We had no less than three coils—the first two with non-adjustable tremblers, one of these giving way at the platinum points, the other breaking down in the insulation. The third coil (a borrowed Bassé-Michel) took us through the last day without loss of a mark. Engine troubles were practically *nil*. Slipping clutch on Westerham was due to over-lubrication through faulty ignition. I have driven the car some hundreds of miles with a Van Raden coil, Carpentier tremblers, and find it is hardly ever necessary to change gear (only three speeds are fitted), as the car runs on the throttle like a steam engine, and, what is pleasant to an engineer, is practically silent." It may be recollected that when recording the behaviour of the different cars in the trials we mentioned that among the good vehicles which did not do justice to themselves, the Brush was one of the most conspicuous, though, despite its disappointing record, the causes of delay were in themselves very trivial, and it will be seen that after a good trial our correspondent fully endorses our views.

One of the 8 h.p. Dennis cars in the Oxford run was fitted with dual electric ignition. That is to say, the De Dion engine was provided with the usual De Dion trembler, and also a wipe contact maker, each having its own sparking plug. A T piece was screwed into the usual aperture for the sparking plug, and a sparking plug into each end of the cross-head. Not only was a little ignition chamber thereby formed and the platinum points kept away from splashing lubricant, but Mr. Dennis assured us, and we can readily believe, that with this dual system of firing a misfire is unknown.

Our illustration is made from a photograph of Mr. and Mrs. Eugene Serre in their 24-h.p. Hurst car. This vehicle has been built by Mr. G. Hurst, of Windsor Road, Holloway, N., and is of the modified Panhard type. The engine has four cylinders, cast in pairs, with a bore of 4¼in. and a stroke of 5in. The nominal speed is 750 revolutions per minute. The crankshaft is turned from a solid steel forging, and the cams operating the exhaust valves, as well as the timing wheels, are all enclosed in an oil-tight chamber. The pump is friction driven, and the clutch is of the usual leather-faced conical type, 16in. in diameter. Four speeds and a reverse are provided, and are of the accepted type, all being operated by a single lever. All wheels are 34in. in diameter, with 5in. back and 3½in. Michelin front tyres. The wheelbase is 8ft., and the gauge 4ft. 6in., while the height of the frame from the ground is 23in. The position of the radiator rather spoils the appearance of the car, but this will be altered on future vehicles. We understand that the owner is extremely pleased with the car, which he has driven over 1,000 miles.

The enlightened manner in which some local public bodies discuss the "motor problem" is illustrated by remarks made at a recent meeting of the Durham Highway Committee, when the Yeovil communication was read. Mr. Chipchase referred to a narrow escape he had had near Shircliffe, and said the motor car was "going like the mail" on the wrong side of the road. "I should say it was fifty miles an hour," he added. "They never go more than five," interrupted Mr. Taylor, facetiously. Mr. Chipchase: "My hair stood on end." Mr. Taylor thereupon remarked that he failed to see any hair on Mr. Chipchase's head. Mr. Chipchase: "It's gone, but it would have gone all the same. Mr. Hepburn, who is, apparently, more enlightened than his fellows, warned the objectors that they might have motor cars themselves some day, whereupon there were deprecating headshakes.

Messrs. Cloud and Nichols, of Magnolia Works, Strand-on-the-Green, Chiswick, write us that they are now prepared to supply a patent paraffin burner, which they have been testing on a car, and which has covered two thousand miles. They have experienced no trouble in connection with this burner either from choking up, smoking, or back firing. The external casing of the burner is identical to those supplied on petrol-fired cars.

* * *

Mr. T. M. Cairns, of Edinburgh, is having a new type of Stirling omnibus built for him. It will have a 16 h.p. engine, and provide seating accommodation for twenty-six.

* * *

The annual dinner of the Aero Club of the United Kingdom will take place at the Carlton Hotel, London, on November 25th, at 7.30. We may add that Mr. Eric Stuart Bruce (son of the late General Michael Bruce, who commanded the Grenadier Guards), M.A. Oxon., Fellow of the Royal Meteorological Society, honorary secretary of the Aeronautical Society of Great Britain, and Membre d'Honneur of the Paris Aero-Club, has accepted the secretaryship of the Aero Club of the United Kingdom.

* * *

That the motor school connected with Mr. Wm. Lea's depot at Liverpool is much appreciated is evidenced by letters from pupils who have passed through the course of instruction. One correspondent writes to Mr. A. Ford, the manager, stating that in one week he acquired both the knowledge and confidence to drive a car under ordinary conditions and in any kind of traffic.

* * *

A motor cycle club is suggested for Nottingham, and Mr. E. G. Young, of 26, Radcliffe Road, West Bridgford, Notts, has taken the initial steps of calling a meeting at the Lion Hotel on December 2nd, at 8 p.m., to discuss the proposal.

* * *

In an article in the *Daily Mail* entitled "Back in London," by A Traveller Returned, occurs the following: "I had been reading in the English papers of foreign invasion in trade matters, and I did not quite believe in it, but I begin to see it is very real. Long Acre, for example, has ceased to be the Long Acre it was. Automobile firms to right and left of it, and all of them in French or German names." The writer of the article would have found one or two English firms if he had searched a little further.

The Yorkshire Automobile Club's run to-day (Saturday) is to Harrogate, the members meeting at Pool Bridge at 3.30 p.m., and having tea at five o'clock at the Prince of Wales Hotel, Harrogate. The Sheffield A.C. has arranged an inaugural run to Worksop to-day. The cars will start from near the Town Hall at 2.30 p.m., marshalled by the president (Mr. B. H. Foster) on his Wolseley car, and after passing along Fargate, Church Street, Leopold Street, and Fargate again, to Tinsley, the members will go the rest of the journey as they please.

* * *

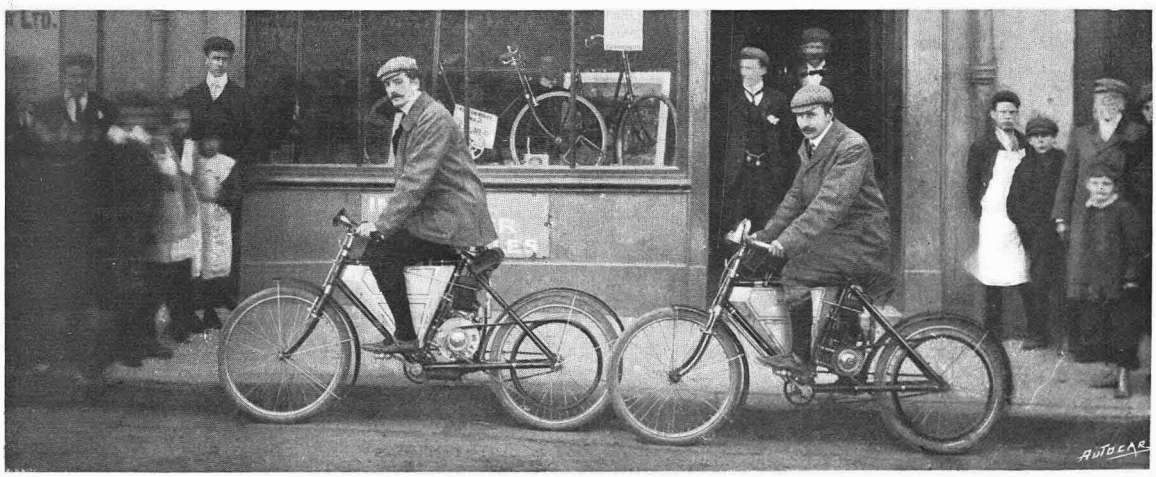
Comparatively little is heard of the success of tours made on voiturettes, so we are interested to have the information about a 500 miles trip which was undertaken by Mr. H. Clegg, of Burnley, on a 4½ h.p. Progress voiturette. This tour brought his mileage up to over 4,000 miles, and the total road-side stops in that distance were under four hours. In the tour referred to, which was 520 miles in all, the only stops were for a burst tyre and to replace a sparking plug. With Mr. and Mrs. Clegg and 60 lbs. of luggage, the car consumed sixteen gallons of petrol, which comes out as nearly as possible at thirty-two miles per gallon.

* * *

One of the chief difficulties which trouble the drivers of steam cars has been the unreliability of the condensation type of lubricator to steam cylinders. The makers of the Weston steam cars have appreciated this, and have introduced a new type of positive feed lubricator, which they claim ensures perfect cylinder lubrication at all times, and under all circumstances. This lubricator consists of an oil reservoir directly connected with a small feed pump, the delivery from which can be graduated to any desired degree. The pump is driven directly off the engine. When the engine is not running there is, of course, no lubrication, but the faster the engine drives the more oil is fed to the cylinder walls. The cars fitted with these lubricators have shown increased smoothness in running and efficiency, while by the elimination of all waste a saving of fifty per cent. in lubricating oil is claimed. The strong feature of the lubricator, however, is the fact that it can be absolutely relied upon to do its work. The reservoir contains sufficient oil for a fifty miles run, and has a 3in. filling opening. It can be fitted to existing cars at a small expense.

* * *

To M. Jenatzy belongs the honour of first applying a magnetic clutch to a car with a high-powered engine, though we believe that Colonel Holden has been experimenting with the idea in a smaller way for a long while, and that he commenced his investigations on the subject even earlier than M. Jenatzy. A few days since we encountered M. Jenatzy, the Baron Caderousse, Mr. Mark Mayhew, and Mr. S. F. Edge at the Hut Hotel on the Ripley Road on M. Jenatzy's 100 h.p. four-cylinder car. The latter is fitted with M. Jenatzy's magnetic clutch, one portion of the clutch being caused to become an electro magnet by current passing from the accumulators through a reducer to what, under ordinary circumstances, would correspond to the female portion of an ordinary friction clutch. In M. Jenatzy's vehicle, however, the parts of the clutch are not coned, the opposing faces of the clutch being metal, and flat in the vertical plane. The grip of the driving upon the driven face is obtained solely by the amount of magnetic force permitted to the magnetised portion of the clutch. The amount of current passing to the latter is controlled through the reducer entirely by a clutch pedal in the ordinary way, and we were assured by both Messrs. Mayhew and Edge that the clutch control obtainable by M. Jenatzy's device was quite extraordinary. Indeed, so great could the grip of one part of the clutch upon the other be made that the huge car could be started on its third speed, while the amount of slip could be varied to an infinitesimal degree. That there was no sort of slip about this clutch when business was meant was evident from the speed at which the big car flew up Red Hill. It is, of course, obvious that with M. Jenatzy's clutch but the merest fractional lateral movement of the driven portion is necessary, while end thrust cannot, of course exist.

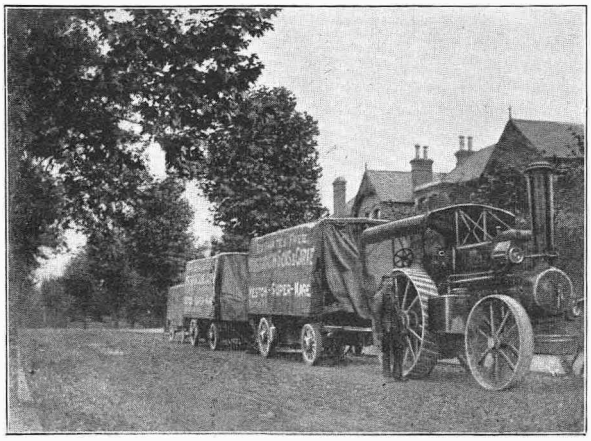


The Hon. Leopold Canning and Mr. Alfred Wright on two of the former's Ormonde motor bicycles. The photograph was taken at Londonderry.

Mrs. Claude Watney recently sold her 24 h.p. Panhard and bought a 60 h.p. Mercedes-Simplex, for delivery in February. It is said that this will be the first of this powerful type to be delivered to a private buyer.

* * *

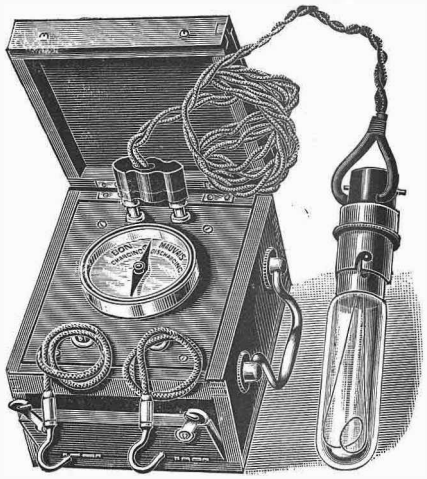
We recently referred to the statement made by the *Engineer* that automobilists should bear in mind that the main roads of this country were never intended for a greater speed than ten miles an hour. Colonel Crompton has written to our contemporary pointing out that in the streets of London these speeds are regularly exceeded by such cumberous vehicles as 'buses. We, from observations which we have made as to the speed of light traffic in the streets of London, can fully endorse all Colonel Crompton says. He also takes up the speed of the old mail coaches, and our contemporary admits that if Colonel Crompton can prove that the speeds he claims were made by the stages it would admit that it was mistaken. We leave Colonel Crompton to prove his case, but in the meantime we may say that coaches were driven from Birmingham to London under ten hours for the 108 miles, this time including stoppages of half an hour for dinner and an average of ten changes of horses. We know the record for a change was a minute, but so far as we can gather this was very rarely made in less than four minutes. In any case, the speed of the coach averaged over thirteen miles an hour, and that would mean a maximum of seventeen or eighteen miles an hour at least at times. At the same time, we do not regard this question as a very important one, and admitting, for the sake of argument, that the roads were built for ten miles an hour, it is high time that such speed was exceeded, provided always that reasonable reduction of pace and proper precaution are exercised at curves, crossings, and populated areas. It is really no argument to introduce the ten-mile-an-hour limit into the question, because if we leave out the speed side of it it will be found that there are many vehicles on the roads to-day for which the roads were never built; for instance, traction engines and bicycles.



This photograph was taken at Acton, and shows how Mr. F. Howard Mercer, an Acton automobilist, reduces the delay of "moving" to the greatest possible extent. The destination, Weston-super-Mare, was reached 2½ days from the start at Acton.

A HOME ACCUMULATOR CHARGER.

A particularly neat and useful accessory in the shape of an accumulator charging switchboard is being marketed by Messrs. G. J. Riches and Co., of 4, Gray's Inn Road, W.C. By the use of this instrument, an illustration of which we give herewith, any automobilist whose house is lit by electricity (100 volt continuous current) can charge his own accumulators without any knowledge of electricity, and without fear of doing them any damage by incorrect connections. It is only necessary to detach the ordinary illuminating lamp from its socket and put the lamp with the instrument in its place. If the poles are properly connected for charging the magnetic needle over the dial will move to the left to the word "Bon." If incorrect the needle



will move to the right ("Mauvais"), in which case it is only necessary to reverse the double-peg plug connected to the lamp wires, and all is in order for charging. The needle will now move towards the word "Bon," but if an alternating current be connected up, no effect on the needle will be noted. The wires with the hook terminals should be connected to the accumulator, the positive, and to the positive of the accumulator, and the negative to the negative. Charging should be carried on until the acid turns "milky" and gives off bubbles, at which stage it should be disconnected and tested. It should show 4.6 volts when fully charged. The box enclosing the apparatus is 8in. long, 6in. wide, and 3in. deep, and may be easily stowed away in the car for charging purposes at any halting place on tour when a suitable current is available.

Messrs. Mann and Overton's inform us that amongst the latest purchasers of the 20 h.p. Georges Richard light cars are Count Zborowski, Dr. Clifford, and Mr. William Younger, M.P. Dr. Clifford's car is a six-seated car of the Lonsdale type, with double hood. Mr. Younger's car is of the same type, to seat four. This car is fitted with a four-cylinder engine, governed on the throttle, with a separate throttle for each cylinder, making the governing very sweet and the car very silent for its power. Magneto ignition only is fitted, following the latest practice. The car is provided with four speeds forward and the reverse.

OIL MOTOR CARS OF 1902.

(Extracts from a paper read before the Institute of Mechanical Engineers.)

BY CAPTAIN C. C. LONGRIDGE, M.I.MECH.E.

(Continued from page 509)

(b.) Fly-wheel.—There is little to be said on this detail. The inertia of the fly-wheel is one of the chief causes of vibration, the explosion energy imparted to the wheel reacting on the frame. A very radical elimination of this objectionable feature is the provision of two fly-wheels revolving in opposite directions. This method has been successfully worked out in the English Lanchester car and also in the French Crozet (Tourand) motor. A large, more especially large rimmed, and, therefore, preferably, a built-up, fly-wheel, is by no means to be despised, since it conduces to steady running; facilitates easy change from low to high gear; helps starting on hills and heavy ground; extends the speed range, enabling the motor to run slower without pulling up; reduces fluctuations of rotative speed, and thus the stresses on all driven parts, gear, chains, and tyres. Naturally, multiple-cylinder or high-speed or low-compression motors require less fly-wheel than single-cylinder, slow-running, or high-compression engines.

(c.) Clutch.—The function of the friction clutch is to transmit motion from the fly-wheel to the gear. A good deal of trouble used to be experienced with clutches getting out of alignment, slipping, acting too fiercely, etc. Nowadays these difficulties have mostly disappeared. One of the best methods of ensuring accurate alignment is to mount the internal part of the clutch on the engineshaft, prolonged through the fly-wheel, as in the 8 h.p. Hozier (Argyll) car. In the 16 h.p. Panhard chassis, last shown at the Crystal Palace exhibition, the clutch was mounted on a sort of Cardan joint, allowing a certain vertical and lateral motion—also a good way to obtain regular engagement all round. In other cases, provision against defective alignment is made by setting springs under the friction strip (leather, copper, etc.), with which the clutch is faced.

In all cases clutches are pressed against the recessed fly-wheel by a spring, usually spiral. In the best practice the thrust of the spring is regulated by an adjustable nut, etc., and is prevented from reaching the engine bearings by the interposition of a ball thrust bearing, as in the Daimler, Mors, and other cars.

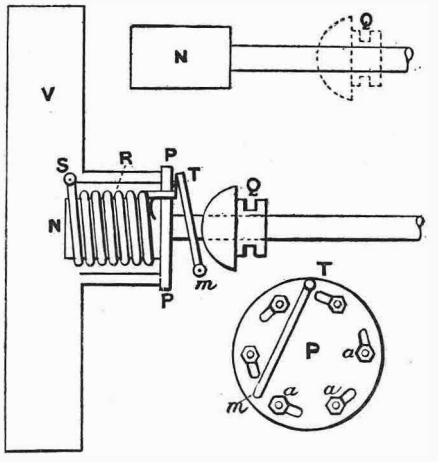
In most cars the application of the foot brake withdraws the clutch, and in the Mercedes-Simplex of the Cannstatt Daimler the withdrawal of the clutch automatically reduces the speed of the motor—a very neat arrangement.

The latest form of clutch is that employed on the 40 h.p. Mercedes-Simplex Daimler car. Here the ordinary clutch is replaced by a spiral spring fastened at one end to the fly-wheel, which in this case serves as fan. When in action the spring is caused to coil tightly round a small drum on the driving axle. The idea is in many respects excellent.

Transmission from Clutch to Gear.

The main point noticed is the increased use of universal joints at both ends of the transmission-shaft, so as to prevent deflection strains reaching the gear. In the French 8 h.p. Clément car, behind the spring-adjusting nut, the clutchshaft ends in a squared section, the faces being given a slight longitudinal curvature to allow for deformation of the frame. The clutchshaft and change-gear shaft are united by a sleeve, inside of which is a distance piece. By opening the coupling sleeve and removing the distance piece, the clutch and shaft can be removed; this is a very handy device. The English Daimler, and, presumably, most other companies, have very similar methods.

There is an indication, however, that these universal joints will be dispensed with, and greater rigidity obtained by tying all parts to a single frame. There is no objection to a single frame properly tied, but flexibility of drive, the author thinks, should be fully maintained, if not increased. To this end he suggests the trial of flexible transmission-shafts, constructed on methods, illustrated by the coiled spring, the bundle of steel rods, etc. Such shafts provide not only for want of alignment, but also, by reason of their initial twisting, absorb the heavy jars and strains when the clutch is too fierce, or too suddenly applied. The same method of construction might perhaps be applied to the countershaft between the differential and the sprocket pinions.



The Mercedes clutch.

R, spiral spring fastened to the flywheel at S, and connected on the disc P to an operating lever T, actuated by special sliding cam Q. N, drum gripped by the spring in action.

Change-speed Gear.

The various systems in use do not present much novelty. Four methods predominate: Toothed wheels, which are slid in and out of gear, as the Panhard type; gear wheels always in mesh, but fixed, when required to drive, by interior expanding clutches, used, for example, by the Société des Automobiles Crouan, Paris, less common, but likely to become a great deal more so; belt-gear, as in the Benz cars, fast disappearing; epicyclic gear, running solid for the high speed, found chiefly in light cars; lastly, a link motion, by which varying throw is imparted to rods which drive the differential, on the rear axle, through reciprocating clutches. Only one instance of the use of this method is known to the author, viz., in the two and a half ton lorries built by R. Hagen, of Cologne.

With gears the general tendency is a direct drive for the highest speed—that is, without the use of intermediate pinions between the motor and the differential. The Mors car may serve as illustration of the method. At the end of the primary and secondary-shafts there is the usual bevel pinion gearing into and driving the differential; this is in use for the first three speeds. The fourth speed is transmitted direct from the primary or drivingshaft (that next to the motor) to the differential or drivingshaft wheel, out of gear, for the first three speeds. Actuation is by a lever which, forcing back the drivingshaft, leaves the intermediate-shaft out of gear, and engages the loose spur wheel with the differential. (See *The Autocar*, July 5th, 1902, page 5.)

An ingenious idea has been realised by M. L. Megy, of Paris. Dispensing with the hand change-speed lever, he causes the speed to automatically vary, according to the resistance to be overcome. The gear wheels are always in mesh, and on each of the loose wheels is a large collar or drum, inside of which is a leather disc. These discs are operated by a rod inside the shaft, and are displaced by the resistance met with by the car. Thus, when the car begins to slow down on one gear the rod moves forward and presses the leather disc on a lower speed wheel, and *vice versâ*. Any one speed, however, can be fixed by a hand lever. The car thus regulates its speed to the road, or can be regulated when required.

It is quite possible that change-speed gears may be soon driven out of the market either by motors of sufficient flexibility or by some electric transmission of power from the motor to the driving wheels, or, though far less likely, by hydraulic gear. It is rather a sign of the times

that Messrs. Panhard and Levassor should, it is stated, have taken over the Cannstatt-Daimler and Lohne-Porsche French patents for a system in which the motor drives a dynamo, and this an electric motor on the wheels. A number of cars of this nature are, it is said, proving satisfactory.

The Differential Gear.

In a few cases the differential has been replaced by other arrangements. Messrs. Brouhot et Cie., of France, are said to employ ratchet-clutches inside the hubs of the driving wheels. In taking corners the outside wheel runs free, and on dropping down again to the same speed as the inside wheel the ratchet pawl falls into the teeth for forward driving.

In the Swift voiturette also the road wheels are fitted with free-wheel clutches of the ratchet type, such, only on a larger scale, as are in use on bicycles.

Neither arrangement would appear suitable for reversing.

In designing a differential the pins should be of the strongest material and ample proportions, and every precaution should be taken to keep the gear free from any defect in the countershaft alignment. Universal joints in the latter can be used, and the flexible-shaft, as suggested, might be tried.

The weakness of the divided shaft is remedied in "the liner tube countershaft," or may be got over by placing the differential on the road wheel axle.

The defects of bevel differential gear are: Natural tendency of bevel gear to force itself apart, end thrust of the pinions against the collars, excessive wear and tear, cross strain on the bearings, and loss of power by conversion at right angles. The same compensation is obtained by spur differential without the thrust and wear.

Systems of Driving.

The two systems of driving are the live axle and the double sprocket chain. The former seems the better mechanical job, but, so far, it is chiefly confined to light cars. A notable exception is the 40 h.p. Napier, on which Mr. Edge recently won the Gordon-Bennett cup. No development of the central chain drive has taken place.

It is difficult to understand why sprocket chains are left quite uncovered, and usually without lubrication. Both could be easily effected.

(To be continued.)

A WORTHING CONVICTION.

Unsuccessful Appeal to the High Court.

In the King's Bench Division, before Mr. Justice Wills and Mr. Justice Channell, on Friday,

Mr. Lincoln Reed moved on behalf of Mr. Geo. Wilder, of Stanstead Park, Emsworth, for a rule *nisi* for a writ of *certiorari* to bring up to this Court a conviction from the Petty Sessional Division of Worthing, made on October 15th last. The conviction was under the Light Locomotives Act, 1896, and was in respect of a charge of driving a motor car at a speed exceeding twelve miles an hour. In support of the motion it was alleged that one of the magistrates—Lieut.-Col. Wisden—had in this and other similar cases exhibited great bias and prejudice. Affidavits were read in support of the application, the solicitor (who acted for Mr. Wilder and also for Mr. Harvey DuCros, who had been summoned before the Bench) deposing that Mr. DuCros was convicted on the 26th June for fast driving. The Bench was composed of an even number of magistrates, the chairman being Lieut.-Col. Wisden. Throughout the proceedings, the chairman made biassed remarks, and put leading questions to the witnesses. At the end of the hearing, it was announced that one-half of the Bench was for a conviction and one-half against. The hearing was adjourned. At the further hearing the defendant's solicitor pointed out that, where a similar division of opinion existed in a similar case, the summons was dismissed. The case, however, went on, and Mr. DuCros was convicted. It appeared by Mr. Wilder's solicitor's affidavit that an application was made to adjourn the hearing, and although this was ultimately granted, the Chairman (Lieut.-Col. Wisden) spoke in angry and indignant terms of motor cars. It had come to his (the solicitor's) knowledge also that the chairman had said it would be a good job if the motor car industry were destroyed, when it was pointed out to the Bench that, if steps were taken to enforce the legal limits on country roads, the industry would be destroyed. The chairman was thus avowing his dislike to motor cars. When it was suggested that the chairman should retire from the Bench he exhibited a great deal of temper, and said he would not retire unless his brother magistrates wished it. In face of this it was decided not to call any evidence for the defence. The police officer gave evidence to the effect that he had timed the motor for a quarter of a mile. Lieut.Col. Wisden asked him, "You are of opinion that the speed was dangerous?" and, of course, the witness said "Yes." But there was no question of danger, and Mr. Wilder was not charged with driving to the common danger, but for a speed of more than twelve miles an hour. In the result Mr. Wilder was fined £5 and costs.

Counsel argued that in the foregoing circumstances there was a case of strong prejudice on the part of the chairman against motor cars and their drivers. The applicant should, therefore, have an opportunity of going into the matter before their lordships, and the chairman of satisfying the Court, if he could, that he had acted in an unprejudiced manner and impartially. The facts showed clearly that the chairman had expressed himself very strongly in regard to motor cars, and among other things said they were a nuisance. He (Mr. Reed) submitted that the chairman was not a proper person to sit on the Bench, and that, therefore, the applicant was entitled to the rule asked for.

Mr. Justice Wills said he did not think there was any ground at all for granting the rule. A magistrate might entertain strong views on a question, and if he did it would be wiser perhaps to keep them to himself; but nothing in affidavits indicated that he would violate his judicial oath and decide contrary to the evidence. His learned brother had reminded him that for very many years magistrates were supposed to entertain very strong views about poaching, but no one ever heard of a case where a writ of *certiorari* was moved for because a magistrate had perhaps a not unnatural dislike, as a landowner, to poaching.

The rule was refused accordingly.

POLICE TRAPS.

On the Eastbourne Road, at the level stretch between East Hoathley and Horsebridge.

Near Broadwater, at a village called Sompting, about one and a half miles from Worthing.

Between Dorchester and Sandford.

At Headington.—A piece of road from Barton turn to the Quarry.

Monmouthshire.—Along the Usk Road.

Mr. L. Savory, manager of the Westminster Motor Car Garage, 17½, Kensington Place, Westminster, writes to say that an error crept into his letter published last week *re* the Ripley trap (p. 496). Instead of an error of 194 yards it should have read an error of 19 per cent.

CLUB DOINGS.

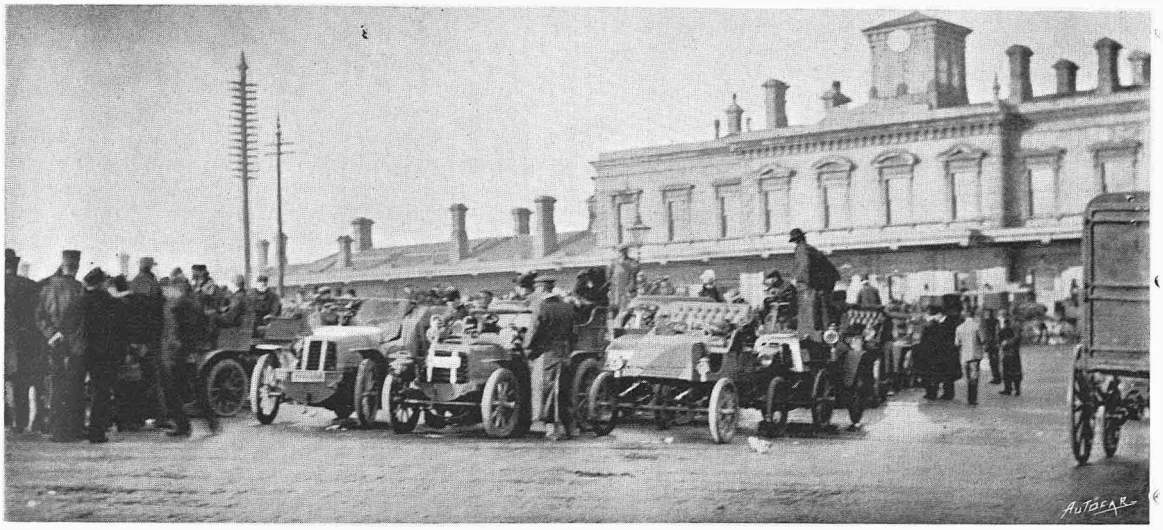
The Scottish Automobile Club.

The first of a series of meetings and discussions under the auspices of the western section of this club took place in the Windsor Hotel, Glasgow, last week. Mr. John Adam, of Larchgrove, the president, occupied the chair, and there was a large attendance of members of the club. Mr. H. M. Napier read an interesting and instructive paper on "Motor troubles and how to get over them." A discussion followed the reading of the paper.

Nottingham and District Automobile Club.

A most enjoyable smoking concert was held at headquarters ("Black Boy" Hotel) on Friday, November 14th, when upwards of fifty members and friends were present. A very pleasant evening was passed under the genial chairmanship of Mr. E. W. Wells, and much club talent was brought to light. During the evening it was decided to make weekly club runs to Newark each Saturday during the winter, the headquarters to be the "Ram" Hotel.

THE COMMEMORATION RUN.



Some of the cars leaving Reading Station Yard for Oxford. From a photograph by Mr. W. Gutmann.

Last week we published a list furnished us by the Automobile Club of the cars which claimed non-stop certificates (see page 503), the drivers, apparently, having conformed to the rules. Since the issue of this list, however, additional protests have been received against the following on the ground that they were seen to be stopped on the road:

Official Name.	Name of Car.	No. of Protests.
Anglo-Saxon	2 h.p. Mitchell bicycle... ...	2
Blind Man	10 h.p. M.M.C.	3
Lenthall	12 h.p. Belsize	1
Mars	10 h.p. Benz	1
Noiseless	8 h.p. Wilson & Pilcher ...	2
*Rambler	4½ h.p. Jeffery	1
Rosalind	7 h.p. M.M.C.	1
Tempter	2¾ h.p. Excelsior bicycle ..	1
Watsonia	10 h.p. Durkopp...	1
Weary Will	6 h.p. Panhard	2

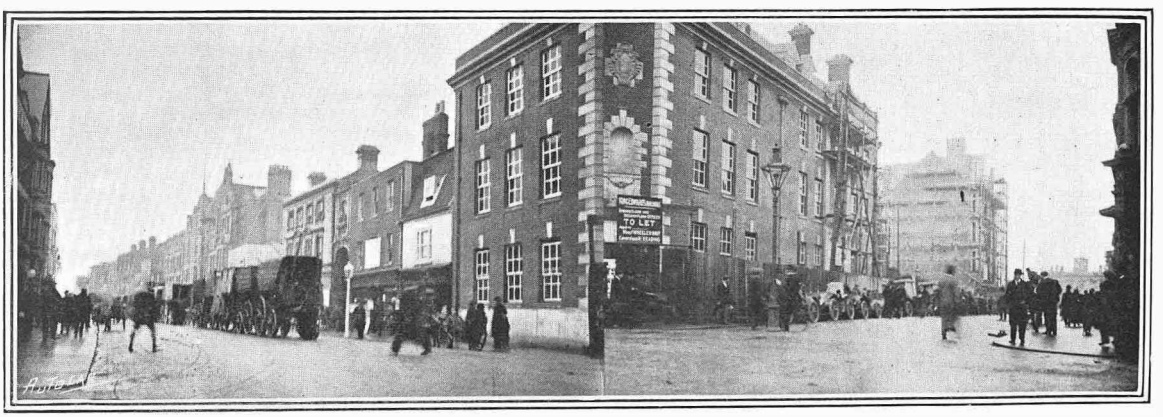
Copies of the objections have been forwarded to the owners of the vehicles in order that they may furnish the committee with such information as they may consider desirable.

The Executive Committee have taken into consideration reports made to them that there was a variation of three minutes between the timekeepers' watches at Twickenham and the timekeepers' watches at Staines Bridge. There seems to be ample evidence that there was a variation; and furthermore, the distance of the stage was reduced by the fact that it was necessary to make the starting point at Twickenham Green 1,000 yards nearer to Staines than had at first been anticipated. In view of these circumstances the Executive Committee have agreed to grant non-stop certificates to the following cars:

Official Name.	Name of Owner.	Name of Car.
Acme	Mr. W. Acton	4½ h.p. Renault.
Australia ...	Mr. S. F. Edge... ..	16 h.p. Napier.
British ...	Mr. Alfred Burgess ...	12 h.p. M.M.C.
Magician ..	Mr. C. Rawley Cross	8 h.p. Humber.
Mercote ...	Mr. W. H. Mapplebeck	8 h.p. Renault.
Petit Bleu ...	Mr. E. M. C. Instone	22 h.p. Daimler.
Redivivus ...	Mr. C. L. Schwind ...	6 h.p. Daimler.
Viking ...	Mr. S. F. Edge... ...	12 h.p. Gladiator
York ...	Mr. Thomas F. Gillett	6 h.p. British Serpollet.

*The protest against Rambler (4½ h.p. Jeffery) obtaining a non-stop certificate has been overruled, inasmuch as the driver, Mr. W. C. Allen, has explained that the first stop to Staines Bridge was owing to his having been stopped by a car in front of him; and the second stop was to light carriage lamps.

Mr. W. J. Adams's 9½ h.p. Ormonde cycle Oxford has, after inquiry, been included in the list of those to whom non-stop certificates can be granted.



The two lines of vehicles shown in this picture afford a good contrast indeed. The photographs were taken at Reading. On the left will be seen the long line of carriers' carts parked along the main street every market day, while on the other side is a line of autocars taking part in the anniversary run, and waiting to be started for Oxford. The photograph from which this illustration was made is by Mr. T. Bernard Percy.

THE 1903 GORDON-BENNETT RACE

The decision of the sub-committee of the Automobile Club appointed to go over the route proposed in Ireland is not being published by the club this week. The chief question at the moment is—the course being circular, will the French A.C. and other clubs interested allow or agree to the variation of the rule (Article 11) of the Gordon-Bennett race, according to which the race cannot be run on a circular route? The French Automobile Club has already been approached on this subject, and is now being pressed for an early reply. Till this is obtained, no decision can be arrived at.

A FREE GARAGE FOR LONDON.

What has been known as the Albany Pantechnicon in Albany Street, Regent's Park, will in future be known as "Friswell's," for Friswells, Ltd., are shaking the dust of the Viaduct and the Acre off their feet to establish themselves in the huge premises of what has been one of the largest warehousing emporiums in Western London.

When cleared of the wooden divisions put up by the Warehousing Co. for storage of various batches of goods, the place might have been built for the purpose to which it is now to be devoted.

Albany Street, Regent's Park, is just across the road from the Portland Road Station of the Metropolitan Railway, and but three minutes from Oxford Circus. Indeed, it is remarkably accessible from almost any part of London, as 'buses from north, south, east, and west pass within a few yards of the doors.

In this huge fireproof building of five floors there will be storage room for seven hundred automobiles. With two fine sloped entrances, a wide mews at back, and a hydraulic lift (which, having made light of loaded pantechnicon vans, will whisk modern automobiles aloft with ease), all floors concreted, and all well warmed by hot water, no premises could present finer advantages as an automobile garage.

But Friswells, Ltd., propose to offer their new premises as a free garage at any time of the night or day, depending for reimbursement upon the moderate charges for any tending, washing, repairing, or furnishing they may be asked by the car owner to do.

To offer free garage seems reckless, but Mr. Charles Friswell is nothing if not enterprising and courageous, and, so being, has unbounded faith in the success of his new venture.

Here will be the future depot of the Peugeot cars and the repository of other makes handled by this firm. The floors of this building, splendidly lit as they are both by natural and artificial light, are unsurpassed as showrooms.

Here, too, will be the depot of the new Siddeley cars, which are shortly to be put upon the market.

One portion of the premises on the ground floor, directly accessible from the street, will be fitted and stocked as an accessories and spare parts department. In the basement is excellently fitted toilet accommodation, with spacious and well-fitted dressing-rooms for both sexes. A portion of the premises is to be fully equipped with all necessary up-to-date machine and other tools as a repair department, where repairs of the lightest and heaviest character will be performed by skilled mechanics. Messrs. Friswells, Ltd., have already passed their salad days of automobile body-building and general carriagework, and will continue it upon a much extended scale in their new premises. Wings, canopies, screens, curtains, etc., will all be kept in stock, and will be fitted to cars with the least possible delay.

Then again, the periodical sales, hitherto conducted so successfully by Mr. Friswell at Holland Park Avenue, will be held on one of the ground floors, and the new *locale* will be found much easier of access than the old.

Indeed, the whole scheme under which these extensive premises will be devoted to the automobile business in all its branches is quite the most ambitious yet attempted in connection with the movement in this country, and by its very daring and plucky conception should command success.

MOTORS IN THE CYCLE SHOWS.

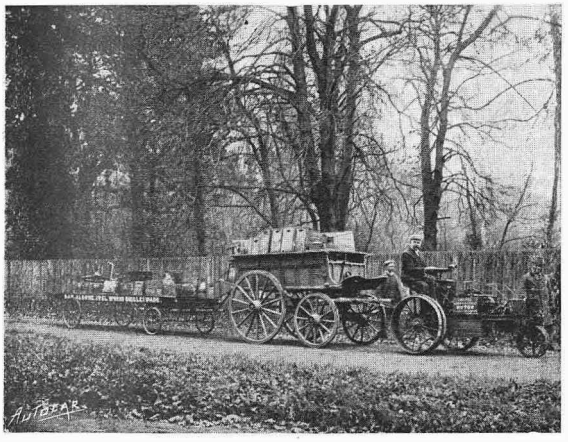
Yesterday (Friday), the 21st inst., the two cycle exhibitions were opened—the Stanley at the Agricultural Hall, Islington, N., and the National at the Crystal Palace. Both exhibitions close today week, Saturday, the 29th inst. In the grounds of the Crystal Palace trials of cars and motor cycles will be held every day, as was the case last year. Among the firms showing motor cars at the National, and with whose exhibits we shall deal next week, are the Star Engineering Co. (Wolverhampton), Progress Motor Co., John Marston, Ltd., Beaufort Motor Co., Alldays and Onions Pneumatic Engineering Co., the British and Foreign Motor Co. (Petit Rochet), Burlington Motor Co., Duryea Motor Co., E. W. Hart (Renault and Mercedes), and the Mauser-Union. A number of interesting and in many cases entirely new motor bicycles will also be found. Among them may be mentioned the "Bat," "Quadrant," "Singer," "Raleigh," "Excelsior," Alldays and Onions, "Centaur," "Whirlwind," Hobart Bird, "Jesmond," "Rex," "Wearwell," "Kerry," "Ormonde," "Minerva," and "Werner." Dunlop tyres (the new vulcanised type), Scottish tyres, Self-sealing air-tubes, chains, and a number of other motor parts and accessories will be found. At the Stanley, Brown Bros. will show cars, and there will probably be some others, but as the Stanley Club will be holding a separate motor show at Earl's Court in January, the cars will mostly be reserved for that occasion; but it is very strong indeed in motor bicycles and parts, fittings and accessories for both motor cycles and cars. Among the motor bicycles which will be shown are the "Ariel," "Bradbury," "Brown," "Chase," "Clarendon," "Clyde," "Crypto," "Enfield," "Garrard," "Phœnix" (including Mr. Hooydonk's new convertible tandem tricycle), "Humber" (a new tricycle will be shown in addition to the chain-driven bicycles), "James," "Mohawk," "Monopole," "Gamage," "New Hudson," "Coventry Eagle," "Princeps," "Riley," "F.N.," "Triumph," and "Osmond." In addition tyres will be exhibited by the Goodyear and other well-known firms. Houses like Messrs. Gamage and Messrs. Brown Bros. will have a wonderful variety of accessories, parts, and fittings of all sorts. In fact, it would appear that nearly all the firms occupying the floor of the hall will have one or

more motor bicycles, while in the galleries a still greater percentage of the exhibitors will show items of interest to the motor cyclist or the motorist, conspicuous among the firms being Messrs. Lucas and Messrs. Salsbury, the two great lamp makers. On the other hand, some of the firms who claim to show items of interest to the motorist content themselves with little more than two or three motor horns. It will be seen that, although both shows were originally cycle shows, each now possesses a very strong motor flavour indeed, though it should be understood that the pedal bicycles shown will be a thoroughly representative collection, and will include, with one or two exceptions, everyone of the best firms in the country. In each show trailers and tandem attachments for motor bicycles will be plentiful.

THE PETROL QUESTION.

The vexed question of petrol transport remains *in statu quo*, notwithstanding a pronouncement to the contrary lately made by a motor cycling contemporary which appears to be quite out of touch with this matter.

The petrol shippers preferred a request to the railway companies to be allowed to forward petrol to their customers by rail under the old terms and conditions, pending the settlement of the consignment note by the special committee of traders' and railway companies' representatives, but we learn from the Clearing House that matters must remain as they are until the meeting of the joint committee referred to above which is called for the 25th inst. The shippers relied upon the granting of their very reasonable request by the railway companies, but



We have several times referred to the lvel agricultural motor. It will be remembered that this motor pulls ploughs, and also all sorts of agricultural implements, and can be us:d as a traction engine when off the fields, as it is adapted for running either on fields or ordinary roads. While the difficulty with the railway companies remains, Mr. Dan Albone, of Biggleswade, which is forty-five miles fr m London, sends his agricultural motor towing a couple of vans to London to fetch spirit, so that he always has a good supply at his place for his own requirements, and those of the district, and passing tourists.

in the face of their refusal to the *statu quo ante*, the situation remains as inconvenient as ever for those who depend upon the railways for their supplies of spirit.

In addition to the firms' names which we gave last week and the week previously who have made arrangements to continue the supply of petrol at their usual prices, the following have written to us informing us that they, too, are able to keep up the supply:

BASINGSTOKE.—W. W. Webber, 1, Winchester Road.
BRADFORD.—Bradford Motor Car Co., Manningham Lane.
DONCASTER.—W. E. Clarke and Co., Station Road.

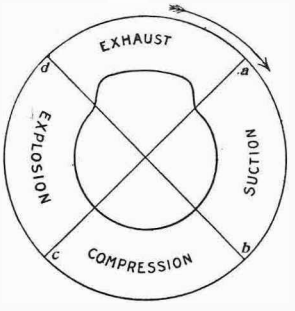
Answers to Correspondents.

QUERIES OF GENERAL INTEREST.

VALVE SETTING.

Q.—In *The Autocar* of October 11th, page 386, I notice a sketch showing the action of cam used for lifting exhaust valve of Minerva motor bicycle. Should this cam not revolve from *c* to *d*, etc., instead of from *a* to *b*, etc., as illustrated? As the small spur wheel on the driving-shaft revolves in the direction the machine travels, the larger spur wheel geared into it which works the cam must revolve in the opposite direction.—H. K.

A.—The cam is revolving from *c* to *d* and from *a* to *b* equally, as you will note by the illustration, which we publish again in order to clear up any doubts that may exist in the minds of some of our readers. In the first place, the illustration was intended as a general diagram, and not applicable to the Minerva engine alone. If this were the case, the direction in which it revolves would, of course, be the reverse to that shown, in which case from *d* to *c* would be the suction stroke, *c* to *b* compression, as at present, and *b* to *a* explosion instead of suction. The cam would, of course, change its position into its opposite quarters in suction and explosion.



SPARE PARTS FOR MOTOR BICYCLE.

Q.—I am about to send a Mitchell motor bicycle to a friend in India (Quetta), where accumulators cannot be charged. I am sending the following spare parts. Would you suggest any others or any changes? Meyra's dry batteries (sufficient for 2,000 miles), six sparking plugs, and washers and thumbscrews, two extra belts and fasteners, one inlet valve and springs, one exhaust valve and springs, three piston rings, one set of insulated wires, one contact breaker complete, one pocket voltmeter, and an extra tank for handle-bar. I should much value your opinion as to the dry batteries.—G. P.

A.—We should advise you to send out two dry batteries, and to obtain these direct from the makers, stating the fact that they are going out to India, and asking for them as fresh as possible. The dry battery is somewhat erratic, and one can never depend upon it lasting a given distance. We have found similar batteries vary from 500 to 1,800 miles of useful work, and to our knowledge no short circuiting has occurred. If you could get the makers to insert a

piece of glass tube through the sealing pitch, the efficiency of the battery might be kept up by occasionally putting in about a tablespoonful of a strong solution of salammoniac. The following should be added to your list of spare parts: Two contact blades, two platinum-pointed screws, two finger nuts for contact-breaker cover, one needle valve for carburetter, two ignition lever springs, and a duplicate of every nut and screw on the motor and parts. We presume you are sending out a full kit of tools with the machine. We would also recommend you to include a small hand vice and a few small files, round and flat.

This week the following correspondents have been, or will be, replied to by post:

Cameron (Edinburgh).	W. E. Clarke.
(Edinburgh).	A. J. Hawkey.
Thos. Sylvester	H. S. Morgan.
(Ashford).	F. C. Blake.
T. Smith.	L. C. Irvine.
H. Enderby	B. Duke.
(Roehampton).	T. E. Barker.
W. W. Colman (Norwich)	J. G. Kirsten.
New Rossleigh	C. E. Hartridge
(Edinburgh).	C. R.
J. C. Pardoe (Barry).	F. Archer.
F. P. J. Harris.	R. M. Band.
B. Davies (Fremington).	McGregor.
E. de Poklwalmisky.	Jelbam.
S. L. Cocks.	R. Goldsmith.
J. H. Fox.	H. Morgan.
J. Higginson.	A. W. Dixon.
C. M. T.	

Our thanks are due to the following for items of news and various topics of interest which have been or will be dealt with: J. Sydney Jones, A. E. Pearson, J. Farmer, Sir Edgar Boehm, L. Savory, W. R. McTaggart, G. S. Cousins, C. J. Paffard, E. Barker, A. H. W., and C. E. Smith.

Letters forwarded: T. Norton and C. H. Dawe.

New Patents.

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

The following list of specifications was printed and published on 6th November, 1902. All notices of opposition to the granting of patents on the several applications should be filed not later than 22nd December, 1902.

1901.

16,238.—N. Greening and E. Sherlock. Pneumatic tyre having layers of picqué or the like introduced into the cover to resist puncture.

20,942.—W. E. Teschemaker. To reduce vibration the motor is mounted on adjustable counteracting tension and compression springs.

20,973.—S. Smith and C. von Buch. A double piston motor drives by frictional contact with the tyre of one of the wheels.

21,013.—A. Couture. Motor bicycle with engine arranged in a fork at the seat-tube, spur reducing gear, and hub brake.

21,229.—A. Schaarschmidt. Wheels are constructed with two concentric rims connected by springs.

22,915.—C. McR. Turrell and T. Pollock. Transmission gear comprising a change-speed gearshaft having a balance gear and two chain wheels.

23,693.—F. W. Lanchester. Dustcaps dished and then flattened out to engage recesses formed in the mouths of bearings.

25,070.—J. W. M. Brooke and J. W. Brooke and Co., Ltd. Explosion motors are governed by a throttle valve operated by the volume and pressure of the exhaust.

1902.

1,173.—R. C. Sayer. Wheels or drums for enabling motor cars to traverse any kind of land or fluid, and actuation thereof by a fluid pressure.

3,062.—L. L. Powell. Apron frill between the knees to accommodate the steering column.

10,086.—L. Megy. Controlling by the steering column and automatically adjusting the speed to the load.

11,398.—G. Klingenberg. Arrangement of the regulating and igniting devices in a separate removable casing.

The following specifications were printed and published on 13th November, 1902. All notices of opposition to the granting of patents on the several applications should be filed not later than 29th December, 1902.

1901.

22,563.—A. F. Spooner (M. Werner and E. Werner) The Werner rear driver motor bicycle frame.

23,011.—F. W. Hayward, R. C. Fox, and E. Wilkinson. Variable speed gear with expanding pulleys and usually driving only one road wheel.

23,476.—J. W. Parker and G. J. C. Parker. Apparatus for producing gas from coke or other solid material for vehicle propulsion.

23,575.—E. Mushing and G. Gilbert. The front forks of motor cycles have the blades extended and hinged to the top of the head and free to play to and fro, and in the fork crown against springs.

1902.

13,842.—T. W. Flory, C. P. Reingpach, and E. Newman. Combined time and distance indicator.

NOTICES.

SUBSCRIPTIONS.

"THE AUTOCAR" is published every Friday morning in Town and Country, and may be obtained of all Newsvenders and Book stalls, or delivered first post on Friday, at the following rates:

GREAT BRITAIN.	s.	d.	ABROAD.	s.	d.
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Six months	8	0	Six months	9	2
Three months	4	0	Three months	4	8
Single copy ...	0	3½	Single copy	0	7

These prices include four special double numbers

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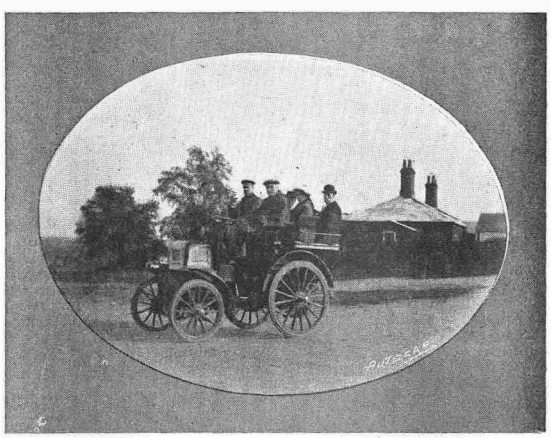
The London Publishing Office of *The Autocar* is at 3, St. Bride Street, Ludgate Circus E.C., where newsvendors and others can always obtain copies *after ten o'clock on Friday mornings.*

Messrs. W. H. Smith & Son take *The Autocar*, and if ordered at one of their bookstalls they will supply it regularly at such place. Anyone not being so supplied should write to Messrs. Smith, or their head office, Strand, London, W.C.

PARIS AGENTS: M.M. Boyveau & Chevillet, 22, Rue de la Banque.



This car is an old 1897 Daimler, which is still running strongly and well. It belongs to Mr. W. C. Hutchings, of Woking, Surrey, and at the time the photograph was taken the car was leaving the army supply depot at Aldershot with Capt. Gourley, A.S.C., and friends. Mr. Hutchings is at the wheel, with Capt. Gourley by his side.

THE AUTOCAR

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

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In "The Autocar" of November 8th, a coloured supplement plate—"The 16 h.p. Napier"—was published. Separate copies of this supplement can be obtained packed flat, post free, for 7d. from the publishers, 3, St. Bride Street, Ludgate Circus, E.C.

COLONIAL AND FOREIGN EDITION.

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

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AUSTRALIA: Phillips, Ormonde, and Co., 533, Collins Street, Melbourne.

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UNITED STATES: The International News Agency, New York.

Notes.

The Speeds of Coaches.

Last week we referred to the letter which Col. Crompton had written to the *Engineer* proving that our contemporary was mistaken in its contention that the great main roads of this country were never intended for traffic travelling in excess of ten miles an hour. However, as our contemporary still maintained that coaches did not exceed this slow speed, Col. Crompton and also Mr. Norman Macdonald have given some actual times accomplished by well-known coaches over certain classic routes, and we do not think we can do better than publish these, as they in themselves give the best possible answer to any who may argue that moderately high speeds on the main roads constitute an infringement of the purposes for which the roads were constructed. As a matter of fact, the main roads were constructed for the highest speeds which could be maintained on them. It was a mere accident that carriages could not at that time attain such high speeds as now, but we do not believe for a moment that those who were responsible for the engineering of the high roads ever imagined that the final development had been reached, and that the speed of, say, 1830 would never be increased. If they thought so slowly, it only shows how short-sighted they were, but why moderns should take up such a line of argument we are utterly at a loss to see, as it cannot matter to them what the constructors of the roads thought, though we may say that posterity would have had a higher regard for their good sense if they had introduced fewer needless curves and corners into their roads. The following are the speeds (in miles per hour) of the coaches referred to above, and given by Col. Crompton:

	Miles.	Total time of Journey.	Time deducting stoppages.	Average speed on road.
Shrewsbury Wonder (special)	158	9½	9¼	17
Shrewsbury (ordinary)	158	15½	14¼	11
Birmingham Swan Tally Ho	109	[illegible]	7	15½
Birmingham Independent Tally Ho	109	7½	7¼	14¾
Manchester Telegraph	187	17	15¾	12

It will be seen from the above that the mean rate of the average speeds on the road works out at fourteen miles an hour, two miles above the present *maximum* for autocars, though everyone knows that to average fourteen miles in the hour it is necessary at times to go at twenty, and there is no doubt whatever that the crack coaches frequently exceeded this speed, although the only brakes were afforded by the two horses, the wheelers, and there was no other check except the skid-pan, which was put on as a retarder down very steep declines. Mr. Norman Macdonald contributes the schedule of the London-Birmingham four-horse flier in 1830, which is also most instructive, particularly as the second fastest stage was partly through town:

Stages.	Distance. Miles.	Speed start to stop inclusive. Miles an hour.
1	17¾	16·17
2	7½	18·75
3	12¼	11·85
4	11	14·64
5	24	13·45
6	19¾	16·50
7	17½	14·59

These evidences are, we think, more than sufficient to prove the fallacy of the ten miles per hour theory.